Notice of Application for a Planning Permit

Cardinia

The land affected by the application is located at:	L2 LP144001 V9539 F582 430 Bourke Road, Nar Nar Goon VIC 3812
The application is for a permit to:	Buildings and Works (Construction of buildings associated with Horse Husbandry and a Rainwater Tank)

A permit is required under the following clauses of the planning scheme:

35.04-5	Construct a building within nominated setbacks
35.04-5	Construct or carry out earthworks specified in a schedule to this zone
44.04-2	Construct a building or construct or carry out works

APPLICATION DETAILS

The applicant for the permit is:	HAI STUDIO PTY LTD
Application number:	T250214

You may look at the application and any documents that support the application at the office of the Responsible Authority:

Cardinia Shire Council, 20 Siding Avenue, Officer 3809.

This can be done during office hours and is free of charge.

Documents can also be viewed on Council's website at cardinia.vic.gov.au/advertisedplans or by scanning the QR code.

HOW CAN I MAKE A SUBMISSION?

This application has not been decided. You can still make a submission before a decision has been made. The Responsible Authority will not decide on the application before:	31 October 2025

WHAT ARE MY OPTIONS?

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

If you object, the Responsible Authority will notify you of the decision when it is issued.

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.

1 Application lodged — 2 Council initial assessment — 3 Notice (Application is here) — 4 Consideration of submissions — 5 Assessment — 6 Decision

Cardinia ePlanning

Application Summary

Portal Reference	A22540Q7

Basic Information

Proposed Use	The new owner of the farm intends to use the property for breeding racehorses. He operates an established horse breeding business and owns several farms across Victoria. To support this use, he is proposing to develop the site with the following key structures and infrastructure: A new stable for housing the horses An agricultural storage shed including a lunch room, office, and toilet facilities A new horse walker Associated infrastructure including new water tanks, septic systems, asphalt roads, and parking areas A new entrance gate to improve access and security Please let me know if you need any further information or clarification regarding the proposal.
Current Use	The property is currently being used as farmland. From what I understand, the existing dwelling on the site had deteriorated significantly and was no longer habitable. The owner has since demolished the house.
Cost of Works	$300,000
Site Address	430 Bourke Road Nar Nar Goon 3812

Covenant Disclaimer

Does the proposal breach, in any way, an encumbrance on title such as restrictive covenant, section 173 agreement or other obligation such as an easement or building envelope?	No such encumbrances are breached

☐ Note: During the application process you may be required to provide more information in relation to any encumbrances.

Contacts

Type	Name	Address	Contact Details
Applicant	[redacted] HAI STUDIO PTY LTD	48 Manuka Drive, Boronia VIC 3155	W: 0432-288-626 E: HAISTUDIOALEX@GMAIL.COM
Owner	[redacted]		
Preferred Contact	[redacted] HAI STUDIO PTY LTD	48 Manuka Drive, Boronia VIC 3155	W: 0432-288-626 E: HAISTUDIOALEX@GMAIL.COM

Fees

Regulation	Fee Condition	Amount	Modifier	Payable
9 - Class 12	More than $100,000 but not more than $1,000,000	$1,706.50	100%	$1,706.50
		Total		**$1,706.50**

Meetings

Meeting Type	Officer Name	Date of Meeting
Pre Application	[redacted]	08 Apr 2025

Documents Uploaded

Date	Type	Filename
20-04-2025	A Copy of Title	00763517310012025040103420001.pdf
20-04-2025	Site plans	existing site plan.pdf
20-04-2025	A proposed floor plan	Nar Nar Goon_TP_250419.pdf

☐ Remember it is against the law to provide false or misleading information, which could result in a heavy fine and cancellation of the permit

Lodged By

Site User	[redacted]
Submission Date	20 April 2025 - 03:17:PM

Declaration

☑ By ticking this checkbox, I, [redacted] declare that all the information in this application is true and correct; and the Applicant and/or Owner (if not myself) has been notified of the application.

Civic Centre
20 Siding Avenue, Officer, Victoria

Council's Operations Centre (Depot)
Purton Road, Pakenham, Victoria

Postal Address
Cardinia Shire Council
P.O. Box 7, Pakenham VIC, 3810

Email: mail@cardinia.vic.gov.au

Monday to Friday 8.30am–5pm
Phone: 1300 787 624
After Hours: 1300 787 624
Fax: 03 5941 3784

Cardinia Shire Council

Request to amend a current planning permit application

Cardinia

This form is used to request an amendment to an application for a planning permit that has already been lodged with Council, but which has not yet been decided. This form can be used for amendments made before any notice of the application is given (pursuant to sections 50 / 50A of the *Planning and Environment Act 1987*) or after notice is given (section 57A of the Act).

PERMIT APPLICATION DETAILS

Application No.:	T250214 PA
Address of the Land:	430 Bourke Road, Nar Nar Goon VIC 3812

APPLICANT DETAILS

Name:	[redacted]
Organisation:	HAI STUDIO PTY LTD
Address:	48 Manuka Drive Boronia VIC 3155
Phone:	0432288626
Email:	HAISTUDIOALEX@GMAIL.COM

AMENDMENT TYPE

Under which section of the Act is this amendment being made? (select one)	
Section 50 – Amendment to application at request of applicant **before** notice:	☐
Section 50A - Amendment to application at request of responsible authority **before** notice:	☑
Section 57A – Amendment to application **after** notice is given:	☐

AMENDMENT DETAILS

What is being amended? (select all that apply)		
What is being applied for ☑	Plans / other documents ☐	Applicant / owner details ☐
Land affected ☐	Other ☐	

Describe the changes. If you need more space, please attach a separate page.
As requested by the planner, I have included " buildings and works for a rainwater tank" in this application.

Specify the estimated cost of any development for which the permit is required:		
Not applicable ☐	Unchanged ☐	New amount $

DECLARATION

I declare that all the information in this request is true and correct and the owner (if not myself) has been notified of this request to amend the application.

Name:	[redacted]
Signature:	[redacted]
Date:	16/06/2025

LODGEMENT

Please submit this form, including all amended plans/documents, to mail@cardinia.vic.gov.au

You can also make amendments to your application via the Cardinia ePlanning Portal at https://eplanning.cardinia.vic.gov.au/

If you have any questions or need help to complete this form, please contact Council's Statutory Planning team on 1300 787 624.

IMPORTANT INFORMATION

It is strongly recommended that before submitting this form, you discuss the proposed amendment with the Council planning officer processing the application.

Please give full details of the nature of the proposed amendments and clearly highlight any changes to plans (where applicable). If you do not provide sufficient details or a full description of all the amendments proposed, the application may be delayed.

No application fee for s50/s50A requests unless the amendment results in changes to the relevant class of permit fee or introduces new classes of permit fees. The fee for a s57A request is 40% of the relevant class of permit fee, plus any other fees if the amendment results in changes to the relevant class (or classes) of permit fee or introduces new classes of permit fees. Refer to the *Planning and Environment (Fees) Regulations 2016* for more information.

The amendment may result in a request for more under section 54 of the Act and/or the application requiring notification (or re-notification). The costs associated with notification must be covered by the applicant.

Council may refuse to amend the application if it considers that the amendment is so substantial that a new application for a permit should be made.

Any material submitted with this request, including plans and personal information, will be made available for public viewing, including electronically, and copies may be made for interested parties for the purpose of enabling consideration and review as part of a planning process under the *Planning and Environment Act 1987*.

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

VOLUME 09539 FOLIO 582

Security no : 124123320490S
Produced 01/04/2025 02:42 PM

LAND DESCRIPTION

Lot 2 on Plan of Subdivision 144001.
PARENT TITLES :
Volume 09463 Folio 923 to Volume 09463 Folio 924
Created by instrument LP144001 10/01/1984

REGISTERED PROPRIETOR

[redacted]

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 or imaged folio set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE LP144001 FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AY815925V (E)	DISCHARGE OF MORTGAGE	Registered	24/01/2025
AY815926T (E)	TRANSFER	Registered	24/01/2025

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

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

Street Address: 430 BOURKE ROAD NAR NAR GOON VIC 3812

ADMINISTRATIVE NOTICES

NIL

eCT Control 19447X NEVETT FORD MELBOURNE PTY LTD
Effective from 24/01/2025

DOCUMENT END

Imaged Document Cover Sheet

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

Document Type	**Plan**
Document Identification	**LP144001**
Number of Pages (excluding this cover sheet)	**1**
Document Assembled	**01/04/2025 14:42**

LP 144001

EDITION 1
APPROVED 21/11/83

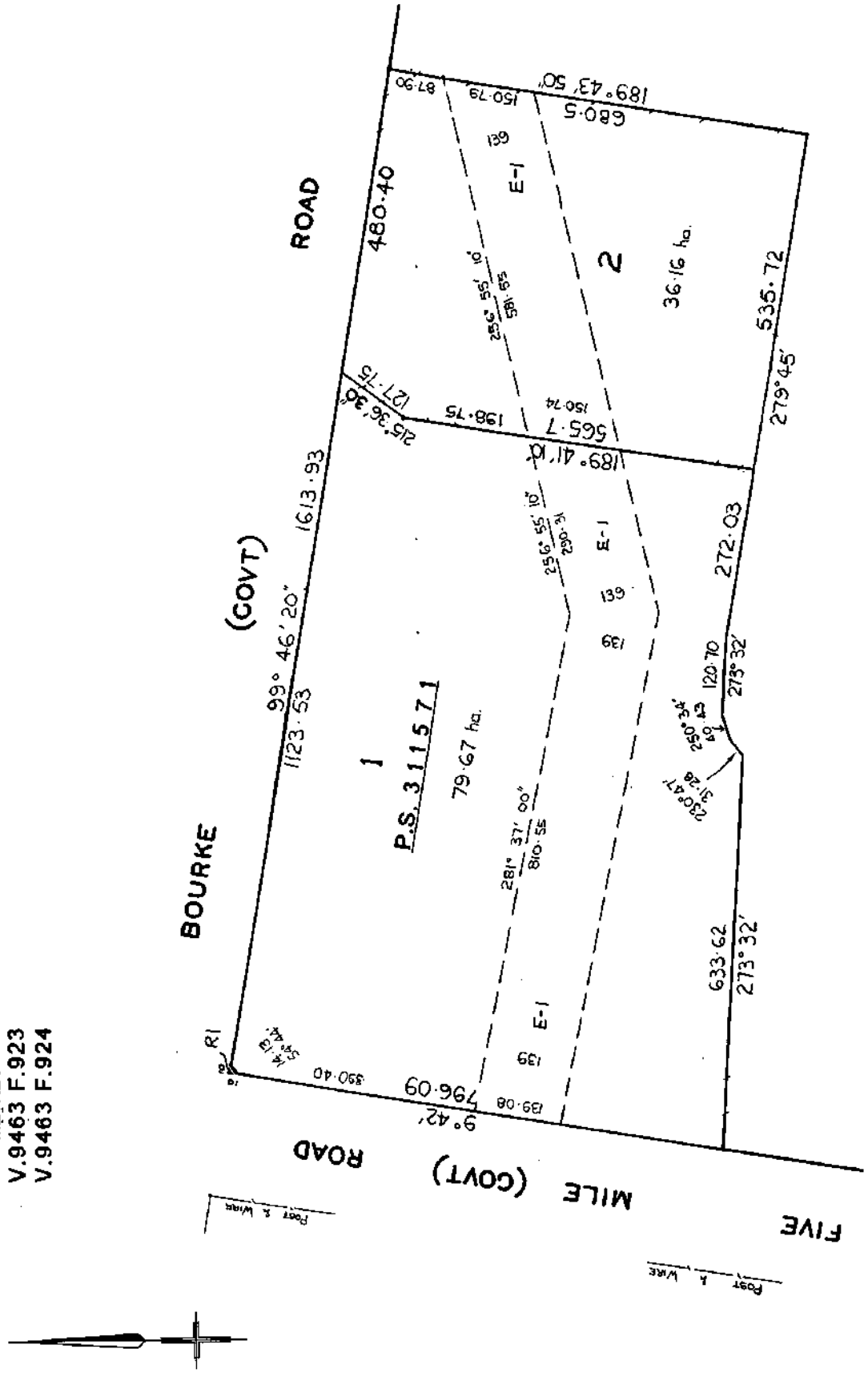
COLOUR CODE

E-1 = BLUE
R1 = BROWN

PLAN OF SUBDIVISION	APPROPRIATIONS	ENCUMBRANCES & OTHER NOTATIONS
PART OF CROWN ALLOTMENTS 72A & 73A	BROWN – WAY + DRAINAGE	THE LAND COLOURED BLUE IS AN S.E.C. EASEMENT WIDE INSTRUMENT N° 1460840
PARISH OF NAR NAR GOON		
COUNTY OF MORNINGTON		

MEASUREMENTS ARE IN METRES

V.9463 F.923
V.9463 F.924



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

VOLUME 09463 FOLIO 925

Security no : 124123815602B
Produced 20/04/2025 11:47 AM

LAND DESCRIPTION

Lot 1 on Title Plan 132628B.
PARENT TITLES :
Volume 05654 Folio 664 Volume 08349 Folio 341
Created by instrument J556032 22/07/1981

REGISTERED PROPRIETOR

[redacted]

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.

DIAGRAM LOCATION

SEE TP132628B FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AY815924X (E)	DISCHARGE OF MORTGAGE	Registered	24/01/2025
AY815926T (E)	TRANSFER	Registered	24/01/2025

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

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

Street Address: 430 BOURKE ROAD NAR NAR GOON VIC 3812

ADMINISTRATIVE NOTICES

NIL

eCT Control 19447X NEVETT FORD MELBOURNE PTY LTD
Effective from 24/01/2025

DOCUMENT END

Imaged Document Cover Sheet

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Document Type	**Plan**
Document Identification	**TP132628B**
Number of Pages (excluding this cover sheet)	**1**
Document Assembled	**20/04/2025 11:47**

TITLE PLAN		EDITION 1	TP 132628B

Location of Land

Parish: NAR-NAR-GOON
Township:
Section: H
Crown Allotment: 37(PT)
Crown Portion:

Last Plan Reference:
Derived From: VOL 9463 FOL 925
Depth Limitation: 15.24 m

Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

ENCUMBRANCES REFERRED TO

As to the land shown marked B- - -
THE EASEMENT to State Electricity-
Commission of Victoria created by-
Instrument J460840- - - - - - - - -

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT
COMPILED: 19/06/2000
VERIFIED: SO'C

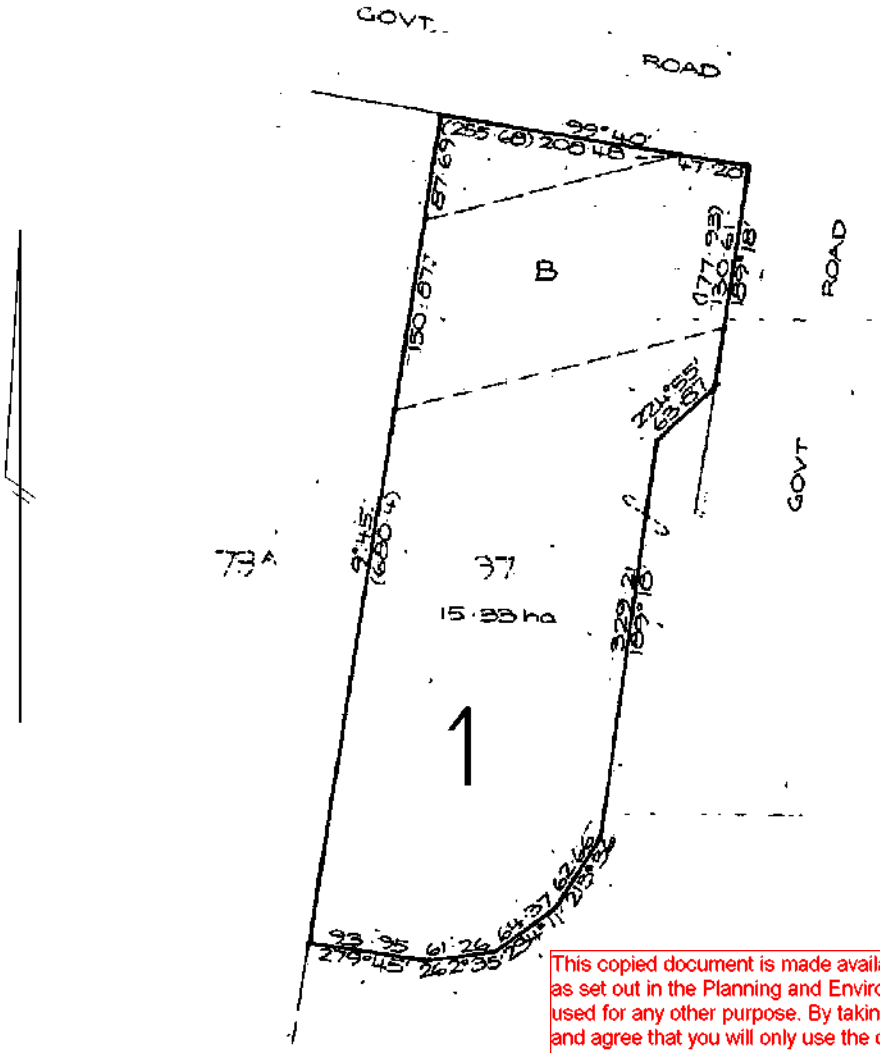

TABLE OF PARCEL IDENTIFIERS
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962
PARCEL 1 = CA 37 (PT)

LENGTHS ARE IN METRES	Metres = 0.3048 x Feet Metres = 0.201168 x Links		Sheet 1 of 1 sheets

Planning Report – Use and Development of Equine Facility
430 Bourke Road, Nar Nar Goon VIC 3812

Application No.: **T250214 PA**

Property No.: **4119750500**

Address: **L2 LP144001 V9539 F582, 430 Bourke Road, Nar Nar Goon VIC 3812**

Proposal: Husbandry) Buildings and Works (Construction of buildings associated with Horse

1. Subject Site and Surrounding Context

The subject land is located at 430 Bourke Road, Nar Nar Goon, within the **Green Wedge Zone – Schedule 1 (GWZ1)**. The land is currently used for agricultural purposes.

The surrounding area is characterised by large rural allotments predominantly used for livestock grazing, cropping, and equine-related activities. The immediate and broader context strongly supports the continuation of rural and agricultural uses.

Key locational features include:

- Approximately 1.4 kilometres south-east of Chairo Christian School (Pakenham Campus).
- Approximately 200 metres from an established equine pre-training and education facility.
- Within a 2-kilometre radius of landholdings exhibiting similar agricultural and equestrian uses.

2. Proposal

The application seeks approval for buildings and works associated with the continued agricultural use of the land, specifically for the establishment of an **equine facility**.

The proposal includes the following components:

- Construction of a **40-stall horse stable** with associated infrastructure.
- Construction of an **agricultural storage shed** for machinery and fodder.
- A **staff amenities building**, including a lunchroom, toilets, and office facilities.
- Installation of a **horse walker**.
- Installation of a **190,000-litre water tank** and new septic system.
- Associated **hardstand areas and internal accessways** (bitumen-surfaced).

The development is intended to support equine operations on the site, consolidating the rural use in a manner consistent with the purpose of the Green Wedge Zone.

---

3. Building Design and Siting

The proposed stable will be a **purpose-built structure** designed to prioritise equine welfare, with a pitched roof form and clerestory windows to facilitate passive ventilation. Each stall will have an operable window at horse head height to maximise cross-flow ventilation and animal comfort.

The external finishes of all proposed building works will comprise matt-finish Surfmist Colorbond for the façades and matt-finish Basalt Colorbond for the roofing.

Internally, the stabling area will be constructed with robust, non-slip, and hygienic materials, incorporating floor pits and an integrated drainage system to manage waste and wash-down water. Essential services (electricity, potable water, drainage, and temperature controls) will be provided to support safe and efficient daily operations.

All buildings will have a finished floor level approximately **600 mm above natural ground level**, mitigating potential overland flow impacts and ensuring compliance with relevant drainage and flood resilience standards.

Driveway works:

- The existing driveway will be rebuilt to its **original level**, with a gradual ramp from the entrance to meet the existing driveway height.

- **Imported material requirements:** 390 m³ total; if the existing 50 mm sub-base is suitable, this will be reduced to 315 m³.

- **Drainage:** The alignment and height will not be altered. Replacement materials (Class 2–3, 20 mm crushed rock with asphalt finish) will not interfere with existing overland flows, maintaining the original drainage design.

---

4. Operational Details

- **Operating Hours:** 7:00 am to 5:00 pm, seven days per week.

- **Staffing:** 3 staff regularly on site.

- **Animals:** Horses and limited livestock (e.g., oxen) are accommodated on site 24/7.

- **Visitors:**

    - There are no visitors to the farm.

    - The facility is **not a riding school**, is not open to the general public, and does not provide overnight accommodation.

The facility is operated by **Yulong Investments** (https://yulonginvest.com.au/), who own several equine farms across Victoria.

---

5. Infrastructure, Servicing and Drainage

- Drainage will be designed to manage stormwater in accordance with **Melbourne Water** and **Cardinia Shire Council** requirements.
- Impervious surfaces and roof catchments will be directed to collection, detention, and lawful discharge points.
- Flooring and hardstand materials will comply with **Best Practice Environmental Management** and Melbourne Water guidelines.
- A new on-site effluent disposal system will be installed for staff amenities.
- An additional septic system will be installed for animal wastewater management.

Note: Replacement fencing is excluded from this application and mentioned for context only.

---

6. Planning Considerations

The proposal is consistent with the **purpose and objectives of the GWZ1**, as it:

- Facilitates the continuation and intensification of productive agricultural use.
- Responds appropriately to the rural character and amenity of the area.
- Contributes to the equine industry, a strategically supported agribusiness sector within peri-urban Victoria.

The scale and siting of the development are considered appropriate, supported by suitable infrastructure and consistent with the surrounding agricultural landscape.

---

7. Road Works

The application proposes **road works along Bourke Road**, including:

- Construction of a **new asphalt road linking to Seven Mile Road**.
- **Swept path upgrades** at the Bourke Road / Seven Mile Road intersection to accommodate large vehicles.

---

8. Signage

The application includes a **single non-illuminated sign** at the property entrance for identification purposes only.

Yours faithfully,

[redacted]
Registered Architect (VIC & NSW). VIC Planning Service. Farm Development Consultation. Residential House Development, Warehouse Development & Change of Use.

HAI STUDIO
ARCHITECTURE | INTERIOR DESIGN | BRAND VISUALISATION

M| 0432 288 626
E| HAISTUDIOALEX@GMAIL.COM

LET'S TALK ABOUT TREES
Managing the Urban Forest

LTAT

This report is prepared by:

Let's Talk About Trees
Managing the Urban Forest

Matthew Branagh
Advanced Arboriculture AHC50516 AQF C5
Diploma of Horticulture /Arboriculture –
Australian College of Applied Science
TAE40116 Training and Assessment AQF C5
Advanced Horticulture AQF C5
Advanced Aroriculture AQF C5
Business Management AQF C5
Trade Qualification in Gardening and
Landscaping AQF C3

PO Box 660,
DRYSDALE Vic, 3222
Ph 0468 874233
ABN 20 625 418 599
arborist@letstalkabouttrees.com.au

LET'S TALK ABOUT TREES
Managing the Urban Forest
LTAT
Member of
Victorian Tree Industry

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tree industry
organisation

Proud Sponsor of
CCAV
CEMETERIES&CREMATORIA
ASSOCIATION OF VICTORIA

www.letstalkabouttrees.com.au

Arboricultural Assessment for:

Preliminary and Impact Assessment of trees Potentially impacted by the Development

430 Bourke Rd, NARNARGOON

This report has been commissioned by:

HAI STUDIO

Let's Talk About Trees, Version 1.0 (Final)

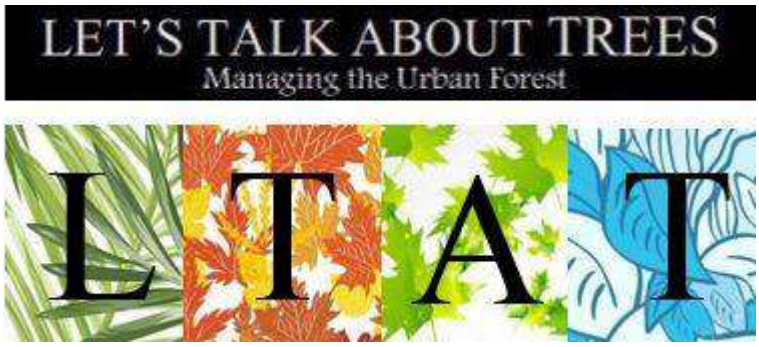


Table of Contents

1.0 Key Objectives

This report has been commissioned by Hai Studio.

The focus of the report is to assess trees on the allotment referred to as 430 Bourke Road, Nar Nar Goon, Victoria.

The focus of this report is to address the impact on trees due to horse stable development on the site.

It assesses all trees potentially impacted on the site.

2.0 Methodology

The inspection for this report was performed in June of 2025, by me [redacted] AQF level 5 Consulting Arborist from Let's Talk About Trees.

A ground-based Visual Tree Assessment was performed on the trees, in line with modern Arboricultural Practices and Principles, many years of education, practical experience, AS 4970 – 2025 – Protection of Trees on Development Sites and AS 4373 – 2007 – Pruning of Amenity Trees.

All photographs were taken at the time of the inspection and will be used within this report for reference or identification purposes.

