Pyrenees Shire Council

Planning Enquiries
Phone: (03) 5382 9777
Web: www.pyrenees.vic.gov.au

Office Use Only

VicSmart: **No**

Specify class of VicSmart application:

Application No: **REFPA20240144**

Date Lodged: **12/12/2024**

Application for
Planning Permit

If you need help to complete this form, read How to complete the Application for Planning Permit form.

⚠ Any material submitted with this application, 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*. If you have any concerns, please contact Council's planning department.

⚠ **Questions marked with an asterisk (*) are mandatory and must be completed.**

⚠ **If the space provided on the form is insufficient, attach a separate sheet.**

Application type

Is this a VicSmart Application?* No

If yes, please specify which VicSmart class or classes:

⚠ If the application falls into one of the classes listed under Clause 92 or the schedule to Clause 94, it is a VicSmart application

Pre-application meeting

Has there been a pre-application meeting with a Council planning officer? **False**

If 'yes', with whom?:

Date: day / month / year

The Land ⓘ

Address of the land. Complete the Street Address and one of the Formal Land Descriptions.

Street Address*

Unit No:	St. No:	St. Name: **ELLIS ROAD**

Suburb/Locality: **BEAUFORT** Postcode: **3373**

Formal Land Description*
Complete either A or B

⚠ This information can be found on the certificate of title.

A Lot No: **1** ○ Lodged Plan ○ Title Plan ○ Plan of Subdivision No: **TP567841Y**

OR

B Crown Allotment No: **60k (PT)** Section No:

Parish/Township Name: **TRAWALLA**

If this application relates to more than one address, please attach details.

The Proposal

⚠ You must give full details of your proposal and attach the information required to assess the application. Insufficient or unclear information will delay your application.

ⓘ For what use, development or other matter do you require a permit?*

Residential house and associated outbuildings.

Provide additional information on the proposal, including: plans and elevations; any information required by the planning scheme, requested by Council or outlined in a Council planning permit checklist; and if required, a description of the likely effect of the proposal.

ⓘ Estimated cost of development for which the permit is required*

Cost **$800,000.00**

⚠ You may be required to verify this estimate
Insert '0' if no development is proposed

Insert '0' if no development is proposed (eg. change of use, subdivision, removal of covenant, liquor licence)

Existing Conditions ⓘ

Describe how the land is used and developed now*

Eg. vacant, three dwellings, medical centre with two practitioners, licensed restaurant with 80 seats, grazing.

Empty lot with a existing 40 foot storage container.

Provide a plan of the existing conditions. Photos are also helpful.

Title Information ⓘ

Encumbrances on title*

If you need help about the title, read: How to complete the Application for Planning Permit form

Does the proposal breach, in any way, an encumbrance on title such as a restrictive covenant, section 173 agreement or other obligation such as an easement or building envelope?

- ◯ Yes. (if 'yes' contact Council for advice on how to proceed before continuing with this application.)
- ◯ No
- ◯ Not applicable (no such encumbrance applies).

Provide a full, current copy of the title for each individual parcel of land forming the subject site.
(The title includes: the covering 'register search statement', the title diagram and the associated title documents, known as 'instruments' eg restrictive covenants.)

Applicant and Owner Details ⓘ

Provide details of the applicant and the owner of the land.

Applicant *

The person who wants the permit

Name:
Title:
First Name: **Louise**
Surname: **Worth**
Organisation (if applicable): **Lddesign**
Postal Address
Unit No: **Level 4**
St. No: **60**
If it is a PO Box, enter the details here:
St. Name: **Moorabool Street**
Suburb/Locality: **Geelong**
State: **Victoria**
Postcode: **3220**

Owner *

The person or organisation who owns the land

Name:
Title: **Mr**
First Name: **MATTHEW**
Surname: **MARTIN**
Organisation (if applicable):

Where the owner is different from the applicant, provide the details of that person or organisation.

Postal Address

If it is a PO Box, enter the details here:

[redacted]

day / month / year

Information Requirements

Is the required information provided?

Contact Council's planning department to discuss the specific requirements for this application and obtain a planning permit checklist.

- ○ Yes
- ○ No

Declaration ⓘ

This form must be signed by the applicant*

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

I declare that I am the applicant; and that all the information in this application is true and correct and the owner (if not myself) has been notified of the permit application.

Signature:

Date:12 December 2024

day / month / year

Checklist ⓘ

Have you:

- ☐ Filled in the form completely?
- ☐ Paid or included the application fee?

⚠ Most applications require a fee to be paid. Contact Council to determine the appropriate fee.

Provided all necessary supporting information and document?

- ☐ A full and current copy of the information for each individual parcel of land forming the subject site.
- ☐ A plan of existing conditions.
- ☐ Plans showing the layout and details of the proposal.
- ☐ Any information required by the planning scheme, requested by council or outlined in a council planning permit checklist.
- ☐ If required, a description of the likely effect of the proposal (eg traffic, noise, environmental impacts).

Lodgement ⓘ

Lodge the completed and signed form and all documents with:

Pyrenees Shire Council
5 Lawrence Street BEAUFORT Vic 3373

Telephone: (03) 5349 1100

Contact information:
Telephone: (03) 5349 1100
Email: pyrenees@pyrenees.vic.gov.au

PLANNING PROPERTY REPORT

Department of Transport and Planning

From www.planning.vic.gov.au at 24 November 2025 02:33 PM

PROPERTY DETAILS

Address:	**ELLIS ROAD BEAUFORT 3373**
Lot and Plan Number:	**Lot 1 TP567841**
Standard Parcel Identifier (SPI):	**1\TP567841**
Local Government Area (Council):	**PYRENEES** www.pyrenees.vic.gov.au
Council Property Number:	**608009920**
Planning Scheme:	**Pyrenees** Planning Scheme - Pyrenees
Directory Reference:	**Vicroads 57 H9**

UTILITIES

Rural Water Corporation:	**Southern Rural Water**
Urban Water Corporation:	**Central Highlands Water**
Melbourne Water:	**Outside drainage boundary**
Power Distributor:	**POWERCOR**

STATE ELECTORATES

Legislative Council:	**WESTERN VICTORIA**
Legislative Assembly:	**RIPON**

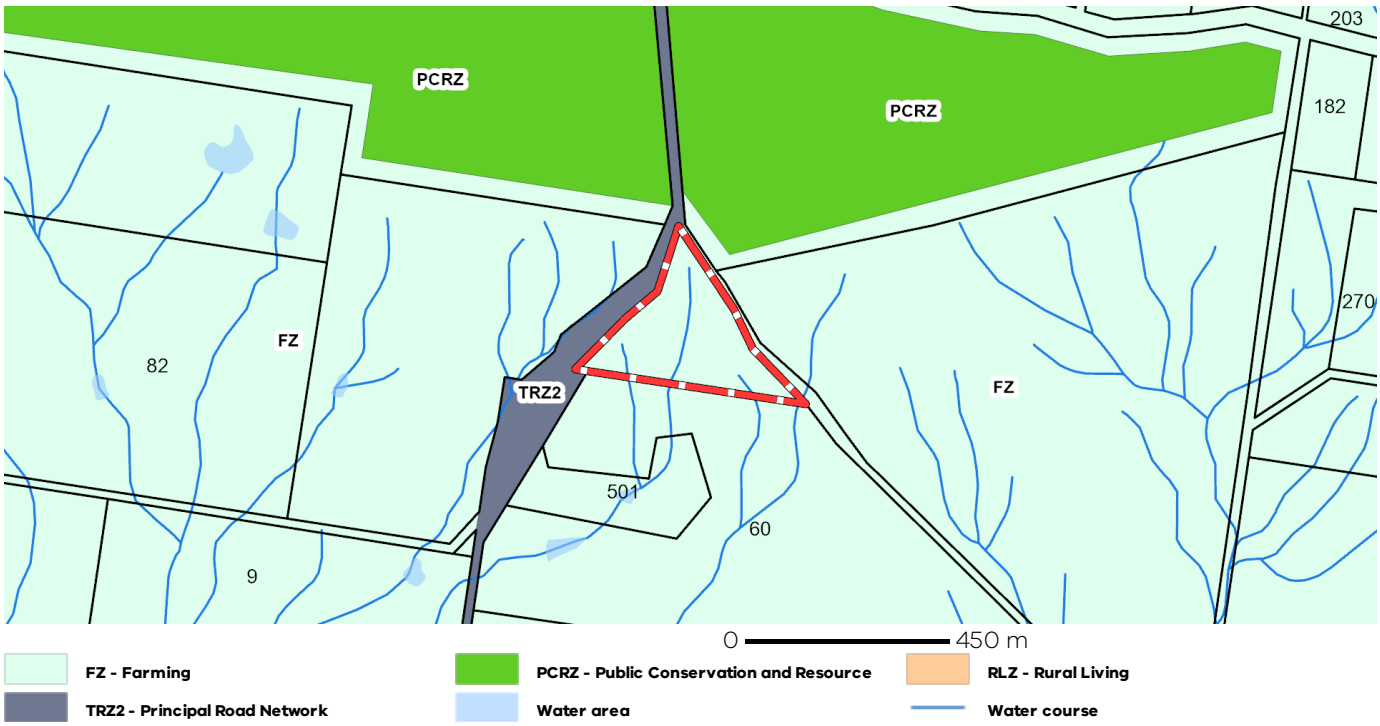
OTHER

Registered Aboriginal Party:	**Wadawurrung Traditional Owners Aboriginal Corporation**
Fire Authority:	**Country Fire Authority**

View location in VicPlan

Planning Zones

FARMING ZONE (FZ)
SCHEDULE TO THE FARMING ZONE (FZ)

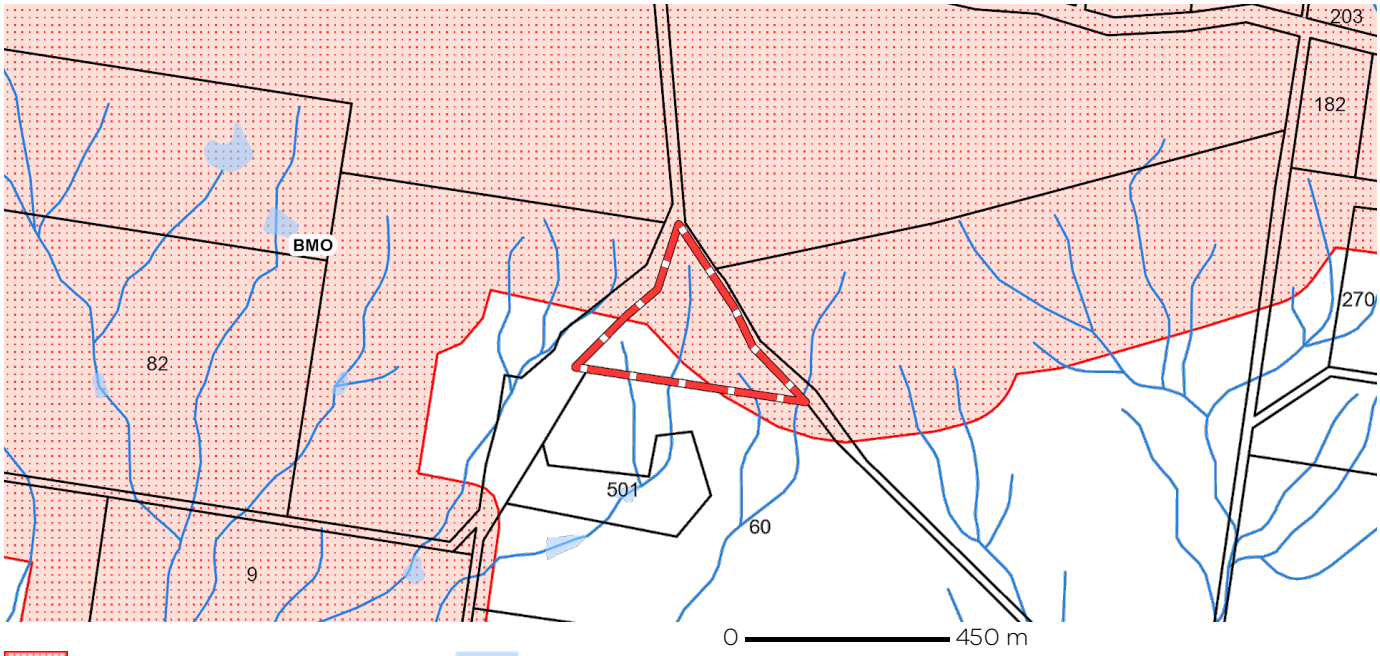


PLANNING PROPERTY REPORT

Department of Transport and Planning

Planning Overlay

BUSHFIRE MANAGEMENT OVERLAY (BMO)



BMO - Bushfire Management 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

Further Planning Information

Planning scheme data last updated on 14 November 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.vic.gov.au/vicplan/

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

PLANNING PROPERTY REPORT

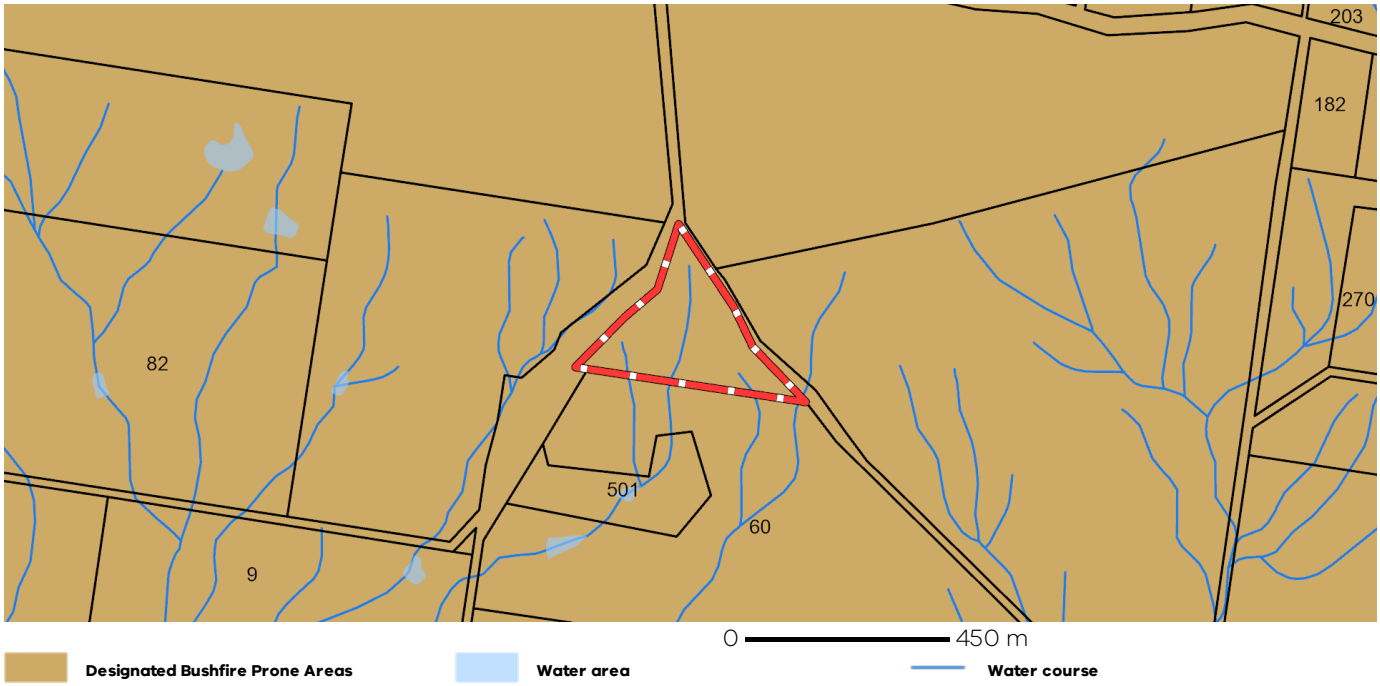
Department of Transport and Planning

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 Victoria 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 Regulations Map (NVR Map) https://mapshare.vic.gov.au/nvr/ and Native vegetation (environment.vic.gov.au) or please contact

NatureKit NatureKit (environment.vic.gov.au)

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

VOLUME 08783 FOLIO 931 Security no : 124120596352M
Produced 12/12/2024 09:57 AM

LAND DESCRIPTION

Lot 1 on Title Plan 567841Y.
PARENT TITLES :
Volume 07839 Folio 014 Volume 08477 Folio 593
Created by instrument D408223 03/06/1969

REGISTERED PROPRIETOR

Estate Fee Simple
Joint Proprietors
JACINTA LEE HEINRICH-MARTIN
MATTHEW JAMES MARTIN both of 31 HOTHAM STREET LAKE WENDOUREE VIC 3350
AU552625G 08/07/2021

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 TP567841Y FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

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

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

Street Address: ELLIS ROAD BEAUFORT VIC 3373

ADMINISTRATIVE NOTICES

NIL

eCT Control 24356W CONVEYANCING PROFESSIONALS PTY LTD
Effective from 17/05/2023

Imaged Document Cover Sheet

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Document Type	**Plan**
Document Identification	**TP567841Y**
Number of Pages (excluding this cover sheet)	**1**
Document Assembled	**12/12/2024 09:57**

LAND MANAGEMENT PLAN

FOR

LOT.1 TP567841

ELLIS ROAD, BEAUFORT

JOB NO: 2751

NR LINKS
Your Planning & Permit Consultants

Ellis Road, Beaufort

Project: 2751

Report prepared by: Julie Lee of Natural Resource Link Pty Ltd Town Planner (MPIA), Post grad.Dip Planning, Post grad Dip Bushfire Planning & Management, Post grad Cert. Regenerative Agriculture,. Dip Conservation and Land Management, Coastal/Water Management and Cert.Horticulture

Julie Lee is a rural planner that is qualified in many areas such as Bushfire Planning, Town Planning, Agroecology (Regenerative Agriculture), Conservation and Land Management, Coastal and Water Management , Horticulture and is a sessional lecturer to the Victorian Planning Institute in Integrated Land Management for Farming zone and Biodiversity.

Natural Resource Link Pty Ltd

ACN 609 952 025

ABN 83 609 952025

P.O. Box 61, Clunes, Vic, 3370

Ph: 0406 459 522

Email: julie@nrlinks.com.au

REV	DATE	DETAILS
	5/8/2025	Final
A	12/11/2025	Add in 10 year Actions, Monitoring Form, Fence and Regeneration Plan

Disclaimer

Natural Resource Link Pty Ltd does not accept any liability for an error, omission or loss or other consequence that may arise from relying on this report. The soil health visual inspection for this report follows the methodology for visual soil inspections by G. Shepherd, Soil Scientist (BioAgrinomics.com New Zealand) Soil testing is by EAL Environmental Analysis Laboratory at [illegible] including general recommendations for [illegible] reflect a brief look of the soils for the [illegible] nd ongoing testing of soils will need to be [illegible] ral in nature and not based on surveys and

Contents

Images

Introduction

This site is zoned Farming Zone and has site constraints to soils and remnant vegetation and an Integrated Land Management Report has been compiled to address the proposed use on site.

A site plan to show buildings and outbuildings

- Zones
- All paddocks and internal fencing
- Dams
- Areas set aside for regeneration/revegetation
- Remnant patches of vegetation
- A site plan showing where revegetation will be located

A summary of each zone to include specific management of each ecological community to include specific management requirements to be undertaken

Locality data and spatial context

The site is within a rural area to the south of the township of Beaufort just below the Andrews State Forest along the Skipton Road. The landscape in the vicinity of this site is large open lot with a mix of Agroforestry and cropping and grazing. There is a mix of undulation across the landscape and there are a few waterways and numerous drainage lines with intact patches of remnant vegetation. The site is currently used for grazing; however, no stock was sighted on the site visit. The paddocks are fenced to separate the open pastures of the west side from the remnant area to the east. The site is 7.57ha in size and there are some smaller parcels of similar size in the landscape.

Image 1 Landscape around site (Source: Landchecker nd)

Image 2 aerial image of the site (Source: Google Earth)

Planning

The site is zoned Farming Zone with Bushfire Management on more than half of the site.

The purpose of the farming zone is :

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To provide for the use of land for agriculture.
- To encourage the retention of productive agricultural land.
- To ensure that non-agricultural uses, including dwellings, do not adversely affect the use of land for agriculture.
- To encourage the retention of employment and population to support rural communities.
- To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision.
- To provide for the use and development of land for the specific purposes identified in a schedule to this zone.

The purpose of the Bushfire Overlay is

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire.
- To identify areas where the bushfire hazard warrants bushfire protection measures to be

he risk to life and property from bushfire

to ensure that it places the house in easy

sk of radiant heat to the area. Human

safety is the highest priority for the siting of a new dwelling. The regeneration on site are outside of the proposed defendable space.

Site history

The site now is like the image of 2005 when it was part of the lot to the south.

Image 3 Site is 2005 with drainage lines (red) (Source: Google Earth 10.02.2005)

Image 4 Site the open areas were planted out (Agroforestry) (Source: Google Earth 19.03.2012)

Image 5 Site cleared of trees and cropped. (Source: Google Earth 16.01.2017)

oogle Earth 20.12.2021)

Geology

Beaufort Formation(-Cab): generic

TEXT_DESCR: Sandstone, mudstone and black shale: sand-poor turbidite facies tectonically modified to phyllite, quartz-mica or graphitic schist; weathered to partly kaolinised; deep marine deposits

Image 7 Soil mapping on site (Victorian Government nd ,Datashare)

The soil on type was a red gradational soil and the study from The Land Capability Study of the Shire of Newham and Woodend notes these soils on site to be Osd and this is what was found on site.

Biodiversity

The biodiversity mapped on site is mostly EVC 20 Heathy Dry Forest which is Least Concern in the CVU Bioregion and on the site survey this would be the case for the site.

nment and Climate Action, 2023)

Risks requiring management

Landform- Soil risks

The site is mapped to be a Sodosol and 2.1Ss6-2 which has the following soil risks for Agriculture:

Shallow stony soils

Compaction	Moderate
Leaching	High
Mass Movement	Nil
Salinisation	Low
Water erosion	High
Water logging	Nil
Wind Erosion	Nil

The issues of erosion, compaction and leaching require attention in the Land Management Plan.

Fire

The site is under a Bushfire Management Overlay and the fire risk should not be increased to a level that is above the capacity of the development. Fire risk is important, and regeneration must not increase the fire risk.

Erosion

These sedimentary soils from sandstone and where there is a lack of ground cover are susceptible to erosion. The site ground cover was good across the site and areas of erosion around the dams were noted from the soil disturbance.

Image 9 Rill erosion of the dam from water

slumped area where the dam is positioned.

Image 11 Erosion along the edge of the dam most likely from stock.

erosion

ture plan and will require attention.

Erosion control

Control of erosion is of imperative importance to protecting the topsoil and ameliorating the risk of exposing often highly dispersive subsoils. Erosion on a farm can be controlled by:

- Increasing diversion banks to spread surface flow more often
- Provide broader disposal points
- Increase friction by introducing vegetation
- Treat the soil with gypsum prior to revegetating the area
- Remove stock from the area with fencing
- Maintaining 90% cover and limiting grazing
- Place rock shutes to allow for runoff from the existing dams
- Provide rock shutes with vegetation to areas that are showing erosion flowing into the dam.
- Control rabbits on site
- Maintain remnant vegetation along gullies and areas of recharge
- Dam gullies and give due consideration to spillways

Estimates of minimum groundcover (%) required to reduce erosion for a range of slope gradients and soil erodibility classes and soil types.
Source: NSW DPI Agfact P2.1.14 January 2005. Maintaining groundcover to reduce erosion and sustain production.

Erodibility	Typical soil types	Flat	Gentle	Moderate	Steep
Low	deep sands	60	80	90	100
Low to moderate	sandy loams, light clays, ferrosols	60	85	95	100
Moderate to high	dermosols, vertosols	65	90	100	100
High	kandosols, sodosols	70	90	100	100
Low to high	drainage lines (all soil types)	100	100	100	100

Image 13 Discussion of slope and soil type in relation of required cover to ameliorate erosion , (Source New South Wales Primary Industries, 2009)

The soil type on site is a sodosol requires a minimum of 70% cover on flat with gentle slopes always

Currently the water flows down onto the lot below and these areas are too wet to crop as shown in these images below.

Image 14 water movement on aerials (Source Google 19.08.2022)

Image 15 Wet areas not cropped on adjacent lot (Source: Google 28.02.2019)

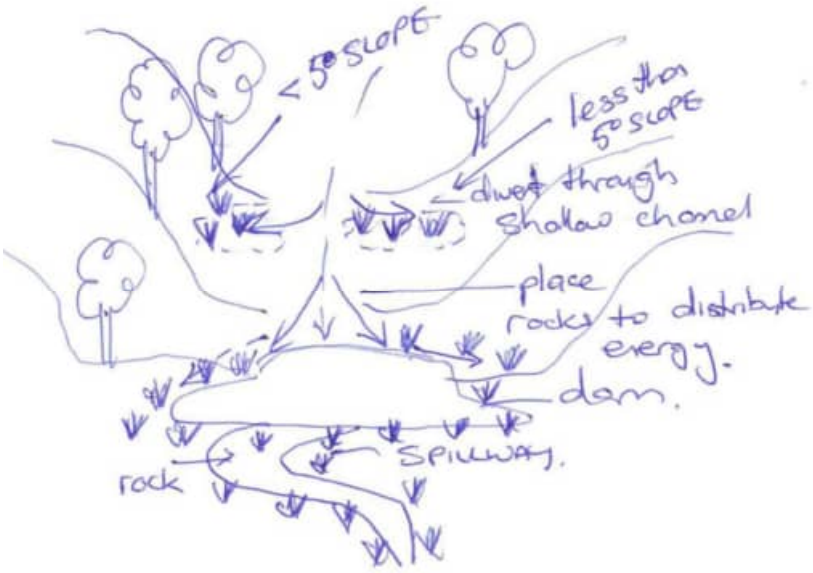
along the drainage lines where sufficient

on

Mitigating Erosion along the drainage line

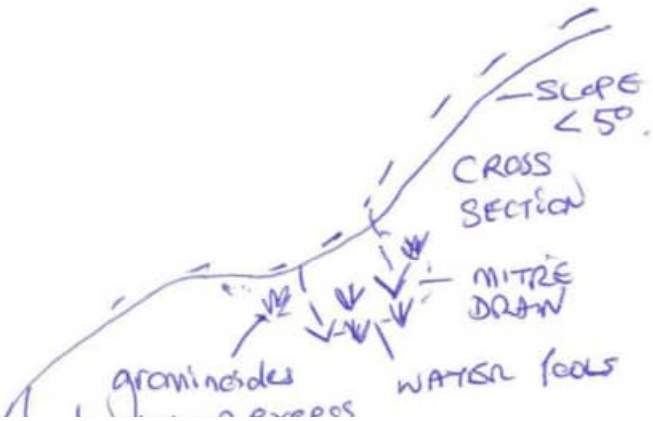
Mitre drains

Mitre drains are surface channels that distribute water to a larger area to the sides of the drain to safely distribute and should be ideally as close together as practical. Ideally less than 50m apart and much closer on steep or in readable soils. The slope of the drain must be less than 5°to avoid scouring and needs to discharge to a safe area. The notated drains are indicative only and not based on site survey levels or designed by an engineer.



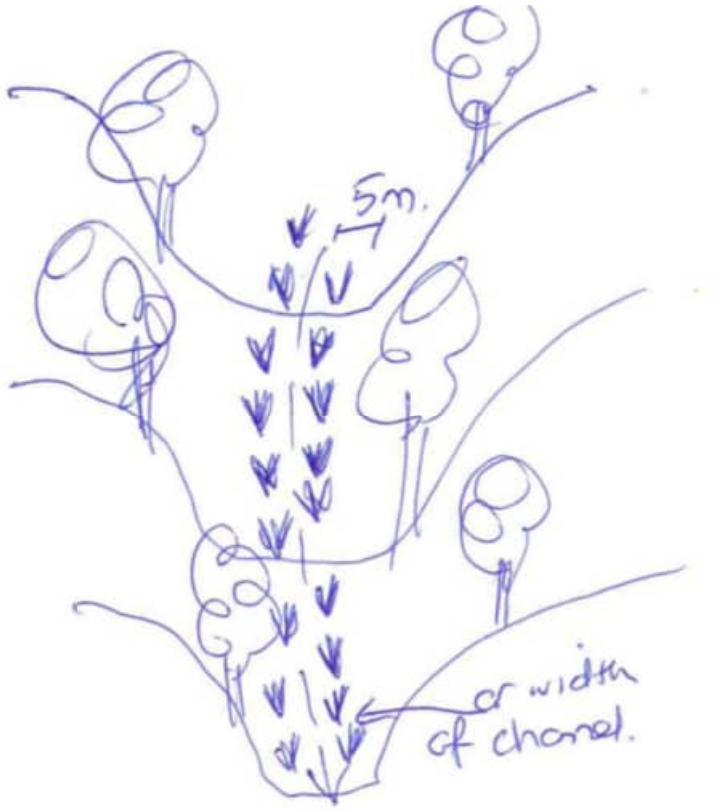
Front section of water running down the drainage line on site indicating appropriate placement of mitre drains and the use of vegetation to dry excess water and filter sediment. High flow concentration areas as the entry and discharge from the dam to use a rock lined spillway.

Image 16 front view of drainage line to dam on site with mitre drains and vegetation.



A cross section of the drainage line whereby the mitre drains to the base of the slope to an area of graminoids (Grass-like plants) where water is used up by the vegetation. The use of graminoids is recommended to the mitre drains to allow the water to discharge to area that is stable against erosion.

nitre drains and vegetation.



It is recommended that the width of grass-like vegetation is planted and maintained to a maximum width of 5m either side of the drainage channel or to the width of the channel.

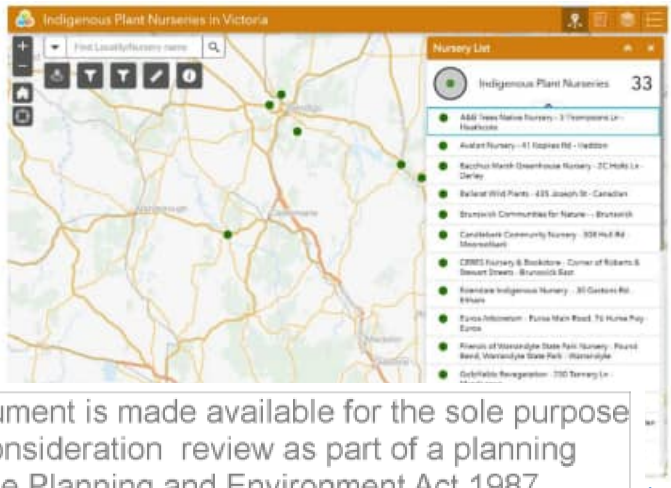
This cover is retained and plants replaced if lost so that a 100% of cover is there to mitigate the loss of soil for all drainage lines on site due to dispersiveness of the sodosols. No vehicle access is allowed to cross the drainage line unless there is an appropriate crossing in place such as rock ford, or culvert.

Image 18 Front view of vegetation in drainage lines

Disclaimer: All details for the mitre drains are general in nature and not based on survey or hydrology calculations by an engineer.

A list of suitable plants will be supplied in Appendix.

Revegetation



This website highlights the locations across Victoria of the Indigenous plant nurseries you can source stock from

lant-nurseries-in-victoria

Regeneration Area.1 is the land around the existing dam and requires graminoids (grass-like plants) to filter sediment and nutrients from entering the waterway. This area is around 0.05ha in size, typically a benchmark area would have at least 5 plants per square metre. However, we are looking to regeneration to a lower realistic condition score of 0.6 (1 being a benchmark). Graminoids should be chosen from EVC 83 (Swampy Riparian Woodland) from the CVU Bioregion.

So 0.6 x 5 x 500 (sqm) = 1500 plants

Regeneration Area 2 is the upper reach of the drainage line north of the dam, which requires graminoids (grass-like plants) to filter sediment and nutrients from entering the waterway. This area is around 0.133ha in size, typically a benchmark area would have at least 5 plants per square metre. However, we are looking to regeneration to a lower realistic condition score of 0.6 (1 being a benchmark).Graminoids should be chosen from EVC 83 (Swampy Riparian Woodland) from the CVU Bioregion.

So 0.6 x 5 x 1330 (sqm) = 4500 plants

Regeneration Area.3 is the land above the existing dam south of the proposed dwelling requires graminoids (grass-like plants) to filter sediment and nutrients from entering the waterway. This area is around 0.03ha in size, typically a benchmark area would have at least 5 plants per square metre. However, we are looking to regeneration to a lower realistic condition score of 0.6 (1 being a benchmark).Graminoids should be chosen from EVC 83 (Swampy Riprian Woodland) from the CVU Bioregion.

So 0.6 x 5 x 300 (sqm) = 900 plants

Regeneration Areas 4 and 5 (Shrubs)-The steep slopes to the east of the existing fence where there is a steep slope it is recommended that this be revegetated to assist in erosion control. The suitable vegetation will be source from Appendix and looks to reproduce 60% of the benchmark of the applicable EVC 20 (Heathy Dry Forest) from the CVU Bioregion.

This area being 0.208ha; typically, typically (1 sqm = 1.5 shrubs) so 0.208= 2080 being the benchmark so at a regeneration value of 0.6 would mean that 2080 x 0.6 1248 plants would be needed for this area These will be planted over two years.

Regeneration Area 6 is the lower reach of the drainage line south of the dam, which requires graminoids (grass-like plants) to filter sediment and nutrients from entering the waterway. This area is around 0.06ha in size, typically a benchmark area would have at least 5 plants per square metre. However, we are looking to regeneration to a lower realistic condition score of 0.6 (1 being a benchmark).Graminoids should be chosen from EVC 83 (Swampy Riparian Woodland) from the CVU Bioregion.

So 0.6 x 5 x 600 (sqm) = 1800 plants

ne to the far west of the property which
nd nutrients from entering the waterway.
rea would have at least 5 plants per square
r realistic condition score of 0.6 (1 being a
wampy Riparian Woodland) from the CVU
Bioregion.

So 0.6 x 5 x 600 (sqm) = 1800 plants

Spillway and rock chute

A rock spillway is to be installed at the end of the drainage line that discharges water from the east side of the site into the dam as shown in the image below.

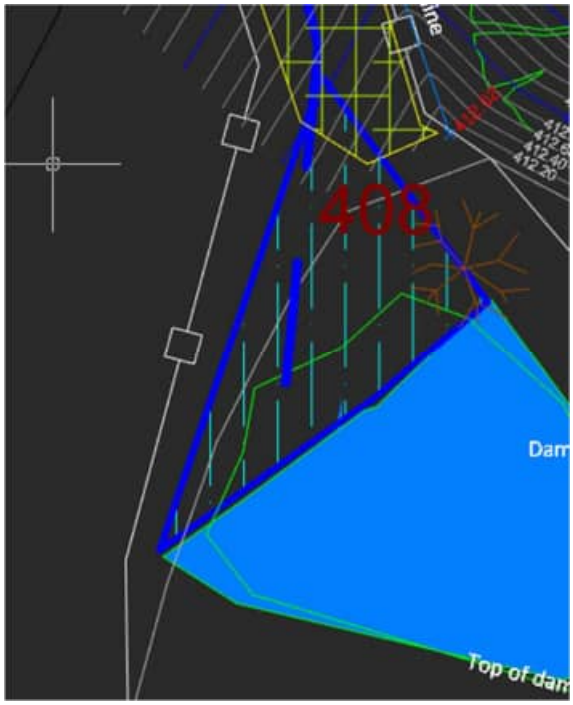


Image. 19 Rock shute to the end of the drainage line in Paddock.10

6. (source: Catchments and creeks 2023)

Disclaimer: All details for the spillway are general in nature and not based on survey or hydrology calculations by an engineer.

The image above demonstrates how the soil is protected by rocks that dissipate the energy flowing from the end of the drainage line into the dam so that it does not continue to erode. You can also plant grass-like plants into this area in pockets to filter debris washing down into the dam this will assist in keeping the water clear.

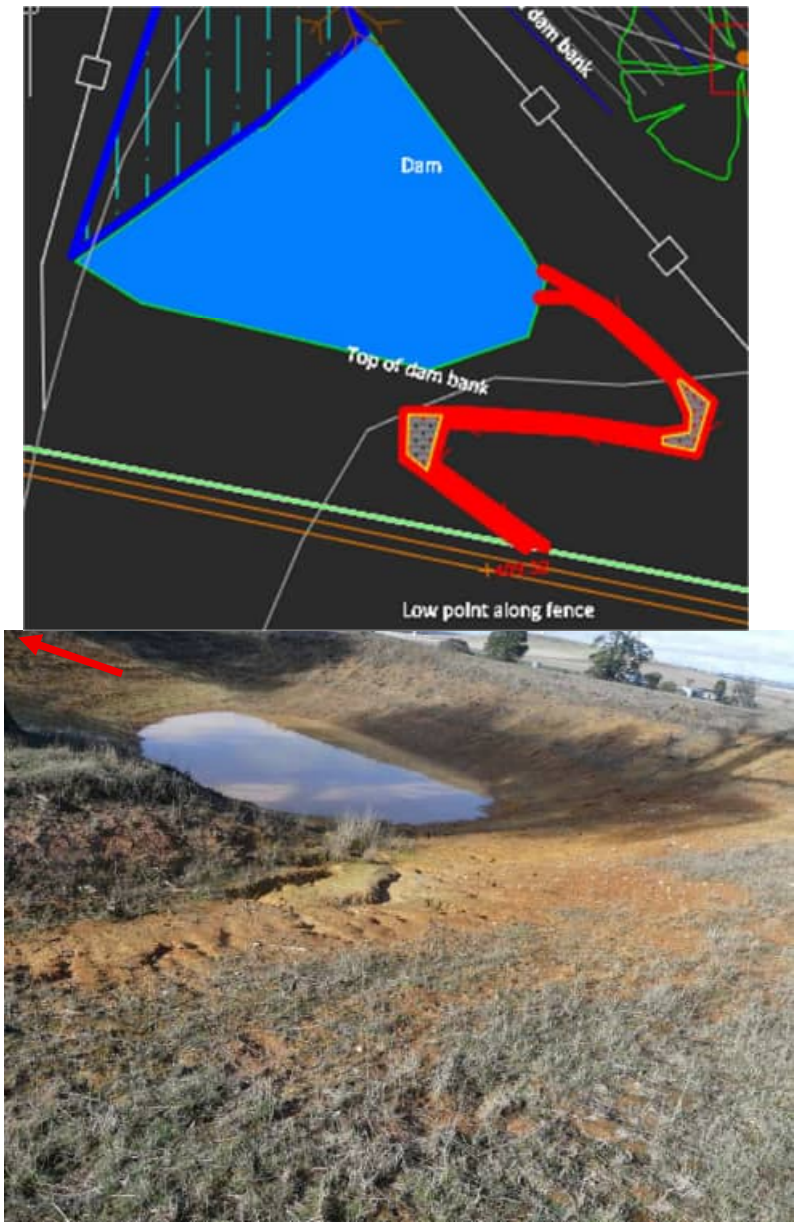


Image 21 Design spillway to the lowest point of the dam and dig a channel to form a twisting line to the low point near the fence as noted in these images.

l to reduce the risk of erosion. Each curve the side and will need more rocks as a

Image 22 Example of a rock spillway to the lowest point in the dam so that water flow out in extreme storm is controlled and does not continue to erode (Source: Proagrimedia, 2022)

should avoid damaging tree roots.

Weeds

The site was managed exceptionally well for weeds and not many were evident on the site visit

Weed Management

Rubus fruiticosa spp.agg (Blackberry)

Description	Life cycle	Status	Dispersal methods
It is a semi-prostrate to almost-erect shrub, with arching and entangling stems arising from a woody crown and forms thickets up to several metres high. The root/crown system is the only perennial part of the plant. Blackberry stems are erect, or semi-erect, canes that arch or trail up to 7 m long. They can be green, purplish or red, smooth or moderately hairy, round or angled, with numerous curved or straight prickles of different sizes and sometimes with small, stalked glands.	**Germination:** Seed germinates September to November. Blackberries can also spread by daughter plants. **Flowering:** December to April **Fruiting:** February to April	**Noxious** Blackberry is an extremely serious agricultural threat, owing to its rapid growth and ability to reproduce through various methods. It is a highly invasive species that will readily establish on disturbed sites and infest large areas. Once established it is expensive to manage and can even be a fire hazard due to large amounts of dead canes.	Blackberry fruit are eaten by birds, foxes and other mammals which distribute seeds over wide areas. Seeds are transported by water along creeks, drains and rivers. Movement of contaminated soil and cultivationand spread blackberry. Infestations increase in size via the formation of daughter plants at the end of canes, up to 6 m from the crown. Blackberry seedlings are not very vigorous in their fist year but after a woody crown is formed, they become firmly established. New canes are produced from the crown each spring and frequently project horizontally for over 3 m from the crown after one growing season.

Distribution across the site

Along waterlines to the north-east corner of the site spreading from the adjacent lot to the north.

Control options within the site

Prescribed measures for the control is:
Application of a registered herbicide
Physical removal
Mulching
Removal along waterways is best undertaken by a registered consultant to avoid any impacts of the herbicide on the aquatic life and water quality.

Scotch Thistle (Onopardum acanthium)

Description	Life cycle	Status	Dispersal methods
Thistles compete with pastures and reduce their carrying capacity. Rosette leaves smother desirable pasture species in spring reducing their early growth. Dense stands of mature thistles create barriers that hinder livestock movement. Parts of the plant can break off causing vegetable fault and thus a loss in value for the wool. Thistles can cause injury to livestock and people handling the livestock or fleece. Thistles are prolific seeders and can spread quickly if not controlled. Once established thistles are difficult and expensive to control. Dense thistle populations can reduce property values. Scotch thistle is an erect annual or biennial herb to 2 m high, commonly 1 to 1.2 m. Generally one main stem with numerous branches, covered with dense, appressed, woolly hairs giving it a whitish-grey appearance. It has broad spiny wings along the stems.	**Germination:** Summer-Autumn and Winter to Spring **Flowering:** Late Spring to Summer **Fruiting:** August to Septmber	Environmental weed	Spread by by the wind seed or seed clings to stock. Can re grow from roots.

Distribution across the site

Minor infestation on site in shady sites in open or more moist areas. It is imperative to check the waterway.

Control options within the site

rbicide spray especially prior to flowering to
on. Isolated plants should be removed using a hoe
grubbing). Remove as much of the taproot as
h does not occur. Cultivation is effective on
tes if they are uprooted.

Weed Name	Form	Control Measure	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	As req
Scotch Thistle	Seedlings	Hand removal													
	Mature	Spray herbicide													
Blackberry	Seedling	Spray Herbicide													
	Mature	Cut and Paste													

Pest Animals

There was no evidence of Rabbit or Fox holes being seen on the site inspection. However vigilance to monitor and manage levels in the future is required.

Dam Management

There is a dam located to the centre of the lot and is surrounded by fencing and has trees for shade.

It is proposed to increase graminoids (grass-like plants) in this area to protect water quality, provide habitat and mitigate sediment.

Image 24 Dam on site- South Paddock

Fauna

Amphibians that rely on this habitat

A list of species and handout on this will assist the landowner in managing this long term.

There are many amphibians that are listed within a 5km search of the site on the Atlas of Living Australia that rely on good intact riparian habitat and dams.

Species Name	Vernacular Name	Number of records	EPBC Act Threatened Species	Victoria : Conservation Status
Crinia signifera	Common Froglet	43		
Litoria ewingii	Brown Tree Frog	29		
Limnodynastes dumerilii	Eastern Banjo Frog	19		
Crinia parinsignifera	Eastern Sign-bearing Froglet	11		
Limnodynastes tasmaniensis	Spotted Marsh Frog	3		
Litoria raniformis	Southern Bell Frog	2	Vulnerable	Vulnerable
Limnodynastes peronii	Striped Marsh Frog	2		
Pseudophryne bibronii	Brown Toadlet	1		Endangered
Geocrinia victoriana	Eastern Smooth Frog	1		

Image 26 List of Amphibians within 5km of the site (Source Belbin L, Wallis E, Hobern D, Zerger A (2021))

Striped Marsh Frog

A large species of frog that can reach up to 7.5 cm in body length. It has a brown back with dark brown longitudinal stripes and sometimes a cream coloured or reddish stripe along the middle. There is a pale trip from under the eye to the top of the arm. The belly is white and the male has a pale-yellow throat with brown mottling. The pupil is horizontal, and this iris is gold. Fingers and toes are unwebbed, both without discs. The male is distinctly larger forearms than the female.

Eggs are laid as a foamy mass on the surface of

ter bodies and can take seven to eight

mn

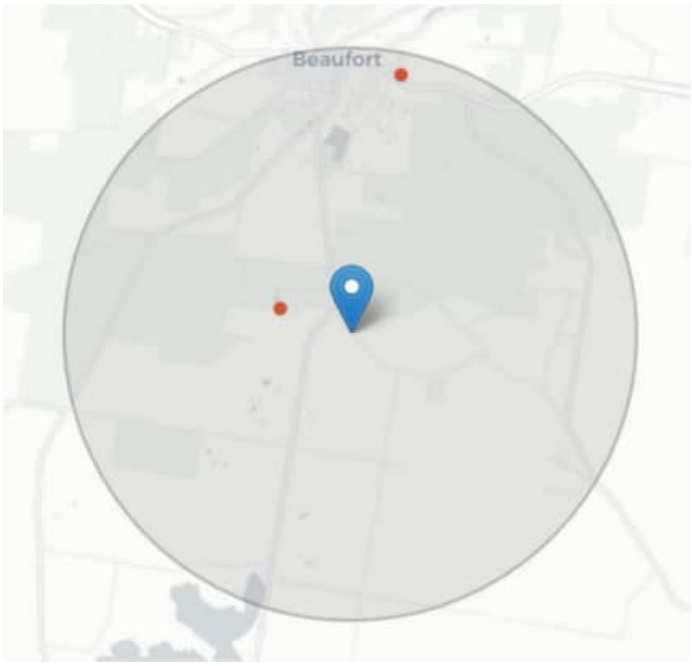


Image 27 Record of the Striped Marsh Frog (Source Belbin L, Wallis E, Hobern D, Zerger A (2021))

What you need to manage?

- Revegetate riparian areas and dams
- Fence riparian area from stock.
- Control pest animals such as cats and foxes.

Bird Species that rely on this habitat

There is a large amount of Bird species listed within 5km of the site and many rely heavily on the woodlands on site.

Grey Goshawk

The Grey Goshawk *Accipiter novaehollandiae* is a medium sized raptor that inhabits a variety of **wet forest types** in Australia. The Grey Goshawk is the largest Accipiter in Australia with an overall length between 40 and 55 cm and wingspan of 70 to 110 cm. Female Grey Goshawks are almost twice as heavy as males (Baker-Gabb 1984; Olsen et al. 1990).

Why is your site valuable?

Throughout its range the Grey Goshawk generally **favours tall, wet forests, particularly in gullies, for roosting and hunting**. It depends on **mature forests for breeding**, rarely using forest regrowth less than 30 years old They are also seen in woodlands, dry forests, wooded farmlands and suburban parks below altitudes of 500 m. Nest sites are found in a limited range of habitats and tree types, being largely confined to wet forested areas and are likely to be selected according to the availability of food. Nests are usually high in the canopy, placed in major forks next to the trunk or on horizontal branches with an easterly aspect to receive the morning sun and shelter from prevailing winds. Nesting takes place from August to November.

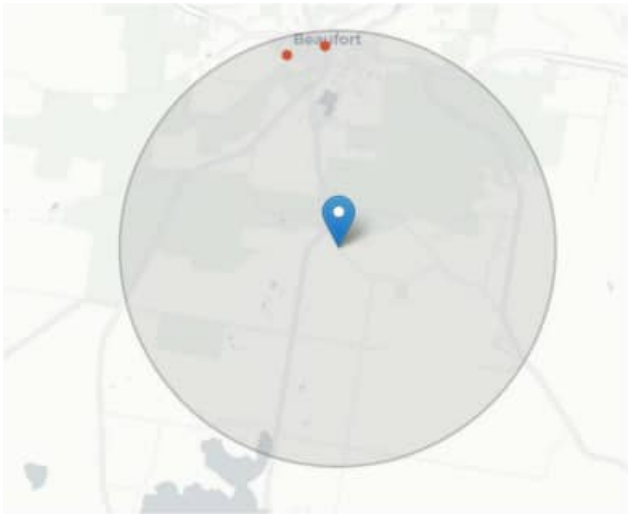


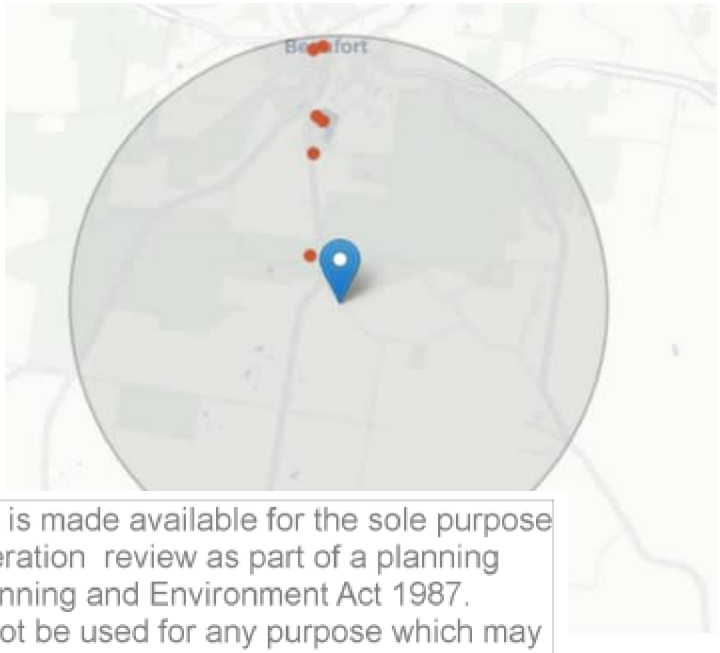
Image 28 recorded sightings (2) of the **Endangered Grey Goshawk** near the site (Source: Belbin L, Wallis E, Hobern D, Zerger A (2021)

What you need to manage?

- Protect habitats on private land known to support Grey Goshawk through voluntary agreements (e.g. Trust for Nature covenants, Land for Wildlife Scheme) and local planning schemes if necessary.
- Review for nest sites or potential nest sites on their property to ensure long-term protection of such sites, eg, through Biodiversity Action Planning or Living Landscapes planning.
- Retain all hollow bearing trees on site.
- Water sites must be maintained during drought periods for all bird species- such as ceramic dish that are kept clean.
- Post fire all hollow bearing trees to be tagged and guards placed to stop arboreal mammals from gaining access to trees and predating on bird species.
- Locate, monitor and protect all known Grey Goshawk habitat sites within the site in Spring for nests.
- Seek an alternative or methodology to avoid loss of other species by poisoning feral animals on site. Professional advice is imperative to avoiding impacts to all bird species on site.

Little Eagle

Little Eagles are small, powerful and stocky (45-55 cm) birds of prey with a wingspan of more than 1 m. They have a long tail that is square cut at the tip when it is closed. Legs are heavily feathered, and the feet and talons are powerful. The species' plumage ranges from light to dark brown, with a short crest with a distinctive underwing 'M' in the light morph and a pale, broken 'M' across the upperparts. Little Eagles are carnivorous, eating mainly rabbits, birds and reptiles. Little Eagles catch prey on the ground by dropping onto it from a prominent perch or from a glide; only rarely is food caught in flight (Emison et al. 1987). The species is heavily dependent on rabbits especially in non-arid areas, but following the spread of rabbit calicivirus disease, and consequent decline in rabbit numbers by 65-85% in the arid and semi-arid zones, the Little Eagle is likely to be increasingly dependent on native prey in the inland. It is difficult to evaluate the level of threat posed by Pindone used to poison rabbits. Based on toxicity studies with Wedge tailed Eagles, it seems likely that some rabbit carcasses contain sufficient toxin to kill a Little Eagle. However Little Eagles take mainly juvenile rabbits (as live prey) and for effectiveness, rabbit control is preferably timed to avoid the season when juveniles are present Pindone is freely available and understood to be used by many landholders through the range of the Little Eagle



Source: Belbin L, Wallis E, Hobern D, Zerger A (2021)

What you need to manage?

- Retain old growth trees on site especially dead ones for perching
- Control pest animals such as cats and foxes.
- Report any sightings on the Atlas of Living Australia
- Be aware if using poisons to control pest animals that can have an impact on larger raptors and chose a control that avoids poisons.

WARNING

Secondary poisoning from anticoagulants including Pindone (2-pivalyl, 3-indandione) and 1080 (sodium fluoroacetate) used to control rabbits may disable raptors and/or be fatal to them.

Image.30. Dead tree on site

Dead trees are ideal perching sies for raptors (eagles, kites) and should be retained on site

Speckled Warbler

The crown of the Speckled Warbler is black with buff streaks. Between the crown and the white eyebrow is a line that is black in the males and chestnut in the females, the only difference between the two. The dark red eye is prominent in the pale face. The back is mottled dark brown but the underparts are cream with bold black streaks. When it flies, its tail shows a black band with a white tip.

This species is listed as Endangered in Victoria.

Why is your site valuable?

The Speckled Warbler lives in dry sclerophyll forests and woodlands (woodlands have fewer trees than forests) dominated by eucalypts. It is mostly seen on the grassy ground layer, when it is foraging.

Feeding:

The Speckled Warbler feeds on the ground, probing the leaf litter for insects. It will also eat seeds. It feeds in pairs or small parties up to 6 in number. Occasionally it is seen in mixed feeding flocks with several types of thornbills.

Breeding:

The Speckled Warbler breeds either in pairs or trios of one female and two males, although the second male does not help at the nest. The group defends a territory and the pair bond usually lasts several years. Sometimes several family groups form small flocks over the winter.

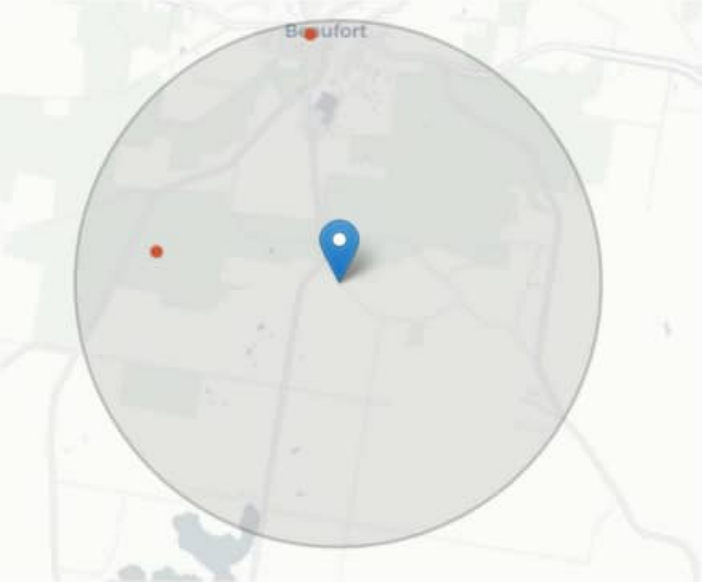


Image 31 recorded sightings (2)of **Endangered Speckled Warbler** near the site (ALA sourced 3/2/2023)

What you need to manage?

- Retain leaf litter in the woodlands outside of the defendable space.
- Manage domestic species on site, especially cats that are best kept in a pen.

Powerful Owl

The largest of Australia's owls, the Powerful Owl usually inhabits the **moist forests** of eastern Australia. Its main item of prey is possums of various species, though large bats such as flying foxes are also often caught. They roost by day, perched in the dense shade of a tree, often with the previous night's prey held in their talons; this is when Powerful Owls are seen most often. The Powerful Owl is a large owl with a relatively small head and a rounded tail. It is dark grey to dark

w, with distinctive dark v-shaped chevrons. The legs are feathered and the yellow to alike but the female is smaller, with a narrower head. Juvenile birds are downy white on the head and underparts, the underparts are

sparsely streaked, and they have much shorter tails than the adults. Powerful Owls are the largest of the Australian nocturnal birds (night birds). The Powerful Owl is found in open forests and woodlands, as well as along sheltered gullies in wet forests with dense understoreys, especially along watercourses. Will sometimes be found in open areas near forests such as farmland, parks and suburban areas, as well as in remnant bushland patches. Needs old growth trees to nest and is **listed as Vulnerable in Victoria.**

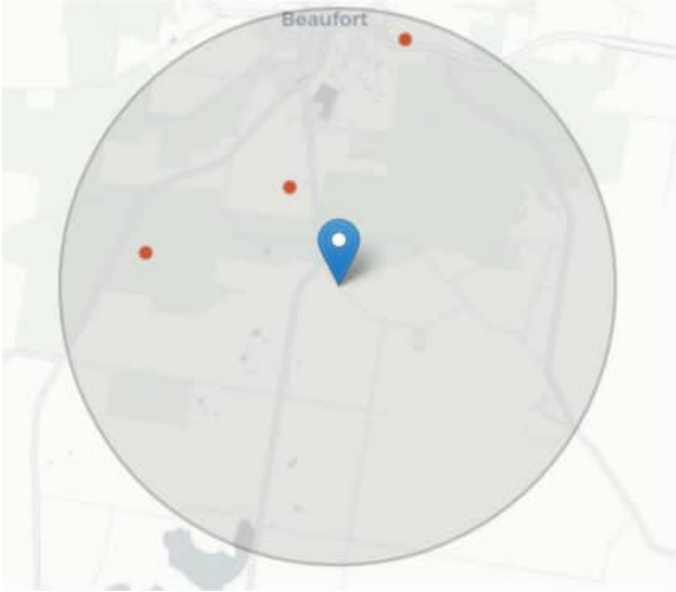


Image 32 3 recorded sightings (3)of the Vulnerable Powerful Owl near the site (Source: Belbin L, Wallis E, Hobern D, Zerger A (2021)

What you need to manage?

