



Strategic Assessment Report  
Moe Water Treatment Plant Planning Scheme Amendment  
and S96A Application Gippsland Water

May 2020

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# 1. Introduction

## 1.1 Purpose of this report

The purpose of this strategic assessment report is to support Gippsland Water's request for a Planning Scheme Amendment (PSA) and combined Section 96 Planning Permit Application to facilitate the proposed upgrade and expansion of the existing Moe Water Treatment Plant (WTP).

Gippsland Water have recently purchased a property at 58 Moe South Road, Moe South, adjoining the existing WTP site at 56 Moe South Road, Moe South, to facilitate the expansion.

Gippsland Water seek an amendment to the Latrobe Planning Scheme to rezone this newly acquired lot from the Rural Living Zone to the Public Use Zone – Schedule 1 to bring it into conformity with the existing WTP site. Concurrently, Gippsland Water seek a planning permit from Council to allow for the development of a new Clear Water Storage (CWS) basin on this property and part of the existing WTP site, plus associated removal of native vegetation.

The proposed works are required to expand the water storage capacity of Moe WTP facility in order to meet the future needs of the region.

## 2. Project overview

### 2.1 Who are Gippsland Water?

Gippsland Water is charged with the delivery of water, wastewater and waste recovery services across the Gippsland region. It supplies drinking water to more than 70,000 customers, wastewater services to more than 63,000 customers across an area of more than 5,000 square kilometres. The infrastructure owned and managed by Gippsland Water includes more than 2,000 kilometres of water mains, 15 water treatment plants, over 1,700 kilometres of sewer mains and 14 wastewater treatment plants.

Gippsland Water treats 35 million litres of wastewater a day from nine towns in central Gippsland and serves the needs of more than 48,000 domestic customers and 300 local businesses.

### 2.2 What is the Moe Water Treatment Plant (WTP)?

Gippsland Water own and operate the Moe Water Treatment Plant (WTP) located at 56 Moe South Road, Moe South.

The Moe WTP receives raw water from two sources; the Narracan Creek and the Tanjil River. This raw water is transferred to the Moe WTP, processed on site, and then distributed to customers through a network of water mains as follows:

- Two gravity mains providing water supply to the Newborough basin
- One gravity main providing water supply to the Newborough higher level
- One gravity main providing water supply to Moe, Trafalgar, Yarragon and Darnum North
- One gravity main providing water supply to Moe
- One pumped main providing water supply to the Moe South Tank

The Moe WTP currently has a maximum production capacity of 24 ML/d with a peak day demand of 22 ML/d based on 1300 L/lot/d and peak instantaneous flows of 30 ML/day in sections of the plant.

The Moe water supply system serves the towns of Moe, Newborough, Yallourn North, Trafalgar, Yarragon and Darnum (north of freeway) as well as the Yallourn W works area site of the Yallourn Power Station. Various rural properties in neighbouring localities are also served at Westbury, Moe South, Hernes Oak, Coalville, Narracan, Trafalgar South, Trafalgar East and Yarragon South.

### 2.3 Why is an expansion required?

Gippsland Water are proposing to construct a new 25ML Clear Water Storage (CWS) basin to expand the storage and processing capacity of the Moe WTP to meet the future needs of the Gippsland region and community.

Currently, there is only one 22 ML CWS storage basin at the Moe WTP which will reach capacity by 2024 under future growth scenarios. This will impact approximately 63 percent of the Moe/Newborough water supply system, including areas in Moe, Trafalgar and Yarragon.

Construction of a second CWS basin will improve the overall resilience of the Moe/Newborough water network and ensure adequate water supply is provided for the system in the long term. The second CWS basin will also be essential to providing for operational flexibility or redundancy when the existing CWS basin goes offline. Should the existing basin be taken offline, it is estimated that services to approximately 5,000 customers would be impacted.

