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: **REFPA20250024**

Date Lodged: **3/03/2025**

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: **Musical Gully Road**

Suburb/Locality: **Waterloo** Postcode: **3373**

Formal Land Description*
Complete either A or B

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

A Lot No: ◯ Lodged Plan ◯ Title Plan ◯ Plan of Subdivision No:

OR

B Crown Allotment No: **5M** Section No: **H**

Parish/Township Name: **Beaufort**

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?*

Telecommunications facility

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 **$350,000.00**

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.

State Forest (Crown land)

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: **Mr** | First Name: **Mark** | Surname: **Baade**
Organisation (if applicable): **NBN Co Limited**
Postal Address | If it is a PO Box, enter the details here:
Unit No: | St. No: | St. Name: **PO Box 50**
Suburb/Locality: **Clayfield** | State: **QLD** | Postcode: **4011**

Where the preferred contact person for the application is different from the applicant, provide the details of that person.

Contact person's details* | Same as applicant (if so, go to 'contact information') ☐
Name:
Title: **Mr** | First Name: **Mark** | Surname: **Baade**
Organisation (if applicable): **SAQ Consulting Pty Ltd**

Postal Address

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

Unit No.: | St. No.: | St. Name: **P O Box 50**

Suburb/Locality: **Clayfield** | State: **QLD** | Postcode: **4011**

*Please provide at least one contact phone number **

Contact Information

Business Phone: **0417088000** | Email: **mark@saqconsulting.com.au**

Mobile Phone: | Fax:

Owner *

The person or organisation who owns the land

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

[redacted]

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:3 March 2025

day / month / year

CROWN FOLIO STATEMENT

VOLUME 11715 FOLIO 720
No CofT exists

Security no : 124122276373B
Produced 24/02/2025 10:45 AM

CROWN FOLIO

LAND DESCRIPTION

Crown Allotment 5M Section H Parish of Beaufort.
Created by instrument MI043213H 06/08/2016

CROWN LAND ADMINISTRATOR

[redacted]

STATUS, ENCUMBRANCES AND NOTICES

RESERVATION MI043215D 06/08/2016
TEMPORARY
RESERVED FOREST [ACT NO.6254/1958]

DIAGRAM LOCATION

SEE CD019857N FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF CROWN FOLIO STATEMENT----------

Additional information: (not part of the Crown Folio Statement)

Street Address: MUSICAL GULLY ROAD WATERLOO VIC 3373

DOCUMENT END

Imaged Document Cover Sheet

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

Document Type	**Plan**
Document Identification	**CD019857N**
Number of Pages (excluding this cover sheet)	**1**
Document Assembled	**24/02/2025 10:48**

CROWN DIAGRAM

CD019857N

Location of Land

Parish : BEAUFORT
Section : H
Allotment : 5M

This plan has been created to assist in locating a Crown land parcel

Warning: No warranty is given as to the accuracy or completeness of this plan

Any derived dimensions are approximate

Standard Parcel Identifier (SPI) : 5M~H\PP2096

Vicmap Parcel PFI : 45450848

Coordinate Position

MGA : 711010, 5859340 (54)

Vicroads Directory Reference : 57 H8 (ed. 6)

Compiled from VICMAP cadastral mapping data

Date: 22/05/2009

SCALE
0 400 800 1200 1600 2000
METRES

Sheet 1 of 1 Sheets

Planning Report

Development Application for a Fixed Wireless Telecommunications Facility

(part of the Connecting Victoria Mobile Program)

Crown Allotment 5M Section H, Parish of Beaufort

Musical Gully Road, WATERLOO VIC 3373

NBN Site Reference: WATERLOO

Disclaimer

This document is provided for information purposes only. This document is subject to the information classification set out on this page. If no information classification has been included, this document must be treated as UNCLASSIFIED, SENSITIVE and must not be disclosed other than with the consent of **nbn**. The recipient (including third parties) must make and rely on their own inquiries as to the currency, accuracy and completeness of the information contained herein and must not use this document other than with the consent of **nbn**.

Contents

EXECUTIVE SUMMARY

Proposal	**nbn**™ propose to install a new fixed wireless facility on Crown Land off Musical Gully Road, WATERLOO comprised of the following: • 70m-tall lattice tower; • Installation of four (4) **nbn** panel antennas, one (1) mini-lens antenna and four (4) remote radio units on a new headframe at the top of the proposed tower • Installation of one (1) parabolic transmission antenna (1200mm diameter) mounted at a height of 67m on the proposed tower • The installation of one (1) outdoor equipment cabinet at ground level (1.9m H x 0.8m W x 0.7m D), adjacent to the proposed tower; • The installation of two (2) outdoor equipment cabinets at ground level (2.0m H x 0.7m W x 0.85m D), adjacent to the proposed tower; • The installation of feeder cables and cable trays; • The installation of underground **nbn** power mains connection; • Compound fencing (10m x 10m); and • Ancillary equipment associated with operation of the proposed facility The location will be accessed via a short track to be installed between the compound and Musical Gully Road.
Purposes	The proposed facility is necessary to provide **nbn**™ fixed wireless coverage to the surrounding area, which includes the townships of Waterloo, Main Lead and Raglan. The proposed facility is part of the State Government funded 'Connecting Victoria Mobile Program' (CVMP).
Property Details	Property description: Crown Allotment 5M Section H Parish of Beaufort Volume 11715 Folio 720 (no Certificate of Title) Street Address: Musical Gully Road, WATERLOO VIC 3373
Town Planning Scheme	Council: Pyrenees Shire Council Zone: Public Conservation and Resource Zone
Application	Development of a Telecommunications Facility (Fixed Wireless facility)

1 INTRODUCTION

The **nbn**™ rollout is an upgrade to Australia's existing telecommunications network. It is designed to provide Australians with access to fast, affordable and reliable internet.

nbn™ plans to upgrade the existing telecommunications network in the most cost-efficient way using best-fit technology and taking into consideration existing infrastructure.

nbn™ has engaged Ventia and SAQ Consulting to act on its behalf to design and deliver new fixed wireless equipment and infrastructure within the broader network which is already in operation.

To support the fixed wireless component of this network, **nbn**™ requires a fixed wireless site to provide internet coverage to the surrounding area, which includes the township/localities of Waterloo, Main Lead and Raglan. The proposed facility will be located on Crown Land in the Musical Gully State Forest, off Musical Gully Road at Waterloo.

The proposed facility is part of the Connecting Victoria Mobile Program (CVMP), which is funded by the Victorian State Government.

Prior to confirming this site as the preferred location for a fixed wireless facility, an in-depth site selection process was undertaken. This process matched potential candidates against five key factors, namely:

- The ability of the site to provide acceptable coverage levels to the area;
- The ability of the site to provide line of sight (LoS) to other facilities;
- Town planning considerations (such as zoning, surrounding land uses, environmental significance and visual impact);
- Construction feasibility and cost; and
- The ability of **nbn**™ to secure a lease agreement with the landowner.

This planning statement will provide assessment in respect of the relevant planning legislation and guidelines, and demonstrates site selection on the basis of the following:

- The site is designed to achieve the required coverage objectives for the area;
- The site is designed to be appropriately located & sited to minimise visual impact on the immediate & surrounding area;
- The proposal is designed to operate within the regulatory framework of Commonwealth, State and Local Government;
- The proposal has been designed to ensure that no adverse environmental impact will result from the proposal
- The facility is designed to operate within all current and relevant standards and is regulated by the Australian Communications and Media Authority.

2 BACKGROUND

2.1 nbn™ and the National Broadband Network

nbn is the organisation responsible for overseeing the upgrade of Australia's existing telecommunications network and for providing wholesale services to retail service providers. The **nbn** is designed to provide Australians with access to fast, affordable and reliable internet and landline phone services.

nbn plans to upgrade the existing telecommunications network in the most cost-efficient way using best-fit technology and taking into consideration existing infrastructure.

The **nbn**'s fixed wireless network uses cellular technology to transmit signals to and from a small antenna fixed on the outside of a home or business, which are able to achieve Line of Sight (LoS) towards the fixed wireless facility.

nbn's fixed wireless network is designed to offer service providers with wholesale access speeds of up to 50Mbps for downloads and 20Mbps for uploads[1].

2.2 What is Fixed Wireless and how is it different to Mobile Broadband?

The **nbn**'s fixed wireless network, which uses advanced technology commonly referred to as LTE or 4G, is engineered to deliver services to a fixed number of premises within each coverage area.

This means that the bandwidth per household is designed to be more consistent than mobile wireless, even in peak times of use.

Unlike a mobile wireless service where speeds can be affected by the number of people moving into and out of the area, the speed available in a fixed wireless network is designed to remain relatively steady.

2.3 The Fixed Wireless Network – Interdependencies

Although fixed wireless facilities are submitted to Council as standalone developments, for planning purposes, they are highly interdependent. Each fixed wireless facility is connected to another to form a chain of facilities that link back to the fibre network. This is called the 'transmission network'.

The transmission network requires LoS from facility to facility until it reaches the fibre network via a hub site. The fixed wireless network will remain unconnected without the transmission network and a break in this chain can have flow on effects to multiple communities.

A typical fixed wireless facility will include a number of antennas mounted above a structure on a headframe. Each antenna is designed to cover a set area to maximise signal strength. In turn, these network antennas communicate to a small antenna installed on the roof of each customer's home or business.

The nature of the Fixed Wireless network is visually demonstrated through **Figure 1** below.

[1] **nbn**™ is designing the **nbn** to provide these speeds to our wholesale customers, telephone and internet service providers. End user experience including the speeds actually achieved over the **nbn** depends on some factors outside **nbn**™'s control like equipment quality, software, broadband plans and how the end user's service provider designs its network.

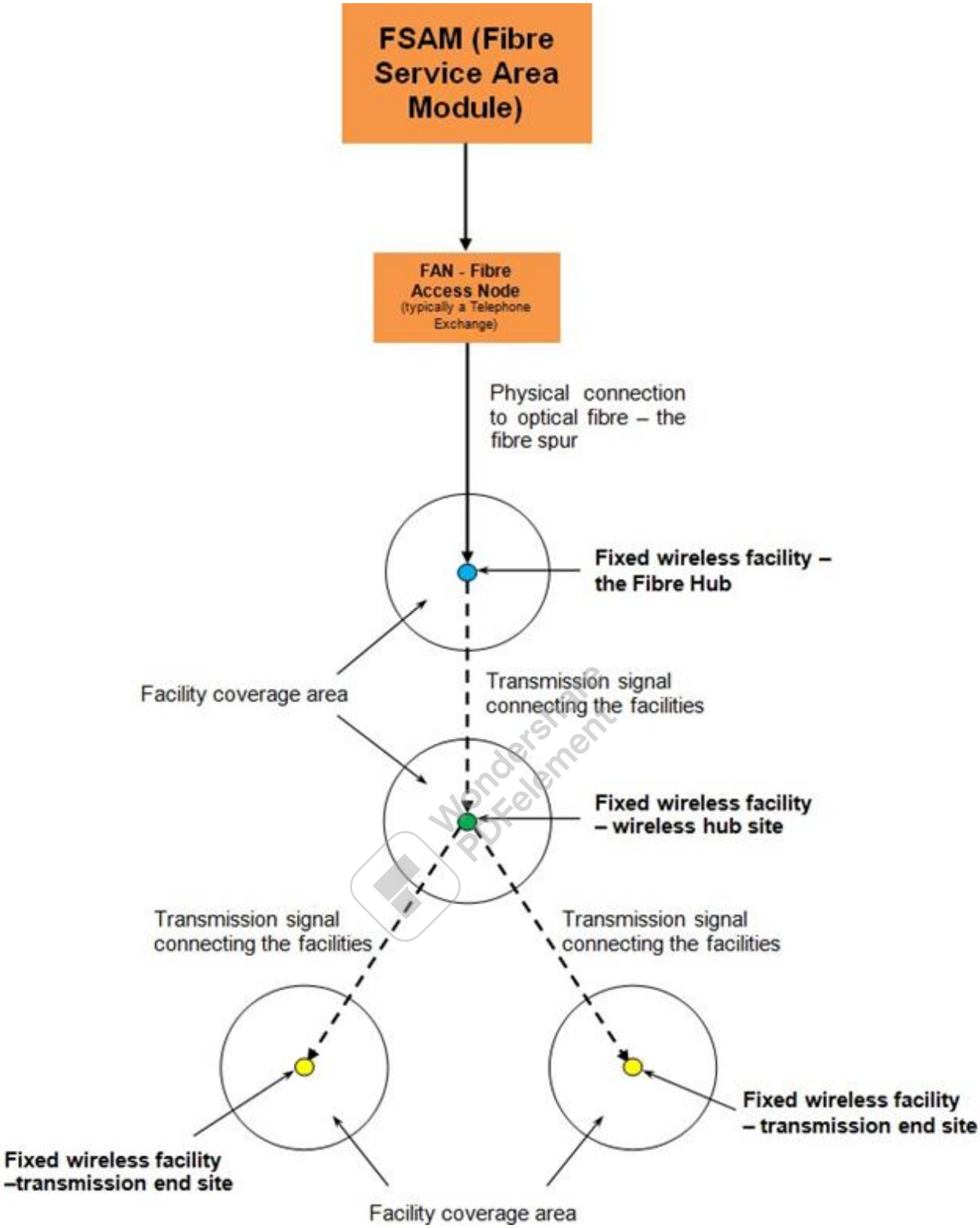


Figure 1 The Fixed Wireless Network

3 SITE SELECTION

Planning for a new fixed wireless broadband facility is a complex process. **nbn**™ conducts a rigorous multi-stage scoping process, as outlined in the section below.

3.1 Identification of areas requiring Fixed Wireless coverage

nbn's Fixed Wireless locations are determined by many factors including the availability of both the nbn Fibre transit network and the availability of Point of Interconnect (POI) facilities to allow for the installation of nbn fibre equipment.

nbn uses a number of methods to identify those parts of Australia that require fixed wireless coverage. When an area is identified as requiring fixed wireless coverage, investigations are undertaken to determine the measures required to provide this coverage.

nbn has identified a requirement to provide a Fixed Wireless facility in the Waterloo/Main Lead area to serve the surrounding area. The facility is designed to provide fixed wireless internet services to the surrounding area and is designed to achieve LoS to an existing **nbn** site at Mt Callender in order to connect to the existing **nbn** network.

3.2 Site Selection Parameters

nbn™ generally identifies an area where the requirement for a Fixed Wireless facility would be highest known as a 'search area.' A preliminary investigation of the area is then undertaken, in conjunction with radio frequency engineers, planning and property consultants and designers to identify possible locations to establish a facility.

Generally speaking, new sites must be located within, or immediately adjacent to, the identified search area. Search areas are produced by radio frequency engineers who work on the network and are areas where a facility is technically feasible and can meet nbn coverage objectives.

While the operational and geographical aspects of deploying new facilities are primary factors, there are also many other issues that influence network design, which should be considered.

Some of the issues that are considered throughout selection include:

- the availability and suitability of land;
- the ability to find a willing landowner to host the proposal;
- topographical constraints affecting network LoS and NTP count;
- construction constraints;
- occupational health and safety; and
- cost constraints

These compounding factors often severely restrict the available search area within which a facility can be established to provide fixed wireless broadband services to a local community.

3.3 Candidate Sites

3.3.1 Opportunities to Co-locate

There are no existing telecommunications structures within 4.8 kilometres of the proposed location and as such collocation is not available for consideration in this instance.

3.3.2 Existing Structures

There are no suitably tall structures in the locality that could be used to accommodate the proposed facility, noting in particular the height required for both the panel antennas and the transmission link to Mt Callender.

3.3.3 New Site Candidates

Following desktop and field investigations of a number of potential candidates, three locations were short-listed as summarised in the table below.

Candidate	Address and Lot Number	Facility Type	Description
A	Crown Allotment 5M **selected**	New structure	Location able to achieve desired network outcomes (given local topography constraints), well screened by trees
B	Musical Gully Reservoir	New structure	Lack of space and difficult access
C	Little Charlie Lane (private property)	New structure	Location not able to meet all desired network outcomes

4 SUBJECT SITE & SURROUNDS

The telecommunications facility is proposed to be located on Crown Land within the Musical Gully State Forest at Waterloo. The specific location is on the southern side of Musical Gully Road, directly opposite the Musical Gully Reservoir, which is located about 840 metres from Main Lead Road. The land's formal description is Crown allotment 5M Section H, Parish of Beaufort and is shown in Figure 2 below.

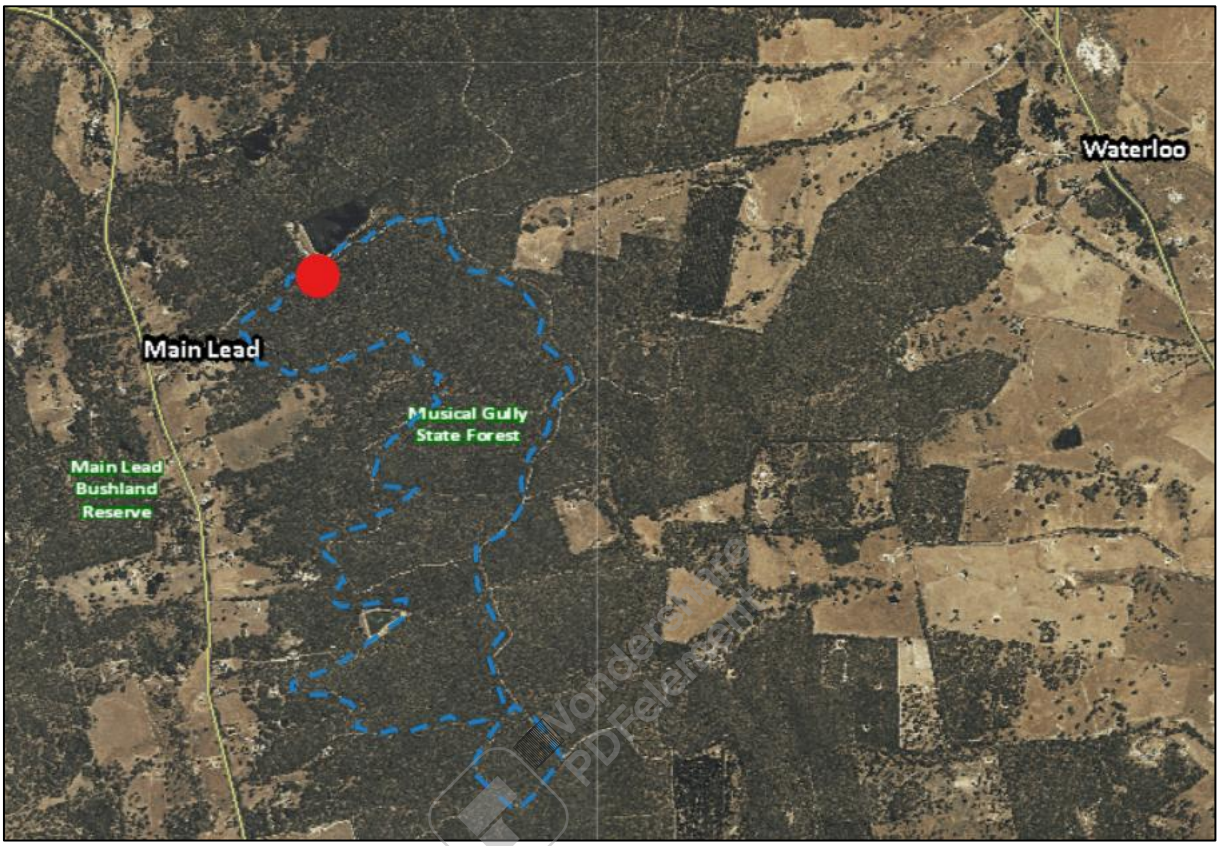


Figure 2 Site Map (proposed facility marked)

The proposed structure will be located adjacent Musical Gully Road in an area previously cleared of vegetation (by way of a valid consent). A small amount of vegetation will require removal to ensure an asset protection zone can be established.

The compound will be accessed via a new, short track from Musical Gully Road, which is unsealed and a very minor road. There will be underground connection for mains power.

The subject land is located about 3.5 kilometres to the west of the township of Waterloo and about 5.5 kilometres north of Beaufort. The locality in this area is dominated by the State Forest area with surrounding farm land. The Main Lead Road, connecting Beaufort to Raglan, is the main thoroughfare in the area. Figure 3 below shows the locality with the subject land and proposed location marked.

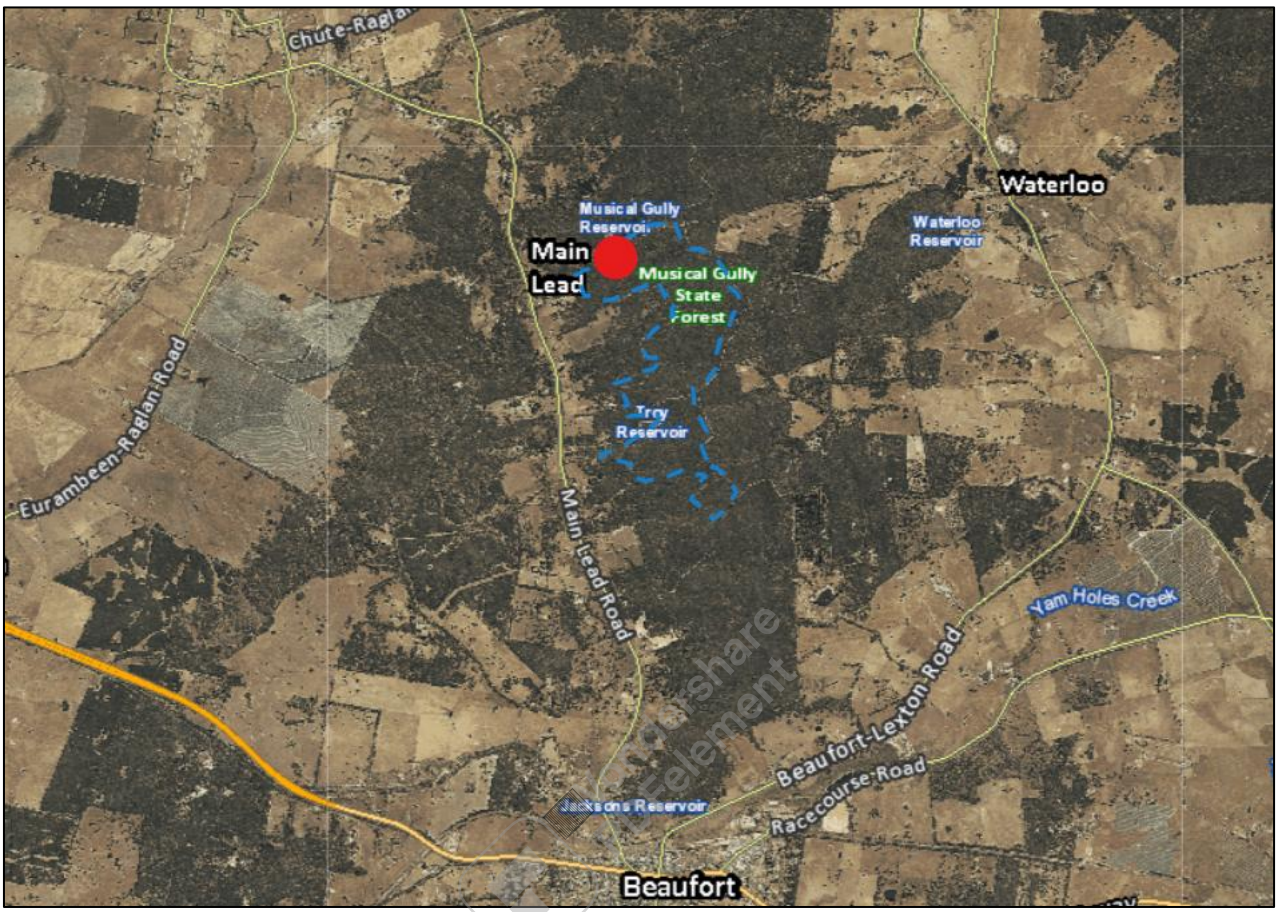


Figure 3 Locality Map (proposed facility marked)

Given the large setback of the proposed facility from main roads and sensitive land uses, as well as the prevailing topography, it is unlikely the proposed structure will be able to be viewed from any location of any significance outside the subject land, or if it can be it will be very distant. The nearest dwelling to the proposed facility is at least 650 metres away and will have no view of the proposed facility.

5 THE DEVELOPMENT APPLICATION

5.1 The nbn™ Fixed Wireless Facility and Equipment Details

The Development Application seeks approval for the use and development of a telecommunications facility, comprising a 70-metre tall lattice tower, antennas and ground equipment.

The specific components of the proposed installation are described below:

- The installation of a 70-metre lattice tower and new headframe
- The installation of four (4) **nbn** panel antennas and one (1) mini-lens antenna on the new headframe;
- The installation of four (4) **nbn** Remote Radio units
- The installation of one 91) **nbn** parabolic transmission antennas (diameter of 1200mm) at a height of 67m
- The installation of one (1) outdoor equipment cabinet at ground level (1.9m H x 0.8m W x 0.7m D), adjacent to the proposed tower;
- The installation of two (2) outdoor equipment cabinets at ground level (2.0m H x 0.7m W x 0.85m D), adjacent to the proposed tower;
- The outdoor units will be installed on a concrete slab.
- The installation of associated feeder cables and cable trays;
- The installation of fencing and a new access track; and
- Ancillary equipment associated with operation of the proposed facility

This **nbn**™ Fixed Wireless facility is a wireless fibre site within the network, providing **nbn**™ broadband coverage to the surrounding area, including Waterloo, Main Lead and Raglan.

The proposed facility is part of the State Government funded 'Connecting Victoria Mobile Program' (CVMP).

Please refer to the proposed drawings in **Appendix A** for details of the facility and site compound.

5.2 Construction Schedule

During the construction phase, trucks will be used to deliver the equipment to the site and a crane will be utilised to lift most of the equipment into place. Any traffic impacts associated with construction will be of a short-term duration and are not anticipated to adversely impact on the surrounding road network. In the unlikely event that road closure will be required, **nbn** will apply to the relevant authorities for permission.

A total construction period of approximately ten weeks (including civil works and network integration and equipment commissioning) is anticipated.

Construction activities will involve four basic stages:

- Stage 1 (Week 1) – Site preparation works, including field testing, excavation and construction of foundations;
- Stage 2 (Weeks 2, 3 and 4) – Construction of the lattice tower;
- Stage 3 (Weeks 5 and 6) – Construction of the equipment cabinets;
- Stage 4 (Weeks 7 – 10) – Installation of antennas and radio equipment, as well as equipment testing.

Once operational, the facility will function on a continuously unstaffed basis and will typically only require maintenance works three times a year.

5.3 Construction and Noise

Noise and vibration emissions associated with the proposed facility are expected to be limited to the construction phase outlined above. Noise generated during the construction phase is anticipated to be of short duration and accord with the standards outlined in the relevant EPA guidelines. Construction works are planned only to occur between the hours of 7.00am and 6.00pm or as stipulated by council through consent conditions.

There is expected to be some low-level noise from the ongoing operation of air conditioning equipment associated with the equipment shelter and cabinets, once installed. Noise emanating from the air conditioning equipment is expected to be at a comparable level to a domestic air conditioning installation, and should generally accord with the background noise levels prescribed by relevant guidelines.

Given the proposed location well away from dwellings and sensitive land uses, noise from construction and operation is not expected to be an issue.

6 RELEVANT PLANNING LEGISLATION AND CONTROLS

6.1 Commonwealth Legislation

As a licensed telecommunications carrier, **nbn** must operate under the provisions of the *Telecommunications Act 1997* and the following supporting legislation:

- The Telecommunications Code of Practice 1997;
- The *Telecommunications (Low-impact Facilities) Determination 2018* (as amended); and
- The *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*.

6.1.1 The Telecommunications Act

This legislation establishes the criteria for 'low impact' telecommunication facilities. If a proposed facility satisfies the requirements of a 'low impact' facility, the development is exempt from the planning approval process.

Further clarification of the term 'low impact' is provided in the Telecommunications Act 1997 and the *Telecommunications (Low Impact Facilities) Determination 2018*, which was gazetted subsequent to the Act. The *Telecommunications (Low Impact Facilities) Determination 2018* establishes certain facilities, which cannot be considered 'low impact' facilities.

The proposed facility is not considered to be low impact under the definitions contained in the Commonwealth legislation as it involves the construction of a new monopole.

6.1.2 Telecommunications Code of Practice 1997

Under the *Telecommunications Act 1997*, the Government established the Telecommunications Code of Practice 1997, which sets out the conditions under which a carrier must operate.

Section 2.11 of the Telecommunications Code of Practice 1997 sets out the design, planning and installation requirements for the carriers to ensure the installation of facilities is in accordance with industry 'best practice'. This is required to:

"… minimise the potential degradation of the environment and the visual amenity associated with the facilities." [Section 2.11(3)]

The siting and design of the proposal has taken place in accordance with Section 3 (Planning and Siting) of the Australian Standard – Siting of Radio Communications Facilities (AS 3516.2).

Furthermore, following an assessment of the available options it became evident that there were no suitable existing telecommunications facilities or other structures (including buildings or power poles) located within the search area that could provide the required site objective/co-location opportunities.

6.1.3 The Telecommunications (Low-impact Facilities) Determination 2018

The *Telecommunications (Low-impact Facilities) Determination 2018* identifies both the type of facilities that can be "Low-impact", and the areas in which these facilities can be installed. Importantly, this current facility is not defined as a "low impact facility" and is therefore subject to State and Territory Planning Laws and Regulation.

6.1.4 The Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* obliges telecommunications carriers to consider 'matters of national environmental significance'. Under this legislation, an action will require approval from the Minister of Environment if the action has or is likely to have an impact on a matter of 'national environmental significance'. According to the *EPBC Act 1999*, there are seven matters of national significance which must be considered.

All relevant EPBC matters have been considered. It is not anticipated that the proposal will have a significant impact on any matters of national environmental significance. Accordingly, approval from the Minister of Environment is not required in this instance.

6.2 Planning and Environment Act 1987

The principal legislation regulating land use and development in Victoria is the *Planning and Environment Act 1987,* with each Council area having its own planning scheme, which includes standardised wording modules throughout.

6.3 Pyrenees Shire Planning Scheme

The subject site is within the *Public Conservation and Resource Zone* of the Pyrenees Shire. A planning permit is required for the development of a telecommunications facility in the zone and it is the only zone where a use permit is not exempted by clause 62.01. However, it is noted the zone does not specifically require a use permit for the facility.

As shown in Figure 4 below, the proposed facility is located just outside the Environmental Significance Overlay.

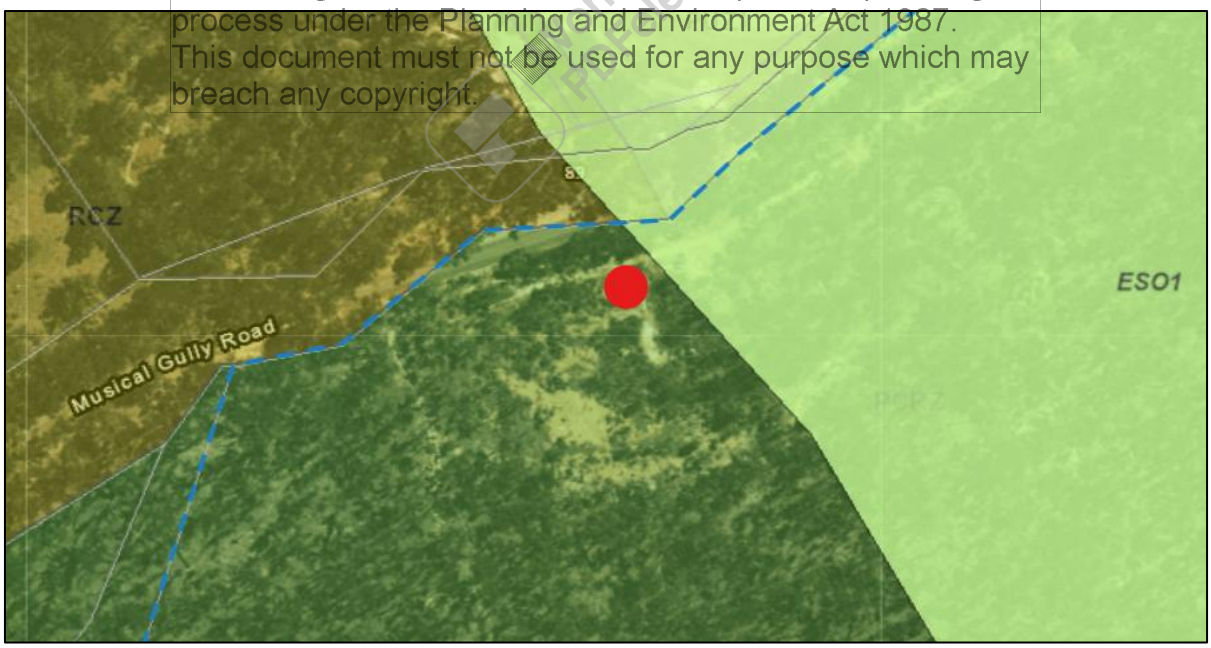


Figure 4: Zone/Overlay Map (proposed facility marked)

Public Conservation and Resource Zone (PCRZ)

The purpose for the *PCRZ* is set out as follows:

> *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
>
> *To protect and conserve the natural environment and natural processes for their historic, scientific, landscape, habitat or cultural values.*

To provide facilities which assist in public education and interpretation of the natural environment with minimal degradation of the natural environment or natural processes.

To provide for appropriate resource based uses.

With respect to these provisions, the proposal is to be located in a previously cleared area and has no material impact on the historic, scientific, habitat or cultural values of the land or surrounding area. Whilst tall, the proposed facility is well screened by the trees of the State Forest and set back from main roads and other land uses and will therefore have a minimal impact on the landscape.

There are no other useful policy or provisions within the zone itself that are applicable to the subject land proposal, nor is there anything contained in the zone schedule.

The zone requires, at 36.03-3, the consent of the public land manager to make the application. In this instance, the public land manger is the Department of Energy, Environment and Climate Action (DEECA), which has given its written consent (attached).

With respect to the decision guidelines, the application is appropriately located and designed as it achieves the telecommunications outcomes whilst minimising visual impact and the clearance of vegetation. As such, it is suitably located within the State Forest and will have no materially adverse impacts on the subject land or its surrounds.