Retain old growth trees on site.

Control pest animals such as cats and foxes.

Report any sightings on the Atlas of Living Australia

Place nesting boxes along the waterway.

Mammals Species that rely on this habitat

Phascogale

In Victoria the Brush-tailed Phascogale's distribution is fragmented. The species occurs in the foothills to the east and north-east of Melbourne; central Victoria around Ballarat, Heathcote and Bendigo; north-eastern Victoria from Broadford to Wodonga; the Brisbane Ranges north-east of Geelong; and far western Victoria from Mt Eccles to Apsley. **The Brushtail is listed as Vulnerable in Victoria.**

Phascogales are primarily arboreal, and forage for their diet, which is predominantly large insects, spiders and centipedes, on the trunks and major branches of rough-barked trees and fallen logs. Brush-tailed Phascogales nest in as many as 30 different sites each year Nests may be in hollows in dead or live trees, under flaking bark, or in tree stumps. Nursery nests require large, secure cavities with small openings; competition for these cavities from other species is often intense. Where natural hollows are scarce, Brush-tailed Phascogales will use nest boxes as shelter and nursery sites. Habitat degradation and fragmentation is still occurring in the species' remaining range because of timber and firewood production, grazing, mining activities and clearing of private land. The relative impact of each of these activities on the species is difficult to assess because the Brush tailed Phascogale is cryptic and shy, occurs at low densities and is difficult to detect by traditional trapping techniques. Poisoning campaigns using 1080 are targeted at introduced predators such as the Red Fox, which are potential predators of, and competitors with, Brush-tailed Phascogales. The predominantly arboreal foraging behaviour should minimise the likelihood of accidental poisoning, particularly as baits are buried, as required by the NRE Code of Practice. The paucity of hollow-bearing trees is of particular concern for the conservation of the Brush-tailed Phascogale. The loss of hollow-bearing trees from Victorian native forests has been listed as a potentially threatening process on Schedule 3 of the Flora and Fauna Guarantee Act 1988, largely because of the dependence of many vertebrates (including a number of rare species) on this habitat for shelter and nesting.

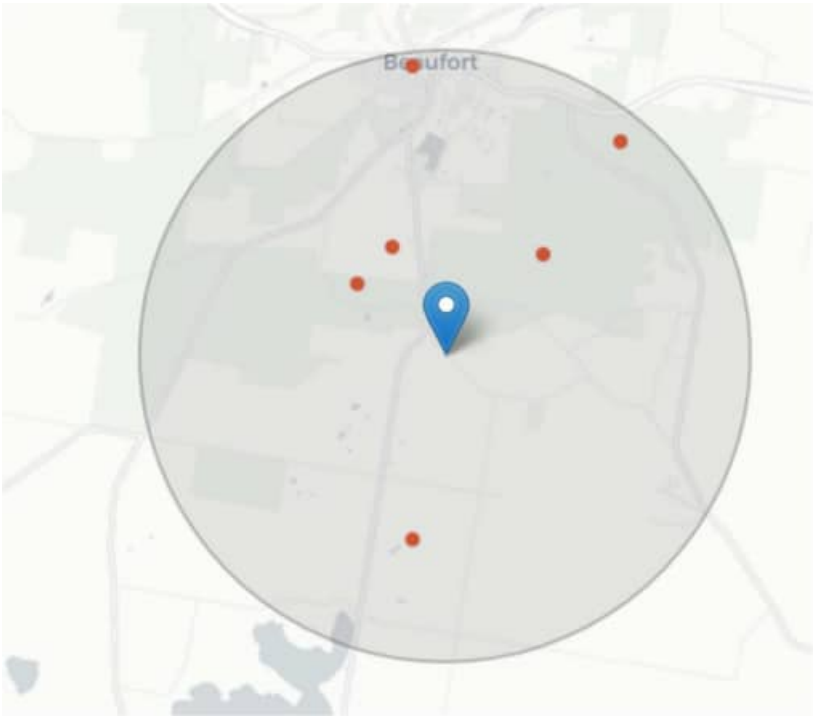


Image 33 9 recorded sightings of Vulnerable Brush-tailed Phascagole near the site (Source: Belbin L, Wallis E, Hobern D, Zerger A (2021)

Box volumes currently in use range from 8 to 16 litres. Entrance holes are placed on the side of the box nearest to trunk, so the animal is less exposed to predators when entering or leaving.

Boxes are hung from a 6-inch nail placed into the tree on a 45-degree angle. Larger diameter trees are selected when available so that the box receives greater thermal buffering from extremes of temperatures experienced in the region. Protection from overhead canopy and shading from adjacent trees is carefully considered to provide maximum protection from solar radiation in summer. Best practice tip: install boxes at the time of day when this can be most directly assessed.

Height for placement on trees is between 3-4 metres for practicality. For best phascogale box placement, a tree is selected that has branches or canopy that interconnect with adjacent trees. This allows phascogales to jump across when dispersing so the animal can avoid travelling on the ground in areas immediately surrounding the base of the tree with the box.

Where possible, at least two boxes are installed at each location. The distance between boxes is no more than 5m. This provides adequate boxes for phascogales and sugar gliders otherwise gliders may prevent phascogales from using a box where only one is available. Best case scenario would be to place a cluster of four boxes enabling both winter and summer shelter that caters for changing sun angles/direction during winter and summer seasons and the extremes of seasonal temperature experienced in Beaufort.

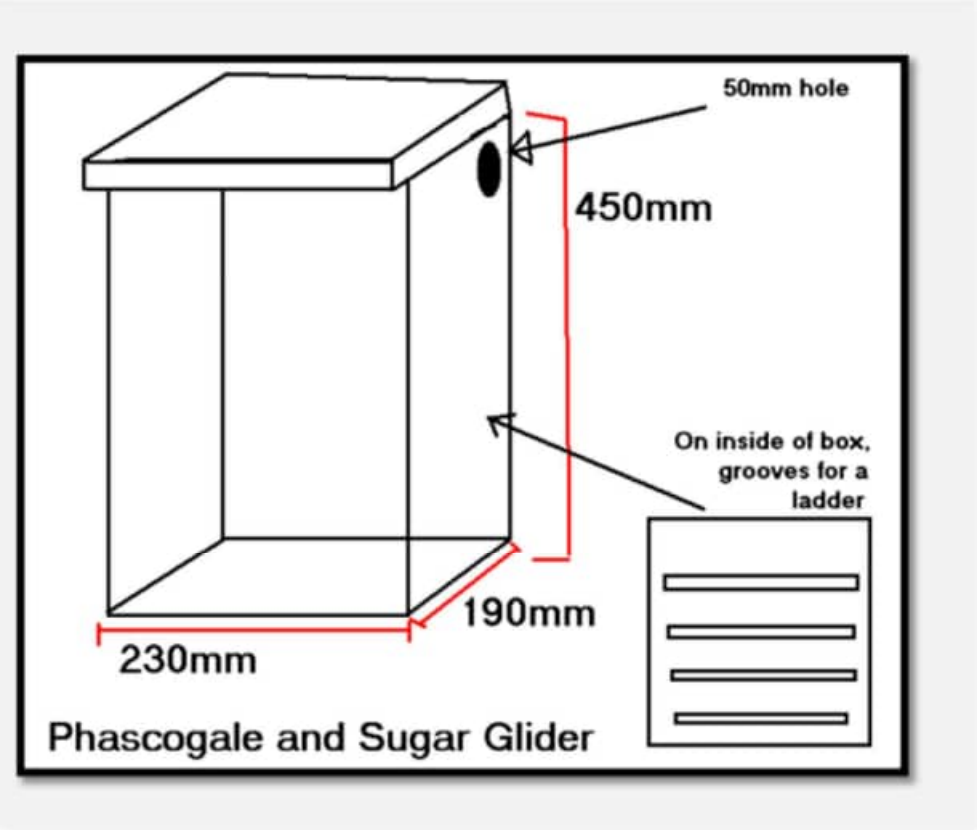


Image 34. Phascogale Nesting Box design (Source Macedon Ranges Shire nd)

What you need to manage?

- Retain old growth trees.
- Construct at least 2 artificial hollows in areas of low hollow availability, utilising appropriate nest boxes and/or chainsaw hollows, the latter of which have the potential to restore degraded habitat and may be used more by arboreal marsupials than nest boxes.
- Control pest animals such as cats and foxes.
- If 1080 is used to control foxes it must be buried to avoid off target impacts
- Report any sightings to DEECA and list up on the Atlas of Living Australia

Koala

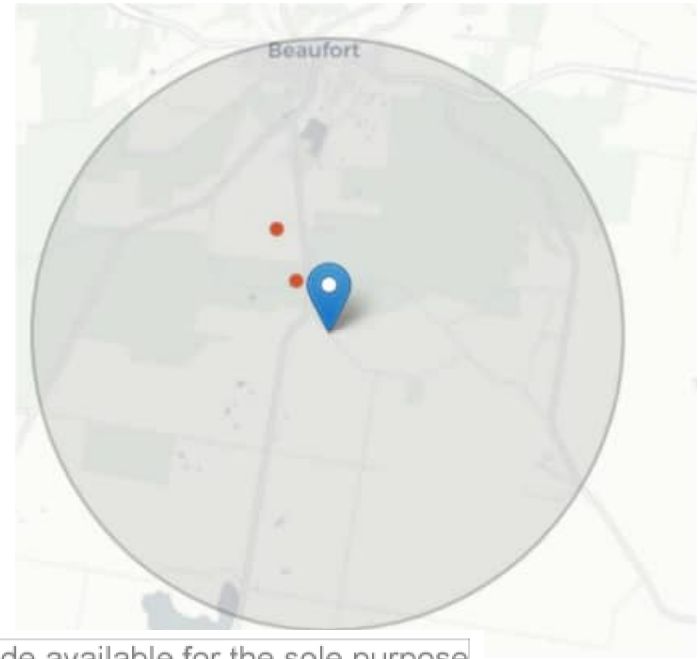
The koala is a tree-dwelling marsupial with large furry ears, a prominent black nose, long sharp claws adapted for climbing and no tail. Fur colour varies from pale grey in north Australia to grey-brown in the south.

Koalas also vary in size across their range. Adult males weigh between 4 and 14 kilograms and adult females weigh between 4 and 10 kilograms.

Despite being called 'koala bears' for many years, koalas are marsupials. While bears give birth to well-developed young, newborn koalas are tiny enough to fit on your thumbnail and are raised in their mother's pouch.

The closest relative of the koala is the wombat. Both animals have pouches which open towards the rear. This is fine for the wombat, but koalas need strong muscles ringing the pouch to keep their young from falling out.

The koala is listed as 'vulnerable to extinction' under the *Biodiversity Conservation Act 2016* because of declining numbers and the ongoing pressure of threats.



urce: Belbin L, Wallis E, Hobern D, Zerger A (2021)

What you need to manage?

- Retain old growth trees.
- Avoid the use of barbed wire and use plain or plastic covered wire for fencing.
- Control feral pests.
- Water sites must be maintained during drought periods for all bird species- such as ceramic dish that are kept clean.
- Prioritise *Eucalyptus viminalis* and other food trees when regenerating
- Keep any dogs on site contained from Dusk to Dawn

Eastern Bared Bandicoot

In Victoria, almost all habitat suitable for Eastern Barred Bandicoots has been lost to grazing and agriculture. Further threats are posed by introduced predators – cats and foxes – that kill high numbers of bandicoots. The Victorian population of 150–200 animals only survives thanks to reintroductions and protective fences, but ongoing drought will significantly reduce the reproductive rate. **This species is listed as Endangered in Victoria.**

At night, Eastern Barred Bandicoots emerge from their nests to forage for food. They use their clawed front feet to dig up invertebrates such as beetle grubs and earthworms from the soil. They use their excellent sense of smell to locate food and also scavenge fallen fruit, fungi and even cat food.

Eastern Barred Bandicoots can reproduce very quickly. They can breed all year round, but breeding slows in summer and stops altogether during drought when food is scarce.

ɔressions in the ground, often under dense claws to scrape out a shallow nest and ɨulation and camouflage. These nests

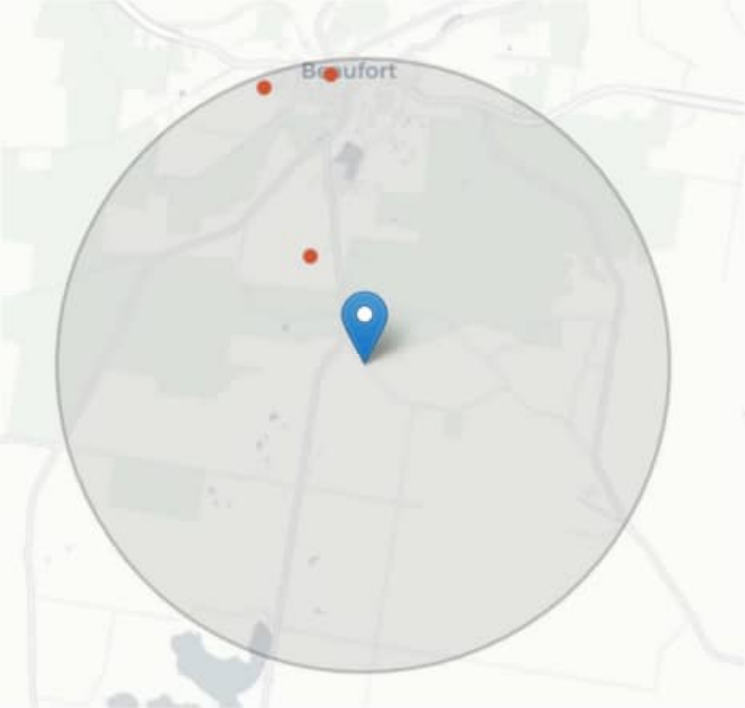


Image 36 **3** recorded sightings of the **Endangered Eastern Barred Bandicoot** near the site (Source: Belbin L, Wallis E, Hobern D, Zerger A (2021)

What you need to manage?

- Keep cats in pens at all times
- Restrain dogs when in the woodland area; do not allow them to free range,
- Allow the grass to grow to natural height along the drainage lines for habitat.
- Control pest animals such as cats and foxes.
- Report any sightings on the Atlas of Living Australia
- Conservation area do not disturb or remove leaf litter.

Soil Biodiversity- why improve

These soils can be improved if required for the pastures; however, conservation is more of a priority on this site.

In agriculture, soils that receive less manufactured inputs (e.g. chemical fertilisers and pesticides) generally have higher soil biodiversity.

Grazing systems that encourage plant diversity usually have higher soil biodiversity, due to the greater availability of food resources from roots and litter, which support a greater variety of organisms in the soil.

Cropping systems generally have low soil biodiversity, unless they increase inputs of carbon and nitrogen to the soil, which will improve soil microbial populations. Crop management techniques that increase soil organic matter will also enhance soil stability and biodiversity.

The application of organic matter to the soil, such as crop stubble, supports greater populations of surface-feeding creatures, including earthworms.

Management techniques such as crop rotation and reduced tillage increase the quantity and quality of organic matter available to soil organisms and develop a more stable environment that encourages more soil biodiversity.

Plant diversity is essential to maintain food production and provides many benefits such as suppression of pest and pathogens, and improved water retention. Legume crops are essential to increase Nitrogen into the soil naturally and increase Soil Organic Carbon by at least 6-8% than a monoculture.

How to improve the soils

Tillage management

Tillage management is imperative to the soil health as reducing tillage or no till will benefit soil microbial health and retain structure in the soils that will build over time. No-tillage or zero tillage is a farming system in which seeds are directly placed into untilled soil that has retained the previous crop residues.

Maintain cover in pastures

Retention of ground cover is imperative on this site due to the high risk of erosion and should aim to always retain a 90% cover.

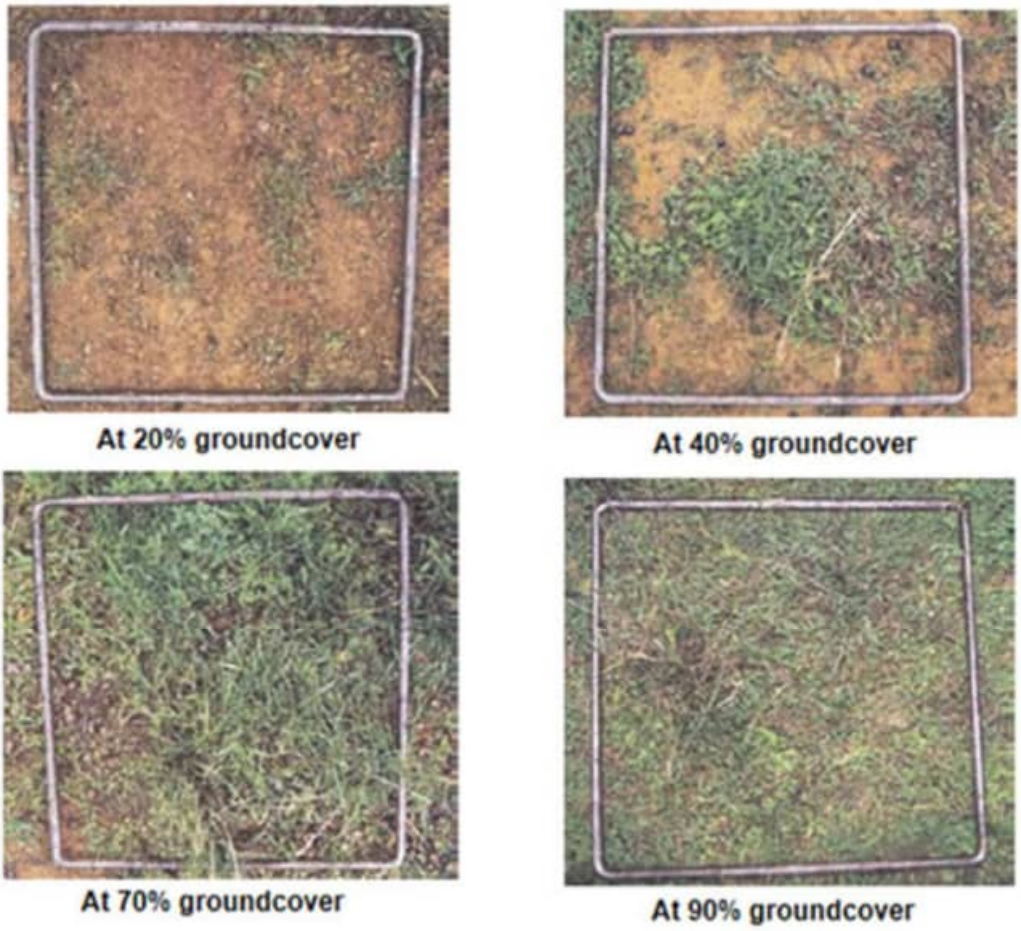


Image 37 Examples of ground cover (Source: Australian Government 30 June 2022)

ower Fox Demonstration Farms, 2024)

Maintaining pasture cover to at least 90% will always

- ameliorate run off
- Improve nutrient cycling
- Increase organic matter which is a priority for these soils
- Increase weed suppression
- Increase water absorption

Pasture Rotation

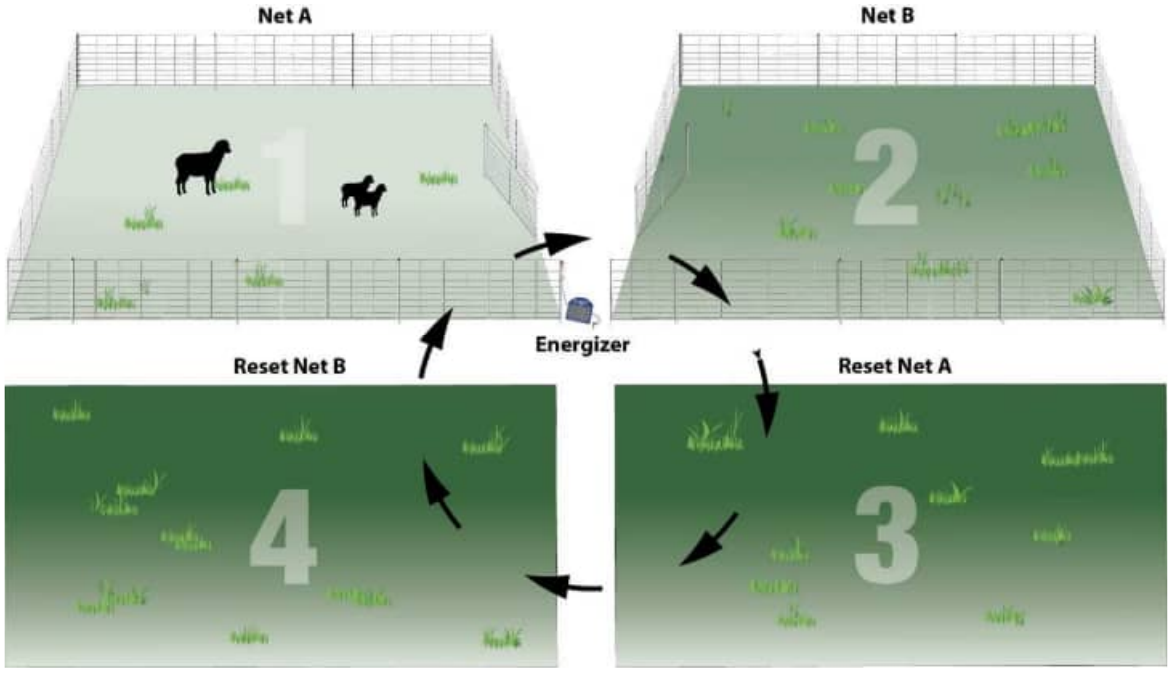


Image 39 Recommended Pasture rotation for grazing, Source: Premier, 2024)

Continued grazing on site is imperative to retaining soil health and the stock will require moving from the pasture once the ground cover falls to 90% cover. The stock is then moved to another paddock. Constant monitoring is imperative to ensure that stock do not clear the soil to a point where it is prone to erosion.

Grazing Stock- why is it important for soil health?

Grazing forms an essential part of farm production and is essential to stressing the plants to forming new growth in response to predation. This response involves increasing root mass and to do this the grasses exuding essential sugars into the soil to feed the microbes; the microbes then produce carbon in the soil. Microbes in the soil co-exist and often move into the roots of the plants ; a gluey sticky substance that glues the soil n is essential in soils for the development ils.

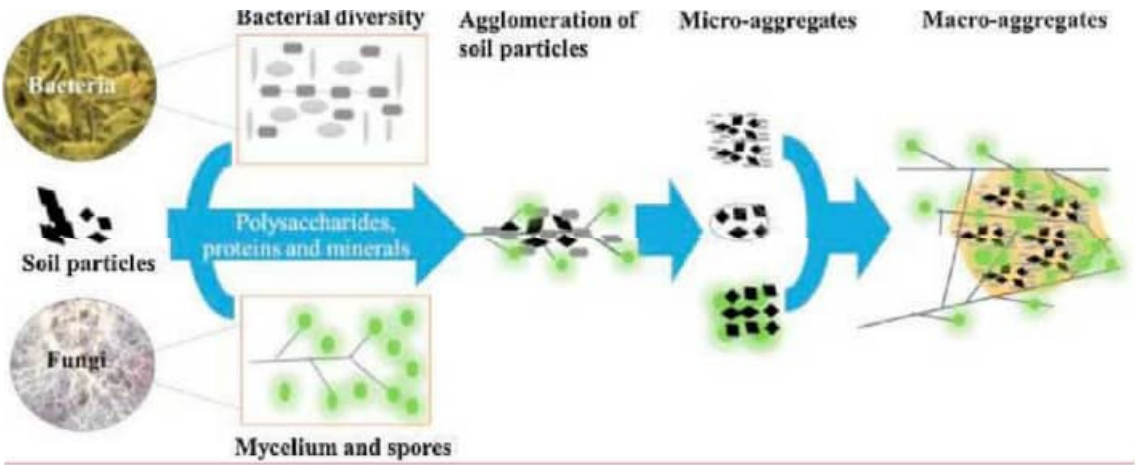


Image 40. Importance of grazing to the improvement of soil aggregates (Source: Muhammad Imtiaz Rashid, Liyakat Hamid Mujawar, Tanvir Shahzad, Talal Almeelbi, Iqbal M.I. Ismail, Mohammad Oves, (2016)

Grazing needs to ensure that it is light, and that stock is rotated around the farm. Light grazing is essential to fungi and bacteria in the soil that leads to the decomposition of organic soil carbon. Over and under grazing has a detrimental impact on the balance and health of the soil.

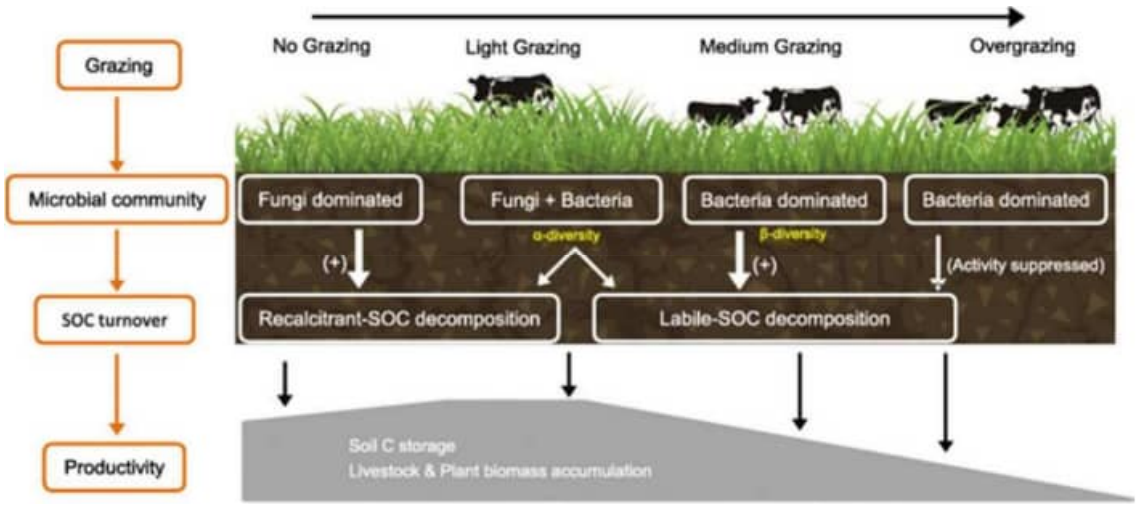


Image 41 Soil Organic Carbon from grazing strategies (Source: Xun, W., Yan, R., Ren, Y. et al. 2018)

rove SOC and soil structure
ıuman. G.E and Reeder.J.D, 2002)

Pictures

Image 42. Drainage line south of dwelling

south paddock

Image 44 Drainage line discharges into the dam (south of proposed dwelling). This area is to be fenced off and regenerated with graminoids, a rock shute and rock lined spillway.

ed against predation and grazing.

Image 46 Soil movement above the dam (south end below proposed dwelling)

Image 47 Erosion on entry into the dam

Image 48 of drainage line above dam (south end) red line shows the centrepoint and between the blue lines graminoids will be established and this area fenced to exclude grazing and predation.

ome recruitment and existing fence.

Image 50 Looking east from paddock.9 to gully (red line) around 5-10m below the line that will be protected and regenerated (graminoids).

e water from nutrient run off). This area is to be noids)

Image 52 Drainage line below the dam (east conservation side) where there are signs of erosion this area is to be regenerated. Red line denotes center point and the blue indicative of regeneration to either side of graminoids. This area is to be fenced and the area above on the flat is suitable for grazing (Paddock.3)

e to be protected from grazing ands predation, in

Image 54 Existing driveway on site

rainage line and the aqua is the existing access to

al use.

Image 56 Taken from paddock.2 looking south-east to the two drainage lines that will be regenerated and have stock excluded.

nage this one was in the east paddock.

Image 58 Two dead trees near the fallen one to be retained as long as possible for perching and nesting for raptors.

e onsite inspection.

Image 60 Flat pastures between drainage lines (paddock.3)

oposed house site.

Priority for development

Fencing as noted to be completed within 3 months of approval of the planning permit. Scattered paddock tree to be protected from stock to the extent of the drip line.

See Action Table for details of timing.

Disclaimer the drainage lines maybe different as per the shown location due to lack of survey details.

Image 62 For small trees in paddocks to protect from predation recycling pellets is a good, sturdy choice. Two corners need to be secured with a steel post (source: Recreating Country 24/11/2020)

Image 63 For isolated scattered old growth trees to protect from predation use typical stock fencing to at least the drip zone (source: Recreating Country 24/11/2020)

Rationale for adaptive management on site

The site must be managed on an ongoing adaptive basis where there is the ability to monitor and control risks. The current owner is currently living remote to the site and is currently limited due to the tyranny of distance to only occasional visits. The restoration, along with management, will require a lot of time on site, including planting, watering, and protecting recruitment from predation. Control of pest species, such as rabbits, is limited to diurnal control due to their habit of emerging at dusk and wreaking havoc during the night. Shooting is the preferred control, and night management from several hundred kilometres away is impossible, and reinfestations are only noted on an ad hoc basis. Responding to rain events and preparing for planting along with monitoring and replacing lost plants is again not considered to be best practice on an adhoc basis and must be on site to be adaptive.

The restoration of habitat has strong socio-economic benefits for threatened trees and birds, mammals, amphibians that rely on this habitat. The economic benefit of ameliorating salinity avoids potential social costs if not ameliorated and this can leave an area void of any vegetation, and this

vith turbidity. Restoring riparian areas and
ned species, create and biolinks on site,
nd environmental benefits.

e works proposed will stablise the area and
ant works and adaptive management, all

not possible from a remote location. The high prevalence of kangaroos on the site and on adjacent sites makes travelling at night to control pest a hazardous undertaking.

The Intrinsic and Extrinsic Value of Biodiversity protection on site

To understand the justification for investing in biodiversity, it's essential to recognize the dual value of biodiversity: intrinsic and extrinsic.

Intrinsic Value: Biodiversity has inherent value. Every species, ecosystem, and genetic diversity contributes to the richness of our planet's life. Biodiversity is a part of the Earth's heritage, and its intrinsic value cannot be underestimated.

Extrinsic Value: Biodiversity also holds significant extrinsic value, which can be translated into economic, social, and cultural benefits. This includes ecosystem services such as pollination, clean air and water, climate regulation, and disease control. It also encompasses recreational, tourism, and research opportunities, which can be quantified and leveraged for ROI.

Economic Benefits of Biodiversity

Investing in biodiversity yields various economic benefits, some of which include:

Ecosystem Services: Biodiverse ecosystems provide essential services that, if disrupted, would require expensive human intervention. For example, wetlands purify water, reducing the costs of water treatment facilities. Forests act as carbon sinks, mitigating climate change and reducing the financial burden of climate adaptation and disaster response.

Agricultural Productivity: Biodiversity is essential for agriculture. Healthy ecosystems ensure pollination, pest control, and nutrient cycling, which are crucial for agricultural productivity. Investments in preserving biodiversity in agricultural landscapes translate into higher crop yields, reduced pesticide use, and ultimately, higher profits for farmers.

Pharmaceutical and Biotech Industry: Many pharmaceuticals and biotechnology products are derived from natural sources. By investing in the preservation of biodiversity, we ensure a rich source of genetic material for the discovery of new medicines and innovations, which can be lucrative for the biotech industry.

Ecosystem-Based Adaptation and Resilience

Biodiversity investments also enhance ecosystem resilience and adaptation in the face of global challenges:

Climate Change: Biodiversity contributes to climate resilience by sequestering carbon and providing natural buffers against extreme weather events. Investments in biodiversity can significantly reduce the economic costs of climate change adaptation.

al buffers against zoonotic diseases. The outbreaks. Investments in biodiversity

Flood Control and Water Management: Ecosystems like wetlands and forests play vital roles in flood control and water purification. Protecting and restoring these ecosystems reduces the costs of flood damage and water treatment.

Measuring Biodiversity ROI

Quantifying the ROI of biodiversity investments can be challenging but is necessary for justifying these expenditures. Methods for measuring ROI may include:

Cost-Benefit Analysis (CBA): CBA compares the costs of biodiversity investments with the economic benefits they generate. The net benefit can be considered as the ROI.

Ecosystem Service Valuation: Assigning monetary values to ecosystem services can help assess the economic returns on investments. For instance, clean water provided by wetlands can be valued based on the cost savings it offers.

Market-Based Approaches: Some biodiversity-related activities generate direct economic returns. For instance, ecotourism or sustainable harvesting of forest products can be quantified as ROI.

Non-Market Valuation: Many biodiversity benefits are not directly bought and sold in markets. Non-market valuation techniques like stated preference surveys or hedonic pricing can be used to assess these values.

The Role of Non-Governmental Organizations (NGOs)

NGOs can facilitate biodiversity investments by partnering with businesses and governments, conducting research, and raising public awareness. They play a crucial role in promoting the importance of biodiversity and creating opportunities for ROI.

To put it briefly, while it may not be simple, supporting biodiversity is an investment in the future. In addition to safeguarding ecosystems and species, we also secure long-term prosperity, economic stability, and resilience against global challenges by protecting and conserving our natural world. Investments in biodiversity are justified by acknowledging the intrinsic and extrinsic qualities of biodiversity, comprehending its economic advantages, reducing risks, taking a long-term view, and applying suitable valuation techniques. To encourage biodiversity investments and build a sustainable and prosperous future for everybody, governments, corporations, and non-governmental organizations must work together. Biodiversity is an investment in both our planet's and our personal well-being, not just a cost." (Source Dong. N, June 2024)

The environmental benefit of the restoration and adaptive management of the site can increase the biodiversity in the existing Box Ironbark Forest to increase the substratum. This has the potential to increase the condition score on site and to provide essential habitat for bird species. Allowing the ıcrease cover on site and will crease a ɔrest to the south. This will not only genetic base but also a link for fauna in

Risks from no ongoing adaptive management.

Direct loss of species from weed infestation, loss of species from loss of habitat will have an immense impact on many species. There are many important threatened species that are found within a short distance from the site and management is of imperative importance now and in the future.

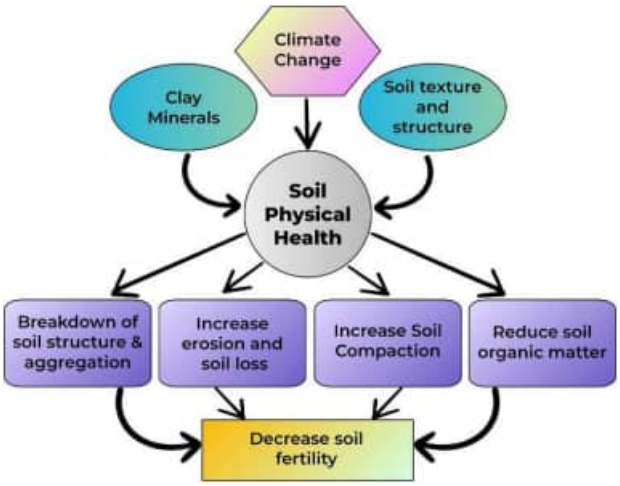


Image. 64 No risk management (Source: Maria Nahin Oishy, Nigar Ahmmad Shemonty, Sadia Islam Fatema, Sadika Mahbub, Ebadunnahar Lukhna Mim, Maimuna Binte Hasan Raisa, Amit Hasan Anik Jan 2025)

Loss of soil and soil quality after vegetation loss, heavy rain events and compaction from wandering stock.

Changes in water low and quality, along with decreased water filtration and increased run-off from lack of cover.

Weed invasions that go unchecked often respond to climatic changes such as rain. Weeds proliferating on-site can change nutrient levels to a point where native species are lost.

Loss of hollow-bearing trees on site from fires, illegal firewood collecting.

Changes in predation, such as cats and foxes predating on native species, resulting in a severe decline in biodiversity.

Loss of habitat for common and threatened species in the landscape.

Zones

Domestic zone

All domestic buildings, structures and works are to be contained within this zone.

There are no specific requirements for the use of the zone except the following restrictions

- Domestic animals to be housed in an area that will ensure they are not able to roam.

Conservation Zone

The objective of the conservation area is to protect the native vegetation and faunal habitat.

Management objectives apply to this area:

- Fencing must be maintained in good order and repaired immediately if necessary.
- No grazing or entry by livestock
- There is no stockpiling/storage, soil disturbance or any vehicles.
- Landowner must maintain and protect all whether live or dead native vegetation and allow for natural regeneration.
- Weeds must be monitored and maintained as they emerge.
- The landowner must monitor for pest animals and obtain professional advice for the control especially where they are having an impact on soils and native vegetation.
- No removal of material for firewood
- No removal of leaf litter except within the specified defendable space so as to retain habitat.
- Revegetation to be undertaken and replaced if lost to ensure habitat is maintained.
- No vehicle access
- Domestic animals to be always excluded.
- Nesting boxes to be placed for detailed threatened species

Dam/Riparian/Water quality/Erosion Zone

rosion, maintain water quality and habitat.

paired immediately if necessary.

- There is no stockpiling/storage, soil disturbance or any vehicles.

- Landowner must maintain and protect all whether live or dead native vegetation and allow for natural regeneration.
- No removal of leaf litter except where it obstructs water flow or is within the defendable space
- Weeds must be monitored and maintained as they emerge.
- The landowner must monitor for pest animals and obtain professional advice for the control especially where they are having an impact on soils and native vegetation.
- Domestic animals to be always excluded.
- No removal of material for firewood
- Revegetation to be undertaken and replaced if lost to ensure habitat is maintained.

Agricultural Zone

The Agricultural Zone is approximately 4.96 ha and with a Land Class 3 @ average rainfall of <600- the carrying capacity is 2DSE which equates to 2 x 4.96 = 10 sheep. (Source: Rowan et al. January 2000)

Management objectives apply to this area:

- Fencing must be maintained in good order and repaired immediately if necessary.
- Rotating stock always through paddocks to ensure a minimum 90% cover is always maintained.
- Steep paddocks are dry weather grazing only.
- Weed control must be always undertaken.
- Any compost and fertilisation to be a minimum of 30m from the edge of any waterway.
- Any soil degradation to be rectified and grazing removed until it is ameliorated.
- All paddocks to be serviced with water facilities.
- Scattered trees to be guarded against damage from stock.

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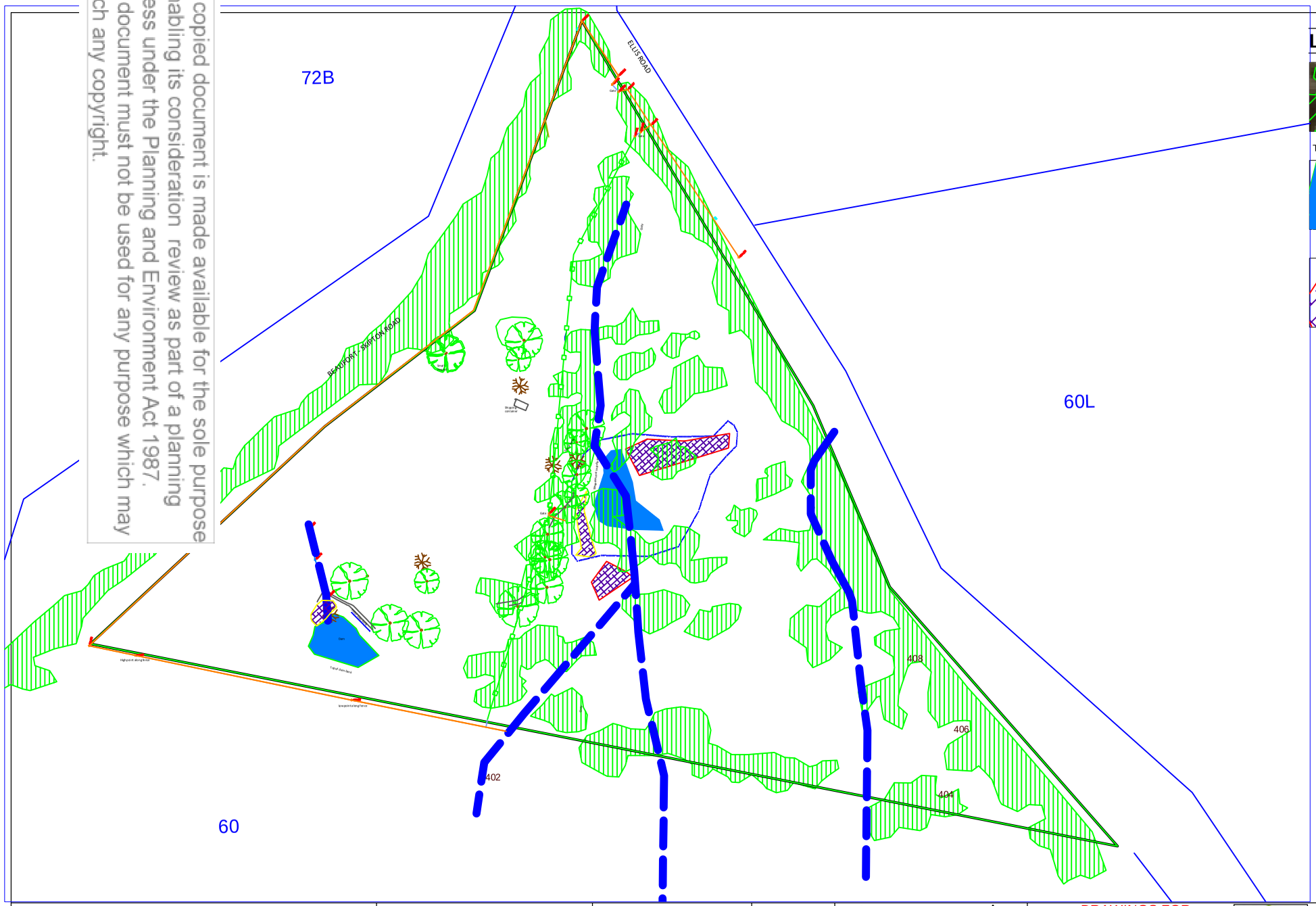
Appendix.1 Existing and Contour Plan



LEGEND

- EXISTING TREE COVER
- EXISTING DAM
- EXISTING EROSION
- EXISTING RILL EROSION (MINOR)
- WATER MOVEMENT

Note:
The contractor shall verify all dimensions and all underground services at the site before commencing work. The contractor shall verify all levels from the consulting engineer prior to construction.

DO NOT SCALE FROM DRAWINGS

PROJECT: *Lot 1 TP567841 (Ellis Road, Beaufort)*

PROJECT NO: *2751*

DATE: JUL 2025

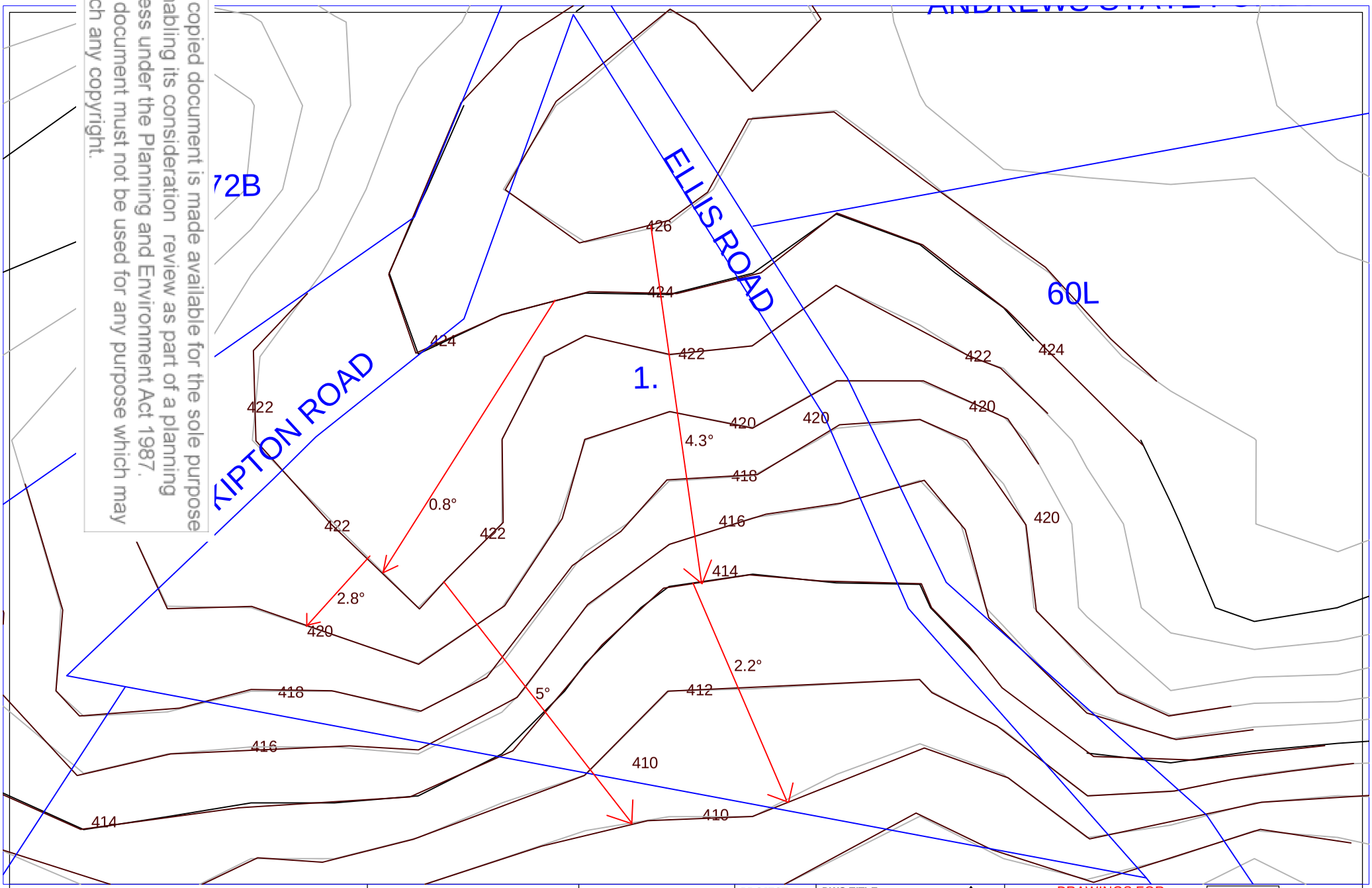
DWG TITLE: *EXISTING FEATURE PLAN*

SCALE: 1:2500 @A4

NORTH (West, East, South)

DRAWINGS FOR PLANNING PERMIT ONLY NOT TO BE USED FOR CONSTRUCTION

NATURAL RESOURCE LINK PTY LTD
54 Frazer Street
Clunes 3370
julie@nrlinks.com.au



Note:
The contractor shall verify all dimensions and all underground services at the site before commencing work. The contractor shall verify all levels from the consulting engineer prior to construction.

DO NOT SCALE FROM DRAWINGS

PROJECT: *Lot 1 TP567841 (Ellis Road, Beaufort)*

PROJECT NO: *2751*

DATE: JUL 2025

DWG TITLE: *EXISTING CONTOUR PLAN*

SCALE: 1:100 @A3

NORTH — West — East — South

DRAWINGS FOR PLANNING PERMIT ONLY NOT TO BE USED FOR CONSTRUCTION

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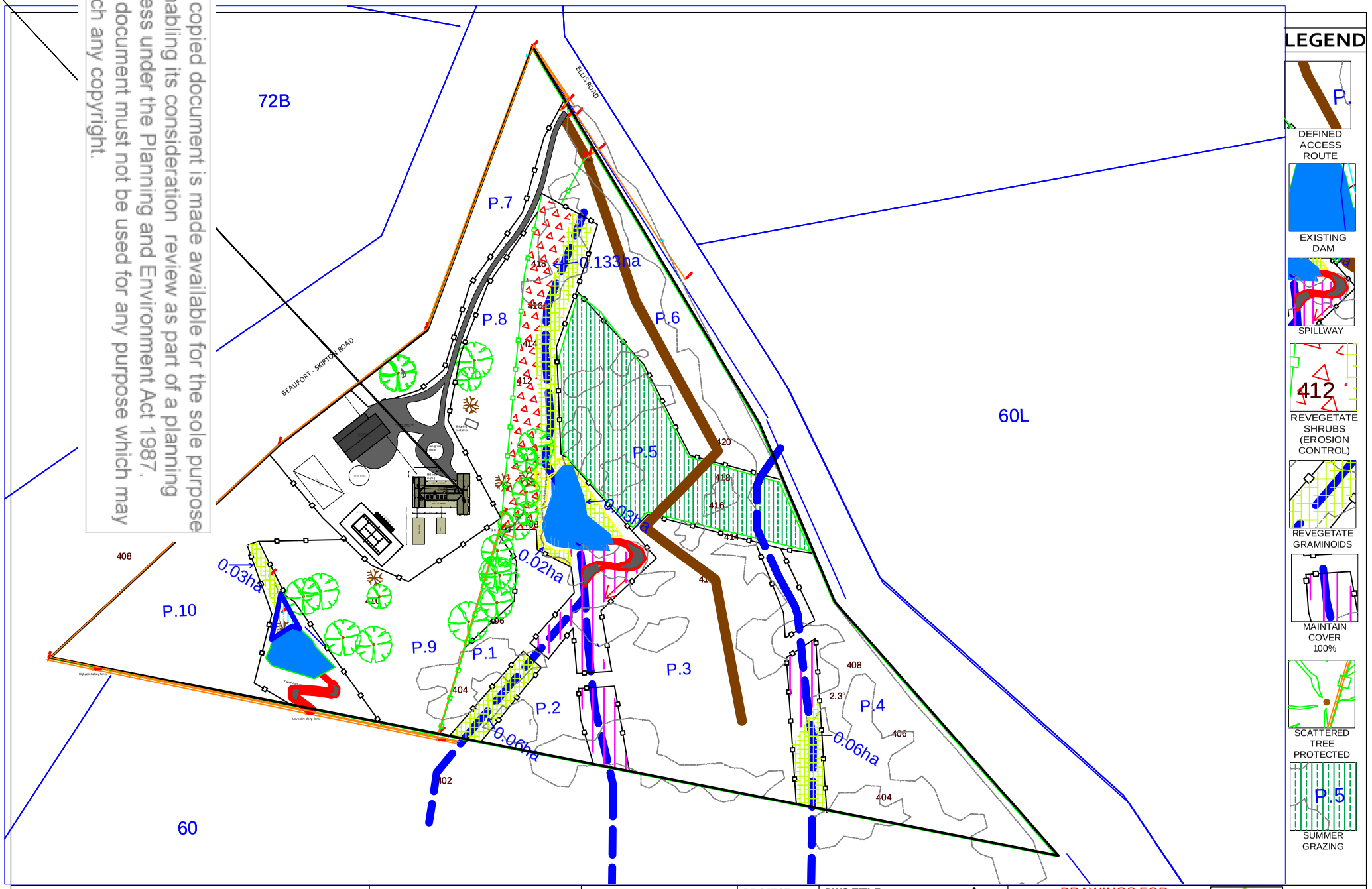
Appendix.2 Proposed Land Management Plan



LEGEND

- DEFINED ACCESS ROUTE
- EXISTING DAM
- SPILLWAY
- REVEGETATE SHRUBS (EROSION CONTROL)
- REVEGETATE GRAMINOIDS
- MAINTAIN COVER 100%
- SCATTERED TREE PROTECTED
- SUMMER GRAZING

Note:
The contractor shall verify all dimensions and all underground services at the site before commencing work. The contractor shall verify all levels from the consulting engineer prior to construction.

DO NOT SCALE FROM DRAWINGS

PROJECT: *Lot 1 TP567841 (Ellis Road, Beaufort)*

PROJECT NO: *2751*

DATE: JUL 2025

DWG TITLE: *EXISTING FEATURE PLAN*

SCALE: 1:2500 @A4

NORTH (West, East, South)

DRAWINGS FOR PLANNING PERMIT ONLY NOT TO BE USED FOR CONSTRUCTION

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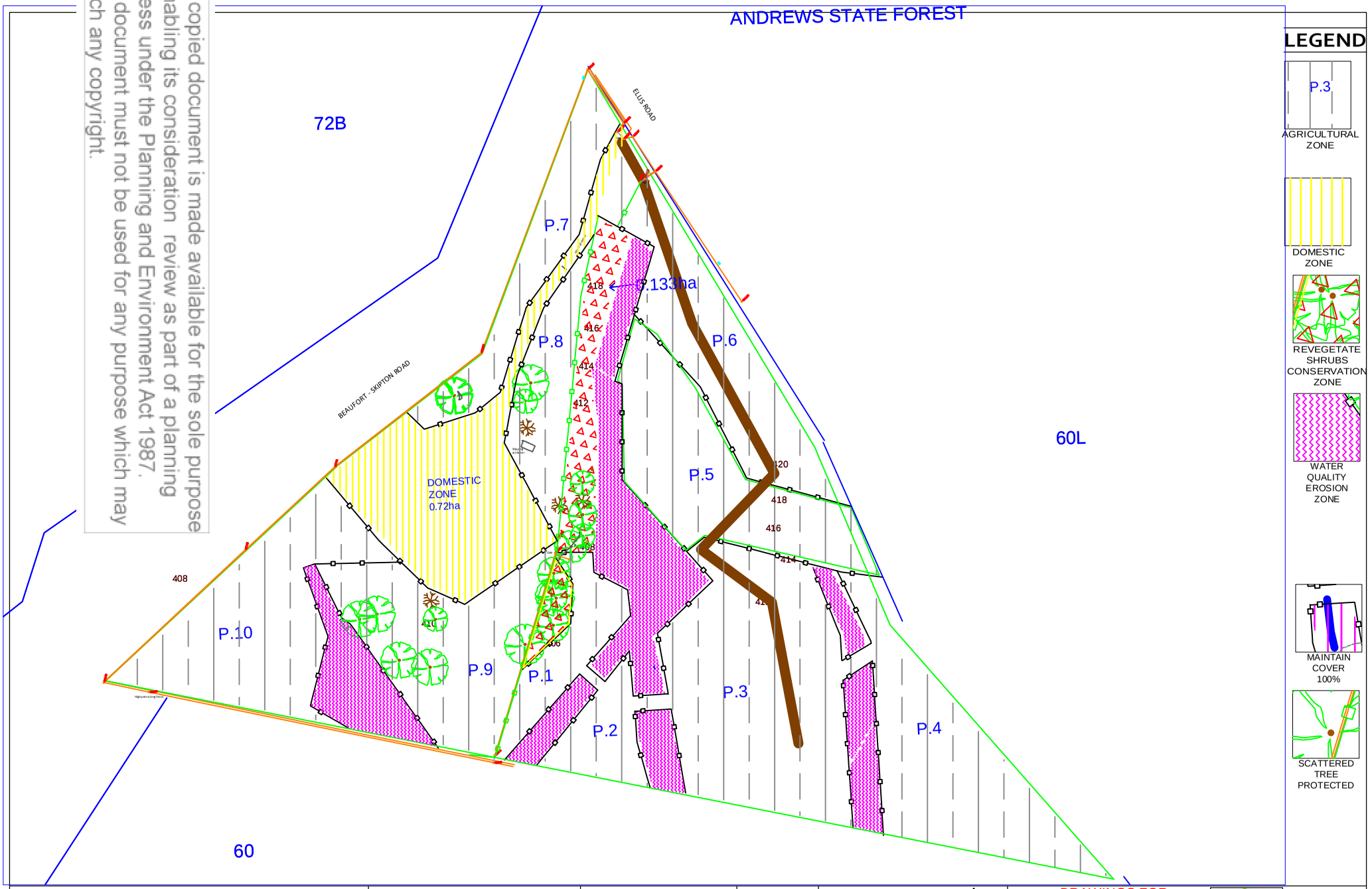
Appendix.3 Zone Plan



LEGEND

- P.3 — AGRICULTURAL ZONE
- DOMESTIC ZONE
- REVEGETATE SHRUBS CONSERVATION ZONE
- WATER QUALITY EROSION ZONE
- MAINTAIN COVER 100%
- SCATTERED TREE PROTECTED

Note:
The contractor shall verify all dimensions and all underground services at the site before commencing work. The contractor shall verify all levels from the consulting engineer prior to construction.