No.	Identification	Est. Age Yrs	ULE	Health	Structure	Significance	Hazard	Esti. Height (m)	DSH (cm) *=multi stemmed	DSH Radius (m) SRZ Radius (m)	Comment
1	*Eucalyptus viminallis – Manna Gum.*	M	L	F	F	L	L	7	90*	10.8 SRZ 3.2	Nonindigenous planted tree remnant of a greater boundary planting.
2	*Eucalyptus viminallis – Manna Gum.*	M	M	P	P	L	L	8	65	7.8 SRZ 2.8	Nonindigenous planted tree remnant of a greater boundary planting
3	*Eucalyptus viminallis – Manna Gum.*	M	M	P	P	L	L	8	60	7.2 SRZ 2.7	Nonindigenous planted tree remnant of a greater boundary planting
4	*Eucalyptus viminallis – Manna Gum.*	M	M	P	P	L	L	11	70	8.4 SRZ 2.8	Nonindigenous planted tree remnant of a greater boundary planting

Table 1 Tree assessment details

3.0 Observations / Discussions

Location of trees on the site (Existing Condition)

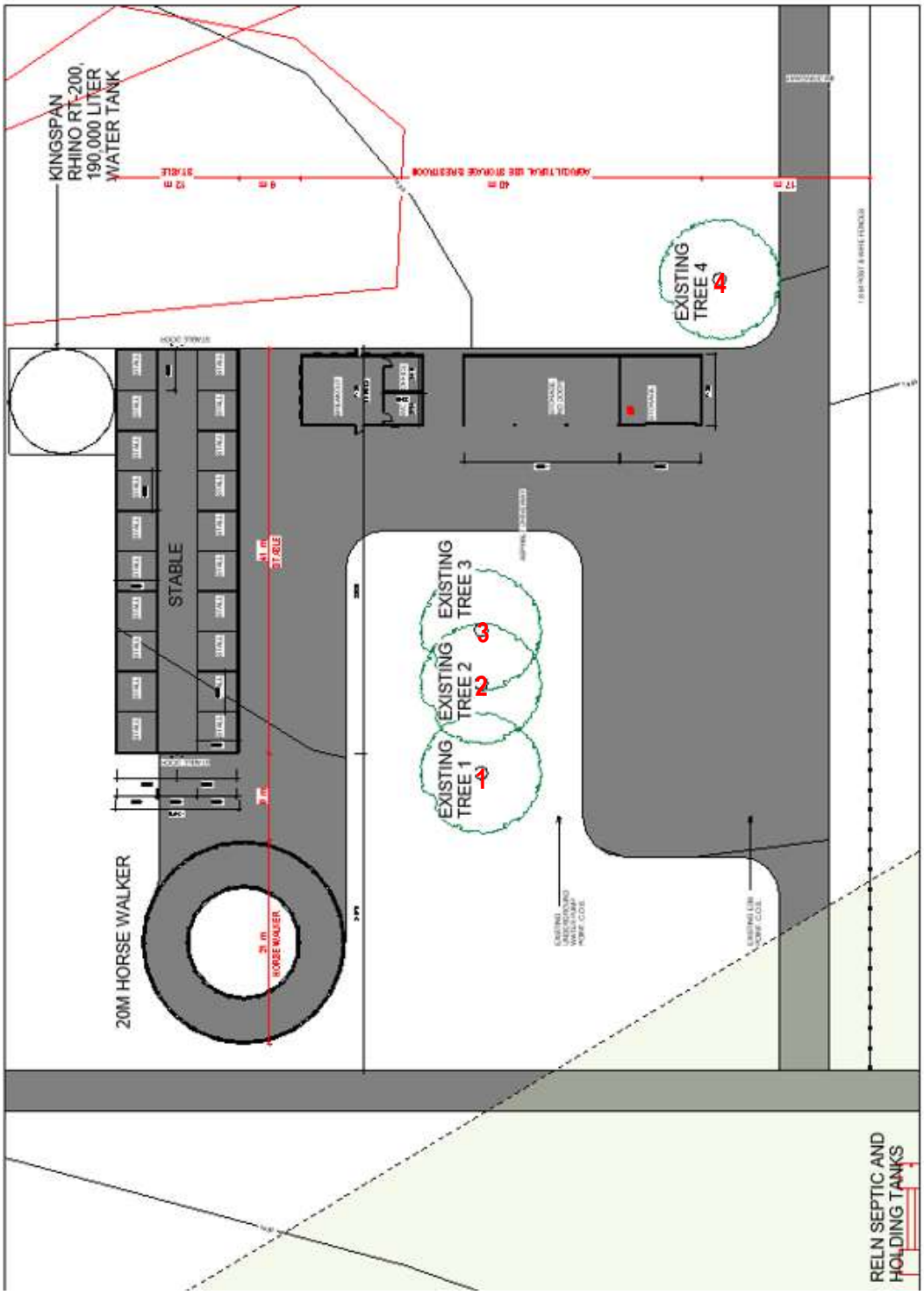
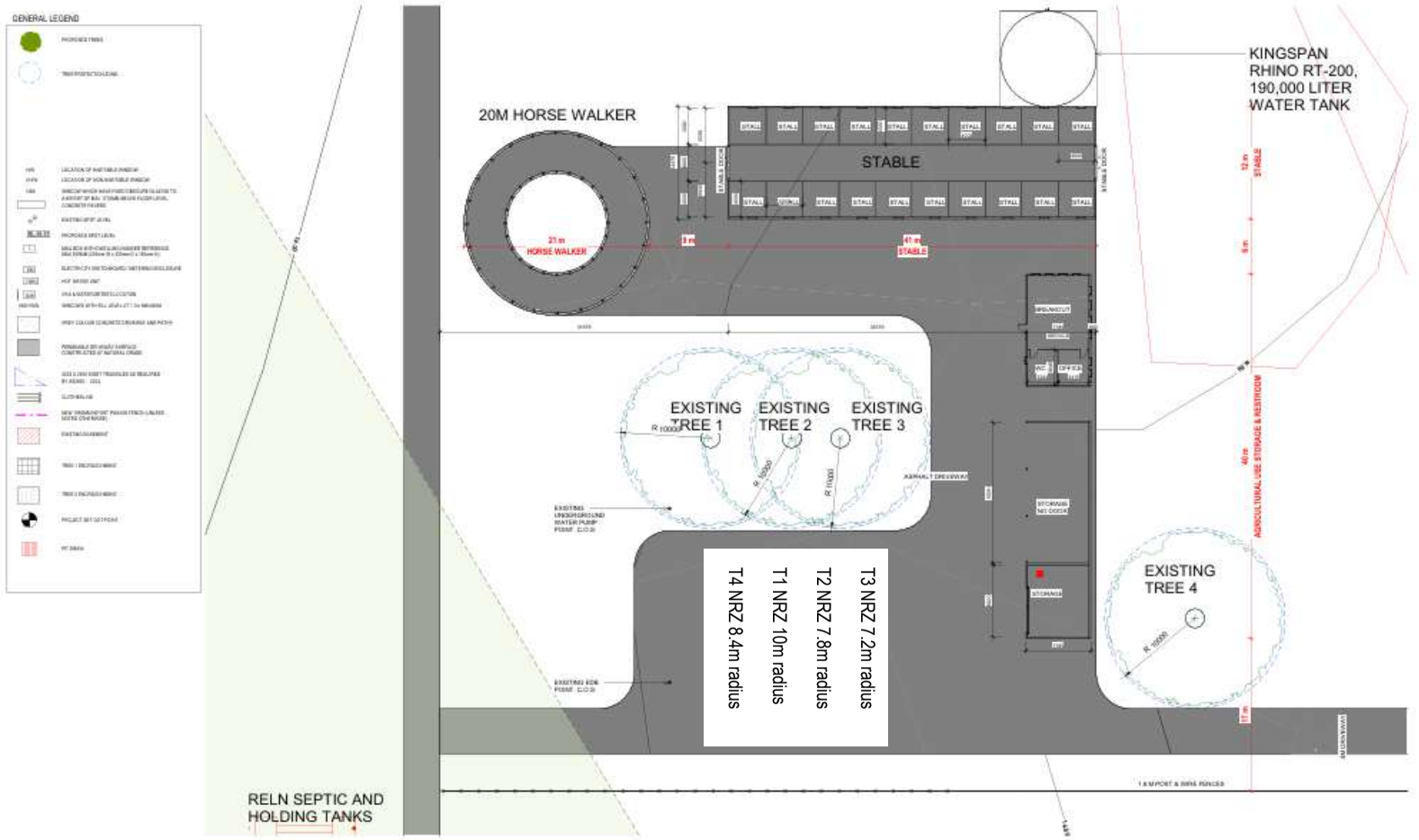


Figure 1 Trees of the site

TREE IMPACT ASSESSMENT



GA GROUND FLOOR PLAN
1 : 200

HAI STUDIO
ARCHITECTURE | INTERIOR DESIGN | BRAND VISUALISATION

PROJECT
HORSE FARM
BOURKE RD, NARNAR GOON VIC 3812
FARM DEVELOPMENT

GA GROUND FLOOR PLAN

PRELIMINARY

TP1000

Figure 2 Tree Impact Assessment

The tree impact assessment for the site reviews each tree as was identified.

Impacts of the subdivision.

Tree #	TSH	Encroachment	Impact
1	10.8m radius	0m	No Impact
2	7.8m radius	0m	No Impact
3	7.2m radius	0m	No Impact
4	8.4m radius	0m	No Impact

Trees 1,2, 3 and 4, are all planted private trees.

The design considers the root zones of these trees on the allotment, and as such direct impact to the trees is made during works.

No other trees on the allotment or on adjoining allotments will be impacted by the development as proposed.

Whilst no trees on the allotment are impacted by the development, the guidance of AS4970-2025 protection of trees on development sites recommends a tree management plan be established to protect trees during the site development works. This may be conditioned in future planning approvals.

4.0 During construction

All construction must adhere to the following specifications.

4.1 Activities excluded from the TPZ include.

- machine excavation
- trenching
- storage
- preparation of chemicals including preparation of cement products
- parking of vehicles and plant
- refuelling
- dumping of waste
- wash down and cleaning of equipment
- placement of fill or soil level changes.

4.2 Limitations of activities carried out within the TPZ include.

- All excavation and construction of or within the encroached area of T.P.Z should be carried out via hand tools.
- Manual excavation should be carried out under the supervision of the project arborist to identify root's location and disturbance.
- Manual excavation may include the use of pneumatic and hydraulic tools used at non-destructive pressure.
- No wheeled or tracked equipment to be used within the encroached area of T.P.Z to avoid or reduce soil compaction.
- Severance of any roots greater than 20 mm in diameter is not permitted, without the prior approval of the project arborist.

4.3 Trees to be retained post development.

- No trees are proposed for removal.

4.4 Trees for practical retention

- No trees for practical retention are noted on this site.

5.0 Conclusion

In conclusion, guided by AS4970-2025 Protection of trees on development sites, the trees of this report can be retained on the site without impact.

The trees are planted and as noted in decline, and as such application for removal of the trees should design change is also supported.

When removing trees from the site the root plates of all trees should be ground out using modern stump grinding methods and the replacement planting of canopy trees should also be considered for the allotment.

6.0 Recommendation

The recommendation of this report is as follows.

1. Trees on site will not be impacted by planned development.

2. A tree management plan as recommended by AS4970-2025 may be deemed appropriate for this site given the close proximity of trees to planned works. If deemed required this should be conditioned in planning approvals for the site.

7.0 Various Site Tree Images

Tree 1 Tree 2 tree 3

Tree 4

8.0 Appendices

9.1 Descriptor's

Definitions Descriptor's used for throughout this report.

AGE

Category	Description
Young	Juvenile or recently planted approximately 1-7 years.
Semi Mature	Tree actively growing.
Mature	Tree has reached expected size in situation.
Senescent	Tree is over mature and has started to decline.

HEALTH

Good	Foliage of tree is entire, with good colour, very little sign of pathogens and of good density. Growth indicators are good ie. Extension growth of twigs and wound wood development. Minimal or no canopy die back (deadwood).
Fair	Tree is showing one or more of the following symptoms; < 25% dead wood, minor canopy die back, foliage generally with good colour though some imperfections may be present. Minor pathogen damage present, with growth indicators such as leaf size, canopy density and twig extension growth typical for the species in this location.
Poor	Tree is showing one or more of the following symptoms of tree decline; > 25% deadwood, canopy die back is observable, discoloured or distorted leaves. Pathogens present, stress symptoms are observable as reduced leaf size, extension growth and canopy density.
Dead or dying	Tree is in severe decline; > 55% deadwood, very little foliage, possibly epicormic shoots, minimal extension growth.

STRUCTURE

Good	Trunk and scaffold branches show good taper and attachment with minor or no structural defects. Tree is a good example of the species with a well-developed form showing no obvious root problems or pests and diseases.
Fair	Tree shows some minor structural defects or minor damage to trunk eg. bark missing, there could be cavities present. Minimal damage to structural roots. Tree could be seen as typical for this species.
Poor	There are major structural defects, damage to trunk or bark missing. Co-dominant stems could be present or poor structure with likely points of failure. Girdling or damaged roots obvious. Tree is structurally problematic.
Hazardous	Tree is an immediate hazard with potential to fail, this should be rectified as soon as possible.

HAZARD

Hazard is rated into three levels: **LOW, MEDIUM,** and **HIGH**.

1. **LOW;** Tree appears to be structurally sound, is healthy with no signs of pests or disease, has good vigour and is clear of any hazards.
2. **MEDIUM:** Tree displays signs of structural problems, evidence of pests or disease, signs of low vigour, deadwood, decay, may be growing into an area that could create a hazard.
3. **HIGH;** Tree is an immediate hazard with the potential to fail; this should be rectified as soon as possible.

USEFUL LIFE EXPEECTANCY – ULE

LONG ULE; Trees that appears to be retainable with an acceptable level of risk for more than 40 years.

1. Structurally sound trees located in positions that can accommodate future growth.
2. Storm damaged or defective trees that could be made suitable for retention in the long term by remedial tree surgery.
3. Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long-term retention.

MEDIUM ULE; Trees that appear to be retainable with an acceptable level of risk for 15 to 40 years.

1. Trees that may only live between 15 and 40 years.
2. Trees that may live for more than 40 years but would be removed to allow the safe development of more suitable individuals.
3. Trees that may live for more than 40 years but would be removed during the course of normal management for safety and nuisance reasons.
4. Storm damage or defective trees that can be made suitable for retention in the medium term by remedial work.

SHORT ULE; Trees that appear to be retainable with an acceptable level of risk for 5 to 15 years.

1. Trees that may live for 5 to 15 years.
2. Trees that may live for more than 15 years but would be removed to allow the safe development of more suitable individuals.
3. Trees that may live for more than 15 years but would be removed during the course of normal management for safety and nuisance reasons.
4. Storm damaged or defective trees that require substantial remedial work to make safe and are only suitable for retention in the short term.

REMOVE; Trees with a high level of risk that would need removal within the next 5 years.

1. Dead trees.
2. Dying or suppressed and declining trees through disease or inhospitable conditions.
3. Dangerous trees through instability or recent loss of adjacent trees.
4. Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form.
5. Damaged trees that are considered unsafe to retain.
6. Trees that will become dangerous after removal of other trees for the above reasons.

SIGNIFICANCE / RETENTION VALUE

Significance is rated into three levels: **LOW, MEDIUM, HIGH**.

LOW; Trees that offer little in terms of contributing to the future landscape for the reasons of poor health or structural condition, species suitability in relation to unacceptable growth habit, noxious, poisonous or weed species or ULE, or a combination of these characteristics. Should be considered for removal.

MODERATE; Trees with some beneficial attributes that may benefit the site in relation to botanical, horticultural, historical or local significance but may be limited to some degree by their future growth potential at the site by maintenance requirements now or in the future. These trees should be considered for retention, if possible, within the development design, they may be modified to allow for construction. (e.g. pruning, etc;)

HIGH; Trees with the potential to positively contribute to the site due to their botanical, horticultural, historical or local significance in combination with good characteristics of structure, health and future development. Should be considered for inclusion within development plans.

9.0 References

Australian Standard® ***AS4970-2025, Protection of trees on development sites,*** *2009, Sydney*

Australian Standard® ***AS4373-2007,Pruning of Amenity Trees,*** *2007, Sydney*

Writings within the report are of the author's personal knowledge and belief. The information and knowledge released in the report when referenced should be referenced to

[redacted] Dip.App.Sci – Horticulture/Arboriculture – *Let's Talk About Trees.*

10.0 Terms and Limitations of the Report

- Any legal information in the report has been provided to *Let's Talks About Trees* by an external source and it is assumed to be correct. All references to property title and/or control or ownership of land are assumed to be correct as *Let's Talk About Trees* has been advised.

- Great care has been taken in sourcing information for this report so as it is correct. *Let's Talk About Trees* cannot be responsible for information provided which is not directly under control of its staff.

- No *Let's Talk About Trees* employee shall be required to give testimony or attend court for any matter in relation to this report, unless further contractual arrangements have been made.

- This report must not be altered in any shape or form. It has been written as a whole document and is intended for use as a whole document. Any changes or modifications to this report not undertaken *Let's Talk About Trees* by shall render this report invalid in its entirety.

- In no way is this report biased or weighted. The content of the report is written in the full, honest opinion of the *Let's Talk About Trees* Consulting Arborist.

- No diagrams, pictures, graphs or other reference material in this report is said to be to scale or value unless stipulated. All measurements and values are made to the best of the author's ability at the time of reporting and should be checked before using as final measurements for whatever reason.

- This report is developed around the information provided by our client in the project brief. Only issues covered by the project brief are discussed in this report.

- All details, information and advice contained in this report have been researched and referenced. Where no reference is included, it is the author's learned opinion, experience and observations.

DM ecological

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[redacted]

19 August 2025

Yulong Stud
PO Box 369
Nagambie VIC 3608
jack@yulonginvest.com.au

Re: Native vegetation impact assessment, Bourke Road, Nar Nar Goon (SPI 2\LP144001).

DM Ecological was engaged by Yulong Stud (Yulong) to undertake a desktop native vegetation impact assessment at the location of a proposed stable, at the above listed property. Yulong provided photos and measurements of the trees for consideration in this assessment. Other information relevant to the assessment has been obtained from the Victorina Government Department of Energy, Environment, and Climate Action's (DEECA) Native Vegetation Regulations (NVR) Map Tool.

The purpose of this assessment is to identify any planning permit and associated offset requirements for proposed native vegetation removal, as per the *Guidelines for the removal, destruction or lopping of native vegetation* (Department of Environment, Land, Water and Planning – DELWP, 2017) herein referred to as 'the Guidelines'. Native vegetation is identified in the Guidelines as, "*Plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses*".

The extent of vegetation removal required is four trees (Map – Attachment 1). The photographs provided (Plate 1) indicate that the four trees comprise one scattered tree, and a patch of three trees. A patch is defined in the Guidelines as "*any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy*". The photographs show that no shrub layer exists beneath the canopies of the trees, and that the grasses present appear to be annual pasture species (e.g. rye grass), and not native grasses.

Plate 1 (l-r): three patch trees, lack of native understory beneath canopy of trees, scattered tree.

The NVR Map tool shows that the mapped Ecological Vegetation Class (EVC) at the site is EVC #83, Swampy Riparian Woodland of the Gippsland Plain Bioregion. The EVC Benchmark (Attachment 2) provides a description of

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the vegetation species, structure, and composition likely to be present if the site is sound ecological condition. Eucalypt species associated with this EVC include Swamp Gum (*Eucalyptus ovata*) and Narrow-leaf Peppermint (*Eucalyptus radiata*). The photographs of the trees provided do not depict either of those species, however the trees could still be *plants that are indigenous to Victoria*. A site assessment would be required to identify the trees to species level. As this is a desktop assessment, the precautionary principle will apply, and the trees will be described as *Eucalyptus* spp. And considered native vegetation in accordance with the Guidelines.

Photographs indicate that the trees requiring removal are planted trees, rather than naturally occurring trees. Factors indicating that the trees are planted include:

- Remnants of stock exclusion fencing around trees.
- Proximity to buildings, structures (Yulong have indicated the site was an old dairy).
- Linear formation and even spacing.
- Single species of same age and size.

There is an exemption from requiring a planning permit for the removal of planted native vegetation as identified in the *Exemptions from requiring a planning permit to remove, destroy or lop native vegetation* (the Exemptions), DELWP 2017, and in Clause 52.17-7 of the Cardinia Planning Scheme:

- 2.22: The purpose of this exemption is to not require a permit for the removal of native vegetation which has either been planted (e.g., planting a seedling or an established plant) or grown from direct seeding (e.g., placing a seed in the ground in any manner).

This exemption does not apply to native vegetation planted or managed with public funding for the purpose of land protection or enhancing biodiversity unless the removal, destruction or lopping of the native vegetation is in accordance with written permission of the agency (or its successor) that provided the funding.

Of the three patch trees and one scattered tree requiring removal, none are considered large. A large tree is defined as having a diameter at breast height (DBH) exceeding that identified in relevant Ecological Vegetation Class (EVC) benchmark. EVC #83: Swampy Riparian Woodland has a large tree benchmark of 70 cm DBH for *Eucalyptus* spp. The trees requiring removal have DBHs of 64-67 cm as provided by Yulong.

Details of individual trees are provided in Table 1.

Table 1: Details of scattered trees included in extent of native vegetation removal

Tree ID#	Common Name	Scientific Name	DBH (cm)	Size	Comment
1-a	Eucalypt	*Eucalyptus* spp.	64	Small	Patch Tree
1-b	Eucalypt	*Eucalyptus* spp.	64	Small	Patch Tree
1-c	Eucalypt	*Eucalyptus* spp.	64	Small	Patch Tree
1-d	Eucalypt	*Eucalyptus* spp.	67	Small	Scattered Tree

The native vegetation removal extent associated with the proposed works is provided in the attached Native Vegetation Removal Report (NVRR, Attachment 3). It was assessed under the basic assessment pathway as determined by the Guidelines. It comprises Location 1 vegetation and has a total removal extent of 0.068 ha. This is made up of one patch (no large patch trees) and one small, scattered tree.

The assessment would indicate that the planted exemption would apply to the proposed tree removal, and that no planning permit or native vegetation offsets would be required to remove the vegetation. Council would be required to confirm that the exemption is applicable. If Council stipulate that the exemption is not applicable, the application requirements of the basic assessment pathway are also addressed in this report.

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The NVRR report stipulates the offset requirement if approval to remove the vegetation is granted, which is:

- 0.014 General Habitat Units.
- A 0.32 minimum strategic biodiversity value score.
- 0 large trees; and
- Being within the Melbourne Water Catchment Management Authority (CMA) or Cardinia Shire Local Government Area (LGA) areas.

The Guidelines and associated Applicants Guide stipulate several application requirements which must be met to apply for a permit to remove native vegetation under the intermediate assessment pathway. These are listed and addressed in the following subheadings:

Native Vegetation Removal Report
Attached to this assessment (Attachment 3).

Topographic and Land Information
The property resides is situated among cleared agricultural land. It has been substantially modified and nearly entirely cleared of native vegetation historically (Attachment 1 map) and used for agriculture, primarily dairy farming and grazing. The land appears relatively flat from the lack of mapped contours and photographs provided. The Northern Boundary Drain and Seven Mile Drain appear adjacent to the eastern boundary of the property (Map 1). There is a constructed farm drain on the property, south of the buildings and trees shown in the attached Map. There are no mapped wetlands in the area.

Photographs
Provided above as Plate 1.

Details of past removal
DM Ecological has not been made aware of past removal that would need to be considered regarding this application.

Avoid and minimise statement
Yulong has advised that they intend to develop the site for their operations involving horses. The site will be used to construct stables and sheds associated with these operations. It is the most suitable location for the proposed buildings as it's where previous buildings have been, utilises an existing driveway, and avoids the high voltage transmission line easement that traverses the property. Whilst some other planted trees should be able to be retained to facilitate the proposed new buildings, the ones identified in this assessment require removal to allow for a suitable pad construction.

Property Vegetation Plan
Not applicable

Defendable Space Statement
Not applicable

NVPP Removal
Not applicable

Offset Statement
The applicant contends that the planted vegetation exemption is applicable to the trees requiring removal. If

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Council deem that the exemption does not apply, then the offset requirement as identified in the attached NVR report would be purchased from a DEECA accredited native vegetation offset broker.

Where an applicant is relying on an exemption from requiring a planning permit to remove native vegetation (i.e. planted vegetation) it would be prudent for the applicant to confirm this exemption applies prior to removal and keep relevant photographs and information (this report) for future references. Where a landholder, landowner or land manager removes native vegetation by relying on an exemption in either Clause 52.16 or 52.17, they are responsible for complying with the relevant planning scheme requirements. Steps that those relying on exemptions should undertake include:

1. Determine the purpose, location and extent of the proposed native vegetation removal.
2. Check what planning controls apply to the land, including zones and overlays or local provisions that may require a permit for the proposed use, activity or development.
3. If unsure, check with the local council planning department to confirm if an exemption applies to the proposed removal of native vegetation under all relevant planning controls (i.e. submit this report to Council).
4. Use this guidance document to help understand the exemption purpose and where it might apply.
5. Comply with any other approval processes referenced in the exemption (e.g. in the road safety exemption).
6. Consider any property law requirements that may apply. This may include the need to get consent from an adjacent landholder or land manager to remove native vegetation on their land, where the exempt activity is not on your property.
7. Comply with any conditions or requirements of the relevant exemption, such as: – only removing native vegetation to the minimum extent necessary (see section 1.5 for more information) – removing native vegetation within the exemption limit.
8. Keep records of native vegetation removal to substantiate that an exemption has been relied upon.

For more information on the Guidelines and statutory requirements for removing native vegetation you can visit https://www.environment.vic.gov.au/native-vegetation/native-vegetation

For more information on the Exemptions you can visit https://www.environment.vic.gov.au/__data/assets/pdf_file/0018/91251/Exemptions-from-requiring-a-planning-permit-to-remove,-destroy-or-lop-native-vegetation-Guidance.pdf

Kind regards,

[redacted]

Principal Ecologist

[redacted]

Attached:

1. Map of proposed tree removal
2. EVC Benchmark
3. Native Vegetation Removal Report

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Attachment 1 – Map

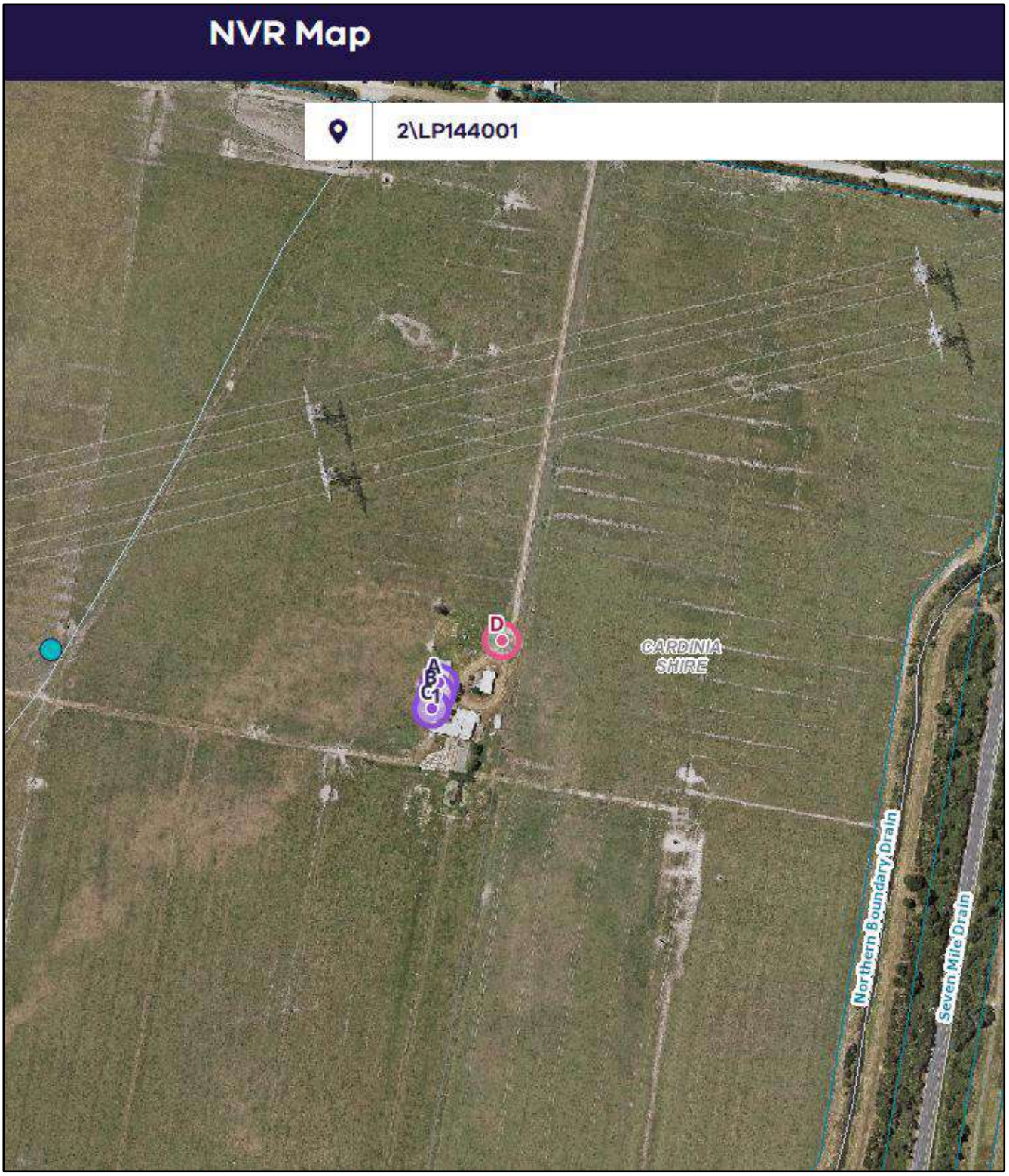


Figure 1: map 1 - Location of proposed trees for removal in context of broader property (NVR MAP, 2025)

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Gippsland Plain bioregion

EVC 83: Swampy Riparian Woodland

Description:
Woodland to 15 m tall generally occupying low energy streams of the foothills and plains. The lower strata are variously locally dominated by a range of large and medium shrub species on the stream levees in combination with large tussock grasses and sedges in the ground layer.