The location selected is sited with a Bushfire Management Overlay, however no permit is required as the buildings and works are less than 100 sqm in size and is not used for accommodation and ancillary to a dwelling. The proposed facility is also not habitable and no persons are on site during normal operation.

In any event, an inner protection zone (which involves the removal a tree) of 10 metres is to be established around the proposed facility, which will provide adequate protection.

Clause 19.03-4S

Clause 19 of the Planning Scheme deals with infrastructure requirements and is broad in its application. Telecommunications are dealt with specifically at 19.03-4S.

The Objective of the Scheme at 19.03-4S states:

"To facilitate the orderly development, extension and maintenance of telecommunication infrastructure."

The Scheme also lists a number of strategies, which are:

- *Facilitate the upgrading and maintenance of telecommunications facilities.*
- *Ensure that modern telecommunications facilities are widely accessible and that the telecommunications needs of business, domestic, entertainment and community services are met.*
- *Encourage the continued deployment of telecommunications facilities that are easily accessible by:*
    - *Increasing and improving access for all sectors of the community to the telecommunications network.*
    - *Supporting access to transport and other public corridors for the deployment of telecommunications networks in order to encourage infrastructure investment and reduce investor risk.*
- *Ensure a balance between the provision of telecommunications facilities and the need to protect the environment from adverse impacts arising from telecommunications infrastructure.*
- *Co-locate telecommunications facilities wherever practical.*
- *Planning should have regard to national implications of a telecommunications network and the need for consistency in infrastructure design and placement.*

In this instance, the proposal will provide a new telecommunications facility specifically to improve the level of **nbn** wireless internet to the surrounding area.

As there are no opportunities for collocation or any other structures on which the facility could be placed, a new structure is required, which has been appropriately located within the zone to ensure a high level of service can be provided to the surrounding area.

As such, in this instance an appropriate balance between the need for the facility and its impact on the environment has been struck.

Clause 52.19

The Planning Scheme also specifically mentions telecommunications facility at 52.19 and a permit is required for the development of the proposed facility pursuant to this clause. The provisions of this clause have been recently updated and expanded to account for the de-registering of the State telecommunications code of practice.

The key purpose of this part of the Scheme is to ensure telecommunications facilities:

- *To ensure that telecommunications infrastructure is provided in an efficient and cost effective manner to meet community needs.*
- *To facilitate an effective statewide telecommunications network in a manner consistent with orderly and proper planning.*
- *To support the provision of telecommunications facilities with minimal impact on the amenity of the area.*

This clause specifically calls for telecommunications infrastructure to be both provided to meet community needs and to be supported where such infrastructure has minimal impact on the amenity of the area.

The need for the facility, its benefits and likely impacts on amenity have already been set out above and demonstrates consistency with the desired outcomes of clause 52.19.

Clause 52.19 also exempts the proposed facility from notice and review under clause 52.19-3, the relevant part of which states:

> *An application under any provision of this planning scheme to use or develop land for a telecommunications facility is exempt from the notice requirements of section 52(1)(a), (b) and (d), the decision requirements of section 64(1), (2) and (3) and the review rights of section 82(1) of the Act if the telecommunications facility is funded, or partly funded, by the Commonwealth through the Mobile Black Spot Program or the State of Victoria.*

As the proposal is for the development of a telecommunications facility that is funded through the State Government's 'Connecting Victoria Mobile Program', it is therefore exempt from notice and review.

7 LIKELY IMPACTS OF THE DEVELOPMENT

7.1 Visual Impact

The proposed facility is set well away from main roads (nearest is more than 800 metres away) and the nearest dwelling is more than 650 metres away. Musical Gully Road is unsealed and minor in nature. The prevailing tree cover and topography is such the facility will not generally be seen outside the subject land.

As a result, the visual impact has been sufficiently minimised through location and design in this instance.

7.2 Flora and Fauna

The proposed facility will be established in an area previously cleared (with consent), however one tree will require removal to allow for the establishment of a 10-metre bushfire inner protection zone. It is not anticipated this requirement will have any material impact on flora or fauna.

7.3 Aboriginal and Non-Aboriginal Heritage

There are no known heritage (built or cultural) issues affecting the selected location but in any event, telecommunications facilities are specifically excluded under r.46(1)(b)(xxvii) of the *Aboriginal Heritage Regulations 2018.*

7.4 Bushfire Risk

The subject land is within a bushfire management overlay but is exempt from requiring a permit under this overlay. The proposed facility is not staffed and does not contribute to an increased risk of or from bushfire and as set out above **nbn** has taken design measures to adequately protect the facility from bushfire risk.

7.5 Electrical Interference

The **nbn**™ fixed wireless network is licensed by the Australian Communications and Media Authority (ACMA) for the exclusive use of the OFDMA9800 frequency band. As **nbn** is the exclusive licensee of this sub-band, emissions from **nbn**™ equipment within the frequency band should not cause interference.

Filters will also help to ensure that each facility meets the ACMA specifications for emission of spurious signals outside the **nbn**™ frequency allocations. **nbn**™ intends to promptly investigate any interference issues that are reported.

7.6 Erosion, Sedimentation Control and Waste Management

All erosion and sediment control mitigation measures will comply with the Building Code of Australia, The Blue Book, and local Council standards where applicable. In addition, contractors must comply with the '**nbn**™ Construction Specification' that requires contractors to undertake the necessary erosion and sediment control measures to protect the surrounding environment.

It is expected that a condition pertaining to erosion and sediment control will be implemented as a condition of development consent if granted by Council.

7.7 Traffic Generation

After the construction period, the only traffic generated by the base station will be that associated with maintenance vehicles. In this respect, it is estimated that maintenance of the facility will generate only three to four visits per year and will remain unattended at all other times. The traffic generation will therefore be minimal and not sufficient to create any adverse impacts. There is adequate room on the subject land for the parking of vehicles associate with the facility.

7.8 Utility Services

All services required for the ongoing operation of the base station are capable of being provided to the facility without impacting on the supply or reliability of these services to any existing consumers in the locality.

7.9 Noise

Noise and vibration emissions associated with the proposed facility will be limited to the initial construction phase. There will be some low-level noise from the ongoing operation of cooling fans associated with the equipment cabinets , once installed. Noise emanating from the cooling equipment is at a comparable level to a domestic air conditioning installation and will generally accord with the background noise levels prescribed by Australian Standard AS1055. Given the distance to sensitive receivers within the locality, noise is not expected to be an issue.

7.10 Social and Economic Impacts

Access to fast internet is an essential service in modern society. Initially, small to medium business customers accounted for a significant part of the demand for broadband technology, but internet services have now been embraced by the general public. Usage of internet services continues to widen as new technologies become progressively more affordable and accessible to the wider community.

The new **nbn**™ network is designed to provide the community with access to fast and reliable internet services. A reliable internet service is important to help promote the economic growth of communities, and the facility is anticipated to have significant social and economic benefits for the local community.

7.11 Public Safety – Radiofrequency Emissions

In relation to public safety and specifically Electromagnetic Emissions (EME) and public health, **nbn**™ network operates within the operational standards set by the Australian Communication and Media Authority (ACMA) and Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). ARPANSA is a Federal Government agency incorporated under the Health and Ageing portfolio and is charged with the responsibility for protecting the health and safety of both people and the environment from the harmful effects of radiation (ionising and non-ionising).

All **nbn**™ network installations are designed and certified by qualified professionals in accordance with all relevant Australian Standards. This helps to ensure that the **nbn**™ facility does not result in any increase in the level of risk to the public.

The proposed facility will comply with Australian Government regulations in relation to emission of electromagnetic energy (EME) - specifically being *Australian Standard Radiation Protection Series S-1 Standard for Limiting Exposure to Radiofrequency Fields – 100 kHz to 300 GHz* published by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) in 2021.

An EME report has been prepared for the proposed facility and is attached for Council's information. It shows the maximum EME level is predicted to be 0.14% of the public safety standard.

Moreover, all **nbn**™ network equipment has the following features, all of which help to minimise the amounts of energy used and emitted:

- Dynamic/Adaptive Power Control is a network feature that automatically adjusts the power and hence minimises EME from the facility.
- Varying the facility's transmit power to the minimal required level, minimising EME from the network, and
- Discontinuous transmission, a feature that reduces EME emissions by automatically switching the transmitter off when no data is being sent.

7.12 The Public Interest

The public benefits of access to high quality broadband have been widely acknowledged for many years. Broadband access is now more than ever considered an integral component of daily life, so much so that its absence is considered a social and economic disadvantage.

Across the Pyrenees Shire, the Fixed Wireless network is designed to service rural communities that have traditionally been significantly disadvantaged both in terms of basic access to broadband and in terms of the quality and reliability of broadband that these communities receive.

The Government's National Map illustrates the substantial disparity and inequity in service between larger townships and smaller communities, and often even within individual rural communities.

The proposed **nbn**™ facility is expected to have significant benefit for residents, businesses and educational establishments in the Waterloo area by providing improved internet services within the area. Furthermore, the proposal has been designed to minimise environmental and visual impact by being located in a remote part of the shire.

8 Conclusion

The **nbn**™ facility proposed at Waterloo has been sited in a manner which allows **nbn**™ to provide broadband services to the surrounding area effectively and efficiently. The facility has been strategically sited and designed to ensure that the target coverage area is able to be provided with **nbn**™ broadband services and will be connected to the **nbn** by radio transmission link.

The proposed facility is part of the 'Connecting Victoria Mobile Program', which is funded by the Victorian State Government.

The selected location is located well away from the main roads and sensitive land uses and has no impact on dwellings or other land uses as it is screened well by prevailing tree cover and local topography.

The proposed facility is generally consistent with the provisions of the *Public Conservation and Resource Zone* and with the more specific telecommunications clauses within the planning scheme, as set out above. The proposal is exempt from notice and review.

The proposed **nbn**™ facility is expected to have significant benefit for residents, businesses and educational establishments in the areas surrounding the selected location. It will assist by providing improved internet services and contribute socially and economically.

For all of those reasons, the proposed facility should be granted planning consent.

Department of Energy, Environment and Climate Action

402-406 Mair Street
BALLARAT VIC 3350
pe.assessment@delwp.vic.gov.au
deeca.vic.gov.au

Mr Mark Baade
Planning Consultant
SAQ Consulting
PO Box 50
CLAYFIELD QLD 4011

mark@saqconsulting.com.au

Ref: 00006228

Dear Mr Baade,

REFERENCE NUMBER: **NBN-3BRZ-3BRA-5141 – WATERLOO**
PROPOSAL: **CONSTRUCTION AND OPERATION OF A TELECOMMUNICATIONS FACILITY (FIXED WIRELESS BASE STATION)**
ADDRESS: **MUSICAL GULLY ROAD, WATERLOO 3373**
CROWN ALLOTMENT 5M, SECTION H, PARISH OF BEAUFORT

I refer to NBN Co's proposal to construct, maintain and operate a telecommunications facility, network and service at the above-described address, and your correspondence dated and received 9 August 2024 requesting public land manager consent to make a planning permit application for the development. I apologise for the extended delay in finalising this matter.

This letter addresses your request for public land manager consent to enable a planning permit application to be made to Pyrenees Shire Council under the *Planning and Environment Act 1987*. It also summarises and provides an update on other interests and processes being worked through.

Comment

The proposal involves Crown land, being Crown Allotment 5M, Section H, Parish of Beaufort (Standard Parcel Identifier 5M~H\PP2096). The Department of Energy, Environment and Climate Action (DEECA) acts on behalf of the Minister for Environment as land owner for Crown land in Victoria.

The subject site is reserved forest. It is managed directly by DEECA as part of Musical Gully State Forest on behalf of the Secretary to DEECA under the provisions of the *Forests Act 1958*.

DEECA's assessment of your request for public land manager consent has been based on the following documents:

- Telecommunications Lease Application Form – "Lease/site name: NBN-3BRZ-3BRA-5141 – Waterloo. Prospective tenant's name: NBN Co Limited." (signed by Stuart Melville - SAED Implementation Manager, dated 6 November 2023)
- Pyrenees Shire Council planning permit and native vegetation advice – "RE: OFFICIAL: RE: NBN Proposal to Lease - Musical Gully Road WATERLOO VIC 3373 - potential planning permit requirements (Crown Allotment 5M Section H Parish of Beaufort) (DEECA ref. 00006228)" (email from Rachel Blackwell, 10 October 2024)
- Final plans – "National Broadband Network. Site No: 3BRA-51-41-WATO. Waterloo. Musical Gully Road Waterloo Vic 3373" (email from Mark Baade, 4 December 2024)
    - Overall Site Plan. Drawing No. 3BRA-51-41-WATO-C2, Revision B (dated 27 November 2024)
    - Site Setout Plan. Drawing No. 3BRA-51-41-WATO-C3, Revision B (dated 27 November 2024)

- Site Elevation and Details. Drawing No. 3BRA-51-41-WATO-C4, Revision B (dated 27 November 2024)
- Site Plan For Lease Purposes. Veris Australia Drawing No. 29319314AC (dated 27 November 2024)

Relevant planning scheme provisions

Pyrenees Shire Council has advised that a planning permit is required for the proposed telecommunications facility and has referenced several provisions of the planning scheme. These are listed below and coupled with a brief note identifying DEECA's interest.

The site is subject to Clause 36.03 Public Conservation and Resource Zone (PCRZ). In consideration of clauses 36.03-3 and 73.01 in the Pyrenees Planning Scheme, DEECA is the public land manager for the subject site.

The site is subject to Clause 44.06 Bushfire Management Overlay and Schedule 1 to Clause 42.01 Environmental Significance Overlay. The Pyrenees Planning Scheme does not prescribe a role for DEECA in relation to either of these overlays, and DEECA has no comment to make in relation to them.

Clause 52.19 Telecommunications Facility requires that an application affecting land in a public land zone (e.g. PCRZ) must be accompanied by written confirmation from the public land manager that the public land manager consents either generally or conditionally to the application being made or to the application being made and to the proposed development. As above, DEECA is the public land manager for the subject site.

Native vegetation

DEECA previously queried the existing cleared condition of the area (email dated 11 September 2024) and potential requirements under Clause 52.17 Native Vegetation.

Correspondence from Pyrenees Shire Council (Rachel Blackwell, email dated 10 October 2024) indicates the proposed site for the telecommunications facility may have been previously cleared under planning permit PA2159/13, which allowed native vegetation removal for upgrade works associated with the nearby Musical Gully Reservoir. Associated documentation, particularly the report "Addendum to Flora and Fauna Assessment of Proposed Works at Musical Gully Reservoir, Beaufort. June 2013. Final Version 2" (Central Highlands Water, 26 August 2013), supports this conclusion.

DEECA concurs with the advice from Pyrenees Shire Council that if any other native vegetation removal is required in association with the current proposed development (i.e. outside the previously cleared area), Clause 52.17 of the planning scheme is relevant and planning permission may be required unless the vegetation removal is exempt.

Response

For the purposes of a planning permit application, this letter confirms that:

- The land owner (the Minister for Environment) has been notified of the application as required by Section 48 of the Planning and Environment Act; and
- In relation to clauses 36.03-3 and 52.19-2, the public land manager (DEECA) consents to the application being made.

You should submit this letter with your planning permit application.

Please provide a copy of the planning permit (if one is granted) to the contacts at the below addresses.

Other matters:

As noted, DEECA has several roles or interests in relation to this proposal:

- Acting on behalf of the Minister for Environment as land owner for Crown land in Victoria in the potential granting of a lease for 'constructing, maintaining and operating a telecommunications facility, network and service'.
- As land manager for Musical Gully State Forest.

Land owner / manager consent and lease arrangements
Land owner / manager consent to the use and development is withheld at this time. It will be confirmed through the execution of a lease.

For the avoidance of doubt: this does not prevent an application for or the determination of a planning permit, but any permit issued will not be able to be acted on until such time as a lease is executed.

DEECA's Direct Leasing Unit advises that a lease has been prepared for 'constructing, maintaining and operating a telecommunications facility, network and service.' The lease has not yet been executed but can be finalised once a planning permit is obtained.

***Obligations under the* Native Title Act 1993**
DEECA has completed a native title future act assessment for the proposal and has determined that there are no procedural requirements that apply. The issue of the lease is valid under section 24JA of the Native Title Act, and native title is not extinguished by the works.

If you have any queries regarding the public land manager consent and planning permit application matters, please contact me on 0448 004 764 or at pe.assessment@deeca.vic.gov.au .

If you have any queries or require an update on other matters (e.g. progress of the lease), please contact DEECA's Land and Built Environment team via publicland.grampians@deeca.vic.gov.au .

Yours sincerely

Claire Tesselaar

Claire Tesselaar
Team Leader, Planning and Environment Assessment

20/02/2025

c.c. Applicant, via email (Emma Adcock, Proptel: e.adcock@proptel.com.au)

SITE LOCATION

REPRODUCED WITH PERMISSION FROM GOOGLE EARTH PRO

SITE CO-ORDINATES

LATTICE TOWER LOCATION	
DATUM: MGA(GDA 94)	ZONE: 54
EASTING	710 654
NORTHING	5 860 465
LATITUDE	-37.37865°
LONGITUDE	143.37921°

DBYD Job No. 34749377
Enquiry Date: 02/08/2023
CONTRACTOR TO REVALIDATE AT TIME OF CONSTRUCTION!

PUBLIC UTILITIES LEGEND

TELCO — TELECOMMUNICATIONS

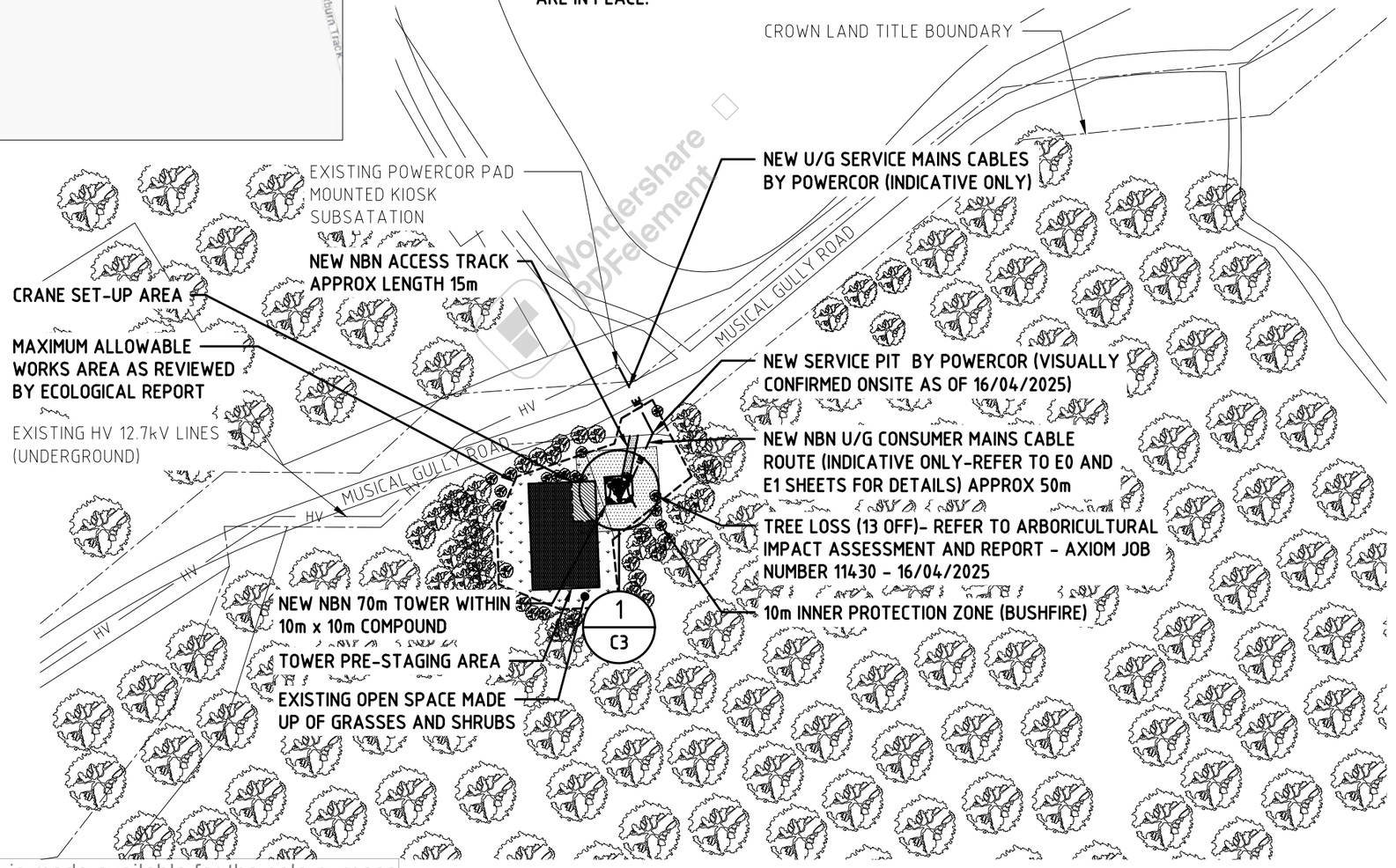
LEGEND

- UE — UE — UNDERGROUND SUB MAIN CABLE
- HV — OVERHEAD POWER LINE
- TREE LOSS
- MAXIMUM ALLOWABLE WORKS AREA

N MGA

NOTES:

1. ALL UNDERGROUND SERVICES SHOWN INDICATIVE ONLY.
2. NBN POWER ROUTE SHOWN INDICATIVELY ONLY.
3. ALL INFORMATION TO BE CHECKED ON SITE PRIOR TO FABRICATION AND CONSTRUCTION.
4. DRAWINGS BASED ON INFORMATION PROVIDED BY OTHERS.
5. CONSTRUCTION CONTRACTOR TO CONFIRM SUITABILITY OF NEW EWP SET-UP/PARKING LOCATION ON SITE PRIOR TO WORK COMMENCING.
6. SERVICES INFORMATION CONTAINED ON THIS DRAWING IS INDICATIVE ONLY AND REFERENCE SHOULD BE MADE TO THE AUTHORITIES DRAWINGS TO CONFIRM ACCURACY AND COMPLETENESS. WHERE INFORMATION IS AVAILABLE, THE SUB-SURFACE SERVICES INSTALLED BY AGENTS OTHER THAN AUTHORITIES HAVE BEEN SHOWN, BUT ADDITIONAL UNDOCUMENTED SERVICES MAY BE PRESENT. SHOULD THE CONTRACTOR BELIEVE THAT SUB-SURFACE SERVICES ARE AT RISK OF DAMAGE DURING CONSTRUCTION, THE CONTRACTOR SHOULD NOTIFY THE RELEVANT AUTHORITIES AND ESTABLISH THE EXACT LOCATION OF THE SERVICES.
7. REFER TO SHEET E0, E1 AND POWERCOR OFFER FOR MORE DETAILS.
8. ADEQUATE SEPARATION TO BE MAINTAINED BETWEEN NON ELECTRICAL SERVICES AS PER THE CLAUSE 3.9.8 OF AS/NZS 3000.
9. THE NBN ELECTRICAL CONTRACTOR IS TO INSTALL PITS IN CABLE BENDS.
10. THE NBN ELECTRICAL CONTRACTOR MUST ENSURE THAT THE ELECTRICAL SCOPE OF WORK MENTIONED IN THE POWERCOR OFFER IS COMPLETED BEFORE COMMENCING ANY ELECTRICAL WORK ON THE SITE.
11. BEFORE COMMENCEMENT OF ANY SITE OR BUILDING WORK ENSURE EROSION AMD SEDIMENT CONTROLS ARE IN PLACE.



OVERALL SITE PLAN

SCALE 1:2000

Client:

Client:

Client:

Project:
NATIONAL BROADBAND NETWORK
SITE No: 3BRA-51-41-WATO
WATERLOO
MUSICAL GULLY ROAD
WATERLOO
VIC 3373

FOR CONSTRUCTION

Rev	Date	Revision Details	CAD
B	27.11.24	FOR CONSTRUCTION	SKD
A	24.05.24	FOR CONSTRUCTION	OB
01	18.09.23	PRELIMINARY	LA

VISIONSTREAM AUSTRALIA PTY LTD
167 Cremorne Street
Cremorne, VIC 3121
Website: https://www.visionstream.com/
AU phone number: 1300 VENTIA (836 842)
NZ phone number: 0508 VENTIA (836 842)

DESIGNER:	DC
CHECKED:	ML
APPROVED:	SM

Drawing Title:
OVERALL SITE PLAN

Drawing No. 3BRA-51-41-WATO-C2
Revision B

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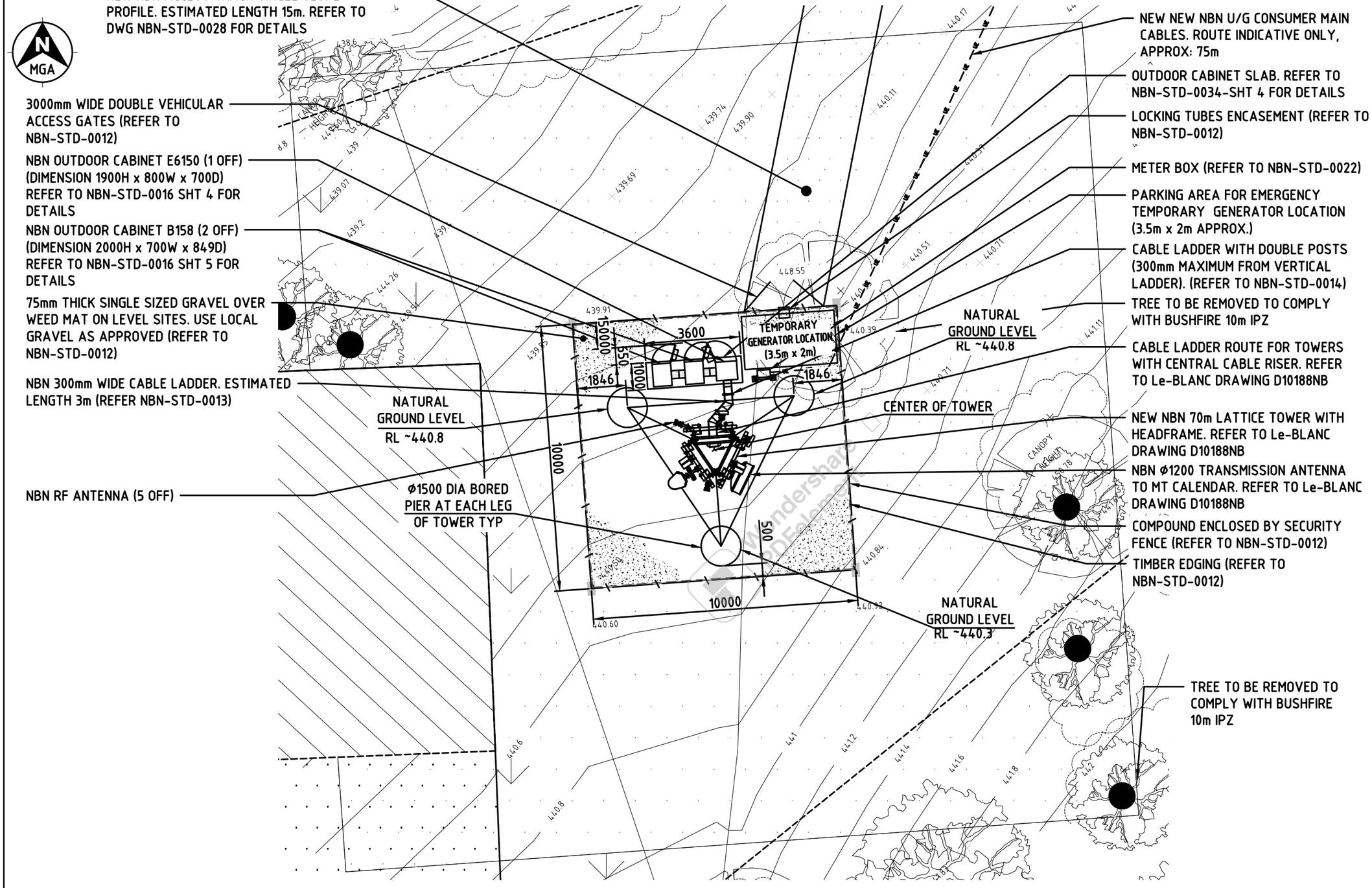

NOTES:

1. REFER TO LEASE PLAN 293193144A FOR COMPOUND DIMENSIONS. NBN DESIGN CONSULTANT SHALL ENSURE THAT TOWER FOUNDATIONS ARE WITHIN THE NBN LEASE AREA.
2. REFER TO STANDARD DRAWING NBN-STD-0001 FOR ADDITIONAL NOTES.
3. NO PART OF THE INSTALLATION, INCLUDING FOUNDATION AND HEADFRAME (INCLUDING ANTENNAS) SHALL EXTEND BEYOND LEASE AREA BOUNDARY.
4. SEPARATE PDB SHALL BE USED IN CONJUNCTION WITH NBN-STD-0017.

SITE SETOUT PLAN

SCALE 1:100

Client:

Client:

Client:

Project:
NATIONAL BROADBAND NETWORK
SITE No: 3BRA-51-41-WATO
WATERLOO
MUSICAL GULLY ROAD
WATERLOO
VIC 3373

FOR CONSTRUCTION

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DESIGNER:	DC
CHECKED:	ML
APPROVED:	SM

Drawing Title:
SITE SETOUT PLAN

Drawing No.: 3BRA-51-41-WATO-C3
Revision: B

CAD File: E:\Soumya\NBN\3BRA-51-41-WATO_Rev B.dwg
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DATE OF ISSUE		18.09.23	24.05.24	27.11.24				
DRAWING PACKAGE VERSION		1	2	3				
GENERAL								
3BRA-51-41-WATO-T1	COVER SHEET	01	A	B				
3BRA-51-41-WATO-T2	REFERENCE DOCUMENTS	-	A	B				
3BRA-51-41-WATO-C1	SITE SPECIFIC NOTES	01	A	B				
3BRA-51-41-WATO-C2	OVERALL SITE PLAN	01	A	B				
3BRA-51-41-WATO-C3	SITE SETOUT PLAN	01	A	B				
3BRA-51-41-WATO-C4	SITE ELEVATION AND DETAILS	01	A	B				
3BRA-51-41-WATO-C4-1	STRUCTURAL EQUIPMENT DETAIL EXPANDED VIEW	-	A	B				
ELECTRICAL								
3BRA-51-41-WATO -E0	ELECTRICAL SPECIFICATION	-	A	B				
3BRA-51-41-WATO -E1	ELECTRICAL SINGLE LINE DIAGRAM & PDB SCHEMATIC	-	A	B				
3BRA-51-41-WATO -E2	SITE EARTHING PLAN	-	A	B				
RF AND TX CONFIGURATIONS								
3BRA-51-41-WATO-A1	NBN ANTENNA CONFIGURATION	01	A	B				
3BRA-51-41-WATO-A2	NBN ANTENNA SETOUT PLAN	01	A	B				
3BRA-51-41-WATO-R1	NBN ANTENNA EME EXCLUSION ZONES 1 OF 2	-	-	B				
3BRA-51-41-WATO-R2	NBN ANTENNA EME EXCLUSION ZONES 2 OF 2	-	-	B				
DESIGN DOCUMENTS								
D10188NB - CERT Rev.0	STRUCTUAL ANALYSIS CERTIFICATE	-	-	-				
29319314AB	SITE PLAN AND LEASE PURPOSES	-	-	-				
PS206517 - RevA	GEOTECHNICAL INVESTIGATION REPORT	-	-	-				
309011624	POWERCOR POWER OFFER	-	-	-				
DISTRIBUTION								
NBN	STUART MELVILLE	E	E	E				
VENTIA	DAVID CARR	E	E	E				

LEGEND> E (EMAIL)

SITE No: 3BRA-51-41-WATO

WATERLOO

ALLOT. 5M SEC. H, PARISH OF BEAUFORT
MUSICAL GULLY ROAD
WATERLOO
VIC 3373

RFNSA No: 3373010

Australia's broadband network

PROJECT SUMMARY

NBN INSTALLATION (NBN-3BRZ-3BRA-5141)
- INSTALL 70m Le-BLANC LATTICE TOWER
- INSTALL NBN OUTDOOR CABINET (3-OFF) ON NEW CONCRETE SLAB WITHIN THE NBN COMPOUND
- INSTALL RF2.3GHz, 3.4GHz & 26GHz
- INSTALL NEW TRANSMISSION ANTENNA

Client:

Client:

Client:

Project:
NATIONAL BROADBAND NETWORK
SITE No: 3BRA-51-41-WATO
WATERLOO
MUSICAL GULLY ROAD
WATERLOO
VIC 3373

FOR CONSTRUCTION

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DESIGNER:	DC
CHECKED:	ML
APPROVED:	SM

Drawing Title:
COVER SHEET

Drawing No.	Revision
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DATE OF ISSUE		18.09.23	24.05.24	27.11.24					
DRAWING PACKAGE VERSION		1	2	3					

NBN STANDARD DOCUMENTS

NBN-STD-0001	STANDARD CONSTRUCTION NOTES	-	G	G					
NBN-STD-0003	TYPICAL GROUND LAYOUT LATTICE TOWER	-	G	G					
NBN-STD-0004	GENERIC MONOPOLE AND LATTICE TOWER LOADING CONDITIONS	-	D	D					
NBN-STD-0006	TYPICAL LATTICE TOWER FOUNDATION	-	D	D					
NBN-STD-0012	STANDARD COMPOUND FENCING DETAILS	-	F	F					
NBN-STD-0013	STANDARD CABLE LADDER WATERFALL DETAILS	-	G	G					
NBN-STD-0014	STANDARD ELEVATED CABLE LADDER SUPPORT POST DETAILS	-	F	F					
NBN-STD-0016-SHT 4	ENCLOSURE E6150 ODC BASE FRAME DETAILS	-	B	B					
NBN-STD-0016-SHT 5	B158 ODC BASE FRAME DETAILS	-	B	B					
NBN-STD-0019	STANDARD SITE EARTHING LATTICE TOWER	-	-	E					
NBN-STD-0021-SHT 1	STANDARD EARTH BAR DETAILS	-	D	D					
NBN-STD-0021-SHT 2	SEB ALLOCATION TABLE - SHEET 1	-	C	C					
NBN-STD-0021-SHT 3	SEB ALLOCATION TABLE - SHEET 2	A	A	A					
NBN-STD-0022	STANDARD METERBOX H-FRAME DETAILS	-	F	F					
NBN-STD-0025-SHT 1	STANDARD SIGNAGE DETAILS SHEET 1	-	D	D					
NBN-STD-0025-SHT 2	STANDARD SIGNAGE DETAILS SHEET 2	-	B	B					
NBN-STD-0027-SHT 4	CHANGEOVER SWITCH 2 PHASE CONNECTION	-	B	B					
NBN-STD-0027-SHT 5	PDB LAYOUT	B	B	B					
NBN-STD-0027-SHT 15	STANDARD PDB/METERING SCHEMATIC - E6150 & VSAT	A	B	B					
NBN-STD-0028	STANDARD ACCESS TRACK DETAILS	-	C	C					
NBN-STD-0030-SHT 7	STANDARD NBN ANTENNA EME PATTERNS MS-MBA-4.4-SH2-SH2	-	B	B					
NBN-STD-0030-SHT 9	STANDARD NBN ANTENNA EME PATTERNS AW3842	-	A	A					
NBN-STD-0030-SHT 15	STANDARD NBN ANTENNA EME PATTERNS AIR5322 N257	A	A	A					
NBN-STD-0034-SHT 4	STANDARD ODC SLAB 3.6m X 1.0m	-	A	A					

REFERENCE DOCUMENTS

SITE No. 3BRA-51-41-WATO
WATERLOO

MUSICAL GULLY ROAD
WATERLOO
VIC 3373

RFNSA No: 3373010

Australia's broadband network

Client:

Client:

Client:

Project:
NATIONAL BROADBAND NETWORK
SITE No: 3BRA-51-41-WATO
WATERLOO
MUSICAL GULLY ROAD
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CHECKED:	ML
APPROVED:	SM

Drawing Title:
REFERENCE DOCUMENTS

Drawing No.	Revision
3BRA-51-41-WATO-T2	B

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A3

1. SITE ADDRESS
ALLOT. 5M SEC. H, PARISH OF BEAUFORT, MUSICAL GULLY ROAD, WATERLOO, VIC 3373
SITE COORDINATES LATITUDE: -37.37865°, LONGITUDE: 143.37921°

2. GENERAL
THE CONTRACTOR COMPLY WITH ALL RELEVANT NBN CONSTRUCTION STANDARDS, CURRENT AUSTRALIAN STANDARDS AND SPECIFICATIONS.