DO NOT SCALE FROM DRAWINGS

PROJECT: *Lot 1 TP567841 (Ellis Road, Beaufort)*

PROJECT NO: *2751*

DATE: JUL 2025

DWG TITLE: *PROPOSED ZONE PLAN*

SCALE: 1:2500 @A4

NORTH (West, East, South)

DRAWINGS FOR PLANNING PERMIT ONLY NOT TO BE USED FOR CONSTRUCTION

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Appendix.4 Plant list Graminoids and associated Benchmarks

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Central Victorian Uplands 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	10 / ha

Tree Canopy Cover:

%cover	Character Species	Common Name
20%	*Eucalyptus globulus* ssp. *bicostata*	Eurabbie
	Eucalyptus ovata	Swamp Gum

Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	3	10%	T
Medium Shrub	3	5%	MS
Small Shrub	1	1%	SS
Large Herb	3	5%	LH
Medium Herb	7	15%	MH
Small or Prostrate Herb	2	5%	SH
Large Tufted Graminoid	5	10%	LTG
Large Non-tufted Graminoid	3	15%	LNG
Medium to Small Tufted Graminoid	9	15%	MTG
Medium to Small Non-tufted Graminoid	5	15%	MNG
Ground Fern	4	10%	GF
Bryophytes/Lichens	na	20%	BL

LF Code	Species typical of at least part of EVC range	Common Name
T	*Acacia pravissima*	Ovens Wattle
T	*Acacia melanoxylon*	Blackwood
MS	*Dodonaea viscosa* ssp. *angustissima*	Slender Hop-bush
MS	*Leptospermum lanigerum*	Woolly Tea-tree
MS	*Dodonaea viscosa*	Sticky Hop-bush
SS	*Rubus parvifolius*	Small-leaf Bramble
LH	*Persicaria hydropiper*	Water Pepper
LH	*Wahlenbergia gracilis* s.l.	Sprawling Bluebell
MH	*Hypericum gramineum*	Small St John's Wort
LTG	*Juncus sarophorus*	Broom Rush
LTG	*Lomandra longifolia*	Spiny-headed Mat-rush
LTG	*Carex appressa*	Tall Sedge
LTG	*Poa labillardierei*	Common Tussock-grass
LNG	*Phragmites australis*	Common Reed
MTG	*Themeda triandra*	Kangaroo Grass
MTG	*Lomandra filiformis*	Wattle Mat-rush
MNG	*Microlaena stipoides* var. *stipoides*	Weeping Grass
		Wispy Club-sedge
		Globe Kyllinga
		Fishbone Water-fern
		Austral Bracken
		Soft Water-fern
		Common Maidenhair

Victoria The Place To Be

Recruitment:
Continuous

Organic Litter:
20 % cover

Logs:
20 m/0.1 ha.

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MS	*Rosa rubiginosa*	Sweet Briar	high	high
MS	*Rubus fruticosus* spp. agg.	Blackberry	high	high
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
LH	*Rumex crispus*	Curled Dock	high	low
LH	*Carduus pycnocephalus*	Slender Thistle	high	high
LH	*Conyza bonariensis*	Flaxleaf Fleabane	high	low
LH	*Cirsium vulgare*	Spear Thistle	high	high
LH	*Verbascum virgatum*	Twiggy Mullein	high	high
LH	*Solanum nigrum* sensu Willis (1972)	Black Nightshade	high	low
LH	*Silybum marianum*	Variegated Thistle	high	high
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Acetosella vulgaris*	Sheep Sorrel	high	high
MH	*Centaurium erythraea*	Common Centaury	high	low
MH	*Lotus corniculatus*	Bird's-foot Trefoil	high	high
MH	*Anagallis arvensis*	Pimpernel	high	low
MH	*Rorippa nasturtium-aquaticum*	Watercress	high	high
MH	*Mimulus moschatus*	Musk Monkey-flower	high	high
MH	*Petrorhagia velutina*	Velvety Pink	high	low
SH	*Callitriche stagnalis*	Common Starwort	high	high
SH	*Trifolium repens* var. *repens*	White Clover	high	high
LTG	*Phalaris aquatica*	Toowoomba Canary-grass	high	high
LNG	*Holcus lanatus*	Yorkshire Fog	high	high
LNG	*Avena spp.*	Oat	high	low
MTG	*Briza maxima*	Large Quaking-grass	high	low
MTG	*Bromus diandrus*	Great Brome	high	low
MTG	*Paspalum dilatatum*	Paspalum	high	high
MTG	*Cyperus eragrostis*	Drain Flat-sedge	high	high
MTG	*Vulpia bromoides*	Squirrel-tail Fescue	high	low
MTG	*Setaria viridis*	Green Pigeon-grass	high	low
MTG	*Briza minor*	Lesser Quaking-grass	high	low
MTG	*Ehrharta erecta* var. *erecta*	Panic Veldt-grass	high	high
MNG	*Cynosurus echinatus*	Rough Dog's-tail	high	low
MNG	*Paspalum distichum*	Water Couch	high	high
MNG	*Aira cupaniana*	Quicksilver Grass	high	low

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Dale Tonkinson (Statewide extent of EVC) 20-Nov-2008

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Acacia dealbata	Silver Wattle	Tree, Small Tree or Large Shrub	High	4	No	No
Acacia floribunda	White Sallow-wattle	Tree, Small Tree or Large Shrub	High	3	Yes	No
Acacia melanoxylon	Blackwood	Tree, Small Tree or Large Shrub	Very High	4	No	No
Acacia pravissima	Ovens Wattle	Tree, Small Tree or Large Shrub	High	4	Yes	No
Acacia verticillata subsp. verticillata	Prickly Moses	Medium Shrub	High	4	No	No
Acaena novae-zelandiae	Bidgee-widgee	Medium Herb	High	3	No	No
Adiantum aethiopicum	Common Maidenhair	Ground Fern	Very High	1	No	No
Allittia uliginosa	Small Swamp-daisy	Medium Herb	High	2	No	No
Alternanthera denticulata s.l.	Lesser Joyweed	Medium Herb	High	3	No	No
Amphibromus neesii	Southern Swamp Wallaby-grass	Large Tufted Graminoid (Grass-like plant)	High	3	No	No
Amyema pendula	Drooping Mistletoe	Epiphyte	High	1	No	No
Azolla filiculoides	Pacific Azolla	Small or Prostrate Herb	High	3	No	No
Blechnum cartilagineum	Gristle Fern	Ground Fern	High	1	No	No
Blechnum minus	Soft Water-fern	Ground Fern	Very High	2	No	No
Blechnum nudum	Fishbone Water-fern	Ground Fern	Very High	2	No	No
Blechnum wattsii	Hard Water-fern	Ground Fern	High	2	No	No
Calochlaena dubia	Common Ground-fern	Ground Fern	High	1	No	No
Calystegia sepium subsp. roseata	Large Bindweed	Scrambler or Climber	High	1	No	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	No	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	No	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	No	No
		plant)				

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Carex gaudichaudiana	Fen Sedge	Medium to Small Tufted Graminoid (Grass-like plant	High	3	No	No
Cassinia aculeata	Common Cassinia	Medium Shrub	High	3	No	No
Centella cordifolia	Centella	Medium Herb	High	2	No	No
Centipeda cunninghamii	Common Sneezeweed	Medium Herb	High	2	No	No
Clematis microphylla s.l.	Small-leaved Clematis	Scrambler or Climber	High	2	No	No
Coprosma quadrifida	Prickly Currant-bush	Medium Shrub	High	2	No	No
Crassula helmsii	Swamp Crassula	Small or Prostrate Herb	High	3	No	No
Cyathea australis	Rough Tree-fern	Tree Fern	High	2	No	No
Cyperus gunnii subsp. gunnii	Flecked Flat-sedge	Large Tufted Graminoid (Grass-like plant)	High	3	No	No
Cyperus lucidus	Leafy Flat-sedge	Large Tufted Graminoid (Grass-like plant)	High	2	No	No
Cyperus sphaeroideus	Globe Kyllinga	Medium to Tiny Non-Tufted Graminoid (Grass-like pl	Very High	2	No	No
Dodonaea viscosa	Sticky Hop-bush	Medium Shrub	High	4	No	No
Dodonaea viscosa subsp. angustissima	Slender Hop-bush	Medium Shrub	High	4	No	No
Echinopogon ovatus	Common Hedgehog-grass	Medium to Tiny Non-Tufted Graminoid (Grass-like pl	High	3	No	No
Empodisma minus	Spreading Rope-rush	Medium to Tiny Non-Tufted Graminoid (Grass-like pl	High	1	No	No
Epilobium billardierianum	Variable Willow-herb	Large Herb	High	3	No	No
Epilobium billardierianum subsp. billardierianum	Smooth Willow-herb	Large Herb	High	2	No	No
					No	No
					No	No
					No	No
		Graminoid (Grass-like plant				
Eryngium vesiculosum	Prickfoot	Small or Prostrate Herb	High	2	No	No

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Eucalyptus aggregata	Black Gum	Tree, Small Tree or Large Shrub	High	3	Yes	No
Eucalyptus camphora subsp. humeana	Mountain Swamp-gum	Tree, Small Tree or Large Shrub	High	4	Yes	No
Eucalyptus globulus subsp. bicostata	Eurabbie	Tree, Small Tree or Large Shrub	High	4	No	No
Eucalyptus ovata	Swamp Gum	Tree, Small Tree or Large Shrub	Very High	4	No	No
Eucalyptus ovata var. ovata	Swamp Gum	Tree, Small Tree or Large Shrub	High	4	No	No
Eucalyptus viminalis	Manna Gum	Small Tree or Large Shrub, Mallee Tree	High	4	No	No
Eucalyptus yarraensis	Yarra Gum	Tree, Small Tree or Large Shrub	High	4	No	No
Euchiton collinus s.s.	Creeping Cudweed	Medium Herb	High	3	No	No
Euchiton involucratus s.l.	Common Cudweed	Medium Herb	High	1	No	No
Euchiton involucratus s.s.	Star Cudweed	Medium Herb	High	1	No	No
Gahnia sieberiana	Red-fruit Saw-sedge	Large Tufted Graminoid (Grass-like plant)	High	4	No	No
Geranium potentilloides	Soft Crane's-bill	Medium Herb	High	2	No	No
Geranium solanderi s.l.	Austral Crane's-bill	Medium Herb	High	2	No	No
Glyceria australis	Australian Sweet-grass	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Gonocarpus micranthus subsp. micranthus	Creeping Raspwort	Small or Prostrate Herb	High	1	No	No
Goodenia ovata	Hop Goodenia	Medium Shrub	High	3	No	No
Gratiola peruviana	Austral Brooklime	Medium Herb	High	2	No	No
Haloragis heterophylla	Varied Raspwort	Medium Herb	High	2	No	No
Hemarthria uncinata var.	Mat Grass	Medium to Tiny Non-Tufted	High	2	No	No
					No	No
					No	No
					No	No
sibthorpioides	Pennywort	Prostrate Herb				
Hypericum gramineum	Small St John's Wort	Medium Herb	Very High	2	No	No

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Hypericum japonicum	Matted St John's Wort	Small or Prostrate Herb	High	1	No	No
Isachne globosa	Swamp Millet	Medium to Tiny Non-Tufted Graminoid (Grass-like pl	High	1	No	No
Isolepis cernua var. cernua	Nodding Club-sedge	Medium to Small Tufted Graminoid (Grass-like plant	High	1	No	No
Isolepis fluitans	Floating Club-sedge	Medium to Small Tufted Graminoid (Grass-like plant	High	1	No	No
Isolepis habra	Wispy Club-sedge	Medium to Tiny Non-Tufted Graminoid (Grass-like pl	Very High	1	No	No
Isolepis inundata	Swamp Club-sedge	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Isotoma fluviatilis subsp. australis	Swamp Isotome	Small or Prostrate Herb	High	2	No	No
Juncus holoschoenus	Joint-leaf Rush	Medium to Small Tufted Graminoid (Grass-like plant	High	3	No	No
Juncus pallidus	Pale Rush	Large Tufted Graminoid (Grass-like plant)	High	3	No	No
Juncus pauciflorus	Loose-flower Rush	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Juncus planifolius	Broad-leaf Rush	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Juncus procerus	Tall Rush	Large Tufted Graminoid (Grass-like plant)	High	3	No	No
Juncus sarophorus	Broom Rush	Large Tufted Graminoid (Grass-like	Very High	3	No	No
					No	No
filiformis	grass	Tufted Graminoid (Grass-like plant			No	No

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Lepidosperma laterale var. majus	Variable Sword-sedge	Large Tufted Graminoid (Grass-like plant)	High	2	No	No
Leptinella reptans s.l.	Creeping Cotula	Small or Prostrate Herb	High	1	No	No
Leptospermum continentale	Prickly Tea-tree	Medium Shrub	High	3	No	No
Leptospermum lanigerum	Woolly Tea-tree	Tree, Medium Shrub	Very High	3	No	No
Lilaeopsis polyantha	Australian Lilaeopsis	Medium Herb	High	1	No	No
Lobelia pedunculata s.l.	Matted Pratia	Small or Prostrate Herb	High	2	No	No
Lomandra filiformis	Wattle Mat-rush	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Lomandra longifolia	Spiny-headed Mat-rush	Large Tufted Graminoid (Grass-like plant)	Very High	3	No	No
Lycopus australis	Australian Gipsywort	Large Herb	High	3	Yes	No
Lythrum salicaria	Purple Loosestrife	Large Herb	High	3	No	No
Melaleuca ericifolia	Swamp Paperbark	Tree, Medium Shrub	High	4	No	No
Melicytus dentatus s.l.	Tree Violet	Medium Shrub	High	3	No	No
Mentha australis	River Mint	Medium Herb	High	2	No	No
Microlaena stipoides var. stipoides	Weeping Grass	Medium to Tiny Non-Tufted Graminoid (Grass-like pl	Very High	3	No	No
Notodanthonia semiannularis	Wetland Wallaby-grass	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Olearia glandulosa	Swamp Daisy-bush	Medium Shrub	High	2	No	No
Oxalis exilis	Shady Wood-sorrel	Small or Prostrate Herb	High	1	No	No
Ozothamnus ferrugineus	Tree Everlasting	Medium Shrub	High	4	No	No
					No	No
					No	No
					No	No
Persicaria praetermissa	Spotted Knotweed	Large Herb	High	1	No	No
Persicaria prostrata	Creeping Knotweed	Medium Herb	High	3	No	No

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Phragmites australis	Common Reed	Large Non-Tufted Graminoid (Grass-like plant)	Very High	3	No	No
Poa ensiformis	Sword Tussock-grass	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Poa labillardierei	Common Tussock-grass	Medium to Small Tufted Graminoid (Grass-like plant	Very High	3	No	No
Poa labillardierei var. labillardierei	Common Tussock-grass	Medium to Small Tufted Graminoid (Grass-like plant	High	3	No	No
Polystichum proliferum	Mother Shield-fern	Ground Fern	High	2	No	No
Potamogeton tricarinatus s.l.	Floating Pondweed	Medium Herb	High	1	No	No
Pteridium esculentum	Austral Bracken	Ground Fern	Moderate	2	No	No
Rubus parvifolius	Small-leaf Bramble	Scrambler or Climber	Very High	3	No	No
Rumex bidens	Mud Dock	Medium Herb	High	2	No	No
Rumex brownii	Slender Dock	Medium Herb	High	3	No	No
Sambucus gaudichaudiana	White Elderberry	Medium Herb	High	2	No	No
Schoenoplectus tabernaemontani	River Club-sedge	Large Non-Tufted Graminoid (Grass-like plant)	High	2	No	No
Senecio minimus	Shrubby Fireweed	Large Herb	High	1	No	No
Themeda triandra	Kangaroo Grass	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Triglochin procera s.l.	Water Ribbons	Large Tufted Graminoid (Grass-like plant)	High	1	No	No
Triglochin procera s.s.	Common Water-ribbons	Large Tufted Graminoid	High	3	No	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	No	No
[illegible] domingensis	[illegible] Cumbungi	[illegible]	[illegible]	[illegible]	No	No
Typha orientalis	Broad-leaf Cumbungi	Large Herb	High	4	No	No
Veronica gracilis	Slender Speedwell	Large Herb	High	2	No	No

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Viola hederacea sensu Willis (1972)	Ivy-leaf Violet	Medium Herb	High	2	No	No
Wahlenbergia gracilis	Sprawling Bluebell	Large Herb	Very High	2	No	No
Wolffia australiana	Tiny Duckweed	Small or Prostrate Herb	High	2	No	No

Appendix.5 Plant list- Shrubs and associated Benchmarks

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Central Victorian Uplands bioregion

EVC 20: Heathy Dry Forest

Description:
Grows on shallow, rocky skeletal soils on a variety of geologies and on a range of landforms from gently undulating hills to exposed aspects on ridge tops and steep slopes at a range of elevations. The overstorey is a low, open eucalypt forest to 20 m tall, poor in form with an open crown cover. The understorey is dominated by a low, sparse to dense layer of ericoid-leaved shrubs including heaths and peas. Graminoids and grasses are frequently present in the ground layer, but do not provide much cover.

Large trees:

Species	DBH(cm)	#/ha
Eucalyptus spp.	60 cm	20 / ha

Tree Canopy Cover:

%cover	Character Species	Common Name
30%	*Eucalyptus macrorhyncha*	Red Stringybark
	Eucalyptus dives	Broad-leaved Peppermint
	Eucalyptus polyanthemos	Red Box
	Eucalyptus goniocalyx s.l.	Long-leaf Box
	Eucalyptus mannifera ssp. *mannifera*	Brittle Gum

Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Medium Shrub	6	30%	MS
Small Shrub	5	20%	SS
Prostrate Shrub	1	1%	PS
Medium Herb	3	5%	MH
Large Tufted Graminoid	1	5%	LTG
Medium to Small Tufted Graminoid	4	20%	MTG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C
Total understorey projective foliage cover		**80%**	

EVC 20: Heathy Dry Forest – Central Victorian Uplands bioregion

LF Code	Species typical of at least part of EVC range	Common Name
MS	*Epacris impressa*	Common Heath
MS	*Pultenaea gunnii*	Golden Bush-pea
MS	*Banksia marginata*	Silver Banksia
MS	*Monotoca scoparia*	Prickly Broom-heath
SS	*Platylobium obtusangulum*	Common Flat-pea
SS	*Hovea heterophylla*	Common Hovea
SS	*Pultenaea humilis*	Dwarf Bush-pea
SS	*Leucopogon virgatus* var. *virgatus*	Common Beard-heath
PS	*Acrotriche serrulata*	Honey-pots
MH	*Gonocarpus tetragynus*	Common Raspwort
MH	*Drosera peltata* ssp. *auriculata*	Tall Sundew
LTG	*Xanthorrhoea australis*	Austral Grass-tree
MTG	*Dianella revoluta* s.l.	Black-anther Flax-lily
MTG	*Lomandra filiformis*	Wattle Mat-rush
MTG	*Poa sieberiana*	Grey Tussock-grass
MTG	*Joycea pallida*	Silvertop Wallaby-grass

Recruitment:
Episodic/Fire. Desirable period between disturbances is 20 years.

Organic Litter:
20 % cover

Logs:
20 m/0.1 ha.

Weediness:
There are no consistent weeds in this EVC.

EVC 20 Dry Heath Forest in the CVU Bioregion

Graminodes

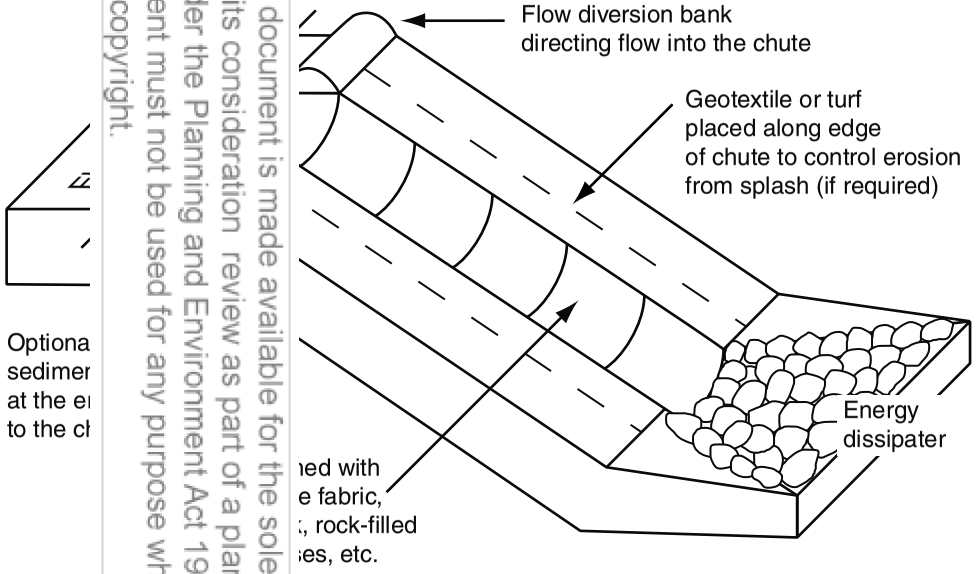
Shrubs

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Acrotriche serrulata	Honey-pots	Prostrate Shrub	High	1	No	No
Banksia marginata	Silver Banksia	Tree, Medium Shrub	High	3	No	No
Dianella revoluta s.l.	Black-anther Flax-lily	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Drosera peltata subsp. auriculata	Tall Sundew	Medium Herb	High	1	No	No
Epacris impressa	Common Heath	Medium Shrub	High	1	No	No
Eucalyptus dives	Broad-leaf Peppermint	Tree, Small Tree or Large Shrub	High	4	No	No
Eucalyptus goniocalyx s.l.	Bundy	Tree, Small Tree or Large Shrub	High	4	No	No
Eucalyptus macrorhyncha	Red Stringybark	Tree, Small Tree or Large Shrub	High	4	No	No
Eucalyptus mannifera subsp. mannifera	Brittle Gum	Tree, Small Tree or Large Shrub	High	4	No	No
Eucalyptus polyanthemos	Red Box	Tree, Small Tree or Large Shrub	High	4	No	No
Gonocarpus tetragynus	Common Raspwort	Medium Herb	High	2	No	No
Hovea heterophylla	Common Hovea	Small Shrub	High	2	No	No
Joycea pallida	Silvertop Wallaby-grass	Large Tufted Graminoid (Grass-like plant)	High	2	No	No
Leucopogon virgatus var. virgatus	Common Beard-heath	Small Shrub	High	1	No	No
Lomandra filiformis	Wattle Mat-rush	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Monotoca	Prickly Broom	Medium Shrub	High	1	No	No
					No	No
		(Grass-like plant			No	No
Pultenaea gunnii	Golden Bush-pea	Medium Shrub	High	2	No	No
Pultenaea humilis	Dwarf Bush-pea	Small Shrub	High	2	No	No

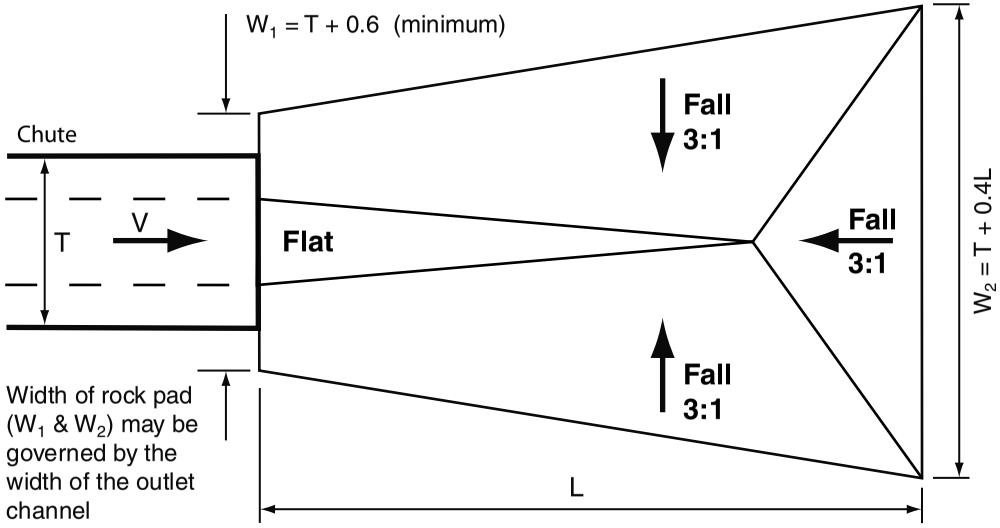
The Central Victorian Uplands Bioregion
Heathy Dry Forest

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Xanthorrhoea australis	Austral Grass-tree	Large Tufted Graminoid (Grass-like plant)	High	2	No	No

Appendix.6 Rock Shute

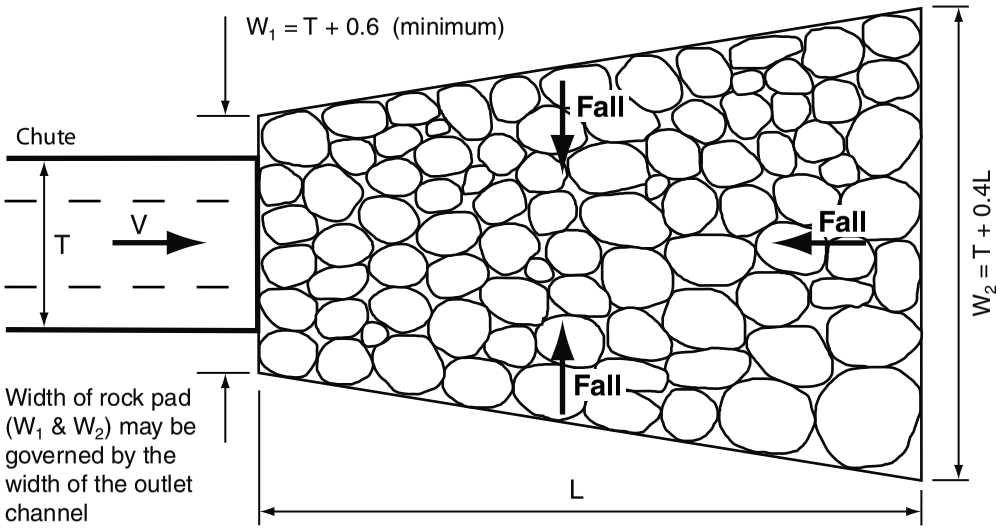


Drainage chute with rock pad outlet structure

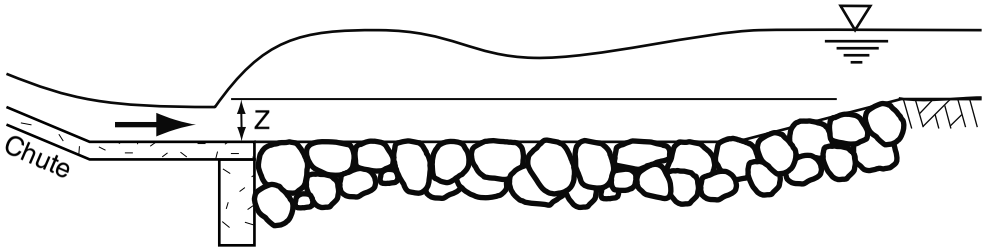


T = Maximum top width of flow at base of chute

(b) Typical layout of an outlet energy dissipater for a drainage chute



(c) Typical layout of a rock pad outlet structure for a drainage chute



(d) Typical profile of a rock pad outlet structure for a drainage chute

Notes:

1. Drawings applicable to temporary drainage chutes, **not** basin spillways.
2. A rock pad outlet structure is just one option for the design of the outlet energy dissipater.

Drawn:	Date:		
GMW	Dec-09	Chutes - General	CH-01

Appendix.7 10 Year Action Timeline

Year	Management Action	Responsible Authority	Timing of Action	Date completed
	Permit approval date			
1	Erect all fences as shown on the fence plan for pastures and all large dead or alive scattered trees on site. All wire must be **wildlife-friendly** barbed wire is not to be used on site.	Landowner/Contractor	Within 3 months of approved planning permit.	
1	Construct traffic route as shown on the fence plan with an all weather surface to a minimum of 3m wide for vehicle access on site.	Landowner/Contractor	Within 3 months of approved planning permit.	
1	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
1	Weed control	Landowner/Bushland Management Contractor	Clear all Blackberry on site within 12 months of the approved permit (Noxious Weed) . Clear other weeds as they emerge to look to control to at least 1% cover.	
1	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
1	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	

Year	Management Action	Responsible Authority	Timing of Action	Date completed
1	Organise a PIC number for stock from the Department of Agriculture	Landowner	Within 12 months of the approved planning permit.	
1	Contact Trust for Nature and discuss a Land for Wildlife voluntary agreement for the site.	Landowner	Within 12 months of the approved planning permit.	
1	Engage an Agronomist to prepare a seed assortment to increase biodiversity on site that containes at least 3 nitrogen fixing species and an overall biodiversity of 8 species.	Agronomist	Within 3 months of approved planning permit.	
1	Prepare pastures as specified by the Agronomist	Agronomist	Within 12 months of approved planning permit	
1	Over sow all paddocks with new species in Autumn if sufficient rainfall is predicted or as specified by the Agronomist.	Agronomist	Within 12 months of approved planning permit.	
1	Look to install waterpoints in all paddocks for stock	Landowner		
1	Connect waterpoints to pump system and tank storage or check daily and top up and clean as required.	Landowner		
	Look to purchase stock or bring back stock to site			

Year	Management Action	Responsible Authority	Timing of Action	Date completed
1	Start stock off in Paddock.1 and rotate once cover is eaten down and cover starts to shown signs of 90% cover. Move stock to Paddock.2; continue through all pastures to retain cover. **Note paddock 5 is only to be used when the soil and climate is dry.**	Landowner		
1	Find a Indigenous Plant nursery to source stock from	Landowner		
1	Look to source to order/purchase Graminoides (Grass-like plants) for **Regeneration area.1** (1500 plants)	Landowner		
1	Clear debris, rocks, and cut down any grass to prepare for planting in the **Regeneration area.1**	Landowner		
1	Construct dusk to dawn pens for any dogs kept on site. This is to protect Koalas and Banicoots on site.	Landowner	Within 3 months of approved planning permit.	
1	Construct outdoor pens for any cats so they are contained on site at all times. This is to protect endangered species on site such as the Bandicoot and bird species.	Landowner	Within 3 months of approved planning permit.	
	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain			

Year	Management Action	Responsible Authority	Timing of Action	Date completed
1	Avoid the use of **Pindone and 1080** on site- use only a registered contractor for any poisons.	Landowner/Contractor		
1	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
1	Remove any existing barb wire and replace with a suitable wildlife friendly wire.			
1	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
2	Look to install both spillways to dams as noted on the Farm Management Plan	Landowner/Contractor	Finalise within 18 months of approved planning permit	
2	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
2	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
2	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
			Weekly suggested	

Year	Management Action	Responsible Authority	Timing of Action	Date completed
2	Clear debris, rocks, and cut down any grass to prepare for planting in the **Regeneration area.2 and 3.**	Landowner		
2	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. Note paddock 5 is only to be used when the soil and climate is dry.	Landowner		
2	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
2	Plant **Regeneration area.1** in Autumn if average rains are predicted. If not delay until normal rainfall patterns return.	Landowner		
2	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.			
2	Avoid the use of **Pindone and 1080** on site- use only a registered contractor for any poisons.	Landowner/Contractor		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
2	Water at time of planting and maintain emerging weeds.	Landowner		
2	Look to source to order/purchase Graminoides (Grass-like plants) for **Regeneration area.2 (Part)** (2700 plants)	Landowner		
2	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
2	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
3	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
3	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
3	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
3	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
		ontractor		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
3	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
3	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
3	Clear debris, rocks, and cut down any grass to prepare for planting in the **Regeneration area.4**	Landowner		
3	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
3	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. Note paddock 5 is only to be used when the soil and climate is dry.	Landowner		
3	Plant **Regeneration area.2 and 3** in Autumn if average rains are predicted. If not delay until normal rainfall patterns return.	Landowner		
3	Water at time of planting and maintain emerging weeds.	Landowner		
3	Look to source to order/purchase Shrubs (624 plants)	Landowner		
			Within 3 months of loss.	

Year	Management Action	Responsible Authority	Timing of Action	Date completed
3	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
4	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
4	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
4	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
4	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
4	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
4	Clear debris, rocks, and cut down any grass to prepare for planting in the **Regeneration area.5**			
4	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
		ontractor		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
4	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
4	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. Note paddock 5 is only to be used when the soil and climate is dry.	Landowner		
4	Plant **Regeneration area.4** in Autumn if average rains are predicted. If not delay until normal rainfall patterns return.	Landowner		
4	Water at time of planting and maintain emerging weeds.	Landowner		
4	Look to source to order/purchase Shrubs for **Regeneration area.5** (624 plants)	Landowner		
4	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
4	Consult with Agronomist to undertake soil testing to determine if any amellioration of the soil is required	Agronomist		
4	Rectify any chemical deficiencies and check pasture species are still evident in biodiversity and over sown any loss to pastures	Agronomist		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
4	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
5	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
5	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
5	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
5	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
5	Check routinely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
5	Clear debris, rocks, and cut down any grass to prepare for planting in the **Regeneration area.6**			
5	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
		ontractor		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
5	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
5	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. **Note paddock 5 is only to be used when the soil and climate is dry.**	Landowner		
5	Plant **Regeneration area.5** in Autumn if average rains are predicted. If not delay until normal rainfall patterns return.	Landowner		
5	Water at time of planting and maintain emerging weeds.	Landowner		
5	Look to source to order/purchase graminoides (Grass-like) for **Regeneration area.6** (1800 plants)	Landowner		
5	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
5	Construct nesting boxes (2) for Phascagole on site as per Land Management Report.	Landowner		
			At the end of each anniversary of the approved permit.	

Year	Management Action	Responsible Authority	Timing of Action	Date completed
6	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
6	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
6	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
6	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
6	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
6	Clear debris, rocks, and cut down any grass to prepare for planting in the **Regeneration area.7**			
6	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway	Landowner		
		ontractor		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
6	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
6	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. **Note paddock 5 is only to be used when the soil and climate is dry.**	Landowner		
6	Plant **Regeneration area.6** in Autumn if average rains are predicted. If not delay until normal rainfall patterns return.	Landowner		
6	Water at time of planting and maintain emerging weeds.	Landowner		
6	Look to source to order/purchase graminoides (Grass-like) for **Regeneration area.7** (1800 plants)	Landowner		
6	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
6	Construct nesting boxes (2) for Powerful Owl on site as per Land Management Report.	Landowner		
6	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
		ushland Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	

Year	Management Action	Responsible Authority	Timing of Action	Date completed
7	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
7	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
7	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
7	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
7	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
7	Avoid the use of **Pindone and 1080** on site- use only a registered contractor for any poisons.	Landowner/Contractor		
7	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
	Continue stock rotation through all pastures to			

Year	Management Action	Responsible Authority	Timing of Action	Date completed
7	Plant **Regeneration area.7** in Autumn if average rains are predicted. If not delay until normal rainfall patterns return.	Landowner		
7	Water at time of planting and maintain emerging weeds.	Landowner		
7	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
7	Consult with Agronomist to undertake soil testing to determine if any amellioration of the soil is required	Agronomist		
7	Rectify any chemical deficiencies and check pasture species are still evident in biodiversity and over sown any loss to pastures.	Agronomist		
7	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
8	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
8	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
8	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
			Daily	

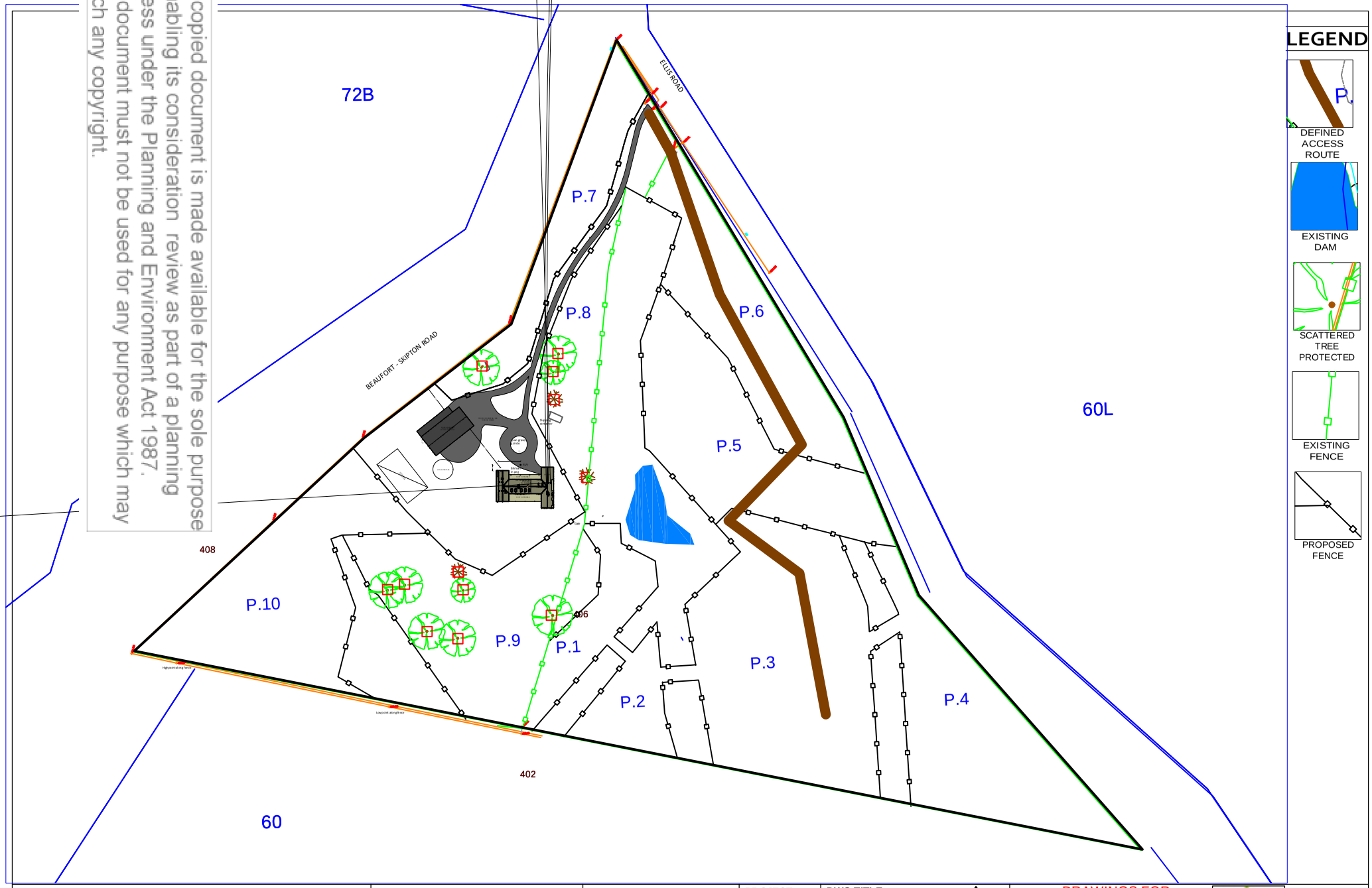
Year	Management Action	Responsible Authority	Timing of Action	Date completed
8	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
8	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
8	Avoid the use of **Pindone and 1080** on site- use only a registered contractor for any poisons.	Landowner/Contractor		
8	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
8	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. **Note paddock 5 is only to be used when the soil and climate is dry.**	Landowner		
8	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
8	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
		ushland Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	

Year	Management Action	Responsible Authority	Timing of Action	Date completed
9	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
9	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
9	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
9	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
9	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
9	Avoid the use of **Pindone and 1080** on site- use only a registered contractor for any poisons.	Landowner/Contractor		
9	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
	Continue stock rotation through all pastures to			

Year	Management Action	Responsible Authority	Timing of Action	Date completed
9	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
9	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
10	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
10	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
10	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
10	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
10	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
10	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
10	Avoid the use of **Pindone and 1080** on site- use only a registered contractor for any poisons.	Landowner/Contractor		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
10	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. **Note paddock 5 is only to be used when the soil and climate is dry.**	Landowner		
10	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
10	Consult with Agronomist to undertake soil testing to determine if any amellioration of the soil is required	Agronomist		
10	Rectify any chemical deficiencies and check pasture species are still evident in biodiversity and over sown any loss to pastures.	Agronomist		
10	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	

Appendix.8 Fence Plan



LEGEND

- DEFINED ACCESS ROUTE
- EXISTING DAM
- SCATTERED TREE PROTECTED
- EXISTING FENCE
- PROPOSED FENCE

Note:
The contractor shall verify all dimensions and all underground services at the site before commencing work. The contractor shall verify all levels from the consulting engineer prior to construction.

DO NOT SCALE FROM DRAWINGS

PROJECT: *Lot 1 TP567841 (Ellis Road, Beaufort)*

PROJECT NO: *2751*

DATE: JUL 2025

DWG TITLE: *FENCE AND ACCESS PLAN-FMP*

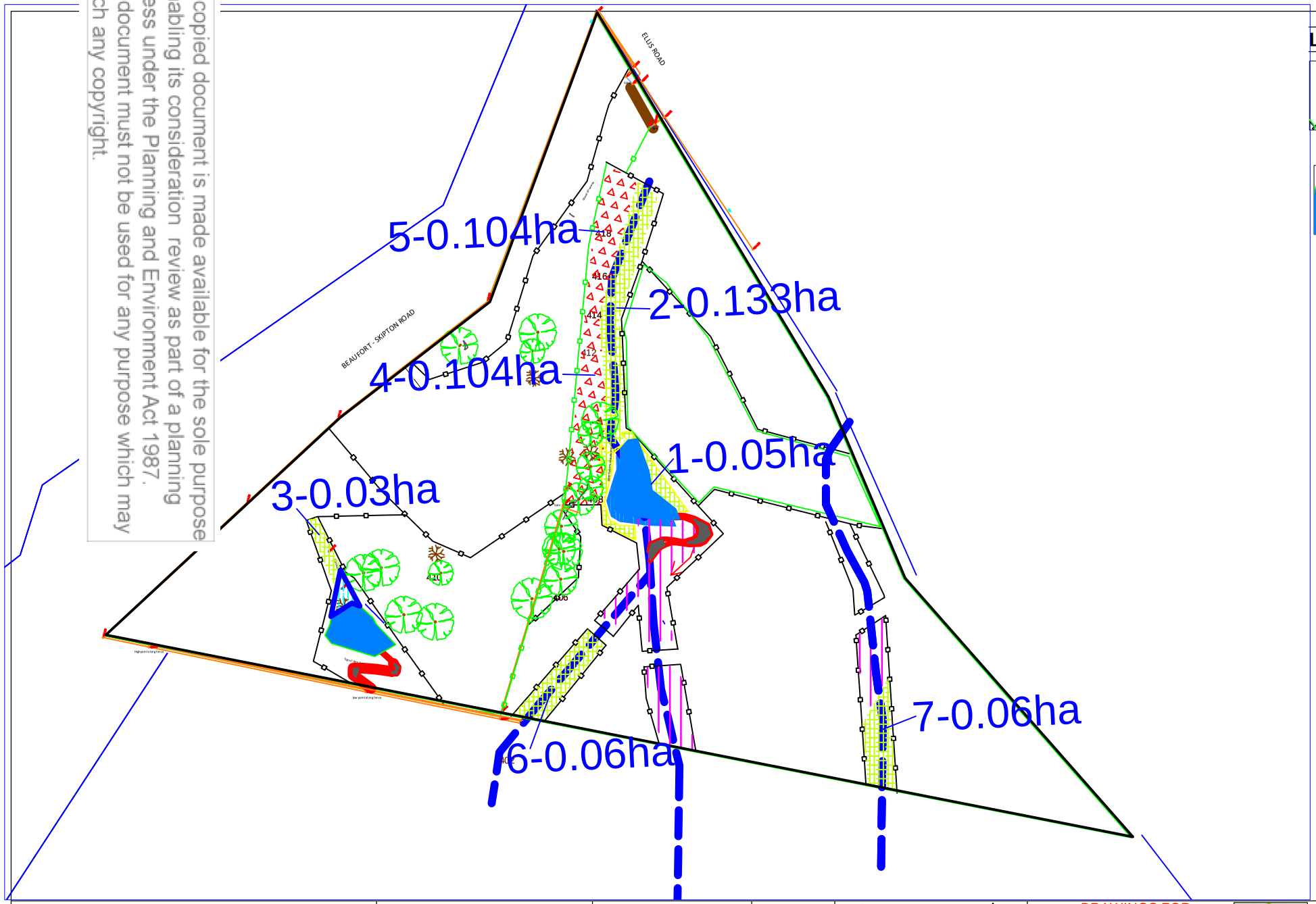
SCALE: 1:2500 @A4

NORTH (West, East, South)

DRAWINGS FOR PLANNING PERMIT ONLY NOT TO BE USED FOR CONSTRUCTION

NATURAL RESOURCE LINK PTY LTD
54 Frazer Street
Clunes 3370
julie@nrlinks.com.au

Appendix.9 Regeneration Plan



LEGEND

- DEFINED ACCESS ROUTE
- EXISTING DAM
- SCATTERED TREE PROTECTED
- SPILLWAY
- REVEGETATE SHRUBS (EROSION CONTROL) — 412
- REVEGETATE GRAMINOIDS
- MAINTAIN COVER 100%
- PRIORITY NUMBER FOR REGENERATION — 7

Note:
The contractor shall verify all dimensions and all underground services at the site before commencing work. The contractor shall verify all levels from the consulting engineer prior to construction.

DO NOT SCALE FROM DRAWINGS

PROJECT: *Lot 1 TP567841 (Ellis Road, Beaufort)*

PROJECT NO: *2751*

DATE: JUL 2025

DWG TITLE: *REGENERATION PLAN-FMP*

SCALE: 1:2500 @A4

NORTH (West, East, South)

DRAWINGS FOR PLANNING PERMIT ONLY NOT TO BE USED FOR CONSTRUCTION

NATURAL RESOURCE LINK PTY LTD
54 Frazer Street
Clunes 3370
julie@nrlinks.com.au

Appendix.10 Monitoring Form

Annual Landowner Monitoring and Reporting form

Owner of site	
Address of site	
Planning Permit NO	
Planning permit date of issue	
Year	
Responsible Authority	

Actions listed in year plan for that year	Date completed	Key performance target met (Y/N)	Comments

TITLE PLAN		EDITION 1	TP 567841Y

Location of Land

Parish: TRAWALLA
Township:
Section:
Crown Allotment: 60K (PT)
Crown Portion:

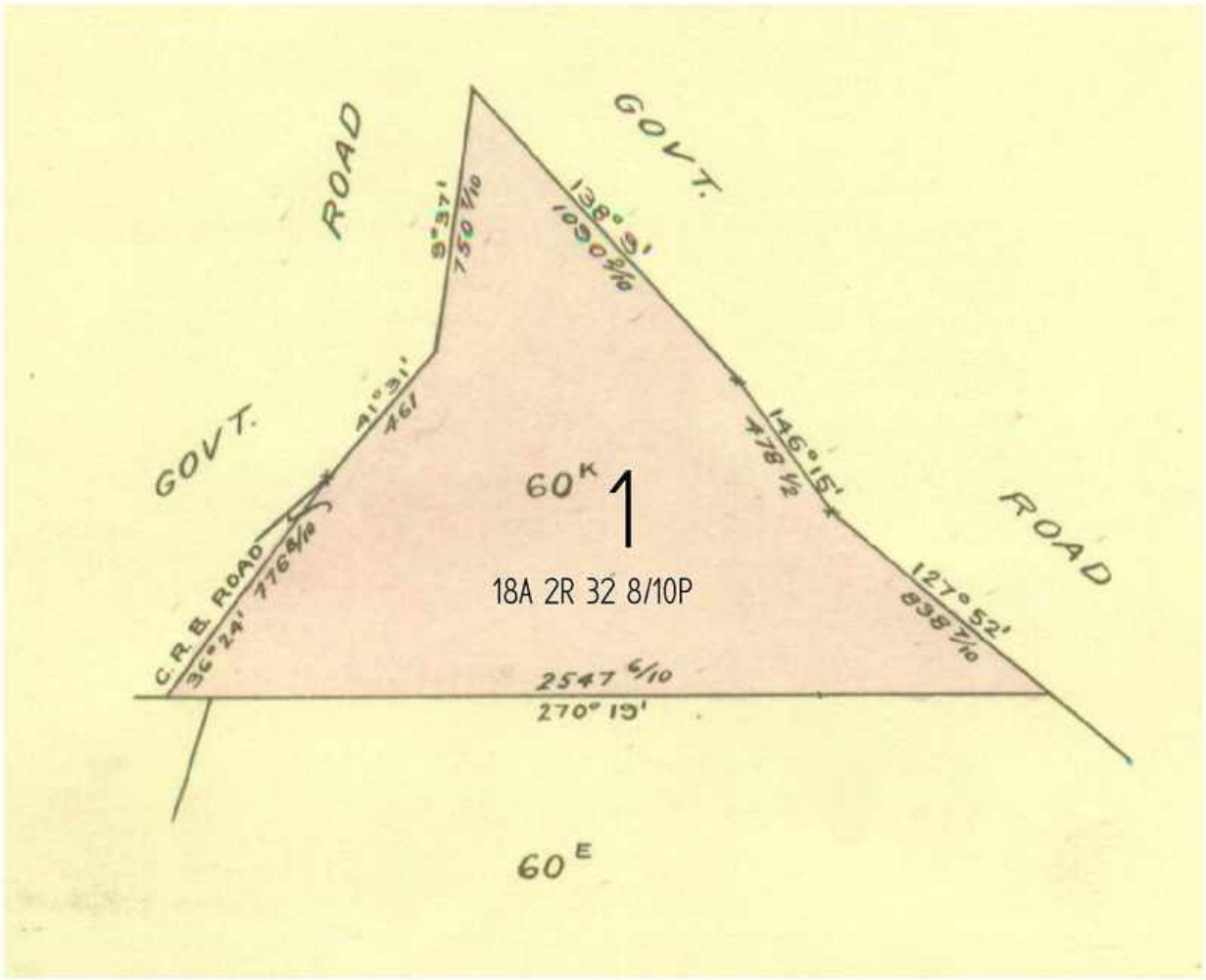
Last Plan Reference:
Derived From: VOL 8783 FOL 931
Depth Limitation: 50 FEET

Notations

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

Description of Land / Easement Information

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT
COMPILED: 17/07/2000
VERIFIED: CL

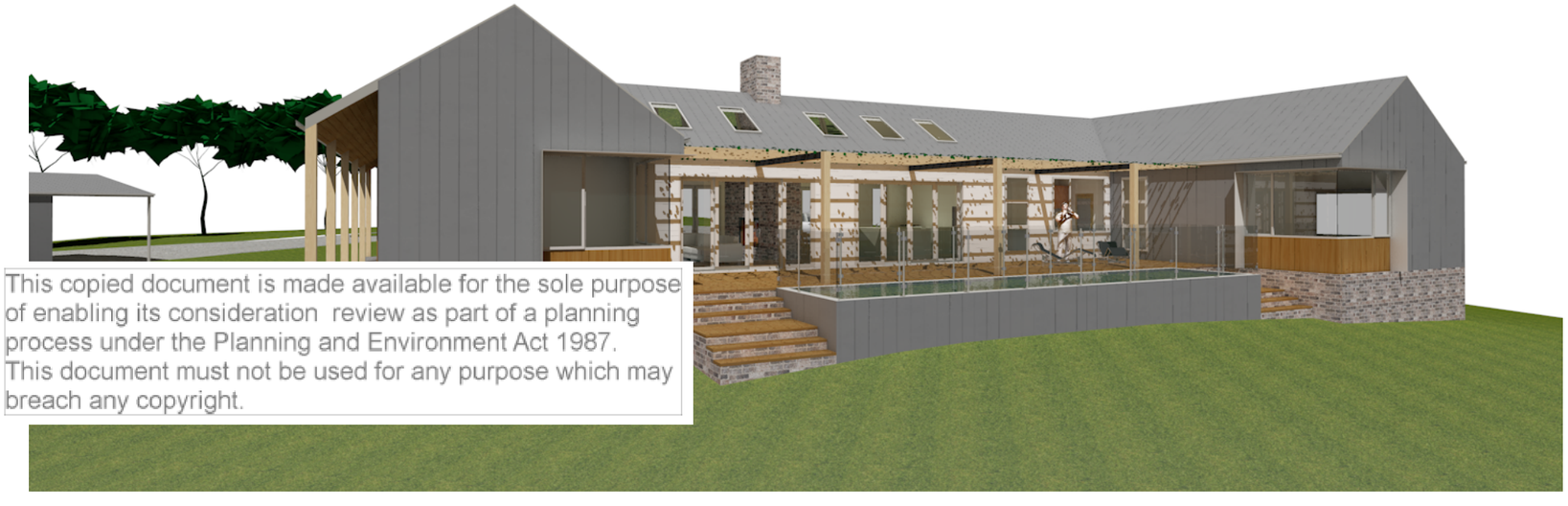


ENTIFIERS
this Title Plan this does
e Sale of Land Act 1962

PARCEL 1 = CA 60K (PT)

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

PLANNING DRAWINGS
FOR PROPOSED DWELLING AND SHED AT
LOT 1 ELLIS ROAD, BEAUFORT FOR
MATT & JACINTA

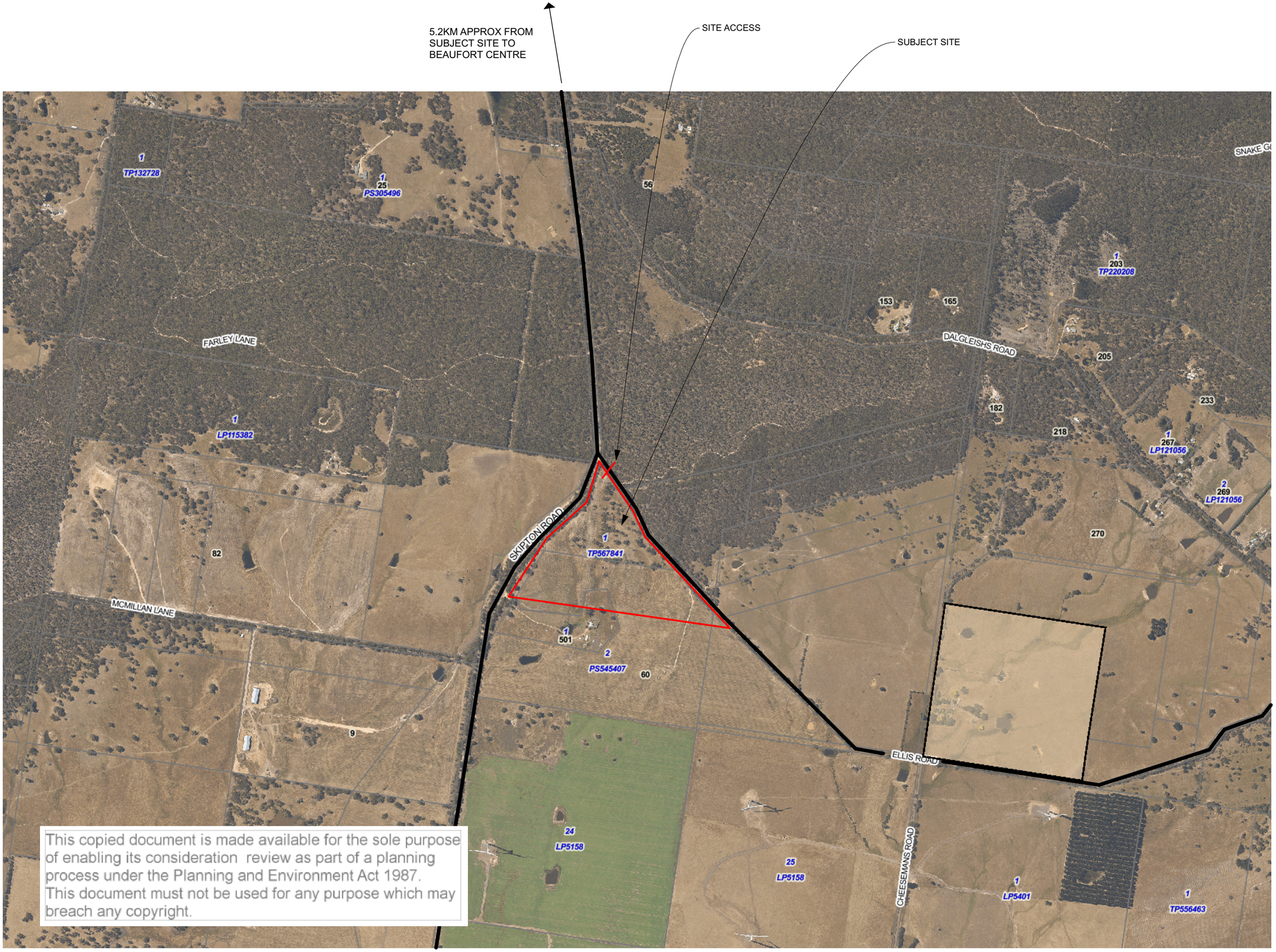


Drawing Index

© documentation by:

LDDESIGN

Issued: 10/11/2025 | Dwg No.: 1 | Rev:



AERIAL PHOTOMAP

LDDESIGN
Level 4, 60 Moorabool St
Geelong, VIC, 3220
0402 719 654
admin@lddesign.com.au
DP-AD 45196

Rev.	Amendments	Date
1	Concept Drawings	08/11/24
2	Planning Drawings	04/12/24
3	Planning Drawings Amendment	12/08/25
4	Planning Drawings Amendment	05/11/25

Bush Fire Attack Level: **BAL 29**

Revision:

The contractor shall verify all dimensions on site prior to the commencement of any works. Figured dimensions shall take precedence over scaled. Drawings shall not be used for construction purposes until issued for construction.