Large trees:

Species	DBH(cm)	#/ha
Eucalyptus spp.	70 cm	15 / ha

Tree Canopy Cover:

%cover	Character Species	Common Name
20%	*Eucalyptus ovata*	Swamp Gum
	Eucalyptus radiata s.l.	Narrow-leaf Peppermint

Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	4	30%	T
Medium Shrub	5	20%	MS
Small Shrub	1	1%	SS
Prostrate Shrub	1	1%	PS
Large Herb	3	5%	LH
Medium Herb	7	10%	MH
Small or Prostrate Herb	3	5%	SH
Large Tufted Graminoid	3	15%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	5	10%	MTG
Medium to Tiny Non-tufted Graminoid	2	10%	MNG
Ground Fern	2	10%	GF
Scrambler or Climber	2	5%	SC
Bryophytes/Lichens	na	10%	BL

LF Code	Species typical of at least part of EVC range	Common Name
T	*Acacia melanoxylon*	Blackwood
T	*Melaleuca ericifolia*	Swamp Paperbark
T	*Leptospermum lanigerum*	Woolly Tea-tree
MS	*Leptospermum continentale*	Prickly Tea-tree
MS	*Coprosma quadrifida*	Prickly Currant-bush
MS	*Bursaria spinosa*	Sweet Bursaria
LH	*Senecio minimus*	Shrubby Fireweed
MH	*Gonocarpus tetragynus*	Common Raspwort
MH	*Acaena novae-zelandiae*	Bidgee-widgee
MH	*Hydrocotyle hirta*	Hairy Pennywort
SH	*Dichondra repens*	Kidney-weed
LTG	*Carex appressa*	Tall Sedge
LTG	*Cyperus lucidus*	Leafy Flat-sedge
LTG	*Lepidosperma elatius*	Tall Sword-sedge
LTG	*Juncus procerus*	Tall Rush
LNG	*Phragmites australis*	Common Reed
MTG	*Themeda triandra*	Kangaroo Grass
MTG	*Lomandra filiformis*	Wattle Mat-rush
MNG	*Microlaena stipoides* var. *stipoides*	Weeping Grass
GF	*Pteridium esculentum*	Austral Bracken

Recruitment:
Continuous

Organic Litter:
20 % cover

Logs:
20 m/0.1 ha.

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	*Cirsium vulgare*	Spear Thistle	high	high
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Prunella vulgaris*	Self-heal	high	high
LNG	*Holcus lanatus*	Yorkshire Fog	high	high
MTG	*Anthoxanthum odoratum*	Sweet Vernal-grass	high	high
MTG	*Briza maxima*	Large Quaking-grass	high	low

Published by the Victorian Government Department of Sustainability and Environment April 2004

Native Vegetation Removal Report

NVRR ID: 311_20250819_BIL

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: 19/08/2025

Local Government Area: CARDINIA SHIRE

Registered Aboriginal Party: Bunurong

Coordinates: 145.55905, -38.11633

Address: 430 BOURKE ROAD NAR NAR GOON 3812

Summary of native vegetation to be removed

Assessment pathway	**Basic 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): 0.068*	**0.068**	*Extent of past removal (ha)*	*0*
		Extent of proposed removal - Patches (ha)	*0.036*
		Extent of proposed removal - Scattered Trees (ha)	*0.031*
No. Large Trees proposed to be removed	**0**	*No. Large Patch Trees*	*0*
		No. Large Scattered Trees	*0*
No. Small Scattered Trees	1		

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]	**0.014 General Habitat Units**
Minimum strategic biodiversity value score [2]	0.32
Large Trees	0
Vicinity	Melbourne Water CMA or CARDINIA 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.

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.

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.

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.

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**
1	Patch	-	GipP0083	Endangered	-	0.200	0.036	0.036	0.400	0.008
D	Scattered Tree	67	GipP0083	Endangered	-	0.200	0.031	0.031	0.400	0.007

Appendix 2: Images of mapped native vegetation

1. Property in context

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

SMOLDERS® GEOTECHNICAL

Land Capability Assessment Report

SITE ADDRESS: 430 Bourke Road, NAR NAR GOON VIC 3812

CLIENT: [redacted]C/- HAI Studios Pty Ltd
haistudioalex@gmail.com
Boronia VIC 3155
0432 288 626

DATE: 05 September 2025

REFERENCE NUMBER: 25H9806

TABLE OF CONTENTS

1. Introduction

THE CONSULTANTS

Smolders Geotechnical Pty Ltd has been engaged to undertake a Land Capability Assessment (LCA) for a site at 430 Bourke Road, NAR NAR GOON VIC 3812.

The field investigation and report have been undertaken and prepared by suitably experienced staff.

I [redacted] B.Sc. PhD. undertook the site investigation and prepared this report.

Smolders Geotechnical Pty Ltd has appropriate professional indemnity insurance for this type of work. Our professional indemnity insurance certificate is available.

REPORT SUMMARY

I understand that this report will accompany an application for a Septic Tank Permit to Install submitted to Cardinia Shire Council for an onsite wastewater management system for the staff amenities at a new stable block and work area, to include office, toilet and kitchen facilities for 3 persons but not to include facilities for disposing of any animal waste at the above address. This document provides information about the site and soil conditions. It also provides a detailed Land Capability Assessment for the site and includes a conceptual design for a suitable onsite wastewater management system, including recommendations for monitoring and management requirements. A number of options are provided for both the treatment system and Land Application Area (LAA).

However, the wastewater should be treated to secondary level by a suitable EPA-approved treatment system and the effluent applied to land via pressure compensating sub-surface drip irrigation.
This report has been prepared to address all issues that may be of concern to the relevant utilities including water businesses.

SITE OVERVIEW

The proposed Land Application Area (LAA) is a fully grassed paddock (see aerial and site photography Appendix 9.1).

The site is within a Green Wedge Zone and has Land subject to Inundation and Heritage Overlays (LSIO/HO).

The proposed Land Application Area (LAA) site is situated on very slightly sloping land (down to the south), approximately 120 metres from the nearest drainage line to the west and >300 metres to the east and south. The soils are sandy clay loams to at least 400mm depth underlain by and grading into a sandy clay/clay to a depth of at least 1800mm after which point it grades into the underlying alluvium/swamp and lake deposits. The soil has a measured Ksat of 0.036 m/d equivalent to a strongly structured medium to heavy clay. There is sufficient land available for sustainable onsite effluent management that maintains the required buffers to protect nearby surface waters and floodways.

There are no sensitive environmental receptors within a 300m downslope setback from the recommended Land Application Area (LAA) envelope.

2. Description of the Development

Site Address: 430 Bourke Road, NAR NAR GOON VIC 3812.

Client/Agent: [redacted] - HAI Studios Pty Ltd

Postal Address: [redacted]

Contact: 0432 288 626

Council Area: Cardinia Shire Council.

Zoning: Green Wedge Zone (GWZ), Land subject to Inundation (LSIO), Heritage Overlay (HO).

Allotment Size: 51.48 ha

Domestic Water Supply: Assume not available at site.

Anticipated Wastewater Load: Assume an office with three employees with toilet and kitchen facilities with full water-reduction fixtures at maximum occupancy. Wastewater generation = 70 L/person/day (source Tables 4-2 & 4-4 of the EPA Guidelines for Onsite Wastewater Management, 2024).

Availability of Sewer: The area is unsewered and highly unlikely to be sewered within the next 10-20 years, due to low development density in the area and the considerable distance from existing wastewater services.

Land Channel Property and Planning Reports are appended and indicate the location of the site (Appendix i).

3. Site and Soil Assessment

A site investigation was undertaken on the 22nd August 2025.

SITE KEY FEATURES

Table 1 summarises the key features of the site in relation to effluent management proposed for the site.

NOTE:

- The proposed LAA is very slightly sloping down to the south a maximum of 1%.
- The site is not within a designated water supply catchment (VVS)
- The closest downslope drainage line is approximately 300 metres to the south of the proposed LAA and the closest waterbore is >200 metres distance.
- The soils are classified as sodic Chromosols (https://soilhealth.ccmaknowledgebase.vic.gov.au/soils_map.php).
- The soil depths within the proposed LAA are at least 1800mm deep. There was no refusal with a mechanical auger at any borehole excavated.
- The risk of effluent transport off site is low.
- The site is within a Land subject to Inundation Overlay

Both aerial and site photographs are appended to provide current site context (Appendix ii).

Table 1: Risk Assessment of Site Characteristics

Feature	Description	Level of Constraint	Mitigation Measures
Buffer Distances	All relevant buffer distances in Table 4-10 of the EPA Guidelines for onsite wastewater management (2024) are achievable for the proposed effluent management area.	Minor	Locate Land Application Area appropriately.
Climate	Average annual rainfall is 852.9mm and annual average pan evaporation is 1213.8 mm (SILO data) (Appendix 9.5). Rainfall is greater than Evapotranspiration on average for 5 months of the year.	Major	Use a daily timestep water balance to calculate area required for LAA as recommended by EPA guidelines for wetter climates (2024). MEDLI model used.
Drainage	Imperfectly drained. Water removed very slowly in relation to supply, seasonal ponding, all horizons wet for periods of several months, some mottling	Major	Secondary treatment and pressure compensating drip irrigation recommended
Erosion & Landslip	No evidence of sheet or rill erosion on the proposed LAA; No possibility of landslip	Minor	NN
Exposure & Aspect	Land Application Area is very slightly sloping with good exposure.	Minor	NN
Water bores	No water bores within 200 metres	Minor	NN
Flooding	The proposed effluent management area is located within a Land Subject to Inundation Overlay	Major	Treatment plants should be watertight and have backflow prevention. Position treatment tanks so that the lid of the tank is above Nominal Food protection Level and ensure electrical comapnents are located above the flood level. Ensure anchoring of floatable tanks is adequate. The system should not be used during flood events or if this is not possible a storage tank should be incorporated in the design to store effluent until the risk of flooding has abated.

NN: Not needed

Table 1: Risk Assessment of Site Characteristics Continued:

Feature	Description	Level of Constraint	Mitigation Measures
Groundwater	No signs of permanent shallow groundwater tables to 1.8 m depth. Water table depths, from Visualising Victorias Groundwaters, are < 5 metres. Some mottling of clay horizon.	Major	Secondary treatment with drip irrigation
Imported Fill	No imported fill material was observed anywhere within the proposed LAA.	Nil	NN
Land Available for LAA	Considering all the constraints and buffers, the site has sufficient suitable land for land application of treated effluent.	Nil	NN
Landform	linear very slight hillslope.	Minor	Secondary treatment
Rock Outcrops	No evidence of surface rocks or outcrops within recommended LAA.	Nil	NN
Run-on & Runoff	Very slightly sloping, minimal possibility of runon/run-off	Minor	NN
Slope	The proposed LAA is very slightly sloping (1%).	Minor	NN
Surface Waters	Nearest downslope surface water >300m from nominated Land Application Area.	Minor	NN
Vegetation	Fully grassed paddock	Minor	NN

NN: Not needed

SITE ASSESSMENT RESULTS

Considering the most constraining site features (climate, drainage, flooding, groundwater) the overall land capability of the site to sustainably manage all effluent onsite is satisfactory. By using secondary treated effluent applied to land via pressure compensating sub-surface/covered surface drip irrigation, in my opinion there will be ample protection of surface waters and groundwater.

SOIL KEY FEATURES

The site's soils have been assessed for their suitability for onsite wastewater management by a combination of soil survey and desktop review of published soil survey information as outlined below.

The soils on site have been derived from Alluvium (mapcode Qa1) and Swamp and Lake Deposits (mapcode Qm1) which is the regional geological setting. Appended is a Geovic Map indicating the site location (Appendix viii).

SOIL SURVEY AND ANALYSIS

A soil survey was carried out at the site to determine suitability for application of treated effluent. Soil investigations were conducted at 5 locations on site in areas that may be potential Land Application Areas, as shown in the Test Site Location Plan (Appendix 9.3), using a mechanical auger to 1.8m depth (4 x boreholes) a hand dug pit to 800mm depth. This was sufficient to adequately characterise the soils as only minor variation would be expected throughout the area of interest.

Two major soil types were encountered in these investigations. The site soils are mapped as Chromosols (https://soilhealth.ccmaknowledgebase.vic.gov.au/soils_map.php) Full profile descriptions are provided in the appended borelogs (Appendix 9.4). Samples of all relevant discrete soil layers were collected for subsequent laboratory analysis of pH, electrical conductivity and Emerson Aggregate Class. Table 2 describes the soil constraints in detail for each of the soils encountered.

Soils in the vicinity of the LAA are characterised as sandy clay loam topsoils overlying a medium to heavy sandy clay/clay subsoil below a minimum of 400mm depth. The upper horizon is weakly structured (sandy clay loam), the sandy clay/clay sub-soil is strongly structured.

Considering the physical and chemical characteristics of the soils in this area of the site, in my opinion secondary treated effluent application via pressure compensating sub-surface/covered surface drip irrigation is a suitable and viable disposal system for this site.

Table 2 below provides an assessment of the physical and chemical characteristics of the relevant soil type.

Full laboratory data results are appended (Appendix 9.6).

TABLE 2: RISK ASSESSMENT OF SOIL CHARACTERISTICS

Feature	Assessment	Level of Constraint	Mitigation Measures
Cation Exchange Capacity (CEC)	B-horizon – 8.4-9.4 MEQ%. Calcium, Magnesium and Potassium are the dominant ions on the exchange sites	Minor	NN.
Electrical Conductivity (ECe)	B-horizon – 0.42 – 0.45 dS/m. No evidence of restricted plant growth on site.	Minor	NN
Emerson Aggregate Class	B-horizon: slaking/some dispersion, class 2	Major	Soil amelioration recommended. Application of 1L liquid gypsum to sump well biannually or apply Gypsum (1kg/m^2) to all excavations before backfilling/covering.
pH	5.6 to 5.7. No evidence restricted plant growth on site.	Minor	NN
Rock Fragments	No rock fragments	Minor	NN
Sodicity (ESP)	Sodic, ESP = 6.6 to 7.2%	Major	Soil amelioration recommended. Application of 1L liquid gypsum to sump well biannually or apply Gypsum (1kg/m^2) to all excavations before backfilling/covering.
Sodium Absorption Ratio (SAR)	0.22 to 0.23	Minor	NN
Soil Depth	Minimum of 1800mm	Minor	NN
Soil Permeability & Design Loading Rates	Weakly structured Sandy Clay Loam underlain by strongly structured Medium Clay: 0.036m/day saturated hydraulic conductivity (K_{sat}) (AS/NZS 1547:2012); 2 mm/day Drip Irrigation Rate (DIR).	Major	Secondary treatment recommended
Soil Texture & Structure	A-horizon: (0 to 400mm minimum): weakly structured Sandy Clay Loam (Category 4b) B-horizon (400- to 1800mm minimum): strongly structured medium clay (category 6a) in accordance with AS/NZS/NZS 1547:2012	Major	Secondary treatment with pressure compensating sub-surface/covered surface drip irrigation
Water table Depth	Groundwater depth < 5 metres.	Major	Secondary treatment with pressure compensating sub-surface/covered surface drip irrigation

NN: Not needed

OVERALL LAND CAPABILITY RATING

Based on the results of the site and soil assessment tabled above and provided in the Appendices, the overall land capability of the proposed effluent management area is constrained. However, the effluent management system will be designed, installed and maintained in ways which will mitigate these factors. The use of secondary treatment with pressure compensating sub-surface/covered surface drip irrigation will minimise saturation of the soils and encourage transpiration by plants by situating the drip lines within the rooting zone of the site. Gypsum application will increase the calcium content on exchange sites and aid in creating a good soil structure, hence limiting soil dispersion. Ensuring that the treatment plant is watertight, with backflow prevention and that the lid of the tank and electrical control components are above nominal flood protection level, together with sealable inspection ports and adequate tank anchoring will protect against possible flooding. Careful placement and construction of the dispersal field to ensure the drip lines are level and evenly utilized together with ensuring that the relevant setback distances are adhered to will protect surface and ground waters.

4. Waste Water Management System

The following sections provide an overview of a suitable onsite wastewater management system, with sizing and design considerations and justification for its selection. Detailed design for the system should be undertaken at the time of the building application and submitted to Council.

4.1 LAND APPLICATION

A range of possible land application systems have been considered, such as absorption trenches, evapotranspiration/absorption (ETA) beds, surface and subsurface irrigation, and sand mounds.

For the soils in the proposed land application area a number of features present a moderate to major constraint and require mitigation measures.

Nonetheless based on the results of the site and soil assessment tabled above and provided in the Appendices, the overall land capability of the proposed effluent management area is not constrained **as long as disposal of secondary treated effluent via pressure compensating sub-surface/covered surface drip irrigation is used.**

It will ensure that the risk of effluent being transported off-site will be negligible.

4.2 DESCRIPTION OF THE IRRIGATION SYSTEM

A detailed irrigation system design is beyond the scope of this report; however, an example EDRS schematics of the recommended pressure compensating sub-surface drip irrigation system is provided here for the information of the client and Council.

Sub-Surface/covered Irrigation Construction & commisioning Specification

CONSTRUCTION GUIDE

PRE-CONSTRUCTION CONSIDERATIONS

SERVICES LOCATION

It is recommended that a services location check be performed to ensure that construction works will not impact on underground services such as water, gas, power, & communications.

VEGETATION REMOVAL

Undertake vegetation removal in accordance with the approved design having regard to a vegetation removal approval that may be required from the local council. (AS/NZS 1547 Section 6)

SOIL IMPROVEMENT & CIVIL WORKS

Undertake soil improvement & civil works in accordance with the approved design. Arrange inspection by the local council or designer if required to do so. (AS/NZS 1547 Section 6)

WEATHER

The weather conditions should be considered prior to commencement of civil works. Excavation work during poor weather conditions can result in unnecessary damage to the EDS & work site.

SEDIMENT & EROSION CONTROL

Evaluate potential for sediment & erosion impacts associated with the work site & implement suitable control measures as required.

EDS DESIGN CHANGES

Alteration to the design of the effluent dispersal system must be approved by the designer & the local council. (AS/NZS 1547 M7.2, T5.2.2)

CONSTRUCTION CONSIDERATIONS

SUB-SURFACE DRIPLINE

Selection of the correct dripline is crucial to its effective operation. Various types of dripline are available that contain emitters with various features such as:

- Pressure compensated (PC) emitters
- Anti-siphon (AS) emitters
- Compensated non-leakage (CNL) emitters

Install dripline type in accordance with the approved design. Use of dripline with emitter type, flow rate, and spacing that differs from the design is an alteration that requires council and designer approval. (AS/NZS 1547 Appendix M M10.2(D))

INSTALLATION DEPTH & ALIGNMENT

A minimum soil depth of 600 mm below the dripline is desirable. Dripline is typically installed approx. 100-150 mm below finished ground surface. Dripline laterals are installed with the contour of the ground (i.e., perpendicular to the ground slope direction). Dripline laterals should not be installed in the direction of the slope unless approved by the designer. (AS/NZS 1547 Table K1, M3.1, Q5.2) (See dripline manufacturers installation guideline.)

ROOT PREVENTION

Consideration should be given to the inclusion of an approved & environmentally sound method of minimising root intrusion into the dripline emitters. (M10.2(D))

PIPEWORK & SURFACE BOXES

Pipes & fittings must:

- Be rated to withstand 150% of the shut-off head of the pump.
- Be semi-flexible & robust.
- Be permanently buried to a depth of 150mm.
- Comply with AS4129 (fittings for polyethylene pipes), AS4130 (polyethylene pipes for pressure applications) & AS1477 (PVC pipes & fittings for pressure applications).

Buried pipework must be marked by using underground marking tape to AS2648 or indicated by signage such as 'sewage effluent pipework installed below, do not dig'. All surface boxes should be provided with lilac-coloured lids to indicate the use of treated effluent. (AS/NZS 1547 M10.2, M10.3, M13)

ELEVATION DIFFERENTIAL

A maximum elevation head of 1 m between the top & base of any hydraulic zone (inclusive of cross fall) should be maintained to minimise emitter leakage. Where the head exceeds 1 m then the inclusion of check valves &/or DNL (do-not-leak) valves must be evaluated & installed. Alternatively, additional zoning or use of higher rated CNL emitters may be considered. (See dripline manufacturers installation guideline.)

VALVES

Non-return: a non-return valve must be installed into the main supply line to prevent treated effluent returning to the secondary treatment plant on completion of the pumping cycle. The valve is generally located at the treatment plant. Non-return valves are also required where higher zones can drain back into lower zones after pump shut off.

Air/vacuum: Air release / vacuum breaker valves must be installed in each zone or where required due to topography or system design. Multiple valves may be required for each distinct zone due to change in topography.

Flush: Flush valves must be installed in each distinct zone. Flush valves can be of a manual or automatic type.

Check valves & do-not-leak (DNL): check valves or DNL valves (or suitable non-return valves) may be required to prevent drain-back in situations where the elevation head exceeds recommended values. This is to maintain laterals in a charged state & minimise downslope leakage / drainback. (AS/NZS 1547 M10.3(a)) (See dripline manufacturers installation guideline.)

FILTER

A fit-for-purpose 120 mesh filter must be installed into the main supply line. The filter is located at the treatment tank & is designed to minimise effluent entrained particles travelling to the emitters. The filter must be capable of manual or automatic cleaning. Filters are to be installed in valve boxes or similar for ease of cleaning & maintenance. (AS/NZS 1547 M10.3(A))

UPSLOPE SURFACE WATER CONTROLS

Construct surface water &/or subsurface diversion drains upslope of the irrigation area where there is potential for water impacts. (AS/NZS 1547 M9.3)

MARKING

The presence of buried pipes shall:

- Be indicated, for example, using underground marking tape to AS/NZS 2648.1; OR
- Be indicated by signage, prominently displayed with the words: 'Sewage effluent pipework installed below. Do not dig.'

(AS/NZS 1547 M13)

CHECKS & INSPECTIONS

COMMENCEMENT OF WORKS

Prior to commencement of any works, ensure works are approved & copy of councils permit is available.

VEGETATION REMOVAL

Ensure necessary approvals for vegetation removal have been obtained & a copy of the approval is available. Arrange inspections as required in accordance with approval.

SITE CIVIL WORKS

Ensure necessary approvals for proposed site works have been obtained & a copy of the approval is available. Arrange inspections in accordance with permit or other approvals.

SOIL IMPROVEMENT WORKS

Arrange inspections in accordance with permit.

CONSTRUCTION STAGE

Check that the location & dimensions of the sub-surface EDS aligns with the permit & approved site plan.

Verify that the type of dripline is in accordance with the design & permit conditions.

Verify that the type & capacity of pump is as designed (if installed).

Perform a hydraulic check on the dripline & valves in all zones by pressurising the system prior to backfilling the trenches. This is to determine effective dripline emitter & valve operation & to detect any leaks in joints & connections. If a permanent power supply is not available, a temporary supply may be required.

POST CONSTRUCTION

Arrange inspections in accordance with permit or other approval.

COMMISSIONING GUIDE

PRE-COMMISSIONING

Check that inspections of the EDS have been completed in accordance with the permit conditions. (AS/NZS 1547 6.2.5)

AS/NZS 1547 advises that the following pre-commissioning tests are to be carried out after all on-site components including the pump have been installed, but prior to covering the effluent dripper system (see also AS/NZS1547 6.2.5).
As a minimum the test shall take the following steps:

- Fill the pump chamber to 'pump-on' level with water.
- Start the pump.
- Check the effluent drip emitter system to ensure water flows uniformly from all emitters & that all flushing valves & other fittings are operating correctly & that there are no leaks observed.
- Record time taken to pump from 'pump-on' level to the 'pump-off' level – desirably approximately 3 minutes.
- Follow pump manufacturer's recommendations for commissioning pump.
- Check pumping main to ensure there are no leaks & the air release valve is functioning; &
- Check that the high-water-level alarm operates.

(AS/NZS 1547 Appendix M, M11)

COMMISSIONING

AS/NZS 1547 advises that the on-site system shall be inspected, checked, & commissioned according to 6.2.5

Verify that construction of the EDS aligns with the permit conditions & the approved design.

Complete inspection & commissioning requirements in accordance with the permit conditions.