3. SITE ACCESS
SITE IS LOCATED WITHIN EXISTING CLEARED AREA.
PROPOSED NBN SITE ACCESS IS OFF MUSICAL GULLY ROAD, APPROX 925m FROM INTERSECTION OF MAIN LEAD ROAD.
PERSONNEL NEED TO CONTACT OWNER PRIOR ACCESSING SITE.

4. EQUIPMENT
NEW OUTDOOR CABINET E6150 (1 OFF) AND BATTERY CABINET B158 (2 OFF) TO BE INSTALLED WITHIN NBN LEASE AREA.

5. STRUCTURE
NBN 70m Le-BLANC LATTICE TOWER.

6. ANTENNA ACCESS
ANTENNA ACCESS VIA TOWER CLIMB OR EWP (BY QUALIFIED RIGGER PERSONNEL ONLY).

7. EXISTING SERVICES
THE CONTRACTOR IDENTIFY AND CONFIRM THE LOCATION OF ALL RELEVANT EXISTING SERVICES AS REQUIRED PRIOR TO THE COMMENCEMENT OF WORKS.

8. EXISTING SITE HAZARDS
THE FOLLOWING HAZARDS ARE PRESENT ON SITE:
- EXISTING OVERHEAD POWER LINE
- EXISTING UNDERGROUND SERVICES
- LONE WORKER
- WILDLIFE/INSECTS
- SUN EXPOSURE AND PPE.
- SLIPS, TRIPS AND FALLS.
- WORKING AT HEIGHTS.
- WEATHER/LIGHTNING.
- PARTIES WHO ACCESS THIS SITE MUST COMPLETE THEIR OWN HAZARD IDENTIFICATION, RISK ASSESSMENT AND THE ABOVE LIST DOES NOT ALLEVIATE THIS RESPONSIBILITY.

9. ELECTRICAL SUPPLY
80A SINGLE PHASE SUPPLY AVAILABLE FROM EXISTING STREET MAINS, VIA AN UNDERGROUND SERVICE INSTALLED BY POWERCOR. REFER TO DRAWINGS C2,C3,E0,E1 AND E2 FOR MORE DETAILS.

10. TRANSMISSION LINK & RF CONFIGURATION
REFER TO DRAWINGS A1 & A2 FOR DETAILS.

11. SITE SPECIFIC INFORMATION
- NBN CONTRACTORS TO:
- CONDUCT U/G SERVICE SEARCH PRIOR TO EXCAVATION.
- SUPPLY AND INSTALL UNDERGROUND POWER ROUTE TO NBN CABINET
- ALL TRENCHING DUE TO NBN UNDERGROUND POWER ARE TO BE REINSTATED AND MAKE GOOD
- SUPPLY AND INSTALL NBN CABLE TRAY
- SUPPLY AND INSTALL EQUIPMENT EARTHING
- SUPPLY AND INSTALL NBN PDB AND EQUIPMENT CABINETS
- SUPPLY AND INSTALL NBN SECURITY FENCING AROUND COMPOUND
- SUPPLY AND INSTALL 15m ACCESS TRACK FROM COMPOUND TO THE PROPERTY NEW ACCESS GATE

12. LATTICE TOWER WIND LOAD PARAMETERS

SITE TOPOGRAPHICAL DATA		
REGION	TERRAIN CATEGORY	TOPOGRAPHIC MULTIPLIER
A5	1.0-3.0	1.10 (MAX)

13. SITE SIGNAGE REQUIREMENTS
NBN EQUIPMENT SIGNAGE SHALL COMPLY WITH NBN RAN DOCUMENT AND NBN STANDARD DRAWING NBN-STD-0025.

14. SCOPE OF WORKS
RF SCOPE
- INSTALL NEW DUAL BAND PANEL ANTENNA (2-OFF; 1-OFF EACH FOR SECTOR 1/B1, 2/B2 - TO BE SHARED ACROSS BOTH SECTORS) ON NEW MOUNT.
- INSTALL NEW NBN DUAL BAND MINI-LENS HP MQ4 ANTENNA (1-OFF FOR SECTOR 3/B3 - TO BE SHARED ACROSS BOTH SECTORS) ON NEW MOUNT.
- INSTALL NEW NBN PANEL ANTENNA (2-OFF FOR SECTOR K1 & K2) ON NEW MOUNTS
- INSTALL NEW RRU (6-OFF; 1-OFF FOR SECTORS 1 & 2 - TO BE SHARED ACROSS BOTH SECTORS, 1-OFF FOR SECTORS B1 & B2 - TO BE SHARED ACROSS BOTH SECTORS, 2-OFF FOR SECTORS 3 & B3,) ON NEW MOUNTS.
- INSTALL NEW NBN 9/18 CORE HYBRID CABLE (2-OFF) AND CANISTER (2-OFF) IN NEW CABLE ROUTE.

TRANSMISSION SCOPE
MT CALLENDER
- INSTALL NEW NBN MOUNT (1-OFF)
- INSTALL NEW NBN Ø1200 TRANSMISSION ANTENNA (1-OFF) ON NEW MOUNT
- INSTALL NEW NBN RAU (4-OFF) ON NEW MOUNTS
- INSTALL NEW NBN TX SPLITTER (2-OFF)
- INSTALL NEW NBN FEEDER CABLE (2-OFF) IN NEW CABLE ROUTE

GROUND SCOPE:
- INSTALL NEW NBN RP6651 (4-OFF)
- INSTALL NEW CONCRETE SLAB FOR NEW NBN OUTDOOR CABINET
- INSTALL NEW NBN E6150 (1-OFF) ON NEW CONCRETE SLAB
- INSTALL NEW NBN OUTDOOR CABINET B158 (2-OFF) ON NEW CONCRETE SLAB
- INSTALL NEW GPS ANTENNA (1-OFF) AND FEEDER CABLE (1-OFF).

EARTHING SCOPE
- ALL NEW EQUIPMENT TO BE EARTHED IN ACCORDANCE WITH NBN-STD-0019, NBN-STD-0021-SH1,NBN-STD-0021-SH3. REFER TO 3BRA-51-41-WATO-E2 FOR DETAILS.
-

ELECTRICAL SCOPE
- INSTALL NEW U/G CONSUMER MAINS FROM SERVICE PIT TO NBN PDB/METERING PANEL.
- INSTALL NEW NBN METERING PANEL ON H FRAME.
- INSTALL NEW SUB MAINS FOR NEW E6150.
- REFER TO 3BRA-51-41-WATO-E0 AND E1 FOR DETAILS.

Client:

Client:

Client:

Project:
NATIONAL BROADBAND NETWORK
SITE No: 3BRA-51-41-WATO
WATERLOO
MUSICAL GULLY ROAD
WATERLOO
VIC 3373

FOR CONSTRUCTION

Rev	Date	Revision Details	CAD
B	27.11.24	FOR CONSTRUCTION	SKD
A	24.05.24	FOR CONSTRUCTION	OB
01	18.09.23	PRELIMINARY	RTK

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APPROVED:	SM

Drawing Title:
SITE SPECIFIC NOTES

Drawing No.: 3BRA-51-41-WATO-C1
Revision: B

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A3

SITE LOCATION

REPRODUCED WITH PERMISSION FROM GOOGLE EARTH PRO

SITE CO-ORDINATES

LATTICE TOWER LOCATION	
DATUM: MGA(GDA 94)	ZONE: 54
EASTING	710 654
NORTHING	5 860 465
LATITUDE	-37.37865°
LONGITUDE	143.37921°

DBYD Job No. 34749377
Enquiry Date: 02/08/2023
CONTRACTOR TO REVALIDATE AT TIME OF CONSTRUCTION!

PUBLIC UTILITIES LEGEND

TELCO — TELECOMMUNICATIONS

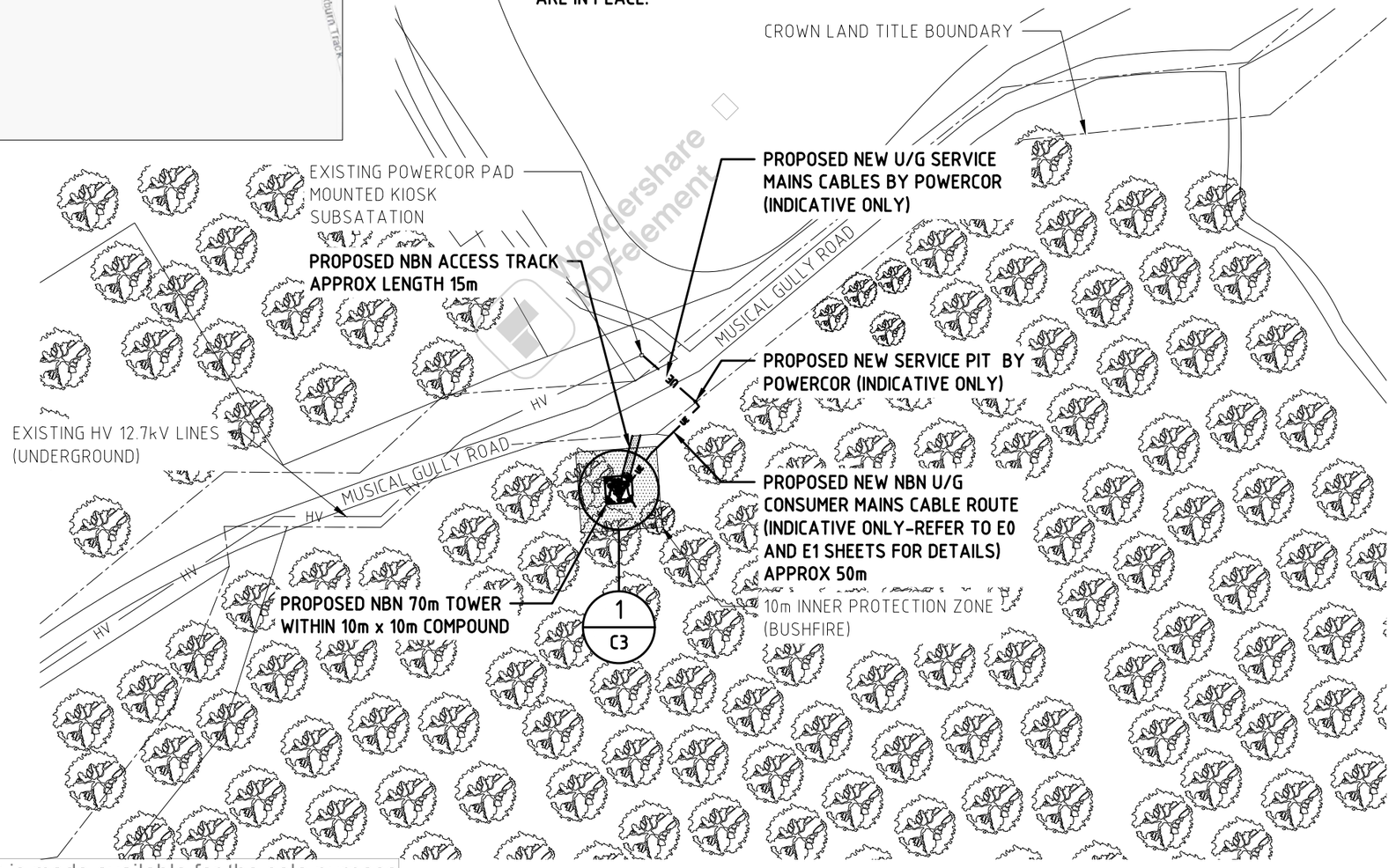
LEGEND

E — UNDERGROUND SUB MAIN CABLE
HV — OVERHEAD POWER LINE

N MGA

NOTES:

1. ALL UNDERGROUND SERVICES SHOWN INDICATIVE ONLY.
2. NBN POWER ROUTE SHOWN INDICATIVELY ONLY.
3. ALL INFORMATION TO BE CHECKED ON SITE PRIOR TO FABRICATION AND CONSTRUCTION.
4. DRAWINGS BASED ON INFORMATION PROVIDED BY OTHERS.
5. CONSTRUCTION CONTRACTOR TO CONFIRM SUITABILITY OF PROPOSED EWP SET-UP/PARKING LOCATION ON SITE PRIOR TO WORK COMMENCING.
6. SERVICES INFORMATION CONTAINED ON THIS DRAWING IS INDICATIVE ONLY AND REFERENCE SHOULD BE MADE TO THE AUTHORITIES DRAWINGS TO CONFIRM ACCURACY AND COMPLETENESS. WHERE INFORMATION IS AVAILABLE, THE SUB-SURFACE SERVICES INSTALLED BY AGENTS OTHER THAN AUTHORITIES HAVE BEEN SHOWN, BUT ADDITIONAL UNDOCUMENTED SERVICES MAY BE PRESENT. SHOULD THE CONTRACTOR BELIEVE THAT SUB-SURFACE SERVICES ARE AT RISK OF DAMAGE DURING CONSTRUCTION, THE CONTRACTOR SHOULD NOTIFY THE RELEVANT AUTHORITIES AND ESTABLISH THE EXACT LOCATION OF THE SERVICES.
7. REFER TO SHEET E0, E1 AND POWERCOR OFFER FOR MORE DETAILS.
8. ADEQUATE SEPARATION TO BE MAINTAINED BETWEEN NON ELECTRICAL SERVICES AS PER THE CLAUSE 3.9.8 OF AS/NZS 3000.
9. THE NBN ELECTRICAL CONTRACTOR IS TO INSTALL PITS IN CABLE BENDS.
10. THE NBN ELECTRICAL CONTRACTOR MUST ENSURE THAT THE ELECTRICAL SCOPE OF WORK MENTIONED IN THE POWERCOR OFFER IS COMPLETED BEFORE COMMENCING ANY ELECTRICAL WORK ON THE SITE.
11. BEFORE COMMENCEMENT OF ANY SITE OR BUILDING WORK ENSURE EROSION AMD SEDIMENT CONTROLS ARE IN PLACE.



OVERALL SITE PLAN

SCALE 1:2000

Client:

Client:

Client:

Project:
NATIONAL BROADBAND NETWORK
SITE No: 3BRA-51-41-WATO
WATERLOO
MUSICAL GULLY ROAD
WATERLOO
VIC 3373

FOR CONSTRUCTION

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APPROVED:	SM

Drawing Title:
OVERALL SITE PLAN

Drawing No. 3BRA-51-41-WATO-C2
Revision B

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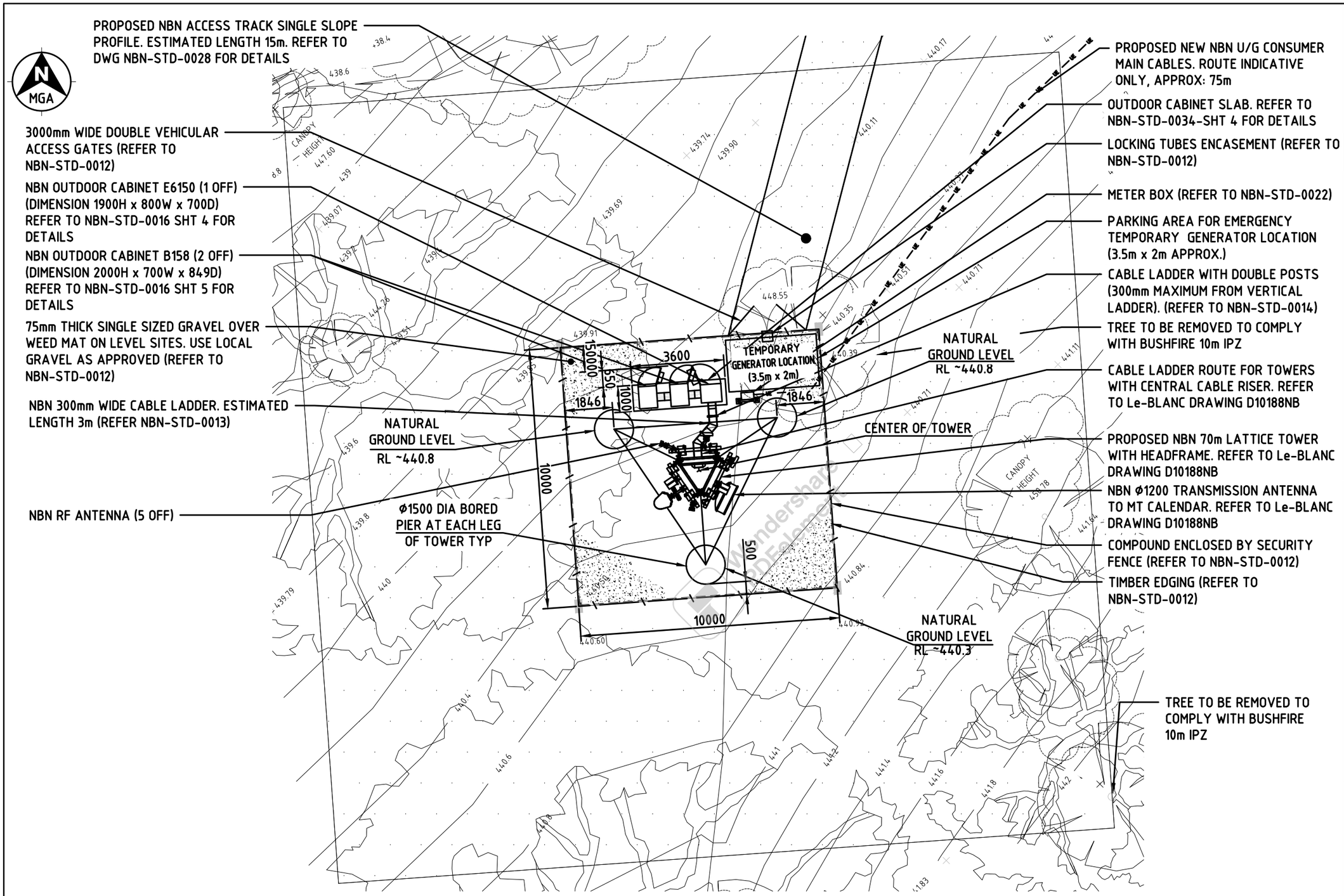

NOTES:

1. REFER TO LEASE PLAN 293193314AA FOR COMPOUND DIMENSIONS. NBN DESIGN CONSULTANT SHALL ENSURE THAT TOWER FOUNDATIONS ARE WITHIN THE NBN LEASE AREA.
2. REFER TO STANDARD DRAWING NBN-STD-0001 FOR ADDITIONAL NOTES.
3. NO PART OF THE INSTALLATION, INCLUDING FOUNDATION AND HEADFRAME (INCLUDING ANTENNAS) SHALL EXTEND BEYOND LEASE AREA BOUNDARY.
4. SEPARATE PDB SHALL BE USED IN CONJUNCTION WITH NBN-STD-0017.

SITE SETOUT PLAN

SCALE 1:100

Client:

Client:

Client:

Project:

NATIONAL BROADBAND NETWORK

SITE No: 3BRA-51-41-WATO

WATERLOO

MUSICAL GULLY ROAD
WATERLOO
VIC 3373

FOR CONSTRUCTION

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Drawing Title:

SITE SETOUT PLAN

Drawing No.	Revision
3BRA-51-41-WATO-C3	B

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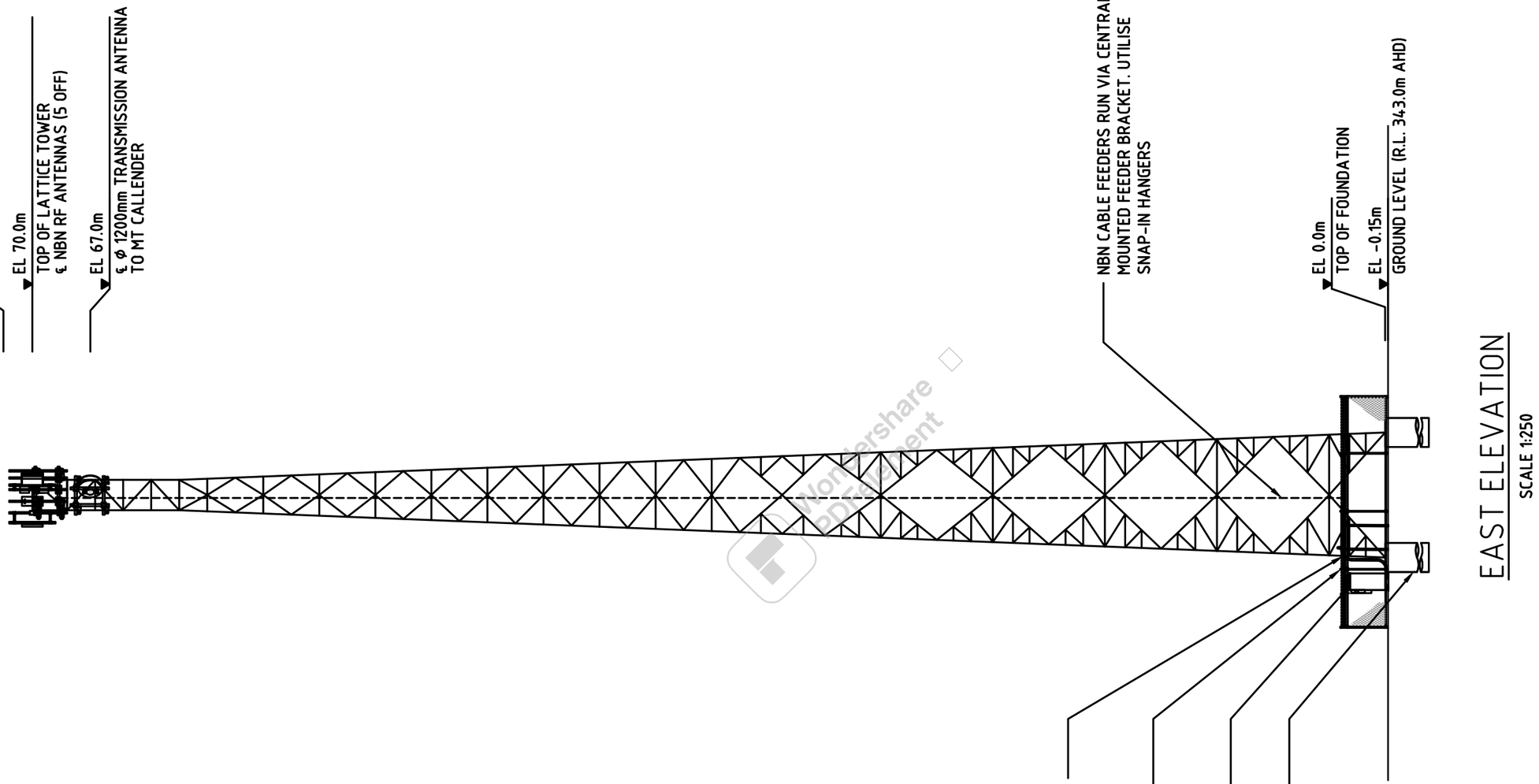
A3



EAST ELEVATION

SCALE 1:250

Client:

Client:

Client:

Project:

NATIONAL BROADBAND NETWORK

SITE No: 3BRA-51-41-WATO

WATERLOO

MUSICAL GULLY ROAD
WATERLOO
VIC 3373

FOR CONSTRUCTION

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SITE ELEVATION AND DETAILS

Drawing No.	Revision
3BRA-51-41-WATO-C4	B

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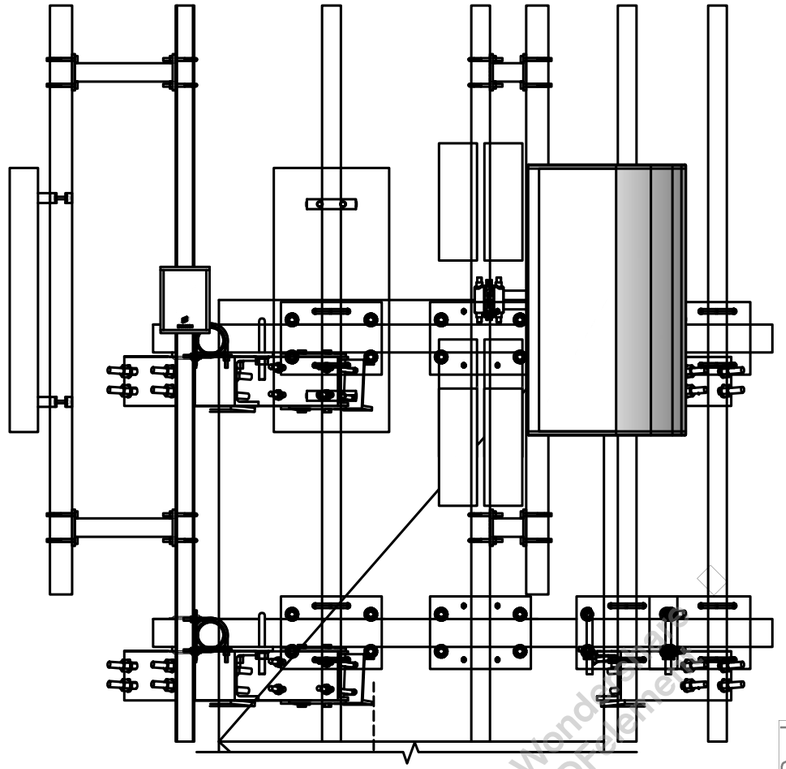
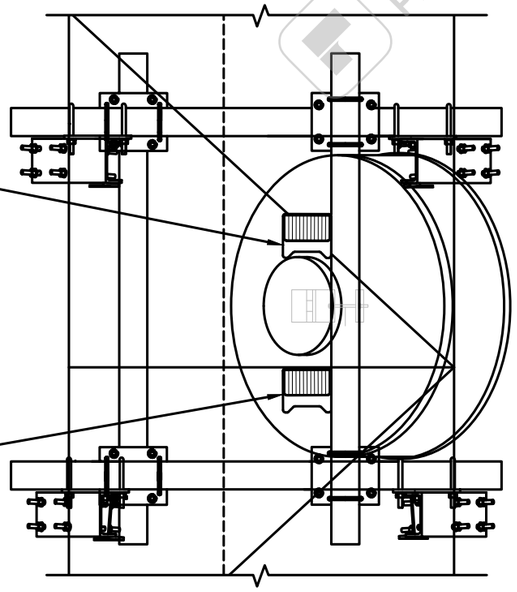


EL 70.4m
℄ NBN RRUS (2 OFF)

EL 70.0m
℄ NBN RF ANTENNAS (5 OFF)
℄ NBN COMBINERS (4 OFF)

EL 69.6m
℄ NBN RRUS (2 OFF)

EL 69.4m
℄ NBN RRUS (2 OFF)



NBN RAU (2-OFF)

NBN RAU (2-OFF)

EL 67.0m
℄ NBN ⌀ 1200mm TRANSMISSION ANTENNA
TO MT CALLENDER

EAST ELEVATION

SCALE 1:25

Client:

Client:

Client:

Project:
NATIONAL BROADBAND NETWORK
SITE No: 3BRA-51-41-WATO
WATERLOO
MUSICAL GULLY ROAD
WATERLOO
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FOR CONSTRUCTION

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Drawing Title:
STRUCTURE EQUIPMENT DETAIL EXPANDED VIEW

Drawing No.	Revision
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ELECTRICAL SPECIFICATIONS

1. GENERAL
ALL ELECTRICAL WORKS SHALL BE IN ACCORDANCE:

- LATEST NBN D&C SPECIFICATIONS
- AS/NZ 3000:2018, AS/NZ 3008, AS/NZ 1768, AS/NZ3015 (LATEST EDITIONS AND AMENDMENTS AT TIME OF CONSTRUCTION SHALL APPLY)
- VICTORIAN SERVICE & INSTALLATION RULES

CONTRACTOR TO ENSURE FAULT CURRENT RATINGS OF PROTECTIVE EQUIPMENT INSTALLED ARE ADEQUATE FOR PROSPECTIVE FAULT LEVELS.

CABLE ROUTES SHALL BE AS DIRECT AS POSSIBLE. WHERE CABLE TURNS ARE REQUIRED, THE RADIUS OF ANY BENDS SHALL NOT BE LESS THAN THE MINIMUM BENDING RADIUS OF THE CABLE.

ALL EXPOSED CABLE, CONDUITS AND NON-METALLIC FASTENERS SHALL BE UV RESISTANT AND SHALL BE ADEQUATELY SECURED TO SURFACE, CABLE TRAY OR STRUCTURE.

CONTRACTOR SHALL MAKE THEMSELVES AWARE OF ALL SERVICES PRESENT ON SITE AND OF ALL SITE CONDITIONS AND SAFETY REQUIREMENTS PRIOR TO COMMENCING WORK ON SITE.

ACCESS GATE LOCKS TO BE DAISY CHAINED WITH VICTORIAN POWER INDUSTRY LOCK TO MAINTAIN UNHINDERED ACCESS TO METER PANELS AND OTHER DISTRIBUTOR ASSETS.

SITE POWER OUTAGE WILL BE REQUIRED, THE ELECTRICAL CONTRACTOR SHALL LIAISE WITH EXISTING OCCUPANT TO COORDINATE ALTERNATIVE SUPPLY IF REQUIRED (MOBILE GENERATOR)

2. SITE AC SUPPLY
POWERCOR TO INSTALL A NEW SERVICE PIT AT THE PROPERTY BOUNDARY. POWERCOR TO INSTALL A NEW SERVICE CABLE FROM EXISTING PAD MOUNTED SWER KIOSK SUBSTATION TO NEW SERVICE PIT. SERVICE PIT TO BE USED AS THE SITE POINT OF SUPPLY. REFER TO E1 FOR MORE DETAILS.

3. CONSUMER MAINS
INSTALL NEW CONSUMER MAINS FROM SERVICE PIT TO PROPOSED NEW NBN METER PANEL.
REFER TO SHEET E2 FOR MORE DETAILS.

4. SITE GROUP METERING
NEW H-FRAME NBN METER PANEL TO BE INSTALLED WITHIN THE NBN COMPOUND.

ELECTRICIAN ON THE SITE SHALL GET METER PANEL DRAWINGS FROM THE MANUFACTURER AND SHALL SUBMIT TO POWER AUTHORITY INSPECTOR FOR AN APPROVAL BEFORE PLACING AN ORDER FOR METER PANEL.

THE CONTRACTOR SHALL LIAISE WITH POWERCOR FOR ALL METERING REQUIREMENTS BEFORE THE INSTALLATION BEGINS.

THE CONTRACTOR SHALL ENSURE FAULT CURRENT RATINGS OF PROTECTIVE EQUIPMENT ARE ADEQUATE FOR PROSPECTIVE FAULT LEVELS.

5. CONDUITS & CABLING
CONDUITS INSTALLED IN ACCORDANCE WITH AS/NZS 3000 AND HEAVY DUTY RIGID UPVC, ELECTRICAL ORANGE WHERE UNDERGROUND AND GRAY WHERE EXPOSED (UV STABILIZED). CONDUITS INSTALLED IN STRICT COMPLIANCE WITH THE MANUFACTURES RECOMMENDATIONS.
UNDERGROUND CABLES INSTALLED IN ACCORDANCE WITH AS/NZS 3008.1. CABLE MARKING TAPE PROVIDED ALONG THE ROUTE. ELECTRICAL PITS PROVIDED AS REQUIRED. THE BENDING RADIUS NOT LESS THAN THE STATUTORY MINIMUM BENDING RADIUS AS PER AS/NZS 3008. ADEQUATE SEPARATION BETWEEN NON ELECTRICAL SERVICES SUCH AS TELECOMMUNICATIONS, WATER & GAS AS PER THE CLAUSE 3.9.8 OF AS/NZS 3000:2007. CONDUITS INSTALLED AT 500mm MINIMUM COVER DEPTH WITH DRAW WIRE.

6. APPLICATION FOR CONNECTION
AN APPLICATION FOR CONNECTION OF SERVICE HAS BEEN SUBMITTED TO POWERCOR. POWERCOR HAS ISSUED SUPPLY OFFER CONTRACT ALLOWING TOTAL SUPPLY OF 80A SINGLE PHASE TO THE WHOLE SITE (REF: 309011624).