Client
MATT & JACINTA

Project Name
PROPOSED DWELLING AND SHED
LOT 1 ELLIS ROAD
BEAUFORT, 3373

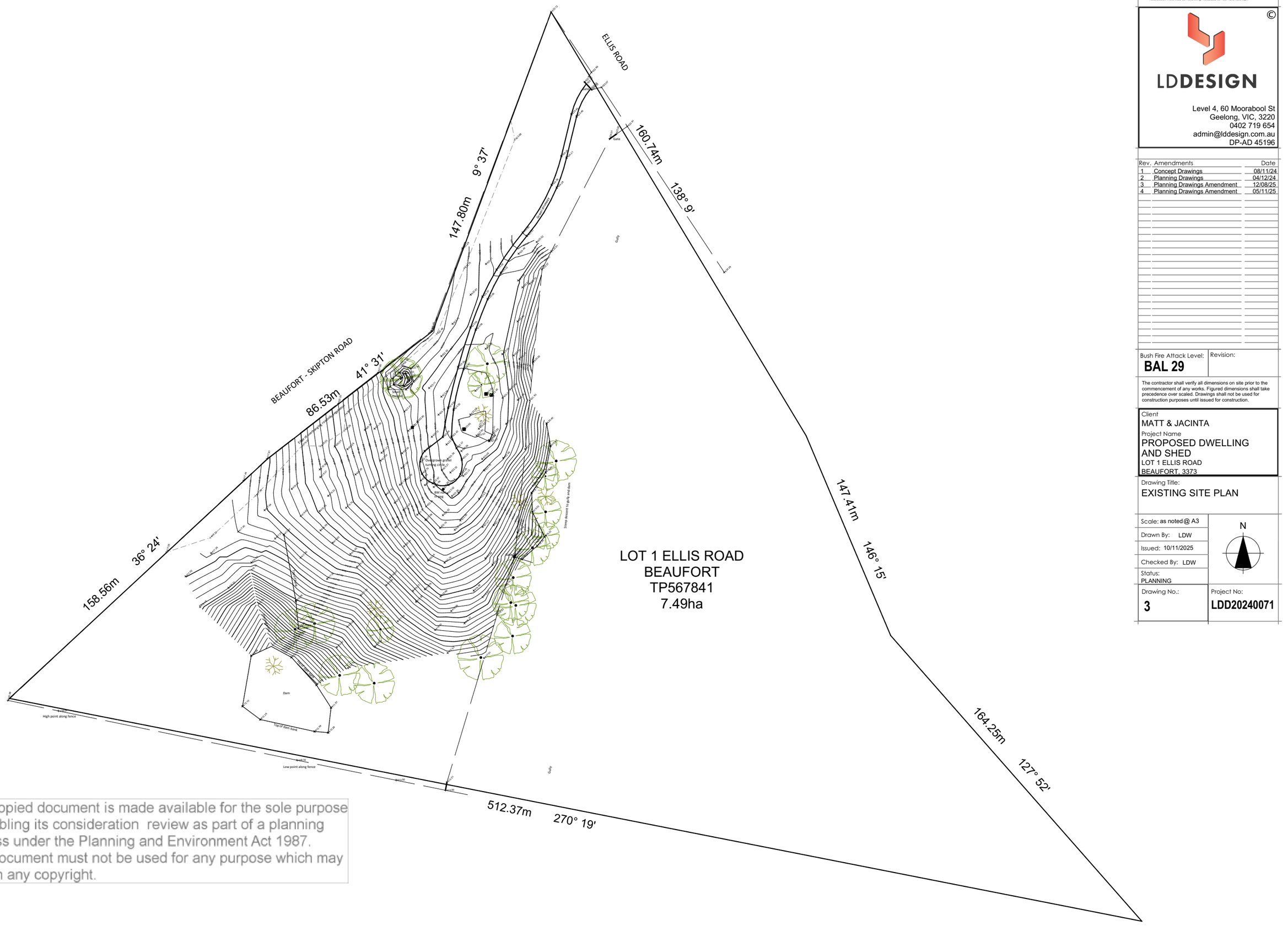
Drawing Title:
AERIAL PHOTOMAP

Scale: as noted @ A3
Drawn By: LDW
Issued: 10/11/2025
Checked By: LDW
Status: PLANNING

N

Drawing No.: **2**

Project No: **LDD20240071**



C:\Users\Louise\Ford\OneDrive - LDDesign\Documents - 2024 Projects\Lot 1 Ellis Road, Cnr of Skipton Road, Beaufort VIC 3373 20240071\06 Drawing Files\LDD20240071 Lot 1 Ellis Road v3.pln

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Rev.	Amendments	Date
1	Concept Drawings	08/11/24
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Bush Fire Attack Level: **BAL 29**

Revision:

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Client
MATT & JACINTA

Project Name
PROPOSED DWELLING AND SHED
LOT 1 ELLIS ROAD
BEAUFORT, 3373

Drawing Title:
EXISTING SITE PLAN

Scale: as noted@ A3
Drawn By: LDW
Issued: 10/11/2025
Checked By: LDW
Status: PLANNING

N

Drawing No.: **3**

Project No: **LDD20240071**

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Rev.	Amendments	Date
1	Concept Drawings	08/11/24
2	Planning Drawings	04/12/24
3	Planning Drawings Amendment	12/08/25
4	Planning Drawings Amendment	05/11/25

Bush Fire Attack Level: **BAL 29**

Revision:

Client
MATT & JACINTA

Project Name
PROPOSED DWELLING AND SHED
LOT 1 ELLIS ROAD
BEAUFORT, 3373

Drawing Title:
EXISTING CONDITIONS - PHOTOS

Scale: as noted@ A3

Drawn By: LDW

Issued: 10/11/2025

Checked By: LDW

Status: PLANNING

Drawing No.: **4**

Project No: **LDD20240071**

1:1500

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Rev.	Amendments	Date
1	Concept Drawings	08/11/24
2	Planning Drawings	04/12/24
3	Planning Drawings Amendment	12/08/25
4	Planning Drawings Amendment	05/11/25

Bush Fire Attack Level: **BAL 29**

Revision:

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Client
MATT & JACINTA

Project Name
PROPOSED DWELLING AND SHED
LOT 1 ELLIS ROAD
BEAUFORT, 3373

Drawing Title:
OVERALL SITE PLAN PROPOSED

Scale: as noted@ A3

Drawn By: LDW

Issued: 10/11/2025

Checked By: LDW

Status: PLANNING

N

Drawing No.: **5**

Project No: **LDD20240071**

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admin@lddesign.com.au
DP-AD 45196

Rev.	Amendments	Date
1	Concept Drawings	08/11/24
2	Planning Drawings	04/12/24
3	Planning Drawings Amendment	12/08/25
4	Planning Drawings Amendment	05/11/25

Bush Fire Attack Level:
BAL 29

Revision:

The contractor shall verify all dimensions on site prior to the commencement of any works. Figured dimensions shall take precedence over scaled. Drawings shall not be used for construction purposes until issued for construction.

Client
MATT & JACINTA

Project Name
PROPOSED DWELLING AND SHED
LOT 1 ELLIS ROAD
BEAUFORT, 3373

Drawing Title:
ENLARGED SITE PLAN PROPOSED

Scale: as noted @ A3
Drawn By: LDW
Issued: 10/11/2025
Checked By: LDW
Status: PLANNING

N

Drawing No.: **6**

Project No: **LDD20240071**

BEAUFORT SKIPTON ROAD

86.53m 41° 31'

Edge of overhanging roadside vegetation

PROPOSED SHED
FFL: 421.6 Approx. FOR
PROPOSED CONCRETE SLAB

PROPOSED DRIVEWAY AND TURNING CIRCLES

Small mound

Overgrown gravel turning circle

CFA WATER TANK

WASTE WATER EFFLUENT FIELD

BM NAIL IN PEG

BM nail in peg

PROPOSED RESIDENCE
FFL: 423 Approx. FOR
PROPOSED CONCRETE SLAB

NORTH VERANDAH

GARAGE

SOUTH VERANDAH

POOL

Top of bank

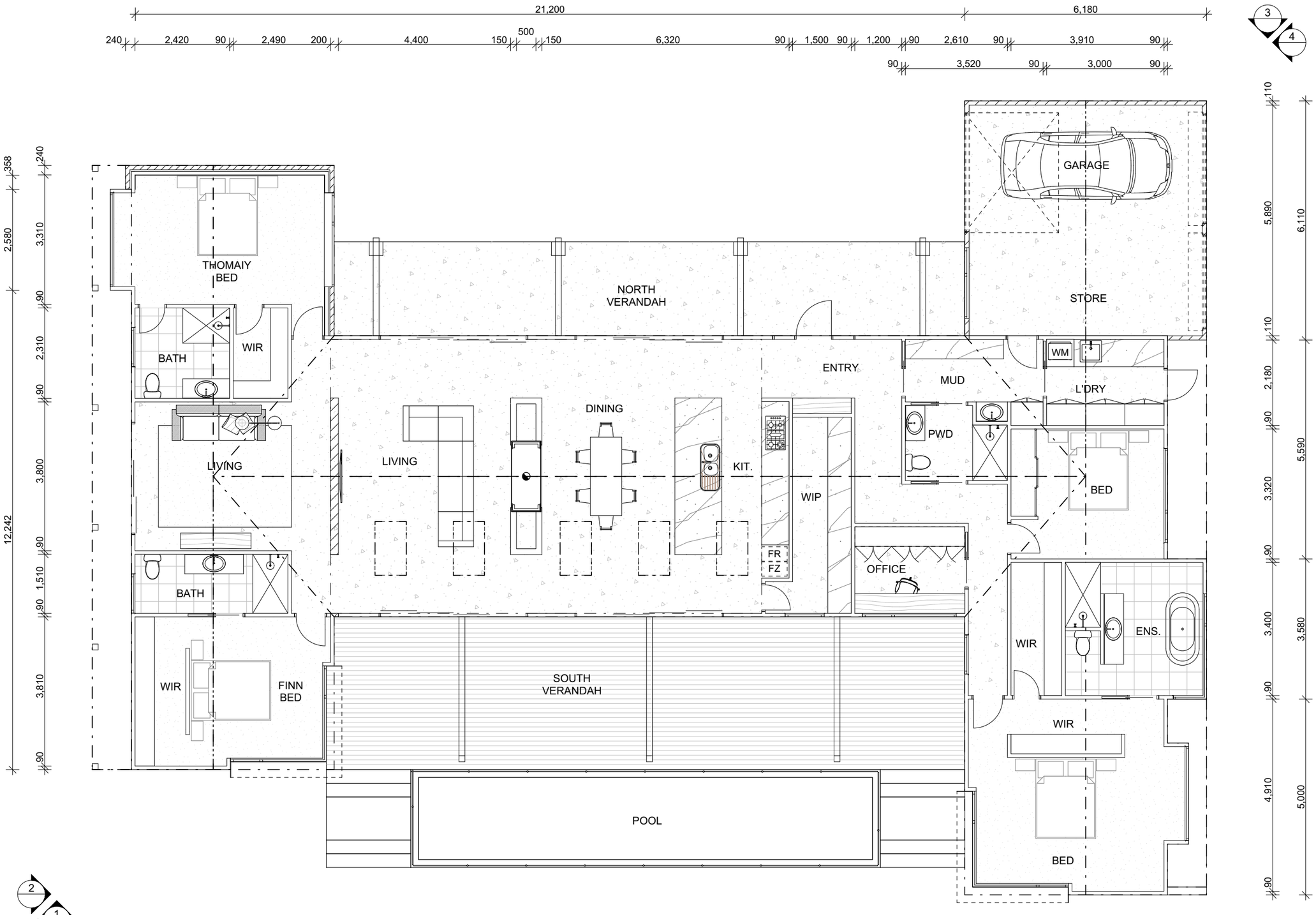
Steep descent to gully and dam

Gate

Top of bank

LOT 1 ELLIS ROAD
BEAUFORT
TP567841
7.49ha

PROPOSED SITE PLAN ENLARGED
1:500



10,820 | 700 | 90 | 1,500 | 90 | 2,810 | 90 | 1,000 | 90 | 1,300 | 90 | 3,520 | 90

16,120 | 90 | 5,000 | 90

16,120 | 5,180 | 1,000

PROPOSED FLOOR PLAN

1:100

Floor Area Calculation - All Floors Proposed

Floor	Location	Area	Perimeter
GROUND FLOOR			
	PROPOSED GARAGE	395.19	103.58
	PROPOSED SHED	358.00	79.00
	PROPOSED DWELLING	274.06	102.18
	SOUTH VERANDAH	63.40	40.44
	NORTH VERANDAH	38.69	37.04
		1,129.34 m²	**362.24 m**

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Bush Fire Attack Level: **BAL 29**

Revision:

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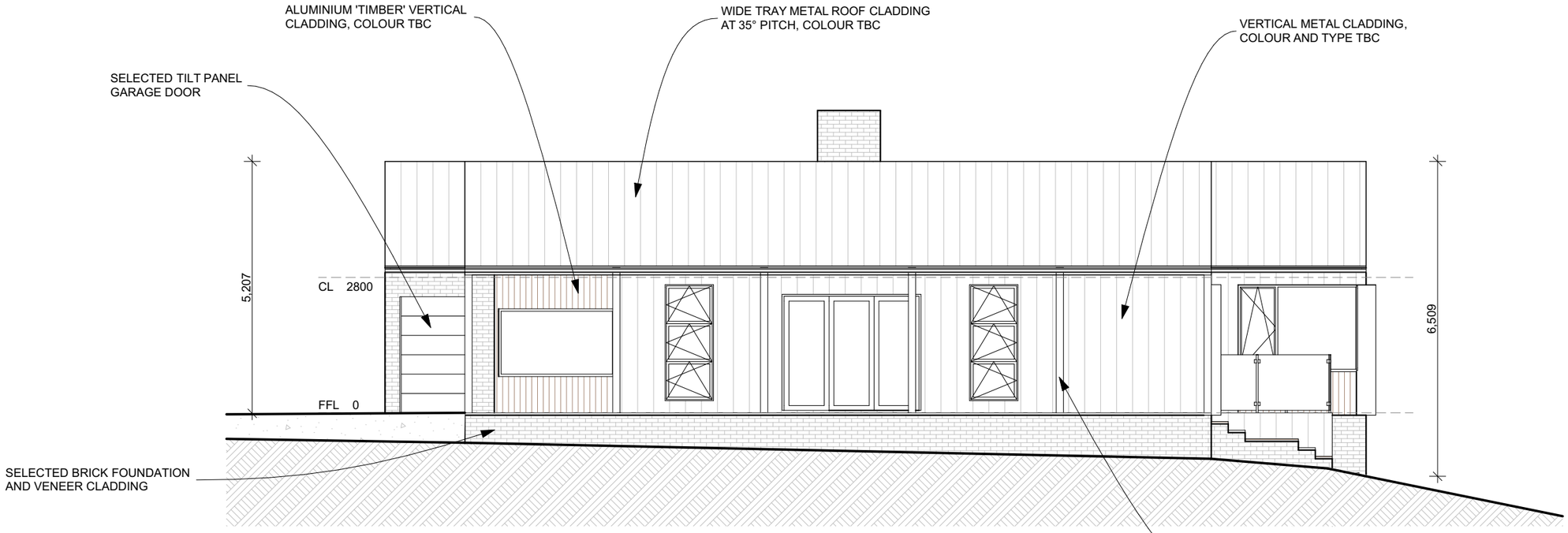
Client
MATT & JACINTA

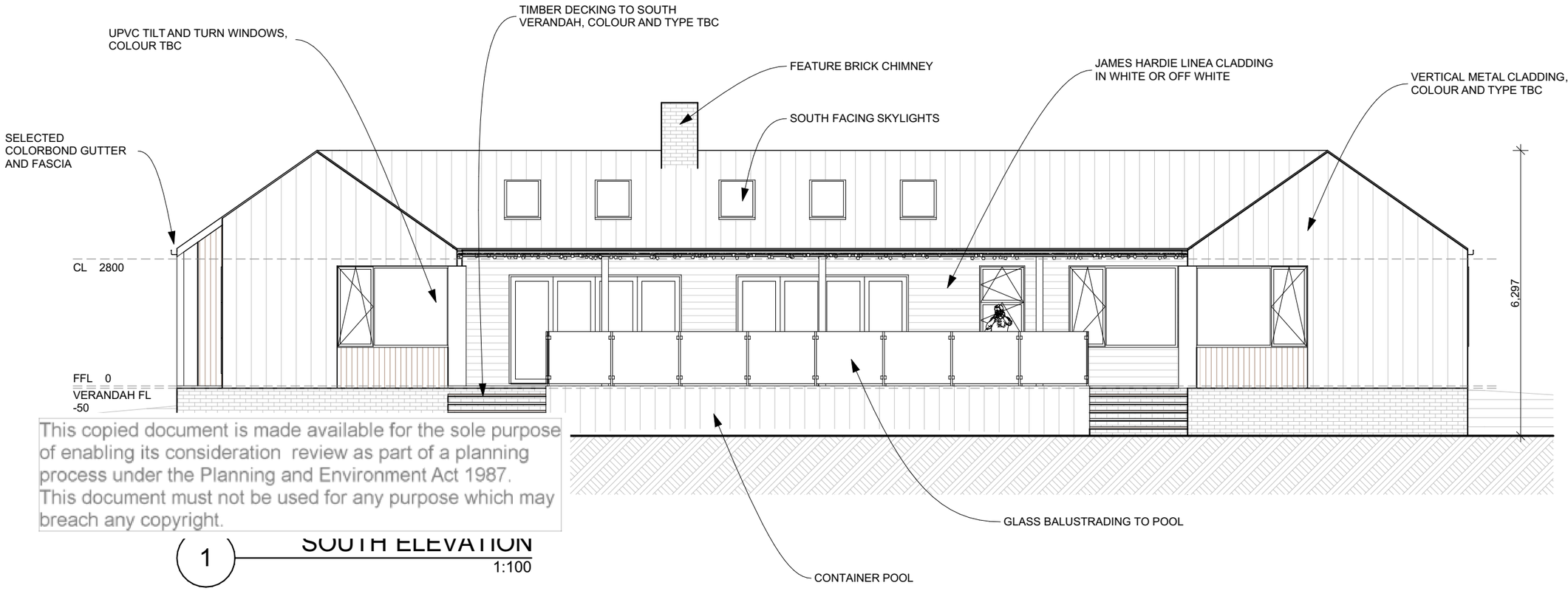
Project Name
PROPOSED DWELLING AND SHED
LOT 1 ELLIS ROAD
BEAUFORT, 3373

Drawing Title:
PROPOSED FLOOR PLAN

Scale: as noted @ A3
Drawn By: LDW
Issued: 10/11/2025
Checked By: LDW
Status: PLANNING
Drawing No.: **7**
Project No: **LDD20240071**
N



2 WEST ELEVATION
1:100



1 SOUTH ELEVATION
1:100

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1	Concept Drawings	08/11/24
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Bush Fire Attack Level: **BAL 29**

Revision:

The contractor shall verify all dimensions on site prior to the commencement of any works. Figured dimensions shall take precedence over scaled. Drawings shall not be used for construction purposes until issued for construction.

Client
MATT & JACINTA

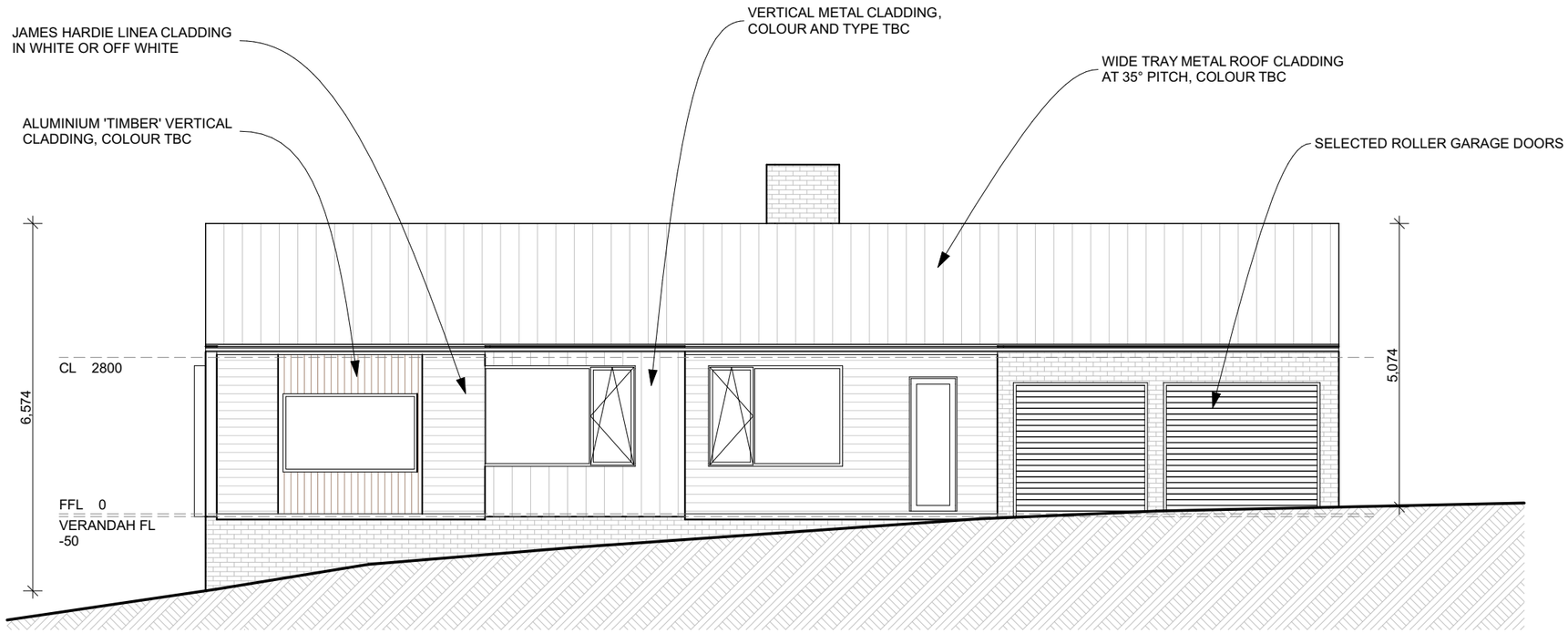
Project Name
PROPOSED DWELLING AND SHED
LOT 1 ELLIS ROAD
BEAUFORT, 3373

Drawing Title:
PROPOSED ELEVATIONS

Scale: as noted@ A3
Drawn By: LDW
Issued: 10/11/2025
Checked By: LDW
Status: PLANNING

Drawing No.: **8**

Project No: **LDD20240071**



4 EAST ELEVATION
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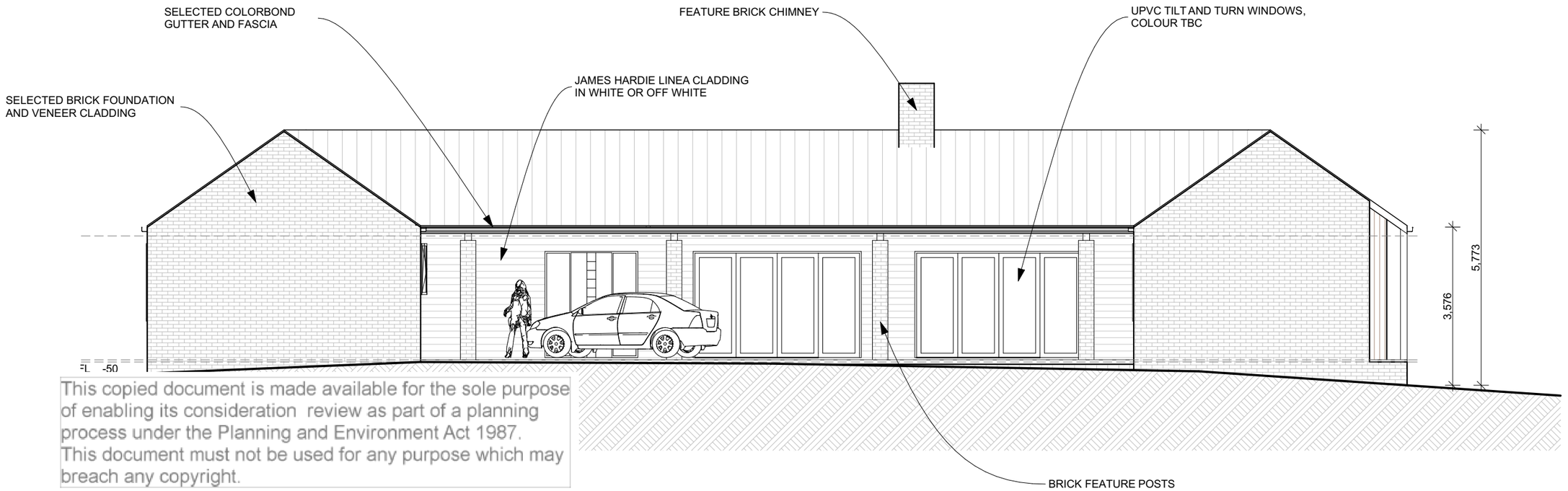


3 SOUTH ELEVATION
1:100

LDDESIGN
Level 4, 60 Moorabool St
Geelong, VIC, 3220
0402 719 654
admin@lddesign.com.au
DP-AD 45196

Rev.	Amendments	Date
1	Concept Drawings	08/11/24
2	Planning Drawings	04/12/24
3	Planning Drawings Amendment	12/08/25
4	Planning Drawings Amendment	05/11/25

Bush Fire Attack Level: **BAL 29**

Revision:

The contractor shall verify all dimensions on site prior to the commencement of any works. Figured dimensions shall take precedence over scaled. Drawings shall not be used for construction purposes until issued for construction.

Client
MATT & JACINTA

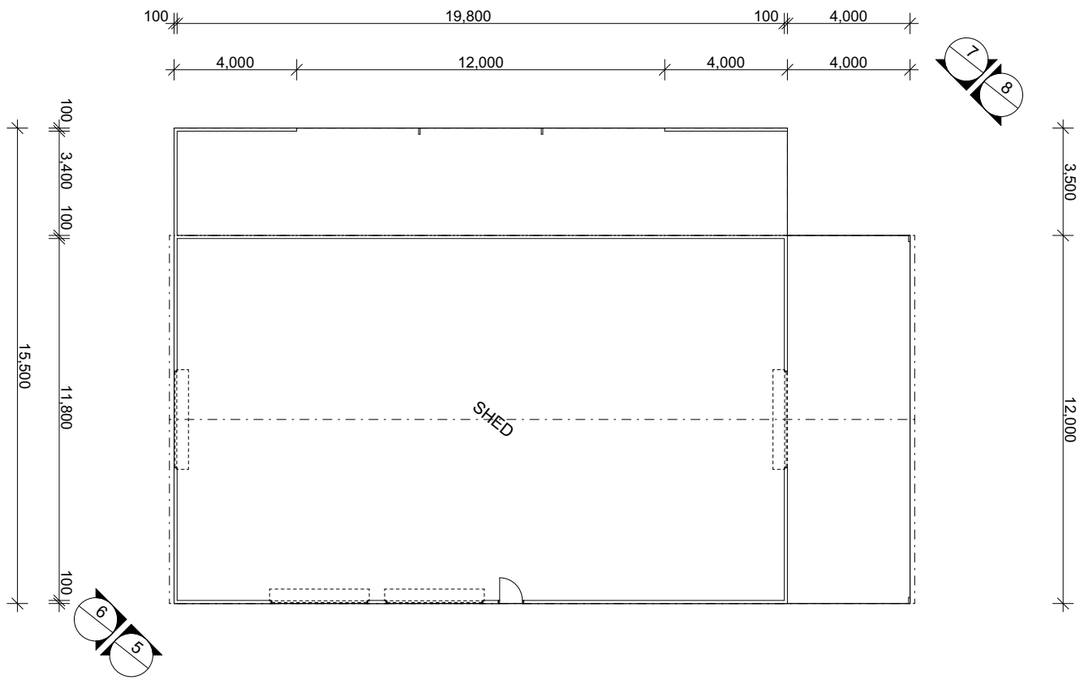
Project Name
PROPOSED DWELLING AND SHED
LOT 1 ELLIS ROAD
BEAUFORT, 3373

Drawing Title:
PROPOSED ELEVATIONS

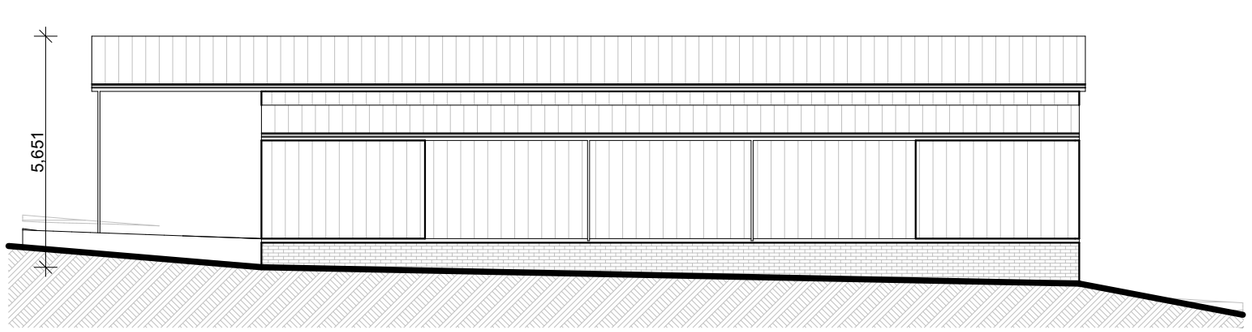
Scale: as noted @ A3
Drawn By: LDW
Issued: 10/11/2025
Checked By: LDW
Status: PLANNING

Drawing No.: **9**

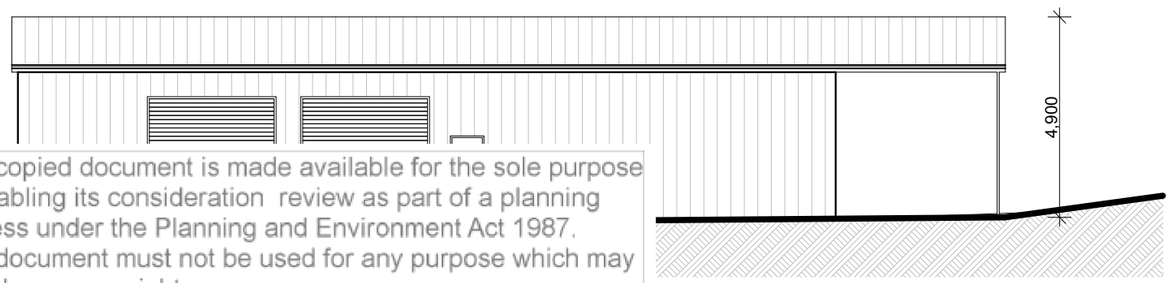
Project No: **LDD20240071**



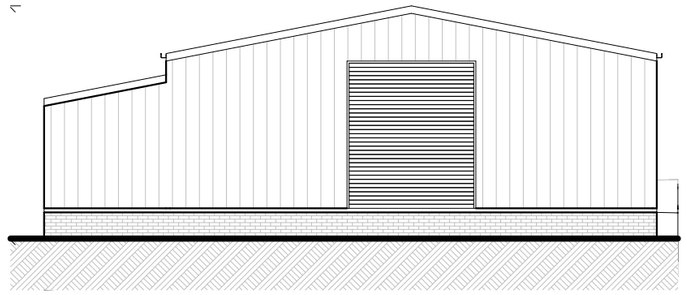
PROPOSED FLOOR PLAN
1:200



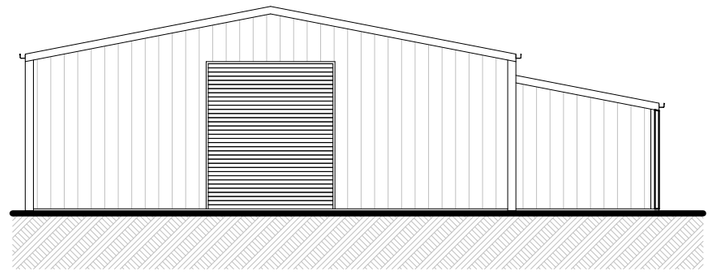
7 NORTHWEST SHED ELEVATION
1:150



5 SOUTHEAST SHED ELEVATION
1:150



6 SOUTHWEST SHED ELEVATION
1:150



8 NORTHEAST SHED ELEVATION
1:150

SHED BY OTHERS

Floor Area Calculation - All Floors Proposed			
Floor	**Location**	**Area**	**Perimeter**
GROUND FLOOR			
	PROPOSED GARAGE	395.19	103.58
	PROPOSED SHED	358.00	79.00
	PROPOSED DWELLING	274.06	102.18
	SOUTH VERANDAH	63.40	40.44
	NORTH VERANDAH	38.69	37.04
		1,129.34 m²	**362.24 m**

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DP-AD 45196

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Bush Fire Attack Level: **BAL 29**

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Client
MATT & JACINTA

Project Name
PROPOSED DWELLING AND SHED
LOT 1 ELLIS ROAD
BEAUFORT, 3373

Drawing Title:
SHED PLAN AND ELEVATIONS

Scale: as noted @ A3
Drawn By: LDW
Issued: 10/11/2025
Checked By: LDW
Status: PLANNING

N

Drawing No.: **10**

Project No: **LDD20240071**

LAND MANAGEMENT PLAN

FOR

LOT.1 TP567841

ELLIS ROAD, BEAUFORT

JOB NO: 2751

NR LINKS
Your Planning & Permit Consultants

Ellis Road, Beaufort

Project: 2751

Report prepared by: Julie Lee of Natural Resource Link Pty Ltd Town Planner (MPIA), Post grad.Dip Planning, Post grad Dip Bushfire Planning & Management, Post grad Cert. Regenerative Agriculture,. Dip Conservation and Land Management, Coastal/Water Management and Cert.Horticulture

Julie Lee is a rural planner that is qualified in many areas such as Bushfire Planning, Town Planning, Agroecology (Regenerative Agriculture), Conservation and Land Management, Coastal and Water Management , Horticulture and is a sessional lecturer to the Victorian Planning Institute in Integrated Land Management for Farming zone and Biodiversity.

Natural Resource Link Pty Ltd

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Ph: 0406 459 522

Email: julie@nrlinks.com.au

REV	DATE	DETAILS
	5/8/2025	Final
A	12/11/2025	Add in 10 year Actions, Monitoring Form, Fence and Regeneration Plan

Disclaimer

Natural Resource Link Pty Ltd does not accept any liability for an error, omission or loss or other consequence that may arise from relying on this report. The soil health visual inspection for this report follows the methodology for visual soil inspections by G. Shepherd, Soil Scientist (BioAgrinomics.com New Zealand) Soil testing is by EAL Environmental Analysis Laboratory at [illegible] including general recommendations for [illegible] reflect a brief look of the soils for the [illegible] nd ongoing testing of soils will need to be [illegible] ral in nature and not based on surveys and

Contents

Images

Introduction

This site is zoned Farming Zone and has site constraints to soils and remnant vegetation and an Integrated Land Management Report has been compiled to address the proposed use on site.

A site plan to show buildings and outbuildings

- Zones
- All paddocks and internal fencing
- Dams
- Areas set aside for regeneration/revegetation
- Remnant patches of vegetation
- A site plan showing where revegetation will be located

A summary of each zone to include specific management of each ecological community to include specific management requirements to be undertaken

Locality data and spatial context

The site is within a rural area to the south of the township of Beaufort just below the Andrews State Forest along the Skipton Road. The landscape in the vicinity of this site is large open lot with a mix of Agroforestry and cropping and grazing. There is a mix of undulation across the landscape and there are a few waterways and numerous drainage lines with intact patches of remnant vegetation. The site is currently used for grazing; however, no stock was sighted on the site visit. The paddocks are fenced to separate the open pastures of the west side from the remnant area to the east. The site is 7.57ha in size and there are some smaller parcels of similar size in the landscape.

Image 1 Landscape around site (Source: Landchecker nd)

Image 2 aerial image of the site (Source: Google Earth)

Planning

The site is zoned Farming Zone with Bushfire Management on more than half of the site.

The purpose of the farming zone is :

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To provide for the use of land for agriculture.
- To encourage the retention of productive agricultural land.
- To ensure that non-agricultural uses, including dwellings, do not adversely affect the use of land for agriculture.
- To encourage the retention of employment and population to support rural communities.
- To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision.
- To provide for the use and development of land for the specific purposes identified in a schedule to this zone.

The purpose of the Bushfire Overlay is

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire.
- To identify areas where the bushfire hazard warrants bushfire protection measures to be

he risk to life and property from bushfire

to ensure that it places the house in easy

sk of radiant heat to the area. Human

safety is the highest priority for the siting of a new dwelling. The regeneration on site are outside of the proposed defendable space.

Site history

The site now is like the image of 2005 when it was part of the lot to the south.

Image 3 Site is 2005 with drainage lines (red) (Source: Google Earth 10.02.2005)

Image 4 Site the open areas were planted out (Agroforestry) (Source: Google Earth 19.03.2012)

Image 5 Site cleared of trees and cropped. (Source: Google Earth 16.01.2017)

oogle Earth 20.12.2021)

Geology

Beaufort Formation(-Cab): generic

TEXT_DESCR: Sandstone, mudstone and black shale: sand-poor turbidite facies tectonically modified to phyllite, quartz-mica or graphitic schist; weathered to partly kaolinised; deep marine deposits

Image 7 Soil mapping on site (Victorian Government nd ,Datashare)

The soil on type was a red gradational soil and the study from The Land Capability Study of the Shire of Newham and Woodend notes these soils on site to be Osd and this is what was found on site.

Biodiversity

The biodiversity mapped on site is mostly EVC 20 Heathy Dry Forest which is Least Concern in the CVU Bioregion and on the site survey this would be the case for the site.

nment and Climate Action, 2023)

Risks requiring management

Landform- Soil risks

The site is mapped to be a Sodosol and 2.1Ss6-2 which has the following soil risks for Agriculture:

Shallow stony soils

Compaction	Moderate
Leaching	High
Mass Movement	Nil
Salinisation	Low
Water erosion	High
Water logging	Nil
Wind Erosion	Nil

The issues of erosion, compaction and leaching require attention in the Land Management Plan.

Fire

The site is under a Bushfire Management Overlay and the fire risk should not be increased to a level that is above the capacity of the development. Fire risk is important, and regeneration must not increase the fire risk.

Erosion

These sedimentary soils from sandstone and where there is a lack of ground cover are susceptible to erosion. The site ground cover was good across the site and areas of erosion around the dams were noted from the soil disturbance.

Image 9 Rill erosion of the dam from water

slumped area where the dam is positioned.

Image 11 Erosion along the edge of the dam most likely from stock.

erosion

ture plan and will require attention.

Erosion control

Control of erosion is of imperative importance to protecting the topsoil and ameliorating the risk of exposing often highly dispersive subsoils. Erosion on a farm can be controlled by:

- Increasing diversion banks to spread surface flow more often
- Provide broader disposal points
- Increase friction by introducing vegetation
- Treat the soil with gypsum prior to revegetating the area
- Remove stock from the area with fencing
- Maintaining 90% cover and limiting grazing
- Place rock shutes to allow for runoff from the existing dams
- Provide rock shutes with vegetation to areas that are showing erosion flowing into the dam.
- Control rabbits on site
- Maintain remnant vegetation along gullies and areas of recharge
- Dam gullies and give due consideration to spillways

Estimates of minimum groundcover (%) required to reduce erosion for a range of slope gradients and soil erodibility classes and soil types.
Source: NSW DPI Agfact P2.1.14 January 2005. Maintaining groundcover to reduce erosion and sustain production.

Erodibility	Typical soil types	Flat	Gentle	Moderate	Steep
Low	deep sands	60	80	90	100
Low to moderate	sandy loams, light clays, ferrosols	60	85	95	100
Moderate to high	dermosols, vertosols	65	90	100	100
High	kandosols, sodosols	70	90	100	100
Low to high	drainage lines (all soil types)	100	100	100	100

Image 13 Discussion of slope and soil type in relation of required cover to ameliorate erosion , (Source New South Wales Primary Industries, 2009)

The soil type on site is a sodosol requires a minimum of 70% cover on flat with gentle slopes always

Currently the water flows down onto the lot below and these areas are too wet to crop as shown in these images below.

Image 14 water movement on aerials (Source Google 19.08.2022)

Image 15 Wet areas not cropped on adjacent lot (Source: Google 28.02.2019)

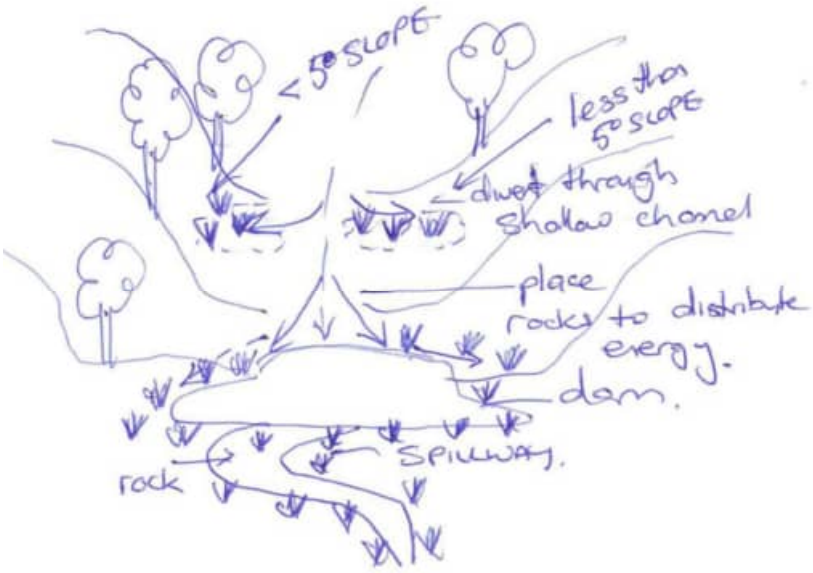
along the drainage lines where sufficient

on

Mitigating Erosion along the drainage line

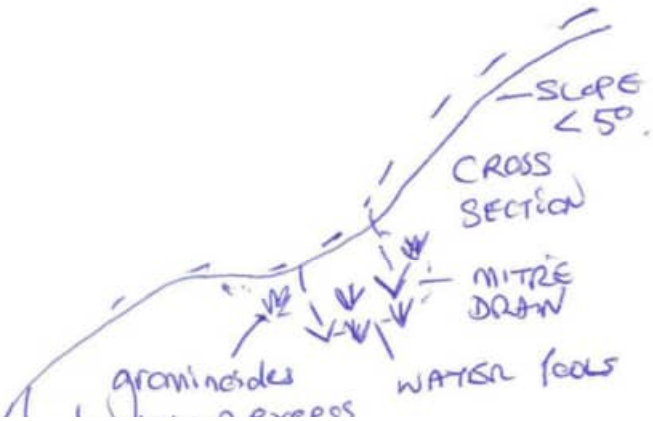
Mitre drains

Mitre drains are surface channels that distribute water to a larger area to the sides of the drain to safely distribute and should be ideally as close together as practical. Ideally less than 50m apart and much closer on steep or in readable soils. The slope of the drain must be less than 5°to avoid scouring and needs to discharge to a safe area. The notated drains are indicative only and not based on site survey levels or designed by an engineer.



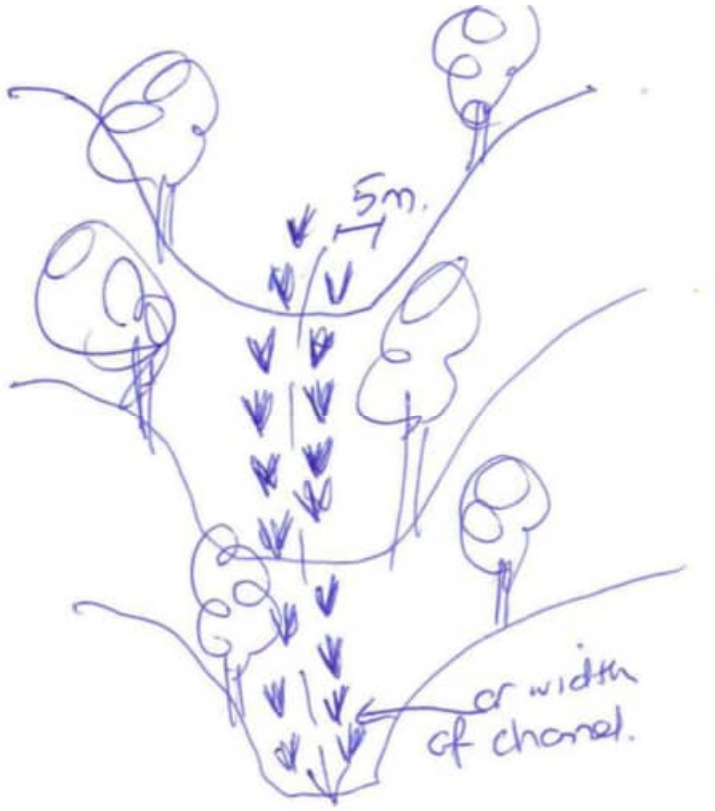
Front section of water running down the drainage line on site indicating appropriate placement of mitre drains and the use of vegetation to dry excess water and filter sediment. High flow concentration areas as the entry and discharge from the dam to use a rock lined spillway.

Image 16 front view of drainage line to dam on site with mitre drains and vegetation.



A cross section of the drainage line whereby the mitre drains to the base of the slope to an area of graminoids (Grass-like plants) where water is used up by the vegetation. The use of graminoids is recommended to the mitre drains to allow the water to discharge to area that is stable against erosion.

nitre drains and vegetation.



It is recommended that the width of grass-like vegetation is planted and maintained to a maximum width of 5m either side of the drainage channel or to the width of the channel.

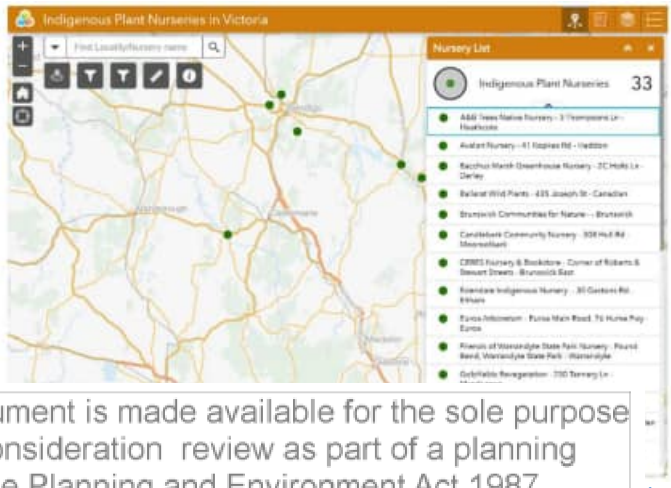
This cover is retained and plants replaced if lost so that a 100% of cover is there to mitigate the loss of soil for all drainage lines on site due to dispersiveness of the sodosols. No vehicle access is allowed to cross the drainage line unless there is an appropriate crossing in place such as rock ford, or culvert.

Image 18 Front view of vegetation in drainage lines

Disclaimer: All details for the mitre drains are general in nature and not based on survey or hydrology calculations by an engineer.

A list of suitable plants will be supplied in Appendix.

Revegetation



This website highlights the locations across Victoria of the Indigenous plant nurseries you can source stock from

lant-nurseries-in-victoria

Regeneration Area.1 is the land around the existing dam and requires graminoids (grass-like plants) to filter sediment and nutrients from entering the waterway. This area is around 0.05ha in size, typically a benchmark area would have at least 5 plants per square metre. However, we are looking to regeneration to a lower realistic condition score of 0.6 (1 being a benchmark). Graminoids should be chosen from EVC 83 (Swampy Riparian Woodland) from the CVU Bioregion.

So 0.6 x 5 x 500 (sqm) = 1500 plants

Regeneration Area 2 is the upper reach of the drainage line north of the dam, which requires graminoids (grass-like plants) to filter sediment and nutrients from entering the waterway. This area is around 0.133ha in size, typically a benchmark area would have at least 5 plants per square metre. However, we are looking to regeneration to a lower realistic condition score of 0.6 (1 being a benchmark).Graminoids should be chosen from EVC 83 (Swampy Riparian Woodland) from the CVU Bioregion.

So 0.6 x 5 x 1330 (sqm) = 4500 plants

Regeneration Area.3 is the land above the existing dam south of the proposed dwelling requires graminoids (grass-like plants) to filter sediment and nutrients from entering the waterway. This area is around 0.03ha in size, typically a benchmark area would have at least 5 plants per square metre. However, we are looking to regeneration to a lower realistic condition score of 0.6 (1 being a benchmark).Graminoids should be chosen from EVC 83 (Swampy Riprian Woodland) from the CVU Bioregion.

So 0.6 x 5 x 300 (sqm) = 900 plants

Regeneration Areas 4 and 5 (Shrubs)-The steep slopes to the east of the existing fence where there is a steep slope it is recommended that this be revegetated to assist in erosion control. The suitable vegetation will be source from Appendix and looks to reproduce 60% of the benchmark of the applicable EVC 20 (Heathy Dry Forest) from the CVU Bioregion.

This area being 0.208ha; typically, typically (1 sqm = 1.5 shrubs) so 0.208= 2080 being the benchmark so at a regeneration value of 0.6 would mean that 2080 x 0.6 1248 plants would be needed for this area These will be planted over two years.

Regeneration Area 6 is the lower reach of the drainage line south of the dam, which requires graminoids (grass-like plants) to filter sediment and nutrients from entering the waterway. This area is around 0.06ha in size, typically a benchmark area would have at least 5 plants per square metre. However, we are looking to regeneration to a lower realistic condition score of 0.6 (1 being a benchmark).Graminoids should be chosen from EVC 83 (Swampy Riparian Woodland) from the CVU Bioregion.

So 0.6 x 5 x 600 (sqm) = 1800 plants

ne to the far west of the property which
nd nutrients from entering the waterway.
rea would have at least 5 plants per square
r realistic condition score of 0.6 (1 being a
wampy Riparian Woodland) from the CVU
Bioregion.

So 0.6 x 5 x 600 (sqm) = 1800 plants

Spillway and rock chute

A rock spillway is to be installed at the end of the drainage line that discharges water from the east side of the site into the dam as shown in the image below.

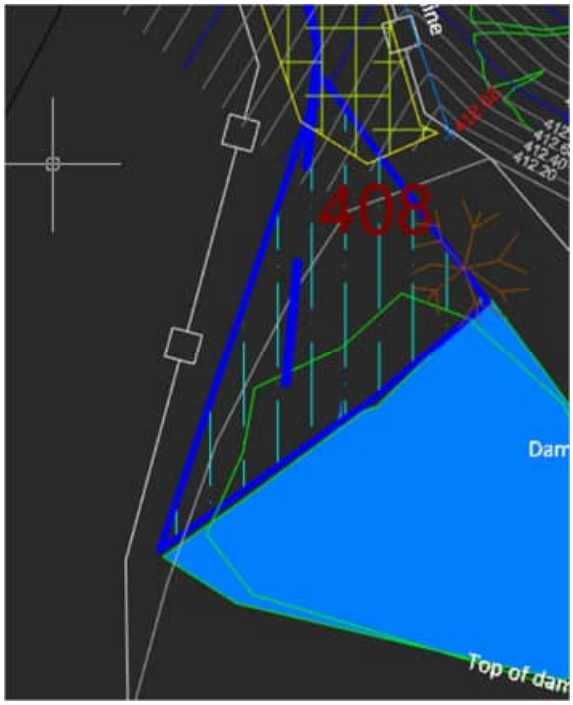


Image. 19 Rock shute to the end of the drainage line in Paddock.10

6. (source: Catchments and creeks 2023)

Disclaimer: All details for the spillway are general in nature and not based on survey or hydrology calculations by an engineer.

The image above demonstrates how the soil is protected by rocks that dissipate the energy flowing from the end of the drainage line into the dam so that it does not continue to erode. You can also plant grass-like plants into this area in pockets to filter debris washing down into the dam this will assist in keeping the water clear.

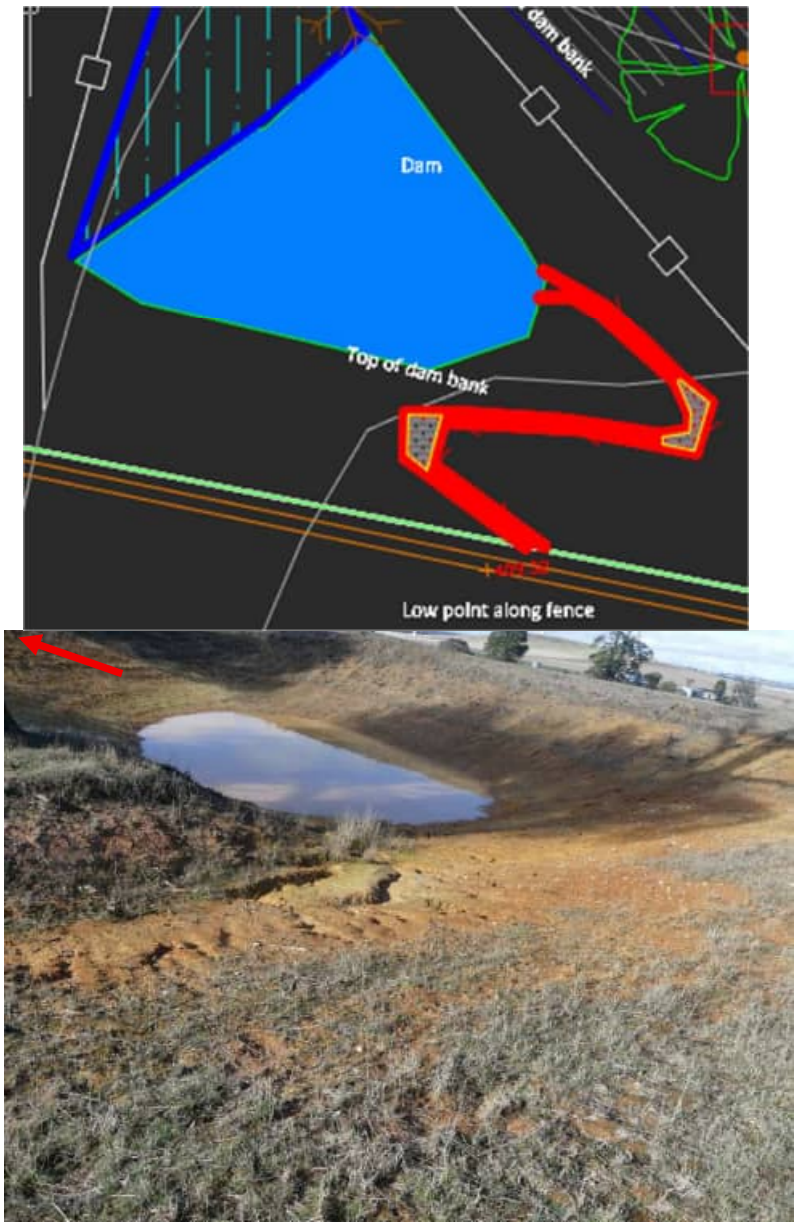


Image 21 Design spillway to the lowest point of the dam and dig a channel to form a twisting line to the low point near the fence as noted in these images.

l to reduce the risk of erosion. Each curve the side and will need more rocks as a

Image 22 Example of a rock spillway to the lowest point in the dam so that water flow out in extreme storm is controlled and does not continue to erode (Source: Proagrimedia, 2022)

should avoid damaging tree roots.