Gippsland Water have recently purchased the adjoining residential property at 58 Moe South Road, Moe South (expanded site) in order to facilitate the expansion of the facility. The expansion, subject to the requisite approvals, will need to be complete by December 2022 to ensure that water supply to the Latrobe region can be sustained going forward.

## 3. Site and surrounds

### 3.1 56 Moe South Road, Moe South (existing WTP site)

The Moe WTP is located at 56 Moe South Road, Moe South; approximately 2.5 kilometres south of the Moe Township. The existing WTP site is irregular in shape and covers an area of approximately 0.15 square kilometres.

The site is accessed off Moe South Road via a dedicated access road approximately 298 metres long. Infrastructure within the existing WTP site is setback approximately 330 metres from Moe South Road.

Existing infrastructure within the Moe WTP site is concentrated in the southeast part of the property, with the balance of the property being covered in dense treed vegetation. The tree canopy within the vegetated areas on site is approximately 5-10 metres in height. The WTP site currently accommodates a 22ML CWS basin, sludge lagoon and sludge handling facility, pump station, filtration building, chlorine contact tank and chlorine gas dosing facility, combined inlet works system, and associated pipework and ancillary infrastructure.

### 3.2 58 Moe South Road, Moe South (expanded site – to be rezoned)

A triangular parcel of land sits along the southern boundary of the existing WTP site, known as 58 Moe South Road, Moe South. This property was previously owned by Gippsland Water and accommodated a caretaker's residence before being sold privately. Gippsland Water recently reacquired this lot to facilitate the proposed expansion of the Moe WTP.

This land parcel is approximately 8,970 square metres in area and is accessed directly off the access track serving the Moe WTP.

The property currently accommodates a single residence (previously care-takers residence) and several outbuildings. Established vegetation is present close to the property entrance in the northeast part of the site. Scattered trees and shrubs are also present close to the dwelling and within the rear yard of the property. The balance of the land remains relatively clear, comprising open lawn areas.

### 3.3 Surrounding context

Land surrounding the existing WTP and newly acquired lot is characterised by low density rural residential uses, with pockets of densely vegetated land scattered throughout the area. Many of the properties which adjoin the WTP to the immediate west, north and northeast feature dense vegetation along their common boundary with the WTP. Properties which adjoin the WTP to the immediate south and south east are accessed of Alvina Court which abuts the WTP access track where it is accessed off Moe South Road.