THE NBN CONTRACTOR TO RE-VALIDATE THE OFFER BEFORE COMMENCING CONSTRUCTION WORKS.

7. LABELLING
STANDARD LABELS FIXED TO ALL THE SWITCHGEARS, PILLARS AND DISTRIBUTION BOARD & CABLE SIZE.

8. EARTHING
NBN EQUIPMENT AND STRUCTURE EARTHING INSTALLED IN ACCORDANCE WITH THE LATEST AS/NZS 1768, NBN STANDARD DRAWINGS AND STANDARD DOCUMENTATION. SITE EARTHING INSTALLED AS DETAILED ON DRAWING E2.

9. GENERATOR SUPPLY
EQUIPMENT AND WIRING COMPLIES WITH THE LATEST AS/NZS 3010 FOR THE ALTERNATE GENERATOR SUPPLY.
CORRECT SWITCHING OF AUXILIARY (PORTABLE GENERATOR) SUPPLY NEUTRAL AT THE CHANGEOVER SWITCH VIA THE INLET SOCKET CONFIGURED IN ACCORDANCE WITH AS/NZS 3010. THE IMPACT OF TWO OR MORE PORTABLE GENERATOR SETS CONNECTED TO ONE ANOTHER'S EQUIPMENT AT ONE TIME REQUIRE CONSIDERATION TO THE SAFE OPERATION AND PERFORMANCE ON SITE.
THE CHANGE OVER SWITCH ALWAYS WIRED TO FACILITATE THE USE OF STANDARD THREE PHASE EMERGENCY GENERATOR. THIS APPLIES TO ALL THE SITES WITH SINGLE PHASE POWER SUPPLY. LABELS PROVIDED AS PER THE INSTALLATION.
FOR THE CONNECTION OF EMERGENCY GENERATOR A 50 MP, THREE PHASE, 5 PIN TYPE RECEPTACLE, CLIPSAL 56A1550 INSTALLED.

10. TESTING & COMMISSIONING
- TESTING, OPERATING AND ADJUSTING THE SYSTEM AND EQUIPMENT.
- SUBMITTED TEST REPORTS AND CERTIFICATE OF PRACTICAL COMPLETION.

Client:

Client:

Client:

Project:
NATIONAL BROADBAND NETWORK
SITE No: 3BRA-51-41-WATO
WATERLOO
MUSICAL GULLY ROAD
WATERLOO
VIC 3373

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Drawing Title:
ELECTRICAL SPECIFICATION

Drawing No.: 3BRA-51-41-WATO-E0
Revision: B

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A3

CABLE SCHEDULE

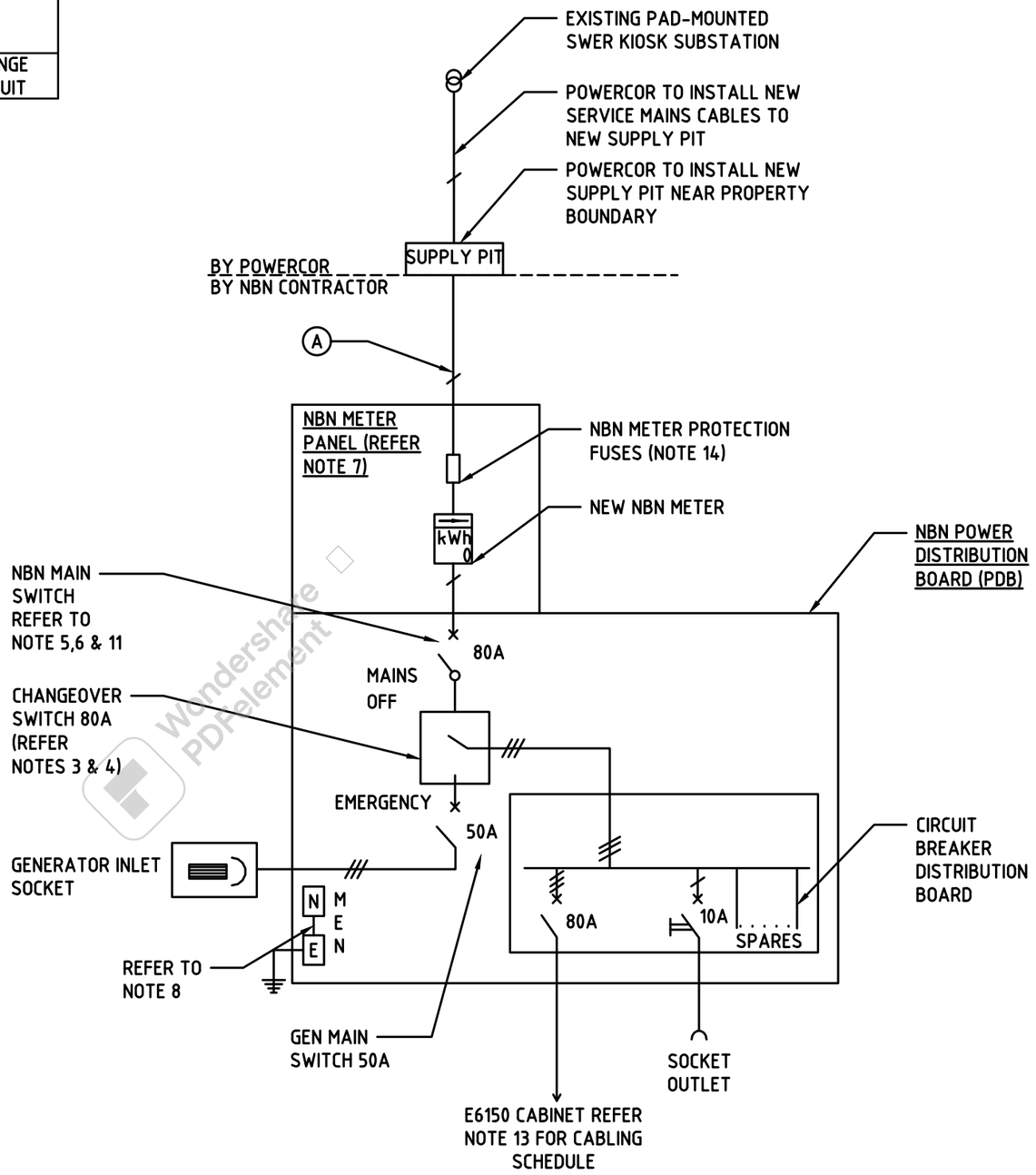
CABLE	LENGTH	CABLE TYPE	CORES	ACTIVE (SIZE)	NEUTRAL (SIZE)	EARTH (SIZE)	INSTALLATION METHOD
(A)	50m	Cu XLPE/ PVC	2 x 1C	25mm²	25mm²	-	U/G VIA 63mm ORANGE HEAVY DUTY CONDUIT

LEGEND:

N	NEUTRAL
E	EARTH
MEN	MULTIPLE EARTHED NEUTRAL
SPD	SERVICE PROTECTION DEVICE
	CIRCUIT BREAKER
	3 PHASES
	2 PHASES
	SINGLE PHASE
	ISOLATOR
	FUSE
	EARTH CONNECTION
	RESIDUAL CURRENT DEVICE
	TRANSFORMER
kWh	METER

NOTES:

1. MEN LINK IN "NBN POWER DISTRIBUTION BOARD".
2. PROVIDE "TRAFFOLYTE" LABELLING WITH WHITE BACKGROUND AND MINIMUM 8mm HIGH BLACK LETTERING, RED FOR WARNING SIGN.
3. WHERE SINGLE PHASE INCOMING MAINS IS USED, BRIDGE POLES 1, 2 AND 3 AT THE LINE SIDE OF THE GENERATOR MANUAL CHANGEOVER SWITCH FOR THE CONNECTION OF INCOMING MAINS AS PER NBN RAN INSTALLATION DOCUMENT SECTION 10.1.2.
4. WHERE TWO PHASE INCOMING MAINS IS USED, BRIDGE POLES 2 AND 3 AT THE LINE SIDE OF THE GENERATOR MANUAL CHANGEOVER SWITCH FOR THE CONNECTION OF INCOMING MAINS. REFER NBN-STD-0027 SHT 4 FOR DETAILS. SEE NOTE 14 FOR FUSE RATING.
5. THE MAIN SWITCH MUST BE LOCKABLE IF INSTALLED REMOTELY FROM THE PDB. CB TYPE TO BE SCHNEIDER IC60 SERIES AND MUST BE INSTALLED WITH LOCK DEVICE (PART NO. A9A26380).
6. RATING OF THE MAIN SWITCH SHALL BE ALLIGNED TO INCOMING SUPPLY CAPACITY AS PER LOCAL AUTHORITY REQUIREMENT (STATE VARIABLE).
7. METERING EQUIPMENT SHALL BE INSTALLED AS PER THE LOCAL SUPPLY AUTHORITY REQUIREMENTS.
8. THE MEN ARRANGEMENT IS BASED AS/NZS 3010 FIGURE 2.3. FOR PDB WITHOUT MEN, REFER TO AS/NZS 3010 FIGURE 2.8 FOR CONNECTION DETAILS.
9. DESIGN ASP SHALL SIZE CABLES AS PER THE SITE MAXIMUM DEMAND ALLOCATED BY LOCAL SUPPLY AUTHORITY AND SHALL BE IN ACCORDANCE WITH AS/NZS 3008.
10. DUAL SUPPLY WARNING LABEL TO BE PLACED ON PDB. REFER TO DRAWING NBN-STD-0025 SHEET 2 FOR DETAILS.
11. REFER NBN-STD-0027-SHT 5 FOR PDB LAYOUT.
12. FOR USE UP TO 8 RECTIFIERS, ELSE SITE SPECIFIC DESIGN REQUIRED.
13. REFER TO NBN-STD-0027-SHT 14 FOR NBN POWER SUPPLY MATERIAL LIST AND FOR PDB PANEL CABLING SCHEDULE.
14. AS PER CLAUSES 8.10.2.12 & 6.8.5.3.1 OF THE VICTORIAN SERVICE AND INSTALLATION RULES, THESE FUSES ARE SUPPLIED BY THE DISTRIBUTOR, HENCE THE RATING HAS NOT BEEN SPECIFIED. CONTRACTOR TO LEASE WITH POWER AUTHORITY. HOWEVER THE MAX RATING FOR PANEL MOUNTED FUSES WILL BE 100A.



ELECTRICAL CONTRACTOR SHALL ENSURE ALL EQUIPMENT AND ASSOCIATED WIRING COMPLY WITH AS/NZS 3010 AND LOCAL POWER SUPPLY AUTHORITY REGULATION FOR ALTERNATE GENERATOR SUPPLY. CORRECT SWITCHING OF AUXILIARY SUPPLY NEUTRAL NEED TO BE CONFIGURED IN ACCORDANCE WITH AS/NZS 3010.

Client:

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Client:

Project:
NATIONAL BROADBAND NETWORK
SITE No: 3BRA-51-41-WATO
WATERLOO
MUSICAL GULLY ROAD
WATERLOO
VIC 3373

FOR CONSTRUCTION

Rev	Date	Revision Details	CAD
B	27.11.24	FOR CONSTRUCTION	SKD
A	24.05.24	FOR CONSTRUCTION	OB

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DESIGNER:	DC
CHECKED:	ML
APPROVED:	SM

Drawing Title:
ELECTRICAL SINGLE LINE DIAGRAM & PDB SCHEMATIC

Drawing No.: 3BRA-51-41-WATO-E1
Revision: B

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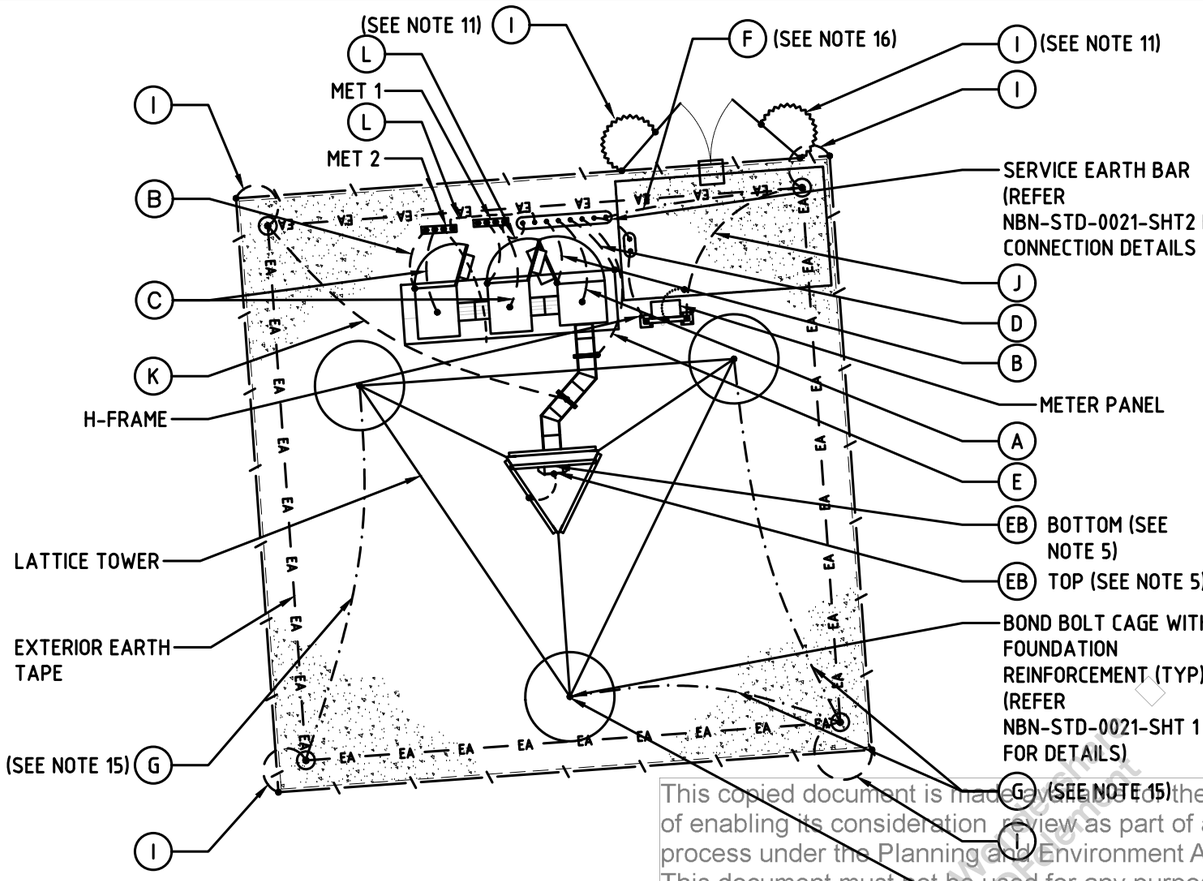

SITE EARTHING PLAN

SCALE NTS

LEGEND:

- PROTECTIVE EARTH ELECTRODE
- EARTHING ELECTRODE IN INSPECTION SLEEVE
- 16mm² STRANDED COPPER GREEN / YELLOW PVC CABLE (SEE NOTE 5)
- 35mm² STRANDED COPPER GREEN / YELLOW PVC CABLE
- EA 25 x 3mm COPPER TAPE
- 70mm² STRANDED COPPER GREEN / YELLOW PVC CABLE
- FLEXIBLE BRAIDED STRAP
- MAIN EARTH CONDUCTOR (REFER TO E1 FOR CABLE SIZE)
- (EB) EARTH BAR (RRU, FEEDER AND RAU EARTHING)
- LINK BAR LOCATION BELOW PDB / METER PANEL IN CABLE LADDER ON H-FRAME
- NEW NBN COMPOUND FENCE

ITEM	DESCRIPTION
A	SEB TO POWER SYSTEM EARTH BAR VIA LINK BAR
B	BASE FRAME TO SEB
C	EQUIPMENT EARTH TO SEB
D	CONCRETE SLAB REO TO SEB
E	EARTH BAR (WATERFALL)TO SEB
F	SEB TO ELECTRODE (SEE NOTE 16)
G	TOWER TO NBN ELECTRODE
I	FENCING AND GATES (SEE NOTE 10 & 11)
J	H-FRAME (DB) STEELWORK TO EARTH TAPE (SEE NOTE 12)
K	GANTRY SUPPORT TO ELECTRODE (SEE NOTE 13)
L	SEB TO MET

NOTES:

1. ALL EARTHING TO COMPLY WITH AS/NZS 1768 & AS/NZS 3000 SECTION 5.3.2.
2. ALL EARTHING ELECTRODES SHALL BE DRIVEN TO DEPTH AS SHOWN IN TABLE.
3. IF EARTHING ELECTRODES ARE INSTALLED BY DRILLING, INSTALL ELECTRODES IN 75mm MINIMUM DIAMETER HOLES AND BACKFILL WITH APPROPRIATE EARTHING ENHANCING COMPOUND SUCH AS SAND-CEMENT MIX, BENTONITE GYPSUM MIX OR GRAPHITE MIX (GEM).
4. PROVIDE MINIMUM OF 3-OFF EARTH BARS: AT TOP OF TOWER, AT BOTTOM OF TOWER AND AT THE ODC. IF TOWER IS 60m HIGH OR GREATER, INSTALL INTERMEDIATE EARTH BAR AT MID-HEIGHT. IN THIS CASE, IF ODC IS LESS THAN 1.5 METRES FROM THE TOWER THEN THE EARTH BAR AT THE ODC IS NOT REQUIRED.
5. TOP AND BOTTOM EARTH BARS ON TOWER AS PER NBN-STD-0021-SHT 1. EARTH BARS SHALL BE DIRECTLY CONNECTED TO THE TOWER AND SHALL NOT BE INSULATED.
6. SERVICE EARTH BAR SHALL BE FACE FIXED TO ODC BASE FRAME VIA INSULATORS.
7. WHERE LANDSCAPING IS REQUIRED, THE CONTRACTOR SHALL ENSURE THAT EXCAVATION FOR LANDSCAPING IS COMPLETE BEFORE INSTALLATION OF THE EARTH TAPE AND LEADS TO AVOID DAMAGE TO THE EARTHING SYSTEM.
8. INSTALL NEW EARTH BAR CONNECTED TO TOWER CLEAT IF INSUFFICIENT HOLES.
9. PROVIDE LINK BAR "TRAFFOLYTE" LABEL WHITE BACKGROUND AND MINIMUM 8mm HIGH BLACK LETTERING "BONDING TERMINAL / LINK BAR BEHIND".
10. MAKE 1-HOLE LUG CONNECTION TO FENCE/SUPPORT POSTS (WITH TAPPED HOLE) FOR EARTHING BONDS.
11. 2mm MINIMUM THICKNESS ON 35mm2 EQUIVALENT FLEXIBLE BRAIDED STRAP FOR FENCE AND GATE BONDING.
12. CABLES F AND J SHALL BE INSTALLED IN ELECTRICAL CONDUIT AS IDENTIFIED IN NBN-STD-0017/0034. REFER SITE SETOUT PLAN FOR LOCATION AND DIRECTION.
13. ALL CABLE LADDER POSTS SHALL BE EARTHED VIA EARTH LEAD TO THE NEAREST ELECTRODE.
14. FOR SHELTER SITES, SEB SHALL BE BONDED WITH TWO 70mm2 CABLES TO TWO SEPARATE ELECTRODES.
15. CONNECTION SHALL BE 25mm x 3mm COPPER STRAP WHEN INSTALLED ON TOWER FOUNDATION SLAB ABOVE GROUND TO AVOID TRIP HAZARD.
16. REFER TO AS3015 CLAUSE 5.4 MAIN SERVICE EARTHING CONDUCTOR ARRANGEMENT.

EARTHING INSTALLATION

ALL ITEMS SHALL BE EARTHED GENERALLY AS SHOWN ON THIS DRAWING. FOR CONNECTION REFERENCE NUMBER, CABLE SIZE, REFER BELOW AND SITE DESIGN DRAWINGS. FOR SPECIFICATIONS AND CONNECTION DETAILS REFER TO
"NBN RAN INSTALLATION" DESIGN/CONSTRUCTION SPECIFICATION, SECTION 12 "SITE EARTHING".

SPECIAL EARTHING NOTES:

1. IF THE MEASURED EARTH RESISTANCE IS BOTH GREATER THAN 10% FROM THE VALUE SPECIFIED IN THE TABLE AND GREATER THAN 5 OHMS THE THE CIVIL ASP SHALL CONTACT THE DESIGN ASP FOR FURTHER INSTRUCTION.

TYPE	DIAMETER	QUANTITY	DEPTH	THEORETICAL EARTH RESISTANCE
COPPER BONDED HARDENED STEEL ROD	13mm	4	3m	0.501 Ohm

Client:

Client:

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NATIONAL BROADBAND NETWORK

SITE No: 3BRA-51-41-WATO

WATERLOO

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Drawing Title:

SITE EARTHING PLAN

Drawing No. 3BRA-51-41-WATO-E2

Revision B

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NBN RF ANTENNA CONFIGURATION – 2300MHz & 3400MHz

PANEL ANTENNA DETAILS									MAIN FEEDER DETAILS					RRU DETAILS						RF TAIL DETAILS	RET CABLE DETAILS
SECTOR	TYPE	DIMENSIONS HxWxD	℄ HEIGHT	AZIMUTH (TN)	E-TILT PORTS	E-TILT °	MECH TILT	ANTENNA ACTION REQUIRED	TYPE	OVERALL LENGTH	CANISTER HEIGHT	CANISTER TO RRU LENGTH	FEEDER ACTION REQ.	TYPE	LOCATION	℄ HEIGHT	RRU PORT	ACTION	FREQUENCY	ANTENNA TO RRU LENGTH	LENGTH
S1	ALPHA WIRELESS-AW3842	1076x470x115	70.0m	0°	1 & 2	2°	0°	INSTALL	H&S HYBRID 9/18 MKII Ø39.5mm	80.0m	68.0m	3.0m	INSTALL	RRUS8863 (R-01)	ADJACENT MOUNT	69.4m	A+B	INSTALL	2.3GHz	5.0m	5.0m
					3 & 4	2°											C+D			5.0m	
B1					5 & 6	2°			H&S HYBRID 9/18 MKII Ø39.5mm			3.0m	INSTALL	RRUS8863 (R-02)	ADJACENT MOUNT	69.4m	A+B	INSTALL	2.3GHz	5.0m	5.0m
					7 & 8	2°											C+D			5.0m	
S2	ALPHA WIRELESS-AW3842	1076x470x115	70.0m	120°	1 & 2	4°	0°	INSTALL	H&S HYBRID 9/18 MKII Ø39.5mm	80.0m	68.0m	3.0m	INSTALL	RRUS8863 (R-01)	ADJACENT MOUNT	69.4m	E+F	INSTALL	2.3GHz	3.0m	3.0m
					3 & 4	4°											G+H			3.0m	
B2					5 & 6	4°			H&S HYBRID 9/18 MKII Ø39.5mm			3.0m	INSTALL	RRUS8863 (R-02)	ADJACENT MOUNT	69.4m	E+F	INSTALL	2.3GHz	3.0m	3.0m
					7 & 8	4°											G+H			3.0m	

NBN RF ANTENNA CONFIGURATION – 2600MHz

PANEL ANTENNA DETAILS								MAIN FEEDER DETAILS					RRU DETAILS					FREQUENCY	RF TAIL DETAILS	RET CABLE DETAILS
SECTOR	TYPE	DIMENSIONS HxWxD	℄ HEIGHT	AZIMUTH (TN)	E-TILT °	MECH TILT	ANTENNA ACTION REQUIRED	TYPE	OVERALL LENGTH	CANISTER HEIGHT	CANISTER TO RRU LENGTH	FEEDER ACTION REQ.	TYPE	LOCATION	℄ HEIGHT	RRU PORT	ACTION		ANTENNA TO RRU LENGTH	LENGTH
K1	AIR 5322	279x200x110	70.0m	190°	0°	5.5°	INSTALL	H&S HYBRID 9/18 MKII Ø39.5mm	80.0m	68.0m	3.0m	INSTALL								
K2	AIR 5322	279x200x110	70.0m	290°	0°	5.5°	INSTALL	H&S HYBRID 9/18 MKII Ø39.5mm	80.0m	68.0m	3.0m	INSTALL								

NBN LENS ANTENNA CONFIGURATION – 2300MHz/3400MHz

DUAL BAND LENS/MINI-LENS ANTENNA DETAILS									MAIN FEEDER DETAILS					RRU DETAILS									RF TAIL DETAILS		RET DETAILS
SECTOR	TYPE	DIMENSIONS HxWxD	℄ HEIGHT	AZIMUTH (TN)	E-TILT PORTS	E-TILT °	MECH TILT	ANTENNA ACTION REQUIRED	TYPE	OVERALL LENGTH	CANISTER HEIGHT	RRU TO CANISTER LENGTH	FEEDER ACTION REQ.	TYPE	LOCATION	℄ HEIGHT	RRU/ COMBINER PORT	ACTION	FREQUENCY	ANTENNA/COMBINER LENGTH	COMBINER /RRU LENGTH	LENGTH	ANTENNA TO COMBINER LENGTH	LENGTH
S3	MATSING LENS MS-MBA-4.4-SH2-SH2-45 (MINI-LENS HP-MQ4)	1100x610x710	70.0m	240°	1 & 2	2°	0°	INSTALL	H&S HYBRID 9/18 MKII Ø39.5mm	80.0m	68.0m	5.0m	INSTALL	RRU8863 (R-3)	ADJACENT MOUNT	70.4m	A+B - M-01	INSTALL	2.3GHz	1.5m	3.0m	3.0m		
					3 & 4	2°			H&S HYBRID 9/18 MKII Ø39.5mm			5.0m	INSTALL	RRU8863 (R-4)	ADJACENT MOUNT	70.4m	A+B - M-02	INSTALL	2.3GHz	1.5m	3.0m			
					5 & 6	2°			H&S HYBRID 9/18 MKII Ø39.5mm			5.0m	INSTALL	RRU8863 (R-3)	ADJACENT MOUNT	70.4m	C+D - M-01	INSTALL	2.3GHz	1.5m	3.0m			
					7 & 8	2°			H&S HYBRID 9/18 MKII Ø39.5mm			5.0m	INSTALL	RRU8863 (R-4)	ADJACENT MOUNT	70.4m	C+D - M-02	INSTALL	2.3GHz	1.5m	3.0m			
					9 & 10	2°								RRU8863 (R-3)	ADJACENT MOUNT	70.4m	E+F - M-03	INSTALL	2.3GHz	1.5m	3.0m			
					11 & 12	2°								RRU8863 (R-4)	ADJACENT MOUNT	70.4m	E+F - M-04	INSTALL	2.3GHz	1.5m	3.0m			
					13 & 14	2°								RRU8863 (R-3)	ADJACENT MOUNT	70.4m	G+H - M-03	INSTALL	2.3GHz	1.5m	3.0m			
					15 & 16	2°								RRU8863 (R-4)	ADJACENT MOUNT	70.4m	G+H - M-04	INSTALL	2.3GHz	1.5m	3.0m			
B3					1 & 2	2°			H&S HYBRID 9/18 MKII Ø39.5mm			5.0m	INSTALL	RRU8863 (R-5)	ADJACENT MOUNT	69.6m	A+B - M-01	INSTALL	3.4GHz	1.5m	3.0m	3.0m		
					3 & 4	2°			H&S HYBRID 9/18 MKII Ø39.5mm			5.0m	INSTALL	RRU8863 (R-6)	ADJACENT MOUNT	69.6m	A+B - M-02	INSTALL	3.4GHz	1.5m	3.0m			
					5 & 6	2°			H&S HYBRID 9/18 MKII Ø39.5mm			5.0m	INSTALL	RRU8863 (R-5)	ADJACENT MOUNT	69.6m	C+D - M-01	INSTALL	3.4GHz	1.5m	3.0m			
					7 & 8	2°			H&S HYBRID 9/18 MKII Ø39.5mm			5.0m	INSTALL	RRU8863 (R-6)	ADJACENT MOUNT	69.6m	C+D - M-02	INSTALL	3.4GHz	1.5m	3.0m			
					9 & 10	2°								RRU8863 (R-5)	ADJACENT MOUNT	69.6m	E+F - M-03	INSTALL	3.4GHz	1.5m	3.0m			
					11 & 12	2°								RRU8863 (R-6)	ADJACENT MOUNT	69.6m	E+F - M-04	INSTALL	3.4GHz	1.5m	3.0m			
					13 & 14	2°								RRU8863 (R-5)	ADJACENT MOUNT	69.6m	G+H - M-03	INSTALL	3.4GHz	1.5m	3.0m			
					15 & 16	2°								RRU8863 (R-6)	ADJACENT MOUNT	69.6m	G+H - M-04	INSTALL	3.4GHz	1.5m	3.0m			

NBN TRANSMISSION & GPS ANTENNA CONFIGURATION

ANTENNA	ANTENNA DETAILS						MAIN FEEDER DETAILS			RAU DETAILS			TX SPLITTER	
	TYPE	DIMENSION	℄ HEIGHT	AZIMUTH (TN)	DESTINATION	ANTENNA ACTION REQUIRED	TYPE	OVERALL LENGTH	FEEDER ACTION REQUIRED	COUNT	TYPE	ACTION	QTY RAU	TX SPLITTER ACTION REQ
A	ANT3 A 1.2 7/8 HPX	Ø1200	67.0m	116°	MT CALLENDER	INSTALL	4x LDF1-50	72.0m	INSTALL	4	MINILINK 6363	INSTALL	2	INSTALL
GPS	KRE 101 2395/2	Ø77X74	2.5m	N/A		INSTALL	1x LDF1-50	5.0m	INSTALL					

Client:

Client:

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NATIONAL BROADBAND NETWORK

SITE No: 3BRA-51-41-WATO

WATERLOO

MUSICAL GULLY ROAD
WATERLOO
VIC 3373

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APPROVED:	SM

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NBN ANTENNA CONFIGURATION

Drawing No.: 3BRA-51-41-WATO-A1

Revision: B

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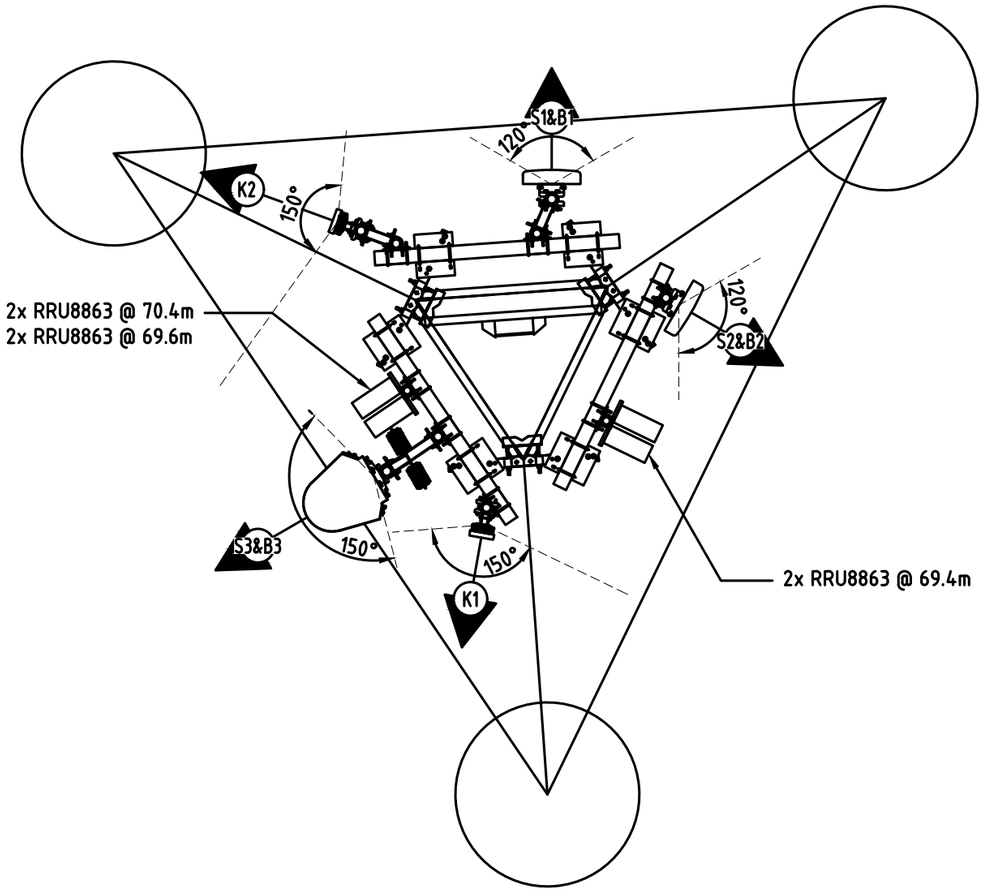
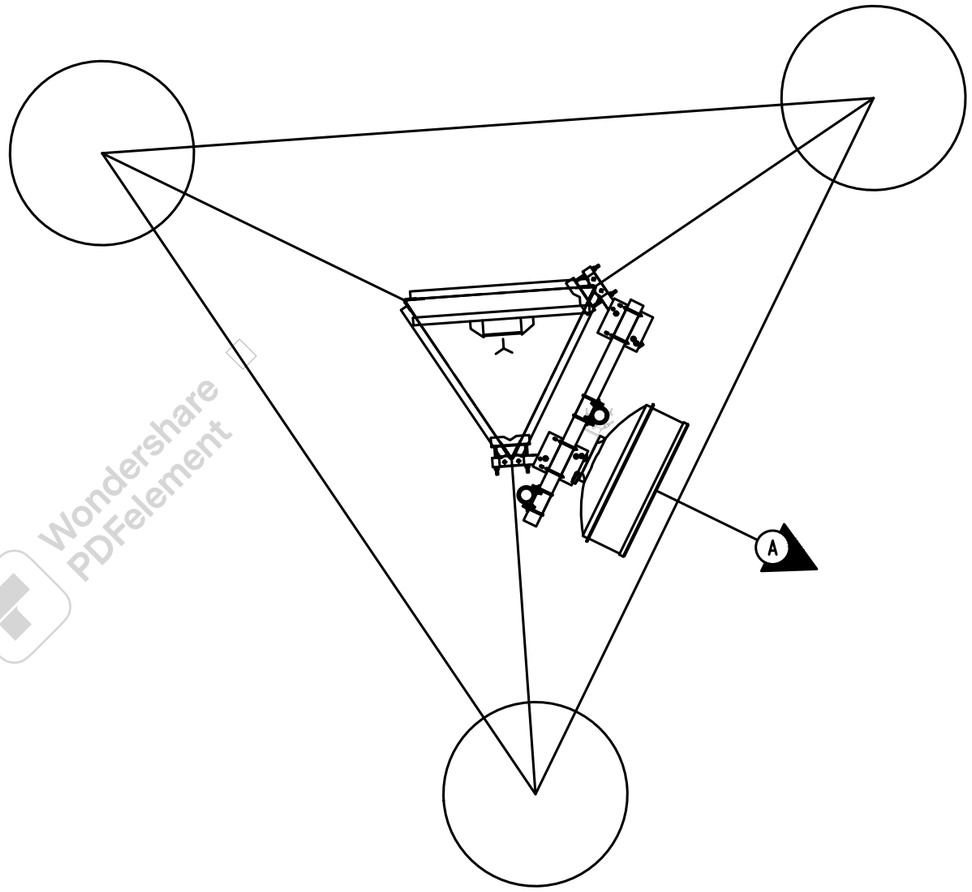