Weeds

The site was managed exceptionally well for weeds and not many were evident on the site visit

Weed Management

Rubus fruiticosa spp.agg (Blackberry)

Description	Life cycle	Status	Dispersal methods
It is a semi-prostrate to almost-erect shrub, with arching and entangling stems arising from a woody crown and forms thickets up to several metres high. The root/crown system is the only perennial part of the plant. Blackberry stems are erect, or semi-erect, canes that arch or trail up to 7 m long. They can be green, purplish or red, smooth or moderately hairy, round or angled, with numerous curved or straight prickles of different sizes and sometimes with small, stalked glands.	**Germination:** Seed germinates September to November. Blackberries can also spread by daughter plants. **Flowering:** December to April **Fruiting:** February to April	**Noxious** Blackberry is an extremely serious agricultural threat, owing to its rapid growth and ability to reproduce through various methods. It is a highly invasive species that will readily establish on disturbed sites and infest large areas. Once established it is expensive to manage and can even be a fire hazard due to large amounts of dead canes.	Blackberry fruit are eaten by birds, foxes and other mammals which distribute seeds over wide areas. Seeds are transported by water along creeks, drains and rivers. Movement of contaminated soil and cultivationand spread blackberry. Infestations increase in size via the formation of daughter plants at the end of canes, up to 6 m from the crown. Blackberry seedlings are not very vigorous in their fist year but after a woody crown is formed, they become firmly established. New canes are produced from the crown each spring and frequently project horizontally for over 3 m from the crown after one growing season.

Distribution across the site

Along waterlines to the north-east corner of the site spreading from the adjacent lot to the north.

Control options within the site

Prescribed measures for the control is:
Application of a registered herbicide
Physical removal
Mulching
Removal along waterways is best undertaken by a registered consultant to avoid any impacts of the herbicide on the aquatic life and water quality.

Scotch Thistle (Onopardum acanthium)

Description	Life cycle	Status	Dispersal methods
Thistles compete with pastures and reduce their carrying capacity. Rosette leaves smother desirable pasture species in spring reducing their early growth. Dense stands of mature thistles create barriers that hinder livestock movement. Parts of the plant can break off causing vegetable fault and thus a loss in value for the wool. Thistles can cause injury to livestock and people handling the livestock or fleece. Thistles are prolific seeders and can spread quickly if not controlled. Once established thistles are difficult and expensive to control. Dense thistle populations can reduce property values. Scotch thistle is an erect annual or biennial herb to 2 m high, commonly 1 to 1.2 m. Generally one main stem with numerous branches, covered with dense, appressed, woolly hairs giving it a whitish-grey appearance. It has broad spiny wings along the stems.	**Germination:** Summer-Autumn and Winter to Spring **Flowering:** Late Spring to Summer **Fruiting:** August to Septmber	Environmental weed	Spread by by the wind seed or seed clings to stock. Can re grow from roots.

Distribution across the site

Minor infestation on site in shady sites in open or more moist areas. It is imperative to check the waterway.

Control options within the site

rbicide spray especially prior to flowering to
on. Isolated plants should be removed using a hoe
grubbing). Remove as much of the taproot as
h does not occur. Cultivation is effective on
tes if they are uprooted.

Weed Name	Form	Control Measure	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	As req
Scotch Thistle	Seedlings	Hand removal													
	Mature	Spray herbicide													
Blackberry	Seedling	Spray Herbicide													
	Mature	Cut and Paste													

Pest Animals

There was no evidence of Rabbit or Fox holes being seen on the site inspection. However vigilance to monitor and manage levels in the future is required.

Dam Management

There is a dam located to the centre of the lot and is surrounded by fencing and has trees for shade.

It is proposed to increase graminoids (grass-like plants) in this area to protect water quality, provide habitat and mitigate sediment.

Image 24 Dam on site- South Paddock

Fauna

Amphibians that rely on this habitat

A list of species and handout on this will assist the landowner in managing this long term.

There are many amphibians that are listed within a 5km search of the site on the Atlas of Living Australia that rely on good intact riparian habitat and dams.

Species Name	Vernacular Name	Number of records	EPBC Act Threatened Species	Victoria : Conservation Status
Crinia signifera	Common Froglet	43		
Litoria ewingii	Brown Tree Frog	29		
Limnodynastes dumerilii	Eastern Banjo Frog	19		
Crinia parinsignifera	Eastern Sign-bearing Froglet	11		
Limnodynastes tasmaniensis	Spotted Marsh Frog	3		
Litoria raniformis	Southern Bell Frog	2	Vulnerable	Vulnerable
Limnodynastes peronii	Striped Marsh Frog	2		
Pseudophryne bibronii	Brown Toadlet	1		Endangered
Geocrinia victoriana	Eastern Smooth Frog	1		

Image 26 List of Amphibians within 5km of the site (Source Belbin L, Wallis E, Hobern D, Zerger A (2021))

Striped Marsh Frog

A large species of frog that can reach up to 7.5 cm in body length. It has a brown back with dark brown longitudinal stripes and sometimes a cream coloured or reddish stripe along the middle. There is a pale trip from under the eye to the top of the arm. The belly is white and the male has a pale-yellow throat with brown mottling. The pupil is horizontal, and this iris is gold. Fingers and toes are unwebbed, both without discs. The male is distinctly larger forearms than the female.

Eggs are laid as a foamy mass on the surface of

ter bodies and can take seven to eight

mn

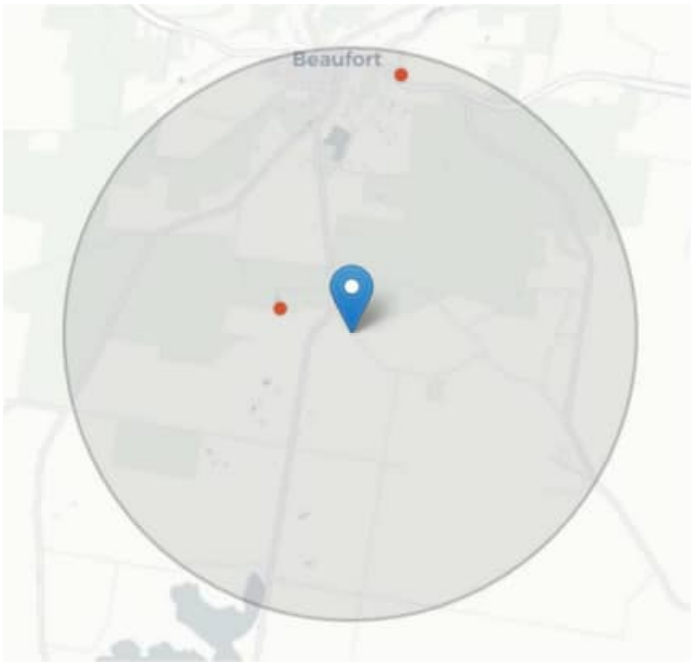


Image 27 Record of the Striped Marsh Frog (Source Belbin L, Wallis E, Hobern D, Zerger A (2021))

What you need to manage?

- Revegetate riparian areas and dams
- Fence riparian area from stock.
- Control pest animals such as cats and foxes.

Bird Species that rely on this habitat

There is a large amount of Bird species listed within 5km of the site and many rely heavily on the woodlands on site.

Grey Goshawk

The Grey Goshawk *Accipiter novaehollandiae* is a medium sized raptor that inhabits a variety of **wet forest types** in Australia. The Grey Goshawk is the largest Accipiter in Australia with an overall length between 40 and 55 cm and wingspan of 70 to 110 cm. Female Grey Goshawks are almost twice as heavy as males (Baker-Gabb 1984; Olsen et al. 1990).

Why is your site valuable?

Throughout its range the Grey Goshawk generally **favours tall, wet forests, particularly in gullies, for roosting and hunting**. It depends on **mature forests for breeding**, rarely using forest regrowth less than 30 years old They are also seen in woodlands, dry forests, wooded farmlands and suburban parks below altitudes of 500 m. Nest sites are found in a limited range of habitats and tree types, being largely confined to wet forested areas and are likely to be selected according to the availability of food. Nests are usually high in the canopy, placed in major forks next to the trunk or on horizontal branches with an easterly aspect to receive the morning sun and shelter from prevailing winds. Nesting takes place from August to November.

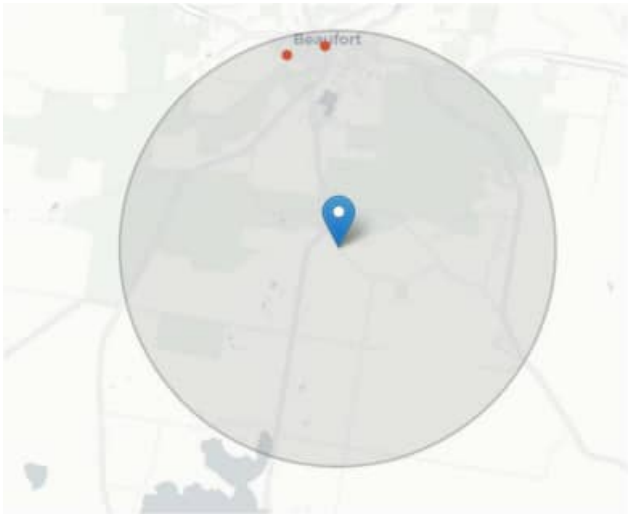


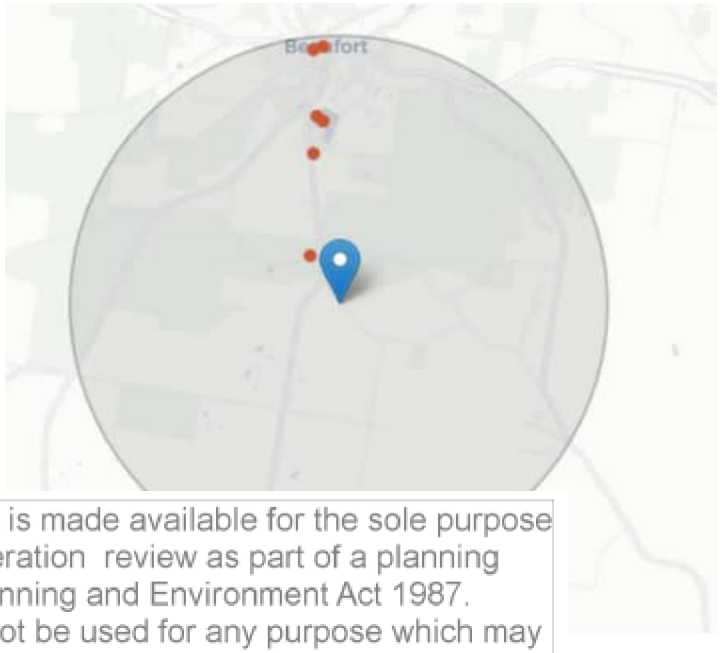
Image 28 recorded sightings (2) of the **Endangered Grey Goshawk** near the site (Source: Belbin L, Wallis E, Hobern D, Zerger A (2021)

What you need to manage?

- Protect habitats on private land known to support Grey Goshawk through voluntary agreements (e.g. Trust for Nature covenants, Land for Wildlife Scheme) and local planning schemes if necessary.
- Review for nest sites or potential nest sites on their property to ensure long-term protection of such sites, eg, through Biodiversity Action Planning or Living Landscapes planning.
- Retain all hollow bearing trees on site.
- Water sites must be maintained during drought periods for all bird species- such as ceramic dish that are kept clean.
- Post fire all hollow bearing trees to be tagged and guards placed to stop arboreal mammals from gaining access to trees and predating on bird species.
- Locate, monitor and protect all known Grey Goshawk habitat sites within the site in Spring for nests.
- Seek an alternative or methodology to avoid loss of other species by poisoning feral animals on site. Professional advice is imperative to avoiding impacts to all bird species on site.

Little Eagle

Little Eagles are small, powerful and stocky (45-55 cm) birds of prey with a wingspan of more than 1 m. They have a long tail that is square cut at the tip when it is closed. Legs are heavily feathered, and the feet and talons are powerful. The species' plumage ranges from light to dark brown, with a short crest with a distinctive underwing 'M' in the light morph and a pale, broken 'M' across the upperparts. Little Eagles are carnivorous, eating mainly rabbits, birds and reptiles. Little Eagles catch prey on the ground by dropping onto it from a prominent perch or from a glide; only rarely is food caught in flight (Emison et al. 1987). The species is heavily dependent on rabbits especially in non-arid areas, but following the spread of rabbit calicivirus disease, and consequent decline in rabbit numbers by 65-85% in the arid and semi-arid zones, the Little Eagle is likely to be increasingly dependent on native prey in the inland. It is difficult to evaluate the level of threat posed by Pindone used to poison rabbits. Based on toxicity studies with Wedge tailed Eagles, it seems likely that some rabbit carcasses contain sufficient toxin to kill a Little Eagle. However Little Eagles take mainly juvenile rabbits (as live prey) and for effectiveness, rabbit control is preferably timed to avoid the season when juveniles are present Pindone is freely available and understood to be used by many landholders through the range of the Little Eagle



Source: Belbin L, Wallis E, Hobern D, Zerger A (2021)

What you need to manage?

- Retain old growth trees on site especially dead ones for perching
- Control pest animals such as cats and foxes.
- Report any sightings on the Atlas of Living Australia
- Be aware if using poisons to control pest animals that can have an impact on larger raptors and chose a control that avoids poisons.

WARNING

Secondary poisoning from anticoagulants including Pindone (2-pivalyl, 3-indandione) and 1080 (sodium fluoroacetate) used to control rabbits may disable raptors and/or be fatal to them.

Image.30. Dead tree on site

Dead trees are ideal perching sies for raptors (eagles, kites) and should be retained on site

Speckled Warbler

The crown of the Speckled Warbler is black with buff streaks. Between the crown and the white eyebrow is a line that is black in the males and chestnut in the females, the only difference between the two. The dark red eye is prominent in the pale face. The back is mottled dark brown but the underparts are cream with bold black streaks. When it flies, its tail shows a black band with a white tip.

This species is listed as Endangered in Victoria.

Why is your site valuable?

The Speckled Warbler lives in dry sclerophyll forests and woodlands (woodlands have fewer trees than forests) dominated by eucalypts. It is mostly seen on the grassy ground layer, when it is foraging.

Feeding:

The Speckled Warbler feeds on the ground, probing the leaf litter for insects. It will also eat seeds. It feeds in pairs or small parties up to 6 in number. Occasionally it is seen in mixed feeding flocks with several types of thornbills.

Breeding:

The Speckled Warbler breeds either in pairs or trios of one female and two males, although the second male does not help at the nest. The group defends a territory and the pair bond usually lasts several years. Sometimes several family groups form small flocks over the winter.

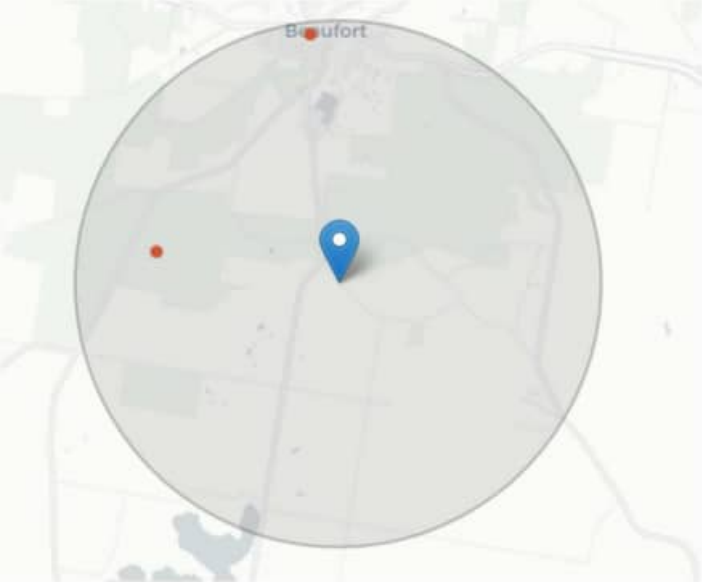


Image 31 recorded sightings (2)of **Endangered Speckled Warbler** near the site (ALA sourced 3/2/2023)

What you need to manage?

- Retain leaf litter in the woodlands outside of the defendable space.
- Manage domestic species on site, especially cats that are best kept in a pen.

Powerful Owl

The largest of Australia's owls, the Powerful Owl usually inhabits the **moist forests** of eastern Australia. Its main item of prey is possums of various species, though large bats such as flying foxes are also often caught. They roost by day, perched in the dense shade of a tree, often with the previous night's prey held in their talons; this is when Powerful Owls are seen most often. The Powerful Owl is a large owl with a relatively small head and a rounded tail. It is dark grey to dark

w, with distinctive dark v-shaped chevrons. The legs are feathered and the yellow to alike but the female is smaller, with a narrower head. Juvenile birds are downy white on the head and underparts, the underparts are

sparsely streaked, and they have much shorter tails than the adults. Powerful Owls are the largest of the Australian nocturnal birds (night birds). The Powerful Owl is found in open forests and woodlands, as well as along sheltered gullies in wet forests with dense understoreys, especially along watercourses. Will sometimes be found in open areas near forests such as farmland, parks and suburban areas, as well as in remnant bushland patches. Needs old growth trees to nest and is **listed as Vulnerable in Victoria.**

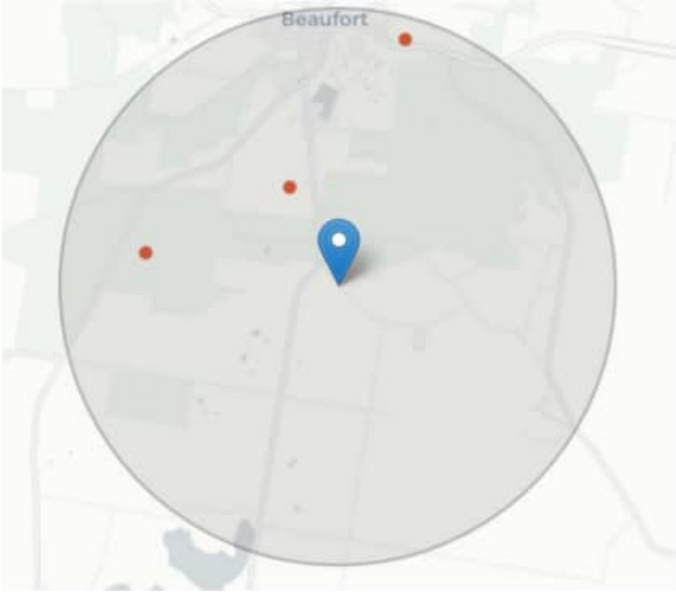


Image 32 3 recorded sightings (3)of the Vulnerable Powerful Owl near the site (Source: Belbin L, Wallis E, Hobern D, Zerger A (2021)

What you need to manage?

Retain old growth trees on site.

Control pest animals such as cats and foxes.

Report any sightings on the Atlas of Living Australia

Place nesting boxes along the waterway.

Mammals Species that rely on this habitat

Phascogale

In Victoria the Brush-tailed Phascogale's distribution is fragmented. The species occurs in the foothills to the east and north-east of Melbourne; central Victoria around Ballarat, Heathcote and Bendigo; north-eastern Victoria from Broadford to Wodonga; the Brisbane Ranges north-east of Geelong; and far western Victoria from Mt Eccles to Apsley. **The Brushtail is listed as Vulnerable in Victoria.**

Phascogales are primarily arboreal, and forage for their diet, which is predominantly large insects, spiders and centipedes, on the trunks and major branches of rough-barked trees and fallen logs. Brush-tailed Phascogales nest in as many as 30 different sites each year Nests may be in hollows in dead or live trees, under flaking bark, or in tree stumps. Nursery nests require large, secure cavities with small openings; competition for these cavities from other species is often intense. Where natural hollows are scarce, Brush-tailed Phascogales will use nest boxes as shelter and nursery sites. Habitat degradation and fragmentation is still occurring in the species' remaining range because of timber and firewood production, grazing, mining activities and clearing of private land. The relative impact of each of these activities on the species is difficult to assess because the Brush tailed Phascogale is cryptic and shy, occurs at low densities and is difficult to detect by traditional trapping techniques. Poisoning campaigns using 1080 are targeted at introduced predators such as the Red Fox, which are potential predators of, and competitors with, Brush-tailed Phascogales. The predominantly arboreal foraging behaviour should minimise the likelihood of accidental poisoning, particularly as baits are buried, as required by the NRE Code of Practice. The paucity of hollow-bearing trees is of particular concern for the conservation of the Brush-tailed Phascogale. The loss of hollow-bearing trees from Victorian native forests has been listed as a potentially threatening process on Schedule 3 of the Flora and Fauna Guarantee Act 1988, largely because of the dependence of many vertebrates (including a number of rare species) on this habitat for shelter and nesting.

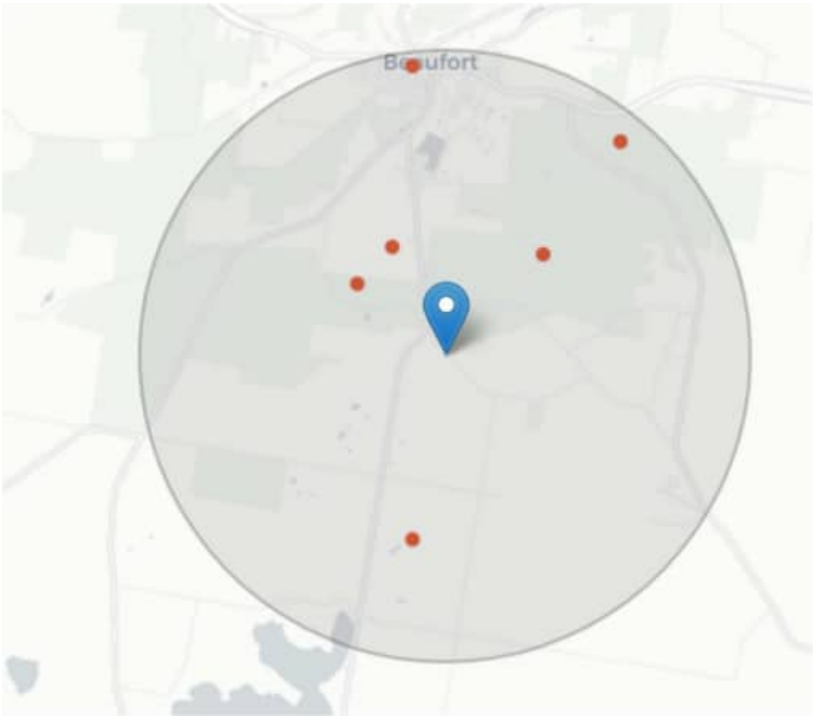


Image 33 9 recorded sightings of Vulnerable Brush-tailed Phascagole near the site (Source: Belbin L, Wallis E, Hobern D, Zerger A (2021)

Box volumes currently in use range from 8 to 16 litres. Entrance holes are placed on the side of the box nearest to trunk, so the animal is less exposed to predators when entering or leaving.

Boxes are hung from a 6-inch nail placed into the tree on a 45-degree angle. Larger diameter trees are selected when available so that the box receives greater thermal buffering from extremes of temperatures experienced in the region. Protection from overhead canopy and shading from adjacent trees is carefully considered to provide maximum protection from solar radiation in summer. Best practice tip: install boxes at the time of day when this can be most directly assessed.

Height for placement on trees is between 3-4 metres for practicality. For best phascogale box placement, a tree is selected that has branches or canopy that interconnect with adjacent trees. This allows phascogales to jump across when dispersing so the animal can avoid travelling on the ground in areas immediately surrounding the base of the tree with the box.

Where possible, at least two boxes are installed at each location. The distance between boxes is no more than 5m. This provides adequate boxes for phascogales and sugar gliders otherwise gliders may prevent phascogales from using a box where only one is available. Best case scenario would be to place a cluster of four boxes enabling both winter and summer shelter that caters for changing sun angles/direction during winter and summer seasons and the extremes of seasonal temperature experienced in Beaufort.

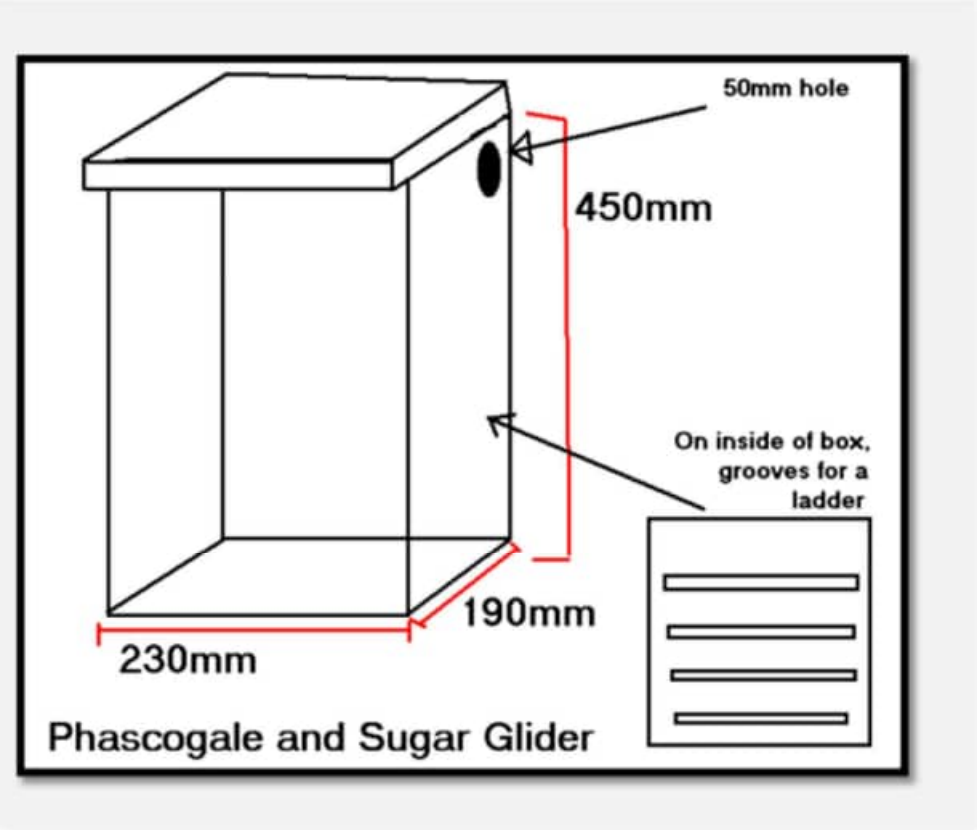


Image 34. Phascogale Nesting Box design (Source Macedon Ranges Shire nd)

What you need to manage?

- Retain old growth trees.
- Construct at least 2 artificial hollows in areas of low hollow availability, utilising appropriate nest boxes and/or chainsaw hollows, the latter of which have the potential to restore degraded habitat and may be used more by arboreal marsupials than nest boxes.
- Control pest animals such as cats and foxes.
- If 1080 is used to control foxes it must be buried to avoid off target impacts
- Report any sightings to DEECA and list up on the Atlas of Living Australia

Koala

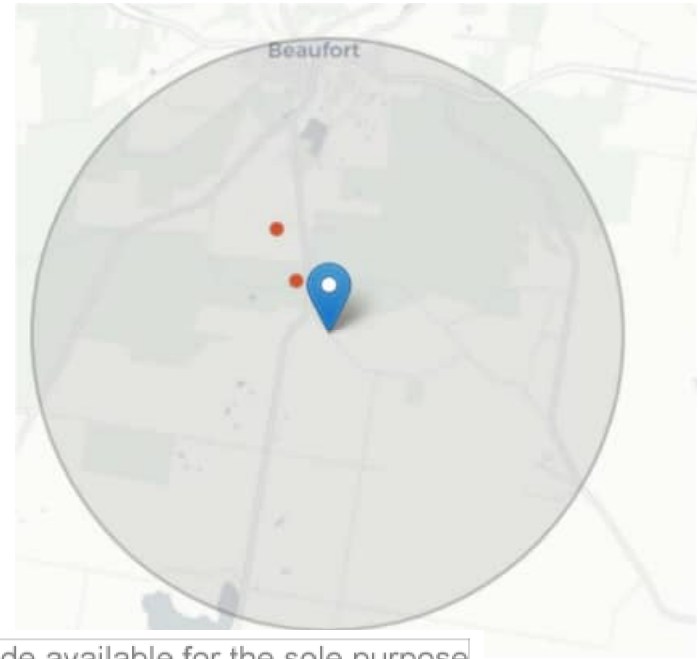
The koala is a tree-dwelling marsupial with large furry ears, a prominent black nose, long sharp claws adapted for climbing and no tail. Fur colour varies from pale grey in north Australia to grey-brown in the south.

Koalas also vary in size across their range. Adult males weigh between 4 and 14 kilograms and adult females weigh between 4 and 10 kilograms.

Despite being called 'koala bears' for many years, koalas are marsupials. While bears give birth to well-developed young, newborn koalas are tiny enough to fit on your thumbnail and are raised in their mother's pouch.

The closest relative of the koala is the wombat. Both animals have pouches which open towards the rear. This is fine for the wombat, but koalas need strong muscles ringing the pouch to keep their young from falling out.

The koala is listed as 'vulnerable to extinction' under the *Biodiversity Conservation Act 2016* because of declining numbers and the ongoing pressure of threats.



urce: Belbin L, Wallis E, Hobern D, Zerger A (2021)

What you need to manage?

- Retain old growth trees.
- Avoid the use of barbed wire and use plain or plastic covered wire for fencing.
- Control feral pests.
- Water sites must be maintained during drought periods for all bird species- such as ceramic dish that are kept clean.
- Prioritise *Eucalyptus viminalis* and other food trees when regenerating
- Keep any dogs on site contained from Dusk to Dawn

Eastern Bared Bandicoot

In Victoria, almost all habitat suitable for Eastern Barred Bandicoots has been lost to grazing and agriculture. Further threats are posed by introduced predators – cats and foxes – that kill high numbers of bandicoots. The Victorian population of 150–200 animals only survives thanks to reintroductions and protective fences, but ongoing drought will significantly reduce the reproductive rate. **This species is listed as Endangered in Victoria.**

At night, Eastern Barred Bandicoots emerge from their nests to forage for food. They use their clawed front feet to dig up invertebrates such as beetle grubs and earthworms from the soil. They use their excellent sense of smell to locate food and also scavenge fallen fruit, fungi and even cat food.

Eastern Barred Bandicoots can reproduce very quickly. They can breed all year round, but breeding slows in summer and stops altogether during drought when food is scarce.

ɔressions in the ground, often under dense claws to scrape out a shallow nest and ɨulation and camouflage. These nests

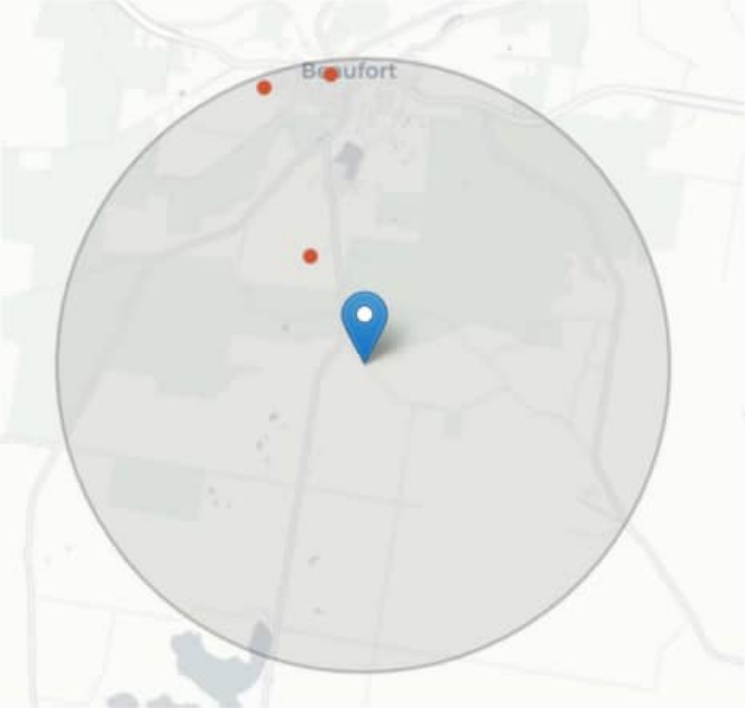


Image 36 **3** recorded sightings of the **Endangered Eastern Barred Bandicoot** near the site (Source: Belbin L, Wallis E, Hobern D, Zerger A (2021)

What you need to manage?

- Keep cats in pens at all times
- Restrain dogs when in the woodland area; do not allow them to free range,
- Allow the grass to grow to natural height along the drainage lines for habitat.
- Control pest animals such as cats and foxes.
- Report any sightings on the Atlas of Living Australia
- Conservation area do not disturb or remove leaf litter.

Soil Biodiversity- why improve

These soils can be improved if required for the pastures; however, conservation is more of a priority on this site.

In agriculture, soils that receive less manufactured inputs (e.g. chemical fertilisers and pesticides) generally have higher soil biodiversity.

Grazing systems that encourage plant diversity usually have higher soil biodiversity, due to the greater availability of food resources from roots and litter, which support a greater variety of organisms in the soil.

Cropping systems generally have low soil biodiversity, unless they increase inputs of carbon and nitrogen to the soil, which will improve soil microbial populations. Crop management techniques that increase soil organic matter will also enhance soil stability and biodiversity.

The application of organic matter to the soil, such as crop stubble, supports greater populations of surface-feeding creatures, including earthworms.

Management techniques such as crop rotation and reduced tillage increase the quantity and quality of organic matter available to soil organisms and develop a more stable environment that encourages more soil biodiversity.

Plant diversity is essential to maintain food production and provides many benefits such as suppression of pest and pathogens, and improved water retention. Legume crops are essential to increase Nitrogen into the soil naturally and increase Soil Organic Carbon by at least 6-8% than a monoculture.

How to improve the soils

Tillage management

Tillage management is imperative to the soil health as reducing tillage or no till will benefit soil microbial health and retain structure in the soils that will build over time. No-tillage or zero tillage is a farming system in which seeds are directly placed into untilled soil that has retained the previous crop residues.

Maintain cover in pastures

Retention of ground cover is imperative on this site due to the high risk of erosion and should aim to always retain a 90% cover.

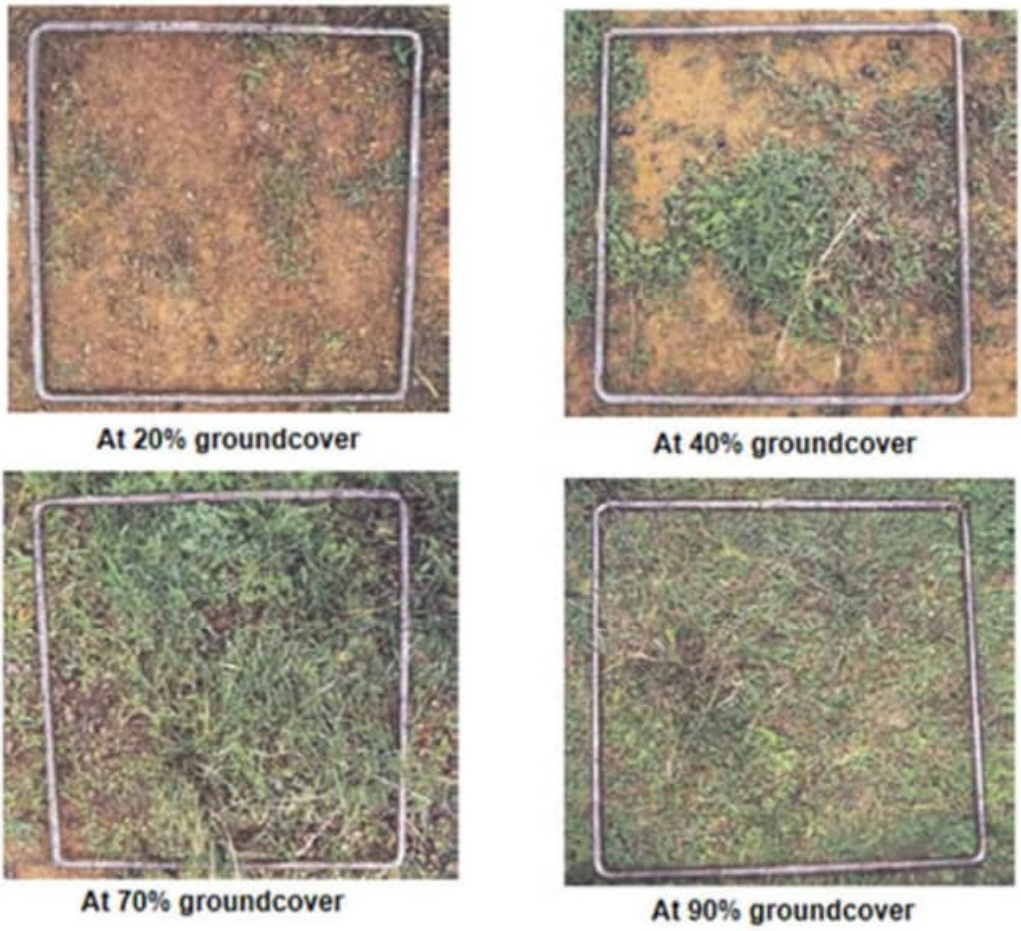


Image 37 Examples of ground cover (Source: Australian Government 30 June 2022)

ower Fox Demonstration Farms, 2024)

Maintaining pasture cover to at least 90% will always

- ameliorate run off
- Improve nutrient cycling
- Increase organic matter which is a priority for these soils
- Increase weed suppression
- Increase water absorption

Pasture Rotation

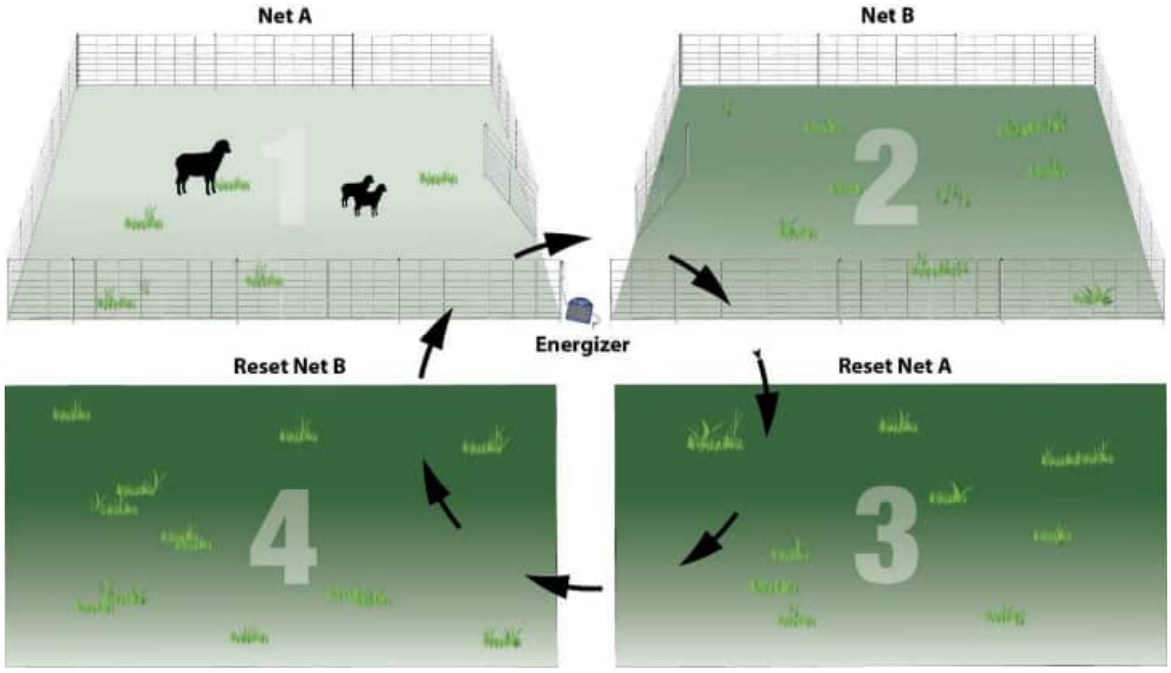


Image 39 Recommended Pasture rotation for grazing, Source: Premier, 2024)

Continued grazing on site is imperative to retaining soil health and the stock will require moving from the pasture once the ground cover falls to 90% cover. The stock is then moved to another paddock. Constant monitoring is imperative to ensure that stock do not clear the soil to a point where it is prone to erosion.

Grazing Stock- why is it important for soil health?

Grazing forms an essential part of farm production and is essential to stressing the plants to forming new growth in response to predation. This response involves increasing root mass and to do this the grasses exuding essential sugars into the soil to feed the microbes; the microbes then produce carbon in the soil. Microbes in the soil co-exist and often move into the roots of the plants ; a gluey sticky substance that glues the soil n is essential in soils for the development ils.

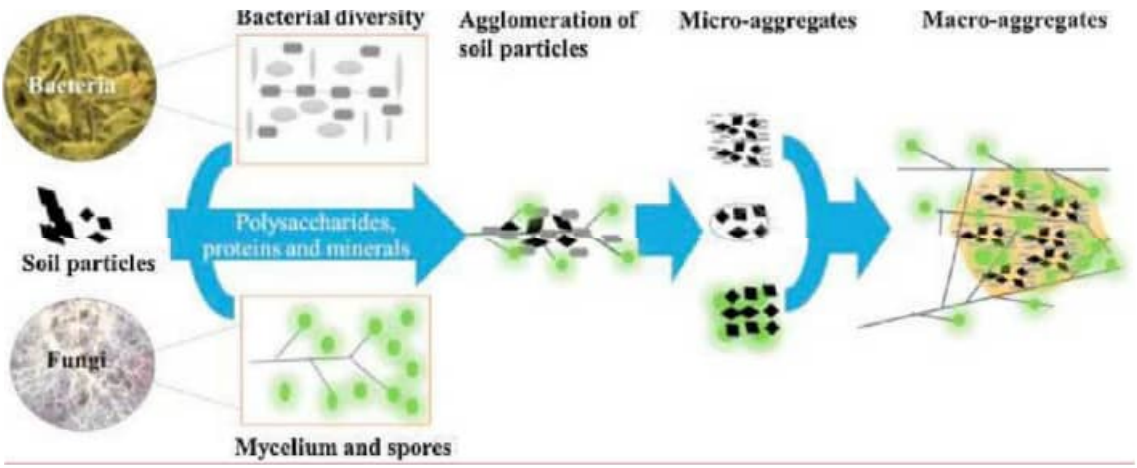


Image 40. Importance of grazing to the improvement of soil aggregates (Source: Muhammad Imtiaz Rashid, Liyakat Hamid Mujawar, Tanvir Shahzad, Talal Almeelbi, Iqbal M.I. Ismail, Mohammad Oves, (2016)

Grazing needs to ensure that it is light, and that stock is rotated around the farm. Light grazing is essential to fungi and bacteria in the soil that leads to the decomposition of organic soil carbon. Over and under grazing has a detrimental impact on the balance and health of the soil.

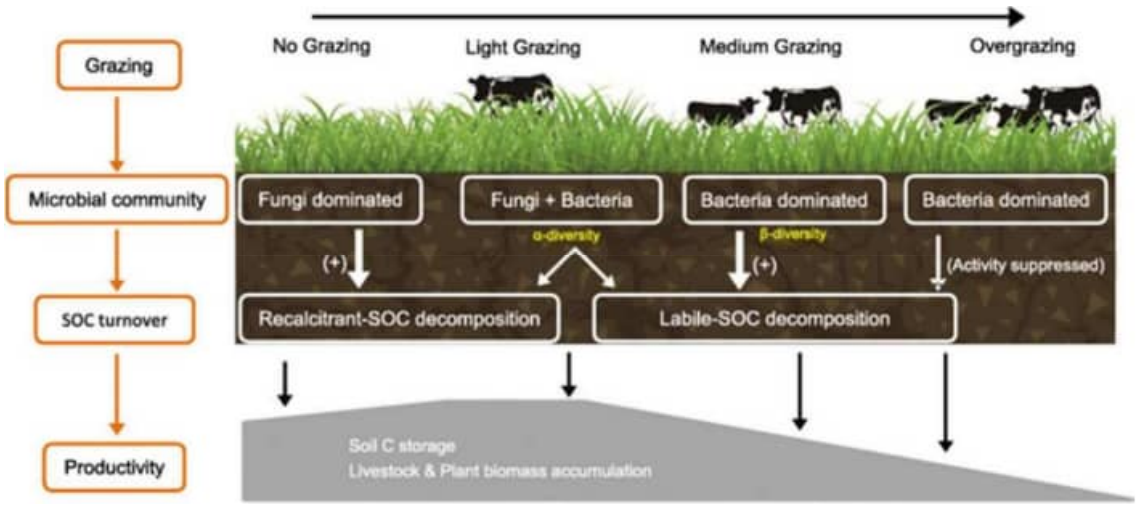


Image 41 Soil Organic Carbon from grazing strategies (Source: Xun, W., Yan, R., Ren, Y. et al. 2018)

rove SOC and soil structure
ıuman. G.E and Reeder.J.D, 2002)

Pictures

Image 42. Drainage line south of dwelling

south paddock

Image 44 Drainage line discharges into the dam (south of proposed dwelling). This area is to be fenced off and regenerated with graminoids, a rock shute and rock lined spillway.

ed against predation and grazing.

Image 46 Soil movement above the dam (south end below proposed dwelling)

Image 47 Erosion on entry into the dam

Image 48 of drainage line above dam (south end) red line shows the centrepoint and between the blue lines graminoids will be established and this area fenced to exclude grazing and predation.

ome recruitment and existing fence.

Image 50 Looking east from paddock.9 to gully (red line) around 5-10m below the line that will be protected and regenerated (graminoids).

e water from nutrient run off). This area is to be noids)

Image 52 Drainage line below the dam (east conservation side) where there are signs of erosion this area is to be regenerated. Red line denotes center point and the blue indicative of regeneration to either side of graminoids. This area is to be fenced and the area above on the flat is suitable for grazing (Paddock.3)

e to be protected from grazing ands predation, in

Image 54 Existing driveway on site

rainage line and the aqua is the existing access to

al use.

Image 56 Taken from paddock.2 looking south-east to the two drainage lines that will be regenerated and have stock excluded.

nage this one was in the east paddock.

Image 58 Two dead trees near the fallen one to be retained as long as possible for perching and nesting for raptors.

e onsite inspection.

Image 60 Flat pastures between drainage lines (paddock.3)

oposed house site.

Priority for development

Fencing as noted to be completed within 3 months of approval of the planning permit. Scattered paddock tree to be protected from stock to the extent of the drip line.

See Action Table for details of timing.

Disclaimer the drainage lines maybe different as per the shown location due to lack of survey details.

Image 62 For small trees in paddocks to protect from predation recycling pellets is a good, sturdy choice. Two corners need to be secured with a steel post (source: Recreating Country 24/11/2020)

Image 63 For isolated scattered old growth trees to protect from predation use typical stock fencing to at least the drip zone (source: Recreating Country 24/11/2020)

Rationale for adaptive management on site

The site must be managed on an ongoing adaptive basis where there is the ability to monitor and control risks. The current owner is currently living remote to the site and is currently limited due to the tyranny of distance to only occasional visits. The restoration, along with management, will require a lot of time on site, including planting, watering, and protecting recruitment from predation. Control of pest species, such as rabbits, is limited to diurnal control due to their habit of emerging at dusk and wreaking havoc during the night. Shooting is the preferred control, and night management from several hundred kilometres away is impossible, and reinfestations are only noted on an ad hoc basis. Responding to rain events and preparing for planting along with monitoring and replacing lost plants is again not considered to be best practice on an adhoc basis and must be on site to be adaptive.

The restoration of habitat has strong socio-economic benefits for threatened trees and birds, mammals, amphibians that rely on this habitat. The economic benefit of ameliorating salinity avoids potential social costs if not ameliorated and this can leave an area void of any vegetation, and this

vith turbidity. Restoring riparian areas and
ned species, create and biolinks on site,
nd environmental benefits.

e works proposed will stablise the area and
ant works and adaptive management, all

not possible from a remote location. The high prevalence of kangaroos on the site and on adjacent sites makes travelling at night to control pest a hazardous undertaking.

The Intrinsic and Extrinsic Value of Biodiversity protection on site

To understand the justification for investing in biodiversity, it's essential to recognize the dual value of biodiversity: intrinsic and extrinsic.

Intrinsic Value: Biodiversity has inherent value. Every species, ecosystem, and genetic diversity contributes to the richness of our planet's life. Biodiversity is a part of the Earth's heritage, and its intrinsic value cannot be underestimated.

Extrinsic Value: Biodiversity also holds significant extrinsic value, which can be translated into economic, social, and cultural benefits. This includes ecosystem services such as pollination, clean air and water, climate regulation, and disease control. It also encompasses recreational, tourism, and research opportunities, which can be quantified and leveraged for ROI.

Economic Benefits of Biodiversity

Investing in biodiversity yields various economic benefits, some of which include:

Ecosystem Services: Biodiverse ecosystems provide essential services that, if disrupted, would require expensive human intervention. For example, wetlands purify water, reducing the costs of water treatment facilities. Forests act as carbon sinks, mitigating climate change and reducing the financial burden of climate adaptation and disaster response.

Agricultural Productivity: Biodiversity is essential for agriculture. Healthy ecosystems ensure pollination, pest control, and nutrient cycling, which are crucial for agricultural productivity. Investments in preserving biodiversity in agricultural landscapes translate into higher crop yields, reduced pesticide use, and ultimately, higher profits for farmers.

Pharmaceutical and Biotech Industry: Many pharmaceuticals and biotechnology products are derived from natural sources. By investing in the preservation of biodiversity, we ensure a rich source of genetic material for the discovery of new medicines and innovations, which can be lucrative for the biotech industry.

Ecosystem-Based Adaptation and Resilience

Biodiversity investments also enhance ecosystem resilience and adaptation in the face of global challenges:

Climate Change: Biodiversity contributes to climate resilience by sequestering carbon and providing natural buffers against extreme weather events. Investments in biodiversity can significantly reduce the economic costs of climate change adaptation.

al buffers against zoonotic diseases. The outbreaks. Investments in biodiversity

Flood Control and Water Management: Ecosystems like wetlands and forests play vital roles in flood control and water purification. Protecting and restoring these ecosystems reduces the costs of flood damage and water treatment.

Measuring Biodiversity ROI

Quantifying the ROI of biodiversity investments can be challenging but is necessary for justifying these expenditures. Methods for measuring ROI may include:

Cost-Benefit Analysis (CBA): CBA compares the costs of biodiversity investments with the economic benefits they generate. The net benefit can be considered as the ROI.

Ecosystem Service Valuation: Assigning monetary values to ecosystem services can help assess the economic returns on investments. For instance, clean water provided by wetlands can be valued based on the cost savings it offers.

Market-Based Approaches: Some biodiversity-related activities generate direct economic returns. For instance, ecotourism or sustainable harvesting of forest products can be quantified as ROI.

Non-Market Valuation: Many biodiversity benefits are not directly bought and sold in markets. Non-market valuation techniques like stated preference surveys or hedonic pricing can be used to assess these values.

The Role of Non-Governmental Organizations (NGOs)

NGOs can facilitate biodiversity investments by partnering with businesses and governments, conducting research, and raising public awareness. They play a crucial role in promoting the importance of biodiversity and creating opportunities for ROI.

To put it briefly, while it may not be simple, supporting biodiversity is an investment in the future. In addition to safeguarding ecosystems and species, we also secure long-term prosperity, economic stability, and resilience against global challenges by protecting and conserving our natural world. Investments in biodiversity are justified by acknowledging the intrinsic and extrinsic qualities of biodiversity, comprehending its economic advantages, reducing risks, taking a long-term view, and applying suitable valuation techniques. To encourage biodiversity investments and build a sustainable and prosperous future for everybody, governments, corporations, and non-governmental organizations must work together. Biodiversity is an investment in both our planet's and our personal well-being, not just a cost." (Source Dong. N, June 2024)

The environmental benefit of the restoration and adaptive management of the site can increase the biodiversity in the existing Box Ironbark Forest to increase the substratum. This has the potential to increase the condition score on site and to provide essential habitat for bird species. Allowing the ıcrease cover on site and will crease a ɔrest to the south. This will not only genetic base but also a link for fauna in

Risks from no ongoing adaptive management.

Direct loss of species from weed infestation, loss of species from loss of habitat will have an immense impact on many species. There are many important threatened species that are found within a short distance from the site and management is of imperative importance now and in the future.

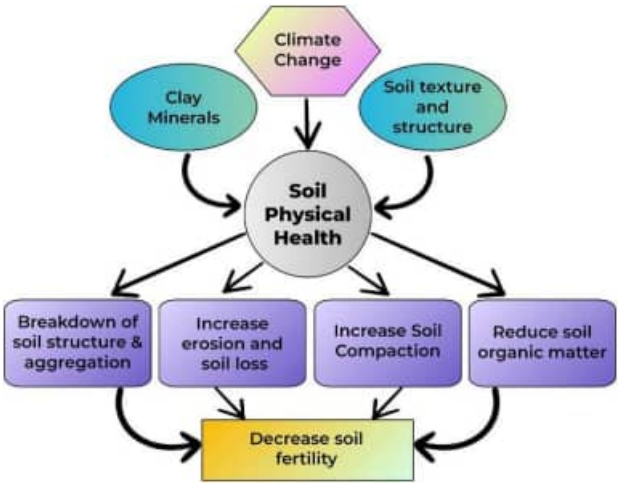


Image. 64 No risk management (Source: Maria Nahin Oishy, Nigar Ahmmad Shemonty, Sadia Islam Fatema, Sadika Mahbub, Ebadunnahar Lukhna Mim, Maimuna Binte Hasan Raisa, Amit Hasan Anik Jan 2025)

Loss of soil and soil quality after vegetation loss, heavy rain events and compaction from wandering stock.

Changes in water low and quality, along with decreased water filtration and increased run-off from lack of cover.

Weed invasions that go unchecked often respond to climatic changes such as rain. Weeds proliferating on-site can change nutrient levels to a point where native species are lost.

Loss of hollow-bearing trees on site from fires, illegal firewood collecting.

Changes in predation, such as cats and foxes predating on native species, resulting in a severe decline in biodiversity.

Loss of habitat for common and threatened species in the landscape.

Zones

Domestic zone

All domestic buildings, structures and works are to be contained within this zone.

There are no specific requirements for the use of the zone except the following restrictions

- Domestic animals to be housed in an area that will ensure they are not able to roam.

Conservation Zone

The objective of the conservation area is to protect the native vegetation and faunal habitat.

Management objectives apply to this area:

- Fencing must be maintained in good order and repaired immediately if necessary.
- No grazing or entry by livestock
- There is no stockpiling/storage, soil disturbance or any vehicles.
- Landowner must maintain and protect all whether live or dead native vegetation and allow for natural regeneration.
- Weeds must be monitored and maintained as they emerge.
- The landowner must monitor for pest animals and obtain professional advice for the control especially where they are having an impact on soils and native vegetation.
- No removal of material for firewood
- No removal of leaf litter except within the specified defendable space so as to retain habitat.
- Revegetation to be undertaken and replaced if lost to ensure habitat is maintained.
- No vehicle access
- Domestic animals to be always excluded.
- Nesting boxes to be placed for detailed threatened species

Dam/Riparian/Water quality/Erosion Zone

rosion, maintain water quality and habitat.

paired immediately if necessary.

- There is no stockpiling/storage, soil disturbance or any vehicles.

- Landowner must maintain and protect all whether live or dead native vegetation and allow for natural regeneration.
- No removal of leaf litter except where it obstructs water flow or is within the defendable space
- Weeds must be monitored and maintained as they emerge.
- The landowner must monitor for pest animals and obtain professional advice for the control especially where they are having an impact on soils and native vegetation.
- Domestic animals to be always excluded.
- No removal of material for firewood
- Revegetation to be undertaken and replaced if lost to ensure habitat is maintained.

Agricultural Zone

The Agricultural Zone is approximately 4.96 ha and with a Land Class 3 @ average rainfall of <600- the carrying capacity is 2DSE which equates to 2 x 4.96 = 10 sheep. (Source: Rowan et al. January 2000)

Management objectives apply to this area:

- Fencing must be maintained in good order and repaired immediately if necessary.
- Rotating stock always through paddocks to ensure a minimum 90% cover is always maintained.
- Steep paddocks are dry weather grazing only.
- Weed control must be always undertaken.
- Any compost and fertilisation to be a minimum of 30m from the edge of any waterway.
- Any soil degradation to be rectified and grazing removed until it is ameliorated.
- All paddocks to be serviced with water facilities.
- Scattered trees to be guarded against damage from stock.