Provide copies of the inspection & commissioning reports to the property owner & local council. (AS/NZS 1547 Appendix M, M12)

REV	DATE	REVISION DESCRIPTION	DRAWN	DESIGNED	CHECKED	CLIENT APPROVED
00	25/11/22	FOR INFORMATION	HV (DWA)	HV (DWA)	DAA (DWA)	N/A

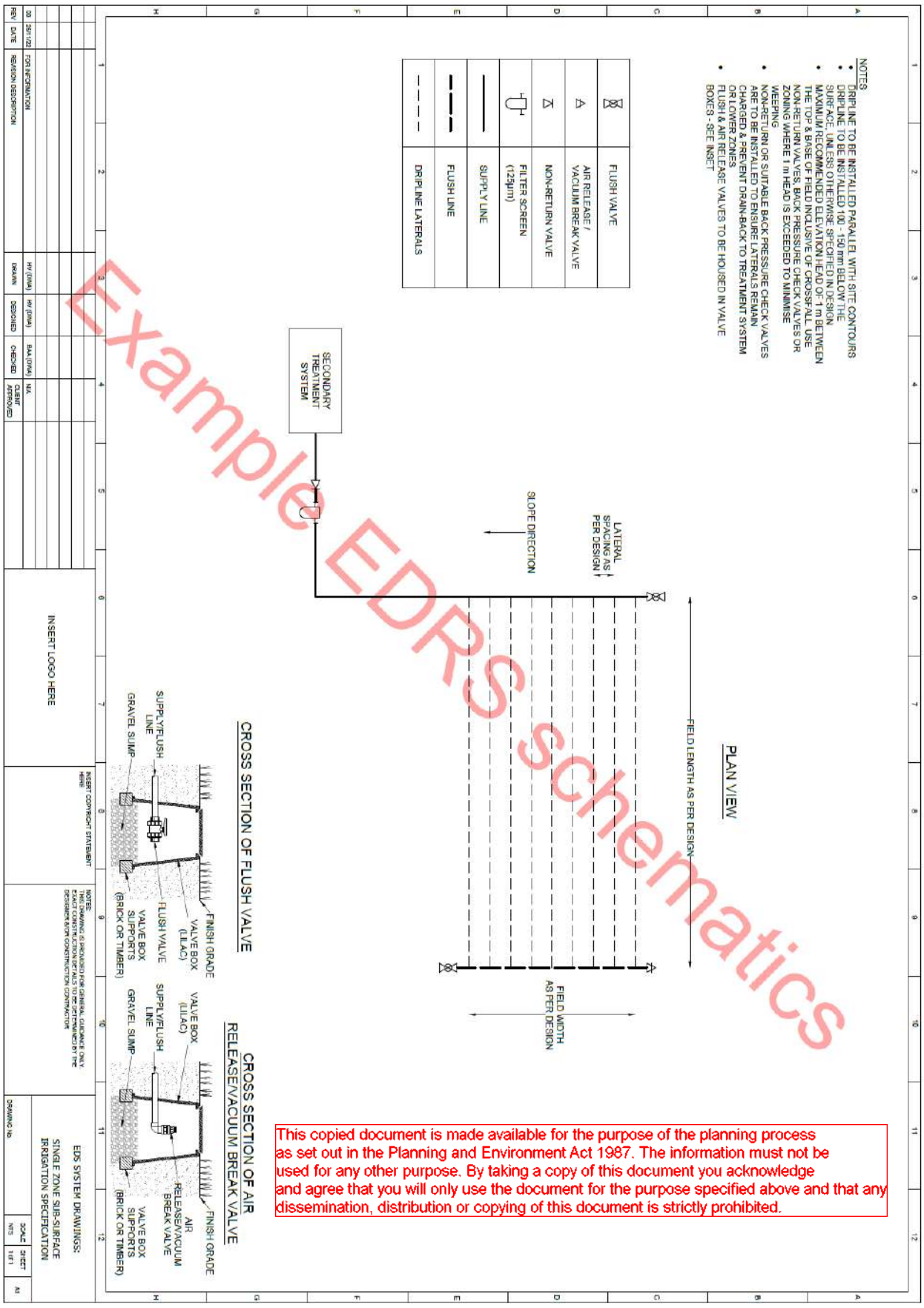
INSERT LOGO HERE

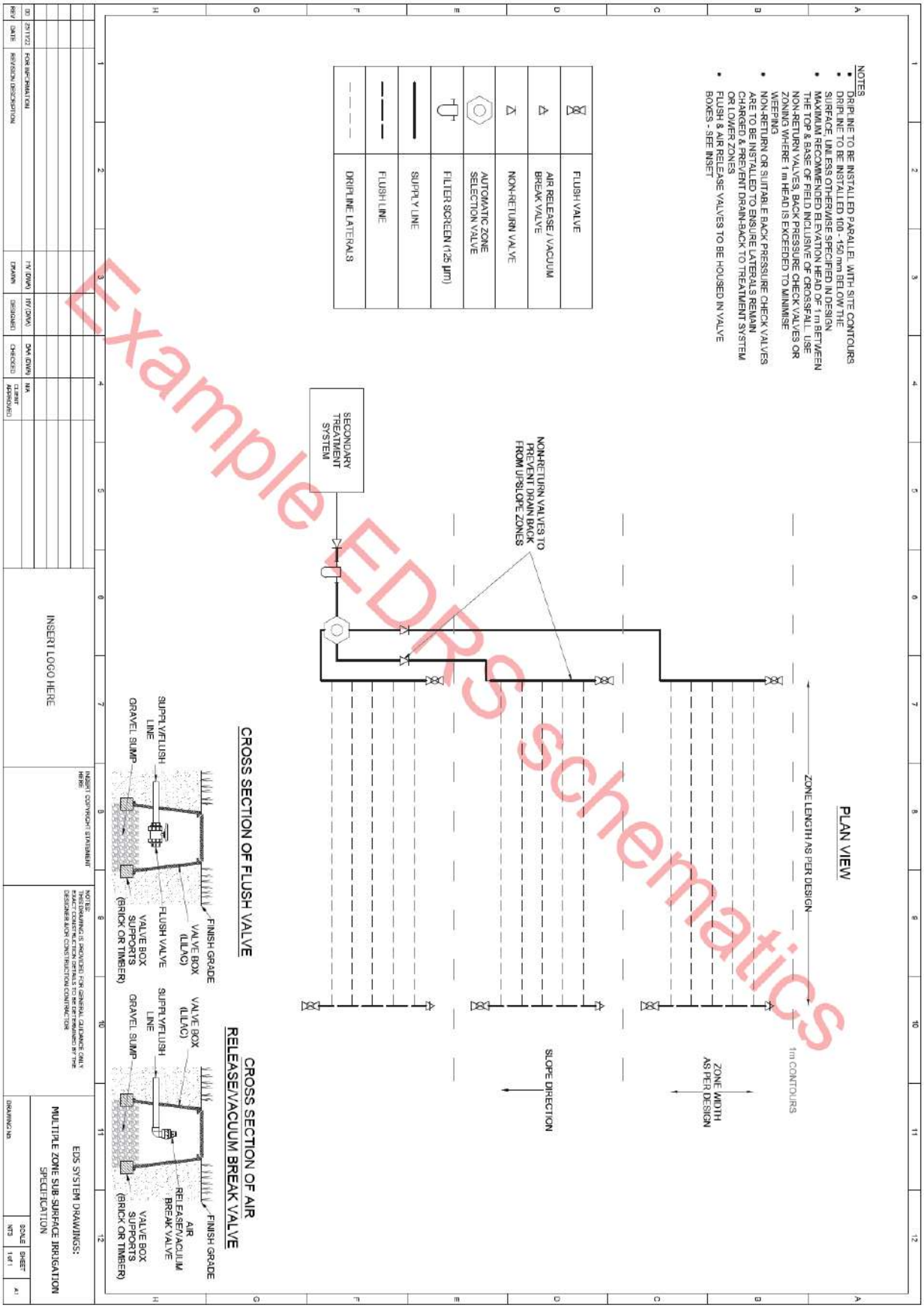
INSERT COPYRIGHT STATEMENT HERE

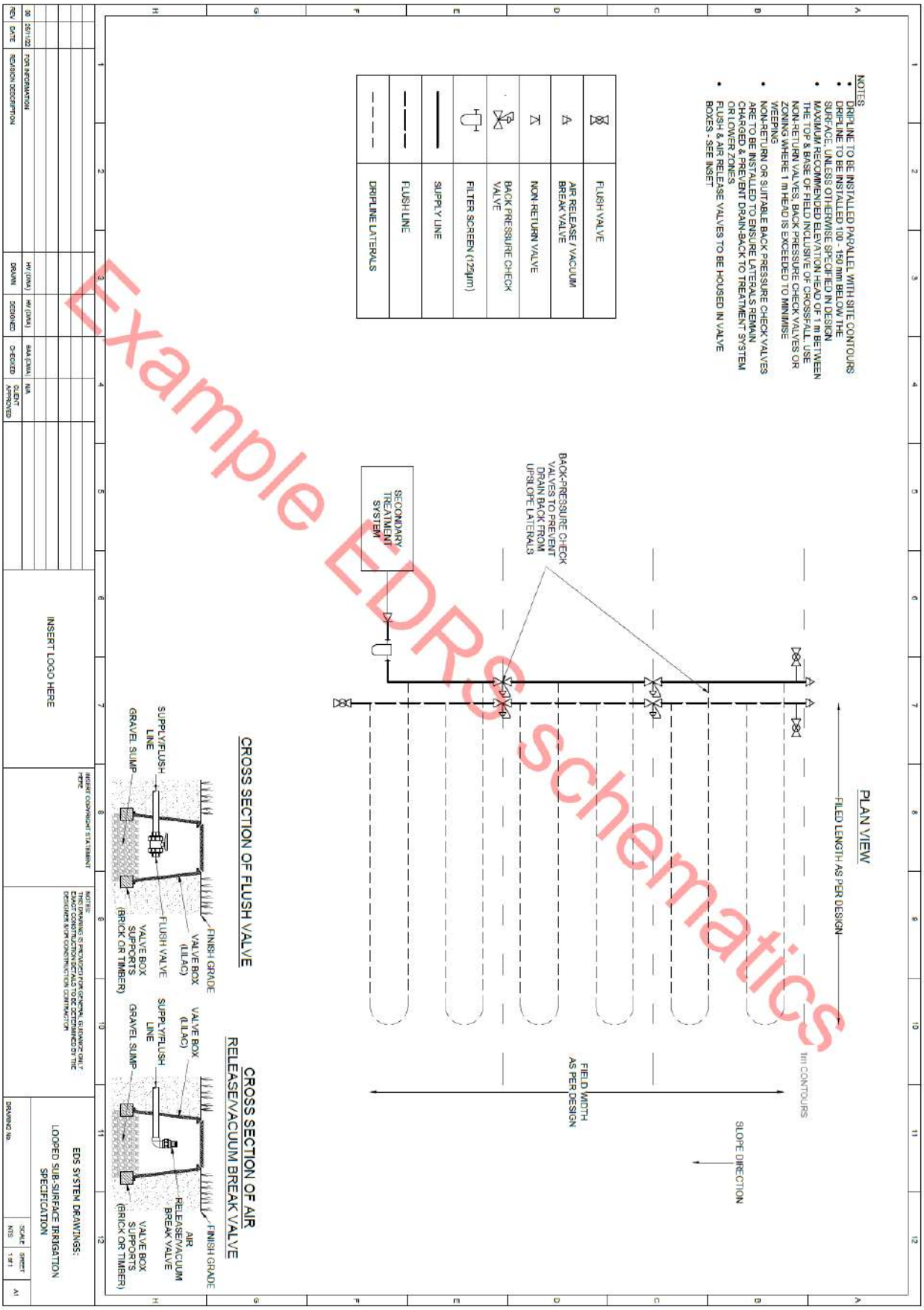
NOTES:
THIS DRAWING IS PROVIDED FOR GENERAL GUIDANCE ONLY. EXACT CONSTRUCTION DETAILS TO BE DETERMINED BY THE DESIGNER AND/OR CONSTRUCTION CONTRACTOR

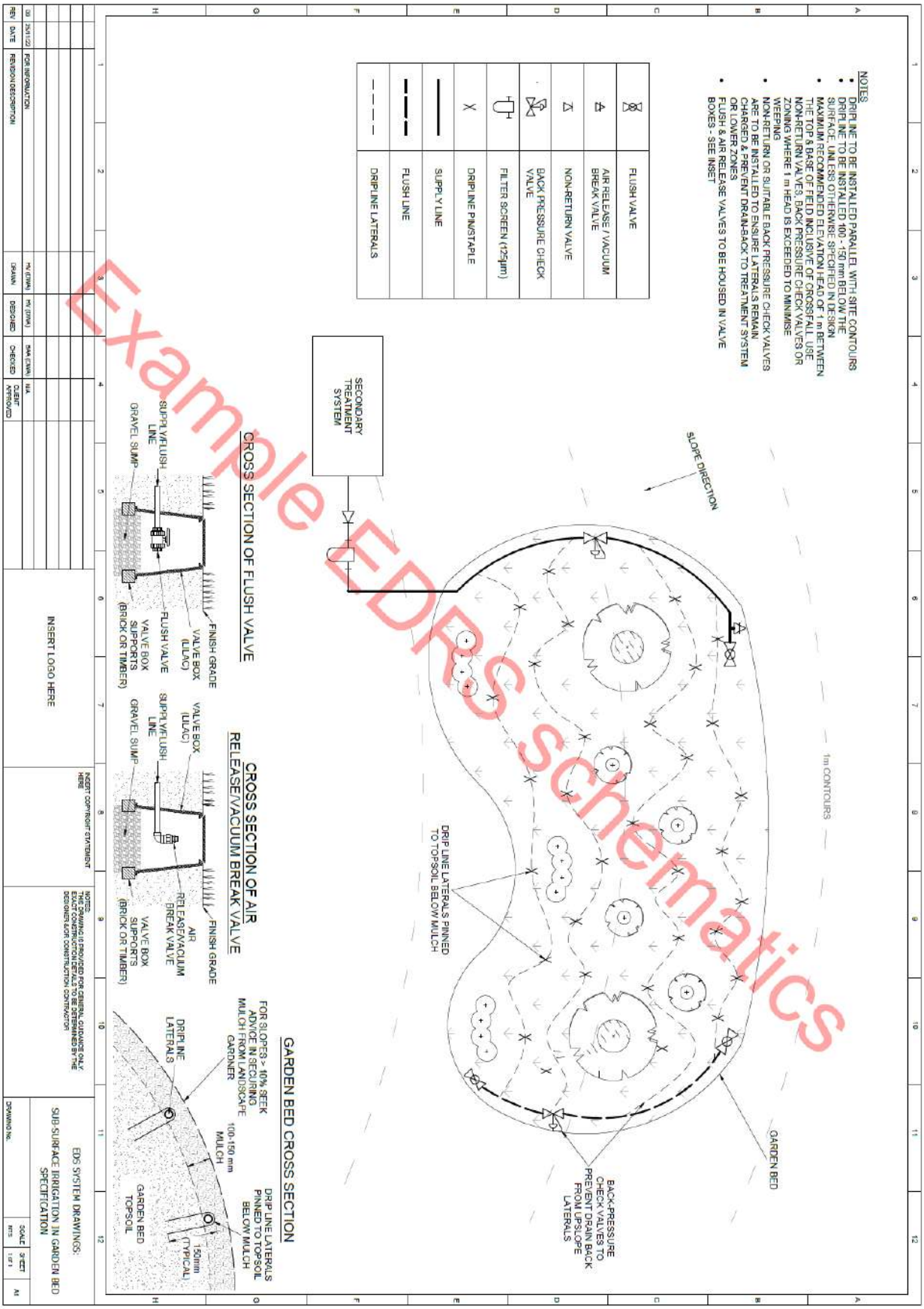
EDS SYSTEM DRAWINGS:
SUB-SURFACE IRRIGATION CONSTRUCTION & COMMISSIONING SPECIFICATION

DRAWING No. | SCALE NTS | SHEET 1 of 1 | A1









4.3 SIZING THE IRRIGATION SYSTEM

Example: Office with Toilet and Kitchen Facilities for 3 persons. Pressure compensating sub-surface drip irrigation.

We have used a Drip Irrigation Rate (DIR) of 2mm/d for secondary treated effluent via pressure compensating sub-surface/covered drip irrigation. We have calculated the LAA area required for effluent irrigation using a daily timestep water balance model (MEDLI Model) as recommended by the EPA guidelines (2024) for areas where rainfall is significantly greater than evaporation for more than three months of the year. We have assumed 70 litres per day effluent production per person (tables 4-2 and 4-4: EPA Guidelines 2024).

The minimum basal area required is 150 sq m for 210 L/d effluent production.

Calculations shown on pages 18-28.

Climate data from SILO has been used in the modelling. (See Appendix 9.5 for complete data).

A preliminary nutrient balance has been considered to check that the Land Application Area is of sufficient size to ensure nutrients are assimilated by the soils and vegetation. It is acknowledged that a proportion of nitrogen will be retained in the soil through processes such as mineralisation and volatilisation.
Reference: Victoria Land Capability Assessment Framework Jan 2014 (app 2).

NOTE: Soil has a high PRI (phosphorus retention index) in clayey soils. Phosphorus is readily removed under these circumstances from wastewater fixation in clayey soil by the action of adsorption. Phosphate in dispersed effluent is lost within a few centimetres of the soil.
This leaves nitrogen (N) as the limiting factor in this proposed development.

Calculation shown on page 17.

Minimum area required for N uptake = 84m².

The client should note that Council may consider a study or other utility room as a potential bedroom.

I am of the opinion that the area required for nitrogen assimilation and phosphorus can be met by the above sized Land Application Area.

SYSTEM TYPE	AREA REQUIRED (m^2)	MAXIMUM LENGTH OF INDIVIDUAL TRENCHES/BEDS	SPACING BETWEEN INDIVIDUAL TRENCHES/BEDS/DRIP LINES
PRESSURE COMPENSATING SUB-SURFACE DRIP IRRIGATION	**150 sq m** **(example: 5 rows of 30 metre drip lines laid horizontally)**	**60**	**1**

Table summarizing LAA requirements for the recommended system.

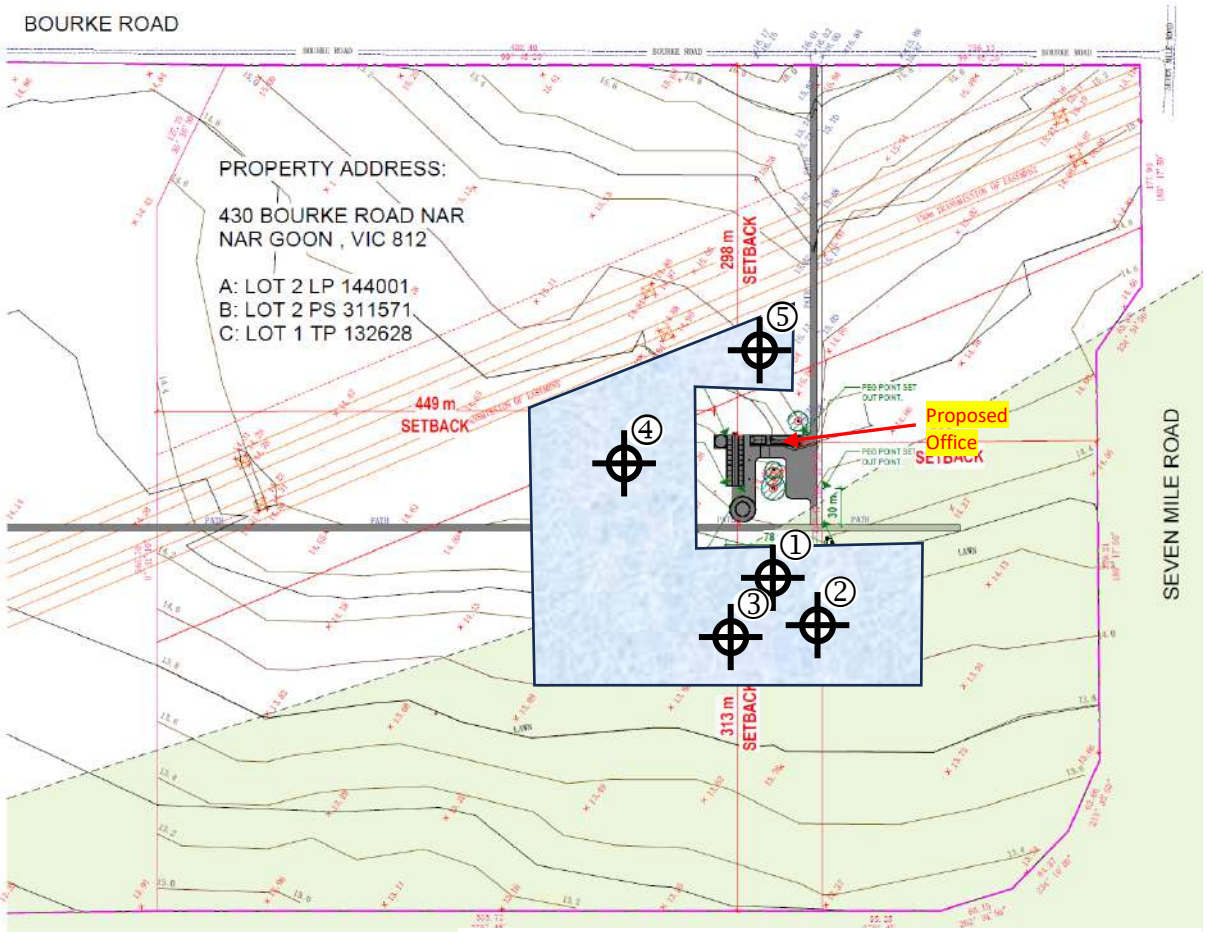


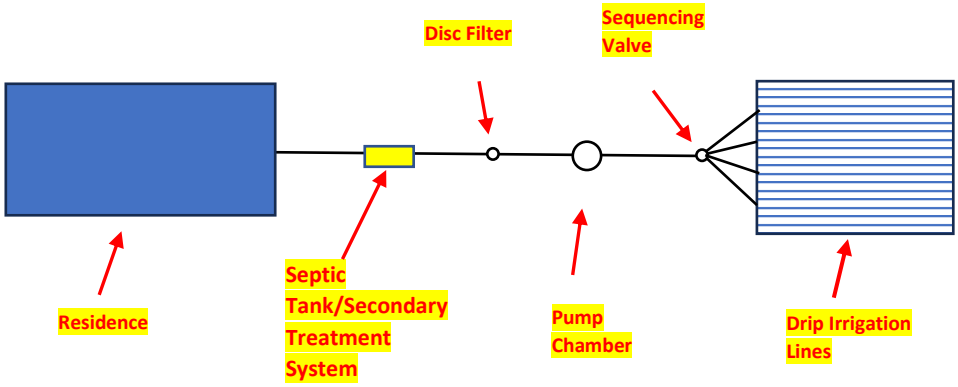
FIGURE 1. Recommended Land Application Area

Recommended Land Application Area

④ Soil Sampling Sites

Client may select dimensions and placement of the irrigation system as long as it meets the required dispersal area stated, is within the recommended land application area illustrated and adheres to the required setback distances. The client may choose the position of the septic tank/secondary treatment system and pump plus sump as long as buffer distances are adhered to.

Below is a flow diagram showing a typical system arrangement.



Victorian Land Capability Assessment Framework

Please read the attached notes before using this spreadsheet

Nitrogen Balance

Site Address: 430 Bourke Road, NAR NAR GOON

SUMMARY - LAND APPLICATION AREA REQUIRED BASED NITROGEN BALANCE 84 m^2

INPUT DATA[1]

Wastewater Loading			Nutrient Crop Uptake					
Hydraulic Load	210	L/day	Crop N Uptake	220	kg/ha/yr	which equals	60.27	$mg/m^2/day$
Effluent N Concentration	30	mg/L						
% N Lost to Soil Processes (Geary & Gardner 1996)	0.2	Decimal						
Total N Loss to Soil	1260	mg/day						
Remaining N Load after soil loss	5040	mg/day						

NITROGEN 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	84	m^2	Nominated LAA Size	150	m^2
			Predicted N Export from LAA	-1.46	kg/year
			Minimum Buffer Required for excess nutrient	0	m^2

CELLS

	Please enter data in blue cells
XX	Red cells are automatically populated by the spreadsheet
XX	Data in yellow cells is calculated by the spreadsheet, DO NOT ALTER THESE CELLS

NOTES

[1] Model sensitivity to input parameters will affect the accuracy of the result obtained. Where possible site specific data should be used. Otherwise data should be obtained from a reliable source such as:

- *EPA Guidelines for Effluent Irrigation*
- *Appropriate Peer Reviewed Papers*
- *Environment and Health Protection Guidelines: Onsite Sewage Management for Single Households*
- *USEPA Onsite Systems Manual*

SCENARIO REPORT: Full run

General information

Enterprise: 430 Bourke Road, NAR NAR GOON
Client: HAI Studios
MEDLI use[redacted]

Description:

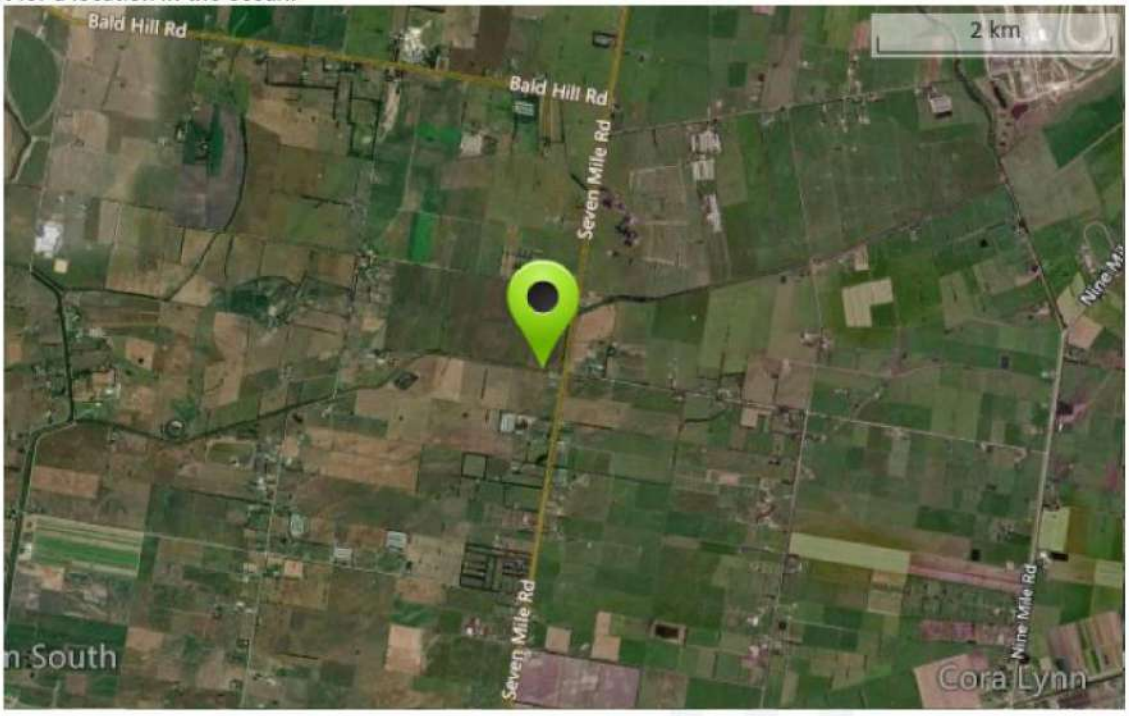
25H9806

Scenario details:

Pond has been converted to a sump that must be emptied daily. Note that the sump is a little bigger than the daily inflow. MEDLI always reserves 1L in the sump for calculation purposes and so the pond can never be emptied completely by irrigation. For fixed daily irrigation irrespective of rainfall, it is important to ensure that the Irrigation Override "No Irrigation if Irrigation Day Rainfall Exceeds (mm)" is set to a large value (e.g. 10000mm).

Map of location:

Note: If the map above appears as a dark box, check that the network is accessible and that the coordinates are not for a location in the ocean.