RF ANTENNA SETOUT PLAN

SCALE 1:50



TRANSMISSION ANTENNA SETOUT PLAN

SCALE 1:50

Client:

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Client:

Project:

NATIONAL BROADBAND NETWORK

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Drawing Title:

NBN ANTENNA SETOUT PLAN

Drawing No.	Revision
3BRA-51-41-WATO-A2	B

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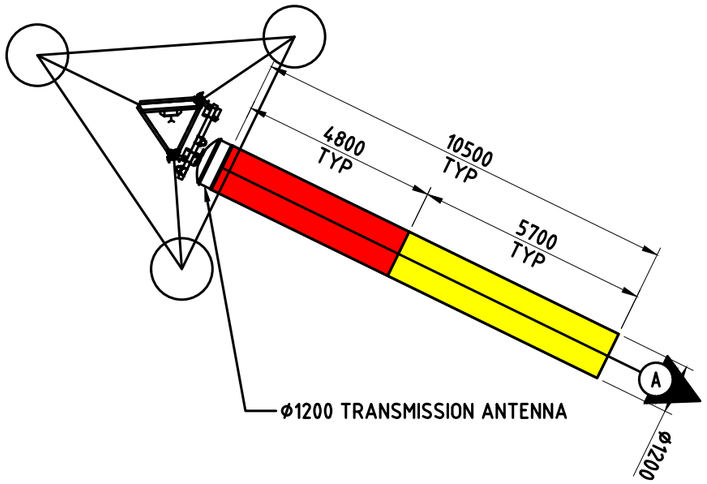


TRANSMISSION ANTENNA EME ZONES LAYOUT PLAN

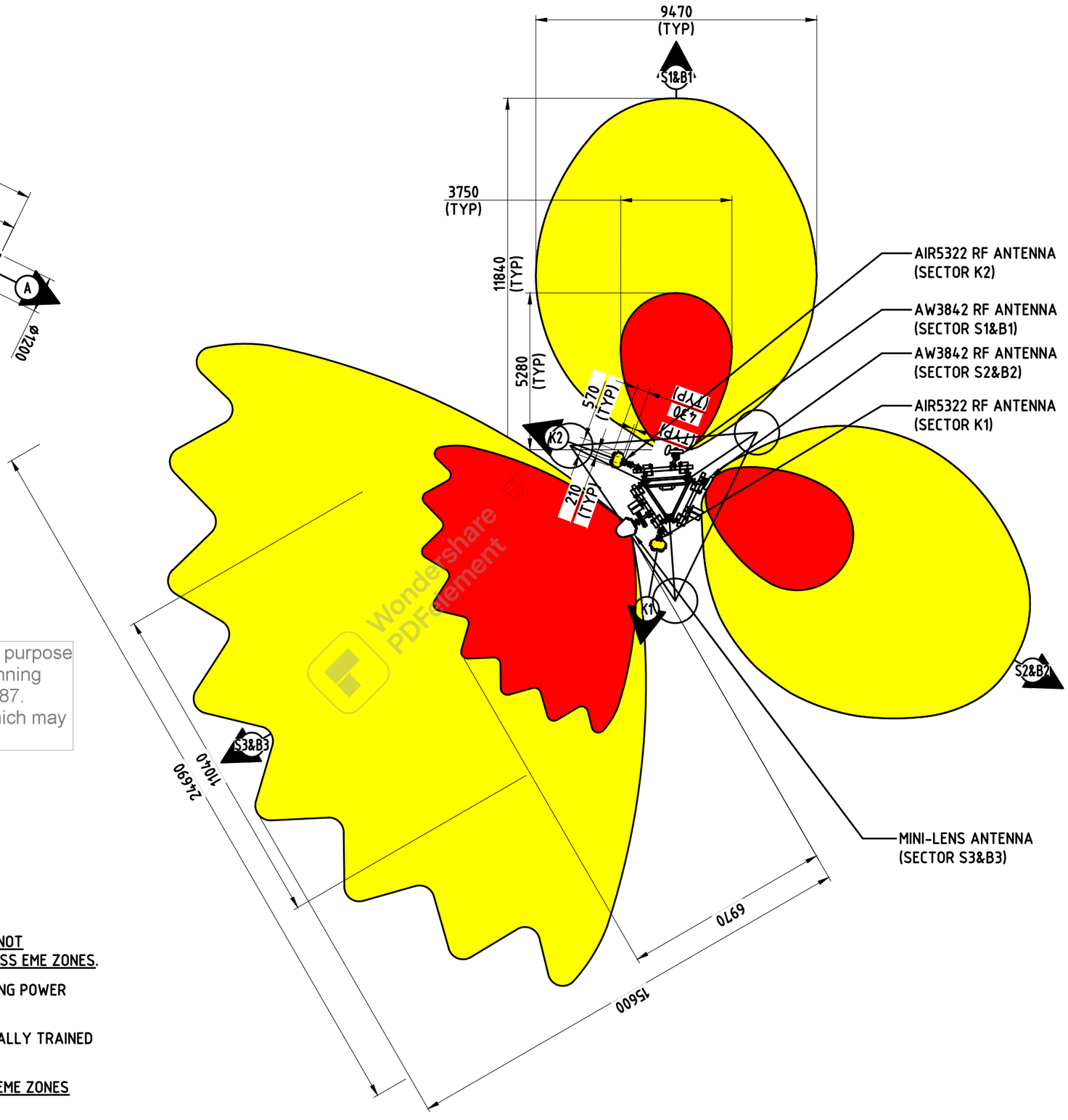
SCALE 1:150

LEGEND:

- NO ACCESS EME ZONE
- LIMITED ACCESS EME ZONE

NOTES:

1. GENERAL PUBLIC, STAFF AND MAINTENANCE PERSONNEL ARE NOT PERMITTED TO ENTER NO ACCESS EME ZONES OR LIMITED ACCESS EME ZONES.
2. NO ACCESS EME ZONES MEANS: NO ACCESS WITHOUT CONFIRMING POWER REDUCTION OR TRANSMISSION SHUTDOWN.
3. LIMITED ACCESS EME ZONES MEANS LIMITED ACCESS TO SPECIALLY TRAINED CARRIER PERSONNEL (RF WORKERS ETC.)
4. AREAS OUTSIDE NO ACCESS EME ZONES AND LIMITED ACCESS EME ZONES ARE GENERAL ACCESS AREAS.
5. EME PLUMES SHOWN ARE INDICATIVE OF WORSE CASE AND IS NOT REPRESENTATIVE OF ACTUAL TILT ON SITE.
6. REFER TO ANTENNA TABLE AND SITE SID FOR ELECTRICAL AND MECHANICAL ANTENNA TILTS.



RF ANTENNA EME ZONES LAYOUT PLAN

SCALE 1:150

Client:

Client:

Client:

Project:

NATIONAL BROADBAND NETWORK

SITE No: 3BRA-51-41-WATO

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MUSICAL GULLY ROAD
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Drawing Title:

NBN ANTENNA EME EXCLUSION ZONES 1 OF 2

Drawing No.	Revision
3BRA-51-41-WATO-R1	B

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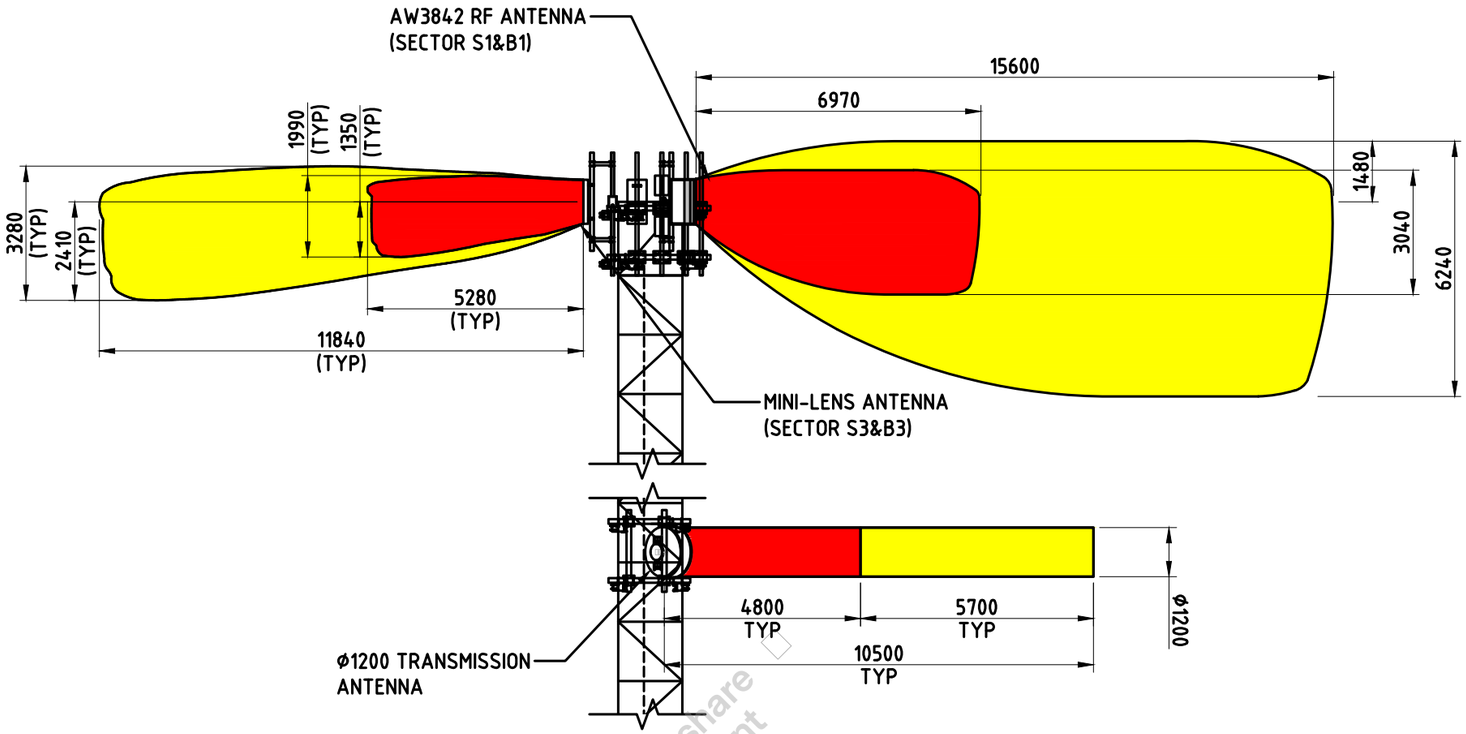

ANTENNA EXCLUSION ZONES PART ELEVATION

SCALE 1:150

LEGEND:

- NO ACCESS EME ZONE
- LIMITED ACCESS EME ZONE

NOTES:

1. GENERAL PUBLIC, STAFF AND MAINTENANCE PERSONNEL ARE NOT PERMITTED TO ENTER NO ACCESS EME ZONES OR LIMITED ACCESS EME ZONES.
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6. REFER TO ANTENNA TABLE AND SITE SID FOR ELECTRICAL AND MECHANICAL ANTENNA TILTS.

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NBN ANTENNA EME EXCLUSION ZONES 2 OF 2

Drawing No.: 3BRA-51-41-WATO-R2

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Environmental EME Report

Location	Waterloo, Musical Gully Road (Allot. 5M Sec. H PARISH OF BEAUFORT), Main Lead VIC 3373		
Date	25/09/2023	**RFNSA No.**	3373010

How does this report work?

This report provides a summary of levels of radiofrequency (RF) electromagnetic energy (EME) around the wireless base station at Waterloo, Musical Gully Road (Allot. 5M Sec. H PARISH OF BEAUFORT), Main Lead VIC 3373. These levels have been calculated by NBN using methodology developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).

A document describing how to interpret this report is available at ARPANSA's website:
A Guide to the Environmental Report.

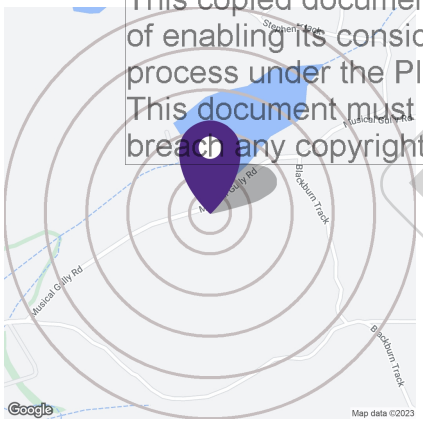
A snapshot of calculated EME levels at this site

There are currently no existing radio systems for this site.

The maximum EME level calculated for the **proposed** changes at this site is

0.14%

out of 100% of the public exposure limit, 327 m from the location.



EME levels with the proposed changes	
Distance from the site	**Percentage of the public exposure limit**
0-50 m	0.01%
50-100 m	0.02%
100-200 m	0.05%
200-300 m	0.13%
300-400 m	0.14%
400-500 m	0.12%

For additional information please refer to the EME ARPANSA Report annexure for this site which can be found at *http://www.rfnsa.com.au/3373010*.

Radio systems at the site

This base station currently has equipment for transmitting the services listed under the existing configuration.
The proposal would modify the base station to include all the services listed under the proposed configuration.

	Existing		Proposed	
Carrier	**Systems**	**Configuration**	**Systems**	**Configuration**
NBN			4G, 5G	LTE2300 (proposed), LTE3500 (proposed), NR28000 (proposed)

An in-depth look at calculated EME levels at this site

This table provides calculations of RF EME at different distances from the base station for emissions from existing equipment alone and for emissions from existing equipment and proposed equipment combined. All EME levels are relative to 1.5 m above ground and all distances from the site are in 360º circular bands.

	Existing configuration			Proposed configuration		
Distance from the site	Electric field (V/m)	Power density (mW/m^2)	Percentage of the public exposure limit	Electric field (V/m)	Power density (mW/m^2)	Percentage of the public exposure limit
0-50m				0.68	1.21	0.01%
50-100m				0.83	1.82	0.02%
100-200m				1.44	5.48	0.05%
200-300m				2.22	13.12	0.13%
300-400m				2.27	13.65	0.14%
400-500m				2.17	12.47	0.12%

Calculated EME levels at other areas of interest

This table contains calculations of the maximum EME levels at selected areas of interest, identified through consultation requirements of the Communications Alliance Ltd Deployment Code C564:2020 or other means. Calculations are performed over the indicated height range and include all existing and any proposed radio systems for this site.

Maximum cumulative EME level for the proposed configuration

Location	Height range	Electric field (V/m)	Power density (mW/m^2)	Percentage of the public exposure limit
No locations identified				

Arboricultural Impact Assessment and Report

Assessment of Trees at Musical Gully Road Waterloo

Report Details

Client:	Ecology and Heritage Partners 292 Mt Alexander Road Ascot Vale
Responsible Authority:	Pyrenees Shire Council
Subject site details:	Musical Gully Road Waterloo
Date of assessment	Friday, 11 April 2025
Date of report:	Wednesday, 16 April 2025
Planning permit details:	PA25018
Plans, maps or other construction information:	Feature Survey prepared by Veris: DWG No: 29319314AB Construction plans provided by Ventia: File name: 3BRA-51-41-WATO_Rev B
Other relevant Arborist, Ecology or Development Impact Reports:	Request for further information provided by Pyrenees Shire Council: Ref No: PA25018, Date: 21/03/2025
Axiom Tree Management Job Number:	11430
Prepared By:	*Tim Cameron - Consulting Arborist/Director* Email: timcameron@axiomtrees.com Qualifications: -Graduate Certificate Arboriculture- AQF level 8 -Diploma Horticulture (Arboriculture) – AQF Level 5
Reviewed By:	*Mick McCallum - Consulting Arborist* Email: mickm@axiomtrees.com Qualifications: -Graduate Certificate Arboriculture - AQF Level 8 -Diploma Conservation & Land Management – AQF Level 5
Axiom Tree Management Business Information	Axiom Tree Management Pty Ltd (Postal Address) 48 Montgomerys Lane, Woodend 3442 Ph: 0428 896 951 ABN: 11 612 205 099

Disclaimer: This document may only be used for the purpose for which it was commissioned and in accordance with the contract between Axiom Tree Management and the client. This includes the information contained in the report, maps, photos and any other documentation. The scope of services was defined in consultation with the client, by time and budgetary constraints, and the availability of reports and other data on the subject area. Changes to available information, legislation and schedules are made on an ongoing basis and readers should obtain up to date information.

Contents

1 Summary

Axiom Tree Management Pty Ltd has been engaged by Ecology and Heritage Partners (EHP) to provide a report on trees at Musical Gully Road Waterloo. It is proposed to construct a telecommunications tower at the site and an assessment and report has been requested to assist with planning.

The subject site is located within bushland along Musical Gully Road adjacent to the Musical Gully Reservoir. The site slopes to the north towards Musical Gully Road and has previously been cleared and excavated for unspecified reason many decades ago. The site is dominated by small shrubs and trees with larger trees located along the boundary. Musical Gully Road adjoins the site and consists of gravel with a swale drain on the southern side. An electrical service pit has recently been installed within the site.

- Sixty-seven (67) trees were assessed within and adjoining the subject site.
  - The trees are all self-sown specimens with the majority being indigenous to the local area.
  - Trees within the site are younger specimens due to previous vegetation clearance.
  - *Acacia decurrens* and *Eucalyptus occidentalis* are not native to Victoria and are not subject to the requirements of Clause 52.17 of the planning scheme.
- The health of most of the trees is 'Good' or 'Fair.
  - Most of the trees are indigenous to the local area and are suited to the conditions and climate.
  - Previous site clearance works, and road maintenance activities have impacted tree health.
- The structure of most of the trees is 'Fair'.
  - The trees are all self-sown and are most growing as part of tree groups with dominant and suppressed specimens.
  - Many of the trees have multiple and leaning stems which is typical of the various species at the site and their growing conditions.
- The trees have been given a variety of ULE ratings which relate to their ability to be long or short lived, maturity and condition.
- Four retention values have been considered, consisting of 'Very high', 'High', 'Medium' and 'Low'.
  - No (0) trees have been assigned 'Very high' retention value.
  - No trees (0) have been assigned 'High' retention value.
  - Twenty-eight trees (28) have been assigned 'Medium' retention value.
  - Thirty-nine trees (39) have been assigned 'Low' retention value.

The design proposal includes:

- Construction of a telecommunications tower consisting of the tower structure and a 10m x 10m area for tower footings and associated works.
- Installation of underground electrical cables from the existing electrical services pit to the tower structure.
- Site access for large vehicles from Musical Gully Road including installation of trafficable material and culverts.
- Laydown/works area, truck parking area and crane pad location.

Based on the proposed design:

Trees to be retained

- Trees numbered 1-14, 20-34, 36-58, 60 and 61 are proposed to be retained at and adjoining the site.
  - Protection measures have been specified and are to be installed for the duration of works.

Trees to be removed

- Trees numbered 15-19, 35, 59 and 62-67 are proposed to be removed as part of the proposed works.
  - Trees numbered 15-19, 59 and 62-67 will be lost in accordance with Clause 52.17 of the planning scheme.
  - Tree number 35 is not native to Victoria and is not subject to the requirements of clause 52.17 of the planning scheme.
  - Most of the trees are young specimens that have grown within the previously disturbed site.

2 Introduction

Axiom Tree Management Pty Ltd has been engaged by Ecology and Heritage Partners (EHP) to provide a report on trees at Musical Gully Road Waterloo. It is proposed to construct a telecommunications tower at the site and an assessment and report has been requested to assist with planning.

2.1 Key Objectives

As part of the report the key objectives include:

- Identify and record the dimensions of all trees greater than 3m in height that have potential to be impacted by the proposed telecommunications tower and associated works.
- To identify any relevant local laws, planning controls that may be relevant to the site.
- Provide an assessment of the health, structure, and retention value of the tree specimens.
- Provide an assessment of the impact of the proposed telecommunications tower and associated works, and
- Provide tree mitigation and protection measures in accordance with AS 4970 2009 for retained trees.

2.2 Documents Viewed

The following reports and documents have been reviewed as part of the preparation of this report including:

- Request for further information provided by Pyrenees Shire Council: Ref No: PA25018, Date: 21/03/2025.
- Feature Survey prepared by Veris: DWG No: 29319314AB.
- Construction plans provided by Ventia: File name: 3BRA-51-41-WATO_Rev B.
- Vic Plan – Department of Transport and Planning (https://mapshare.vic.gov.au/vicplan/);
- Aerial Image data for the site accessed from https://www.nearmap.com/au/en;
- AS 4970:2009 - Protection of Trees on Development Sites.
- AS 4373:2007 - Pruning of Amenity Trees.

2.3 Planning Controls

- The site is located within the Pyrenees Shire Council and is in a Public Conservation and Resource Zone (PCRZ).
- The site is covered by a Bushfire Management Overlay (BMO) and Environmental Significance Overlay (ESO1).
  - The site and associated vegetation is not within 30m of a waterway, waterbody or water supply channel and a permit is **not** required to remove, destroy or lop vegetation in accordance with ESO1.
- No local laws are present that require a permit to remove, destroy or lop vegetation.
- The site is in a Designated Bushfire Prone Area (Clause 52.12). No exemptions are present at the site.
- Native vegetation regulations (Clause 52.17 of the planning scheme) are present in Victoria and are primarily implemented through local council planning schemes.
  - The site is greater than 0.4 hectares and exemptions for site area do not apply;
  - Exemptions apply to dead trees with trunk diameters less than 40cm at 1.3m, trees less than 10 years in age and emergency works, and;
  - Trees deliberately planted for amenity are exempt from permit requirements in accordance with 52.17. For this exemption to be used, planting must be obvious and show evidence that deliberate planting has occurred such as tree guards/irrigation, straight planting lines/ spacings or photographic evidence.

2.4 Site Methodology

Wednesday, 16 April 2025, Tim Cameron conducted a site inspection. Data collected for the trees included but was not limited to:

- Botanical Name;
- Diameter at Breast Height (DBH);
- Retention Value;
- Canopy Dimensions (estimated);
- Health and Structure;
- Useful Life Expectancy (ULE).

Additional methodology includes:

- Assessments were conducted from ground level, with no instruments other than a diameter tape to measure DBH.
- A detailed visual inspection of the tree/s and the surrounding site was conducted, including a complete walk around the tree, looking at the buttress roots, trunk, branches, and leaves; and
- Trees were assessed and located using differentially corrected GPS (generally +/- 1.0m accuracy) and aligned to locations provided on the site plan where available.

3 Subject Site

3.1 Site Description

The subject site is located within bushland along Musical Gully Road adjacent to the Musical Gully Reservoir. The site slopes to the north towards Musical Gully Road and has previously been cleared and excavated for unspecified reason many decades ago (Figure 1). The site is dominated by small shrubs and trees with larger trees located along the boundary. Musical Gully Road adjoins the site and consists of gravel with a swale drain on the southern side (Figure 2). An electrical service pit has recently been installed within the site.

Figure 1. Subject site from the west looking east showing the site conditions and vegetation present.

Figure 2. Musical Gully Road from the east looking west showing the road surface, swale drain, vegetation and proposed access to the site.

4 Trees Details

4.1 Species Composition

Sixty-seven (67) trees were assessed within and adjoining the subject site. The trees are all self-sown specimens with the majority being indigenous to the local area. Trees within the site are younger specimens due to previous vegetation clearance. *Acacia decurrens* and *Eucalyptus occidentalis* are not native to Victoria and are not subject to the requirements of Clause 52.17 of the planning scheme.

Table 1. Species composition.

Botanical Name	Common Name	Origin	Count
Eucalyptus aromaphloia	Scent-bark	Indigenous	**24**
Eucalyptus obliqua	Messmate Stringybark	Indigenous	**23**
Eucalyptus pseudoglobulus	Victorian Eurabbie	Indigenous	**5**
Eucalyptus macrorhyncha	Red Stringybark	Indigenous	**5**
Acacia decurrens	Green Wattle	Non-VIC native	**4**
Eucalyptus goniocalyx	Long-leaved Box	Indigenous	**3**
Exocarpos cupressiformis	Cherry Ballart	Indigenous	**1**
Eucalyptus polyanthemos	Red Box	Indigenous	**1**
Eucalyptus occidentalis	Swamp Yate	Non-VIC native	**1**
Total			**67**

4.2 Health

The assessment of health has been assigned based on several factors including canopy growth and density, presence of pest or disease, presence of dead branches considering the time of year and typical form of the species. The health of most of the trees is 'Good' or 'Fair (Table 2). Most of the trees are indigenous to the local area and are suited to the conditions and climate. Previous site clearance works, and road maintenance activities have impacted tree health.

Table 2. Health, structure, and ULE ratings.

Health/Structure Range	Health Count	Structure Count	ULE ratings	ULE
Good	20	7	20+ years	25
Fair	28	47	10-20 years	23
Poor	17	13	5-10 years	11
Very poor/Dead/Failed	2	0	0-5 years	8
Total	67	67	Total	67

4.3 Structure

The structural rating of a tree is used to determine if faults are present at the time of assessment, and to guide the future management of that individual. As a tree grows its structural integrity is influenced by many factors including:

- Susceptibility to decay, which will inevitably increase is some species as the tree reaches the later stages of its life, causing structural faults in roots, trunks and stems and increased likelihood of deadwood falling from the canopy.
- Species (and/or individuals) genetic susceptibility to forming poor structural unions such as codominance; and
- Past, and present, management of the individual, in particular the lopping of tree trunks and canopies resulting in both codominant unions and decay.

The structure of most of the trees is 'Fair'. The trees are all self-sown and are most growing as part of tree groups with dominant and suppressed specimens. Many of the trees have multiple and leaning stems which is typical of the various species at the site and their growing conditions.

4.4 Useful Life Expectancy (ULE)

The ULE of a tree is assigned by the assessor based on many factors including species longevity, suitability to the site and current age and condition both regarding health and structure. It is an estimation of how long a tree can provide amenity in the landscape at an acceptable level of risk. The trees have been given a variety of ULE ratings which relate to their ability to be long or short lived, maturity and condition.

Excavation and compaction associated with development have the potential to significantly reduce tree longevity. Roots provide mechanical stability to a tree and are the organs which absorb water and nutrients required to carry out life processes such as photosynthesis, transpiration, and cell respiration. To maintain a healthy root system, the soil needs to contain the required nutrients and moisture levels, and have a good structure, with plenty of pore space to provide an

aerated environment, vital for root growth and function (Shigo, 1991). When soil is removed or compacted the soil structure is destroyed and the tree's ability to function is severely impaired leading to a decline in health.

4.5 Retention Rating

Four retention values have been considered, consisting of 'Very high', 'High', 'Medium' and 'Low'. Retention value considers tree size and condition, ULE, contribution to landscape and individual tree significance and they provide useful information to planners, regarding which trees are considered worthy of protection in the design phase. Table 2 gives a breakdown of retention values across the site.

Table 2. Retention Values

Retention Value	Tree numbers	Count
Very high	-	0
High	-	0
Medium	Trees numbered 1, 3-7, 11, 12, 15, 16, 20, 21, 26, 28-30, 34, 36-39, 41, 42, 44, 45, 48, 51 and 60	28
Low	Trees numbered 2, 8-10, 13, 14, 17-19, 22-25, 27, 31-33, 35, 40, 43, 46, 47, 49, 50, 52-59 and 61-67.	39
Total		**67**

4.5.1 Very High Retention

No (0) trees have been assigned 'Very high' retention value. The trees are generally mature specimens in good condition and are long lived species with very high amenity value. Semi-mature or mature rare species in fair to good condition may also apply to this category.

4.5.2 High Retention

No trees (0) have been assigned 'High' retention value. High retention trees are well suited to the site and offer amenity. They are normally in 'Good' to 'Fair' health and have 'Good' to 'Fair' structure. The ULE should be at least the same as the design life of any new buildings.

4.5.3 Medium Retention

Twenty-eight trees (28) have been assigned 'Medium' retention value. The trees are moderate or large sized specimens with a general condition rating of fair. If designing around these trees is not feasible or practical, removal and replacement would be an acceptable compromise.

4.5.4 Low Retention

Thirty-nine trees (39) have been assigned 'Low' retention value. Low retention value trees are either young or S-mature common varieties that are easily replaceable or are dead and require removal. Trees in poor health or with significant defects in structure are not suitable for preservation in areas where people or structures will be located (Matheny & Clark, 1998).

5 TPZ Specifications

Regardless of tree condition or retention value, any tree selected to be retained requires protection during construction. The best way to protect retained trees as part of any development is by establishing a tree protection zone (TPZ). TPZs have been calculated according to *Protection of Trees on Development Sites* (AS 4970-2009) for all trees to be retained calculating the TPZ as 12 times the trunk diameter at 1.4m above ground level (DBH).

The TPZ fence is designed to act as a physical barrier of protective fencing. It is erected around retained specimens (at the edge of the TPZ or where specified by the Arborist) before site works commence. Activities excluded from the TPZ include but are not limited to-

- machine excavation including trenching (unless on plans);
- cultivation;
- preparation of chemicals, including cement products;
- refuelling;
- wash down and cleaning of equipment;
- lighting of fires;
- temporary or permanent installation of utilities and signs;
- excavation for silt fencing;
- storage;
- parking of vehicles and plant;
- dumping of waste;
- placement of fill;
- soil level changes;
- physical damage to the tree/s.

5.1 Encroachment

Encroachment into the TPZ of trees is allowed under certain circumstances depending on several factors including site and tree conditions.

5.1.1 Encroachment Less Than 10%

Encroachment of less than 10% of the TPZ and outside the SRZ is deemed to be minor encroachment according to AS 4970-2009. Detailed root investigations should not be required but must be compensated with an extension to the TPZ elsewhere (Figure 3 & Figure 4). Variations must be made by the project arborist considering other relevant factors including tree health, vigour, stability, species sensitivity and soil characteristics.

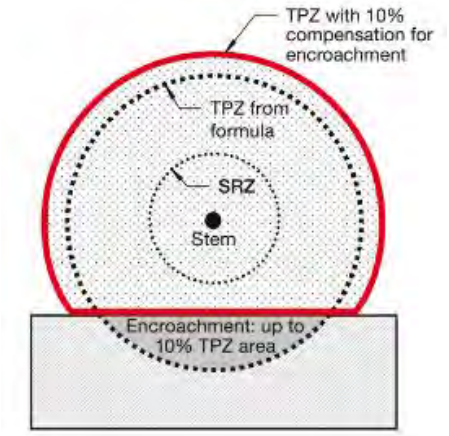


Figure 3. Example of TPZ encroachment and compensatory offset (image from AS 4970-2009).

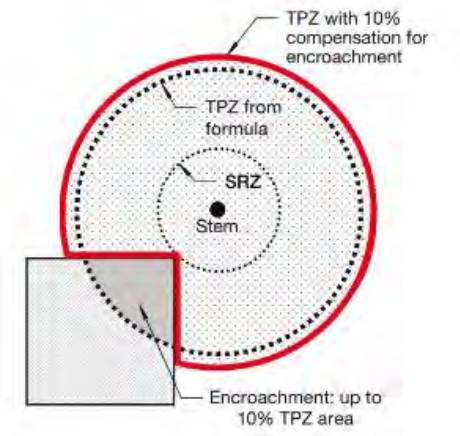


Figure 4. Example of TPZ encroachment and compensatory offset (image from AS 4970-2009).

5.1.2 Encroachment Greater Than 10%

Encroachment of more than 10% of the TPZ or into the SRZ will require the project arborist to demonstrate that the tree(s) will remain viable. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation by non-destructive methods and consideration of relevant factors tree health, vigour, stability, species sensitivity and soil characteristics.

5.2 SRZ

The SRZ is the minimum volume of roots required by the tree to remain stable in the ground. If the SRZ is breached the chances of windthrow are significantly increased, especially if roots are cut on the same side as prevailing winds. Windthrow is an event where the entire tree falls/falls over. Often, the tree is completely uprooted with devastating results. It is important to note that the SRZ is not related to tree health. It refers to the physical volume of roots required for the tree to remain stable in the ground. It is in no way related to the physiological requirements of the tree but is the minimum volume of roots required for the tree to remain standing.

6 Construction Impact and Tree Protection Measures

6.1 Design Proposal

The design proposal includes:

- Construction of a telecommunications tower consisting of the tower structure and a 10m x 10m area for tower footings and associated works.
- Installation of underground electrical cables from the existing electrical services pit to the tower structure.
- Site access for large vehicles from Musical Gully Road including installation of trafficable material and culverts.
- Laydown/works area, truck parking area and crane pad location.

6.2 Construction Impact

Construction into the TPZs of trees is allowed (AS 4970 2009). The level of encroachment is based upon the percentage of TPZ area intruded upon with less than 10% encroachment considered minor and greater than 10% encroachment considered major. Minor encroachment is considered acceptable with some modification of the TPZ, whereas mitigation measures/alternative designs are required for trees with major encroachment.

Trees have been assessed within and adjoining the site to establish tree location, origin and protection area. The current location of the works area has been specified to reduce the impact to native trees as much as practicable.

Based on the proposed design:

Trees to be retained

- Trees numbered 1-14, 20-34, 36-58, 60 and 61 are proposed to be retained at and adjoining the site.
  - Protection measures have been specified and are to be installed for the duration of works.