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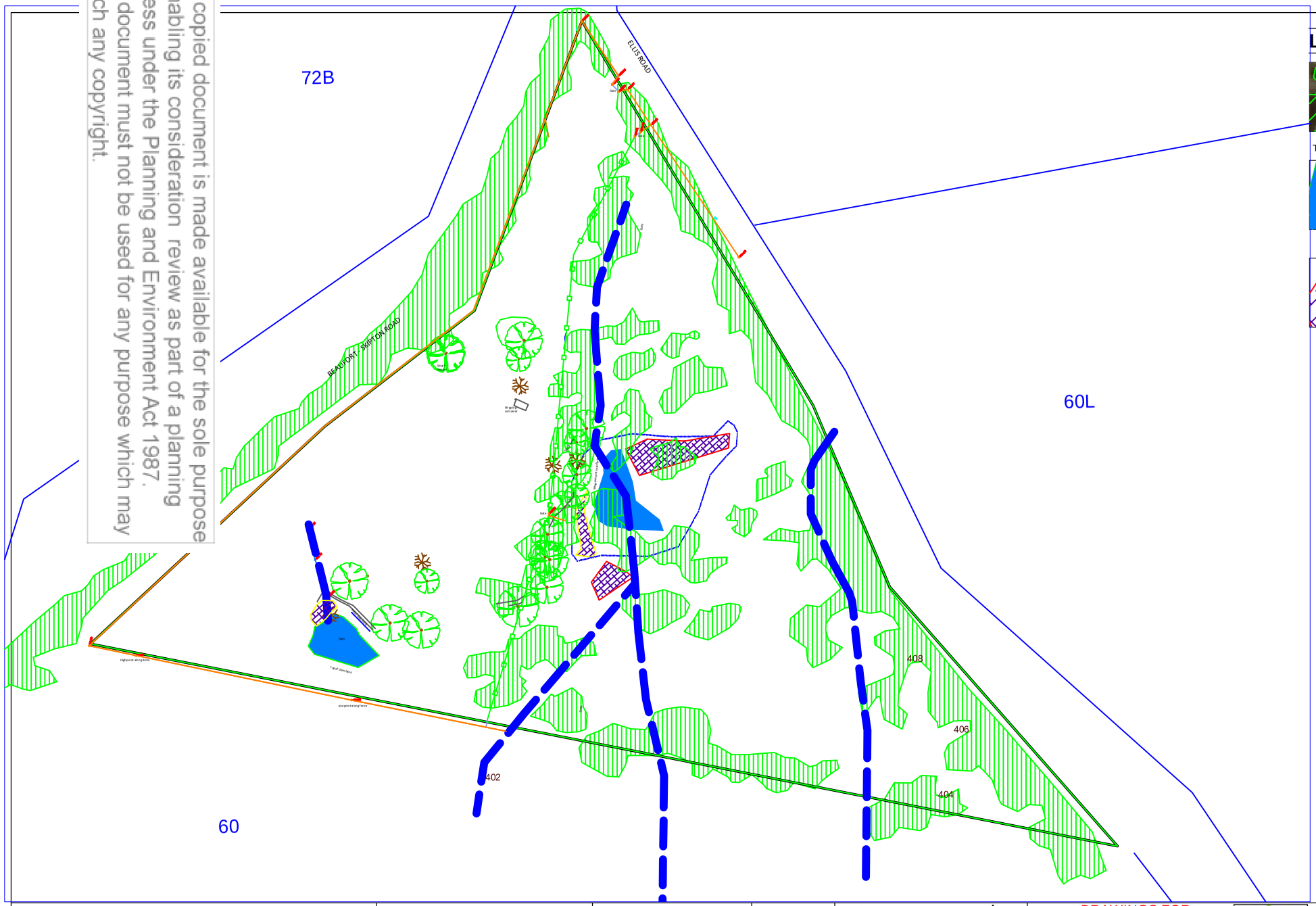
Appendix.1 Existing and Contour Plan



LEGEND

- EXISTING TREE COVER
- EXISTING DAM
- EXISTING EROSION
- EXISTING RILL EROSION (MINOR)
- WATER MOVEMENT

Note:
The contractor shall verify all dimensions and all underground services at the site before commencing work. The contractor shall verify all levels from the consulting engineer prior to construction.

DO NOT SCALE FROM DRAWINGS

PROJECT: *Lot 1 TP567841 (Ellis Road, Beaufort)*

PROJECT NO: *2751*

DATE: JUL 2025

DWG TITLE: *EXISTING FEATURE PLAN*

SCALE: 1:2500 @A4

NORTH (West, East, South)

DRAWINGS FOR PLANNING PERMIT ONLY NOT TO BE USED FOR CONSTRUCTION

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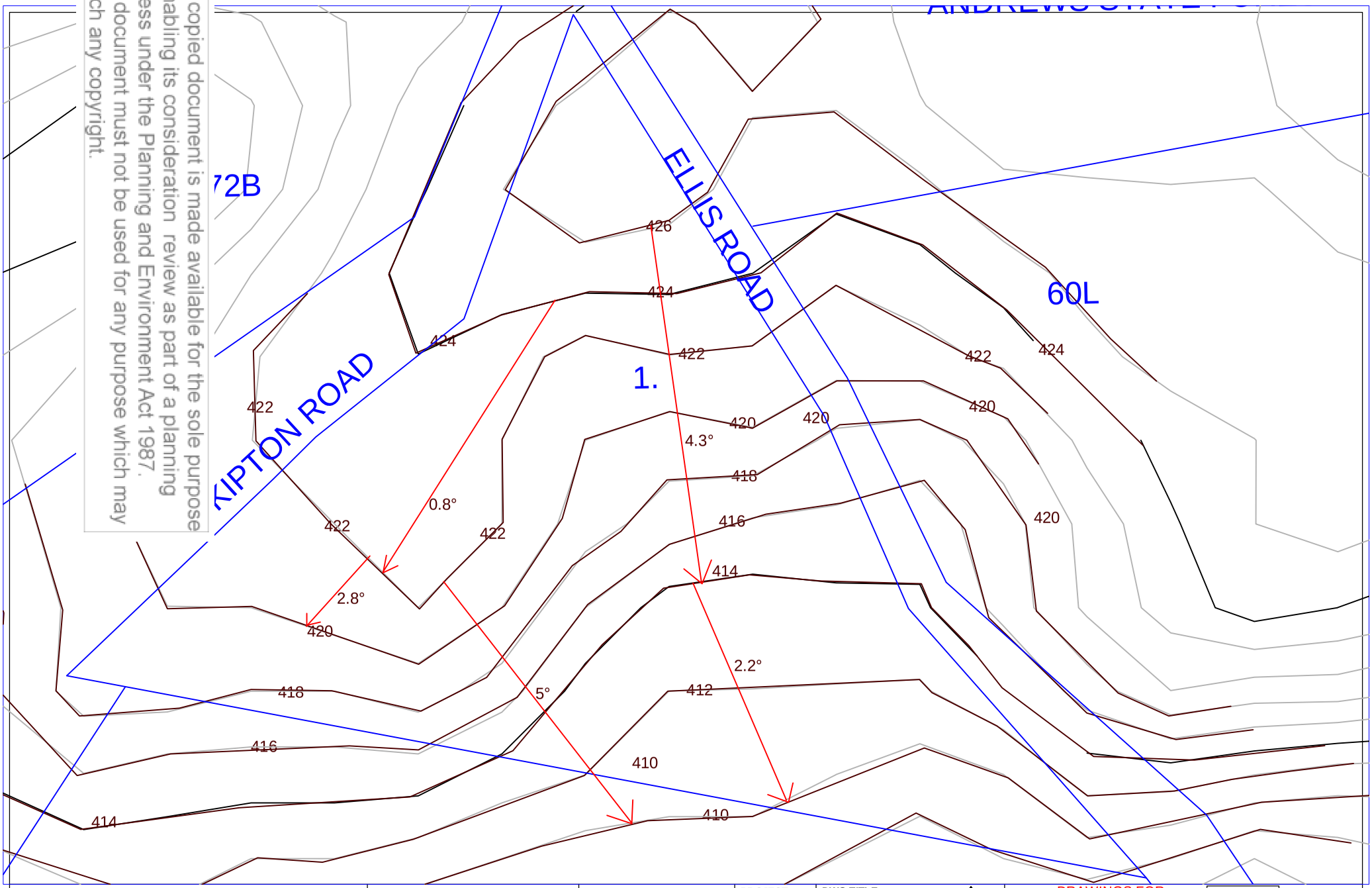
Clunes 3370
julie@nrlinks.com.au



Note:
The contractor shall verify all dimensions and all underground services at the site before commencing work. The contractor shall verify all levels from the consulting engineer prior to construction.

DO NOT SCALE FROM DRAWINGS

PROJECT: *Lot 1 TP567841 (Ellis Road, Beaufort)*

PROJECT NO: *2751*

DATE: JUL 2025

DWG TITLE: *EXISTING CONTOUR PLAN*

SCALE: 1:100 @A3

NORTH — West — East — South

DRAWINGS FOR PLANNING PERMIT ONLY NOT TO BE USED FOR CONSTRUCTION

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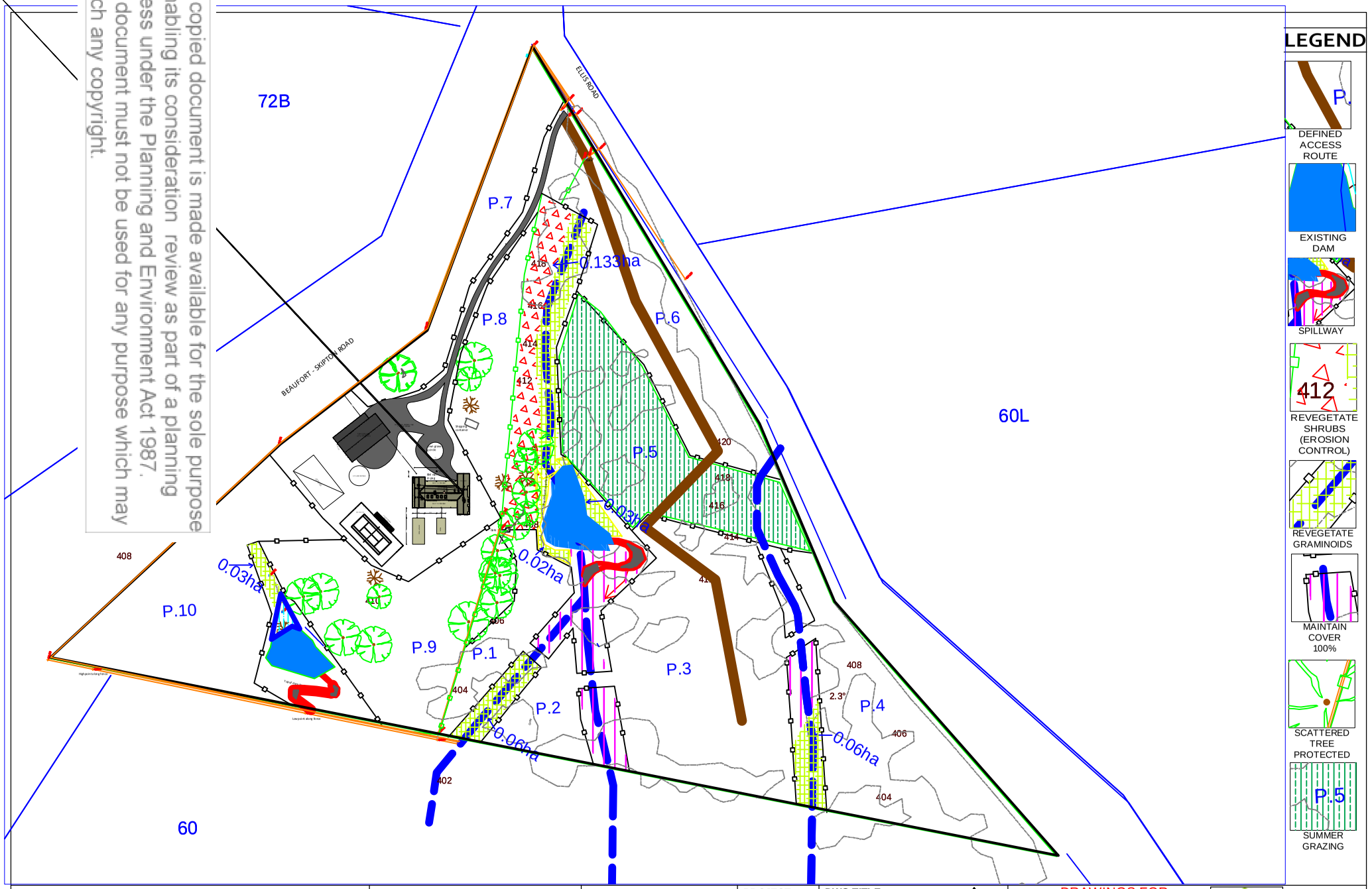
Appendix.2 Proposed Land Management Plan



LEGEND

- DEFINED ACCESS ROUTE
- EXISTING DAM
- SPILLWAY
- REVEGETATE SHRUBS (EROSION CONTROL)
- REVEGETATE GRAMINOIDS
- MAINTAIN COVER 100%
- SCATTERED TREE PROTECTED
- SUMMER GRAZING

Note:
The contractor shall verify all dimensions and all underground services at the site before commencing work. The contractor shall verify all levels from the consulting engineer prior to construction.

DO NOT SCALE FROM DRAWINGS

PROJECT: *Lot 1 TP567841 (Ellis Road, Beaufort)*

PROJECT NO: *2751*

DATE: JUL 2025

DWG TITLE: *EXISTING FEATURE PLAN*

SCALE: 1:2500 @A4

NORTH (West, East, South)

DRAWINGS FOR PLANNING PERMIT ONLY NOT TO BE USED FOR CONSTRUCTION

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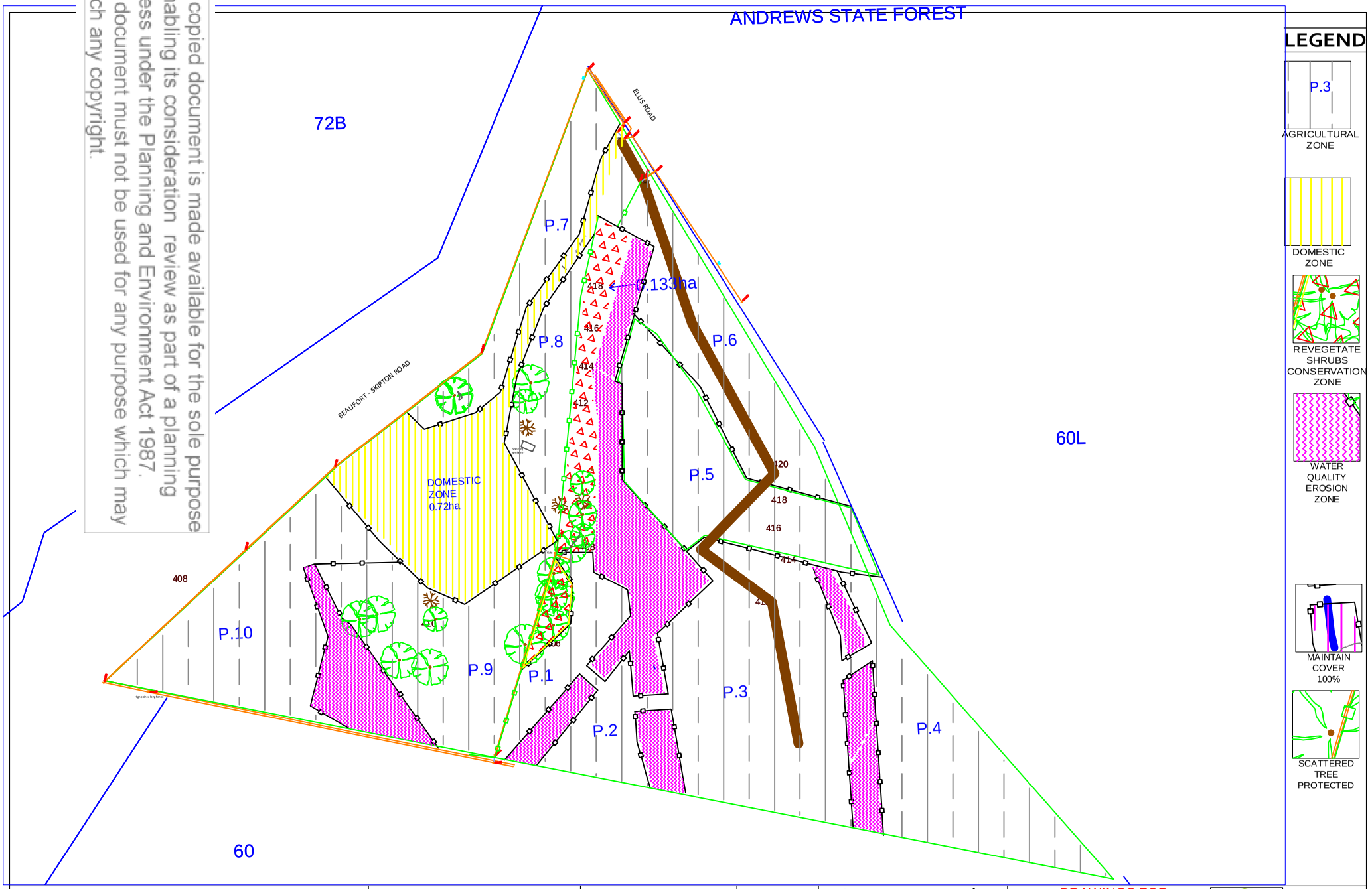
Appendix.3 Zone Plan



LEGEND

- P.3 — AGRICULTURAL ZONE
- DOMESTIC ZONE
- REVEGETATE SHRUBS CONSERVATION ZONE
- WATER QUALITY EROSION ZONE
- MAINTAIN COVER 100%
- SCATTERED TREE PROTECTED

Note:
The contractor shall verify all dimensions and all underground services at the site before commencing work. The contractor shall verify all levels from the consulting engineer prior to construction.

DO NOT SCALE FROM DRAWINGS

PROJECT: *Lot 1 TP567841 (Ellis Road, Beaufort)*

PROJECT NO: *2751*

DATE: JUL 2025

DWG TITLE: *PROPOSED ZONE PLAN*

SCALE: 1:2500 @A4

NORTH (West, East, South)

DRAWINGS FOR PLANNING PERMIT ONLY NOT TO BE USED FOR CONSTRUCTION

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Appendix.4 Plant list Graminoids and associated Benchmarks

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Central Victorian Uplands 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	10 / ha

Tree Canopy Cover:

%cover	Character Species	Common Name
20%	*Eucalyptus globulus* ssp. *bicostata*	Eurabbie
	Eucalyptus ovata	Swamp Gum

Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	3	10%	T
Medium Shrub	3	5%	MS
Small Shrub	1	1%	SS
Large Herb	3	5%	LH
Medium Herb	7	15%	MH
Small or Prostrate Herb	2	5%	SH
Large Tufted Graminoid	5	10%	LTG
Large Non-tufted Graminoid	3	15%	LNG
Medium to Small Tufted Graminoid	9	15%	MTG
Medium to Small Non-tufted Graminoid	5	15%	MNG
Ground Fern	4	10%	GF
Bryophytes/Lichens	na	20%	BL

LF Code	Species typical of at least part of EVC range	Common Name
T	*Acacia pravissima*	Ovens Wattle
T	*Acacia melanoxylon*	Blackwood
MS	*Dodonaea viscosa* ssp. *angustissima*	Slender Hop-bush
MS	*Leptospermum lanigerum*	Woolly Tea-tree
MS	*Dodonaea viscosa*	Sticky Hop-bush
SS	*Rubus parvifolius*	Small-leaf Bramble
LH	*Persicaria hydropiper*	Water Pepper
LH	*Wahlenbergia gracilis* s.l.	Sprawling Bluebell
MH	*Hypericum gramineum*	Small St John's Wort
LTG	*Juncus sarophorus*	Broom Rush
LTG	*Lomandra longifolia*	Spiny-headed Mat-rush
LTG	*Carex appressa*	Tall Sedge
LTG	*Poa labillardierei*	Common Tussock-grass
LNG	*Phragmites australis*	Common Reed
MTG	*Themeda triandra*	Kangaroo Grass
MTG	*Lomandra filiformis*	Wattle Mat-rush
MNG	*Microlaena stipoides* var. *stipoides*	Weeping Grass
		Wispy Club-sedge
		Globe Kyllinga
		Fishbone Water-fern
		Austral Bracken
		Soft Water-fern
		Common Maidenhair

Victoria The Place To Be

Recruitment:
Continuous

Organic Litter:
20 % cover

Logs:
20 m/0.1 ha.

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MS	*Rosa rubiginosa*	Sweet Briar	high	high
MS	*Rubus fruticosus* spp. agg.	Blackberry	high	high
LH	*Sonchus oleraceus*	Common Sow-thistle	high	low
LH	*Rumex crispus*	Curled Dock	high	low
LH	*Carduus pycnocephalus*	Slender Thistle	high	high
LH	*Conyza bonariensis*	Flaxleaf Fleabane	high	low
LH	*Cirsium vulgare*	Spear Thistle	high	high
LH	*Verbascum virgatum*	Twiggy Mullein	high	high
LH	*Solanum nigrum* sensu Willis (1972)	Black Nightshade	high	low
LH	*Silybum marianum*	Variegated Thistle	high	high
MH	*Hypochoeris radicata*	Cat's Ear	high	low
MH	*Acetosella vulgaris*	Sheep Sorrel	high	high
MH	*Centaurium erythraea*	Common Centaury	high	low
MH	*Lotus corniculatus*	Bird's-foot Trefoil	high	high
MH	*Anagallis arvensis*	Pimpernel	high	low
MH	*Rorippa nasturtium-aquaticum*	Watercress	high	high
MH	*Mimulus moschatus*	Musk Monkey-flower	high	high
MH	*Petrorhagia velutina*	Velvety Pink	high	low
SH	*Callitriche stagnalis*	Common Starwort	high	high
SH	*Trifolium repens* var. *repens*	White Clover	high	high
LTG	*Phalaris aquatica*	Toowoomba Canary-grass	high	high
LNG	*Holcus lanatus*	Yorkshire Fog	high	high
LNG	*Avena spp.*	Oat	high	low
MTG	*Briza maxima*	Large Quaking-grass	high	low
MTG	*Bromus diandrus*	Great Brome	high	low
MTG	*Paspalum dilatatum*	Paspalum	high	high
MTG	*Cyperus eragrostis*	Drain Flat-sedge	high	high
MTG	*Vulpia bromoides*	Squirrel-tail Fescue	high	low
MTG	*Setaria viridis*	Green Pigeon-grass	high	low
MTG	*Briza minor*	Lesser Quaking-grass	high	low
MTG	*Ehrharta erecta* var. *erecta*	Panic Veldt-grass	high	high
MNG	*Cynosurus echinatus*	Rough Dog's-tail	high	low
MNG	*Paspalum distichum*	Water Couch	high	high
MNG	*Aira cupaniana*	Quicksilver Grass	high	low

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Dale Tonkinson (Statewide extent of EVC) 20-Nov-2008

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Acacia dealbata	Silver Wattle	Tree, Small Tree or Large Shrub	High	4	No	No
Acacia floribunda	White Sallow-wattle	Tree, Small Tree or Large Shrub	High	3	Yes	No
Acacia melanoxylon	Blackwood	Tree, Small Tree or Large Shrub	Very High	4	No	No
Acacia pravissima	Ovens Wattle	Tree, Small Tree or Large Shrub	High	4	Yes	No
Acacia verticillata subsp. verticillata	Prickly Moses	Medium Shrub	High	4	No	No
Acaena novae-zelandiae	Bidgee-widgee	Medium Herb	High	3	No	No
Adiantum aethiopicum	Common Maidenhair	Ground Fern	Very High	1	No	No
Allittia uliginosa	Small Swamp-daisy	Medium Herb	High	2	No	No
Alternanthera denticulata s.l.	Lesser Joyweed	Medium Herb	High	3	No	No
Amphibromus neesii	Southern Swamp Wallaby-grass	Large Tufted Graminoid (Grass-like plant)	High	3	No	No
Amyema pendula	Drooping Mistletoe	Epiphyte	High	1	No	No
Azolla filiculoides	Pacific Azolla	Small or Prostrate Herb	High	3	No	No
Blechnum cartilagineum	Gristle Fern	Ground Fern	High	1	No	No
Blechnum minus	Soft Water-fern	Ground Fern	Very High	2	No	No
Blechnum nudum	Fishbone Water-fern	Ground Fern	Very High	2	No	No
Blechnum wattsii	Hard Water-fern	Ground Fern	High	2	No	No
Calochlaena dubia	Common Ground-fern	Ground Fern	High	1	No	No
Calystegia sepium subsp. roseata	Large Bindweed	Scrambler or Climber	High	1	No	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	No	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	No	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	No	No
		plant)				

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Carex gaudichaudiana	Fen Sedge	Medium to Small Tufted Graminoid (Grass-like plant	High	3	No	No
Cassinia aculeata	Common Cassinia	Medium Shrub	High	3	No	No
Centella cordifolia	Centella	Medium Herb	High	2	No	No
Centipeda cunninghamii	Common Sneezeweed	Medium Herb	High	2	No	No
Clematis microphylla s.l.	Small-leaved Clematis	Scrambler or Climber	High	2	No	No
Coprosma quadrifida	Prickly Currant-bush	Medium Shrub	High	2	No	No
Crassula helmsii	Swamp Crassula	Small or Prostrate Herb	High	3	No	No
Cyathea australis	Rough Tree-fern	Tree Fern	High	2	No	No
Cyperus gunnii subsp. gunnii	Flecked Flat-sedge	Large Tufted Graminoid (Grass-like plant)	High	3	No	No
Cyperus lucidus	Leafy Flat-sedge	Large Tufted Graminoid (Grass-like plant)	High	2	No	No
Cyperus sphaeroideus	Globe Kyllinga	Medium to Tiny Non-Tufted Graminoid (Grass-like pl	Very High	2	No	No
Dodonaea viscosa	Sticky Hop-bush	Medium Shrub	High	4	No	No
Dodonaea viscosa subsp. angustissima	Slender Hop-bush	Medium Shrub	High	4	No	No
Echinopogon ovatus	Common Hedgehog-grass	Medium to Tiny Non-Tufted Graminoid (Grass-like pl	High	3	No	No
Empodisma minus	Spreading Rope-rush	Medium to Tiny Non-Tufted Graminoid (Grass-like pl	High	1	No	No
Epilobium billardierianum	Variable Willow-herb	Large Herb	High	3	No	No
Epilobium billardierianum subsp. billardierianum	Smooth Willow-herb	Large Herb	High	2	No	No
					No	No
					No	No
					No	No
		Graminoid (Grass-like plant				
Eryngium vesiculosum	Prickfoot	Small or Prostrate Herb	High	2	No	No

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Eucalyptus aggregata	Black Gum	Tree, Small Tree or Large Shrub	High	3	Yes	No
Eucalyptus camphora subsp. humeana	Mountain Swamp-gum	Tree, Small Tree or Large Shrub	High	4	Yes	No
Eucalyptus globulus subsp. bicostata	Eurabbie	Tree, Small Tree or Large Shrub	High	4	No	No
Eucalyptus ovata	Swamp Gum	Tree, Small Tree or Large Shrub	Very High	4	No	No
Eucalyptus ovata var. ovata	Swamp Gum	Tree, Small Tree or Large Shrub	High	4	No	No
Eucalyptus viminalis	Manna Gum	Small Tree or Large Shrub, Mallee Tree	High	4	No	No
Eucalyptus yarraensis	Yarra Gum	Tree, Small Tree or Large Shrub	High	4	No	No
Euchiton collinus s.s.	Creeping Cudweed	Medium Herb	High	3	No	No
Euchiton involucratus s.l.	Common Cudweed	Medium Herb	High	1	No	No
Euchiton involucratus s.s.	Star Cudweed	Medium Herb	High	1	No	No
Gahnia sieberiana	Red-fruit Saw-sedge	Large Tufted Graminoid (Grass-like plant)	High	4	No	No
Geranium potentilloides	Soft Crane's-bill	Medium Herb	High	2	No	No
Geranium solanderi s.l.	Austral Crane's-bill	Medium Herb	High	2	No	No
Glyceria australis	Australian Sweet-grass	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Gonocarpus micranthus subsp. micranthus	Creeping Raspwort	Small or Prostrate Herb	High	1	No	No
Goodenia ovata	Hop Goodenia	Medium Shrub	High	3	No	No
Gratiola peruviana	Austral Brooklime	Medium Herb	High	2	No	No
Haloragis heterophylla	Varied Raspwort	Medium Herb	High	2	No	No
Hemarthria uncinata var.	Mat Grass	Medium to Tiny Non-Tufted	High	2	No	No
					No	No
					No	No
					No	No
sibthorpioides	Pennywort	Prostrate Herb				
Hypericum gramineum	Small St John's Wort	Medium Herb	Very High	2	No	No

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Hypericum japonicum	Matted St John's Wort	Small or Prostrate Herb	High	1	No	No
Isachne globosa	Swamp Millet	Medium to Tiny Non-Tufted Graminoid (Grass-like pl	High	1	No	No
Isolepis cernua var. cernua	Nodding Club-sedge	Medium to Small Tufted Graminoid (Grass-like plant	High	1	No	No
Isolepis fluitans	Floating Club-sedge	Medium to Small Tufted Graminoid (Grass-like plant	High	1	No	No
Isolepis habra	Wispy Club-sedge	Medium to Tiny Non-Tufted Graminoid (Grass-like pl	Very High	1	No	No
Isolepis inundata	Swamp Club-sedge	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Isotoma fluviatilis subsp. australis	Swamp Isotome	Small or Prostrate Herb	High	2	No	No
Juncus holoschoenus	Joint-leaf Rush	Medium to Small Tufted Graminoid (Grass-like plant	High	3	No	No
Juncus pallidus	Pale Rush	Large Tufted Graminoid (Grass-like plant)	High	3	No	No
Juncus pauciflorus	Loose-flower Rush	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Juncus planifolius	Broad-leaf Rush	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Juncus procerus	Tall Rush	Large Tufted Graminoid (Grass-like plant)	High	3	No	No
Juncus sarophorus	Broom Rush	Large Tufted Graminoid (Grass-like	Very High	3	No	No
					No	No
filiformis	grass	Tufted Graminoid (Grass-like plant			No	No

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Lepidosperma laterale var. majus	Variable Sword-sedge	Large Tufted Graminoid (Grass-like plant)	High	2	No	No
Leptinella reptans s.l.	Creeping Cotula	Small or Prostrate Herb	High	1	No	No
Leptospermum continentale	Prickly Tea-tree	Medium Shrub	High	3	No	No
Leptospermum lanigerum	Woolly Tea-tree	Tree, Medium Shrub	Very High	3	No	No
Lilaeopsis polyantha	Australian Lilaeopsis	Medium Herb	High	1	No	No
Lobelia pedunculata s.l.	Matted Pratia	Small or Prostrate Herb	High	2	No	No
Lomandra filiformis	Wattle Mat-rush	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Lomandra longifolia	Spiny-headed Mat-rush	Large Tufted Graminoid (Grass-like plant)	Very High	3	No	No
Lycopus australis	Australian Gipsywort	Large Herb	High	3	Yes	No
Lythrum salicaria	Purple Loosestrife	Large Herb	High	3	No	No
Melaleuca ericifolia	Swamp Paperbark	Tree, Medium Shrub	High	4	No	No
Melicytus dentatus s.l.	Tree Violet	Medium Shrub	High	3	No	No
Mentha australis	River Mint	Medium Herb	High	2	No	No
Microlaena stipoides var. stipoides	Weeping Grass	Medium to Tiny Non-Tufted Graminoid (Grass-like pl	Very High	3	No	No
Notodanthonia semiannularis	Wetland Wallaby-grass	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Olearia glandulosa	Swamp Daisy-bush	Medium Shrub	High	2	No	No
Oxalis exilis	Shady Wood-sorrel	Small or Prostrate Herb	High	1	No	No
Ozothamnus ferrugineus	Tree Everlasting	Medium Shrub	High	4	No	No
					No	No
					No	No
					No	No
Persicaria praetermissa	Spotted Knotweed	Large Herb	High	1	No	No
Persicaria prostrata	Creeping Knotweed	Medium Herb	High	3	No	No

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Phragmites australis	Common Reed	Large Non-Tufted Graminoid (Grass-like plant)	Very High	3	No	No
Poa ensiformis	Sword Tussock-grass	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Poa labillardierei	Common Tussock-grass	Medium to Small Tufted Graminoid (Grass-like plant	Very High	3	No	No
Poa labillardierei var. labillardierei	Common Tussock-grass	Medium to Small Tufted Graminoid (Grass-like plant	High	3	No	No
Polystichum proliferum	Mother Shield-fern	Ground Fern	High	2	No	No
Potamogeton tricarinatus s.l.	Floating Pondweed	Medium Herb	High	1	No	No
Pteridium esculentum	Austral Bracken	Ground Fern	Moderate	2	No	No
Rubus parvifolius	Small-leaf Bramble	Scrambler or Climber	Very High	3	No	No
Rumex bidens	Mud Dock	Medium Herb	High	2	No	No
Rumex brownii	Slender Dock	Medium Herb	High	3	No	No
Sambucus gaudichaudiana	White Elderberry	Medium Herb	High	2	No	No
Schoenoplectus tabernaemontani	River Club-sedge	Large Non-Tufted Graminoid (Grass-like plant)	High	2	No	No
Senecio minimus	Shrubby Fireweed	Large Herb	High	1	No	No
Themeda triandra	Kangaroo Grass	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Triglochin procera s.l.	Water Ribbons	Large Tufted Graminoid (Grass-like plant)	High	1	No	No
Triglochin procera s.s.	Common Water-ribbons	Large Tufted Graminoid	High	3	No	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	No	No
[illegible] domingensis	[illegible] Cumbungi	[illegible]	[illegible]	[illegible]	No	No
Typha orientalis	Broad-leaf Cumbungi	Large Herb	High	4	No	No
Veronica gracilis	Slender Speedwell	Large Herb	High	2	No	No

The Central Victorian Uplands Bioregion
Swampy Riparian Woodland

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Viola hederacea sensu Willis (1972)	Ivy-leaf Violet	Medium Herb	High	2	No	No
Wahlenbergia gracilis	Sprawling Bluebell	Large Herb	Very High	2	No	No
Wolffia australiana	Tiny Duckweed	Small or Prostrate Herb	High	2	No	No

Appendix.5 Plant list- Shrubs and associated Benchmarks

Department of Sustainability and Environment

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Central Victorian Uplands bioregion

EVC 20: Heathy Dry Forest

Description:
Grows on shallow, rocky skeletal soils on a variety of geologies and on a range of landforms from gently undulating hills to exposed aspects on ridge tops and steep slopes at a range of elevations. The overstorey is a low, open eucalypt forest to 20 m tall, poor in form with an open crown cover. The understorey is dominated by a low, sparse to dense layer of ericoid-leaved shrubs including heaths and peas. Graminoids and grasses are frequently present in the ground layer, but do not provide much cover.

Large trees:

Species	DBH(cm)	#/ha
Eucalyptus spp.	60 cm	20 / ha

Tree Canopy Cover:

%cover	Character Species	Common Name
30%	*Eucalyptus macrorhyncha*	Red Stringybark
	Eucalyptus dives	Broad-leaved Peppermint
	Eucalyptus polyanthemos	Red Box
	Eucalyptus goniocalyx s.l.	Long-leaf Box
	Eucalyptus mannifera ssp. *mannifera*	Brittle Gum

Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Medium Shrub	6	30%	MS
Small Shrub	5	20%	SS
Prostrate Shrub	1	1%	PS
Medium Herb	3	5%	MH
Large Tufted Graminoid	1	5%	LTG
Medium to Small Tufted Graminoid	4	20%	MTG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C
Total understorey projective foliage cover		**80%**	

EVC 20: Heathy Dry Forest – Central Victorian Uplands bioregion

LF Code	Species typical of at least part of EVC range	Common Name
MS	*Epacris impressa*	Common Heath
MS	*Pultenaea gunnii*	Golden Bush-pea
MS	*Banksia marginata*	Silver Banksia
MS	*Monotoca scoparia*	Prickly Broom-heath
SS	*Platylobium obtusangulum*	Common Flat-pea
SS	*Hovea heterophylla*	Common Hovea
SS	*Pultenaea humilis*	Dwarf Bush-pea
SS	*Leucopogon virgatus* var. *virgatus*	Common Beard-heath
PS	*Acrotriche serrulata*	Honey-pots
MH	*Gonocarpus tetragynus*	Common Raspwort
MH	*Drosera peltata* ssp. *auriculata*	Tall Sundew
LTG	*Xanthorrhoea australis*	Austral Grass-tree
MTG	*Dianella revoluta* s.l.	Black-anther Flax-lily
MTG	*Lomandra filiformis*	Wattle Mat-rush
MTG	*Poa sieberiana*	Grey Tussock-grass
MTG	*Joycea pallida*	Silvertop Wallaby-grass

Recruitment:
Episodic/Fire. Desirable period between disturbances is 20 years.

Organic Litter:
20 % cover

Logs:
20 m/0.1 ha.

Weediness:
There are no consistent weeds in this EVC.

EVC 20 Dry Heath Forest in the CVU Bioregion

Graminodes

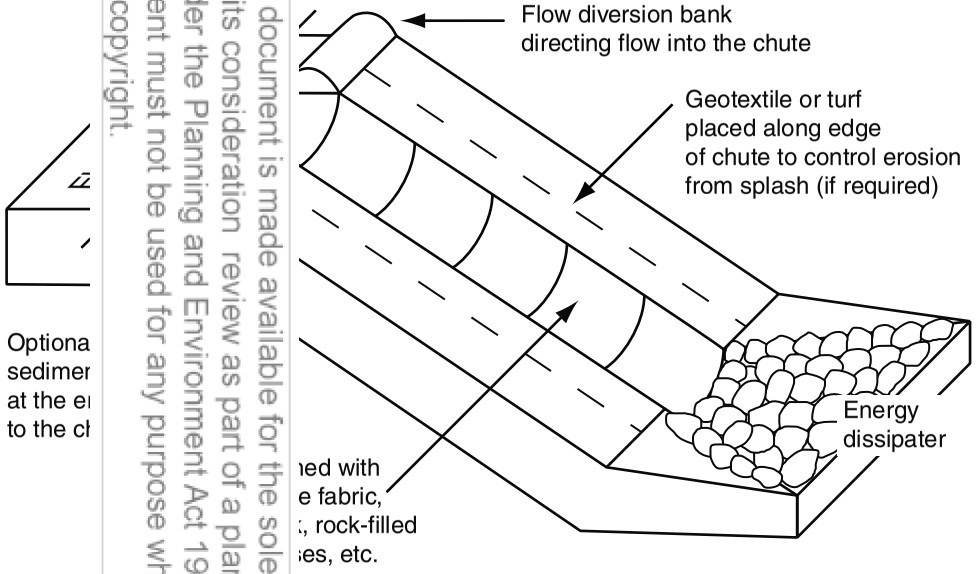
Shrubs

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Acrotriche serrulata	Honey-pots	Prostrate Shrub	High	1	No	No
Banksia marginata	Silver Banksia	Tree, Medium Shrub	High	3	No	No
Dianella revoluta s.l.	Black-anther Flax-lily	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Drosera peltata subsp. auriculata	Tall Sundew	Medium Herb	High	1	No	No
Epacris impressa	Common Heath	Medium Shrub	High	1	No	No
Eucalyptus dives	Broad-leaf Peppermint	Tree, Small Tree or Large Shrub	High	4	No	No
Eucalyptus goniocalyx s.l.	Bundy	Tree, Small Tree or Large Shrub	High	4	No	No
Eucalyptus macrorhyncha	Red Stringybark	Tree, Small Tree or Large Shrub	High	4	No	No
Eucalyptus mannifera subsp. mannifera	Brittle Gum	Tree, Small Tree or Large Shrub	High	4	No	No
Eucalyptus polyanthemos	Red Box	Tree, Small Tree or Large Shrub	High	4	No	No
Gonocarpus tetragynus	Common Raspwort	Medium Herb	High	2	No	No
Hovea heterophylla	Common Hovea	Small Shrub	High	2	No	No
Joycea pallida	Silvertop Wallaby-grass	Large Tufted Graminoid (Grass-like plant)	High	2	No	No
Leucopogon virgatus var. virgatus	Common Beard-heath	Small Shrub	High	1	No	No
Lomandra filiformis	Wattle Mat-rush	Medium to Small Tufted Graminoid (Grass-like plant	High	2	No	No
Monotoca	Prickly Broom	Medium Shrub	High	1	No	No
					No	No
		(Grass-like plant			No	No
Pultenaea gunnii	Golden Bush-pea	Medium Shrub	High	2	No	No
Pultenaea humilis	Dwarf Bush-pea	Small Shrub	High	2	No	No

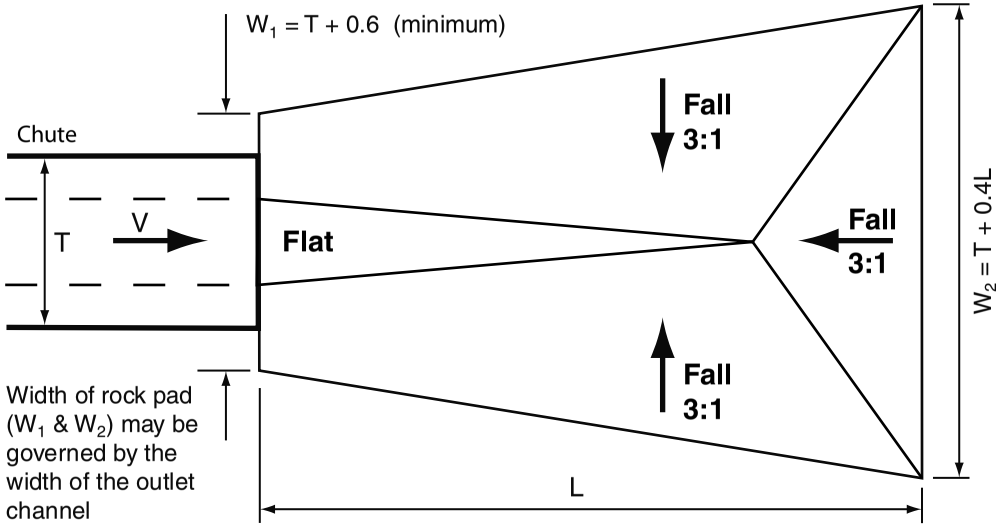
The Central Victorian Uplands Bioregion
Heathy Dry Forest

Scientific Name	Common Name	Life Form	Confidence	Reveg Suitability	Restricted Species	Specialist
Xanthorrhoea australis	Austral Grass-tree	Large Tufted Graminoid (Grass-like plant)	High	2	No	No

Appendix.6 Rock Shute

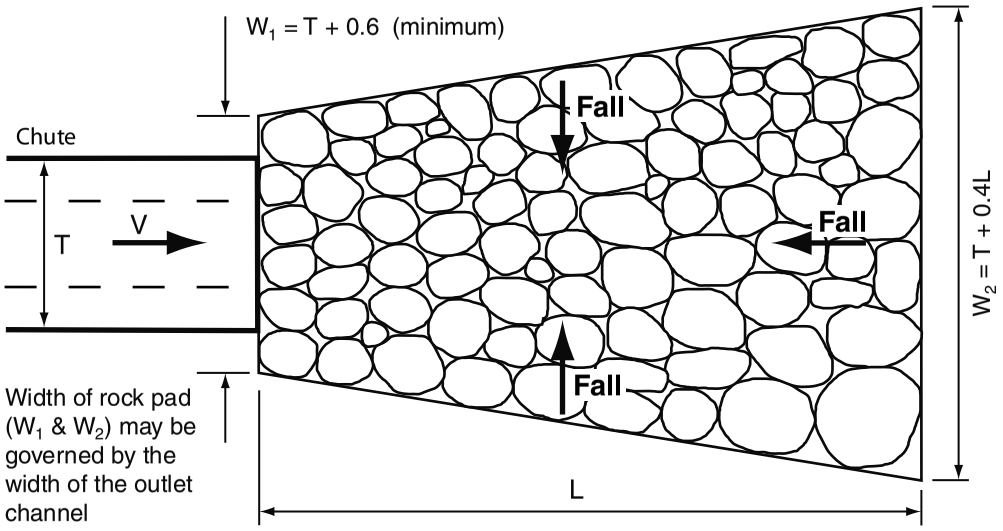


Drainage chute with rock pad outlet structure

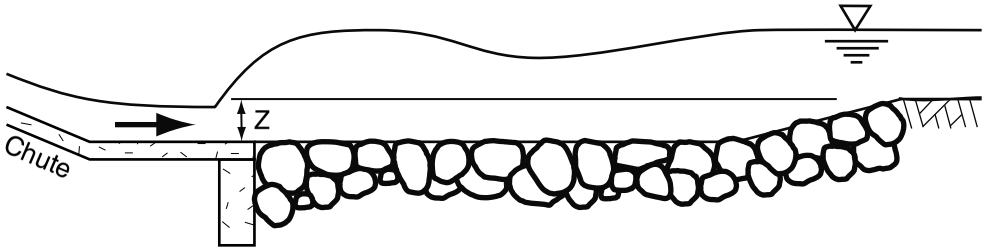


T = Maximum top width of flow at base of chute

(b) Typical layout of an outlet energy dissipater for a drainage chute



(c) Typical layout of a rock pad outlet structure for a drainage chute



(d) Typical profile of a rock pad outlet structure for a drainage chute

Notes:

1. Drawings applicable to temporary drainage chutes, **not** basin spillways.
2. A rock pad outlet structure is just one option for the design of the outlet energy dissipater.

Drawn:	Date:		
GMW	Dec-09	Chutes - General	CH-01

Appendix.7 10 Year Action Timeline

Year	Management Action	Responsible Authority	Timing of Action	Date completed
	Permit approval date			
1	Erect all fences as shown on the fence plan for pastures and all large dead or alive scattered trees on site. All wire must be **wildlife-friendly** barbed wire is not to be used on site.	Landowner/Contractor	Within 3 months of approved planning permit.	
1	Construct traffic route as shown on the fence plan with an all weather surface to a minimum of 3m wide for vehicle access on site.	Landowner/Contractor	Within 3 months of approved planning permit.	
1	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
1	Weed control	Landowner/Bushland Management Contractor	Clear all Blackberry on site within 12 months of the approved permit (Noxious Weed) . Clear other weeds as they emerge to look to control to at least 1% cover.	
1	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
1	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	

Year	Management Action	Responsible Authority	Timing of Action	Date completed
1	Organise a PIC number for stock from the Department of Agriculture	Landowner	Within 12 months of the approved planning permit.	
1	Contact Trust for Nature and discuss a Land for Wildlife voluntary agreement for the site.	Landowner	Within 12 months of the approved planning permit.	
1	Engage an Agronomist to prepare a seed assortment to increase biodiversity on site that containes at least 3 nitrogen fixing species and an overall biodiversity of 8 species.	Agronomist	Within 3 months of approved planning permit.	
1	Prepare pastures as specified by the Agronomist	Agronomist	Within 12 months of approved planning permit	
1	Over sow all paddocks with new species in Autumn if sufficient rainfall is predicted or as specified by the Agronomist.	Agronomist	Within 12 months of approved planning permit.	
1	Look to install waterpoints in all paddocks for stock	Landowner		
1	Connect waterpoints to pump system and tank storage or check daily and top up and clean as required.	Landowner		
	Look to purchase stock or bring back stock to site			

Year	Management Action	Responsible Authority	Timing of Action	Date completed
1	Start stock off in Paddock.1 and rotate once cover is eaten down and cover starts to shown signs of 90% cover. Move stock to Paddock.2; continue through all pastures to retain cover. **Note paddock 5 is only to be used when the soil and climate is dry.**	Landowner		
1	Find a Indigenous Plant nursery to source stock from	Landowner		
1	Look to source to order/purchase Graminoides (Grass-like plants) for **Regeneration area.1** (1500 plants)	Landowner		
1	Clear debris, rocks, and cut down any grass to prepare for planting in the **Regeneration area.1**	Landowner		
1	Construct dusk to dawn pens for any dogs kept on site. This is to protect Koalas and Banicoots on site.	Landowner	Within 3 months of approved planning permit.	
1	Construct outdoor pens for any cats so they are contained on site at all times. This is to protect endangered species on site such as the Bandicoot and bird species.	Landowner	Within 3 months of approved planning permit.	
	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain			

Year	Management Action	Responsible Authority	Timing of Action	Date completed
1	Avoid the use of **Pindone and 1080** on site- use only a registered contractor for any poisons.	Landowner/Contractor		
1	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
1	Remove any existing barb wire and replace with a suitable wildlife friendly wire.			
1	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
2	Look to install both spillways to dams as noted on the Farm Management Plan	Landowner/Contractor	Finalise within 18 months of approved planning permit	
2	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
2	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
2	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
			Weekly suggested	

Year	Management Action	Responsible Authority	Timing of Action	Date completed
2	Clear debris, rocks, and cut down any grass to prepare for planting in the **Regeneration area.2 and 3.**	Landowner		
2	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. Note paddock 5 is only to be used when the soil and climate is dry.	Landowner		
2	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
2	Plant **Regeneration area.1** in Autumn if average rains are predicted. If not delay until normal rainfall patterns return.	Landowner		
2	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.			
2	Avoid the use of **Pindone and 1080** on site- use only a registered contractor for any poisons.	Landowner/Contractor		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
2	Water at time of planting and maintain emerging weeds.	Landowner		
2	Look to source to order/purchase Graminoides (Grass-like plants) for **Regeneration area.2 (Part)** (2700 plants)	Landowner		
2	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
2	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
3	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
3	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
3	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
3	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
		ontractor		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
3	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
3	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
3	Clear debris, rocks, and cut down any grass to prepare for planting in the **Regeneration area.4**	Landowner		
3	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
3	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. Note paddock 5 is only to be used when the soil and climate is dry.	Landowner		
3	Plant **Regeneration area.2 and 3** in Autumn if average rains are predicted. If not delay until normal rainfall patterns return.	Landowner		
3	Water at time of planting and maintain emerging weeds.	Landowner		
3	Look to source to order/purchase Shrubs (624 plants)	Landowner		
			Within 3 months of loss.	

Year	Management Action	Responsible Authority	Timing of Action	Date completed
3	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
4	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
4	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
4	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
4	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
4	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
4	Clear debris, rocks, and cut down any grass to prepare for planting in the **Regeneration area.5**			
4	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
		ontractor		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
4	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
4	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. Note paddock 5 is only to be used when the soil and climate is dry.	Landowner		
4	Plant **Regeneration area.4** in Autumn if average rains are predicted. If not delay until normal rainfall patterns return.	Landowner		
4	Water at time of planting and maintain emerging weeds.	Landowner		
4	Look to source to order/purchase Shrubs for **Regeneration area.5** (624 plants)	Landowner		
4	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
4	Consult with Agronomist to undertake soil testing to determine if any amellioration of the soil is required	Agronomist		
4	Rectify any chemical deficiencies and check pasture species are still evident in biodiversity and over sown any loss to pastures	Agronomist		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
4	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
5	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
5	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
5	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
5	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
5	Check routinely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
5	Clear debris, rocks, and cut down any grass to prepare for planting in the **Regeneration area.6**			
5	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
		ontractor		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
5	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
5	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. **Note paddock 5 is only to be used when the soil and climate is dry.**	Landowner		
5	Plant **Regeneration area.5** in Autumn if average rains are predicted. If not delay until normal rainfall patterns return.	Landowner		
5	Water at time of planting and maintain emerging weeds.	Landowner		
5	Look to source to order/purchase graminoides (Grass-like) for **Regeneration area.6** (1800 plants)	Landowner		
5	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
5	Construct nesting boxes (2) for Phascagole on site as per Land Management Report.	Landowner		
			At the end of each anniversary of the approved permit.	

Year	Management Action	Responsible Authority	Timing of Action	Date completed
6	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
6	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
6	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
6	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
6	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
6	Clear debris, rocks, and cut down any grass to prepare for planting in the **Regeneration area.7**			
6	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway	Landowner		
		ontractor		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
6	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
6	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. **Note paddock 5 is only to be used when the soil and climate is dry.**	Landowner		
6	Plant **Regeneration area.6** in Autumn if average rains are predicted. If not delay until normal rainfall patterns return.	Landowner		
6	Water at time of planting and maintain emerging weeds.	Landowner		
6	Look to source to order/purchase graminoides (Grass-like) for **Regeneration area.7** (1800 plants)	Landowner		
6	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
6	Construct nesting boxes (2) for Powerful Owl on site as per Land Management Report.	Landowner		
6	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
		ushland Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	

Year	Management Action	Responsible Authority	Timing of Action	Date completed
7	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
7	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
7	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
7	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
7	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
7	Avoid the use of **Pindone and 1080** on site- use only a registered contractor for any poisons.	Landowner/Contractor		
7	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
	Continue stock rotation through all pastures to			

Year	Management Action	Responsible Authority	Timing of Action	Date completed
7	Plant **Regeneration area.7** in Autumn if average rains are predicted. If not delay until normal rainfall patterns return.	Landowner		
7	Water at time of planting and maintain emerging weeds.	Landowner		
7	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
7	Consult with Agronomist to undertake soil testing to determine if any amellioration of the soil is required	Agronomist		
7	Rectify any chemical deficiencies and check pasture species are still evident in biodiversity and over sown any loss to pastures.	Agronomist		
7	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
8	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
8	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
8	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
			Daily	

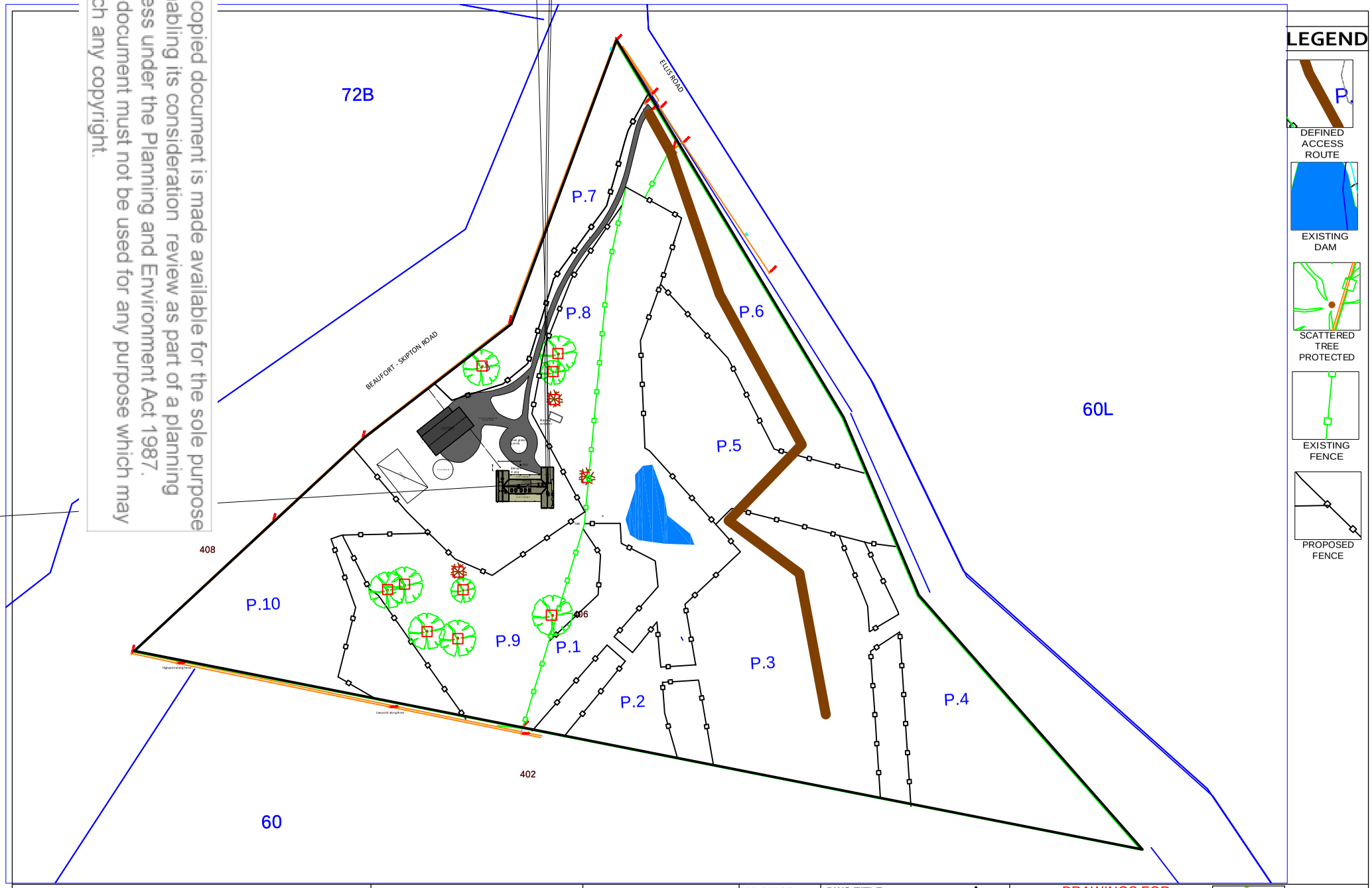
Year	Management Action	Responsible Authority	Timing of Action	Date completed
8	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
8	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
8	Avoid the use of **Pindone and 1080** on site- use only a registered contractor for any poisons.	Landowner/Contractor		
8	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
8	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. **Note paddock 5 is only to be used when the soil and climate is dry.**	Landowner		
8	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
8	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
		ushland Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	

Year	Management Action	Responsible Authority	Timing of Action	Date completed
9	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
9	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
9	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
9	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
9	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
9	Avoid the use of **Pindone and 1080** on site- use only a registered contractor for any poisons.	Landowner/Contractor		
9	Retain all leaf litter outside of **50m of the dwelling and any other accommodation** areas as habitat for the Endangered Speckled Warbler.	Landowner		
	Continue stock rotation through all pastures to			

Year	Management Action	Responsible Authority	Timing of Action	Date completed
9	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
9	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	
10	Monitor weed control	Landowner/Bushland Management Contractor	Monitor Autumn and Spring for any emergence of weeds on site.	
10	Weed control	Landowner/Bushland Management Contractor	Look to maintain weeds as they emerge to look to control to at least 1% cover.	
10	Monitor populations of pest animals and conduct control works if required	Landowner/Pest Animal Contractor	After peak breeding season/late summer/early autumn	
10	Daily check of domestic animal pens if required to ensure endangered species are always protected against predation on site.	Landowner	Daily	
10	Check routinuely to inspect all fencing and repair any damage.	Landowner	Weekly suggested	
10	Prioritise any tree planting to be Eucalyptus viminalis as a food source for the Koala. Retain all dead trees for perching and for hollows. These trees can be planted in Regeneration areas 2, 3, 4,5, 6 & 7 as long as they are a minimum of 10m from any dam or spillway.	Landowner		
10	Avoid the use of **Pindone and 1080** on site- use only a registered contractor for any poisons.	Landowner/Contractor		

Year	Management Action	Responsible Authority	Timing of Action	Date completed
10	Continue stock rotation through all pastures to retain cover at 80% flat land and 90% on the slope. **Note paddock 5 is only to be used when the soil and climate is dry.**	Landowner		
10	Check all previous regeneration areas and replace lost plants as required.	Landowner	Within 3 months of loss.	
10	Consult with Agronomist to undertake soil testing to determine if any amellioration of the soil is required	Agronomist		
10	Rectify any chemical deficiencies and check pasture species are still evident in biodiversity and over sown any loss to pastures.	Agronomist		
10	Fill in monitoring form and send to council	Landowner	At the end of each anniversary of the approved permit.	