Climate information

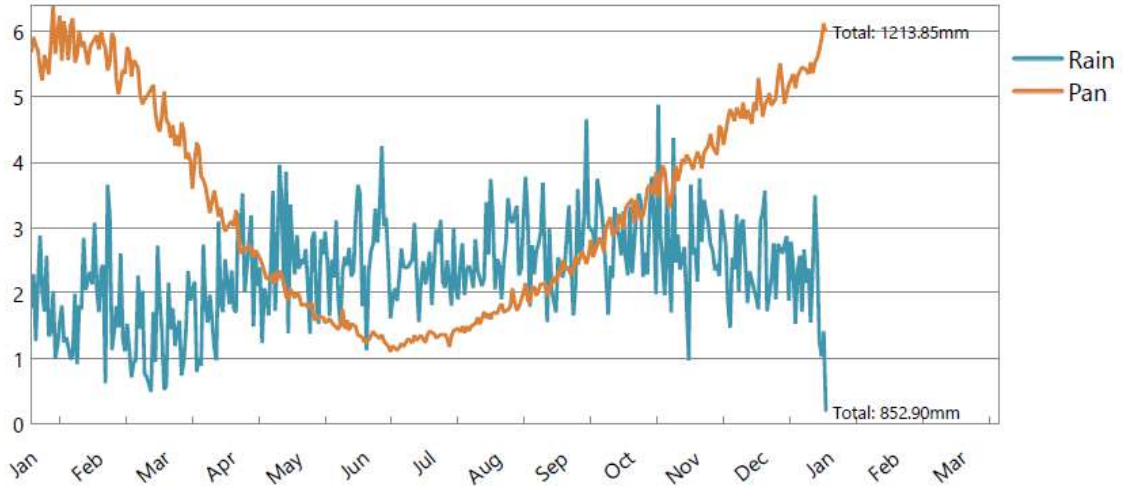
Climate Data Location: Nar-Nar_Goon_25H9806, -38.12°, 145.56°
Run Period: 01/01/1974 to 31/12/2024 (51 years)

Climate statistics

	5th Percentile		50th Percentile		95th Percentile	
Rainfall (mm/year)	(Year 2006)	628.6	(Year 2000)	854.6	(Year 2020)	1084.6
Pan evaporation (mm/year)	(Year 2011)	1101.7	(Year 1975)	1213.3	(Year 2024)	1350.2

Climate data

Daily average across run period:



Wastestream

Effluent Quantity: 76.70 m3/year or 0.21 m3/day (Min-Max 0.21 - 0.21)
Flow-Weighted Average (Min - Max) Daily Effluent Quality Entering the Pond System:

	Concentration (mg/L)	Load (kg/year)
Total nitrogen	30.00 (30.00 - 30.00)	2.30 (2.30 - 2.31)
Total phosphorus	10.00 (10.00 - 10.00)	0.77 (0.77 - 0.77)
Total dissolved salts	1000.00 (1000.00 - 1000.00)	76.70 (76.65 - 76.86)
Volatile solids	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)
Total solids	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)

Pond system information

Pond System Configuration: 1 closed (sludge-free) storage tank

Pond system details

	Pond 1
Maximum pond volume (m3)	3.00
Minimum allowable pond volume (m3)	0.00
Pond depth at overflow outlet (m)	1.00
Maximum water surface area (m2)	27.00
Pond footprint length (m)	9.00
Pond footprint width (m)	3.00
Pond catchment area (m2)	27.00
Average active volume (m3)	0.00

Irrigation pump limits

Minimum pump rate limit (L/day)	210.00
Maximum pump rate limit (L/day)	210.00

Paddock information

Paddock: Nar Nar Goon, 150 m2

Soil type: Red chromosol, 1900.00 mm defined profile depth

Profile porosity (mm)	898.49
Profile saturation water content (mm)	879.40
Profile drained upper limit (or field capacity) (mm)	599.10
Profile lower storage limit (or permanent wilting point) (mm)	286.10
Profile available water capacity (mm)	313.00
Profile limiting saturated hydraulic conductivity (mm/hour)	40.00
Surface saturated hydraulic conductivity (mm/hour)	100.00
Runoff curve number II (coefficient)	83.00
Soil evaporation U (mm)	10.00
Soil evaporation Cona (mm/sqrt day)	4.00

Planting regime: Continuous Kikuyu 1 pasture

Average monthly cover (%) (minimum - maximum)	85.24 (79.46 - 89.55)
Maximum crop factor at 100% cover (mm/mm) (Maximum crop coefficient 0.8 x Pan coefficient 1)	0.80
Dead cover (if Mthly Covers) or Tot. cover left after harvest (%)	100.00
Potential rooting depth in defined soil profile (mm)	1200.00
Salt tolerance	Moderately tolerant
Salinity threshold (dS/m soil saturation extract)	3.00
Proportion of yield decrease per dS/m increase (%/dS/m)	3.00

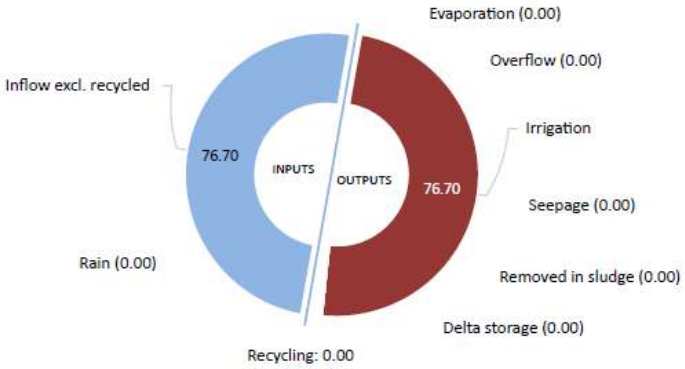
Irrigation rules: Low travelling irrigator

Rule 1. Irrigation triggered every 1 days and rainfall is less than or equal to 10000.00 mm
Rule 2. Irrigate a fixed amount of 2.00 mm each day
Rule 3. Irrigation window from 1/1 to 31/12 including the days specified
Rule 4. A minimum of 0 days must be skipped between irrigation events

Pond system information

Pond System Configuration: 1 closed (sludge-free) storage tank (wet weather storage pond: 3 m3)

Pond system water balance (m3/year)



Name	Value
Rain	0.00
Inflow excl. recycled	76.70
Recycled	0.00
Evaporation	0.00
Overflow	0.00
Irrigation	76.70
Seepage	0.00
Removed in sludge	0.00
Delta storage	0.00

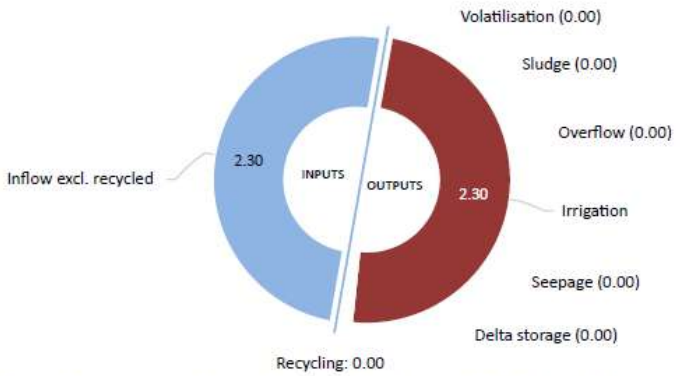
Overflow and reuse diagnostics

Metric	Value
Total volume of overflow (m3/10 years)	0.00
Total number of overflow events (events/10 years)	0.00
Total number of pond overflow days (days/10 years)	0.00
Probability of at least 90% effluent reuse (%)	100.00
Effluent reuse (%)	100.00

Pond system information

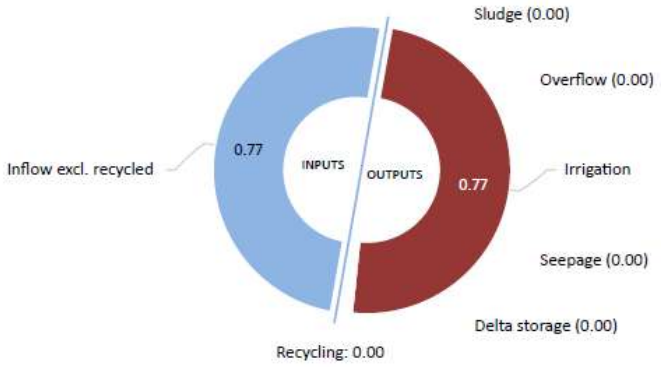
Pond System Configuration: 1 closed (sludge-free) storage tank

Pond system nitrogen balance (kg/year)



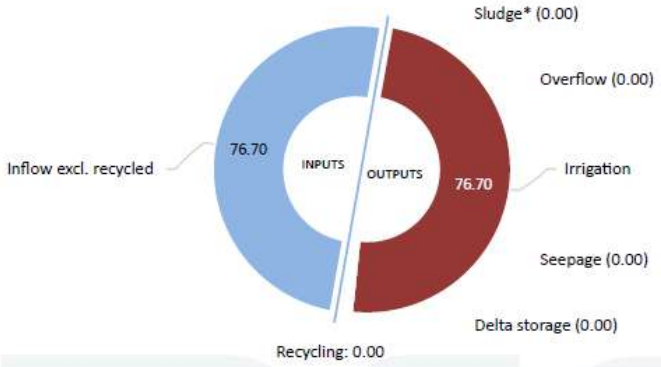
Name	Value
Inflow excl. recycled	2.30
Recycled	0.00
Volatilisation	0.00
Sludge	0.00
Overflow	0.00
Irrigation	2.30
Seepage	0.00
Delta storage	0.00

Pond system phosphorus balance (kg/year)



Name	Value
Inflow excl. recycled	0.77
Recycled	0.00
Sludge	0.00
Overflow	0.00
Irrigation	0.77
Seepage	0.00
Delta storage	0.00

Pond system salt balance (kg/year)



Name	Value
Inflow excl. recycled	76.70
Recycled	0.00
Sludge*	0.00
Overflow	0.00
Irrigation	76.70
Seepage	0.00
Delta storage	0.00

* Salt removal in sludge is not calculated from the pond salt balance. However if salt could be assumed to be present in the sludge at the same concentration as in the pond supernatant (up to a maximum of salt added in inflow) - then salt accumulation in the sludge could be 0.00 kg/year

Water use (assumes 100% irrigation efficiency)

Metric	Value
Pond water irrigated (m3/year)	76.70
Average shandy water irrigation (m3/year) (minimum - maximum)	0.00 (0.00 - 0.00)
Total water irrigated (m3/year)	76.70
Proportion of irrigation events requiring shandying (% of events)	0.00
Proportion of years shandying water allocation of 0 m3/year is exceeded (% of years)	0.00
Average exceedance as a proportion of annual shandy water allocation (% of allocation) (minimum - maximum)	0.00 (0.00 - 0.00)

Irrigation quality

Metric	Value
Average nitrogen concentration of irrigation water - before ammonia loss during irrigation (mg/L)	30.00
Average nitrogen concentration of irrigation water - after ammonia loss during irrigation (mg/L)	28.02
Average phosphorus concentration of irrigation water (mg/L)	10.00
Average salinity of irrigation water (dS/m)	1.56

Irrigation diagnostics

Metric	Value
No. periods/year without any irrigable effluent in the wet weather storage pond (periods/year)	0.00
Average length of such periods (days)	0.00

Irrigation triggering and application

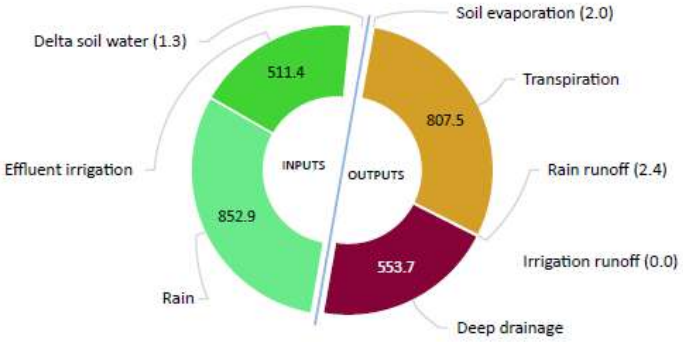
No. Days without Irrigation Applied per Year: 0.00
No. Days with Irrigation Applied per Year: 365.25 (with full application)
No. Days with Irrigation Triggered per Year: 365.25

Paddock information

Paddock: Nar Nar Goon, 150 m2

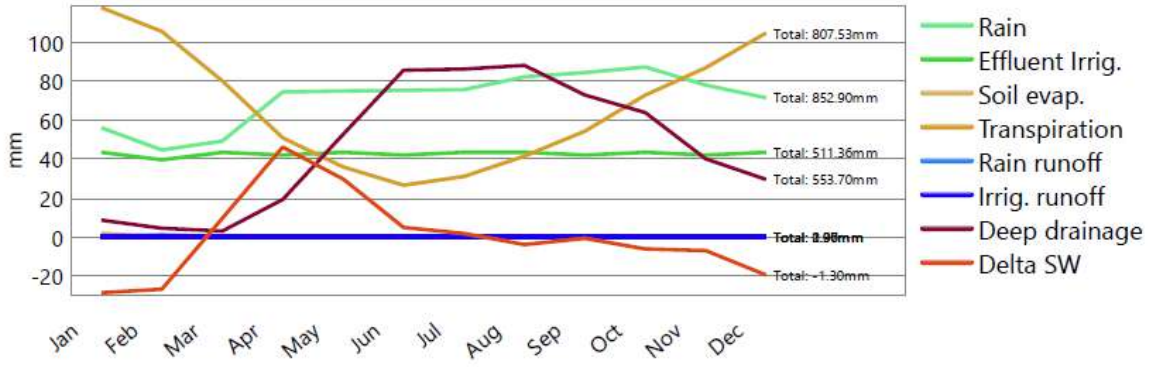
Soil Type: Red chromosol, 180.00 mm PAWC at maximum root depth

Soil water balance (mm/year)

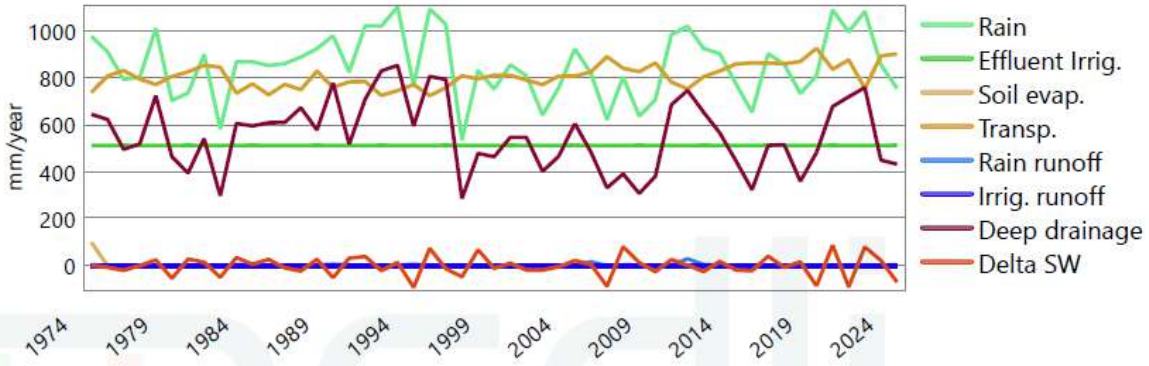


Name	Value
Rain	852.9
Effluent irrigation	511.4
Soil evaporation	2.0
Transpiration	807.5
Rain runoff	2.4
Irrigation runoff	0.0
Deep drainage	553.7
Delta soil water	-1.3

Average monthly totals (mm)



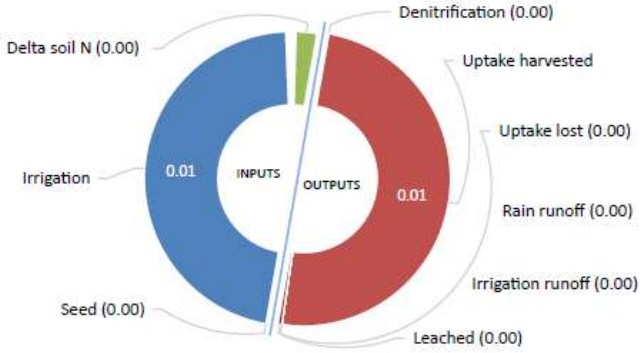
Average annual totals (mm/year)



Paddock information

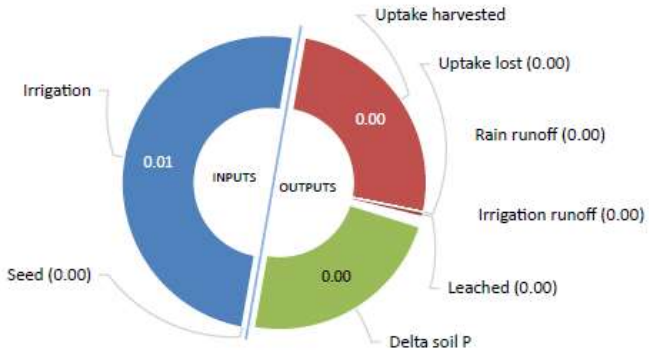
Paddock: Nar Nar Goon, 150 m2
Soil Type: Red chromosol
Irrigation Ammonia-N Volatilisation Losses (kg/m2/year): 0.00
Proportion of Total Nitrogen in Irrigated Effluent as Ammonium (%): 30.00

Soil nitrogen balance (kg/m2/year)



Name	Value
Seed	2.06E-06
Irrigation	0.01
Denitrification	1.30E-06
Uptake harvested	0.01
Uptake lost	5.26E-07
Rain runoff	0.00
Irrigation runoff	0.00
Leached	1.33E-04
Delta soil N	-7.07E-04

Soil phosphorus balance (kg/m2/year)



Name	Value
Seed	1.76E-07
Irrigation	0.01
Uptake harvested	2.66E-03
Uptake lost	5.46E-08
Rain runoff	0.00
Irrigation runoff	0.00
Leached	5.61E-05
Delta soil P	2.40E-03

Paddock information

Paddock: Nar Nar Goon, 150 m2
Soil Type: Red chromosol
Planting Regime: Continuous Kikuyu 1 pasture

Plant growth (minimum - maximum)

Metric	Value
Average annual shoot dry matter harvestable yield* (kg/m2/year)	0.88 (0.78 - 0.98)
Average annual shoot dry matter lost (kg/m2/year)	0.00 (0.00 - 0.00)
Average monthly plant (green) cover (%)	85.24 (79.46 - 89.55)
Average monthly root depth (mm)	1198.64 (1184.76 - 1200.00)

Plant nutrient uptake (minimum - maximum)

Metric	Value
Average annual shoot nitrogen in harvestable yield* (kg/m2/year)	0.01 (0.01 - 0.02)
Average annual shoot nitrogen lost (kg/m2/year)	0.00 (0.00 - 0.00)
Average annual shoot phosphorus in harvestable yield* (kg/m2/year)	0.00 (0.00 - 0.00)
Average annual shoot phosphorus lost (kg/m2/year)	0.00 (0.00 - 0.00)
Average annual shoot nitrogen concentration (fraction dwt)	0.02 (0.02 - 0.02)
Average annual shoot phosphorus concentration (fraction dwt)	0.003 (0.003 - 0.003)

*Harvestable yield is a measure of *net* gain over a nominated period - say monthly. It is the total shoot-dry-matter gain minus any shot-dry-matter loss within a given period. Hence, just like financial investments, negative harvestable yields may occur when the (episodic) losses exceed the gains made within a particular accounting period.

Paddock information

Paddock: - Nar Nar Goon, 150 m2

Irrigation: Low travelling irrigator with 22% ammonium loss during irrigation

Irrigation Rules
Irrigation triggered every 1 days and when rainfall is less than or equal to 10000.00 mm
Irrigate a fixed amount of 2.00 mm
Irrigation window from 1/1 to 31/12 including the days specified
A minimum of 0 days must be skipped between irrigation events

Soil water balance (mm): Red chromosol, 180.00 mm PAWC at maximum root depth

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Rain	56.0	44.6	49.2	74.4	74.9	75.2	75.6	82.1	84.3	87.2	77.9	71.4	852.9
Efflt. irrg.	43.4	39.6	43.4	42.0	43.4	42.0	43.4	43.4	42.0	43.4	42.0	43.4	511.4
Soil evap	1.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Transpn.	117.7	105.5	80.1	50.9	35.9	26.5	31.0	41.5	54.2	72.8	86.8	104.7	807.5
Rain runoff	0.0	1.0	0.0	0.3	0.1	0.3	0.1	0.0	0.0	0.2	0.1	0.3	2.4
Irr. runoff	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Drainage	8.6	4.4	3.0	19.2	52.6	85.6	86.1	88.0	72.8	63.8	40.1	29.5	553.7
Delta SW	-28.7	-26.9	9.5	46.1	29.7	4.8	1.7	-4.0	-0.8	-6.2	-7.0	-19.6	-1.3

Soil nitrogen balance: (Concentrations are flow-weighted)

Metric	Value
Average annual nitrogen added in seed (kg/m2/year)	2.06E-06
Average annual nitrogen added from irrigation (kg/m2/year)	0.01
Av. annual soil N removed by uptake (harvest + lost) (kg/m2/year)	0.01 (0.01, 5.26E-07)
Av. annual soil nitrogen removed by denitrification (kg/m2/year)	1.30E-06
Average annual soil nitrogen leached (kg/m2/year)	1.33E-04
Soil organic-N kg/m2 (Initial - Final)	0.04 - 0.01
Soil inorganic-N kg/m2 (Initial - Final)	0.01 - 1.00E-05
Average nitrate-N concentration of deep drainage (Max annual concentration)	
Across all years (mg/L)	0.24 (3.58)
Excluding first year of data (mg/L)	0.16 (0.48)

Soil phosphorus balance: (Concentrations are flow-weighted)

Metric	Value
Average annual phosphorus added in seed (kg/m2/year)	1.76E-07
Average annual phosphorus added from irrigation (kg/m2/year)	0.01
Av. annual soil P removed by uptake (harvest + lost) (kg/m2/yr)	2.66E-03 (2.66E-03, 5.46E-08)
Average annual soil phosphorus leached (kg/m2/year)	5.61E-05
Dissolved phosphorus (kg/m2) (Initial - Final)	5.99E-05 - 4.86E-04
Adsorbed phosphorus (kg/m2) (Initial - Final)	0.41 - 0.53
Average phosphate-P concentration in rootzone (mg/L)	0.74
Average phosphate-P concentration of deep drainage (Max annual concentration)	
Across all years (mg/L)	0.10 (0.11)
Last year only (mg/L)	0.11 (N.D.*)
Design soil profile storage life based on average infiltrated water phosphorus concn. of 3.75 mg/L (years)	203.41

* Not determined

Paddock information

Paddock: Nar Nar Goon, 150 m2
Planting Regime: Continuous Kikuyu 1 pasture

Average plant performance (minimum - maximum)

Metric	Value
Average annual shoot dry matter harvestable yield (kg/m2/year)	0.88 (0.78 - 0.98)
Average annual shoot dry matter lost (kg/m2/year)	0.00 (0.00 - 0.00)
Average monthly plant (green) cover (%)	85.24 (79.46 - 89.55)
Average monthly crop factor (fraction)	0.68 (0.64 - 0.72)
Dead cover (if Mthly Covers) or Tot. cover left after harvest (%)	100.00
Average monthly root depth (mm)	1198.64 (1184.76 - 1200.00)
Average number of normal harvests per year (no./year)	1.59 (1.00 - 2.00)
Average number of normal harvests for last five years only (no./year)	1.60
Average number of forced harvests per year (no./year)	0.00 (0.00 - 0.00)
Average number of forced harvests for last five years only (no./year)	0.00
Average annual nitrogen deficiency index (0 = no stress, 1 = full stress) (coefficient)	0.55 (0.39 - 0.67)
Average January temperature stress index (0 = no stress, 1 = full stress) (coefficient)	0.20 (0.03 - 0.39)
Average July temperature stress index (0 = no stress, 1 = full stress) (coefficient)	0.94 (0.85 - 0.99)
Average monthly water stress index (0 = no stress, 1 = full stress) (coefficient)	0.01 (0.00 - 0.07)
Average monthly waterlogging index (0 = no stress, 1 = full stress) (coefficient)	0.00 (0.00 - 0.00)
No. days without crop per year. Excludes bare fallow days (days)	0.00

Soil salinity - plant salinity tolerance: Moderately tolerant

Assumes 1.0 dS/m Electrical Conductivity = 640 mg/L Total Dissolved Salts
All values based on 10 -year running averages.

Metric	Value
Salinity of infiltrated water (Average salinity of rainwater = 0.03 dS/m) (dS/m)	0.61
Salt added by rainfall (kg/m2/year)	0.02
Average annual salt added & leached at steady state (kg/m2/year)	0.53
Average leaching fraction based on 10 -year running averages (fraction)	0.59
Average water-uptake-weighted rootzone salinity sat. ext. (dS/m)	0.47
Salinity of the soil solution (at drained upper limit) at base of rootzone (dS/m)	1.52
Relative crop yield expected due to salinity (%)	100.00
Proportion of years that crop yields would be expected to fall below 90% of potential due to salinity (%)	0.00

4.5 SITING AND CONFIGURATION OF THE LAND APPLICATION AREA

Considering the allotment's size there is sufficient space for location of the effluent disposal envelope on the site.

Whilst there is ample area for application of effluent, it is important that buffer distances be adhered to. It is important to note that buffers are measured as the overland flow path for run-off water from the effluent disposal area.

As a result of my visit the Land Application Area can be located in the area investigated and delineated on the annotated Test Site Location Plan (Appendix 9.3 and Figure 1).

4.5 BUFFER DISTANCES

Buffer distances from Land Application Areas are required to help prevent human contact, maintain public amenity and protect sensitive environments. Council generally adopts the following nominal buffers, described in table 4-10 of the EPA Guidelines 2024:

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

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

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.

All nominal buffers are achievable.

4.6 INSTALLATION OF THE IRRIGATION SYSTEM

Installation of the irrigation system must be carried out by a suitably qualified, licensed plumber or drainer experienced with effluent irrigation systems.

To ensure even distribution of effluent, it is essential that the pump (if required) capacity is adequate for the size and configuration of the irrigation system, taking into account head and friction losses due to changes in elevation, pipes, valves, fittings etc

If sub-surface drip irrigation is used the irrigation area and surrounding area must be vegetated or revegetated immediately following installation of the system, preferably with turf.

As the proposed LAA is within a Land Subject to Inundation Overlay the treatment and dispersal systems should not be used during flood events, or if this is not possible, a suitably sized effluent storage tank must be incorporated into the design that can store any effluent produced until the flood risk has abated. Stored effluent must be released gradually once the flood risk has abated so as not to overwhelm the treatment or dispersal systems, and

- **treatment plants should be watertight and have backflow prevention – for example, install seals, access risers and backflow prevention devices (in accordance with manufacturers requirements).**
- **Position treatment plants so that the lid of the tank is above the Nominal Flood Protection Level and ensure electrical control components are located above the flood level.**
- **Ensure anchoring of floatable tanks is adequate.**

The area should be fenced or otherwise isolated (such as by landscaping), to prevent vehicle and stock access; and signs should be erected to inform householders and visitors of the extent of the effluent irrigation area and to limit their access and impact on the area.