Trees to be removed

- Trees numbered 15-19, 35, 59 and 62-67 are proposed to be removed as part of the proposed works.
  - Trees numbered 15-19, 59 and 62-67 will be lost in accordance with Clause 52.17 of the planning scheme.
  - Tree number 35 is not native to Victoria and is not subject to the requirements of clause 52.17 of the planning scheme.
  - Most of the trees are young specimens that have grown within the previously disturbed site.

6.3 Tree Protection Measures

Tree protection measures have been specified prior to and for the duration of works.

- TPZ fencing must be erected in accordance with the Arboricultural Impact Assessment and TPZ specifications.
- TPZ fencing must be 1.8m chainmesh fixed to concrete pads or parra webbing fixed to star pickets every 3m.
- TPZ fencing is only to be removed following completion of construction works.
- The project Arborist must be consulted where:
  - Design changes occur which have the potential to impact adjoining trees.
  - Damage occurs to above or below ground parts of adjoining trees.
  - Concerns are raised regarding the health/viability of the trees during and after completion of construction works.

7 Tree Data and Plans

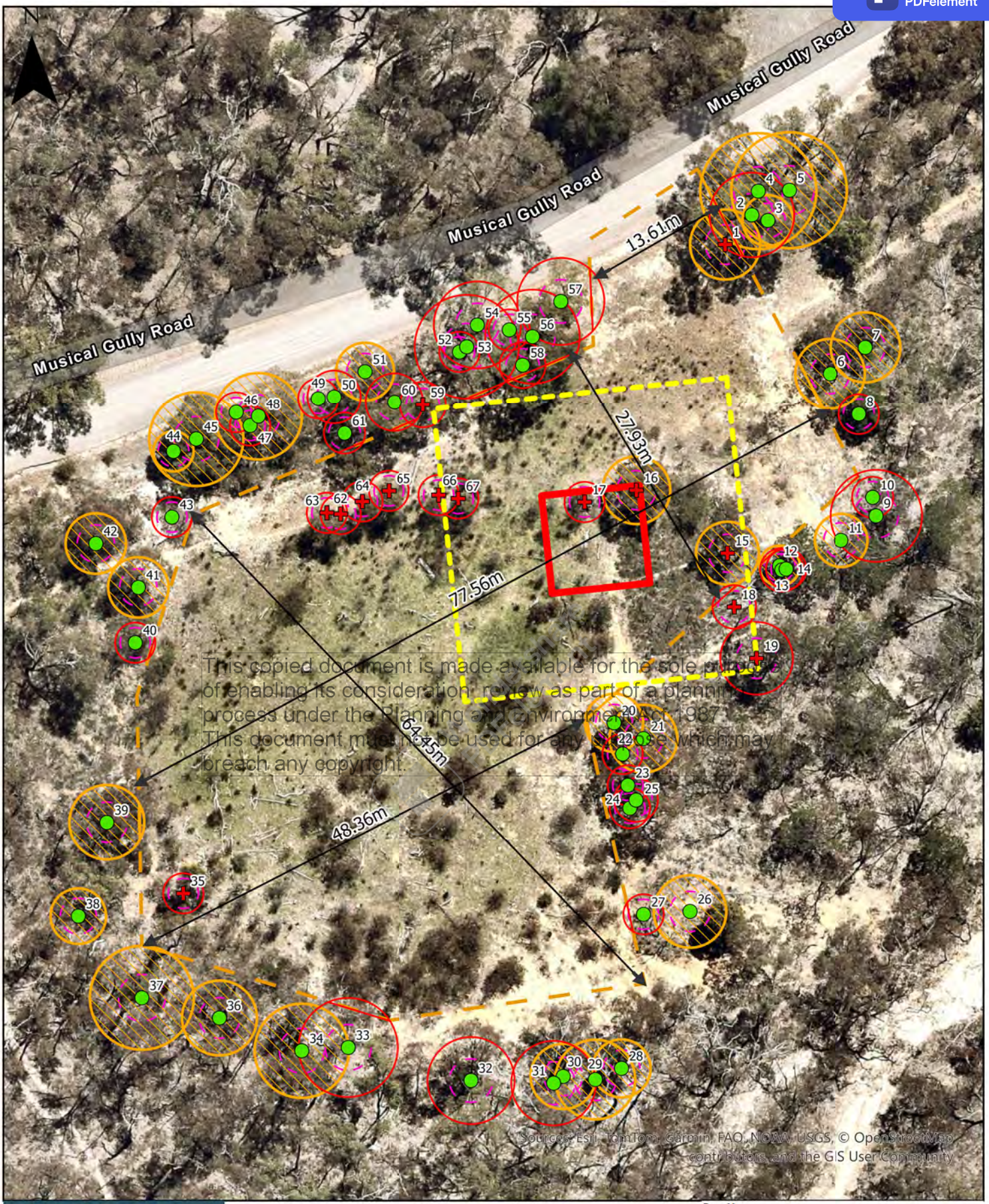
7.1 Individual Tree Assessment Spreadsheet

ID	Botanical Name	Common Name	Origin	Age	H x W	DBH (cm)	Health	Structure	ULE	Retention Value	TPZ (m radius)	SRZ (m radius)	Comments	Retain/ remove	Lost/not lost	Impact type
1	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	11m x 3m	29	Poor	Fair	10-20 years	Medium	3.48	1.97	Multiple stems, major trunk wound.	Retain	Lost	Works area
2	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	11m x 5m	35	Fair	Fair	10-20 years	Low	4.2	2.13	Multiple stems and next to road	Retain	Not lost	None
3	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	11m x 6m	21	Fair	Fair	10-20 years	Medium	2.52	1.72	Multiple stems and next to road	Retain	Not lost	None
4	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	13m x 7m	48	Fair	Fair	10-20 years	Medium	5.76	2.43	Multiple stems and next to road. Pruned over road	Retain	Not lost	None
5	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	12m x 7m	48	Poor	Fair	5-10 years	Medium	5.76	2.43	Multiple stems and next to road. Pruned over road. Impacted by previous road works.	Retain	Not lost	None
6	*Eucalyptus pseudoglobulus*	Victorian Eurabbie	Indigenous	S-mature	12m x 5m	29	Fair	Fair	10-20 years	Medium	3.48	1.97	Multiple stems	Retain	Not lost	None
7	*Eucalyptus goniocalyx*	Long-leaved Box	Indigenous	S-mature	9m x 8m	29	Fair	Fair	20-40 years	Medium	3.48	1.97	Multiple stems and leaning	Retain	Not lost	None
8	*Acacia decurrens*	Green Wattle	Non-VIC native	Mature	7m x 4m	16	Poor	Poor	5-10 years	Low	2	1.53	Multiple live and dead stems	Retain	Exempt	None
9	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	S-mature	9m x 2m	38	Fair	Poor	5-10 years	Low	4.56	2.20	Multiple stems	Retain	Not lost	None
10	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	S-mature	7m x 2m	17	Poor	Poor	1-5 years	Low	2.04	1.57		Retain	Not lost	None
11	*Eucalyptus macrorhyncha*	Red Stringybark	Indigenous	S-mature	9m x 2m	22	Fair	Fair	10-20 years	Medium	2.64	1.75	Multiple stems	Retain	Not lost	None
12	*Acacia decurrens*	Green Wattle	Non-VIC native	S-mature	9m x 4m	16	Fair	Fair	10-20 years	Medium	2	1.53		Retain	Exempt	None
13	*Eucalyptus pseudoglobulus*	Victorian Eurabbie	Indigenous	S-mature	10m x 3m	18	Poor	Fair	5-10 years	Low	2.16	1.61	Dead head	Retain	Not lost	None
14	*Acacia decurrens*	Green Wattle	Non-VIC native	Young	4m x 1m	6	Fair	Fair	10-20 years	Low	2	1.50		Retain	Exempt	None
15	*Eucalyptus polyanthemos*	Red Box	Indigenous	S-mature	10m x 4m	26	Good	Fair	20-40 years	Medium	3.12	1.88		Remove	Lost	APZ
16	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	S-mature	8m x 5m	28	Good	Good	20-40 years	Medium	3.36	1.94		Remove	Lost	Tower footings

ID	Botanical Name	Common Name	Origin	Age	H x W	DBH (cm)	Health	Structure	ULE	Retention Value	TPZ (m radius)	SRZ (m radius)	Comments	Retain/ remove	Lost/not lost	Impact type
17	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	Young	5m x 1m	8	Good	Good	20-40 years	Low	2	1.50		Remove	Lost	Tower footings
18	*Eucalyptus pseudoglobulus*	Victorian Eurabbie	Indigenous	S-mature	10m x 2m	18	Poor	Fair	5-10 years	Low	2.16	1.61	Dead head	Remove	Lost	APZ
19	*Eucalyptus pseudoglobulus*	Victorian Eurabbie	Indigenous	S-mature	12m x 3m	30	Poor	Fair	5-10 years	Low	3.6	2.00	One stem with dead head	Remove	Lost	APZ
20	*Eucalyptus pseudoglobulus*	Victorian Eurabbie	Indigenous	S-mature	9m x 3m	24	Good	Fair	20-40 years	Medium	2.88	1.82		Retain	Not lost	None
21	*Eucalyptus goniocalyx*	Long-leaved Box	Indigenous	S-mature	9m x 6m	28	Fair	Fair	20-40 years	Medium	3.36	1.94		Retain	Not lost	None
22	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	S-mature	9m x 5m	12	Fair	Fair	10-20 years	Low	2	1.50	Suppressed and leaning	Retain	Not lost	None
23	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	S-mature	4m x 3m	11	Fair	Fair	10-20 years	Low	2	1.50	Suppressed and leaning	Retain	Not lost	None
24	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	S-mature	5m x 4m	14	Fair	Fair	10-20 years	Low	2	1.50	Suppressed and leaning	Retain	Not lost	None
25	*Eucalyptus macrorhyncha*	Red Stringybark	Indigenous	S-mature	10m x 0m	18	Poor	Fair	5-10 years	Low	2.16	1.61		Retain	Not lost	None
26	*Exocarpos cupressiformis*	Cherry Ballart	Indigenous	Mature	7m x 4m	30	Good	Fair	10-20 years	Medium	3.6	2.00		Retain	Not lost	None
27	*Eucalyptus goniocalyx*	Long-leaved Box	Indigenous	S-mature	5m x 4m	14	V-poor	Poor	1-5 years	Low	2	1.50	Leaning and nearly dead	Retain	Not lost	None
28	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	14m x 4m	24	Poor	Fair	10-20 years	Medium	2.88	1.82		Retain	Not lost	None
29	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	12m x 7m	33	Fair	Fair	10-20 years	Medium	3.96	2.08	Leaning	Retain	Not lost	None
30	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	Mature	12m x 7m	27	Fair	Fair	10-20 years	Medium	3.24	1.91	Leaning	Retain	Not lost	None
31	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	Mature	17m x 5m	35	Dead	Poor	0 years	Low	4.2	2.13	Multiple stems	Retain	Not lost	None
32	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	Mature	14m x 4m	36	Poor	Poor	1-5 years	Low	4.32	2.15	Multiple stems	Retain	Not lost	None
33	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	12m x 4m	41	Poor	Poor	1-5 years	Low	4.92	2.28	Multiple dead and live stems	Retain	Not lost	None
34	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	10m x 4m	39	Fair	Poor	10-20 years	Medium	4.68	2.23	Multiple stems and hanger present	Retain	Not lost	None
35	*Eucalyptus occidentalis*	Swamp Yate	Non-VIC native	Young	8m x 3m	12	Good	Fair	20-40 years	Low	2	1.50	Head failed. No permit	Remove	Exempt	Works area

ID	Botanical Name	Common Name	Origin	Age	H x W	DBH (cm)	Health	Structure	ULE	Retention Value	TPZ (m radius)	SRZ (m radius)	Comments	Retain/ remove	Lost/not lost	Impact type
36	*Eucalyptus macrorhyncha*	Red Stringybark	Indigenous	S-mature	10m x 6m	31	Fair	Fair	10-20 years	Medium	3.72	2.02		Retain	Not lost	None
37	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	Mature	15m x 5m	43	Fair	Fair	10-20 years	Medium	5.16	2.32	Thin canopy. Id	Retain	Not lost	None
38	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	S-mature	6m x 7m	23	Good	Fair	10-20 years	Medium	2.76	1.79		Retain	Not lost	None
39	*Eucalyptus macrorhyncha*	Red Stringybark	Indigenous	Mature	10m x 6m	31	Fair	Fair	20-40 years	Medium	3.72	2.02		Retain	Not lost	None
40	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	Young	8m x 2m	13	Good	Fair	20-40 years	Low	2	1.50	Multiple stems	Retain	Not lost	None
41	*Eucalyptus macrorhyncha*	Red Stringybark	Indigenous	S-mature	10m x 5m	25	Fair	Fair	20-40 years	Medium	3	1.85	Multiple stems	Retain	Not lost	None
42	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	S-mature	9m x 5m	25	Good	Fair	20-40 years	Medium	3	1.85	Leaning	Retain	Not lost	None
43	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	Young	5m x 2m	15	Poor	Fair	5-10 years	Low	2	1.50	Thin canopy. Near Telstra pit	Retain	Not lost	None
44	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	Young	7m x 4m	16	Fair	Fair	10-20 years	Medium	2	1.53	Suppressed and between road and gutter	Retain	Not lost	None
45	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	10m x 7m	39	Good	Fair	20-40 years	Medium	4.68	2.23	Between road and gutter	Retain	Not lost	None
46	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	6m x 3m	10	Poor	Fair	5-10 years	Low	2	1.50	Between road and gutter. Lopped	Retain	Not lost	None
47	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	S-mature	6m x 1m	13	Fair	Fair	20-40 years	Low	2	1.50		Retain	Not lost	None
48	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	Mature	8m x 7m	36	Fair	Fair	20-40 years	Medium	4.32	2.15	Multiple stems	Retain	Not lost	None
49	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	S-mature	5m x 1m	14	Fair	Fair	20-40 years	Low	2	1.50	Suppressed	Retain	Not lost	None
50	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	10m x 4m	22	Fair	Fair	10-20 years	Low	2.64	1.75	Between gutter and road	Retain	Not lost	None
51	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	S-mature	9m x 4m	24	Fair	Fair	20-40 years	Medium	2.88	1.82	Between gutter and road	Retain	Not lost	None
52	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	Young	6m x 1m	12	Good	Fair	20-40 years	Low	2	1.50	Between gutter and road	Retain	Not lost	None
53	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	12m x 7m	43	Poor	Poor	1-5 years	Low	5.16	2.32	Multiple stems, Between gutter and road	Retain	Not lost	None

ID	Botanical Name	Common Name	Origin	Age	H x W	DBH (cm)	Health	Structure	ULE	Retention Value	TPZ (m radius)	SRZ (m radius)	Comments	Retain/ remove	Lost/not lost	Impact type
54	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	10m x 5m	36	Poor	Poor	1-5 years	Low	4.32	2.15	Multiple stems, Between gutter and road	Retain	Not lost	None
55	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	9m x 2m	17	Poor	Poor	1-5 years	Low	2.04	1.57	Multiple stems, Between gutter and road	Retain	Not lost	None
56	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	10m x 4m	39	Poor	Poor	5-10 years	Low	4.68	2.23	Multiple stems, Between gutter and road	Retain	Not lost	None
57	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	9m x 5m	36	Fair	Poor	5-10 years	Low	4.32	2.15	Multiple stems, Between gutter and road	Retain	Not lost	None
58	*Acacia decurrens*	Green Wattle	Non-VIC native	Mature	9m x 4m	19	Fair	Fair	10-20 years	Low	2.28	1.65	Suppressed	Retain	Exempt	None
59	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	Young	9m x 2m	19	Good	Fair	20-40 years	Low	2.28	1.65	Multiple stems	Remove	Lost	APZ
60	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	S-mature	9m x 4m	24	Good	Fair	20-40 years	Medium	2.88	1.82		Retain	Not lost	None
61	*Eucalyptus obliqua*	Messmate Stringybark	Indigenous	S-mature	4m x 5m	17	Good	Fair	10-20 years	Low	2.04	1.57	Major lean	Retain	Not lost	None
62	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	Young	5m x 2m	12	Good	Good	20-40 years	Low	2	1.50		Remove	Lost	Works area
63	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	Young	5m x 2m	12	Good	Good	20-40 years	Low	2	1.50		Remove	Lost	Works area
64	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	Young	7m x 2m	12	Good	Good	20-40 years	Low	2	1.50		Remove	Lost	Works area
65	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	Young	7m x 2m	15	Good	Fair	20-40 years	Low	2	1.50	Multiple stems	Remove	Lost	Works area
66	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	Young	4m x 1m	7	Good	Good	20-40 years	Low	2	1.50		Remove	Lost	APZ
67	*Eucalyptus aromaphloia*	Scent-bark	Indigenous	Young	5m x 2m	13	Good	Good	20-40 years	Low	2	1.50		Remove	Lost	APZ



AXIOM Tree Management Pty Ltd

Drawn and Plotted by ATM
Geographic Projection:
GDA 1994 MGA Zone 55

Arboricultural Impact Assessment

Musical Gully Road, Waterloo

Base Map:
Due to possible distortions associated with the aerial photograph and the Vicmap property base plan, the location of existing and proposed features are approximate only and should be verified on site prior to commencement of works. All dimensions/ areas shown are approximate only and should be confirmed on site.

Legend

Lost/notlost
- Lost
- Not lost
- SRZ

TPZ-Retention value
- Very high
- High
- Medium
- Low
- Encroachment

- Updated works area
- Dimensions
- Asset Protection Zone (APZ)
- Lease Area

4 2 0 4 8 12 16 Meters

8 Conclusion and Recommendations

See Summary for Conclusion and Recommendations.

9 References

AS 4373, 2007, *Australian Standard, Pruning Amenity Trees*, 2nd Edition Standards Australia

AS 4970, 2009, *Australian Standard, Protection of Trees on Development Sites*, Standards Australia.

Matheny, N. & Clark, J. 1998 *Trees and development – a technical guide to preservation of trees during land development*. International Society of Arboriculture, Champaign, IL USA.

10 Appendices

10.1 Definitions

Methodology

Term	Definition
Botanical name	The genus species and common name.
Canopy dimensions	Height (approximate) and width (approximate) of the canopy in metres.
DBH	Diameter at breast height (measured at 1.4m above ground level).

Tree Origin

Term	Definition
Exotic	The species originates in a country other than Australia.
Non Victorian native	The species originates within an Australian state other than Victoria.
Victorian native	The species originates within Victoria.
Indigenous	The species originates within the local environs.

Health

Term	Definition
Excellent	The tree is demonstrating excellent or exceptional growth. The tree should exhibit a full canopy of foliage and be free of pest and disease problems.
Good	The tree is demonstrating good or exceptional growth. The tree should exhibit a full canopy of foliage, and have only minor pest or diseases problems.
Fair	The tree is in reasonable condition and growing well. The tree should exhibit an adequate canopy of foliage. There may be some deadwood present in the crown. Some grazing by insects or possums may be evident.
Poor	The tree is not growing to its full capacity; extension growth of the laterals is minimal. The canopy may be thinning or sparse. Large amounts of deadwood may be evident throughout the crown. Significant pest and disease problems may be evident or symptoms of stress indicating tree decline.
Very Poor	The tree appears to be in a state of decline. The tree is not growing to its full capacity. The canopy may be very thin and sparse. A significant volume of deadwood may be present in the canopy or pest and disease problems may be causing a severe decline in tree health.
Dead	The tree is dead.

Structure

Term	Definition
Good	The tree has a well-defined and balanced crown. Branch unions appear to be strong, with no defects evident in the trunk or the branches. Major limbs are well defined. The tree is considered a good example of the species.
Fair	The tree has some minor problems in the structure of the crown. The crown may be slightly out of balance, and some branch unions may be exhibiting minor structural faults. If the tree has a single trunk, it may be on a slight lean or exhibiting minor defects.
Poor	The tree may have a poorly structured crown. The crown may be unbalanced or exhibit large gaps. Major limbs may not be well defined. Branches may be rubbing or crossing over. Branch unions may be poor or faulty at the point of attachment. The tree may have suffered root damage.
Very Poor	The tree has a poorly structured crown. The crown is unbalanced or exhibit large gaps with possibly large sections of deadwood. Major limbs may not be well defined. Branches may be

Term	Definition
	rubbing or crossing over. Branch unions may be poor or faulty at the point of attachment. Branches may exhibit large cracks that are likely to fail in the future. The tree may have suffered major root damage.
Failed	The tree has a very poorly structured crown. A section of the tree has failed or is in imminent danger of failure.

Useful Life Expectancy (ULE) Rating

Useful Life Expectancy is approximately how long a tree can be retained safely and usefully in the landscape.

Term	Definition
0 years	The tree is considered dangerous in the location and has no significant amenity value.
Less than 5 years	The tree, under normal circumstances and without extra stresses being imposed on it, should be safe and have value for up to five years, but will need to be replaced. During this period, normal inspections and maintenance will be required. If possible, replacement trees should be planted.
5 – 10 years	The tree, under normal circumstances and without extra stresses being imposed on it, should be safe and of value for up to ten years. During this period, normal inspections and maintenance will be required.
10– 20 years	The tree, under normal circumstances and without extra stresses being imposed on it, should be safe and of value for up to twenty years. During this period, normal inspections and maintenance will be required.
Greater than 20 years	The tree, under normal circumstances and without extra stresses being imposed on it, should be safe and of value for greater than 20 years. During this period, normal inspections and maintenance will be required.

Retention Value

Term	Definition
Very High	The tree is highly suited to the site and offers significant amenity or screening to the site. The tree is normally in fair to good health and has fair to good structure. In some circumstances a tree should be retained for cultural/historic reasons, because it is indigenous, old, remnant or because the tree (regardless of species) may offer vital screening for surrounding properties. The tree could be considered for inclusion into a significant tree register.
High	The tree is well suited to the site and offers amenity or screening to the site. The tree is normally in fair to good health and has fair to good structure. In some circumstances a tree may need to be retained for cultural/historic reasons, because it is indigenous, old, remnant or because the tree (regardless of species) may offer vital screening for surrounding properties.
Medium	The tree is suited to the site and, if practical, designs should be altered to accommodate the tree. This category may contain trees that are juvenile or semi-mature specimens that can potentially be replaced with standard nursery stock. It may be possible to transplant trees rated in this category.
Low	The tree is not worth retaining in the landscape. The tree may be considered a weed species, structurally unsound, dead/dying/diseased, nearing the end of its ULE or may not be suitable for the site.

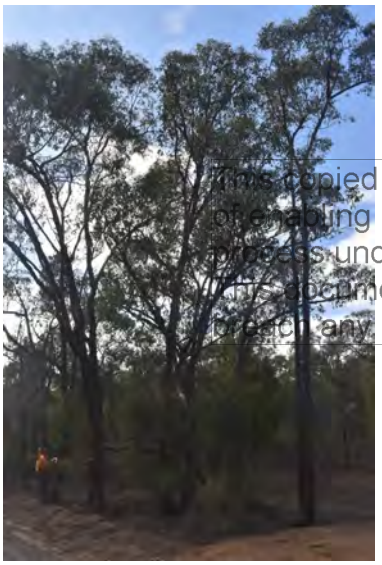
11 Individual Tree Details

Tree Number: 1

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	11m x 3m
Health:	Poor
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Lost
Comments:	Multiple stems,Major trunk wound.

DBH (cm): 29
TPZ (m): 3.48
SRZ (m): 1.97

Tree Number: 2



Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	11m x 5m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems and next to road

DBH (cm): 35
TPZ (m): 4.2
SRZ (m): 2.13

Tree Number: 3

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	11m x 6m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems and next to road

DBH (cm): 21
TPZ (m): 2.52
SRZ (m): 1.72

Tree Number: 4

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	13m x 7m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems and next to road. Pruned over road

DBH (cm): 48
TPZ (m): 5.76
SRZ (m): 2.43

Tree Number: 5

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	12m x 7m
Health:	Poor
Structure:	Fair
ULE:	5-10 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems and next to road. Pruned over road. Impacted by previus road works.

DBH (cm): 48
TPZ (m): 5.76
SRZ (m): 2.43

Tree Number: 6

Botanical Name:	*Eucalyptus pseudoglobulus*
Common Name:	Victorian Eurabbie
Origin:	Indigenous
Tree Age:	S-mature
H x W:	12m x 5m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems

DBH (cm): 29
TPZ (m): 3.48
SRZ (m): 1.97

Tree Number: 7

Botanical Name:	*Eucalyptus goniocalyx*
Common Name:	Long-leaved Box
Origin:	Indigenous
Tree Age:	S-mature
H x W:	9m x 8m
Health:	Fair
Structure:	Fair
ULE:	20-40 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems and leaning

DBH (cm): 29
TPZ (m): 3.48
SRZ (m): 1.97

Tree Number: 8

Botanical Name:	*Acacia decurrens*
Common Name:	Green Wattle
Origin:	Non-VIC native
Tree Age:	Mature
H x W:	7m x 4m
Health:	Poor
Structure:	Poor
ULE:	5-10 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Exempt
Comments:	Multiple live and dead stems

DBH (cm): 16
TPZ (m): 2
SRZ (m): 1.53

Tree Number: 9

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	9m x 2m
Health:	Fair
Structure:	Poor
ULE:	5-10 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems

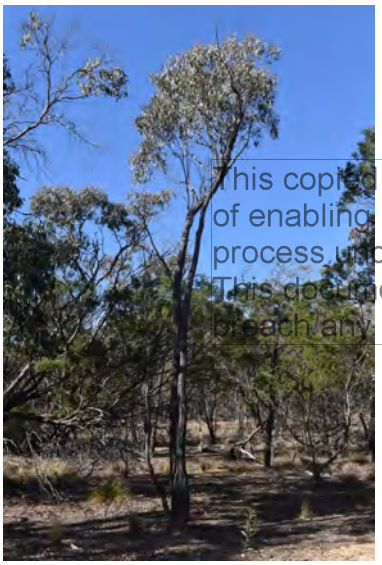
DBH (cm): 38
TPZ (m): 4.56
SRZ (m): 2.20

Tree Number: 10

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	7m x 2m
Health:	Poor
Structure:	Poor
ULE:	1-5 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	

DBH (cm): 17
TPZ (m): 2.04
SRZ (m): 1.57

Tree Number: 11



Botanical Name:	*Eucalyptus macrorhyncha*
Common Name:	Red Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	9m x 2m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems

DBH (cm): 22
TPZ (m): 2.64
SRZ (m): 1.75

Tree Number: 12

Botanical Name:	*Acacia decurrens*
Common Name:	Green Wattle
Origin:	Non-VIC native
Tree Age:	S-mature
H x W:	9m x 4m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Exempt
Comments:	

DBH (cm): 16
TPZ (m): 2
SRZ (m): 1.53

Tree Number: 13

Botanical Name:	*Eucalyptus pseudoglobulus*
Common Name:	Victorian Eurabbie
Origin:	Indigenous
Tree Age:	S-mature
H x W:	10m x 3m
Health:	Poor
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Dead head

DBH (cm): 18
TPZ (m): 2.16
SRZ (m): 1.61

Tree Number: 14

Botanical Name:	*Acacia decurrens*
Common Name:	Green Wattle
Origin:	Non-VIC native
Tree Age:	Young
H x W:	4m x 1m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Exempt
Comments:	

DBH (cm): 6
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 15

Botanical Name:	*Eucalyptus polyanthemos*
Common Name:	Red Box
Origin:	Indigenous
Tree Age:	S-mature
H x W:	10m x 4m
Health:	Good
Structure:	Fair
ULE:	20-40 years
Retention Value:	Medium
Retain/remove:	Remove
Lost/Not lost:	Lost
Comments:	

DBH (cm): 26
TPZ (m): 3.12
SRZ (m): 1.88

Tree Number: 16

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	8m x 5m
Health:	Good
Structure:	Good
ULE:	20-40 years
Retention Value:	Medium
Retain/remove:	Remove
Lost/Not lost:	Lost
Comments:	

DBH (cm): 28
TPZ (m): 3.36
SRZ (m): 1.94

Tree Number: 17

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	Young
H x W:	5m x 1m
Health:	Good
Structure:	Good
ULE:	20-40 years
Retention Value:	Low
Retain/remove:	Remove
Lost/Not lost:	Lost
Comments:	

DBH (cm): 8
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 18

Botanical Name:	*Eucalyptus pseudoglobulus*
Common Name:	Victorian Eurabbie
Origin:	Indigenous
Tree Age:	S-mature
H x W:	10m x 2m
Health:	Poor
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Retain/remove:	Remove
Lost/Not lost:	Lost
Comments:	Dead head

DBH (cm): 18
TPZ (m): 2.16
SRZ (m): 1.61

Tree Number: 19

Botanical Name:	*Eucalyptus pseudoglobulus*
Common Name:	Victorian Eurabbie
Origin:	Indigenous
Tree Age:	S-mature
H x W:	12m x 3m
Health:	Poor
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Retain/remove:	Remove
Lost/Not lost:	Lost
Comments:	One stem with dead head

DBH (cm): 30
TPZ (m): 3.6
SRZ (m): 2.00

Tree Number: 20

Botanical Name:	*Eucalyptus pseudoglobulus*
Common Name:	Victorian Eurabbie
Origin:	Indigenous
Tree Age:	S-mature
H x W:	9m x 3m
Health:	Good
Structure:	Fair
ULE:	20-40 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	

DBH (cm): 24
TPZ (m): 2.88
SRZ (m): 1.82

Tree Number: 21

Botanical Name:	*Eucalyptus goniocalyx*
Common Name:	Long-leaved Box
Origin:	Indigenous
Tree Age:	S-mature
H x W:	9m x 6m
Health:	Fair
Structure:	Fair
ULE:	20-40 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	

DBH (cm): 28
TPZ (m): 3.36
SRZ (m): 1.94

Tree Number: 22

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	9m x 5m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Suppressed and leaning

DBH (cm): 12
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 23

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	4m x 3m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Suppressed and leaning

DBH (cm): 11
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 24

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	5m x 4m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Suppressed and leaning

DBH (cm): 14
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 25

Botanical Name:	*Eucalyptus macrorhyncha*
Common Name:	Red Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	10m x 0m
Health:	Poor
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	

DBH (cm): 18
TPZ (m): 2.16
SRZ (m): 1.61

Tree Number: 26

Botanical Name:	*Exocarpos cupressiformis*
Common Name:	Cherry Ballart
Origin:	Indigenous
Tree Age:	Mature
H x W:	7m x 4m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	

DBH (cm): 30
TPZ (m): 3.6
SRZ (m): 2.00

Tree Number: 27

Botanical Name:	*Eucalyptus goniocalyx*
Common Name:	Long-leaved Box
Origin:	Indigenous
Tree Age:	S-mature
H x W:	5m x 4m
Health:	V-poor
Structure:	Poor
ULE:	1-5 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Leaning and nearly dead

DBH (cm): 14
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 28

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	14m x 4m
Health:	Poor
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	

DBH (cm): 24
TPZ (m): 2.88
SRZ (m): 1.82

Tree Number: 29

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	12m x 7m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Leaning

DBH (cm): 33
TPZ (m): 3.96
SRZ (m): 2.08

Tree Number: 30

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	Mature
H x W:	12m x 7m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Leaning

DBH (cm): 27
TPZ (m): 3.24
SRZ (m): 1.91

Tree Number: 31

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	Mature
H x W:	17m x 5m
Health:	Dead
Structure:	Poor
ULE:	0 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems

DBH (cm): 35
TPZ (m): 4.2
SRZ (m): 2.13

Tree Number: 32

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	Mature
H x W:	14m x 4m
Health:	Poor
Structure:	Poor
ULE:	1-5 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems

DBH (cm): 36
TPZ (m): 4.32
SRZ (m): 2.15

Tree Number: 33

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	12m x 4m
Health:	Poor
Structure:	Poor
ULE:	1-5 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple dead and live stems

DBH (cm): 41
TPZ (m): 4.92
SRZ (m): 2.28

Tree Number: 34

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	10m x 4m
Health:	Fair
Structure:	Poor
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems and hanger present

DBH (cm): 39
TPZ (m): 4.68
SRZ (m): 2.23

Tree Number: 35

Botanical Name:	*Eucalyptus occidentalis*
Common Name:	Swamp Yate
Origin:	Non-VIC native
Tree Age:	Young
H x W:	8m x 3m
Health:	Good
Structure:	Fair
ULE:	20-40 years
Retention Value:	Low
Retain/remove:	Remove
Lost/Not lost:	Exempt
Comments:	Head failed. No permit

DBH (cm): 12
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 36

Botanical Name:	*Eucalyptus macrorhyncha*
Common Name:	Red Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	10m x 6m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	

DBH (cm): 31
TPZ (m): 3.72
SRZ (m): 2.02

Tree Number: 37

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	Mature
H x W:	15m x 5m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Thin canopy. Id

DBH (cm): 43
TPZ (m): 5.16
SRZ (m): 2.32

Tree Number: 38

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	6m x 7m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	

DBH (cm): 23
TPZ (m): 2.76
SRZ (m): 1.79

Tree Number: 39

Botanical Name:	*Eucalyptus macrorhyncha*
Common Name:	Red Stringybark
Origin:	Indigenous
Tree Age:	Mature
H x W:	10m x 6m
Health:	Fair
Structure:	Fair
ULE:	20-40 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	

DBH (cm): 31
TPZ (m): 3.72
SRZ (m): 2.02

Tree Number: 40

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	Young
H x W:	8m x 2m
Health:	Good
Structure:	Fair
ULE:	20-40 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems

DBH (cm): 13
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 41

Botanical Name:	*Eucalyptus macrorhyncha*
Common Name:	Red Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	10m x 5m
Health:	Fair
Structure:	Fair
ULE:	20-40 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems

DBH (cm): 25
TPZ (m): 3
SRZ (m): 1.85

Tree Number: 42

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	9m x 5m
Health:	Good
Structure:	Fair
ULE:	20-40 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Leaning