Appendix.8 Fence Plan



LEGEND

- DEFINED ACCESS ROUTE
- EXISTING DAM
- SCATTERED TREE PROTECTED
- EXISTING FENCE
- PROPOSED FENCE

Note:
The contractor shall verify all dimensions and all underground services at the site before commencing work. The contractor shall verify all levels from the consulting engineer prior to construction.

DO NOT SCALE FROM DRAWINGS

PROJECT: *Lot 1 TP567841 (Ellis Road, Beaufort)*

PROJECT NO: *2751*

DATE: JUL 2025

DWG TITLE: *FENCE AND ACCESS PLAN-FMP*

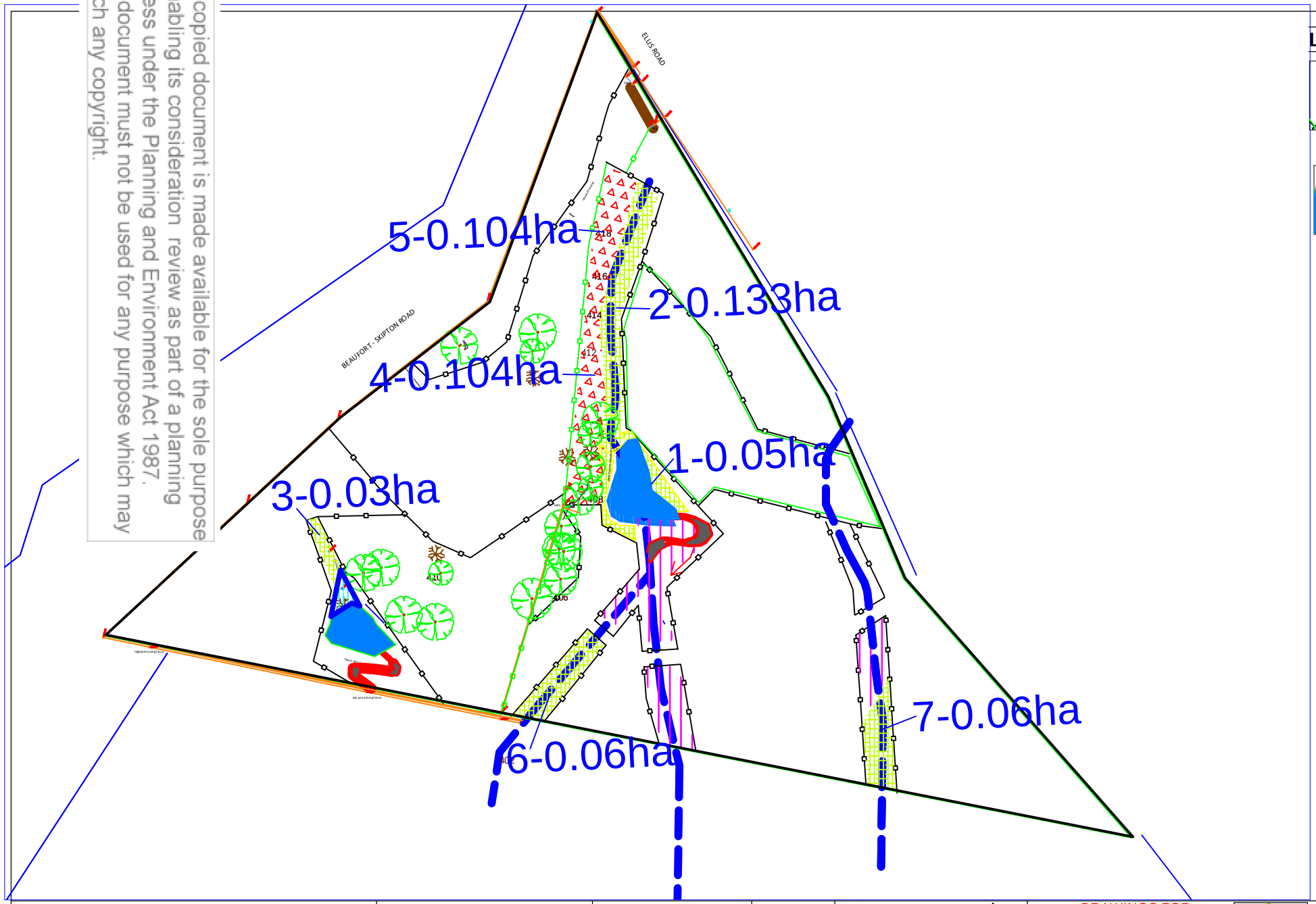
SCALE: 1:2500 @A4

NORTH (West, East, South)

DRAWINGS FOR PLANNING PERMIT ONLY NOT TO BE USED FOR CONSTRUCTION

NATURAL RESOURCE LINK PTY LTD
54 Frazer Street
Clunes 3370
julie@nrlinks.com.au

Appendix.9 Regeneration Plan



LEGEND

- DEFINED ACCESS ROUTE
- EXISTING DAM
- SCATTERED TREE PROTECTED
- SPILLWAY
- REVEGETATE SHRUBS (EROSION CONTROL) — 412
- REVEGETATE GRAMINOIDS
- MAINTAIN COVER 100%
- PRIORITY NUMBER FOR REGENERATION — 7

Note:
The contractor shall verify all dimensions and all underground services at the site before commencing work. The contractor shall verify all levels from the consulting engineer prior to construction.

DO NOT SCALE FROM DRAWINGS

PROJECT: *Lot 1 TP567841 (Ellis Road, Beaufort)*

PROJECT NO: *2751*

DATE: JUL 2025

DWG TITLE: *REGENERATION PLAN-FMP*

SCALE: 1:2500 @A4

NORTH (West, East, South)

DRAWINGS FOR PLANNING PERMIT ONLY NOT TO BE USED FOR CONSTRUCTION

NATURAL RESOURCE LINK PTY LTD
54 Frazer Street
Clunes 3370
julie@nrlinks.com.au

Appendix.10 Monitoring Form

Annual Landowner Monitoring and Reporting form

Owner of site	
Address of site	
Planning Permit NO	
Planning permit date of issue	
Year	
Responsible Authority	

Actions listed in year plan for that year	Date completed	Key performance target met (Y/N)	Comments

MES Wastewater
Environmental and Wastewater Consultancy

Land Capability Assessment Report

Client Name:	Jacinta & Matthew Martin
Site Address:	(Lot 1) Ellis Road (Cnr of Skipton Road), BEAUFORT VIC 3373
Date of Report:	01/07/2025
Version:	2
File Number:	2025-E-004

Author:	Michael Shelly, BHlthSc, MEHPA.
Contact:	M: 0490 513 387. E: mes.wastewater@gmail.com.

Important Note:

This land capability assessment report consists of this coversheet, a full written report and an appendix containing relevant plans, maps, and important reference materials.

This report should not be read or interpreted in isolation.

Table of Contents.

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(i) Assessors' Academic and Professional Qualifications

Michael Shelly is the Principal Land Capability Assessor at MES Environmental and Wastewater Consultancy.

Michael earned a bachelor's degree in Health Science (Public and Environmental Health) from Swinburne University of Technology in 2006.

Michael has also studied in the fields of:

- Diploma of Food Technology (Dairy), Melbourne University, 2004
- Graduate Diploma of Education (Secondary), Tabor College, 2011
- Graduate Certificate of Occupational Health, Safety and Environmental Management, Australian Catholic University, 2015
- Certificate of Land Capability Assessments, Centre for Environmental Training, 2022 and 2024

Since graduating with his bachelor's degree, Michael has worked in education, private industry, and local and state government as an Authorised Officer.

As an Authorised Officer in local government, Michael gained a specialisation in on-site wastewater management systems (OWMS) as a Regulator working for authorities responsible for assessing OWMS generating under 5000 L of wastewater per day.

Michael continues to specialise in and consult on on-site wastewater management system projects of all sizes and seeks professional development training courses to further his knowledge.

Michael is a financial member of Environmental Health Professionals Australia and their Environment & Wastewater Special Interest Group (SIG).

Michael has been ably assisted by Paul Williams, who is the Director and Principal Earth Scientist at Paul Williams & Associates Pty Ltd.

Paul earned a Bachelor of Applied Science degree in Geology and Land Use (awarded in 1978) and has since specialised in vadose zone hydrology, soil science, land-soil risk assessment, and engineering geology.

Michael Shelly and Paul Williams have undertaken all fieldwork and laboratory data analysis. Paul Williams has also peer-reviewed the work in this report.

Paul Williams & Associates Pty. Ltd.
CONSULTANTS IN THE EARTH SCIENCES

(ii) Assessors' Combined Liability & Professional Indemnity Insurance

Policy No.:	BXLC -MPI-2025-011512
Period of Coverage:	07/03/2025 to 07/03/2026
Geographical Coverage:	Worldwide (excluding USA and Canada)
Retro-active Date:	Inception, excluding known claims and circumstances
Limit of Indemnity:	$4,000,000
Insurance Company:	XL Insurance Company SE T/As Brooklyn Underwriting Pty Ltd
Underwriting Company:	XL Insurance Company SE

(iii) Executive Summary

I understand that this report may accompany a Planning Permit Application with a subsequent 'A20 Application for a Permit to Install an Onsite Wastewater Management System (OWMS)' submitted to Pyrenees Shire Council, for the proposed development of a residential dwelling at the property, as mentioned above.

This report provides a detailed Land Capability Assessment Report and information about the site and soil conditions. It details the on-site wastewater requirements for the proposed development of a four-bedroom dwelling and includes a conceptual design for a suitable on-site wastewater management system. The report also provides recommendations for monitoring and management requirements.

Only one option is provided for the wastewater treatment system (WTS) and effluent disposal system (EDS). The wastewater should be treated at a **secondary (or better) level** by a suitably approved onsite wastewater treatment system with a current Certificate of Conformance issued under the appropriate Standard, and the effluent should be applied to land via **310 m²** of subsurface irrigation for a 4-bedroom dwelling. The calculations for the dwelling are available in **Section 4.4** of this report.

- The subsurface drip irrigation (SSDI) system pipework **must be installed** at a minimum depth of **150 mm** in the imported soil for this site.
- WELS water-saving fixtures and appliances **must be installed** in the new residential dwelling to reduce the wastewater load.

The **site and floor plans** for the proposed development of a four-bedroom residential dwelling are appended to this report to demonstrate its location (see Appendix C).

Site Overview:

The allotment is currently undeveloped with only a storage container and a toilet shelter, which houses a chemical toilet when they are on site for doing work. Several trees have been introduced nd are unlikely to affect the positioning of the tbacks.

vill be consistent with a rural setting. The EDS southwest, extending towards the western

boundary of the property. Vegetation-wise, the land is sparsely grassed, which is likely a result of the clayey soils found at the property.

Sufficient land is available for a sustainable onsite wastewater management system treated to a secondary (or better) level that maintains satisfactory setback buffers to protect nearby surface waters and drains.

1. Introduction

MES Wastewater has been engaged to undertake a Land Capability Assessment (LCA) for a site at **(Lot 1) Ellis Road (Cnr of Skipton Road), BEAUFORT VIC 3373**, located on the corner of Ellis Road and Skipton Road.

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

MES Water and Paul Williams & Associates Pty Ltd have undertaken the field work and co-authored parts of this report together.

Paul Williams, B AppSci (Geology and Land Use), has peer reviewed this report.

2. Description of Development

Site Address: (Lot 1) Ellis Road (Cnr of Skipton Road),
BEAUFORT VIC 3373

Lot and Plan Number: Lot 1 TP567841

Standard Parcel Identifier: 1\TP567841

Detailed Property and Planning Reports provide a locality plan and indicate the location of the proposed development site, as well as other planning information required to determine the suitability of the land for onsite wastewater management *(see Appendix A)*.

Client/Agent: Matthew and Jacinta Martin

Postal Address: 106 Howard Street, SOLDIERS HILL VIC 3350

Contact: Jacinta Martin, 0438 870 994

Council Area: Pyrenees Shire Council

Zoning: Farming (FZ)

Allotment Size: 7.57 Hectares / 75,681 m^2

Special Water Supply Catchment Area: No **Name:** NA

Domestic Water Supply: Assume that a reticulated supply is unavailable (Roof Top Supply).

OWMP & Risk Sensitivity: Pyrenees Shire Council, 2024-2028 – Low Risk Sensitivity.

Anticipated Wastewater Load:

Table 1: Anticipated Wastewater Load, Litres per day at maximum design occupancy.

Wastewater Flow Rate	120	**Litres/person/day**

Calculation Potential Bedrooms		**Dwelling**
Data to be used in Calculation		**#1**
Number of dwelling	1	
Potential Bedrooms		4
Occupants (Bedrooms +1)		5
Litres / person / day		120
Proposed wastewater loading		600

Assume that the dwelling is fitted with Water Efficiency Labelling Scheme (WELS) fixtures and fittings. Wastewater generation *under an onsite roof water tank supply* = 120 L/person/day (*Ref: EPA Guidelines for onsite wastewater management (May 2024) Table 4-1: Design flow rates for households*)

sewered and is unlikely to be sewered within
years due to the low development density in
d the considerable distance from existing
rvices.

3. Method of Investigation

Our site investigation has been carried out in accordance with the Environment Protection Act 2017 and the Environment Protection Regulations 2021, as amended, and ancillary statements of knowledge, which are listed in **Section 8: References**.

Our capability assessment involved mapping unique land-soil units (s), which were defined in terms of significant attributes including climate, slope, aspect, vegetation, soil profile characteristics (including colloid stability, soil reaction trend, and electrical conductivity), depth to rock, proximity to surface waters and escarpments, transient soil moisture characteristics, and hydraulic conductivity.

The soil profiles were inspected, logged, and sampled via an exploratory push-tube method.

Water and nutrient balance analyses are based on the mean wet year calculated from the mean monthly rainfall data ***Beaufort (089005)*** and mean evaporation data for ***Creswick (088019)*** and were undertaken in accordance with EPA Publication 168.3 (October 2022), *Victorian Guidelines for Irrigation with recycled water (Appendix 1)*, AS/NZS 1547:2012 and in-house methods.

The rainfall and evaporation data were obtained from the Bureau of Meteorology's Climate Data Online website. We then applied the data to our 'Water and Nutrient Balance' for appropriate analysis.

Appendix D of this report provides the results of the water and nutrient balance analysis.

The investigation results and *in situ* and laboratory testing are provided in **Section 4, Table 3, and Appendix H** to this report.

Collection Method for the Bureau of Meteorology (BOM) Rainfall and Pan Evaporation Data.

Our choice of ***Beaufort (089005)*** as the Rainfall Climate Station is based on reviewing the list of open and closed climate stations available in close proximity to the Beaufort locality, which exhibits the most comprehensive rainfall data collection over a 30-year period between 1961 and 1990.

It is important to note that, when reporting on BOM rainfall data, we cannot use current day data, due to a number of factors, including months with missing collection figures and where the months have been reported and appear in italics, the BOM web page reports that these figures have not been quality checked/assessed for correctness.

Our choice of ***Creswick (088019)*** as the Pan-A Evaporation Climate Station is based on the fact that it is one of only thirty-three (33) open and closed climate stations across the state of Victoria that can provide suitable Pan-A Evaporation data (as advised by *researching the BOM website)*.

4. Site and Soil Assessment

We attended this property on 11 June 2025 to undertake and record appropriate site and soil observations to assist with preparing this Land Capability Assessment (LCA) report.

4.1 Site Key Features

Table 2 (overleaf) summarises the site's key features concerning wastewater management proposed for the site.

NOTE: *(Brief Summary)*

- The site is not likely to experience significant stormwater run-on.
- There is no evidence of a shallow groundwater table or other significant constraints that cannot be mitigated.
- The risk of effluent transport off-site is low.
- There are no significant environmental receptors downslope within 30 m of the proposed effluent disposal system (EDS) envelope.

The site-related maps and photography appended to this report in ***Appendix B*** provide the site context during our property assessment.

4.2 Site Assessment Results

Considering the most constraining site features, the site's overall land capability to sustainably manage all effluent on site is satisfactory.

The proposed on-site wastewater management system is located above the 1-in-100-year flood level, and secondary treatment and disposal via irrigation will adequately protect surface waters and groundwater.

4.3 Soil Key Features

The site's soils have been assessed for suitability for on-site wastewater management by combining a soil survey with a desktop review of published soil survey information.

The soils on site have been derived from Palaeozoic (Cambrian) Marine Sediments (MapCode -Ca), the regional geological setting.

A Geovic Map indicating the site location is appended to ***Appendix B***.

Table 2: Risk Assessment of Site Characteristics.

RISK ASSESSMENT OF SITE CHARACTERISTICS				
CHARACTERISTIC	**UNIT**	**ASSESSMENT**	**RISK RATING**	**MITIGATION MEASURES**
Available land for LAA		Exceeds LAA and duplicate LAA requirements	**LOW**	NA
Aspect		North, north-east and north-west	**LOW**	NA
Exposure		Full sun and/or high wind or minimal shading	**LOW**	NA
Landform		Plains and rises (<30.0m)	**LOW**	NA
Rock Outcrops		No evidence	**LOW**	NA
Imported Fill		No evidence	**LOW**	NA
SLOPE (GRADIENT):				
Slope Form		Convex or divergent side slopes	**LOW**	NA
Trenches and beds	%	NA		NA
Subsurface irrigation	%	<10	**LOW**	NA
Site drainage: run-off/run-on		Moderate likelihood	**MODERATE**	Install an upslope cut-off drain, or a spoon drain with a downslope berm, to redirect stormwater away from the EDS
Landslip		Low Potential	**LOW**	NA
Erosion potential		Low	**LOW**	NA
Flood/inundation		Never	**LOW**	NA
Distance to surface waters	**Metres**	Buffer distance complies with GOWM requirements	**LOW**	NA
Distance to groundwater bores	**Metres**	No bores on site or within a significant distance	**LOW**	NA
Vegetation		Plentiful/health vegetation	**LOW**	NA
Depth to water table (potentiometric)	**Metres**	>2	**LOW**	NA
Depth to water table (seasonal perched)	**Metres**	>1.5	**LOW**	NA
Rainfall (Climate)	**Climate Station:**	BEAUFORT (089005)	**MODERATE**	Install an upslope cut-off drain, or a spoon drain with a downslope berm, to redirect stormwater away from the EDS
	Mean (mm):	500 to 750		
Pan evaporation (mean)	**Mean (mm):**	1000 to 1250	**MODERATE**	
Setback Distances (Table 4-10)		Comfortably meets all required setback buffers	**LOW**	NA

NA: No Mitigation Required

Note: The risk assessment criteria used in Table 2 (above) can be found in Appendix J – Risk Matrix

4.4 Soil Survey and Analysis

A soil survey was conducted at the site to assess the suitability of the site for the application of treated effluent wastewater. Soil investigations were conducted at three locations using an exploratory push-tube method adjacent to the proposed building envelope, as shown in the Test Site Location Plan *in* ***Appendix F***.

This was sufficient to adequately characterise the soils as only a minor variation would be expected throughout the area of interest. Two soil types were encountered in these investigations. Full profile descriptions are provided in the Borelogs *in* ***Appendix G***.

Samples of all discrete soil layers for each soil type were collected for subsequent laboratory analysis to determine the pH, electrical conductivity, Emerson Aggregate Class and the free swell, which is used to calculate the gypsum additive requirements for clay soils where necessary. Soils in the vicinity of the nominated effluent disposal system (EDS) envelope are characterised as light clay topsoils (5b) overlying a medium clay (6b).

The A1 horizon has a moderate structure. The complete laboratory data results are appended in ***Appendix H***.

Table 3 (overleaf) provides a Risk Assessment of the soil characteristics (physical and chemical), while describing detailed constraints in each soil type encountered.

4.5 Overall Land Capability Rating

Thirteen (*13*) features present a moderate to limiting constraint on the soils in the proposed effluent disposal system (EDS) area and require listed mitigation measures to be implemented.

Nonetheless, based on the results of this site and soil assessment contained in **Table 3** (*over the next* page) and the provided Laboratory Analysis in ***Appendix H***, the overall Land Capability Rating of the proposed onsite wastewater management area will not be constrained as long as disposal of the **secondary (or better)** treated wastewater is via **subsurface dripper irrigation (SSDI)** and the required mitigation instructions contained within this report are followed.

+

Table 3: Risk Assessment of Soil Characteristics.

RISK ASSESSMENT OF SOIL CHARACTERISTICS					
CHARACTERISTIC	**UNIT**	**ASSESSMENT**		**RISK RATING**	**MITIGATION MEASURES**
Structure		High or moderately structured		LOW	NA
Fill materials		Nil or mapped good quality topsoil		LOW	NA
Thickness: (m)					
Trenches and beds	Metres	<1.4		MAJOR	The land is not suitable to a conventional absorption trench system
Subsurface irrigation	Metres	1.0 to 1.5		LOW	NA
Permeability (limiting horizon)	m/day	0.01 to 0.3		MAJOR	Amelioration of the clay soils is required with the addition of Gypsum is required
Permeability (buffer evaluation)	m/day	0.3 to 3.0		MAJOR	
Stoniness (Rock fragments)	%	<10		LOW	NA
Emerson Aggregate Class	Topsoil:	2.3		MAJOR	Requires wastewater treatment to a Secondary Level and for clay soil amelioration with gypsum.
	Subsoil 1	2.3		MAJOR	
	Subsoil 2	2.3		MAJOR	
Dispersion Index		8 to 15		MAJOR	Amelioration of the clay soils is required with the addition of Gypsum is required
Reaction Trend	pH	5.5 to 8.0		LOW	NA
Electrical Conductivity (ECe)	d/Sm	0.8 to 2.0		MODERATE	NA
Free Swell	%	<30		LOW	NA
Topsoil :					
Soil Depth Texture Structure	mm Category	<600 5b High or moderately structured		MAJOR	NA
Subsoil :					
Soil Depth Texture Structure	mm Category	>150 6b High or moderately structured		MAJOR	Requires soil renovation/amelioration with gypsum.
Soil Permeability & Design Loading / Irrigation Rates	Topsoil:	Light clay		MODERATE	NA
	Ksat:	0.06-0.12	m/day saturated conductivity		
	DIR:	3.00	mm/day (Design Irrigation Rate)		
	DLR:	NA	mm/day (Design Loading Rate)		
Dispersal Method: Subsurface Irrigation Ref: Table 4-8 of EPA Guide to onsite wastewater management (2024).					
	Subsoil:	Medium clay		MAJOR	Disperse wastewater to subsurface irrigation.
	Ksat:	<0.06	m/day saturated conductivity		
	DIR:	2.00	mm/day (Design Irrigation Rate)		
	DSR:	3.20	mm/day (Deep Seepage Rate)		
	AR:	1.90	mm/day (Application Rate)		
	DLR:	NA	mm/day (Design Loading Rate)		
Groundwater Table Depth		<1.5 Maximum borehole depth 1500 mm.		MODERATE	NA

NA: No Mitigation Required

Note: The risk assessment criteria used in Table 3 (above) can be found in Appendix J – Risk Matrix

5. Wastewater Management System

The following sections provide an overview of a suitable on-site wastewater management system (OWMS), including sizing, design considerations, and justification for its selection. A detailed design for the system should be undertaken before applying to the Pyrenees Shire Council for an 'A20 Permit to Install an on-site wastewater management system'.

Note: You will require an 'A20 Permit to Install an onsite wastewater management system', which will be issued by the Pyrenees Shire Council before a Building Permit can be issued. (*Ref: Building Regulations 2018 Regulation 44(1)(p)*).

5.1 Wastewater Treatment System (WTS).

The secondary wastewater output quality required is –

< 20 mg/L BOD and < 30 mg/L TSS.

It would be best to refer to the EPA website for the approved OWMS available. Any of the secondary treatment system options can achieve the desired performance level. The property owner is responsible for selecting the secondary treatment system and must include its details in the OWMS A20 Permit to Install/Alter Application Form for Council approval.

5.2 Effluent Disposal System (EDS)

Various land application systems have been considered, including absorption trenches, evapotranspiration absorption (ETA) beds, wick trenches, subsurface irrigation, and mounds.

The nominated and preferred dispersal system is a **pressure-compensating subsurface drip irrigation (SSDI)**, based on information provided regarding development on the land and available land for the dispersal of treated wastewater. Subsurface irrigation will provide even and widespread dispersal of the treated effluent within the root zone of plants. This system will give beneficial reuse of wastewater, which is always desirable. It will also ensure that the risk of untreated sewage being transported off-site will be negligible.

5.3 Description of the Effluent Disposal System (EDS) – Subsurface Drip Irrigation

Ref: *EPA Publication 'Guideline for onsite wastewater effluent dispersal and recycling systems' (May 2024), Section 2.4.3.1 Shallow subsurface irrigation, pages 34-35.*

A detailed irrigation system design is beyond the scope of this report. However, a general description of subsurface irrigation is provided here for the client and the Council's information.

Subsurface irrigation comprises a network of drip irrigation lines specially designed for wastewater use. The pipe contains pressure-compensating emitters (drippers) that employ a biocide to prevent the build-up of slimes and inhibit root penetration.

ontour, are usually **1.0 m** apart for clay soils.

which will be imported to the site, within

12 (Appendix M–Clause M3.1). The irrigation

dequate pressure and delivery rate for the

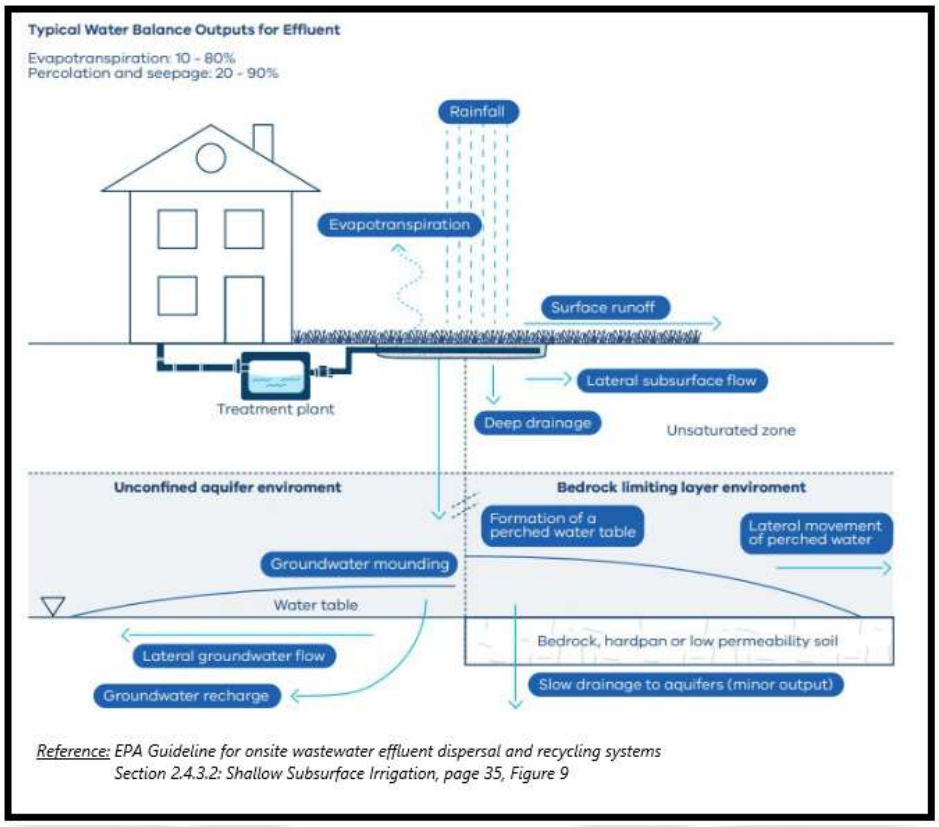

Figure 1: *Shallow Subsurface Irrigation EDS conceptual water balance.*

- A filter is installed in the main line to remove fine particulates that could block the emitters. According to the manufacturer's instructions, this filter must be cleaned regularly (typically monthly).
- Vacuum breakers should be installed at the high point/s in the system to prevent air and soil from being sucked back into the drippers when the pump shuts off.
- Flushing valves are an important component that allows for periodic flushing of the lines, which should be done at six-month intervals. Flush water can be returned to the treatment system or released to a small, dedicated gravel-based trench.

All trenching used to install the pipes must be adequately backfilled to prevent preferential subsurface flows along trench lines. Irrigation areas must not be subject to high foot traffic, and vehicles and livestock must be excluded from the area. Otherwise, a fence or barrier must be constructed around the wastewater dispersal area to avoid compaction around emitters, which could lead to premature system failure.

In some cases, due to the soil depths, quality, and categories encountered during borehole soil sampling, it may be determined that loamy soils need to be imported to the site as a he effluent disposal system. This is usually the subsoil is of poor quality, as it will not of transpiration through vegetation. The recommended to have a low clay content. To nported to the site, please refer to **Table 3** for

confirmation. If your property involves soil being imported to the site, please read **Section 5.6: Installation of the Effluent Disposal System (EDS)** for further information.

5.4 Sizing the Effluent Disposal System (EDS) – Subsurface Drip Irrigation

The following have been considered for this onsite wastewater management system:

- The calculations for the dwelling in this LCA Report are based on a dwelling of four bedrooms.
- Overall, this will result in five occupants at maximum design capacity.
- The calculations for this water and nutrient balance can be found in **Table 6** (below).

To determine the necessary size of the irrigation area, **a water balance** model has been considered using a water and nutrient balance tool based on the method and water balance tool found in the "*Victorian Land Capability Assessment Framework – 2nd Edition (2014)"* and the EPA Publication *"Guideline for onsite wastewater management (May 2024)" – see **Appendix D***.

Please note: The Water and Nutrient Balance *in **Appendix D*** has been used with full permission from Paul Williams and Associates Pty Ltd, ©2025.

The final sizing of the irrigation system has been undertaken by adopting a Deep Seepage Rate of **3.2 mm/day** and an application rate of **1.9 mm/day**, using Category **6b Medium Clay** as the most limiting soil horizon.

The **maximum design capacity** for the system is equivalent to 5 full-time occupants at the property, resulting in a required area of **310 m^2** of subsurface drip irrigation.

As part of the water balance model, **a nutrient balance** has also been conducted to determine whether the Land Application Area is sufficient to ensure that soils and vegetation can assimilate nutrients. It is acknowledged that a proportion of nitrogen will be retained in the soil through processes such as mineralisation and volatilisation.

Reference: *The Victorian Land Capability Assessment Framework – 2nd Edition (2014)*.

NOTE: Soil has a high phosphorus retention index (PRI) in clayey soils. Unlike when Nitrogen (N) is discharged from the onsite wastewater management system (OWMS) to the soil, where it is converted to very mobile nitrates in underground waters, Phosphorus (P) is retained and adsorbed into the soil, rarely moving more than a couple of metres from the point of infiltration from the OWMS outflow pipe. *(Scope Newsletter 2006)*.

The effects of P sorption can occur rapidly (hours to a few days) after effluent enters the soil, and the reverse process (desorption) is a very slow one (years to decades), making it difficult for plants to access the P sorbed onto minerals/clays. *(Lanfax Laboratories, 2016)*.

This results in hydraulic load being the limiting factor in this proposed development.

Adopt as design criteria.

Table 4: Wastewater Loading, as per **Table 1**.

Wastewater Flow Rate	120	Litres/person/day
Calculation Potential Bedrooms		**Dwelling**
Data to be used in Calculation		**#1**
Number of dwelling	1	
Potential Bedrooms		4
Occupants (Bedrooms +1)		5
Litres / person / day		120
Proposed wastewater loading		600

Table 5: Nutrient Balance Calculation – Nitrogen Uptake.

Calculation of Design Criteria for Nitrogen Uptake		
Total Daily Wastewater Loading	600	Litres / day
Daily N Load (30 mg)	18,000	mg / day
Annual N Load (365 days)	6,570,000	mg / year
20% loss through denitrification	5,256,000	mg / year
Annual N Load	5.256	kg / year
N uptake by Plants	220	kg / ha / year (Application Rate)
Area required for N uptake	0.0239	hectares (ha)
	239	square metres (m^2)

The minimum area required for **N uptake is 239 m^2,** as determined by the water and nutrient balance found in **Appendix D.**

Table 6: Sizing table – minimum area required for Subsurface Dripper Irrigation (SSDI).

	No. of Bedrooms	No. of Occupants	Total Daily Wastewater Flow (L/day)	Deep Seepage Rate	Application Rate	Area Size required for N uptake (m2)	Recommended Area of Effluent Disposal System (EDS) (m^2)	
*	4	5	600	3.2	1.9	239	310	*

* - Example used in LCA Report.

Summary and Discussion

This property requires **310 m^2 of Subsurface Drip Irrigation.**

This is **sufficient to provide the minimum area of 239 m^2** required for Nitrogen uptake**.**

It is worth noting that modelling includes several significant factors of conservatism:

- Hydraulic load. This assumes a maximum occupancy of the residence at a rate of 120 litres/person/day.
- The actual occupancy may be less than the maximum occupancy design calculated; however, there is a requirement that the wastewater system be able to cope with the equivalent maximum occupancy load.
- In nutrient balances, very conservative estimates of crop nutrient uptake rates and total nitrogen lost to soil processes are used, considering that site-specific data are

5.5 Siting and Configuration of the Effluent Disposal System (EDS) – Subsurface Drip Irrigation.

Along with the Test Site Location Plan, we have provided a plan indicating a suitable envelope for the Effluent Disposal System (EDS), which is appended to this report. This has been selected as the ideal location for dispersing all wastewater generated from the proposed four-bedroom residential dwelling, considering the overall soil depth observed within the boreholes – see ***Appendix F***.

The size of the effluent disposal system envelope will satisfy the four-bedroom dwelling as listed in **Table 6**.

The client and/or an appropriately qualified system installer will determine the final placement and configuration of the effluent disposal system, provided it remains within the general vicinity of this envelope. The effluent disposal system must continue to meet the minimum area requirement as determined by the preliminary water and nutrient balances.

Whilst ample land area exists for the expected volume of wastewater to be generated, appropriate buffer distances to neighbouring properties and other landscape features or structures must be maintained. It is essential to note that buffers are measured as the overland flow path for runoff water from the effluent disposal system area.

It is recommended that the owner consult an irrigation expert familiar with the chosen method of effluent dispersal—*subsurface drip irrigation (SSDI)*— to design the onsite wastewater management system (OWMS). This expert will likely be an appropriately qualified and licensed plumbing/drainage practitioner who is also expected to be the OWMS installer. An effluent disposal system plan must ensure that wastewater is evenly applied throughout the subsurface irrigation area.

Please note:

In the absence of a preferred wastewater envelope provided by the client at the time of commissioning for this report, or the preferred wastewater envelope being considered unsuitable, MES Wastewater will arbitrarily nominate the effluent disposal system (EDS) envelope within the report – *see* ***Appendix F***.

Altering the location of this envelope at a later date may require a planning permit alteration, as the exact location of the effluent disposal system (EDS) may be a permit condition at the time of issue.

Clients are advised to carefully consider the nominated location of the effluent disposal system (EDS) envelope provided with this report concerning future planned uses of the site. Submission to the Council of this report with the nominated effluent disposal system (EDS) included will be considered as an endorsement of its location.

Despite the Council's requirement, MES Wastewater will endeavour to nominate as large an envelope as practical to allow the client some flexibility in locating the EDS within the

ecific scaled EDS on a provided site plan.

5.6 Installing the required amount of the Effluent Disposal System (EDS) – Subsurface Drip Irrigation

The irrigation system installation **must be** completed by a suitably qualified and licensed plumber/drainer experienced in installing pressure-compensated subsurface dripper irrigation systems.

To ensure an even distribution of wastewater within pressure-compensated subsurface dripper irrigation systems, the pump capacity must be adequate for the irrigation system's size and configuration, taking into account head and friction losses due to changes in elevation, pipe lengths, valves, fittings, and other factors. An additional, optional measure (where required) to achieve even coverage is to divide the irrigation area into two or more separate sub-zones of equal size, dosed alternately using an automatic indexing or sequencing valve.

Importing Soil to Site:

According to the 'Risk Assessment of Soil Characteristics' (**Table 3**), more soil is not required to be imported to this site.

Revegetating the Soil:

The irrigation area and surrounding area must be vegetated or revegetated immediately following the installation of the subsurface irrigation system, preferably sown with turf seed (or overlaid by actual rolled turf). The area should be fenced off or otherwise isolated (such as by landscaping) to prevent vehicle and stock access, and signs should be erected to inform occupants and visitors of the extent of the subsurface dripper irrigation area and to limit their access and impact on the area.

Stormwater, Swimming Pools and LPoD:

Stormwater run-on is not expected to be a concern for the proposed subsurface drip irrigation area due to the site's landform and relatively gentle slopes. However, we believe that an upslope spoon drain and a downslope berm should be constructed to divert any stormwater flows originating from the driveway area as a minimum mitigation measure.

Stormwater from roofs, rainwater tanks, and other impervious surfaces must not be drained into wastewater treatment systems or onto the effluent disposal system.

Swimming pool backwash and overflow water must be redirected away from effluent disposal systems using diversionary drains with downslope berms.

The applicant should seek advice from their local Council regarding their Legal Point of Discharge (LPoD) placement and ask for a description of the types of water that can be discharged.

5.7 Setback Buffer Distances

al systems (EDS) and wastewater treatment
the risk of harm to human health or the
nimising these risks so far as reasonably
Section 25(1).

n from Table 4-10 of the EPA Guidelines for onsite wastewater management (May 2024), are:

For secondary (or better) wastewater treatment systems:

- 20 metres from any groundwater bores (category 2b to 6), including future groundwater bores.
- 100 metres from potable watercourses.
- 30 metres from non-potable watercourses.
- 3 metres if the area is upslope and 1.5 metres if the area is downslope of property boundaries, swimming pools and buildings.

All buffer distances are achievable. A copy of the table of setback distances for secondary (or better) treated wastewater is attached – *see* ***Appendix E***.

5.8 Renovation/Amelioration of Clay Soils

Gypsum should be added to the soil when installing the effluent disposal system (EDS) in light to medium/heavy clay soils.

Gypsum has both short and long-term impacts on soil sodicity. In the short term, it increases **salinity** to suppress dispersion. In the long term, it replaces sodium on soil particles with calcium.

For Secondary systems with subsurface drip irrigation systems (SSDI):

(i) The effluent disposal area should be broadcast across the area of the effluent disposal system (EDS) with gypsum (or the equivalent) at a rate of 0.25 kg/m^2.

(ii) After the Subsurface dripper irrigation system has been installed and is in use, gypsum should be broadcast across the effluent disposal system (EDS) field at intervals of three months and then every three years at a rate of 0.25 kg/m^2.

(iii) **Alternatively,** during the secondary wastewater treatment system (WTS) commissioning procedure, the installer may use a liquid gypsum slurry at a 0.25 kg/m^2 equivalent rate (*or 1 Litre*). This procedure requires the slurry to be added to the WTS's pump chamber and pumped evenly across the entire irrigation network.

(iv) The Application of the gypsum slurry at a 0.25kg/m^2 equivalent rate *(or 1Litre)* should be completed every three months and then every three years. We recommend that you ask the Servicing Agent, who will undertake the quarterly maintenance schedule for the secondary wastewater management system, to include this task as part of their duties at these timed intervals.

The gypsum used should be fine-ground, agricultural-grade.

A proprietary liquid gypsum slurry is typically composed of CaCl, polyacrylamide, a wetting agent, and water.

6. Continuing Monitoring, Operation and Maintenance

The maintenance frequency of the onsite wastewater management system must be according to the manufacturer's recommendations for the secondary wastewater treatment system proposed for installation. The wastewater treatment system will only function adequately if it is properly and regularly maintained.

To ensure the treatment system functions adequately, residents must:

- Have a Servicing Agreement with a suitably qualified maintenance contractor to service the secondary wastewater treatment system.
- Ensure that the Servicing Agent can regularly add a gypsum slurry to the pump chamber as recommended in "Section 5.8 – Renovation/Amelioration of Clay Soils" of the report, *if this is the method of Gypsum distribution that you have elected to follow.*
- Otherwise, ensure that Gypsum is broadcast across the effluent field as per the directions in "Section 5.8 – Renovation/Amelioration of Clay Soils".
- Ensure you maintain copies of the Servicing Reports on-site for up to five years after each activity – *Environment Protection Regulations 2021 – Regulation 162 (1).*
- Use household cleaning products that are suitable for onsite wastewater management systems.
- Minimise the amount of fat and oil entering the system.
- Conserve water (AAA-rated fixtures and appliances are highly recommended).

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

- Regularly harvest (mow) vegetation within the effluent disposal system (EDS) application area and remove this to maximise uptake of water and nutrients.
- Monitor and maintain the subsurface irrigation system according to the manufacturer's recommendations, including flushing the irrigation lines.
- Regularly clean in-line filters – the installer or Servicing Agent *will provide instructions on how to undertake this task.*
- Do not erect structures and paths over the effluent disposal system (EDS).
- Install a permanent barrier, such as a fence, to prevent vehicle and livestock access to the effluent disposal system (EDS) and prevent compaction and damage.
- Maintain the ground surface level around the Effluent Disposal System (EDS) by filling any depressions with good-quality topsoil (not clay).
- Apply Gypsum to the surface of the effluent disposal system (EDS) at the intervals recommended in this report, after use for three months and then every three years (where the Service Agent is not undertaking these requirements).

7. Conclusion

As this report outlines, our investigations have concluded that a sustainable on-site wastewater management system (OWMS) with appropriate mitigation measures is feasible for the proposed new or replacement OWMS for this allotment.

Specifically, I recommend the following:

- Secondary treatment of wastewater using a treatment system with a current Certificate of Conformance issued by an accredited AS/NZS Certifying body.
- Apply gypsum to the proposed effluent disposal system (EDS) application area, as per directions in this report, before installation (or during the commissioning of the WTS) and at the prescribed interval of three months and then every three years.
- The application of treated wastewater to a suitably sized effluent disposal system (EDS) application area, within the EDS envelope as described in this report.
- The subsurface drip irrigation (SSDI) system pipework **must be installed** at a minimum depth of **150 mm** in the imported soil for this site.
- WELS water-saving fixtures and appliances **must be installed** in the new residential dwelling to reduce the wastewater load.
- Using low-phosphorus and low-sodium (liquid) detergents to improve wastewater quality and maintain soil properties for growing plants.
- Operation and management of the onsite wastewater management system must be conducted according to the manufacturer's recommendations and the recommendations contained within this report.

Michael Sholly, BHlthSc (Public and Environmental Health), MEHPA
Land Capability Assessor.

8. References

Centre for Environmental Training [CET] (November 2024). Course Notes – *Land Capability Assessment for Onsite Wastewater Management Training Course*.

- A compilation of notes and materials from Patterson, R.A (Dr); Geary, P.; Sanders, M.; and Whitehead, J.

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Mikhail, Edward (Ted) H. (2017). *The Mikhail System: Understanding and Achieving Optimum Soil Balance – Second Edition*.

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Standards Australia / Standards New Zealand (2012). AS/NZS 1547:2012 *On-site wastewater management*.

Tennessee Valley Authority (March 2004). *Wastewater Subsurface Drip Distribution*.

Isbell, R.F. (1996). The Australian Soil Classification. CSIRO Publishing, Melbourne.

Geary, P. and Gardner, E. (1996). On-site Disposal of Effluent. In Proceedings from the one-day conference *Innovative Approaches to the Management of Waste and Water*, Lismore 1996.

9. Appendices

A. Property Reports (www.land.vic.gov.au/property-and-parcel-search)
- Detailed Property Report
- Planning Property Report

B. Site Information – Maps and Photographs
- Cartographical Map of Site Locality (MapshareVic)
- Aerial Photograph of the Development Site (NearMaps)
- 1-in-100-Year Flooding Extent Map (Digital Twin)
- Nearest Registered Groundwater Bores Map (VVG)
- 10–metre Contour Map (MapshareVic)
- Local Geology Map (GeoVic)
- Site Aspect Photographs – during On-site Assessment

C. Site Development Plans
- Site Plans
- Dwelling Floor Plan

D. Water & Nutrient Balance
- Bureau of Meteorology (BOM):
  - Average Monthly Rainfall – **Beaufort (089005)**
  - Average Monthly Pan-A Evaporation – **Creswick (088019)**

E. Setback Distances for a Secondary (or better) Treatment System (WTS) & Effluent Disposal System (EDS)

F. Test Site Location Plan
- Nominated Effluent Disposal System (EDS) Envelope

G. Borehole Log Descriptions

H. Laboratory Soil Analysis Results

I. EPA Publication 1976 (May 2021)
- Guidance for Owners & Occupiers of Land - With an Onsite Wastewater Management System ≤5,000 L on any day

J. Risk Assessment Matrix
- Risk Assessment Matrix Purpose
- Site Characteristics
- Soil Characteristics

K. Onsite Wastewater Management Plan
- Pyrenees Shire Council
  - Risk Sensitivity Profile

Appendix A:

Property Reports:

- Detailed Property Report
- Planning Property Report
  (www.land.vic.gov.au/property-and-parcel-search)

Detailed Property Report

PROPERTY REPORT

Energy, Environment and Climate Action

From www.land.vic.gov.au at 09 June 2025 10:58 AM

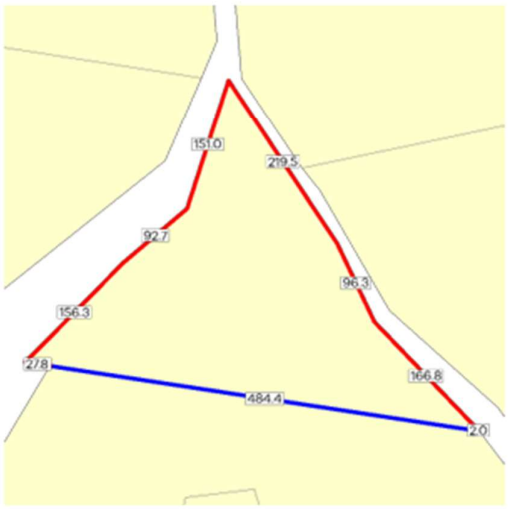
PROPERTY DETAILS

Address:	**ELLIS ROAD BEAUFORT 3373**
Lot and Plan Number:	**Lot 1 TP567841**
Standard Parcel Identifier (SPI):	**1\TP567841**
Local Government Area (Council):	**PYRENEES**
Council Property Number:	**608009920**
Directory Reference:	**Vicroads 57 H9**

www.pyrenees.vic.gov.au

SITE DIMENSIONS

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



Area: 75681 sq. m (7.57 ha)
Perimeter: 1397 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

UTILITIES

Rural Water Corporation:	**Southern Rural Water**
Urban Water Corporation:	**Central Highlands Water**
Melbourne Water:	**Outside drainage boundary**
Power Distributor:	**POWERCOR**

STATE ELECTORATES

Legislative Council:	**WESTERN VICTORIA**
Legislative Assembly:	**RIPON**

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.

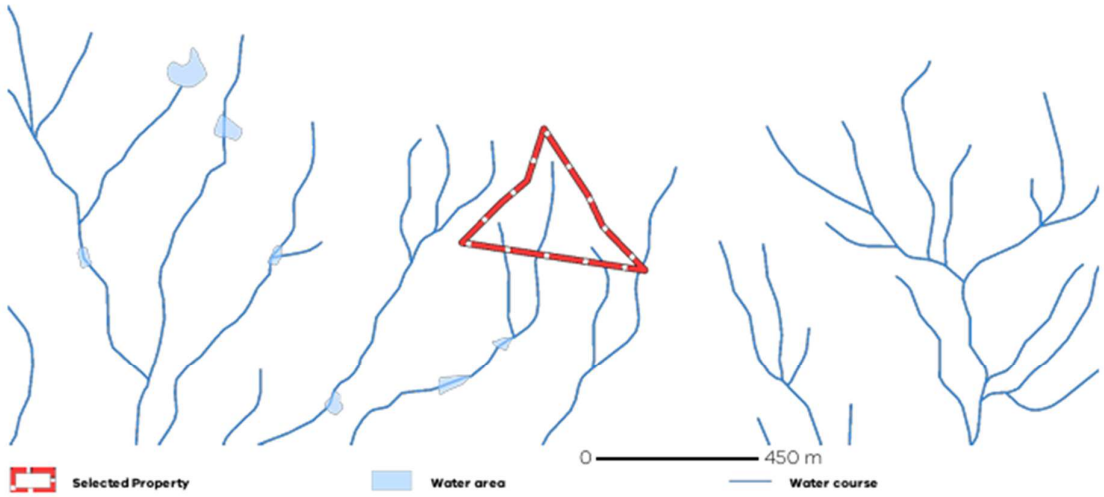
The Planning Property Report for this property can found here - Planning Property Report

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

PROPERTY REPORT

Energy, Environment and Climate Action

Area Map



Planning Property Report

PLANNING PROPERTY REPORT

Department of Transport and Planning

From www.planning.vic.gov.au at 09 June 2025 10:58 AM

PROPERTY DETAILS

Address:	**ELLIS ROAD BEAUFORT 3373**
Lot and Plan Number:	**Lot 1 TP567841**
Standard Parcel Identifier (SPI):	**1\TP567841**
Local Government Area (Council):	**PYRENEES** www.pyrenees.vic.gov.au
Council Property Number:	**608009920**
Planning Scheme:	**Pyrenees** Planning Scheme - Pyrenees
Directory Reference:	**Vicroads 57 H9**

UTILITIES

Rural Water Corporation:	**Southern Rural Water**
Urban Water Corporation:	**Central Highlands Water**
Melbourne Water:	**Outside drainage boundary**
Power Distributor:	**POWERCOR**

STATE ELECTORATES

Legislative Council:	**WESTERN VICTORIA**
Legislative Assembly:	**RIPON**

OTHER

Registered Aboriginal Party: **Wadawurrung Traditional Owners Aboriginal Corporation**

View location in VicPlan

Planning Zones

FARMING ZONE (FZ)
SCHEDULE TO THE FARMING ZONE (FZ)

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

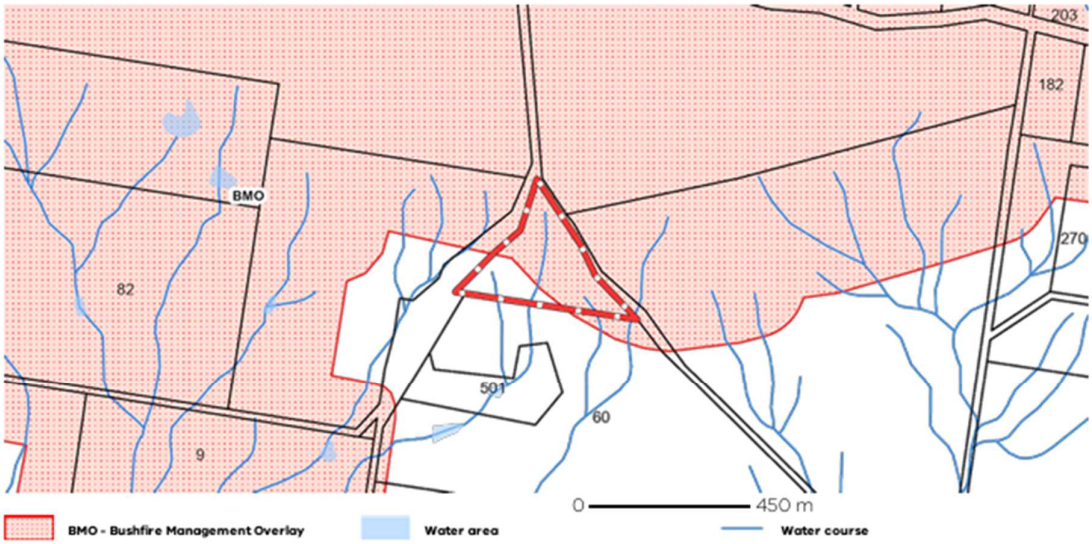
statement that land is in a bushfire prone area as required by section 32C (b) of the Sale

PLANNING PROPERTY REPORT

Department of Transport and Planning

Planning Overlay

BUSHFIRE MANAGEMENT OVERLAY (BMO)



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

Further Planning Information

Planning scheme data last updated on 05 June 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

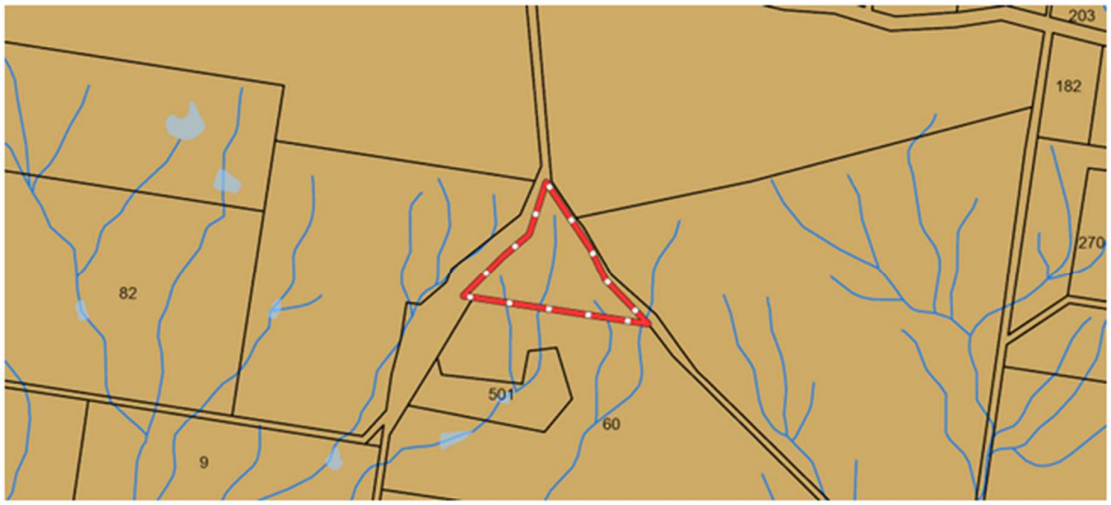
Department of Transport and Planning

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.