Stormwater run-on/runoff is a not concern for the proposed disposal area, hence; upslope and downslope diversion berms/cut-off drains are not required. Stormwater from roofs and other impervious surfaces must not be disposed of into the wastewater treatment system or onto the effluent management system.

5. Monitoring, Operation and Maintenance System

Maintenance is to be carried out in accordance with the EPA Certificate of Approval of the selected secondary treatment system and Council's permit conditions. The treatment system will only function adequately if appropriately and regularly maintained.

To ensure the treatment system functions adequately, residents must:

- Have a suitably qualified maintenance contractor service the treatment system at the frequency required by Council under the permit to use;
- Use low phosporous household cleaning products that are suitable for septic tanks;
- Sink strainer to be used to catch food particles
- a front-loading washing machine be used when possible;
- surge loads be avoided (letting out large volumes of water at the same time);
- scrape all dishes to remove grease and fats before washing;
- do not install a garbage grinder waste disposal system;
- do not allow sanitary napkins or hygiene products to enter the system;
- do not dispose of aggressive toxic cleaning agents in the system;
- do not dispose of any solvents or paints in the system;
- do not allow bleach, whiteners, nappy soakers, spot removers or disinfectants to enter the system;
- Keep as much fat and oil out of the system as possible; and
- Conserve water (AAA rated fixtures and appliances are recommended).

To ensure the land application system functions adequately, residents must:

- Regularly harvest (mow) vegetation within the LAA and remove this to maximise uptake of water and nutrients;
- Monitor and maintain the system following the manufacturer's recommendations, including flushing the irrigation lines;
- Regularly clean in-line filters;
- Not erect any structures and paths over the LAA;
- Avoid vehicle and livestock access to the LAA, to prevent compaction and damage; and
- All stormwater runoff from the proposed dwelling, driveway etc. must be drained to a legal point of discharge, and not be allowed to run onto the effluent field.

6. Stormwater Management

As mentioned above, stormwater run-on is not a concern in this case. Therefore, the construction and maintenance of diversion berms/cutoff drains are not necessary. Roof stormwater must not be disposed in the Land Application Area.

7. Conclusions

As a result of my investigations I conclude that sustainable onsite wastewater management is feasible with appropriate mitigation measures as outlined for a future residential development on this allotment.

Specifically, I recommend the following:

- Secondary treatment of wastewater by an EPA-accredited treatment system;
- Location of Land Application Area as per this report.
- Land application of secondary treated effluent to a suitably sized pressure compensating sub-surface/covered surface drip irrigation system;
- A recommended inclusion would be to have a pumped system with sequencing valves to ensure even coverage of the effluent across the drip lines;
- Dose the system more than once per day;
- Installation of water saving fixtures and appliances in the existing and new residences to reduce the effluent load;
- Use of low phosphorus and low sodium (liquid) detergents to improve effluent quality and maintain soil properties for growing plants; and
- Operation and management of the treatment and disposal system in accordance with manufacturer's recommendations, the EPA Certificate of Approval, the EPA Guidelines for Onsite Wastewater Management (2024), the EPA Guidelines for Onsite Wastewater Effluent Dispersal and Recycling systems (2024) and the recommendations made in this report.

For and on behalf of SMOLDERS GEOTECHNCIAL PTY. LTD.

[redacted]

B.Sc. (Soils) PhD.

C.E.T. Accredited.

8. References

Cardinia Shire Council Domestic Wastewater Management Plan. 2020-2025.

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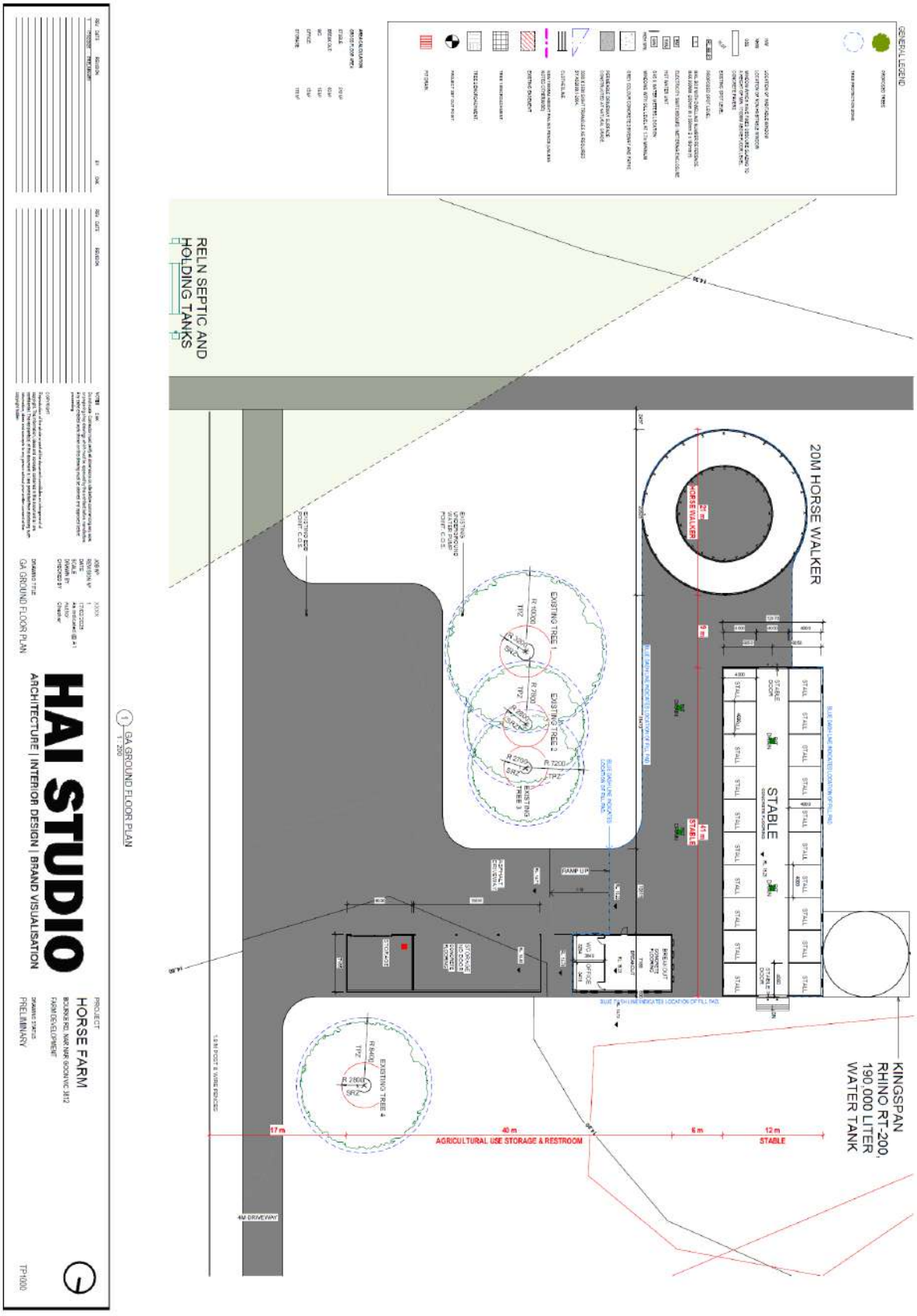
Victorian land Capability Assessment Framework (2014).

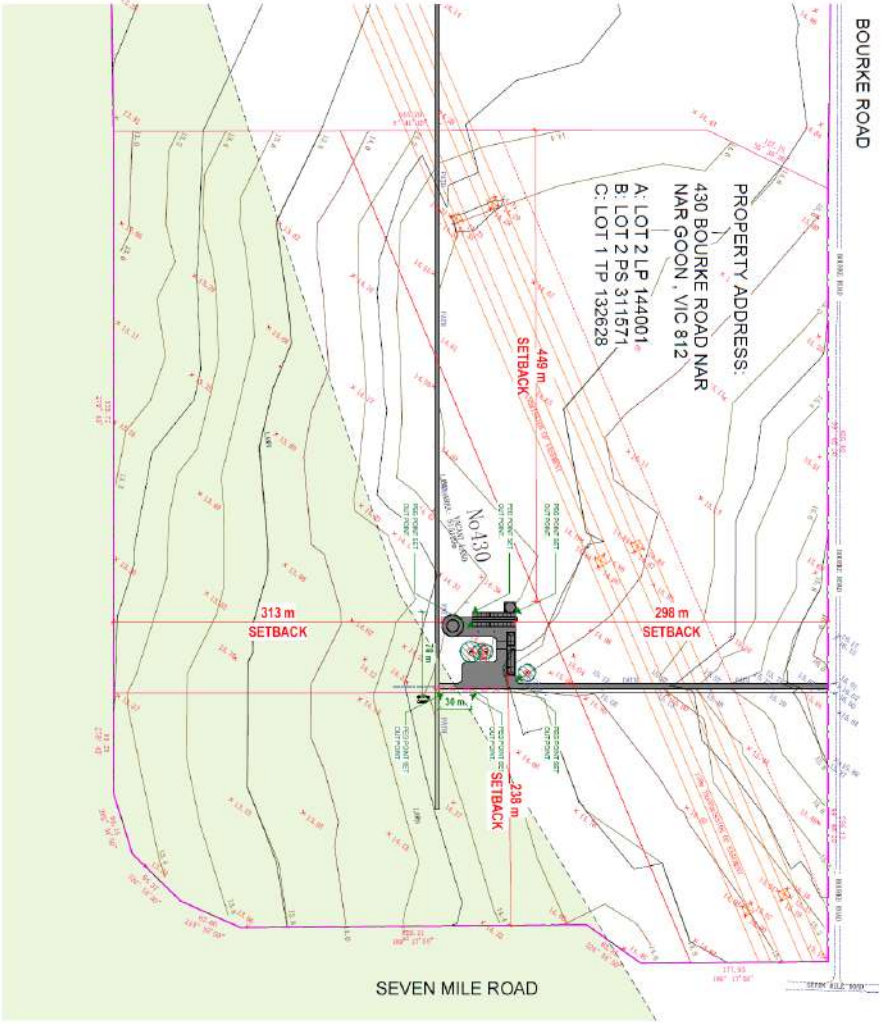
9. Appendices

1. Aerial and Site Photographs
2. Floor Plan
3. Test Site Location Plan
4. Borelog Descriptions
5. Bureau of Meteorology Climate Report
6. Analytical Laboratory Results
7. Geological Map
8. Land Channel Property Report

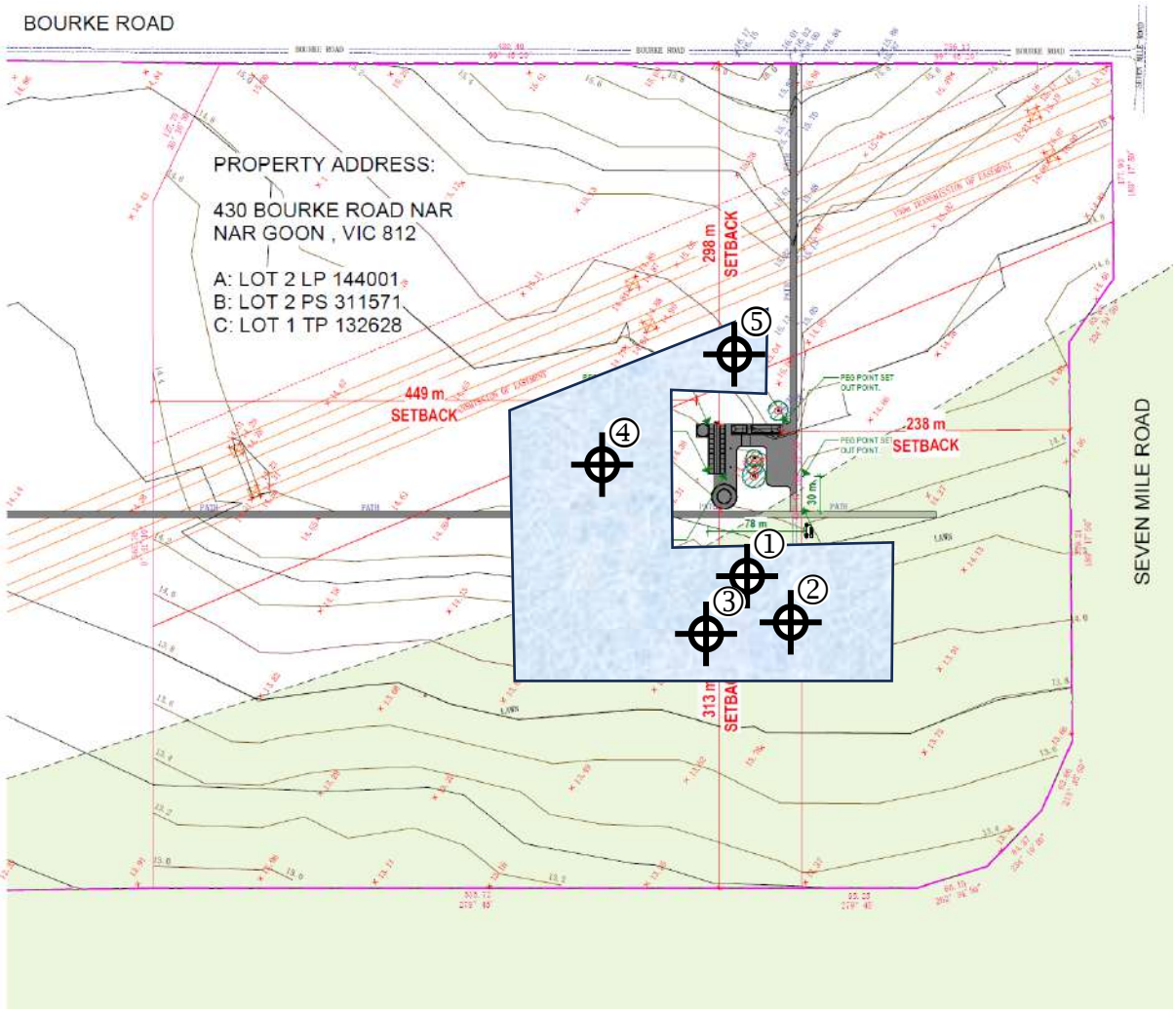
9.1 Aerial and Site Photographs

9.2 Floor Plan





9.3 Test Site and LAA Location Plan



RECOMMENDED IRRIGATION AREA

③ SOIL TEST SITES

9.4 Borelog Description

PROJECT ADDRESS: 430 Bourke Road, NAR NAR GOON VIC
REFERENCE NUMBER: 25H9806
FIELD WORK DATE: 22/08/2025
SUPERVISING GEOLOGIST: Richard Smart & Jamie Tzimas

BORELOG 1				BORELOG 2				BORELOG 3			
Depth mm	SOIL PROFILE Hand Dug Pit	Fill	Cat	Depth mm	SOIL PROFILE Mechanical Auger	Fill	Cat	Depth mm	SOIL PROFILE Mechanical Auger	Fill	Cat
100	**Sandy Clay Loam: brown, slightly moist, firm**		**4b**	100	**Sandy Clay Loam: brown, slightly moist, firm**		**4b**	100	**Sandy Clay Loam: brown, slightly moist, firm**		**4b**
200	**Layer of gravels at base of horizon**			200	**Layer of gravels at base of horizon**			200	**Layer of gravels at base of horizon**		
300	**Weakly structured**			300	**Weakly structured**			300	**Weakly structured**		
400	**Ribbon length 25 – 40mm**			400	**Ribbon length 25 – 40mm**			400	**Ribbon length 25 – 40mm**		
500	**Medium Clay: with sand, grey/brown**			500	**Medium Clay: with sand, grey/brown**		**6a**	500	**Medium Clay: with sand, grey/brown**		
600	**mottled orange, moist, v. stiff.**		**6a**	600	**mottled orange, moist, v. stiff.**			600	**mottled orange, moist, v. stiff.**		
700	**Strong structure**			700	**Strong structure**			700	**Strong structure**		**6c**
800	**Ribbon length >75mm**			800	**Ribbon length >75mm**			800	**Ribbon length >75mm**		
900	**END OF HOLE – No Refusal**			900				900			
1000				1000	**-decreasing sand with depth**			1000			
1100				1100				1100			
1200				1200				1200			
1300				1300				1300			
1400				1400				1400			
1500				1500				1500			
1600				1600				1600			
1700				1700				1700			
1800				1800				1800			
1900				1900	**END OF HOLE – No Refusal**			1900	**END OF HOLE – No Refusal**		
2000				2000				2000			
2100				2100				2100			
2200				2200				2200			
2300				2300				2300			
2400				2400				2400			
2500				2500				2500			
2600				2600				2600			
2700				2700				2700			
2800				2800				2800			
2900				2900				2900			
3000				3000				3000			
3100				3300				3300			
3200				3500				3500			

PROJECT ADDRESS: 430 Bourke Road, NAR NAR GOON VIC
REFERENCE NUMBER: 25H9806
FIELD WORK DATE: 22/08/2025
SUPERVISING GEOLOGIST: Richard Smart & Jamie Tzimas

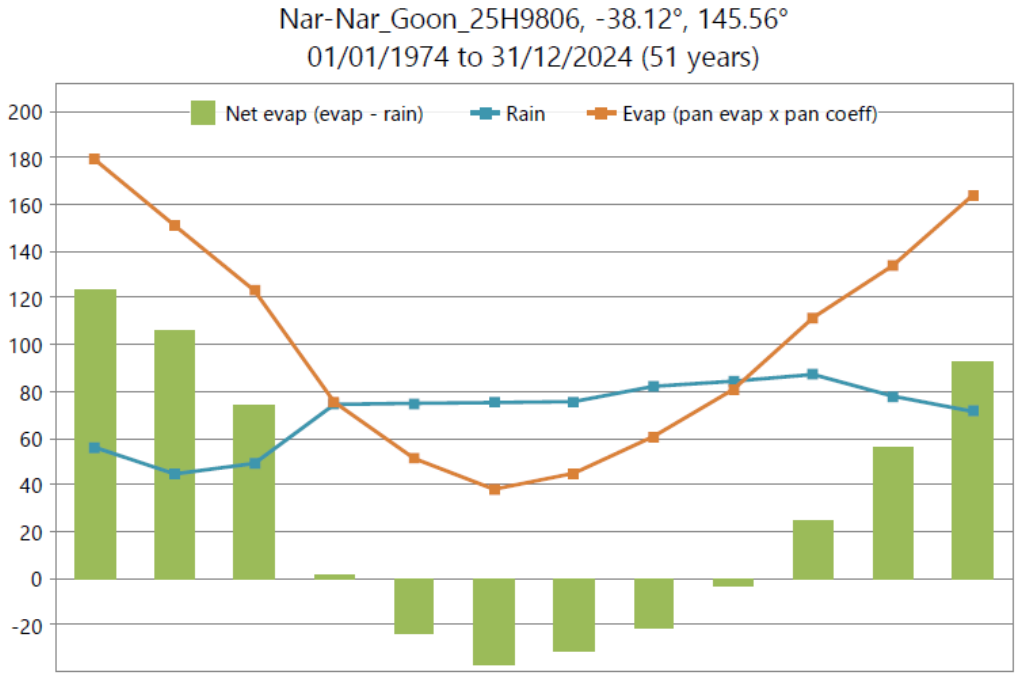
BORELOG 4				BORELOG 5				BORELOG 6			
Depth mm	SOIL PROFILE Mechanical Auger	Fill	Cat	Depth mm	SOIL PROFILE Mechanical Auger	Fill	Cat	Depth mm	SOIL PROFILE	Fill	Cat
100	**Sandy Clay Loam: brown, slightly moist, firm**		**4b**	100	**Sandy Clay Loam: brown, slightly moist, firm**		**4b**	100			
200	**Layer of gravels at base of horizon**			200	**Layer of gravels at base of horizon**			200			
300	**Weakly structured**			300	**Weakly structured**			300			
400	**Ribbon length 25 – 40mm**			400	**Ribbon length 25 – 40mm**			400			
500	**Medium Clay: with sand, grey/brown**		**6a**	500	**Medium Clay: with sand, grey/brown**		**6a**	500			
600	**mottled orange, moist, v. stiff.**			600	**mottled orange, moist, v. stiff.**			600			
700	**Strong structure**			700	**Strong structure**			700			
800	**Ribbon length >75mm**			800	**Ribbon length >75mm**			800			
900				900				900			
1000	**-decreasing sand with depth**			1000	**-decreasing sand with depth**			1000			
1100				1100				1100			
1200				1200				1200			
1300				1300				1300			
1400				1400				1400			
1500				1500				1500			
1600				1600				1600			
1700				1700				1700			
1800				1800				1800			
1900	**END OF HOLE – No Refusal**			1900	**END OF HOLE – No Refusal**			1900			
2000				2000				2000			
2100				2100				2100			
2200				2200				2200			
2300				2300				2300			
2400				2400				2400			
2500				2500				2500			
2600				2600				2600			
2700				2700				2700			
2800				2800				2800			
2900				2900				2900			
3000				3000				3000			
3100				3300				3300			
3200				3500				3500			

9.5 Bureau of Meteorology Climate Report

Scenario information

Enterprise: 430 Bourke Road, NAR NAR GOON

Climate long-term monthly averages (mm)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Rain	56.0	44.6	49.2	74.4	74.9	75.2	75.6	82.1	84.3	87.2	77.9	71.4	852.9
Evap	179.2	151.0	123.1	75.4	51.3	38.1	44.9	60.7	80.8	111.6	133.9	164.0	1213.8
Net evap	123.1	106.3	73.9	1.0	-23.6	-37.1	-30.7	-21.4	-3.5	24.3	56.0	92.6	360.9
Net evap/day	4.0	3.8	2.4	0.0	-0.8	-1.2	-1.0	-0.7	-0.1	0.8	1.9	3.0	1.0

9.6 Laboratory Results

Groundswell Batch # : GS25553

Groundswell Laboratories

" A New Force in Analytical Testing"

CERTIFICATE OF ANALYSIS

Client Name :	Smolders Geotechnical Pty Ltd	**Groundswell Batch # :**	GS25553
Client Address :	PO Box 7299, Upper Ferntree Gully, VIC 3156	**Project Name :**	430 Bourke Road, Nar Nar Goon VIC
Client Mobile # :	0488 773 060	**Project # :**	25H9806
		Date Samples Received :	25/08/2025
Project Manager :	[redacted]	**Sample Matrix :**	Soil
E-mail :		**Sample # Submitted :**	1
Project Sample Manager :		**Groundswell Quote # :**	Not Applicable
E-mail :		**Date CofA Issued :**	28/08/2025

[redacted]

Managing Director

paul@groundswelllabs.com.au

Reference AF56.Rev4 Date Issued : 19/5/2014

Groundswell Batch # : GS25553

Soil Analysis Results

Client Sample ID			Sample 2	Sample 2			
Laboratory Sample Number			GS25553-1	GS25553-1			
Date Sampled			22/08/2025	22/08/2025			
Analytes	Units	LOR		Duplicate			
pH	pH Units	0.1	5.6	5.7			
Electrical Conductivity @ 25°C	dS/m	0.005	0.042	0.044			
Exchangeable Calcium	mg/Kg	1	570	626			
Exchangeable Magnesium	mg/Kg	1	473	549			
Exchangeable Potassium	mg/Kg	1	422	453			
Exchangeable Sodium	mg/Kg	1	139	142			
CEC	MEQ%	0.1	8.4	9.4			
ESP	%	0.1	7.2	6.6			
Sodicity Rating	---	---	Sodic	Sodic			
SAR		0.01	0.23	0.22			

Reference AF56.Rev4 Date Issued : 19/5/2014

Comments :

1- pH & electrical conductivity determined & reported on a 1:5 soil:water extraction

2- CEC determined by soil chemical method 15B1 'Exchangeable bases and cation exchange capacity - 1M amonium chloride at pH 7.0, no pre-treatment for soluble salts'

3- ESP, sodicity rating & SAR determined by calculation using the exchangeable cation results

Groundswell Laboratories Pty Ltd ABN 24 133 248 923
Unit 33, 180 Fairbairn Road, Sunshine West, Victoria, 3020 Ph (03) 8669 1450 E-mail : paul@groundswelllabs.com.au

Groundswell Batch # : GS25553

Soil Analysis Results

Client Sample ID			Sample 2	Sample 2			
Laboratory Sample Number			GS25553-1	GS25553-1			
Date Sampled			22/08/2025	22/08/2025			
Analytes	**Units**	**LOR**					
Sample Type	---	---	Air Dried Aggregates	Re-moulded Ped			
Emerson Aggregate Class - 2 Hours	---	---	Slaking / Some Dispersion	Slaking / Some Dispersion			
Emerson Class Number	---	---	Class 2	Class 2			
Emerson Aggregate Class - 20 Hours	---	---	Slaking / Some Dispersion	Slaking / Some Dispersion			
Emerson Class Number	---	---	Class 2	Class 2			
Addition of 1M HCl	---	---	---	---			
1:5 Soil:Water 10 minute extraction	---	---	---	---			
Emerson Class Number	---	---	---	---			

Reference AF56.Rev4 Date Issued : 19/5/2014

Comments :

1- Classification conducted in accordance with Emmerson 'A clasification of soil aggregates based on their coherence in water', 1967 & AS1289.C8.1-1980

Groundswell Batch # : GS25553

Inorganics Quality Control Report

Client Sample ID							
Laboratory Sample Number							
QC Parameter			Method Blank		Laboratory Control Standard (LCS)		
			Method Blank	Within GSL Acceptance Criteria (<LOR) (Pass/Fail)	LCS (%R)	LCS (%R) Acceptance Criteria	Within GSL Acceptance Criteria (Pass/Fail)
Analyte	Units	LOR					
pH	pH units	0.1	NA	NA	9.88	10.00 ± 0.1 pH Unit	Pass
Conductivity	dS/m	0.005	<0.005	Pass	101%	80-120%	Pass
Exchangeable Calcium	mg/Kg	1	<1	Pass	94%	70-130%	Pass
Exchangeable Magnesium	mg/Kg	1	<1	Pass	108%	70-130%	Pass
Exchangeable Potassium	mg/Kg	1	<1	Pass	113%	70-130%	Pass
Exchangeable Sodium	mg/Kg	1	<1	Pass	103%	70-130%	Pass
CEC	MEQ%	0.1	NA	NA	NA	NA	NA
ESP	%	0.1	NA	NA	NA	NA	NA
SAR	---	0.01	NA	NA	NA	NA	NA

Reference AF56.Rev4 Date Issued : 3/11/2010

Comments :

1- Exchangeable cations LCS values based on independent water standards

2- NA = Not Applicable

Groundswell Laboratories Pty Ltd ABN 24 133 248 923
Unit 33, 180 Fairbairn Road, Sunshine West, Victoria, 3020 Ph (03) 8669 1450 E-mail : admin@groundswelllabs.com.au

Smolders Geotechnical Pty. Ltd.
p: 0488 773 060
e: enquiries@smoldersgeotechnical.com.au
p: PO Box 7299, Upper Ferntree Gully, VIC 3156