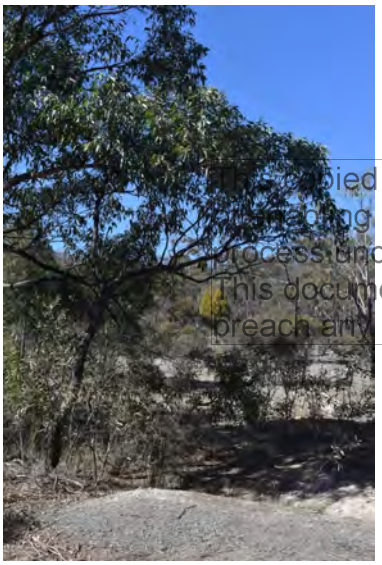
DBH (cm): 25
TPZ (m): 3
SRZ (m): 1.85

Tree Number: 43

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	Young
H x W:	5m x 2m
Health:	Poor
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Thin canopy. Near telstra pit

DBH (cm): 15
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 44



Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	Young
H x W:	7m x 4m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Suppressed and between road and gutter

DBH (cm): 16
TPZ (m): 2
SRZ (m): 1.53

Tree Number: 45

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	10m x 7m
Health:	Good
Structure:	Fair
ULE:	20-40 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Between road and gutter

DBH (cm): 39
TPZ (m): 4.68
SRZ (m): 2.23

Tree Number: 46

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	6m x 3m
Health:	Poor
Structure:	Fair
ULE:	5-10 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Between road and gutter. Lopped

DBH (cm): 10
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 47

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	6m x 1m
Health:	Fair
Structure:	Fair
ULE:	20-40 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	

DBH (cm): 13
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 48

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	Mature
H x W:	8m x 7m
Health:	Fair
Structure:	Fair
ULE:	20-40 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems

DBH (cm): 36
TPZ (m): 4.32
SRZ (m): 2.15

Tree Number: 49

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	5m x 1m
Health:	Fair
Structure:	Fair
ULE:	20-40 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Suppressed

DBH (cm): 14
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 50

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	10m x 4m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Between gutter and road

DBH (cm): 22
TPZ (m): 2.64
SRZ (m): 1.75

Tree Number: 51

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	9m x 4m
Health:	Fair
Structure:	Fair
ULE:	20-40 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Between gutter and road

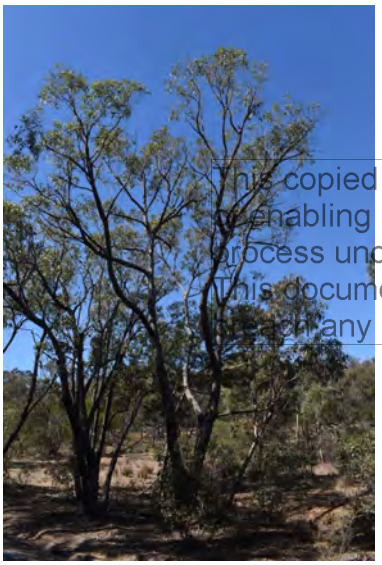
DBH (cm): 24
TPZ (m): 2.88
SRZ (m): 1.82

Tree Number: 52

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	Young
H x W:	6m x 1m
Health:	Good
Structure:	Fair
ULE:	20-40 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Between gutter and road

DBH (cm): 12
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 53



Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	12m x 7m
Health:	Poor
Structure:	Poor
ULE:	1-5 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems,Between gutter and road

DBH (cm): 43
TPZ (m): 5.16
SRZ (m): 2.32

Tree Number: 54

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	10m x 5m
Health:	Poor
Structure:	Poor
ULE:	1-5 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems,Between gutter and road

DBH (cm): 36
TPZ (m): 4.32
SRZ (m): 2.15

Tree Number: 55

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	9m x 2m
Health:	Poor
Structure:	Poor
ULE:	1-5 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems,Between gutter and road

DBH (cm): 17
TPZ (m): 2.04
SRZ (m): 1.57

Tree Number: 56

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	10m x 4m
Health:	Poor
Structure:	Poor
ULE:	5-10 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems,Between gutter and road

DBH (cm): 39
TPZ (m): 4.68
SRZ (m): 2.23

Tree Number: 57

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	9m x 5m
Health:	Fair
Structure:	Poor
ULE:	5-10 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Multiple stems,Between gutter and road

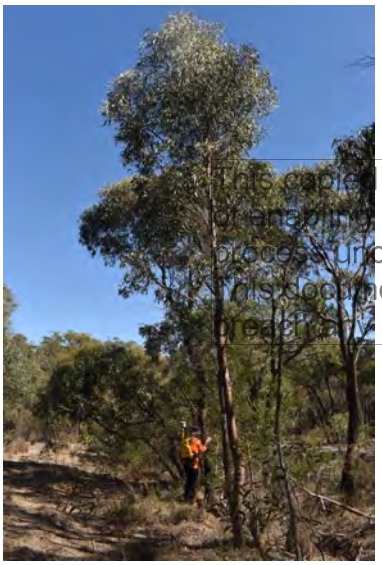
DBH (cm): 36
TPZ (m): 4.32
SRZ (m): 2.15

Tree Number: 58

Botanical Name:	*Acacia decurrens*
Common Name:	Green Wattle
Origin:	Non-VIC native
Tree Age:	Mature
H x W:	9m x 4m
Health:	Fair
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Exempt
Comments:	Suppressed

DBH (cm): 19
TPZ (m): 2.28
SRZ (m): 1.65

Tree Number: 59



Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	Young
H x W:	9m x 2m
Health:	Good
Structure:	Fair
ULE:	20-40 years
Retention Value:	Low
Retain/remove:	Remove
Lost/Not lost:	Lost
Comments:	Multiple stems

DBH (cm): 19
TPZ (m): 2.28
SRZ (m): 1.65

Tree Number: 60

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	9m x 4m
Health:	Good
Structure:	Fair
ULE:	20-40 years
Retention Value:	Medium
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	

DBH (cm): 24
TPZ (m): 2.88
SRZ (m): 1.82

Tree Number: 61

Botanical Name:	*Eucalyptus obliqua*
Common Name:	Messmate Stringybark
Origin:	Indigenous
Tree Age:	S-mature
H x W:	4m x 5m
Health:	Good
Structure:	Fair
ULE:	10-20 years
Retention Value:	Low
Retain/remove:	Retain
Lost/Not lost:	Not lost
Comments:	Major lean

DBH (cm): 17
TPZ (m): 2.04
SRZ (m): 1.57

Tree Number: 62

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	Young
H x W:	5m x 2m
Health:	Good
Structure:	Good
ULE:	20-40 years
Retention Value:	Low
Retain/remove:	Remove
Lost/Not lost:	Lost
Comments:	

DBH (cm): 12
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 63

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	Young
H x W:	5m x 2m
Health:	Good
Structure:	Good
ULE:	20-40 years
Retention Value:	Low
Retain/remove:	Remove
Lost/Not lost:	Lost
Comments:	

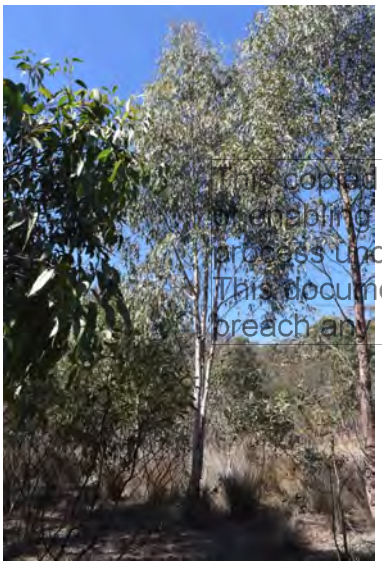
DBH (cm): 12
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 64

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	Young
H x W:	7m x 2m
Health:	Good
Structure:	Good
ULE:	20-40 years
Retention Value:	Low
Retain/remove:	Remove
Lost/Not lost:	Lost
Comments:	

DBH (cm): 12
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 65



Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	Young
H x W:	7m x 2m
Health:	Good
Structure:	Fair
ULE:	20-40 years
Retention Value:	Low
Retain/remove:	Remove
Lost/Not lost:	Lost
Comments:	Multiple stems

DBH (cm): 15
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 66

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	Young
H x W:	4m x 1m
Health:	Good
Structure:	Good
ULE:	20-40 years
Retention Value:	Low
Retain/remove:	Remove
Lost/Not lost:	Lost
Comments:	

DBH (cm): 7
TPZ (m): 2
SRZ (m): 1.50

Tree Number: 67

Botanical Name:	*Eucalyptus aromaphloia*
Common Name:	Scent-bark
Origin:	Indigenous
Tree Age:	Young
H x W:	5m x 2m
Health:	Good
Structure:	Good
ULE:	20-40 years
Retention Value:	Low
Retain/remove:	Remove
Lost/Not lost:	Lost
Comments:	

DBH (cm): 13
TPZ (m): 2
SRZ (m): 1.50

ecology & heritage partners

Final Report

Biodiversity Assessment for a proposed NBN tower: Musical Gully Road, Waterloo, Victoria

Prepared for

Ventia Australia Pty Ltd

April 2025

Ecology and Heritage Partners Pty Ltd

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DOCUMENT CONTROL

Assessment type	Biodiversity Assessment for a proposed NBN tower
Address	Musical Gully Road, Waterloo, Victoria
Project number	19056
Project manager	Cat Stephenson (Associate Bushfire Consultant/Botanist)
Other EHP staff	Jared McGuiness (Associate Botanist)
Mapping	Diana Valadares (GIS Officer)
File name	19056_EHP_BA_MusicalGullyRoad-Waterloo_Final_17042025
Client	Ventia Australia Pty Ltd
Bioregion	Central Victorian Uplands
Catchment Management Authority	Glenelg Hopkins
Council	Pyrenees Shire Council

VERSION CONTROL

Report version	Comments	Report updated by:	Report reviewed by:	Date submitted
Draft	Report sent to the client for review	CS	JM	16/04/2025
Final	No comments received. Report sent to the client	CS	-	17/04/2025

Ecology and Heritage Partners acknowledge the Traditional Owners of the country we live and work on, and we pay our respect to Elders past, present and emerging.

CONTENTS

SUMMARY OF CLAUSE 52.17 APPLICATION REQUIREMENTS

Clause 52.17 Native Vegetation outlines the requirements for a permit to remove, destroy or lop native vegetation, including dead vegetation, under the Victoria Planning Provisions. There are nine application requirements that must be met in order to satisfy this clause (Table S1).

Table S1. Application requirements for a permit to remove native vegetation (Table 6 in Department of Environment, Land, Water and Planning [DELWP] 2017).

No.	Application Requirement	Response
Application requirements under the Basic Assessment Pathway		
1	Information about the native vegetation to be removed, including: • The assessment pathway and reason for the assessment pathway; • A description of the native vegetation to be removed; • Maps showing the native vegetation and property in context; and • The offset requirement that will apply if the native vegetation is approved to be removed.	Refer to Section 3.1, Section 4.2, Figure 2, Appendix 2 (NVR Report) and Appendix 3
2	Topographic and land information relating to the native vegetation to be removed, showing ridges, crests and hilltops, wetlands and waterways, slopes of more than 20 percent, drainage lines, low lying areas, saline discharge areas, and areas of existing erosion, as appropriate.	Refer to Section 1.2 and Figure 1
3	Recent dated photographs of the native vegetation to be removed.	Refer to Section 3.1
4	Details of any other native vegetation that was permitted to be removed on the same property with the same ownership as the native vegetation to be removed, where the removal occurred in the five-year period before the application to remove native vegetation is lodged.	No native vegetation has been removed by the proponent within the property within the past five years
5	An avoid and minimise statement. The statement describes any efforts to avoid the removal of and minimise the impacts on the biodiversity and other values of native vegetation, and how these efforts focussed on areas of native vegetation that have the most value.	Refer to Section 4.1
6	A copy of any Property Vegetation Plan contained within an agreement made pursuant to section 69 of the *Conservation, Forests and Lands Act 1987* that applies to the native vegetation to be removed.	Not applicable
7	Where the removal of native vegetation is to create defendable space, a written statement explaining why the removal of native vegetation is necessary. This statement must have regard to other available bushfire risk mitigation measures. This statement is not required when the creation of defendable space is in conjunction with an application under the Bushfire Management Overlay.	Not applicable as the vegetation clearance is not for defendable space
8	If the application is under Clause 52.16, a statement that explains how the proposal responds to the Native Vegetation Precinct Plan considerations at decision guideline 8.	Not applicable as the application responds to Clause 52.17
9	An offset statement providing evidence that an offset that meets the offset requirements for the native vegetation to be removed has been identified and can be secured in accordance with the Guidelines.	Refer to Section 4.2.3

1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners Pty Ltd was commissioned by Ventia Australia Pty Ltd to undertake a Biodiversity Assessment for a proposed NBN tower along Musical Gully Road, Waterloo, Victoria.

We understand that Ventia Australia Pty Ltd is submitting a planning application in order to construct a NBN communications tower, which includes the 10 metre by 10 metre tower compound, a 10 metre Asset Protection Zone bushfire buffer around the compound, access track from Musical Gully Road to the tower compound, crane pad and tower layup area.

The purpose of this assessment was to identify the extent and type of native vegetation present within the study area and to determine the likely presence of significant flora and fauna species and/or ecological communities. This report presents the results of the assessment and discusses the potential ecological and legislative implications associated with the proposed action.

1.2 Study Area

The study area is located along Musical Gully Road, Waterloo within Standard Parcel Identifier (SPI) 5M-H\PP2096 and is approximately 150 kilometres north-west of Melbourne's CBD (Figure 1). The study area covers approximately 0.343 hectares and is bound by Musical Gully Road to the north and native bushland in all other directions.

The study area is currently vacant, being part of the wider bushland. It is generally flat, with no ridges or crests within or immediately adjacent to the site. Maiden Gully Reservoir is approximately 80 metres north-east of the study area.

According to the Victorian Department of Energy, Environment and Climate Action (DEECA) NatureKit Map (DEECA 2025a), the study area is located within the Central Victorian Uplands bioregion, Glenelg Hopkins Catchment Management Authority (CMA) and Pyrenees Shire Council municipality.

2 METHODS

2.1 Desktop Assessment

Relevant literature, online-resources and databases were reviewed to provide an assessment of flora and fauna values associated with the study area. The following information sources were reviewed:

- The DEECA NatureKit Map (DEECA 2025a) and Native Vegetation Regulation (NVR) Map (DEECA 2025b) for:
    - Modelled data for location risk, native vegetation patches, scattered trees and habitat for rare or threatened species; and,
    - The extent of historic and current Ecological Vegetation Classes (EVCs).
- EVC benchmarks (DEECA 2025c) for descriptions of EVCs within the relevant bioregion;
- The Victorian Biodiversity Atlas (VBA) for previously documented flora and fauna records within the project locality (DEECA 2025d);
- The Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) for matters of National Environmental Significance (NES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (DCCEEW 2025);
- Relevant listings under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act), including the latest Threatened (DEECA 2025e) and Protected (DEECA 2024) Lists;
- The online VicPlan Map (Department of Transport and Planning [DTP] 2025) to ascertain current zoning and environmental overlays in the study area;
- Aerial photography of the study area; and,
- Previous ecological assessments relevant to the study area; being;
    - Arboricultural Impact Assessment and Report: Assessment of Trees at Musical Gully Road Waterloo. Axiom Tree Management Pty Ltd, Woodend, Victoria.

2.2 Field Assessment

A field assessment was undertaken by a habitat hectare assessor, who is accredited by DEECA in the habitat hectare assessment methodology, on 10 April 2025 to obtain information on flora and fauna values within the study area. The study area was walked, with all commonly observed vascular flora and fauna species recorded, significant records mapped, and the overall condition of vegetation and habitats noted. EVCs were determined with reference to DEECA pre-1750 and extant EVC mapping (DEECA 2025a) and their published descriptions (DEECA 2025c).

2.3 Removal, Destruction or Lopping of Native Vegetation (the Guidelines)

Under the *Planning and Environment Act 1987,* Clause 52.17 of the Pyrenees Planning Scheme requires a planning permit to remove, destroy or lop any native vegetation, including dead vegetation. The assessment process for the clearing of vegetation follows the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines) (Department of Environment, Land, Water and Planning [DELWP] 2017).

2.4 Assessment Qualifications and Limitations

This report has been written based on the quality and extent of the ecological values and habitat considered to be present or absent at the time of the desktop and/or field assessments being undertaken.

The field assessment was undertaken during a sub-optimal season for the identification of flora and fauna species (i.e. autumn). The 'snapshot' nature of a standard biodiversity assessment, along with sub-optimal timing of the survey, meant that migratory, transitory or uncommon fauna species may have been absent from typically occupied habitats at the time of the field assessment. In addition, annual or cryptic flora species such as those that persist via underground tubers may also be absent.

A comprehensive list of all terrestrial flora and fauna present within the study area was not undertaken as this was not the objective of the assessment. Rather a list of commonly observed species was recorded to assist in determining the broader biodiversity values present within the study area.

Ecological values identified within the study area were recorded using a hand-held GPS or tablet with an accuracy of +/-3 metres. This level of accuracy is considered to provide an accurate assessment of the ecological values present within the study area; however, this data should not be used for detailed surveying purposes.

The terrestrial flora and fauna data collected during the field assessment and information obtained from relevant desktop sources is considered to inform an accurate assessment of the ecological values present within the study area.

3 RESULTS

3.1 Vegetation Condition

One contiguous patch of native vegetation (comprised of two habitat zones) was recorded within the study area. The remainder of the study area comprised Musical Gully Road and areas void of any vegetation.

Thirty-nine (38) flora species were observed within the study area, including 26 indigenous and 12 non-indigenous species. A list of all flora species recorded during the field assessment are provided in Appendix 1. Specific details relating to observed EVCs are provided below.

3.1.1 Patches of Native Vegetation

Native vegetation in the study area is representative of one EVC, being Heathy Dry Forest (EVC 20). The presence of this EVC is consistent with the modelled extent (2005) native vegetation mapping (DEECA 2025a).

Heathy Dry Forest EVC

Heathy Dry Forest is characterised by an open eucalypt forest to 20-metres tall over an understorey of sparse to dense ericoid-leaved shrubs and a sparse ground layer of graminoids and grasses. This EVC grows on a range of landforms from undulating hills to steep slopes (DEECA 2025c).

Heathy Dry Forest (HDF) was the dominant EVC present within the study area and surrounds. Habitat zone HDF1 was of moderate to high quality, with a canopy of Scent Gum *Eucalyptus aromaphloia,* Messmate *Eucalyptus obliqua*, Red Stringybark *Eucalyptus macrorhyncha* and occasional specimens of Bundy *Eucalyptus goniocalyx* and Victorian Eurabbie *Eucalyptus globulus* subsp. *pseudoglobulus*. The understory contained a diversity of shrubs and graminoids, including Spreading Wattle *Acacia genistifolia,* Blackwood *Acacia melanoxylon,* Hedge Wattle *Acacia paradoxa,* Golden Wattle *Acacia pycnantha,* Honey-pots *Acrotriche serrulate,* Black-anther Flax-lily *Dianella revoluta,* Common Heath *Epacris impressa,* Cherry Ballart *Exocarpos cupressiformis,* Common Rapier-sedge *Lepidosperma filiforme,* Wattle Mat-rush *Lomandra filiformis,* Grey Tussock-grass, *Poa sieberiana* and Silvertop Wallaby-grass *Rytidosperma pallidum* (Plate 1).

Habitat zone HDF2 was highly modified and void of a canopy layer, comprised of an understorey of scattered Golden Wattle over a heavily grazed ground layer of native and exotic herbs and grasses, including Wallaby Grass *Rytidosperma* spp., Spear Grass *Austrostipa* spp., Pale Rush *Juncus pallidus*, Couch *Cynodon dactylon* var. *dactylon*, Flatweed *Hypochaeris radicata* and Scarlet Pimpernel *Lysmachia arvensis* var. *arvensis* (Plate 2). One noxious weed, as defined under the *Catchment and Land Protection Act 1994* (CaLP Act), was present within the study area with Spear Thistle *Cirsium vulgare* present in limited numbers within HDF2.

Plate 1. Good quality Heathy Dry Forest (HDF1) within the study area (Ecology and Heritage Partners Pty Ltd 10/04/2025).

Plate 2. Highly modified treeless Heathy Dry Forest (HDF2) within the study area (Ecology and Heritage Partners Pty Ltd 10/04/2025).

3.1.2 Scattered Trees and Large Trees in Patches

No scattered trees or Large Trees in patches of native vegetation were observed within the study area.

3.2 Fauna Habitat

The study area was located within a forest environ likely to provide an important resource for arboreal fauna. Most of the eucalypts were mature, however no Large Trees (i.e. Diameter at Brest Height [DBH] of 60-centimetres or more) were observed within the study area. These are likely to be used for foraging and shelter by a range of fauna including parrots, microbats, possums, gliders and owls.

Species observed utilising forest vegetation within the study area included Superb Fairy-wren *Malurus cyaneus*, White-winged Chough *Corcorax melanorhamphos*, Brown Thornbill *Acanthiza pusilla* and Laughing Kookaburra *Dacelo novaeguineae*.

3.3 Significance Assessment

3.3.1 Flora

No national (i.e. under the EPBC Act) or State significant (i.e. under the FFG Act) flora were recorded during the site assessment. Although there are numerous records of the EPBC Act-listed Ben Major Grevillea *Grevillea floripendula* (Status: Vulnerable) within five kilometres of the study area (Figure 3), including two records within approximately 450-metres of the study area, no Ben Major Grevillea (or any other *Grevillea* spp.) were observed within the study area. As such, the species is considered to have a low likelihood of occurrence within the proposed impact footprint due to the previous disturbance to the study area. That is, the Google Earth Pro history imagery shows the entire study area being cleared of all vegetation in February 2015, with the current vegetation therefore being regrowth. A known reference site for Ben Major Grevillea (near Camp Hill Road, Waterloo, approximately 1.8 kilometres north-east of the study area) was visited prior to undertaking the site assessment, with the species identified and confirmed to not be in flower (Plate 3; Plate 4).

Plate 3. Ben Major Grevillea at a reference site (Ecology and Heritage Partners Pty Ltd 10/04/2025).

Plate 4. Ben Major Grevillea at a reference site (Ecology and Heritage Partners Pty Ltd 10/04/2025).

Based on the modified nature of the study area, landscape context and the proximity of previous records, additional significant flora species are considered unlikely to occur within the study area due to the high levels of disturbance and absence of suitable habitat.

3.3.2 *Fauna*

No national (i.e. under the EPBC Act) or State significant (i.e. under the FFG Act) fauna were recorded during the site assessment. However, there is suitable habitat for Brown Treecreeper *Climacteris picumnus*, Diamond Firetail *Stagonopleura guttata*, Powerful Owl *Ninox strenua*, Squirrel Glider *Petaurus norfolcensis* and Brush-tailed Phascogale *Phascogale tapoatafa* within forest vegetation within (HDF1) and adjacent to the study area, being Heathy Dry Forest EVC. However, as the proposed impacts are predominantly restricted to areas of Heathy Dry Forest with no mature trees, it is considered unlikely that suitable habitat for national and State-significant fauna species will be impacted.

Based on the modified nature of the study area, landscape context and the proximity of previous records (Figure 4), additional significant fauna species are considered unlikely to occur within the study area due to the high levels of disturbance and absence of suitable habitat.

3.3.3 *Ecological Communities*

Five nationally listed ecological communities are predicted to occur within 10 kilometres of the study area (DCCEEW 2025):

- Grassy Eucalypt Woodland of the Victorian Volcanic Plain;
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia
- Natural Temperate Grassland of the Victorian Volcanic Plain;
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains; and
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

However, vegetation within the study area did not meet the condition thresholds that define any nationally significant communities due to the absence of key indicator species.

One FFG Act-listed ecological community has the potential to occur within the study area, being the Victorian Temperate Woodland Bird Community. Forest habitats (i.e. treed areas) representative of Heathy Dry Forest support suitable habitat for a number of woodland bird species associated with the Victorian Temperate Woodland Bird Community; however, as the proposed impacts are predominantly restricted to areas of treeless Heathy Dry Forest, it is considered highly unlikely that suitable habitat for woodland bird species associated with the Victorian Temperate Woodland Bird Community will be impacted.

4 REMOVAL, DESTRUCTION OR LOPPING OF NATIVE VEGETATION (THE GUIDELINES)

4.1 Avoid and Minimise Statement

The proponent has undertaken several measures to avoid and minimise the loss of native vegetation as far as reasonably practicable. Firstly, potential sites were investigated within the local area that met the technical requirements of the project, with the chosen site being considered the most appropriate largely due to the presence of treeless vegetation and areas of bare ground compared to the surrounding mature forest.

A preliminary design was prepared that included the communications tower concrete pad, crane pad, tower layup area, access track and 10-meter bushfire Asset Protection Zone. This design was discussed on site between the Ventia Field Manager and Project Arborist to determine whether any modifications could be made to reduce impacts to native vegetation while still ensuring all construction elements were accommodated. The on-site meeting resulted in a slightly modified design layout that allowed for the retention of six additional trees compared to the preliminary design.

A large majority of the native vegetation being impacted is due to the crane pad and tower layup area, which are only required during the construction stage. Once the works are completed, native vegetation in these two areas will be able to regenerate.

No feasible opportunities exist to further avoid and minimise impacts on native vegetation without undermining the key objectives of the proposal.

4.2 Residual Impacts to Native Vegetation

The below clearing scenario is based on the proposed construction footprint by the proponent in consultation with the Project Arborist.

4.2.1 Vegetation proposed to be removed

The study area is within Location 1, with 0.347 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Basic assessment pathway (Table 1).

Condition scores for vegetation proposed to be removed are based on modelled scores available in the NVR Map (DEECA 2025b).

Table 1. Removal of Native Vegetation (the Guidelines) (DELWP 2017).

Assessment pathway	Basic
Location category	1
Total extent (including past and proposed) (ha)	0.347
Includes endangered EVCs (ha)	0.000
Extent of past removal (ha)	0.000
Extent of proposed removal – Patches (ha)	0.347
Extent of proposed removal – Scattered trees (ha)	0.000
Total Large Trees to be removed (no.)	0
Large patch trees to be removed (no.)	0
Large scattered trees to be removed (no.)	0
Small scattered trees to be removed (no.)	0
EVC Conservation Status of vegetation to be removed	Least Concern (Heathy Dry Forest)

4.2.2 Offset Requirements

The offset requirements for native vegetation removal for the proposed development are 0.391 General Habitat Units.

A summary of the offset requirements associated with the proposed vegetation losses is presented in Table 2 and the Native Vegetation Removal (NVR) Report is presented in Appendix 2.

Table 2. Offset Requirements.

General Offsets Required	0.391 General Habitat Units
Large Trees	0
Vicinity (catchment/council)	Glenelg Hopkins CMA / Pyrenees Shire Council municipality
Minimum Strategic Biodiversity Value*	0.744

***The minimum Strategic Biodiversity Value is 80% of the weighted average score across habitat zones where a General offset is required.

4.2.3 Offset Strategy

According to DEECAs Native Vegetation Offset Register (DEECA 2025f), there are ten offset sites within the Glenelg Hopkins CMA or Pyrenees Shire Council municipality that can be used to satisfy the General Habitat Unit offset requirements.

An offset register search statement identifying the relevant offsite sites is provided in Appendix 3, which provides evidence that the offset obligation can be secured without any difficulty should a permit be provided for the project.

5 LEGISLATIVE AND POLICY IMPLICATIONS

5.1 *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

The proposed action is unlikely to have a significant impact on any matter of NES. As such, a referral to the Commonwealth Environment Minister is unlikely to be required regarding matters listed under the EPBC Act.

5.2 *Flora and Fauna Guarantee Act 1988* (Victoria)

One FFG Act-listed ecological community has the potential to occur within the study area, being the Victorian Temperate Woodland Bird Community. However, as the proposed impacts are restricted to treeless areas of Heathy Dry Forest, it is considered highly unlikely that suitable habitat for woodland bird species associated with the Victorian Temperate Woodland Bird Community will be impacted.

5.3 *Planning and Environment Act 1987* (Victoria)

5.3.1 Local Planning Scheme

The study area is located within the Pyrenees Shire Council. The following zoning and overlays apply (DTP 2025):

- Public Conservation and Resource one (PCRZ)
- Bushfire Management Overlay (BMO)
- Environmental Significance Overlay – Schedule 1 (ESO1)

Environmental Significance Overlay – Schedule 1 Designated Water Supply Areas (ESO1)

The ESO and ESO1 applies to the eastern portion of the study area. ESO1 applies to designated water supply areas (in this instance, the Musical Gully Reservoir) and aims to protect, maintain and (where possible) enhance water quality and yield within the designated catchments and broader region.

Under ESO1, a permit is required to construct a building or construct or carry out works within 100 metres of a waterway, spring or bore, or within 300 metres of a waterbody or water supply channel. Given Maiden Gully Reservoir is 65 meters north of the study area, a permit is required for the tower's construction.

5.3.2 The Guidelines

The State Planning Policy Framework and the decision guidelines at Clause 12.01 Biodiversity and Clause 52.17 Native Vegetation require Planning and Responsible Authorities to have regard for the Guidelines (DELWP 2017).

5.3.3 Implications

The study area is within Location 1, with 0.347 hectares of native vegetation proposed to be removed from the impact area. As such, the permit application falls under the Basic assessment pathway. The offset

requirement for native vegetation removal is 0.391 General Habitat Units. A planning permit from the Pyrenees Shire Council is required to remove, destroy or lop any native vegetation under Clause 52.17 and Clause 42.01 (ESO1). In this instance, the application is required to be referred to DEECA because it is located on Crown land. Given the development footprint is covered by ESO1, the application is required to be referred to Central Highlands Water, who are the determining authority for this overlay schedule.

5.4 *Catchment and Land Protection Act 1994* (Victoria)

One weed listed as noxious under the CaLP Act was recorded during the assessment (Spear Thistle). Listed noxious weeds should be appropriately controlled throughout the study area.

5.5 *Wildlife Act 1975* and Wildlife Regulations 2013 (Victoria)

Any persons engaged to remove, salvage, hold or relocate native fauna during construction must hold a current Management Authorisation under the *Wildlife Act 1975* or under any other Act issued by DEECA.

6 MITIGATION MEASURES

Recommended measures to mitigate impacts upon terrestrial values present within the study area include:

- Minimise impacts to native vegetation and habitats through construction and micro-siting techniques, including fencing retained areas of native vegetation during construction. If indeed necessary, trees should be lopped or trimmed rather than removed;
- All contractors should be aware of ecologically sensitive areas to minimise the likelihood of inadvertent disturbance to areas marked for retention. Native vegetation (areas of sensitivity) should be included as a mapping overlay on any construction plans;
- Tree Protection Zones (TPZs) must be implemented to prevent indirect losses of native vegetation to be retained during construction activities (Standards Australia 2009). A TPZ applies to a tree and is a specific area above and below the ground, with a radius 12 x the Diameter at Breast Height (DBH). At a minimum standard a TPZ should consider the following:
    - A TPZ of trees should be a radius no less than two metres or greater than 15 metres;
    - Construction, related activities and encroachment (i.e. earthworks such as trenching that disturb the root zone) should be excluded from the TPZ;
    - Where encroachment is 10% or more of the total area of the TPZ, the tree should be considered as lost and offset accordingly (unless an arboricultural report specifies otherwise);
    - Directional drilling may be used for works within the TPZ without being considered encroachment. The directional bore should be at least 600 millimetres deep;
    - The above guidelines may be varied if a qualified arborist confirms the works will not significantly damage the tree (including stags / dead trees). In this case the tree would be retained, and no offset would be required; and,
    - Where the minimum standard for a TPZ has not been met an offset may be required.
- Removal of any habitat trees or shrubs (particularly trees/shrubs with nests) should be undertaken between February and September to avoid the breeding season for most fauna species. If any habitat trees or shrubs are proposed to be removed, this should be undertaken under the supervision of an appropriately qualified zoologist to salvage and translocate any displaced fauna. A Fauna Management Plan may be required to guide the salvage and translocation process;
- Where possible, construction stockpiles, machinery, roads, and other infrastructure should be placed away from areas supporting native vegetation;
- Ensure that best practice sedimentation and pollution control measures are undertaken at all times, in accordance with Environment Protection Authority (EPA) guidelines where relevant (e.g. EPA 2020; EPA 2023; Victorian Stormwater Committee 1999) to prevent offsite impacts to waterways and wetlands; and,
- As indigenous flora provides valuable habitat for indigenous fauna, it is recommended that any landscape plantings that are undertaken as part of the proposed works are conducted using indigenous species sourced from a local provenance that align with the modelled 1750 EVC present on site, rather than exotic deciduous trees and shrubs.

7 SUMMARY OF PLANNING IMPLICATIONS

Further requirements associated with development of the study area, as well as additional studies or reporting that may be required, are provided in Table 3.

Table 3. Further requirements associated with development of the study area.

Relevant Legislation	Implications	Further Action
Environment Protection and Biodiversity Conservation Act 1999	The proposed action is unlikely to have a significant impact on any matter of NES. As such, a referral to the Commonwealth Environment Minister is unlikely to be required regarding matters listed under the EPBC Act.	No further action required.
Flora and Fauna Guarantee Act 1988	One FFG Act-listed ecological community has the potential to occur within the study area, being the Victorian Temperate Woodland Bird Community. However, as the proposed impacts are restricted to treeless areas of Heathy Dry Forest, it is considered highly unlikely that suitable habitat for woodland bird species associated with the Victorian Temperate Woodland Bird Community will be impacted.	No further action required.
Planning and Environment Act 1987	The study area is within Location 1, with 0.347 hectares of native vegetation proposed to be removed from the impact area. As such, the permit application falls under the Basic assessment pathway. The offset requirement for native vegetation removal is 0.391 General Habitat Units. A planning permit from the Pyrenees Shire Council is required to remove, destroy or lop any native vegetation under Clause 52.17 and Clause 42.01 (ESO1). In this instance, the application is required to be referred to DEECA because it is located on Crown land. Given the development footprint is covered by ESO1, the application is required to be referred to Central Highlands Water, who are the determining authority for this overlay schedule.	Respond to Council's Request for Further Information letter for planning application number PA25018.
Catchment and Land Protection Act 1994	One weed listed as noxious under the CaLP Act was recorded during the assessment (Spear Thistle). Listed noxious weeds should be appropriately controlled throughout the study area.	Listed noxious weeds should be appropriately controlled throughout the study area.
Wildlife Act 1975	Any persons engaged to conduct salvage and translocation or general handling of terrestrial fauna species must hold a current Management Authorisation.	Ensure wildlife specialists hold a current Management Authorisation.