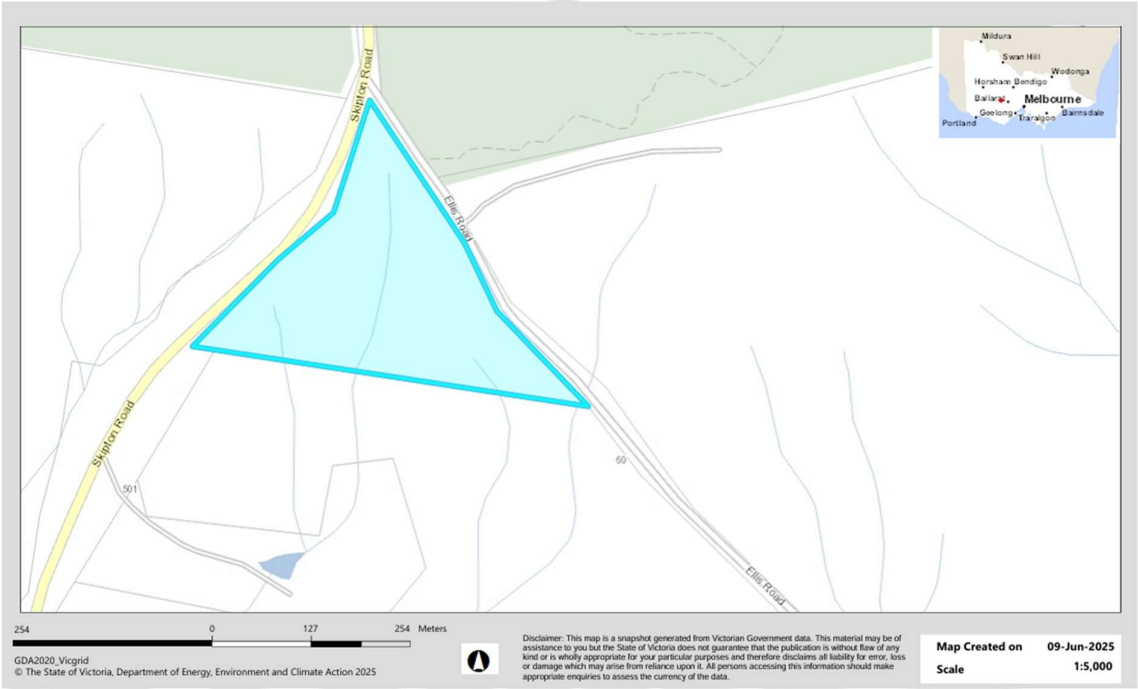
You can find out more about the natural values on your property through NatureKit NatureKit (environment.vic.gov.au)

Appendix B:

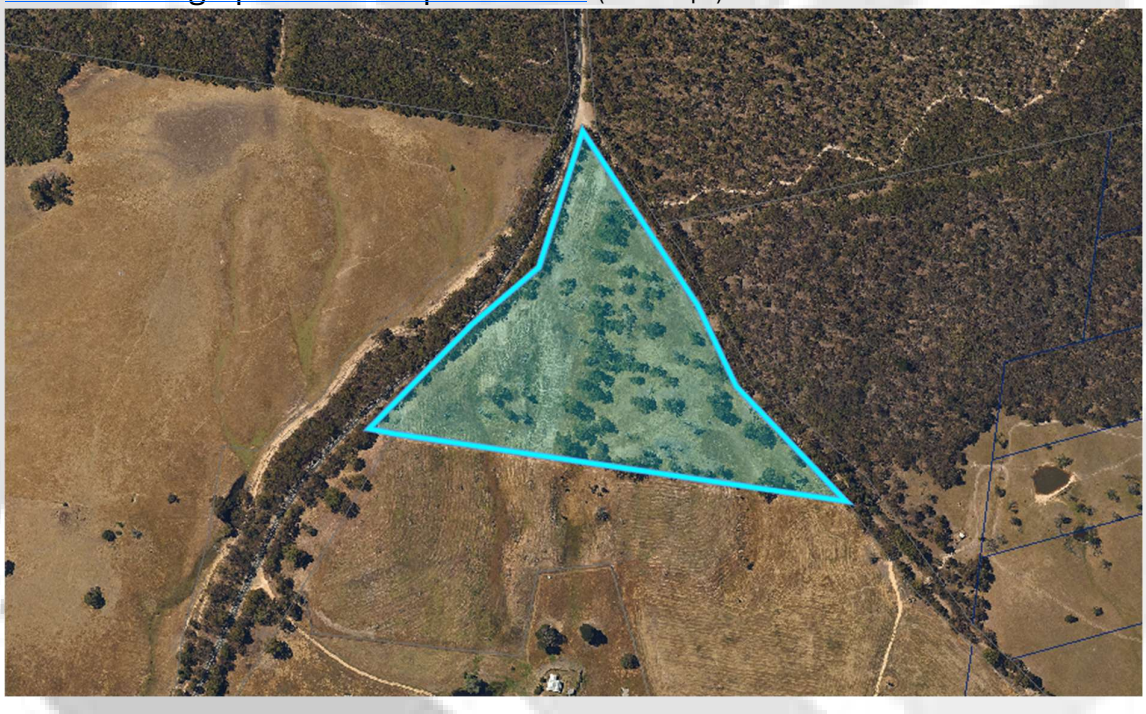
Site Information – Maps & Photographs:

- Cartographical Map of Site Locality
- Aerial Photograph of Development Site
- 1-in-100-year Flooding Extent
- Nearest Registered Groundwater Bore/s
- 10-metre Contour Map
- Local Geology Map
- Site Aspect Photographs, taken during the Site Assessment

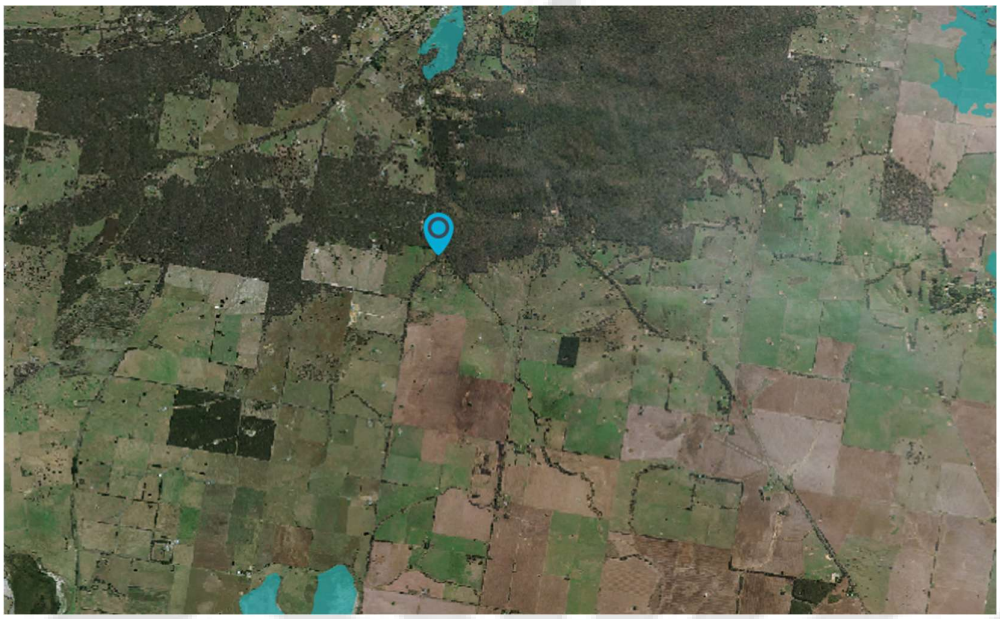
Cartographical Map of Site Locality (MapshareVic)



Aerial Photograph of Development Site (NearMaps)



1-in-100-Year Flood Extent Mapping (Digital Twin Victoria)

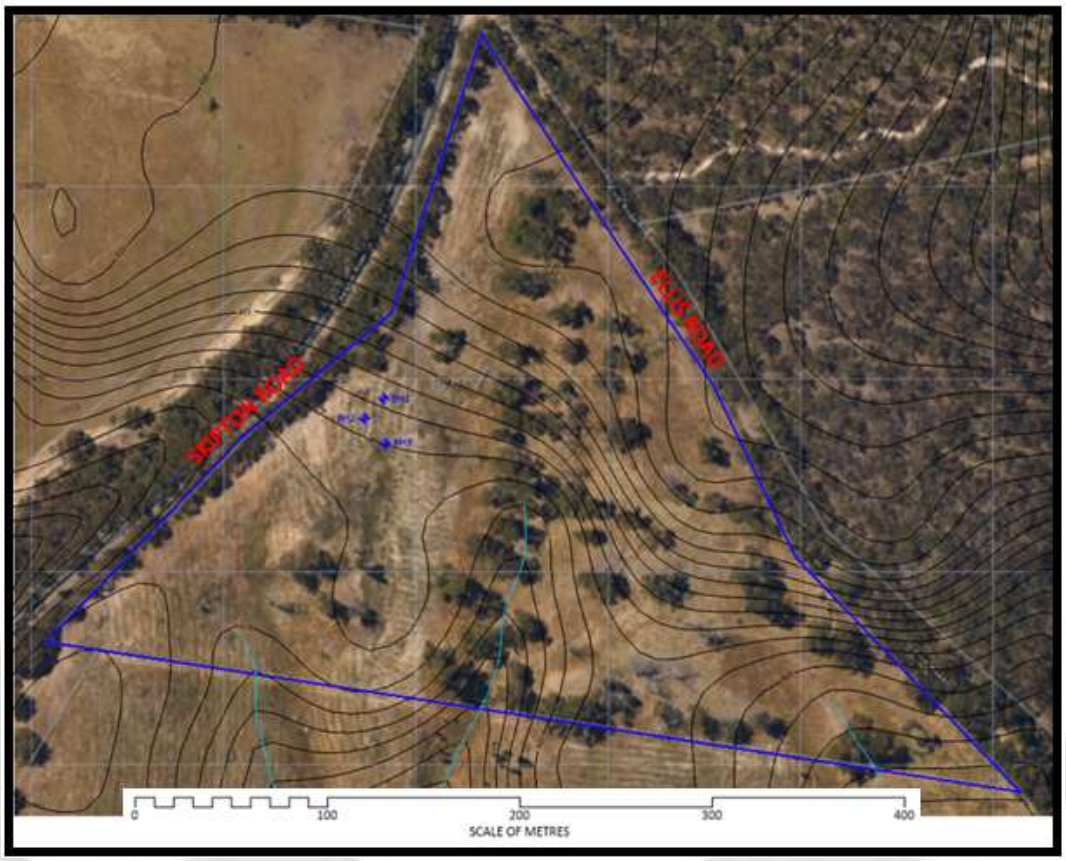


The extent of 1-in-100-year flooding on the subject property from the *'Hopkins River'* Basin.
Glenelg Hopkins CMA 1%AEP (100-year ARI) Regional Flood Extent.
Ref: https://digitaltwin.vic.gov.au/portals/44/map/?share=85e0f736-8576-4733-9f94-b1b7fe093d70

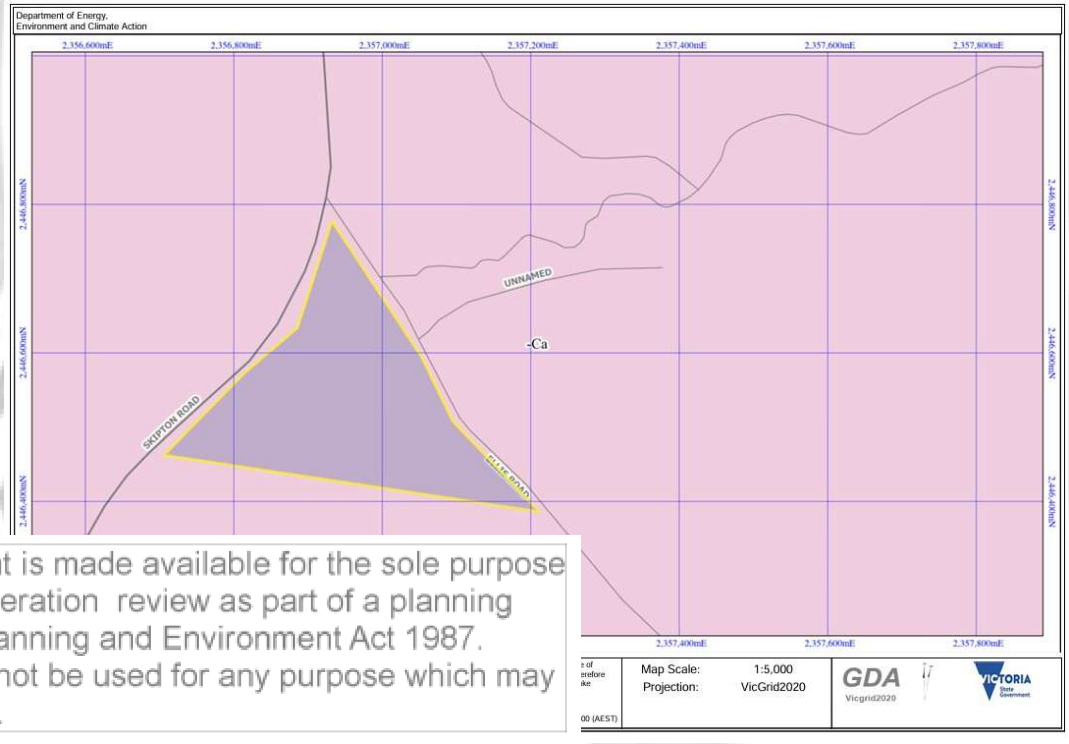
Nearest Groundwater Bores (Visualising Victoria's Groundwater)

operty's proposed effluent disposal system
vater bore is approximately 1.5km.
g.org.au/

10-metre Contour Map (MapshareVic) [Surfer]



Local Geology Map (GeoVic)



Site Aspect Photographs – during the On-site Assessment

Date: 11/06/2025

Location Description: Aspect photographs taken from the location west of the dwelling envelope and south of the shed location, at (Lot 1) Ellis Road, BEAUFORT VIC 3373.

#1: North aspect – shed location to be on the left-hand side, driveway to front gate (*see image #5*).

#2: East aspect – location of dwelling envelope.

#3: South aspect.

#4: West Aspect – Skipton Road is on the other side of the tree line.

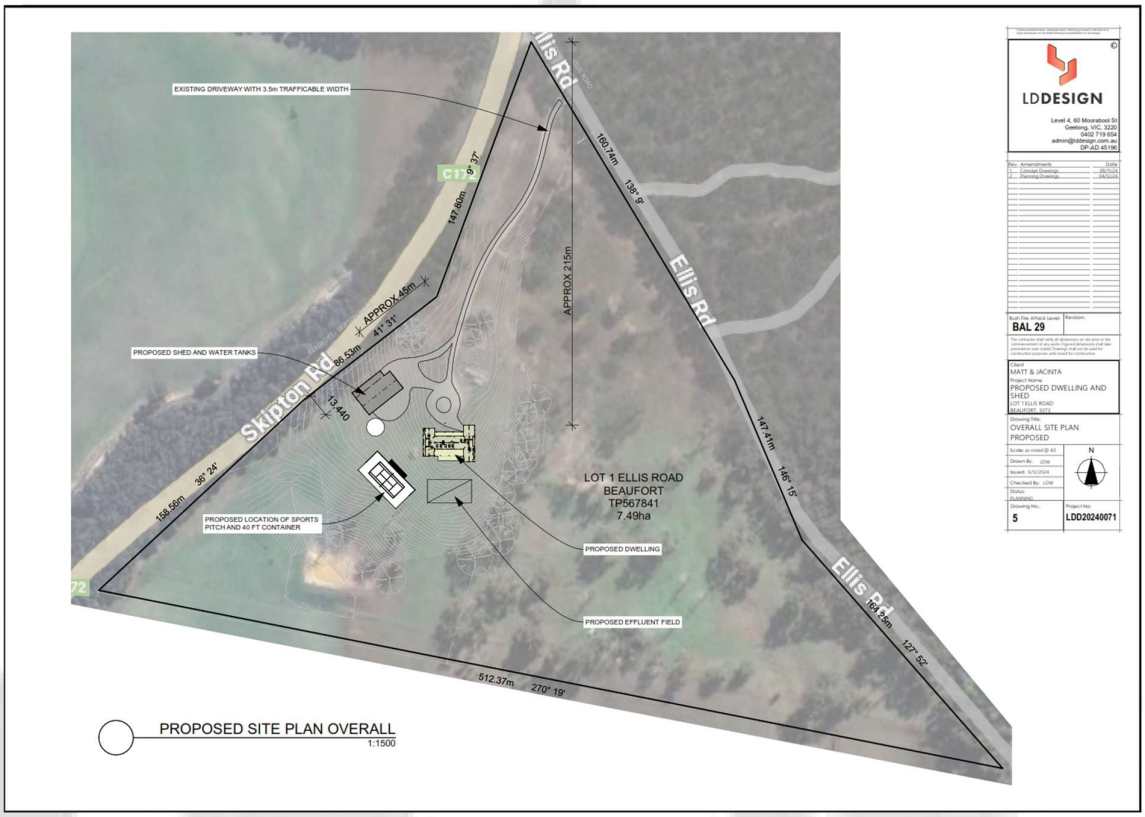
#5: Front Entry Gate to the Property off Ellis Road.

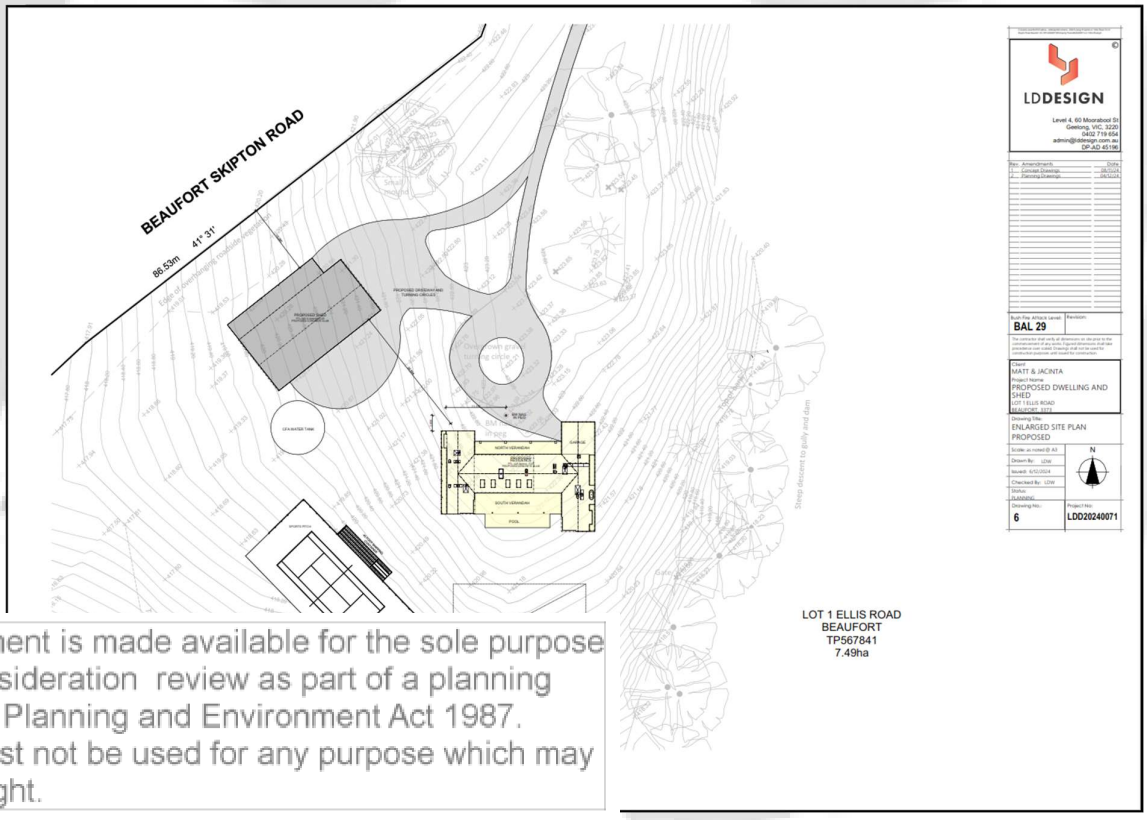
Appendix C:

Development Site Plans:

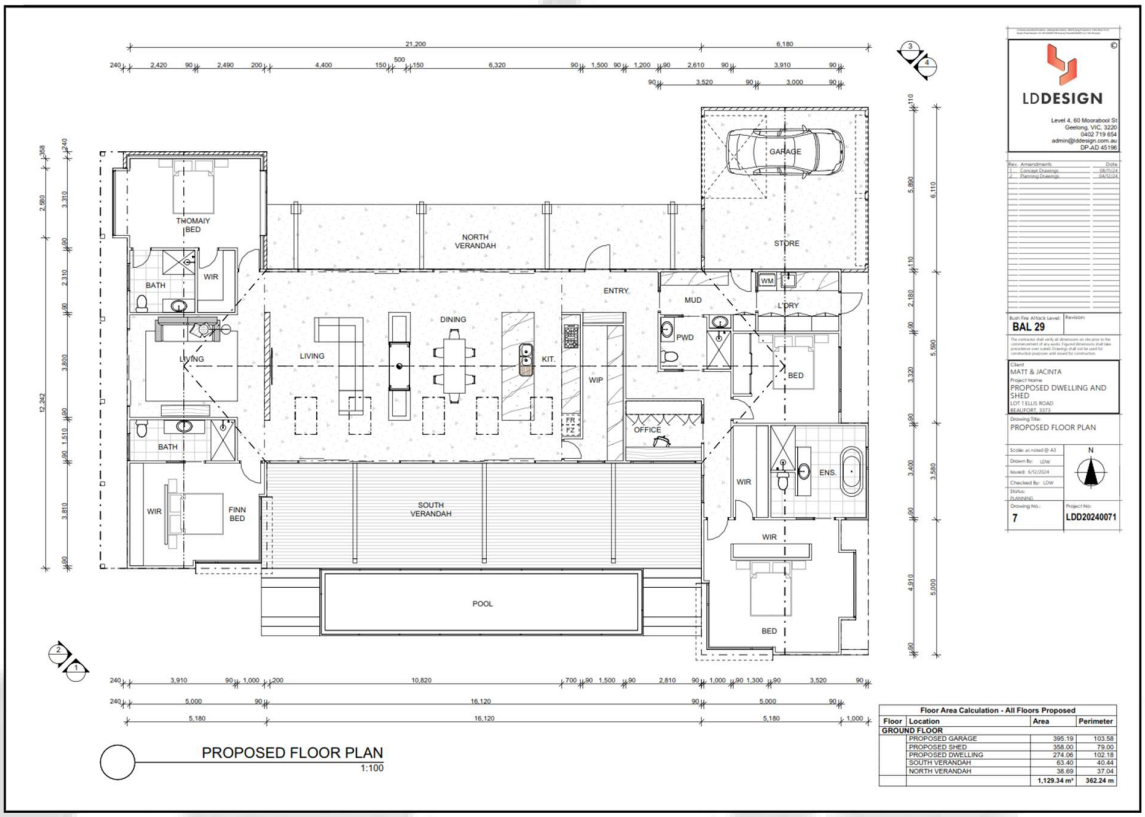
- Site Plans
- Dwelling Floor Plan

Site Plans





Dwelling Floor Plans



Appendix D:

Water & Nutrient Balance:

- Bureau of Meteorology (BOM) – Online Climate Data:
  - Average Monthly Rainfall – ***Beaufort (089005)***
  - Planning Property Report – ***Creswick (088019)***

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Soil Category	6b

WATER/NITROGEN BALANCE (20/30 irrigation): With no wet month storage.

Rainfall Station: BEAUFORT (089005) **Evaporation Station:** CRESWICK (088019)

Location: Lot 1, Ellis Road BEAUFORT VIC 3373 - (Corner of Ellis & Skipton Road)

Date: 1 July 2025

Client: JACINTA & MATTHEW MARTIN

ITEM	UNIT	#	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Days in month:		D	31	28	31	30	31	30	31	31	30	31	30	31	365
Evaporation (Mean)	mm	A	208	185	127	81	50	27	28	43	66	112	129	155	1210
Rainfall (mean)	mm	B1	42	35	39	52	68	56	67	77	67	72	51	44	0
Effective rainfall	mm	B2	31	26	29	39	51	42	50	57	50	54	38	33	501
Peak seepage Loss[1]	mm	B3	99	90	99	96	99	96	99	99	96	99	96	99	1168
Evapotranspiration(fXA)	mm	C1	145	129	89	49	25	12	11	20	36	73	90	109	788
Waste Loading(C1+B3-B2)	mm	C2	213	193	159	106	73	66	60	61	82	118	148	175	1455
Net evaporation from lagoons (10(0.8A-B1xlagoon area(ha)))	L	NL	0	0	0	0	0	0	0	0	0	0	0	0	0
Volume of Wastewater	L	E	18600	16800	18600	18000	18600	18000	18600	18600	18000	18600	18000	18600	219000
Total Irrigation Water(E-NL)/G	mm	F	60	54	60	58	60	58	60	60	58	60	58	60	706
Irrigation Area(E/C2)annual.	m^2	G													310
Surcharge	mm	H	-153	-139	-99	-48	-13	-8	0	-1	-24	-58	-90	-115	0
Actual seepage loss	mm	J	-54	-49	0	48	86	88	99	98	72	41	6	-16	539
Direct Crop Coefficient:		I	0.7	0.7	0.7	0.6	0.5	0.45	0.4	0.45	0.55	0.65	0.7	0.7	Pasture:
Rainfall Retained: 75	%	K	1. Seepage loss (peak) equals deep seepage plus lateral flow: 5mm (<10% ksat)												
Lagoon Area: 0	ha	L	CROP FACTOR												
Wastewater(Irrigation): 600	L	M	0.7	0.7	0.7	0.6	0.5	0.45	0.4	0.45	0.55	0.65	0.7	0.7	Pasture:
Seepage Loss (Peak): 3.2	mm	N	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	Shade:
Irrig'n Area(No storage): 310	m^2	P2	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	Buffalo:
Application Rate: 1.9	mm	Q	1	1	1	1	1	1	1	1	1	1	1	1	Woodlot
Nitrogen in Effluent: 30	mg/L	R													
Denitrification Rate: 20	%	S													
Plant Uptake: 220	kg/ha/yr	T													
Average daily seepage: 1.5	mm	U													
Annual N load: 5.26	kg/yr	V													
Area for N uptake: 239	m^2	W													
Application Rate: 2.5	mm	X													

NITROGEN UPTAKE:

Species:	Kg/ha.yr	pH	Species:	Kg/ha.yr	pH	Species:	Kg/ha.yr	pH
Ryegrass	200	5.6-8.5	Bent grass	170	5.6-6.9	Grapes	200	6.1-7.9
Eucalyptus	90	5.6-6.9	Couch grass	280	6.1-6.9	Lemons	90	6.1-6.9
Lucerne	220	6.1-7.9	Clover	180	6.1-6.9	C cunn'a	220	6.1-7.9
Tall fescue	150-320	6.1-6.9	Buffalo (soft)	150-320	5.5-7.5	P radiata	150	5.6-6.9
Rye/clover	220		Sorghum	90	5.6-6.9	Poplars	115	5.6-8.5

BOM Climate Information for Water Balance

Site name: BEAUFORT **Site number:** 089005 **Commenced:** 1922

Latitude: 37.45° S **Longitude:** 143.37° E **Elevation:** 407 m **Operational status:** Open

Summary statistics for period 1961-1990

Information about climate statistics

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	41.8	34.6	38.6	51.9	67.8	55.6	67.1	76.6	67.1	71.8	51.0	43.8	667.5
Lowest	2.5	0.0	7.0	7.4	15.2	13.4	24.7	23.4	18.3	17.3	16.6	0.8	333.8
5th %ile	6.4	1.2	9.9	10.0	23.2	20.8	36.5	36.5	25.7	19.6	21.6	9.0	448.6
10th %ile	8.6	3.0	18.2	11.0	27.9	27.1	38.8	42.3	27.6	25.6	25.2	14.0	552.2
Median	28.9	20.8	31.6	47.9	65.8	55.5	65.4	78.3	66.2	70.1	50.7	36.0	644.6
90th %ile	94.6	75.9	78.0	107.8	112.5	83.3	95.5	96.4	100.3	103.8	84.2	87.8	834.8
95th %ile	114.4	102.8	94.1	110.4	117.3	102.4	99.9	101.6	122.7	126.9	90.5	109.6	849.8
Highest	233.7	183.1	110.2	117.7	130.6	124.4	114.3	137.0	140.7	200.2	106.6	137.2	953.9

PAN EVAPORATION DATA	LOCATION: CRESWICK (088019)								DATES: 1973 to 1985			YEARS: 12	
Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
Daily Mean	6.7	6.6	4.1	2.7	1.6	0.9	0.9	1.4	2.2	3.6	4.3	5	3.3
Monthly Mean	207.7	184.8	127.1	81	49.6	27	27.9	43.4	66	111.6	129	155	1204.5

Reference: www.bom.gov.au/climate/averages/tables/cw_088019_All.shtml

Appendix E:

Setback Buffer Distances:

- For a Secondary (or better) Wastewater Treatment System (WTS) with an Effluent Disposal System (EDS)

For all wastewater treated to a Secondary standard (or better), the **Setback distances** between the treatment and dispersal system areas and other site features as set out in the Environment Protection Authority (EPA) Publication – Guidelines for Onsite Wastewater Management (May 2024) Table 4-10 **must be met**; see below.

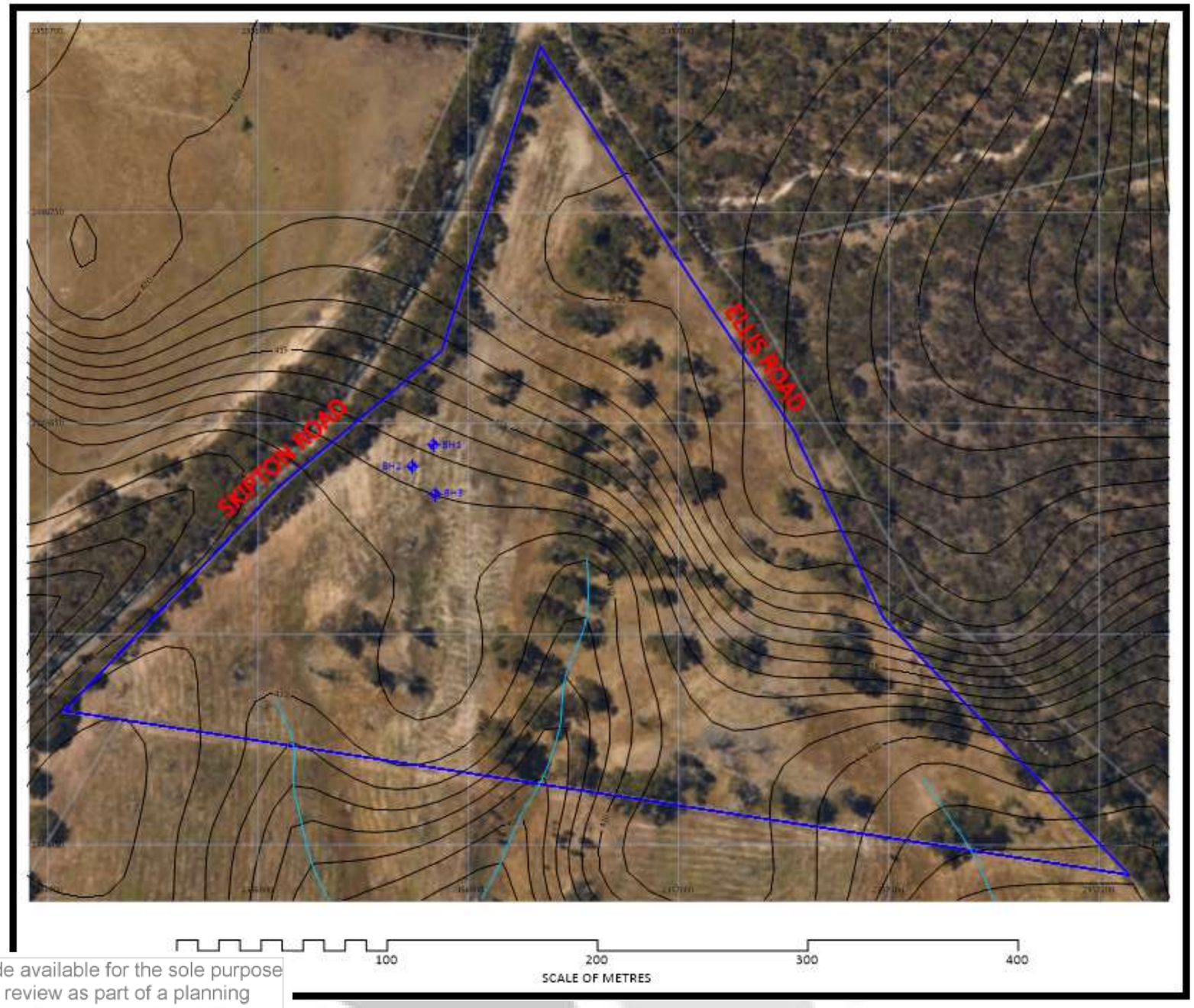
Landscape Feature or Structure	Setback distance (m)
	OWMS with secondary treated effluent or Level 3 greywater effluent
Building/allotment boundary	
Upslope of a building (See Note 1)	3
Downslope of a building	1.5
Upslope of an adjacent lot	3
Downslope of an adjacent lot	1.5
Services	
Water supply pipe	1.5
Upslope of a potable supply channel (stock and domestic)	150
Downslope of a potable supply channel (stock and domestic)	10
An in-ground water tank (See Note 2)	7.5
A closed stormwater drain	3
An open stormwater drain	30
Gas supply pipe	1.5
Recreational areas	
Children's grassed playground (see Note 3)	3
An in-ground swimming pool	3
Surface Waters	
Dam, lake, or reservoir (used as a source of water for drinking or within a special water supply catchment) (See Notes 5, 6)	300
Waterways (used as a source of water for drinking or within a special water supply catchment) (See Notes 4, 5)	100
Waterways not used as a source of water for drinking or within a special water supply catchment (for example, wetlands (continuous or ephemeral); estuaries (See Note 4)	30
Ocean beach at high-tide mark; dams, reservoirs or lakes not used as a source of water for drinking or within a special water supply catchment (See Note 6)	30
Drainage lines (See Note 7)	20
Upslope of cutting/escarpment (See Note 8)	15
Groundwater bores	
Groundwater bores - category 1 and 2a soils	50
Groundwater bores - category 2b to 6 soils	20
Soil depth (See Note 9)	
	1.5
	0.6

Appendix F:

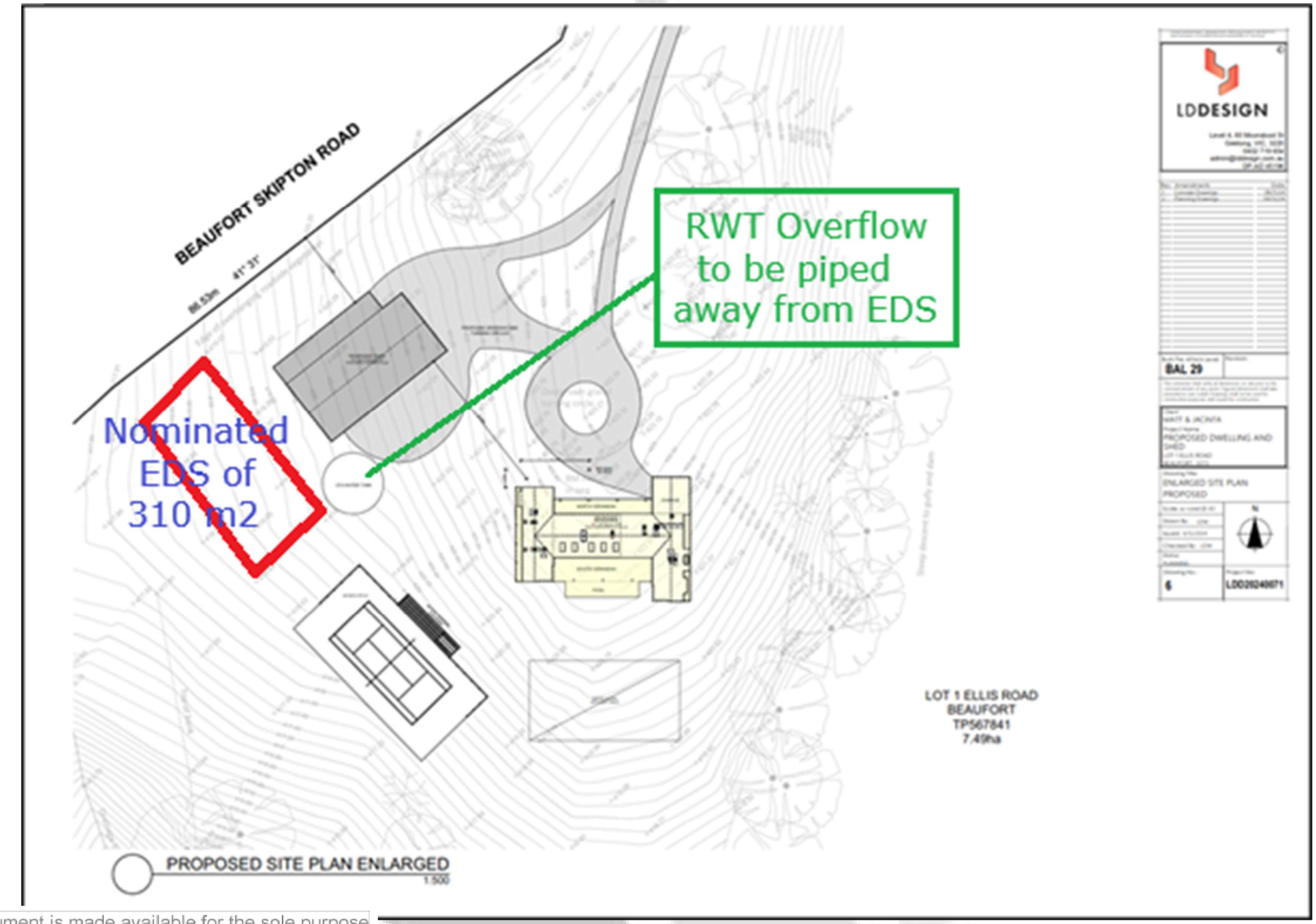
Test Site Location Plan:

- Nominated Effluent Disposal System (EDS) Envelope

Test Site Location Plan ○ - Approximate borehole locations



Nominated Effluent Disposal System Envelope (Approximate Location)



Appendix G:

Borehole Log Descriptions

- Borehole Logs with Comparison Photographs of Soil Samples

Paul Williams & Associates Pty Ltd

borehole log

Borehole Number: **BH 1**

Project Number: **A250605**

Project :	LAND CAPABILITY ASSESSMENT AT ELLIS ROAD, BEAUFORT	Hole commenced :	11/8/2025
Location :	See Drawing 1.	Hole completed :	11/8/2025
		Supervised by :	M.E.S.
		Checked by :	P.R.W.

Drill type :	Push Tube	Slope :	90 deg	R.L. surface :	-	m
Hole diameter :	55mm mm	Bearing :	- deg	Datum :	Local	

Method	Support	Water	Samples and D.C.P. Tests	Depth(m)	Graphic Log	SOIL DESCRIPTION / ROCK DESCRIPTION	Symbol	Moisture	Consistency/ Density Index	ADDITIONAL OBSERVATIONS
						Soil type; Colour, Plasticity, Particle characteristics / Rock Type; Grain Characteristics, Colour Weathering, Estimated strength				
P	N	N	D	0.15		Silty SAND; light brown, sand fine to medium.	SM	D	MD	**TOPSOIL** [1.6][5.6][0][0] Root fibres
			D	0.5		Sandy CLAY; light orange-brown, low plasticity, sand fine to medium, **(light clay), Cat 6**	CL	D	Fb	**RESIDUAL SOIL** Root fibres [0.5][5.6][5][0] Root fibres
			D	0.80		Sandy CLAY; white, light brown, low plasticity, sand fine to medium, **(light clay), Cat 8**	CL	M	H	**EW SANDSTONE** [0.58][6.1][0][10]
				1.00		SANDSTONE; white and light brown, highly fractured, extremely to highly weathered.				**EW/HW SANDSTONE**
				1.40		BOREHOLE TERMINATED AT REFUSAL ON HIGHLY WEATHERED SANDSTONE				
				1.6						

...pation symbols and soil description	Consistency/Density Index
...n unified classification system and AS/NZS1547	VS Very soft S Soft F Firm St Stiff VSt Very stiff H Hard Fb Friable VL Very loose L Loose MD Medium dense D Dense VD Very dense
...e Dry Moist Wet AS1289.2.1.4	

Paul Williams & Associates Pty Ltd

borehole log

Borehole Number: **BH 2**

Project Number: **A250605**

Project :	LAND CAPABILITY ASSESSMENT AT ELLIS ROAD, BEAUFORT	Hole commenced :	11/6/2025
		Hole completed :	11/6/2025
		Supervised by :	M.E.S.
Location :	See Drawing 1.	Checked by :	P.R.W.

Drill type :	Push Tube		Slope :	90	deg	R.L. surface :	- m
Hole diameter :	55mm	mm	Bearing :	-	deg	Datum :	Local

Method	Support	Water	Samples and D.C.P. Tests	Depth(m)	Graphic Log	SOIL DESCRIPTION Soil type; Colour, Plasticity, Particle characteristics ROCK DESCRIPTION Rock Type; Grain Characteristics, Colour Weathering, Estimated strength	Symbol	Moisture	Consistency/ Density Index	ADDITIONAL OBSERVATIONS
P	N	N	D	0.25		Silty SAND; light brown, sand fine to medium.	SM	D	MD	**TOPSOIL** [1.69][5.6][0][0] Root fibres
			D	0.5		Sandy CLAY; light orange-brown, low plasticity, sand fine to medium, **(light clay), Cat 5**	CL	D/M	Fb	**RESIDUAL SOIL** [0.10][5.2][0][0] Root fibres Root fibres
				0.60 1. 1.10		Sandy CLAY; grey, orange, low plasticity, sand fine to medium, **(light clay), Cat 6**	CL	M	H	**EW SANDSTONE** HW sandstone fragments
				1.30		SANDSTONE; white and light brown, highly fractured, extremely to highly weathered.				**EW/HW SANDSTONE**
				1.5		BOREHOLE TERMINATED AT REFUSAL ON HIGHLY WEATHERED SANDSTONE				

Method	Water Inflow	Classification symbols and soil description	Consistency/Density Index
S Auger screwing D Auger drilling P Push tube H Hand	S+ Slight seepage M+ Moderate seepage H+ Heavy seepage ▽ Dry Water level and time	Based on unified classification system and AS/NZS1547	VS Very soft S Soft F Firm St Stiff VSt Very stiff H Hard Fb Friable VL Very loose L Loose MD Medium dense D Dense VD Very dense

Paul Williams & Associates Pty Ltd

borehole log

Borehole Number: **BH 3**

Project Number: **A250605**

Project :	LAND CAPABILITY ASSESSMENT AT ELLIS ROAD, BEAUFORT	Hole commenced :	11/6/2025
		Hole completed :	11/6/2025
Location :	See Drawing 1.	Supervised by :	M.E.S.
		Checked by :	P.R.W.

Drill type :	Push Tube	Slope :	90 deg	R.L. surface :	-	m
Hole diameter :	55mm mm	Bearing :	- deg	Datum :	Local	

Method	Support	Water	Samples and D.C.P. Tests	Depth(m)	Graphic Log	SOIL DESCRIPTION / ROCK DESCRIPTION	Symbol	Moisture	Consistency/ Density Index	ADDITIONAL OBSERVATIONS
P	N	N		0.20		Silty SAND; light brown, sand fine to medium.	SM	D	MD	**TOPSOIL** Root fibres
				0.30		Sandy CLAY; light orange-brown, low plasticity, sand fine to medium, **(light clay), Cat 6**	CL	D/M	Fb	**RESIDUAL SOIL** Root fibres
			D	0.5		Sandy CLAY; white, light brown, low plasticity, sand fine to medium, **(light clay), Cat 8**	CL	M	H	**EW SANDSTONE** [0.48][6.2][0][5] Root fibres
				0.8		SANDSTONE; light grey, highly fractured, extremely to highly weathered.				**EW/HW SANDSTONE**
				0.80		BOREHOLE TERMINATED AT REFUSAL ON HIGHLY WEATHERED SANDSTONE				
				1.						

Method	Water Inflow	Classification symbols and soil description	Consistency/Density Index
S Auger screwing	Sh Slight seepage	based on unified classification system and AS1726-1647	VS Very soft
D Auger drilling	Mh Moderate seepage		S Soft
P Push tube	Hh Heavy seepage		F Firm
H Hand	Wwl Water level and time		St Stiff
			VSt Very stiff
			H Hard
			Fb Friable
			VL Very loose
		Dry	L Loose
		Moist	MD Medium dense
		Wet	D Dense
		AS1289.2.1.4	VD Very dense

Appendix H:

Laboratory Soil Analysis Results:

- Laboratory Results
- Soil Permeability

Laboratory Results

Results for samples taken from the borehole logs, as presented on pages 48-50 of the report.

Borehole	Soil Depth	Dispersion Index	Electrical Conductivity	Soil Reaction Trend	Free Swell
1	0-200 mm	NA	1.69	5.6	NA
	400-600 mm	NA	0.54	5.6	5
	600 mm +	10	0.58	6.1	NA
2	0-200 mm	NA	1.69	5.6	NA
	400-600 mm	NA	0.10	5.2	NA
3	400-600 mm	5	0.48	6.2	NA

NA – Not Tested

Soil Permeability

The hydraulic conductivity has been estimated from our database and the Guideline for Onsite Wastewater Management *(GOWM)*, EPA (May 2024), *Table 4-8*.

A conservative estimate of permeability has been deduced as follows:

Profile analysis in accordance with AS/NZS 1547:2012 indicates that the residual light clay soils (and clay fractions) exhibit both non-dispersive and dispersive properties, with low swelling potential. They are, therefore, by definition, Category 6 soils (medium clays) with a saturated hydraulic conductivity of less than 0.06 m/day.

For the (limiting) poorly-moderately structured clay and assuming renovation by gypsum application, we have adopted an estimated and conservative design saturated hydraulic conductivity of 0.04 m/day.

Peak deep seepage is conservatively estimated at 3.2 mm/day (<10 % k_{sat}).

Based on the literature and examination of exposures in the vicinity, the hydraulic conductivity of the basement rocks is likely to be greater than 0.05 m/day (assuming 1.0 m/day for buffer design).

Appendix I:

EPA Publication 1976 (May 2021):

- Guidance for owners & Occupiers of land – with an Onsite Wastewater Management System ≤ 5,000 L on any day

21 May 2021

Guidance for owners & occupiers of land with an OWMS ≤ 5000 litres on any day (including septic tank systems)

EPA VICTORIA

Publication 1976 May 2021

Community information

The general environmental duty (GED)

The *Environment Protection Act 2017* (**EP Act**) creates a GED that applies to all Victorians from 1 July 2021. The GED requires anyone conducting an activity that poses risks to human health and the environment from pollution and waste, to minimise those risks.

If you own or use an onsite wastewater management system (**OWMS**), including septic tank systems and secondary treatment systems, the GED applies to you. It also applies to how you construct, install, alter, operate and maintain the system, deal with faults or system failures and manage your waste.

Management of OWMS

The *Environment Protection Regulations 2021* provide more specific requirements for the management of OWMS with flow rates not exceeding 5000 litres on any day, including older legacy systems. If you intend to construct, install or alter one, you must obtain a permit from your council.

Alteration of an OWMS may include

- a change to the design of the system
- a change to the operation of the system, or to the premises where it is located. For example, from a residential premises to a commercial premises, which may increase the flow rate of sewage.

An alteration does not include maintenance of the system.

If you are an owner or occupier of land where an OWMS is located, you must take reasonable steps to:

- operate the system so it doesn't pose a risk to human health or the environment[1]
- maintain (except for residential renters) the system in good working order, including older legacy systems that may not meet current standards[2]
- check for signs the system may be failing or isn't in good working order and notify council if it is[3]
- respond to any system failures.

Keeping maintenance service records and providing information on operation

The Regulations require a landowner to also:

- provide information to occupiers on how to correctly operate and maintain the system
- keep maintenance service records and provide them to council on request.

Managing your waste

If disposed of illegally or improperly, such as releasing it into creeks or forests, the waste from OWMS can cause major environmental consequences. If you are a landowner or occupier, you must make sure waste from your septic tank system is appropriately managed and does not overflow. When septic tanks are pumped out, you also need to take all reasonable steps to ensure the person removing the waste will take it to an appropriate facility.

---

[1] For example, ensuring the system is not overloaded to an extent that causes a blockage, runoff, spillage or leak.

[2] For example, regular desludging to remove the contents of the system; ensuring the integrity of pipes, tanks and storage systems; repairing and, when required, replacing all the components and fittings of the system; maintaining the biological and chemical processes integral to the proper functioning of the system; maintaining the integrity of the land used in connection with th the system manufacturer's specifications and quirements; monitoring the system for signs of failure. good working order applies from 1 July 2022.

VICTORIA State Government

Dealing with incidents

It is essential to be vigilant about potential failures, especially with older legacy systems. This means paying attention to key warning signs and taking steps to address the issue, even if this might be contained to your property.

Warning signs of failure may include:

- the absorption field becoming wet with wastewater pooling on the surface
- wastewater runoff from the disposal area
- a smell of effluent near or from the system
- drains or toilets running slowly
- the grease trap being full or blocked.

The Regulations require landowners and occupiers to tell their council if their OWMS shows any signs of failure. They will need to explain what they have done, or are doing, to fix the problem. If others detect and report issues to councils – such as offensive smells – and the owner or occupier has not reported it, a penalty may apply to the owner or occupier.

Why this is important

OWMS are a major source of environmental risk. Poorly installed or maintained systems, particularly old legacy systems can create serious hazards, including polluted drinking water, contaminated land and water bodies, and offensive odours.

Some tips to keep your on-site wastewater management systems working well

- To reduce sludge building up in the tank:
  - scrape all dishes to remove fats, grease and food scraps before washing
  - keep all possible solids out of the system
  - don't use a food waste disposal unit unless the system is specifically designed to carry the extra load
  - don't put sanitary napkins and other hygiene products into the system.
- To keep the bacteria working in the tank working well:
  - use biodegradable soaps and low-phosphorus detergent
  - use low-sodium detergent
  - use detergents in the recommended quantities
  - don't use powerful bleaches, whiteners, nappy soakers, spot removers and disinfectants
  - don't put chemicals or paint down the drain.
- Reduce wastewater by:
  - installing water conservation fittings
  - taking showers instead of baths
  - washing clothes only when there is a full load.
- Avoid overloading the system by spacing out water use as evenly as possible. For example:
  - don't do all the washing on one day, and
  - don't run the washing machine and dishwasher at the same time.

Offences and penalties for breaches of the EP Act and Regulations

If you don't comply with your duties and obligations under the EP Act or Regulations as a landowner or occupier, you may receive a penalty.

Further information
Contact EPA on 1300 372 842 (1300 EPA VIC) or epa.vic.gov.au

Disclaimer
This does not constitute legal or other professional advice and should not be relied on as a statement of the law. As it is intended only as a general guide, it may contain generalisations you should obtain

Appendix J:

Risk Assessment Matrix:

- Risk Assessment Matrix Purpose
- Site Characteristics
- Soil Characteristics

Risk Assessment Matrix Purpose

This Appendix provides the overall Risk Management Matrix to demonstrate every potential risk associated with the Site and Soil Characteristics assessed in this Land Capability Assessment. The Risk Assessment Matrices - Site Characteristics (Table 2) and Soil Characteristics (Table 3) – have been developed in accordance with ISO 31000:2018 - Risk Management Guidelines. This standard establishes the components of risk management as likelihood, impact, and risk rating. These tables provide a visual representation of the overall risk of harm to the environment and public health while also illustrating the assessors' informed decision-making through enhanced risk management protocols.

This is in line with the General Environmental Duty, as outlined in Section 25 of the Environment Protection Act 2017 and its subordinate regulations, standards, and guidelines.

Risk Assessment Matrix - Site Characteristics

LAND FEATURE	LAND CAPABILITY RISK RATING			
	LOW	MODERATE	MAJOR	LIMITING
SITE CHARACTERISTICS				
Available land for LAA	Exceeds LAA and duplicates LAA requirements	Meets LAA and duplicate LAA requirements	Meets LAA and partially duplicates LAA requirements	Insufficient LAA area
Aspect	North, north-east and north-west	East, west, south-east, south-west	South	South, full shade
Exposure	Full sun and/or high wind or minimal shading	Dappled light (partial shade)	Limited light, little wind and heavily shaded all day	Perpetual shade
Landform	Plains and rises (<30.0m)	Low hills (<90.0m)	Hills (<300.0m)	Mountains (>300.0m)
Rock Outcrops	No evidence	Evidence of surface rocks	Protruding rocks	Rocky outcrops and boulders
Imported Fill	No evidence	Shallow depth	Depth extends to the subsoil	Borehole unable to penetrate at <1.0m
SLOPE (GRADIENT):				
Slope Form	Convex or divergent side slopes	Straight-sided slopes	Concave or convergent side slopes	Locally depressed
Trenches and beds	<5%	5% to 10%	10% to 15%	>15%
Subsurface irrigation	<10%	10% to 30%	30% to 40%	>40%
Site drainage: run-off/run-on	LAA backs onto a crest or ridge	Moderate likelihood	High likelihood	Cut-off drain not possible
Landslip	Low Potential	Moderate Potential	Major Potential	Existing Landslip
Erosion potential	Low	Moderate	High	No practical mitigation
Flood/inundation	Never	-	<1%AEP	>5%AEP
Distance to surface waters (m)	Buffer distance complies with GOWM requirements	-	Buffer distance does not comply with GOWM requirements	Reduced buffer distance not acceptable
Distance to groundwater bores (m)	No bores on site or within a significant distance	Buffer distances comply with GOWM	Buffer distances do not comply with GOWM	No suitable treatment method
Vegetation	Plentiful/health vegetation	Moderate vegetation	Sparse or no vegetation	Propagation not possible
Depth to water table (potentiometric) (m)	>2	2 to 1.5	<1.5	Surface
Depth to water table (seasonal perched) (m)	>1.5	<0.5	0.5 to 1.5	Surface
Rainfall (Climate) (9th Decile mm)	<500	500 to 750	750 to 1000	>1000
		50	750 to 1000	<750
		et the ack	-	Unable to meet the setback buffer distances

Risk Assessment Matrix – Soil Characteristics

LAND FEATURE	LAND CAPABILITY RISK RATING			
	LOW	MODERATE	MAJOR	LIMITING
SOIL CHARACTERISTICS				
Structure	High or moderately structured	Weakly structured	Structureless, massive or hardpan	-
Fill materials	Nil or mapped good quality topsoil	Mapped variable depth and quality materials	Variable quality and/or uncontrolled fill	Uncontrolled, poor quality/unsuitable fill
Thickness: (m)				
Trenches and beds	>1.4	-	<1.4	<1.2
Subsurface irrigation	1.5+	1.0 to 1.5	0.75 to 1.0	<0.75
Permeability (limiting horizon) (m/day)	0.15 to 0.3	0.03 to 0.15 or 0.3 to 0.6	0.01 to 0.3 or 0.6 to 3.0	>3.0 or <0.03
Permeability (buffer evaluation) (m/day)	<0.3	0.3 to 3.0	3 to 5	>5.0
Stoniness (%)	<10	10 to 20	>20	-
Emerson number	4, 5, 6, 8	7	2, 3	1
Dispersion Index	0	1.0 to 8.0	8 to 15	>15
Reaction trend (pH)	5.5 to 8	4.5 to 5.5	<4.5 or >8	-
E.C. (dS/m)	<0.8	0.8 to 2	2.0 to 4.0	>4.0
Free swell (%)	<30	30 to 80	80-120	>120
Topsoil :				
Soil Depth (m)	>1.5	1.5 to 1.0	<1.0	-
Texture (category)	2b, 3a, 3b, 4a	4b, 4c, 5a	1, 2a, 5b, 6a, 6b	5c, 6c
Structure	High or moderately structured	Weakly structured	Massively structured	Hardpan
Subsoil :				
Soil Depth (m)	>1.5	1.5 to 1.0	<1.0	-
Texture (category)	2b, 3a, 3b, 4a	4b, 4c, 5a	1, 2a, 5b, 6a, 6b	5c, 6c
Structure	High or moderately structured	Weakly structured	Massively structured	Hardpan
Groundwater Table Depth (m)	>2.m or VGG Virtual Bore Depth 5-10 m	2.0 to 1.5	<1.5	0

Appendix K:

Onsite Wastewater Management Plan

- Pyrenees Shire Council
  - Risk Sensitivity Profile – for areas other than SWSCA

Pyrenees Shire Council – Risk Sensitivity Profile

We have assessed this property in line with the following section from the Pyrenees Shire Council's OWMP in Section 4.3 Risk Assessment on pages 30-31.
We have ensured that the following information is included in our LCA and that the property would be rated as having a **Low-Risk Sensitivity.**

Other unsewered properties

For properties not within SWSCA the following Lot Risk Assessment and Land Capability Requirements are considered appropriate to mitigate the risk of OWMS. Councils EHO will consider the below factors in evaluating the risks associated with the installation of an individual wastewater system for a new development:

- Lot size
- Proximity to watercourse and surface/ground waters
- Flooding constraints (identified from existing planning and flood GIS layers)
- Soil type
- Slope

The assessment of the above factors will determine the need and requirements for an individual LCA to be provided. If the development required a planning permit, an LCA may have been required as part of the process. All LCAs are required to be prepared in accordance with the minimum standards outlined within the EPA Guideline for onsite wastewater management and AS/NZS 1547:2012. The Guideline provides scope for Councils EHO to determine what constitutes a satisfactory LCA.