DATE: 22 August 2025

To: Groundswell Laboratories
Unit 33/180 Fairbairn Road
Sunshine West, VIC 3020

SITE: 430 Bourke Road
NAR NAR GOON, VIC

REF No.: 25H9806

Please perform the following soil tests:

i Emerson Aggregate Class
ii Cation Exchange Capacity
iii Electrical Conductivity (EC)
iv pH
v Sodicity – Exchangeable Sodium Percentage (ESP)
vi Sodium Absorption Ratio (SAR)

For the following One (1) sample from One (1) location:

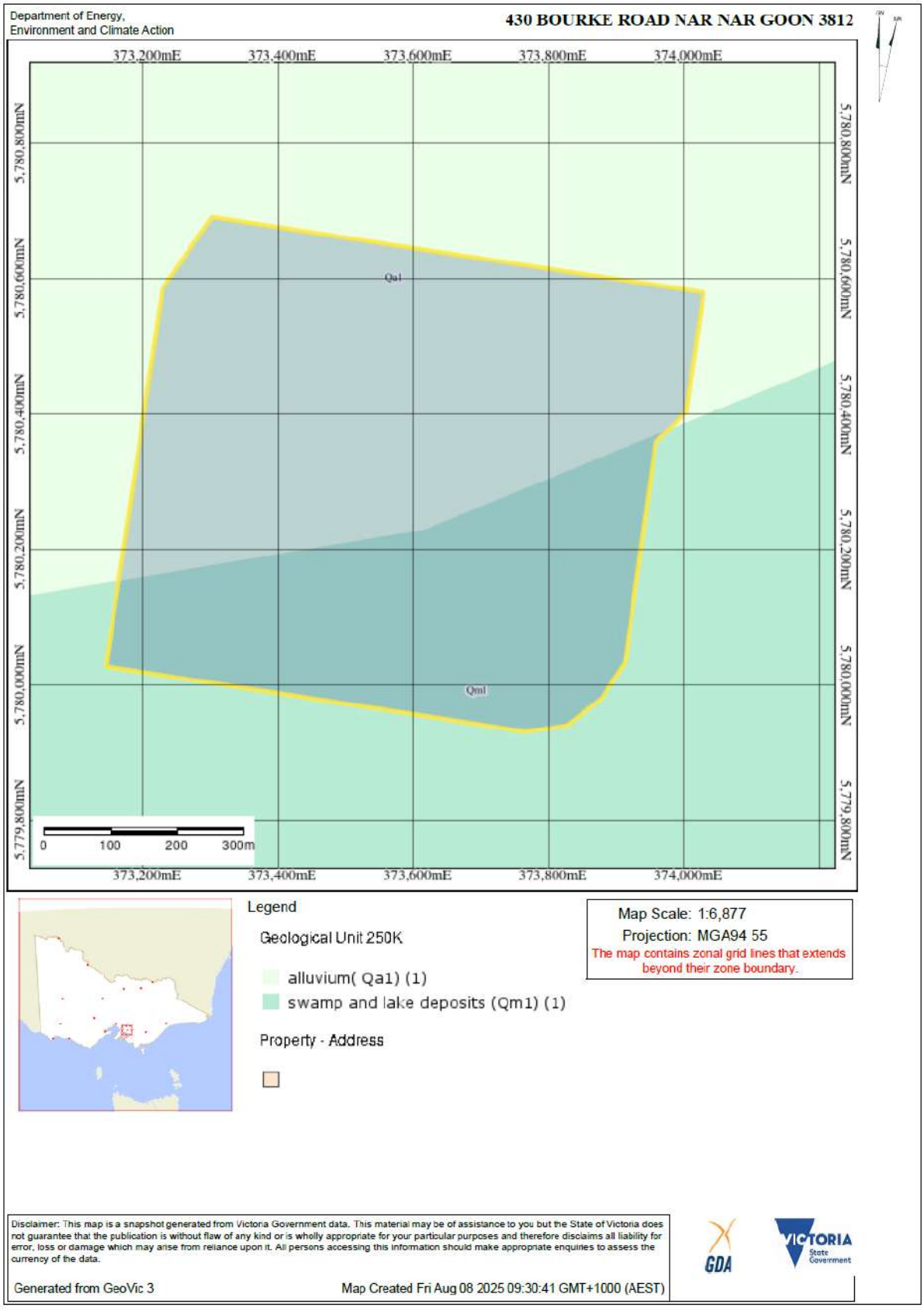
DATE	SAMPLE	TEST SITE	DEPTH (mm)	MATERIAL	LAB ID
22/08/2025	2	Pit 1	500-600 mm	SOIL	**GS25553**

We request that the sample be put through on the accelerated turnaround stream.
(2 day turnaround with surcharge)

Yours sincerely
For and on behalf of SMOLDERS GEOTECHNCIAL PTY. LTD.

[redacted]

9.7 Geovic Map



9.8 Land Channel Property Report

PROPERTY REPORT

Energy, Environment and Climate Action

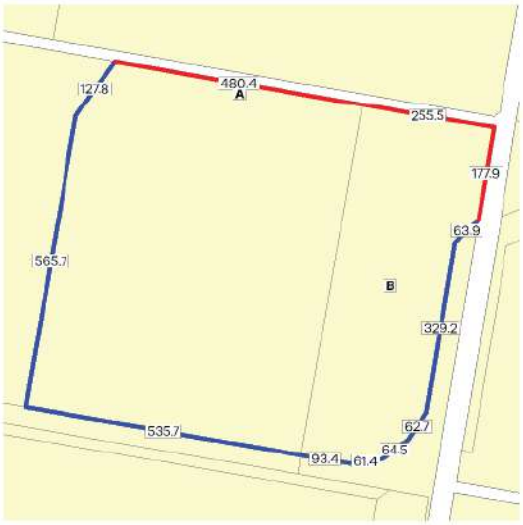
From www.land.vic.gov.au at 08 August 2025 09:27 AM

PROPERTY DETAILS

Address:	**430 BOURKE ROAD NAR NAR GOON 3812**
Lot and Plan Number:	**This property has 2 parcels. See table below**
Standard Parcel Identifier (SPI):	**See table below**
Local Government Area (Council):	**CARDINIA** www.cardinia.vic.gov.au
Council Property Number:	**4119750500**
Directory Reference:	**Vicroads 96 A3**

SITE DIMENSIONS

All dimensions and areas are approximate. They may not agree with those shown on a title or plan.



Area: 514753 sq. m (51.48 ha)
Perimeter: 2818 m
For this property:
— Site boundaries
— Road frontages

Dimensions for individual parcels require a separate search, but dimensions for individual units are generally not available.

Calculating the area from the dimensions shown may give a different value to the area shown above

For more accurate dimensions get copy of plan at Title and Property Certificates

PARCEL DETAILS

The letter in the first column identifies the parcel in the diagram above

	Lot/Plan or Crown Description	SPI
A	Lot 2 LP144001	2\LP144001
B	Lot 1 TP132628	1\TP132628

UTILITIES

Rural Water Corporation:	**Southern Rural Water**
Melbourne Water Retailer:	**South East Water**
Melbourne Water:	**Inside drainage boundary**
Power Distributor:	**AUSNET**

STATE ELECTORATES

Legislative Council:	**EASTERN VICTORIA**
Legislative Assembly:	**NARRACAN**

PROPERTY REPORT

VICTORIA State Government | Energy, Environment and Climate Action

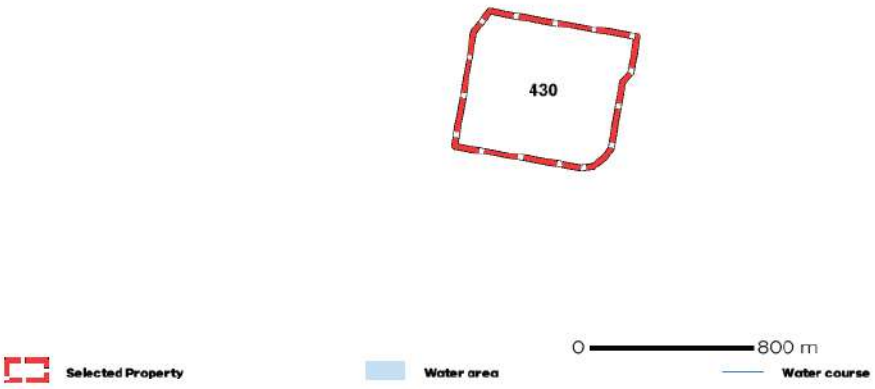
PLANNING INFORMATION

Property Planning details have been removed from the Property Reports to avoid duplication with the Planning Property Reports from the Department of Transport and Planning which are the authoritative source for all Property Planning information.

The Planning Property Report for this property can found here - Planning Property Report

Planning Property Reports can be found via these two links
Vicplan https://mapshare.vic.gov.au/vicplan/
Property and parcel search https://www.land.vic.gov.au/property-and-parcel-search

Area Map



PLANNING PROPERTY REPORT

VICTORIA State Government | Department of Transport and Planning

From www.planning.vic.gov.au at 08 August 2025 09:28 AM

PROPERTY DETAILS

Address:	**430 BOURKE ROAD NAR NAR GOON 3812**
Lot and Plan Number:	**More than one parcel - see link below**
Standard Parcel Identifier (SPI):	**More than one parcel - see link below**
Local Government Area (Council):	**CARDINIA** www.cardinia.vic.gov.au
Council Property Number:	**4119750500**
Planning Scheme:	**Cardinia** Planning Scheme - Cardinia
Directory Reference:	**Vicroads 96 A3**

This property has 2 parcels. For full parcel details get the free Property report at Property Reports

UTILITIES

Rural Water Corporation:	**Southern Rural Water**
Melbourne Water Retailer:	**South East Water**
Melbourne Water:	**Inside drainage boundary**
Power Distributor:	**AUSNET**

STATE ELECTORATES

Legislative Council:	**EASTERN VICTORIA**
Legislative Assembly:	**NARRACAN**

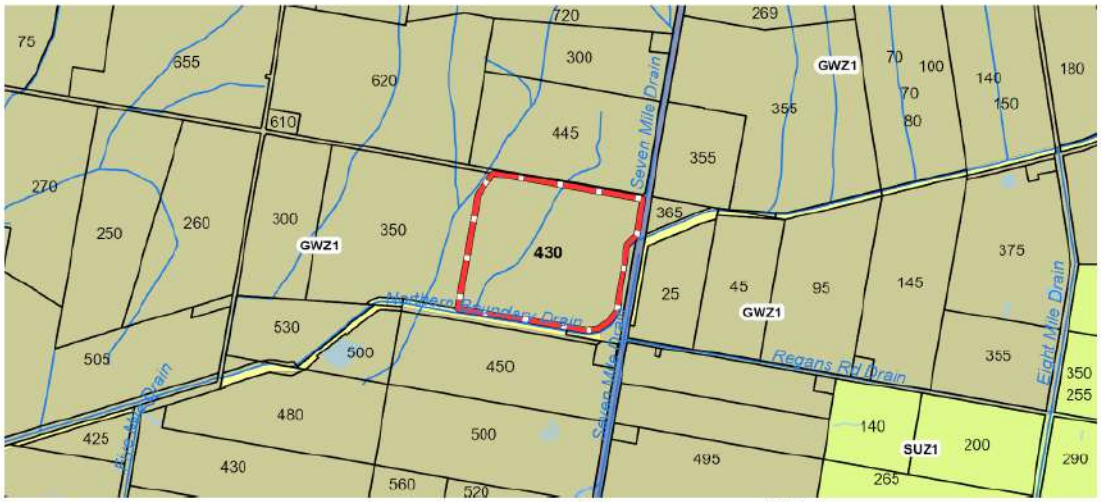
OTHER

Registered Aboriginal Party:	**Bunurong Land Council Aboriginal Corporation**
Fire Authority:	**Country Fire Authority**

View location in VicPlan

Planning Zones

GREEN WEDGE ZONE (GWZ)
GREEN WEDGE ZONE - SCHEDULE 1 (GWZ1)



GWZ - Green Wedge
PUZ1 - Public Use-Service and Utility
SUZ - Special Use
TRZ3 - Significant Municipal Road
Water area
Water course

Note: labels for zones may appear outside the actual zone - please compare the labels with the legend

PLANNING PROPERTY REPORT

VICTORIA State Government | Department of Transport and Planning

Planning Overlays

LAND SUBJECT TO INUNDATION OVERLAY (LSIO)

LAND SUBJECT TO INUNDATION OVERLAY SCHEDULE (LSIO)

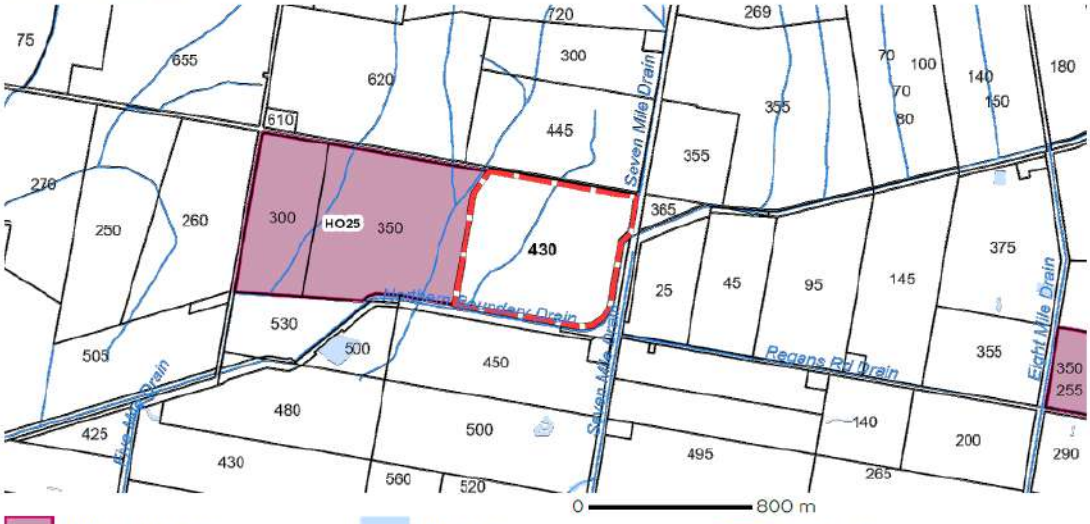
LSIO - Land Subject to inundation Overlay | Water area | Water course

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend

OTHER OVERLAYS

Other overlays in the vicinity not directly affecting this land

HERITAGE OVERLAY (HO)



HO - Heritage Overlay | Water area | Water course

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend

PLANNING PROPERTY REPORT

Department of Transport and Planning

Areas of Aboriginal Cultural Heritage Sensitivity

All or part of this property is an 'area of cultural heritage sensitivity'.

'Areas of cultural heritage sensitivity' are defined under the Aboriginal Heritage Regulations 2018, and include registered Aboriginal cultural heritage places and land form types that are generally regarded as more likely to contain Aboriginal cultural heritage.

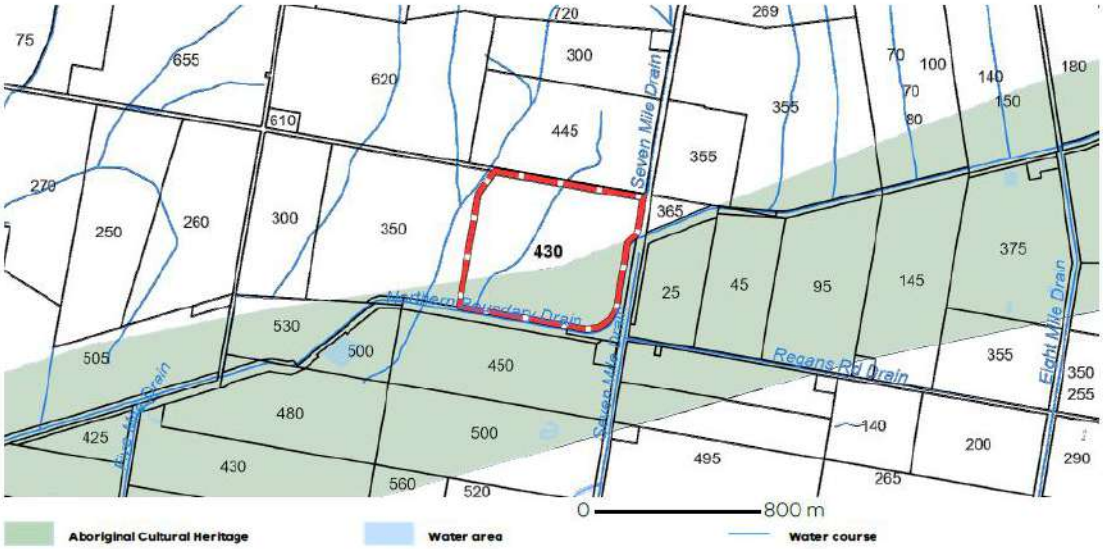
Under the Aboriginal Heritage Regulations 2018, 'areas of cultural heritage sensitivity' are one part of a two part trigger which require a 'cultural heritage management plan' be prepared where a listed 'high impact activity' is proposed.

If a significant land use change is proposed (for example, a subdivision into 3 or more lots), a cultural heritage management plan may be triggered. One or two dwellings, works ancillary to a dwelling, services to a dwelling, alteration of buildings and minor works are examples of works exempt from this requirement.

Under the Aboriginal Heritage Act 2006, where a cultural heritage management plan is required, planning permits, licences and work authorities cannot be issued unless the cultural heritage management plan has been approved for the activity.

For further information about whether a Cultural Heritage Management Plan is required go to https://heritage.achris.vic.gov.au/aavQuestion1.aspx

More information, including links to both the Aboriginal Heritage Act 2006 and the Aboriginal Heritage Regulations 2018, can also be found here - https://www.firstpeoplesrelations.vic.gov.au/aboriginal-heritage-legislation



PLANNING PROPERTY REPORT

Department of Transport and Planning

Further Planning Information

Planning scheme data last updated on 8 August 2025.

A **planning scheme** sets out policies and requirements for the use, development and protection of land. This report provides information about the zone and overlay provisions that apply to the selected land. Information about the State and local policy, particular, general and operational provisions of the local planning scheme that may affect the use of this land can be obtained by contacting the local council or by visiting https://www.planning.vic.gov.au

This report is NOT a **Planning Certificate** issued pursuant to Section 199 of the ***Planning and Environment Act 1987.*** It does not include information about exhibited planning scheme amendments, or zonings that may abut the land. To obtain a Planning Certificate go to Titles and Property Certificates at Landata - https://www.landata.vic.gov.au

For details of surrounding properties, use this service to get the Reports for properties of interest.

To view planning zones, overlay and heritage information in an interactive format visit https://mapshare.maps.vic.gov.au/vicplan

For other information about planning in Victoria visit https://www.planning.vic.gov.au

PLANNING PROPERTY REPORT

Department of Transport and Planning

Designated Bushfire Prone Areas

This property is in a designated bushfire prone area. Special bushfire construction requirements apply to the part of the property mapped as a designated bushfire prone area (BPA). Planning provisions may apply.

Where part of the property is mapped as BPA, if no part of the building envelope or footprint falls within the BPA area, the BPA construction requirements do not apply.

Note: the relevant building surveyor determines the need for compliance with the bushfire construction requirements.

Designated BPA are determined by the Minister for Planning following a detailed review process. The Building Regulations 2018, through adoption of the Building Code of Australia, apply bushfire protection standards for building works in designated BPA.

Designated BPA maps can be viewed on VicPlan at https://mapshare.vic.gov.au/vicplan/ or at the relevant local council.

Create a BPA definition plan in VicPlan to measure the BPA.

Information for lot owners building in the BPA is available at https://www.planning.vic.gov.au.

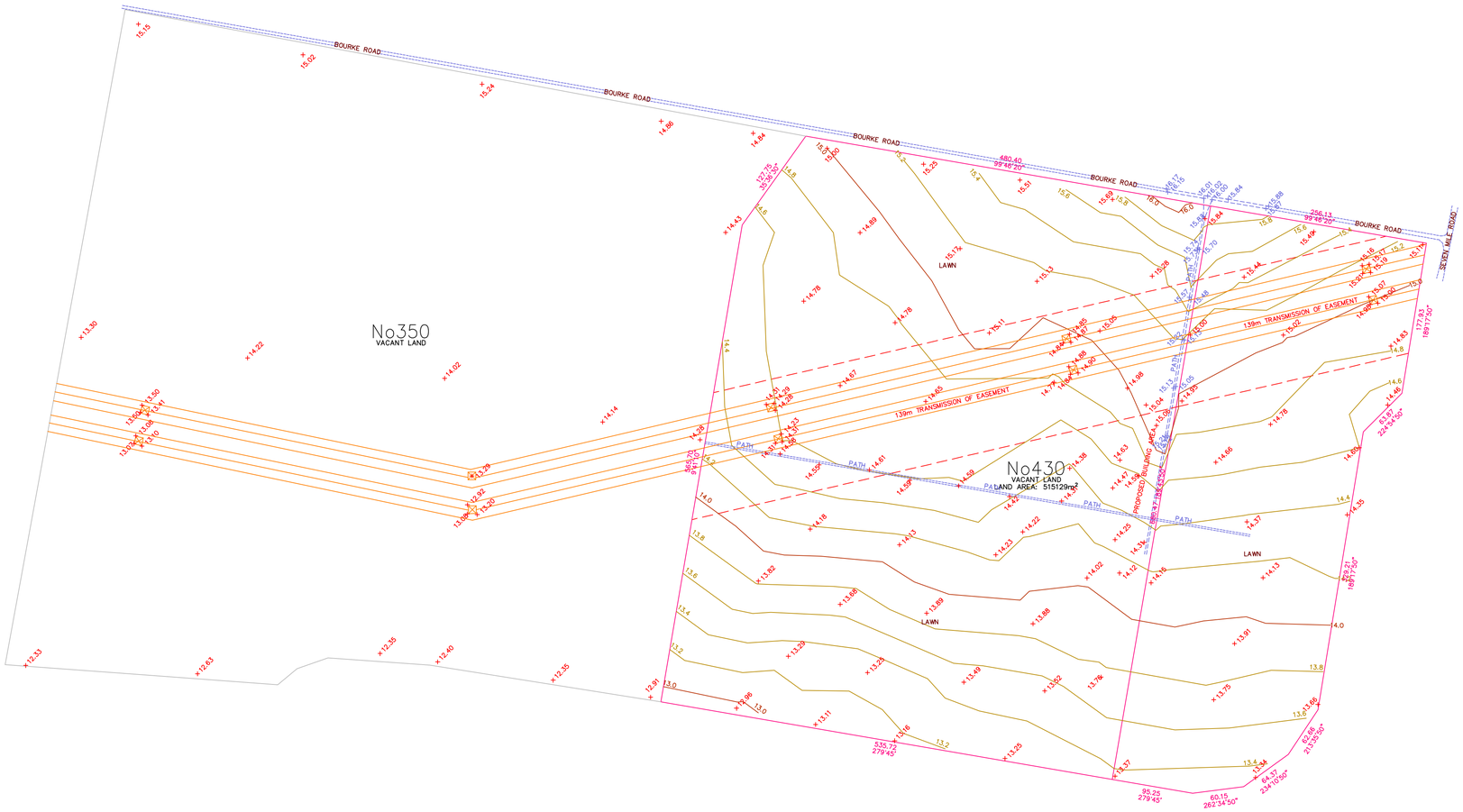
Further information about the building control system and building in bushfire prone areas can be found on the Victorian Building Authority website https://www.vba.vic.gov.au. Copies of the Building Act and Building Regulations are available from http://www.legislation.vic.gov.au. For Planning Scheme Provisions in bushfire areas visit https://www.planning.vic.gov.au.

Native Vegetation

Native plants that are indigenous to the region and important for biodiversity might be present on this property. This could include trees, shrubs, herbs, grasses or aquatic plants. There are a range of regulations that may apply including need to obtain a planning permit under Clause 52.17 of the local planning scheme. For more information see Native Vegetation (Clause 52.17) with local variations in Native Vegetation (Clause 52.17) Schedule

To help identify native vegetation on this property and the application of Clause 52.17 please visit the Native Vegetation Information Management system https://nvim.delwp.vic.gov.au/ and Native vegetation (environment.vic.gov.au) or please contact your relevant council.

You can find out more about the natural values on your property through NatureKit NatureKit (environment.vic.gov.au)



1 3D VIEW 01

REV	DATE	REVISION	BY	CHK
1	17/02/2025	PRELIMINARY		

REV	DATE	REVISION

NOTES CHK

Do not scale. Contractor must verify all dimensions on site before commencing any work or preparing shop drawings which must be approved by the architect before manufacture. Any extra entailed work shown on this drawing must be claimed and approved before proceeding.

JOB N°	XXXX
REVISION N°	1
DATE	17/02/2025
SCALE	@ A1
DRAWN BY	Author
CHECKED BY	Checker

DRAWING TITLE

3D VIEWS

HAI STUDIO

ARCHITECTURE | INTERIOR DESIGN | BRAND VISUALISATION

PROJECT

HORSE FARM

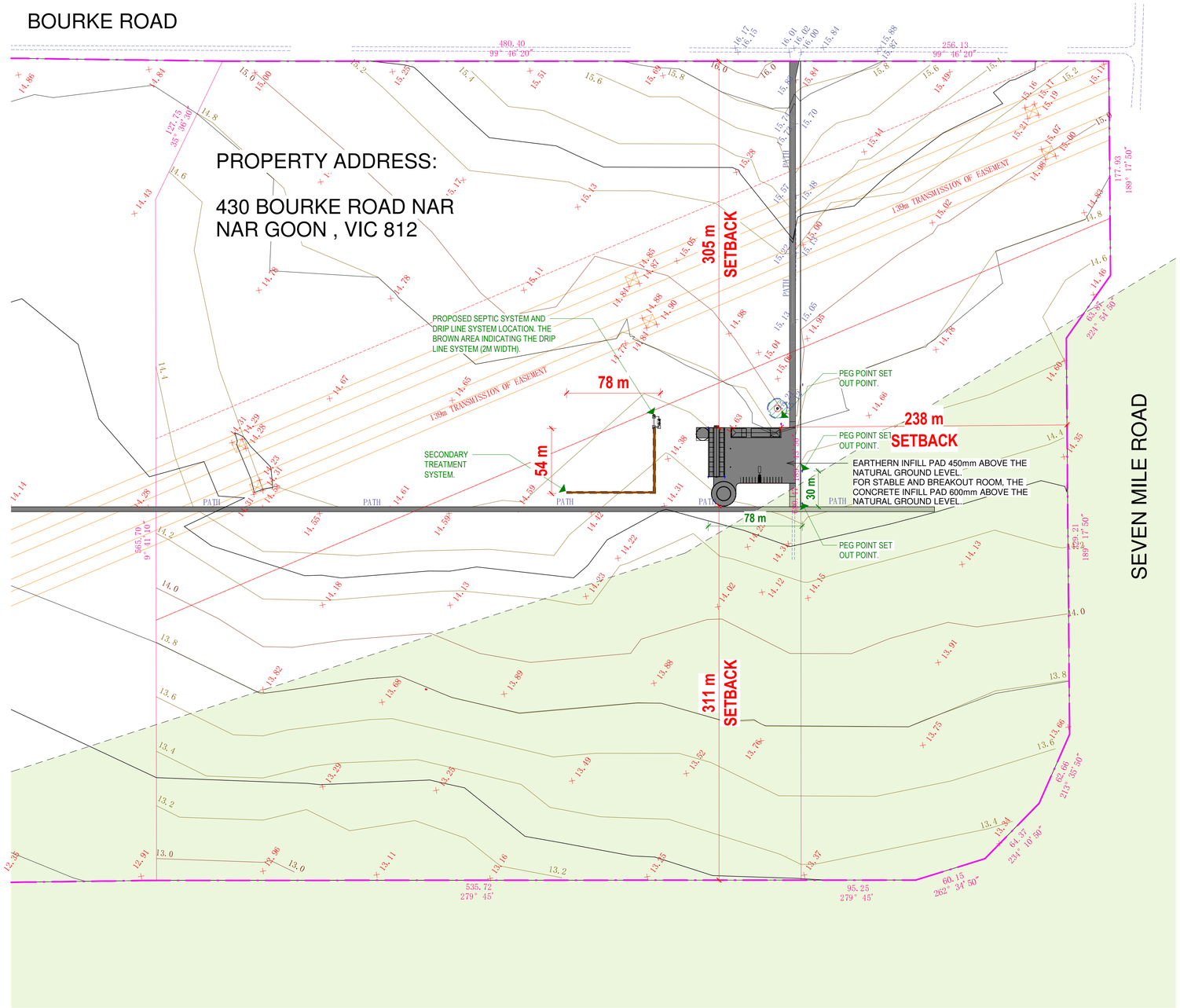
BOURKE RD, NAR NAR GOON VIC 3812

FARM DEVELOPMENT

DRAWING STATUS

TOWN PLANNING

TP0011



REV	DATE	REVISION	BY	CHK
1	17/02/2025	PRELIMINARY		

REV	DATE	REVISION

NOTES CHK

Do not scale. Contractor must verify all dimensions on site before commencing any work or preparing shop drawings which must be approved by the architect before manufacture. Any extra entailed work shown on this drawing must be claimed and approved before proceeding.