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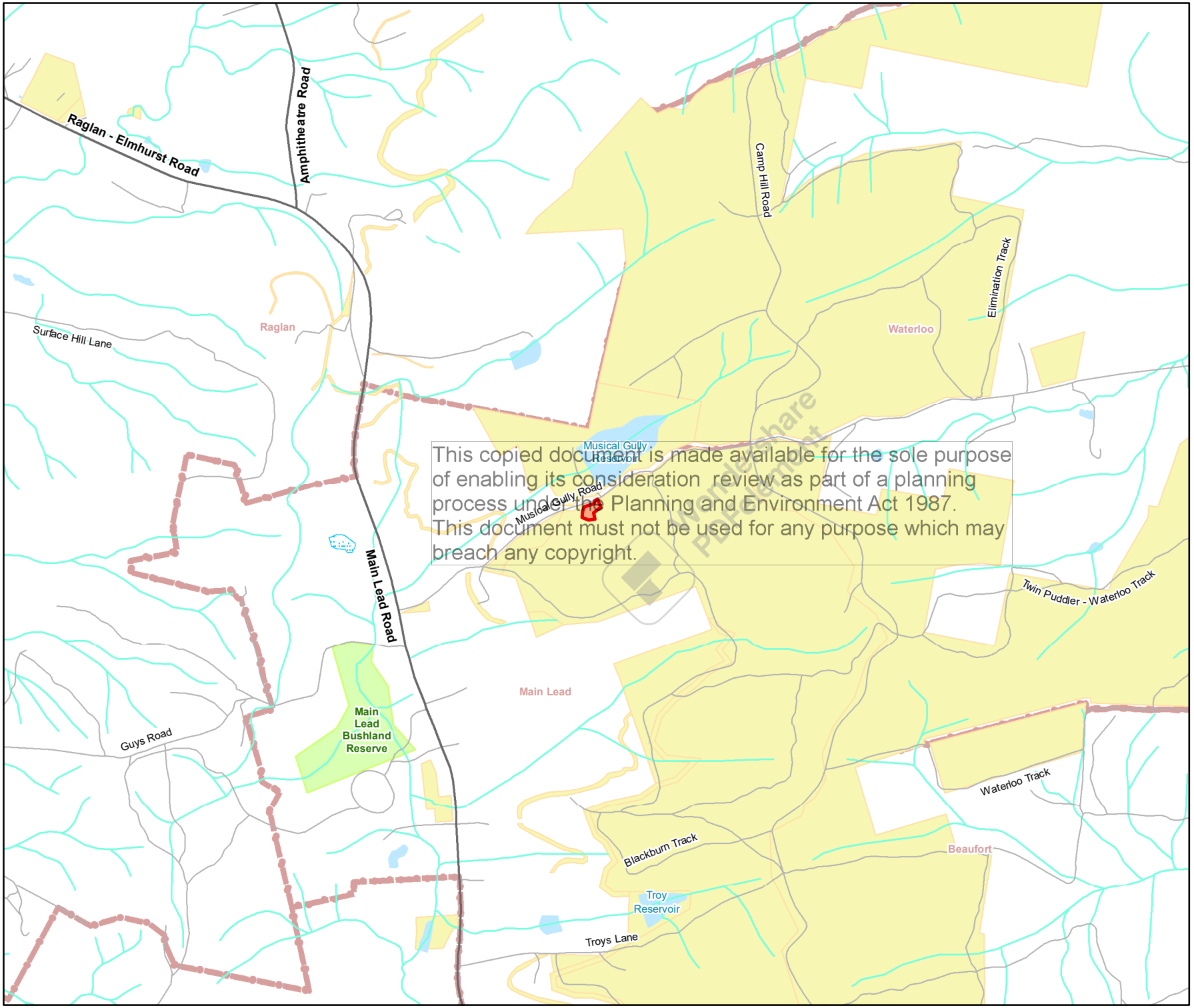

Legend

- Study Area
- Arterial road
- Local or minor road
- Minor watercourse
- Permanent waterbody
- Wetland/swamp
- Parks and reserves
- Crown land
- Localities

Figure 1

Location of the study area

Biodiversity Assessment for a NBN tower and associated cabling, Musical Gully Road, Waterloo

0 250 500
Metres

Map Scale: 1:20,000 @ A4
Coordinate System: GDA2020 MGA Zone 54

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Figure 2

Ecological features

Biodiversity Assessment for a NBN tower and associated cabling, Musical Gully Road, Waterloo

Legend

- Study Area
- NBN tower
- Assess Protection Zone
- Access
- CaLP weed

Ecological Vegetation Class

- Heathy Dry Forest (EVC 20)
- Impacted vegetation

N

0 5 10

Metres

Map Scale: 1:500 @ A4
Coordinate System:
GDA2020 MGA Zone 54

19056_Fig02_EcoFeat_PG20 16/04/2025 melsley

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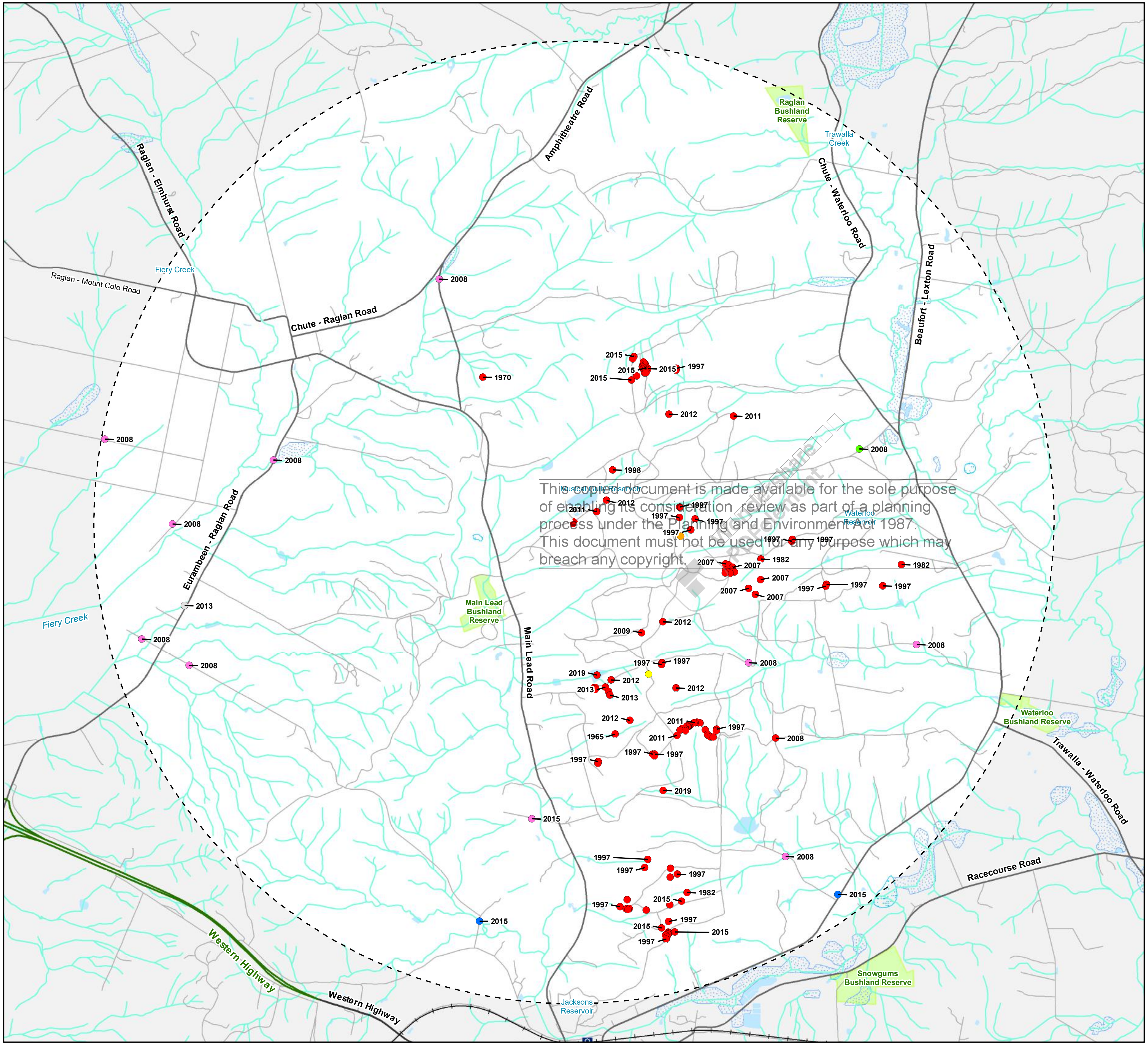
Aerial source: Nearmap 2025



Legend

Study Area

Significant flora

- Basalt Sun-orchid
- Ben Major Grevillea
- Coast Gum
- Dwarf Boronia
- Giant Honey-myrtle
- Matted Flax-lily
- Yarra Gum

Figure 3

Previously documented significant flora within 5km of the study area

Biodiversity Assessment for a NBN tower and associated cabling, Musical Gully Road, Waterloo

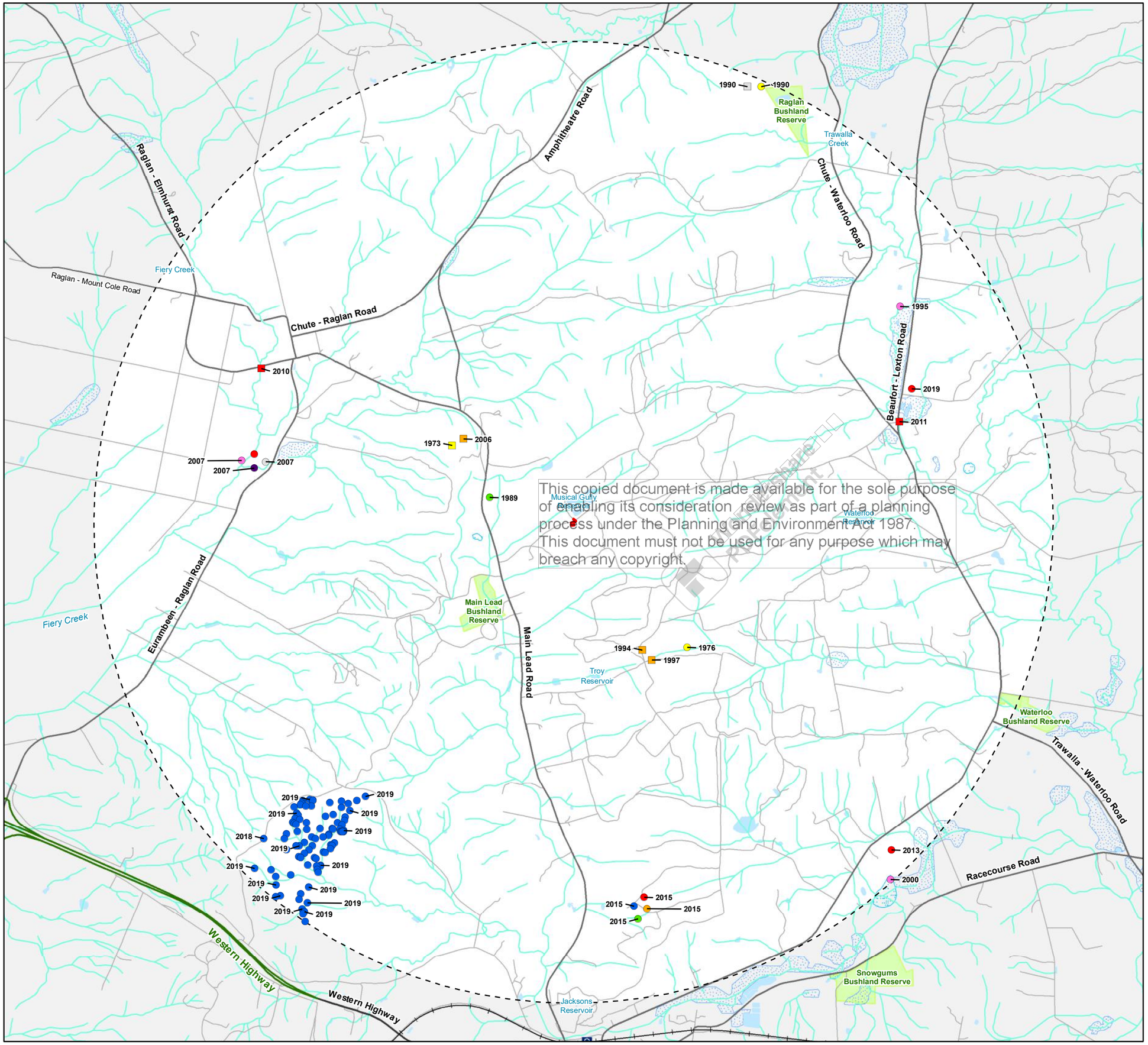
0 1 2
Kilometres

Map Scale: 1:38,000 @ A3
Coordinate System: GDA2020 MGA Zone 54

ecology & heritage partners

Victorian Biodiversity Atlas (VBA). Sourced from: 'VBA_FLORA25', 'VBA_FLORA100', 'VBA_FAUNA25' and 'VBA_FAUNA100', Updated January 2025 © The State of Victoria, Department of Energy, Environment and Climate Action. Records prior to 1949 not shown. //
Base data source: Victoria State Government. Disclaimer: the State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

19056_Fig03_SigFlora_G20 9/04/2025 dvaladares



Legend

Study Area

Significant fauna

- Blue-billed Duck
- Brolga
- Brown Toadlet
- Brown Treecreeper
- Brush-tailed Phascogale
- Golden Sun Moth
- Growling Grass Frog
- Latham's Snipe
- Little Eagle
- Little Galaxias
- Powerful Owl
- White-throated Needletail

Figure 4

Previously documented significant fauna within 5km of the study area

Biodiversity Assessment for a NBN tower and associated cabling, Musical Gully Road, Waterloo

N

0 1 2

Kilometres

Map Scale: 1:38,000 @ A3
Coordinate System: GDA2020 MGA Zone 54

ecology & heritage partners

APPENDIX 1 FLORA RESULTS

Legend:

^ Naturally growing (i.e. non-planted) indigenous species to the study area

Planted Victorian (non-indigenous) and Australian species

c Listed as a noxious weed under the CaLP Act

Table A1.1. Flora within the study area.

Scientific Name	Common Name	Notes
INDIGENOUS SPECIES		
Acacia genistifolia	Spreading Wattle	^
Acacia melanoxylon	Blackwood	^
Acacia paradoxa	Hedge Wattle	^
Acacia pycnantha	Golden Wattle	^
Acrotriche serrulata	Honey-pots	^
Austrostipa spp.	Speargrass	^
Dianella revoluta	Black-anther Flax-lily	^
Epacris impressa	Common Heath	^
Eucalyptus aromaphloia	Scentbark	^
Eucalyptus globulus subsp. *pseudoglobulus*	Gippsland Blue-gum	^
Eucalyptus goniocalyx	Bundy	^
Eucalyptus macrorhyncha	Red Stringybark	^
Eucalyptus obliqua	Messmate Stringybark	^
Exocarpos cupressiformis	Cherry Ballart	^
Gonocarpus tetragynus	Common Raspwort	^
Hakea nodosa	Yellow Hakea	Possibly of planted origin
Juncus pallidus	Pale Rush	^
Lepidosperma filiforme	Common Rapier-sedge	^
Leucopogon virgatus var. *virgatus*	Common Beard-heath	^
Lomandra filiformis	Wattle Mat-rush	^
Oxalis perennans	Grassland Wood-sorrel	^
Poa sieberiana	Grey Tussock-grass	^
Rytidosperma caespitosum	Common Wallaby-grass	^
Rytidosperma pallidum	Silvertop Wallaby-grass	^
Rytidosperma spp.	Wallaby Grass	^

Scientific Name	Common Name	Notes
Styphelia humifusa	Cranberry Heath	^
NON-INDIGENOUS OR INTRODUCED SPECIES		
Acacia decurrens	Early Black-wattle	-
Acetosella vulgaris	Sheep Sorrel	-
Aira cupaniana	Quicksilver Grass	-
Briza maxima	Large Quaking-grass	-
Centaurium erythraea	Common Centaury	-
Cirsium vulgare	Spear Thistle	c
Cynodon dactylon var. *dactylon*	Couch	-
Eucalyptus occidentalis	Swamp Yate	#
Hypochaeris radicata	Flatweed	-
Lysimachia arvensis var. *arvensis*	Scarlet Pimpernel	-
Plantago lanceolata	Ribwort	-
Romulea rosea	Onion Grass	-

APPENDIX 2 NATIVE VEGETATION REMOVAL (NVR) REPORT

Native Vegetation Removal Report

NVRR ID: 359_20250416_6MO

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

Report details

Date created: 16/04/2025

Local Government Area: PYRENEES SHIRE

Registered Aboriginal Party: Wadawurrung

Coordinates: 143.37896, -37.37888

Address: MUSICAL GULLY ROAD WATERLOO 3373

Regulator Notes

Removal polygons are located:

- On Crown Land

Summary of native vegetation to be removed

Assessment pathway	**Basic Assessment Pathway**		
Location category	Location 1 The native vegetation extent map indicates that this area is not typically characterised as supporting native vegetation. It does not meet the criteria to be classified as Location Category 2 or 3. The removal of less than 0.5 hectares of native vegetation in this area will not require a Species Offset.		
Total extent including past and proposed removal (ha) *Includes endangered EVCs (ha): 0*	**0.347**	*Extent of past removal (ha)*	*0*
		Extent of proposed removal - Patches (ha)	*0.347*
		Extent of proposed removal - Scattered Trees (ha)	*0.000*
No. Large Trees proposed to be removed	**0**	*No. Large Patch Trees*	*0*
		No. Large Scattered Trees	*0*
No. Small Scattered Trees	0		

Offset requirements if approval is granted

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

General Offset amount [1]	**0.391 General Habitat Units**
Minimum strategic biodiversity value score [2]	0.744
Large Trees	0
Vicinity	Glenelg Hopkins CMA or PYRENEES SHIRE LGA

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

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

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

Application requirements

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

Application Requirement 1 - Native vegetation removal information

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

Application Requirement 2 - Topographical and land information

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

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

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

Application Requirement 4 - Past removal

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

Application Requirement 5 - Avoid and minimise statement

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

Application Requirement 6 - Property Vegetation Plan

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

Application Requirement 7 - Defendable space statement

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

- Describes the bushfire threat; and

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

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

Application Requirement 8 - Native Vegetation Precinct Plan

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

Application Requirement 9 - Offset statement

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

Next steps

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

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

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

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

Application Requirement 6 - Property Vegetation Plan

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

Appendix 1: Description of native vegetation to be removed

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

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

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

Native vegetation to be removed

Information provided by or on behalf of the applicant			Information calculated by NVR Map							
Zone	**Type**	**DBH (cm)**	**EVC code (modelled)**	**Bioregional conservation status**	**Large Tree(s)**	**Condition score (modelled)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**General Habitat Units**
1	Patch	-	CVU_0020	Least Concern	-	0.790	0.067	0.067	0.930	0.076
2	Patch	-	CVU_0020	Least Concern	-	0.789	0.034	0.034	0.930	0.038
3	Patch	-	CVU_0020	Least Concern	-	0.776	0.201	0.201	0.930	0.226
4	Patch	-	CVU_0020	Least Concern	-	0.760	0.034	0.034	0.930	0.037
5	Patch	-	CVU_0020	Least Concern	-	0.730	0.010	0.010	0.930	0.010
6	Patch	-	CVU_0020	Least Concern	-	0.730	0.003	0.003	0.930	0.003

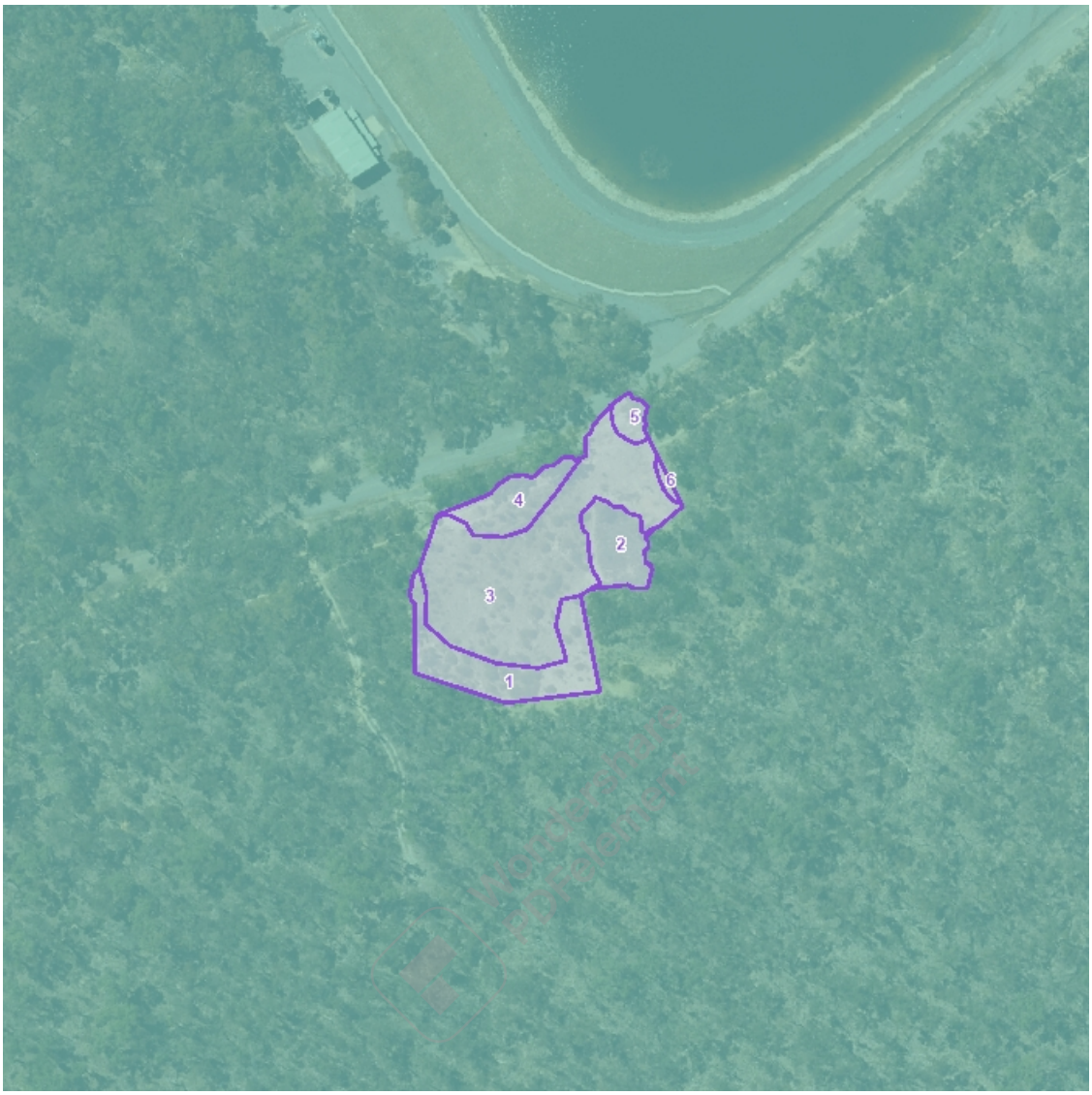
Appendix 2: Images of mapped native vegetation

1. Property in context

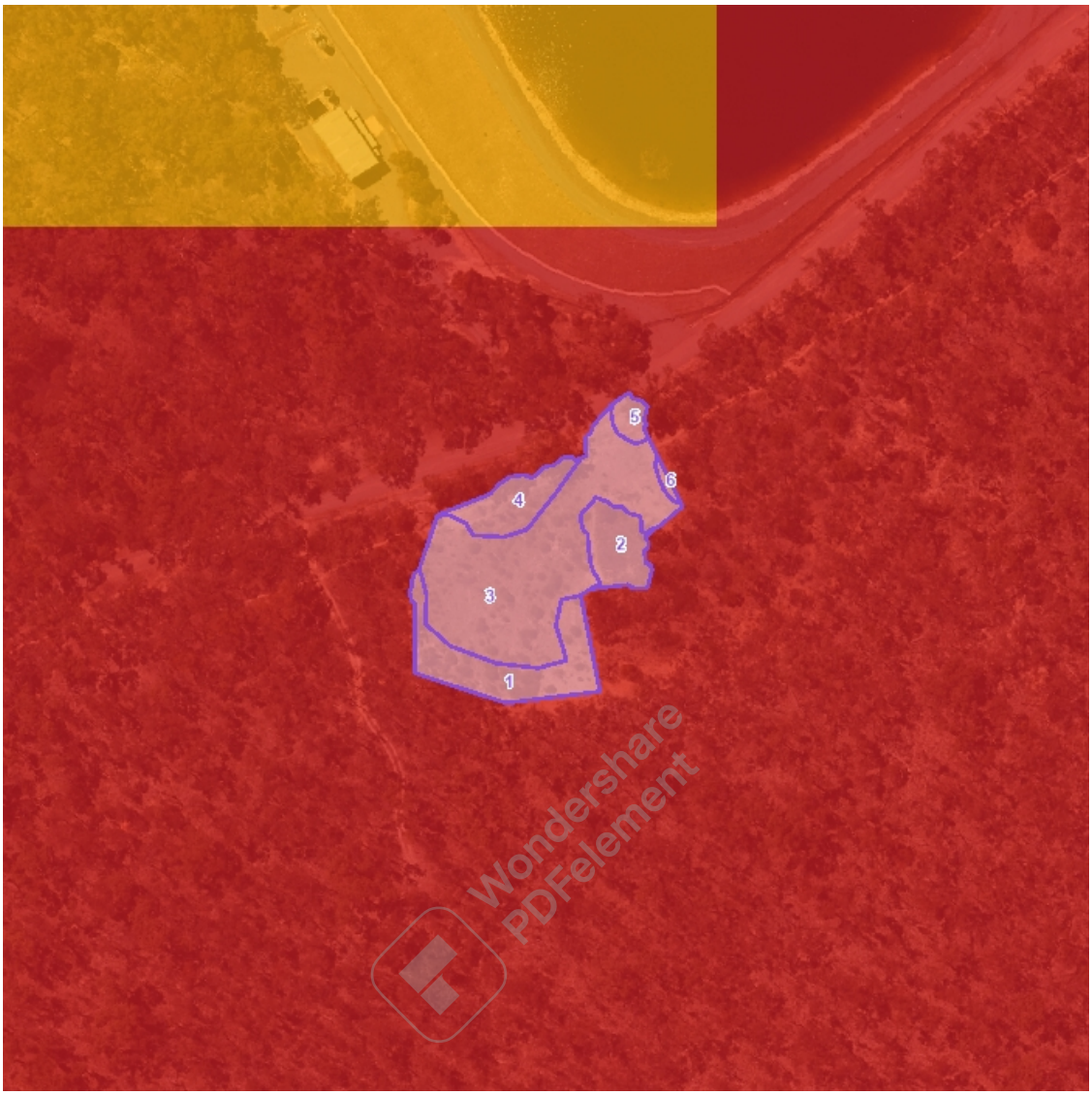
2. Aerial photograph showing mapped native vegetation

Proposed Removal

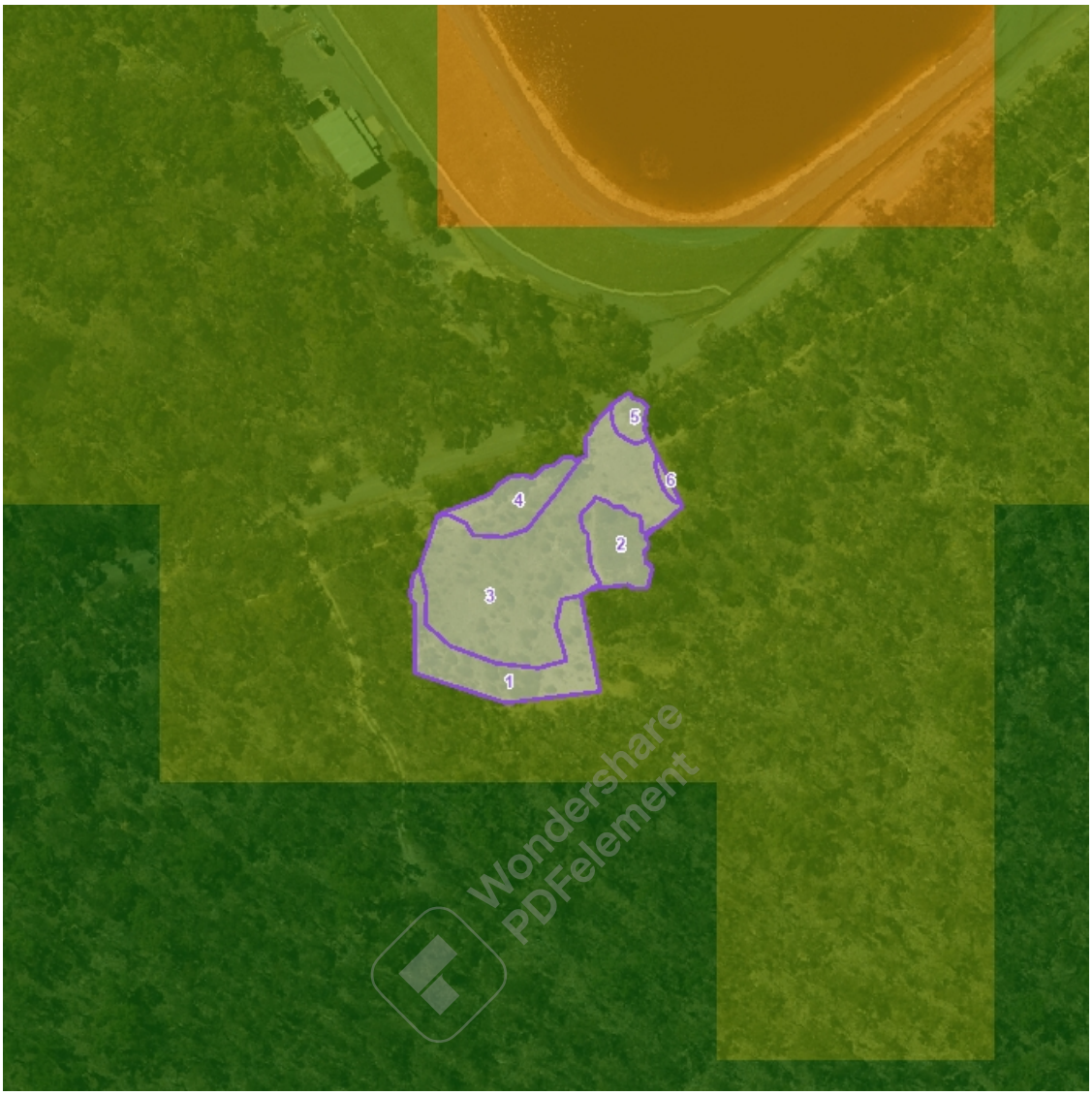
3. Location Risk Map



4. Strategic Biodiversity Value Score Map



5. Condition Score Map



6. Endangered EVCs

Not Applicable

APPENDIX 3 AVAILABLE NATIVE VEGETATION CREDITS

Report of available native vegetation credits

This report lists native vegetation credits available to purchase through the Native Vegetation Credit Register.

This report is **not evidence** that an offset has been secured. An offset is only secured when the units have been purchased and allocated to a permit or other approval and an allocated credit extract is provided by the Native Vegetation Credit Register.

Date and time: 16/04/2025 09:39 **Report ID: 29360**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.391	0.744	0	CMA	Glenelg Hopkins
			or LGA	Pyrenees Shire

Details of available native vegetation credits on 16 April 2025 09:39

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-0639	4.563	0	Glenelg Hopkins	Moyne Shire	Yes	Yes	No	Bio Offsets
BBA-1139_05	0.407	0	Glenelg Hopkins	Moyne Shire	No	Yes	No	VegLink
BBA-3031	0.748	25	North Central	Pyrenees Shire	Yes	Yes	No	VegLink
TFN-C0228	4.631	0	Glenelg Hopkins	Glenelg Shire	No	Yes	No	Bio Offsets
VC_CFL-3727_01	4.346	24	Glenelg Hopkins	Ararat Rural City	Yes	Yes	No	VegLink
VC_CFL-3756_01	12.249	0	Glenelg Hopkins	Ararat Rural City	Yes	Yes	No	VegLink
VC_CFL-3763_01	3.246	266	Glenelg Hopkins	Glenelg Shire	Yes	Yes	No	VegLink
VC_CFL-3814_01	12.719	526	Glenelg Hopkins	Southern Grampians Shire	Yes	Yes	No	VegLink
VC_CFL-3814_01	0.958	0	Glenelg Hopkins	Southern Grampians Shire	Yes	Yes	Yes	VegLink
VC_TFN-C2046_01	7.438	1446	Glenelg Hopkins	Southern Grampians Shire	Yes	Yes	No	Ecocentric, Ethos, VegLink

These sites meet your requirements using alternative arrangements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
TFN-C0543	0.407	7	Glenelg Hopkins	Southern Grampians Shire	No	Yes	No	Bio Offsets
VC_CFL-3693_01	0.406	61	Glenelg Hopkins	Ararat Rural City	Yes	Yes	No	VegLink

These potential sites are not yet available, land owners may finalise them once a buyer is confirmed.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
VC_CFL-3807_01	5.606	62	Glenelg Hopkins	SOUTHERN GRAMPIANS SHIRE	Yes	Yes	No	Contact NVOR

LT - Large Trees *CMA - Catchment Management Authority* *LGA - Municipal District or Local Government Authority*

Next steps

If applying for approval to remove native vegetation
Attach this report to an application to remove native vegetation as evidence that your offset requirement is currently available.

If you have approval to remove native vegetation
Below are the contact details for all brokers. Contact the broker(s) listed for the credit site(s) that meet your offset requirements. These are shown in the above tables. If more than one broker or site is listed, you should get more than one quote before deciding which offset to secure.

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
	Fully traded			
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@deeca.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

For more information contact the DEECA Customer Service Centre 136 186 or the Native Vegetation Credit Register at nativevegetation.offsetregister@delwp.vic.gov.au

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Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@deeca.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

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