JOB N°	XXXX
REVISION N°	1
DATE	17/02/2025
SCALE	1 : 2000 @ A1
DRAWN BY	Author
CHECKED BY	Checker

DRAWING TITLE

SITE PLAN

HAI STUDIO

ARCHITECTURE | INTERIOR DESIGN | BRAND VISUALISATION

PROJECT

HORSE FARM

BOURKE RD, NAR NAR GOON VIC 3812

FARM DEVELOPMENT

DRAWING STATUS

PRELIMINARY

TP0901

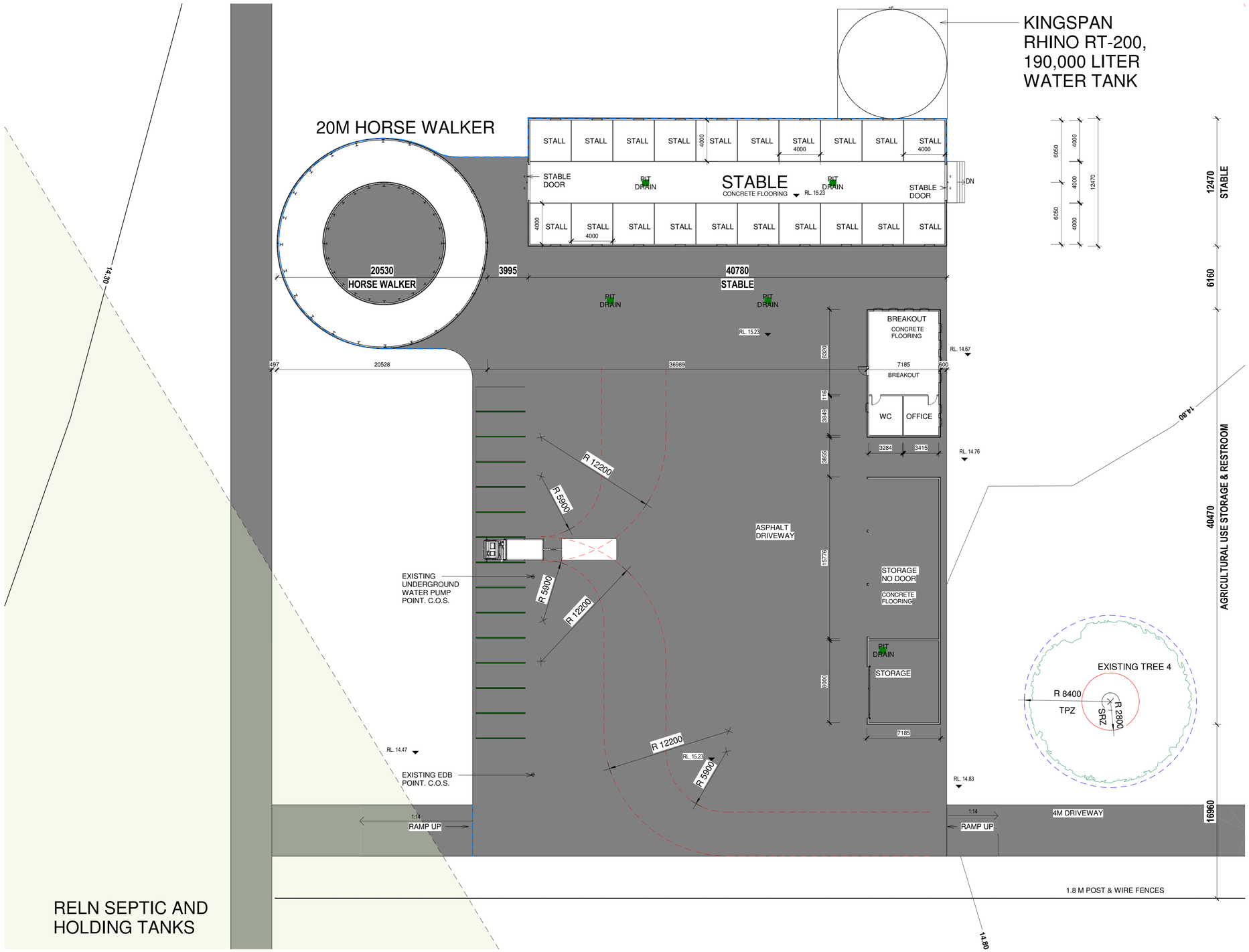
GENERAL LEGEND

- PROPOSED TREES
- TREE PROTECTION ZONE.
- H/W — LOCATION OF HABITABLE WINDOW
- NH/W — LOCATION OF NON-HABITABLE WINDOW
- OBS — WINDOW WHICH HAVE FIXED OBSCURE GLAZING TO A HEIGHT OF MIN. 1700MM ABOVE FLOOR LEVEL.
- CONCRETE PAVERS
- 75.50 — EXISTING SPOT LEVEL
- RL 69.81 — PROPOSED SPOT LEVEL
- 1. — MAIL BOX WITH DWELLING NUMBER REFERENCE. MAX 900MM (230mm W x 330mm D x 160mm H)
- EM — ELECTRICITY SWITCHBOARD / METERING ENCLOSURE
- HWU — HOT WATER UNIT
- G/W — GAS & WATER METERS LOCATION
- HIGH WIN. — WINDOWS WITH SILL LEVEL AT 1.7m MINIMUM
- GREY COLOUR CONCRETE DRIVEWAY AND PATHS
- PERMEABLE DRIVEWAY SURFACE CONSTRUCTED AT NATURAL GRADE.
- 2000 X 2500 SIGHT TRIANGLES AS REQUIRED BY AS2890.1-2004.
- CLOTHESLINE.
- NEW 1950MM HEIGHT PAILING FENCE.(UNLESS NOTED OTHERWISE)
- EXISTING EASEMENT
- TREE 1 ENCROACHMENT.
- TREE 2 ENCROACHMENT.
- PROJECT SET OUT POINT.
- PIT DRAIN.

AREA CALCULATION

GROSS FLOOR AREA:

STABLE:	510 M²
BREAK OUT:	60 M²
WC:	15 M²
OFFICE:	15 M²
STORAGE:	175 M²



1 GA GROUND FLOOR PLAN
1 : 200

REV	DATE	REVISION	BY	CHK
1	17/02/2025	PRELIMINARY		

NOTES

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JOB N°	XXXX
REVISION N°	1
DATE	17/02/2025
SCALE	As indicated @ A1
DRAWN BY	Author
CHECKED BY	Checker

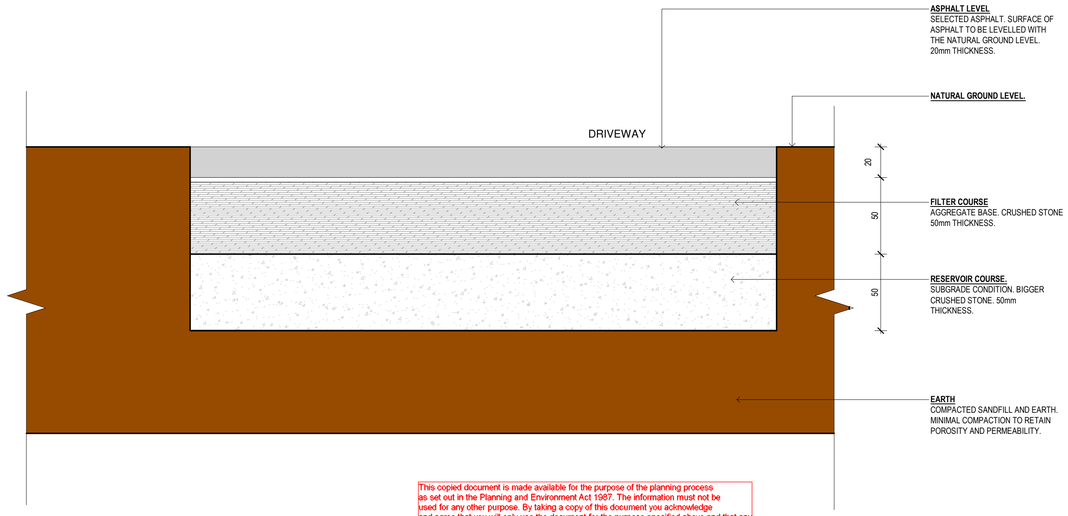
DRAWING TITLE
GA GROUND FLOOR PLAN

HAI STUDIO
ARCHITECTURE | INTERIOR DESIGN | BRAND VISUALISATION

PROJECT
HORSE FARM
BOURKE RD, NAR NAR GOON VIC 3812
FARM DEVELOPMENT

DRAWING STATUS
PRELIMINARY

TP1000



1 DRIVEWAY ASPHALT DETAILS.
1 : 2

REV	DATE	REVISION	BY	CHK
1	17/02/2025	PRELIMINARY		

REV	DATE	REVISION

NOTES CHK

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DRAWN BY	Author
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DRAWING TITLE
ASPHALT SECTION DETAILS.

HAI STUDIO
ARCHITECTURE | INTERIOR DESIGN | BRAND VISUALISATION

PROJECT
HORSE FARM
BOURKE RD, NAR NAR GOON VIC 3812
FARM DEVELOPMENT

DRAWING STATUS
PRELIMINARY

TP1001

GENERAL LEGEND

- PROPOSED TREES
- TREE PROTECTION ZONE.
- H/W — LOCATION OF HABITABLE WINDOW
- NH/W — LOCATION OF NON-HABITABLE WINDOW
- OBS — WINDOW WHICH HAVE FIXED OBSCURE GLAZING TO A HEIGHT OF MIN. 1700MM ABOVE FLOOR LEVEL.
- CONCRETE PAVERS
- 75.50 — EXISTING SPOT LEVEL
- RL 69.81 — PROPOSED SPOT LEVEL
- 1. — MAIL BOX WITH DWELLING NUMBER REFERENCE. MAX 900MM (230mm W x 330mm D x 160mm H)
- EM — ELECTRICITY SWITCHBOARD / METERING ENCLOSURE
- HWU — HOT WATER UNIT
- G/W — GAS & WATER METERS LOCATION
- HIGH WIN. — WINDOWS WITH SILL LEVEL AT 1.7m MINIMUM
- GREY COLOUR CONCRETE DRIVEWAY AND PATHS
- PERMEABLE DRIVEWAY SURFACE CONSTRUCTED AT NATURAL GRADE.
- 2000 X 2500 SIGHT TRIANGLES AS REQUIRED BY AS2890.1-2004.
- CLOTHESLINE.
- NEW 1950MM HEIGHT PAILING FENCE.(UNLESS NOTED OTHERWISE)
- EXISTING EASEMENT
- TREE 1 ENCROACHMENT.
- TREE 2 ENCROACHMENT.
- PROJECT SET OUT POINT.
- PIT DRAIN.

SITE CUT.

SCHEDULE OF MATERIALS & FINISHES

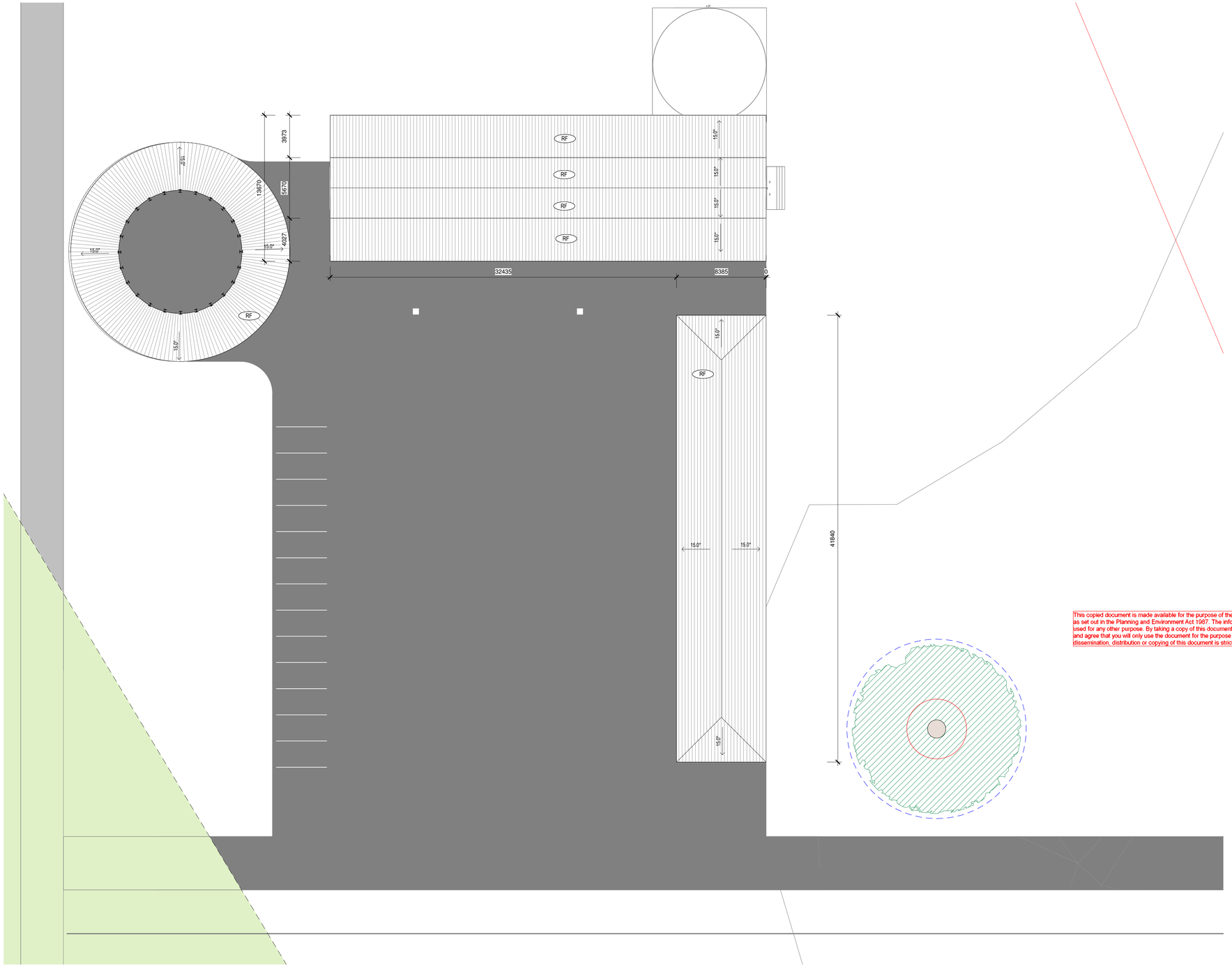
- LOV. — ALUMINIUM LOUVRE TO DETAIL
- TM — TIMBER COLOR **-BLACK BUTT TIMBER**
- CB — COLORBOND **-COLOUR SURFMIST WITH MATT-FINISH**
- RF — ROOF SHEET **-COLOUR BASALT WITH MATT-FINISH**
- R — CONCRETE ROOF TILE **-MONIER HORIZON SAMBUCA**
- MT — BLACK POWDERCOATED METAL TO BALUSTRADE & FRONT FENCES.
- WF — **COLOUR: TO MATCH EXTERIOR WALL COLOR** - ALUMINIUM WINDOW FRAMES (TYP.)
- PT — EXTERNAL WALL WITH SELECTED COLOUR: "LIGHT BEIGE" OR SIMILAR
- OBS — GLAZING - OBSCURED GLASS WHICH HAS MIXIMUM OF 25% TRANSPARENCY
  NOTE: GLAZING SHALL BE CLEAR GLASS (GL) UNLESS NOTED AS **OBS.**

ACRONYM:

AVE.	AVERAGE	GF CL	GROUND FLOOR CEILING LEVEL
AFFL.	ABOVE FINISHED FLOOR LEVEL	1F	FIRST FLOOR
GF FFL	GROUND FLOOR FINISHED FLOOR LEVEL	BF	SEMI BASEMENT FLOOR
		MF	MEZZANINE FLOOR

NOTE:

PROPOSED LANDSCAPE FEATURES NOT SHOWN (EXCEPT CANOPY TREES) FOR CLARITY.



1 ROOF PLAN
1 : 200

REV	DATE	REVISION	BY	CHK
1	17/02/2025	PRELIMINARY		

NOTES CHK

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DRAWING TITLE
ROOF PLAN

HAI STUDIO
ARCHITECTURE | INTERIOR DESIGN | BRAND VISUALISATION

PROJECT
HORSE FARM
BOURKE RD, NAR NAR GOON VIC 3812
FARM DEVELOPMENT

DRAWING STATUS
PRELIMINARY

TP1010

SITE CUT.

SCHEDULE OF MATERIALS & FINISHES

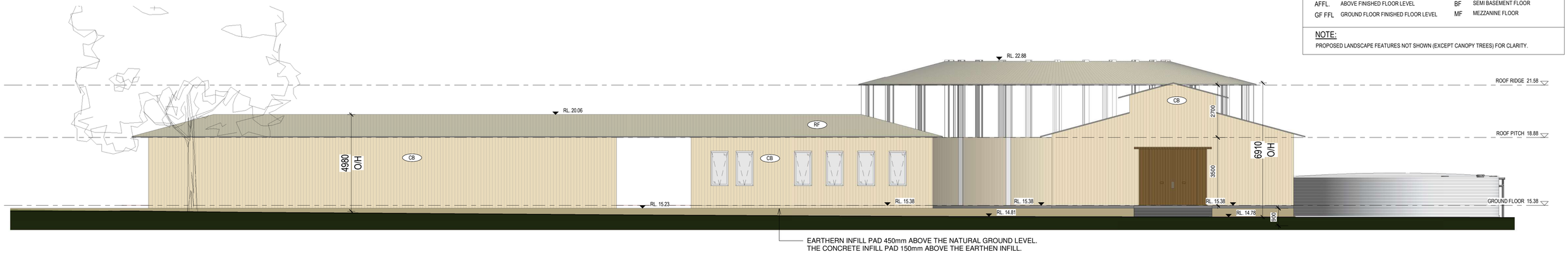
LOV.	ALUMINIUM LOUVRE TO DETAIL	
TM	TIMBER COLOR **-BLACK BUTT TIMBER**	
CB	COLORBOND **-COLOUR SURFMIST WITH MATT-FINISH**	
RF	ROOF SHEET **-COLOUR BASALT WITH MATT-FINISH**	
R	CONCRETE ROOF TILE **-MONIER HORIZON SAMBUCA**	
MT	BLACK POWDERCOATED METAL TO BALUSTRADE & FRONT FENCES.	
WF	**COLOUR: TO MATCH EXTERIOR WALL COLOR** - ALUMINIUM WINDOW FRAMES (TYP.)	
PT1	EXTERNAL WALL WITH SELECTED COLOUR: "LIGHT BEIGE" OR SIMILAR	
OBS	GLAZING - OBSCURED GLASS WHICH HAS MIXIMUM OF 25% TRANSPARENCY NOTE: GLAZING SHALL BE CLEAR GLASS (GL) UNLESS NOTED AS **OBS.**	

ACRONYM:

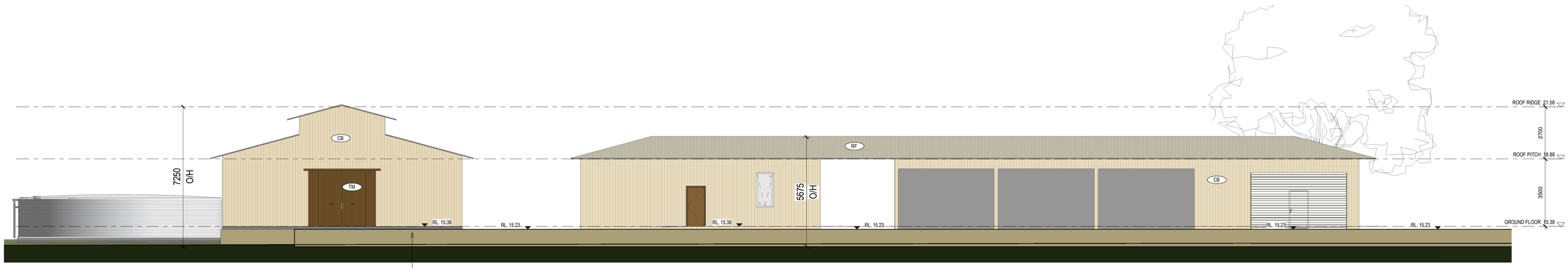
AVE.	AVERAGE	GF CL	GROUND FLOOR CEILING LEVEL
AFFL.	ABOVE FINISHED FLOOR LEVEL	1F	FIRST FLOOR
GF FFL	GROUND FLOOR FINISHED FLOOR LEVEL	BF	SEMI BASEMENT FLOOR
		MF	MEZZANINE FLOOR

NOTE:

PROPOSED LANDSCAPE FEATURES NOT SHOWN (EXCEPT CANOPY TREES) FOR CLARITY.



4 PROPOSED NORTH ELEVATION
1 : 100



1 PROPOSED SOUTH ELEVATION
1 : 100

REV	DATE	REVISION	BY	CHK
1	17/02/2025	PRELIMINARY		

REV	DATE	REVISION

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DRAWING TITLE

PROPOSED ELEVATIONS

HAI STUDIO
ARCHITECTURE | INTERIOR DESIGN | BRAND VISUALISATION

PROJECT

HORSE FARM

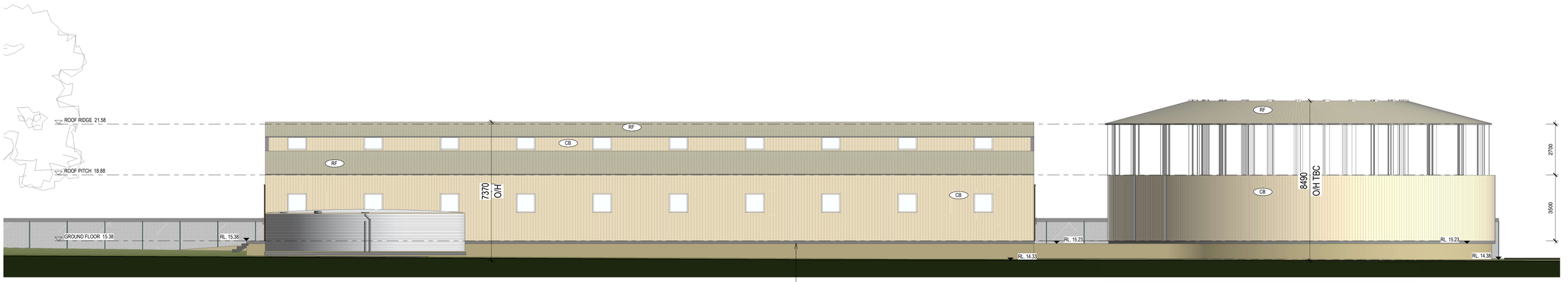
BOURKE RD, NAR NAR GOON VIC 3812

FARM DEVELOPMENT

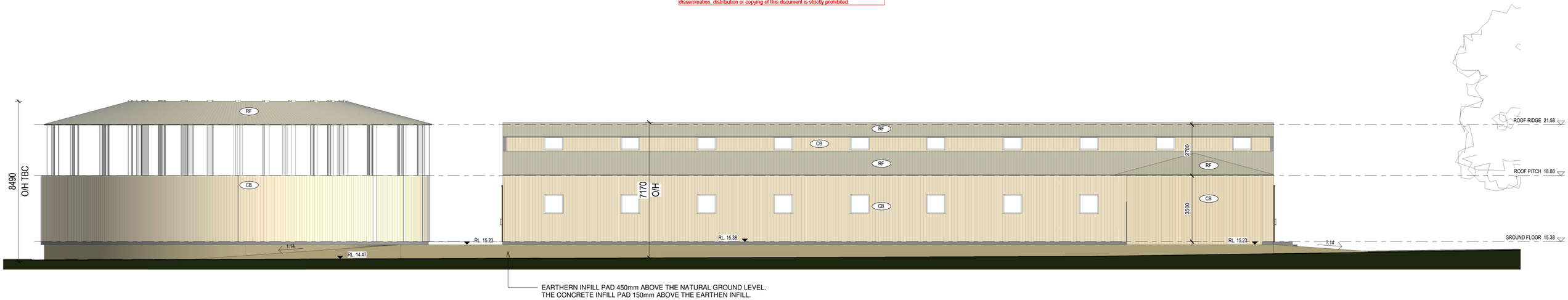
DRAWING STATUS

TOWN PLANNING

TP1100



2 PROPOSED WEST ELEVATION
1 : 100



1 PROPOSED EAST ELEVATION
1 : 100

REV	DATE	REVISION	BY	CHK
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REV	DATE	REVISION

NOTES

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DRAWING TITLE
PROPOSED ELEVATIONS

HAI STUDIO
ARCHITECTURE | INTERIOR DESIGN | BRAND VISUALISATION

PROJECT
HORSE FARM
BOURKE RD, NAR NAR GOON VIC 3812
FARM DEVELOPMENT

DRAWING STATUS
TOWN PLANNING

TP1101