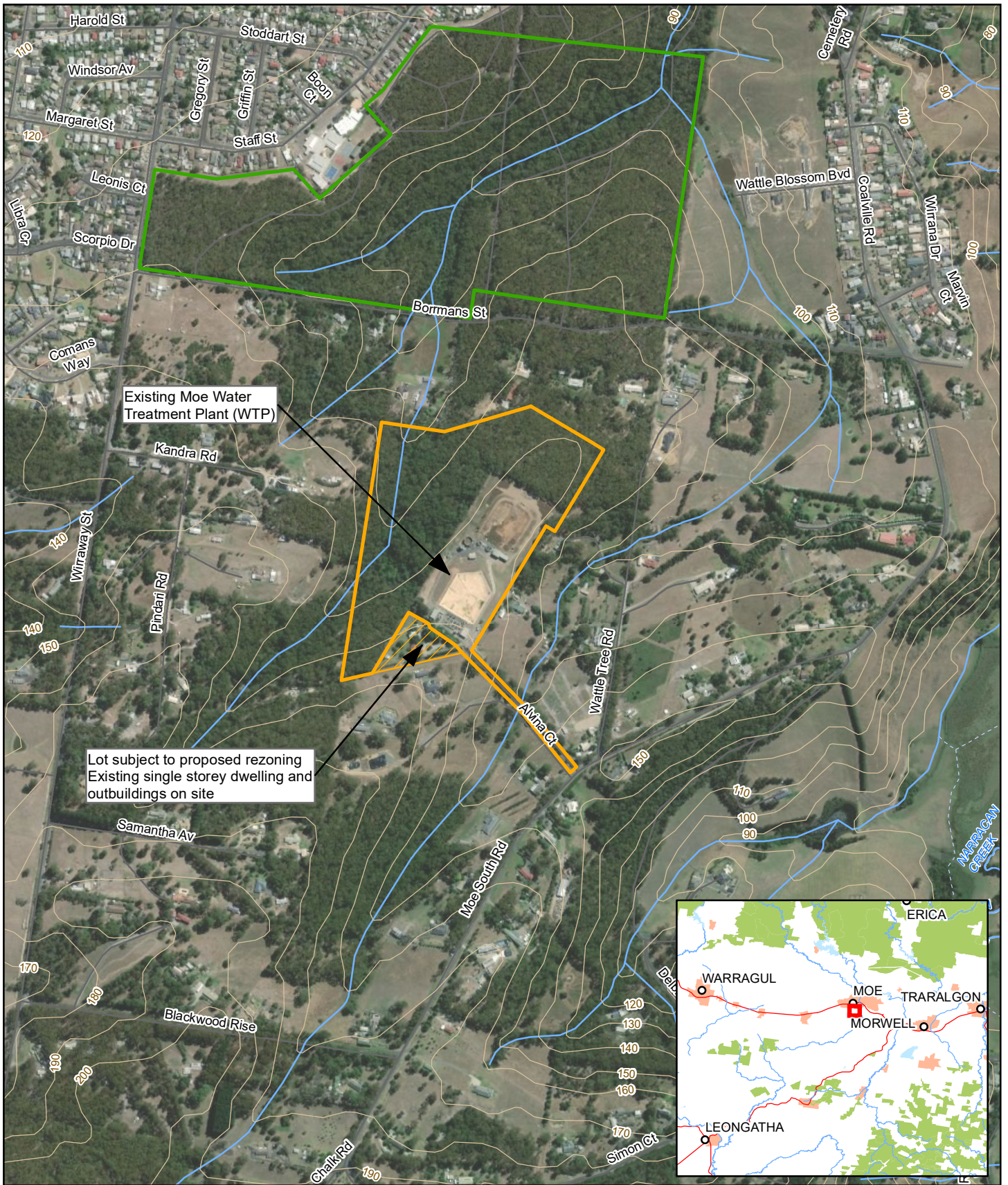
The southern boundary of the expanded site abuts 30 Alvina Court, Moe South which features a single-storey rural residence and large shed/garage. The dwelling on this property is set back approximately 42 metres from its northern boundary. Along this northern boundary is a high-pressure gas main and easement owned by APA Group.

Further southwest of this neighbouring property is another rural residence located at 38 Alvina Court, Moe South. This property also features a single-storey dwelling and large shed/garage. The property shares its northern boundary with part of the existing Moe WTP site within which part of the proposed new CWS basin will be sited. The dwelling on this property is set back approximately 83 metres from its northern boundary.

To the west of the proposed WTP expansion area are properties located at 21 and 25 Pindari Road. These properties feature single dwellings setback approximately 186 metres and 311 metres from their eastern boundaries respectively. Both dwellings are set on large rural residential allotments and will be separated from the proposed works area by dense established treed vegetation.

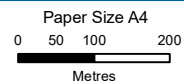
As discussed in Section 5 of this report, the abovementioned landowners have been consulted with by Gippsland Water and have provided their support for the project.

A Locality Plan showing the existing WTP site and newly acquired lot is provided at Figure 1 overleaf.

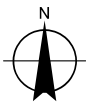


**LEGEND**

- 58 Moe South Road Moe South
- 56 Moe South Road Moe South
- Contours 10m
- Road
- Stream
- Drain/Channel/Other
- Watercourse
- Edward Hunter Heritage Bushland Reserve



Horizontal Datum: GDA 1994  
Grid: GCS GDA 1994



Gippsland Water  
Moe WTP Rezoning

Job Number | 31-12516874  
Revision | B  
Date | 08/04/2020

Locality

**Figure 1**

### 3.4 Land tenure

Table 1 below provides land tenure information for this project.

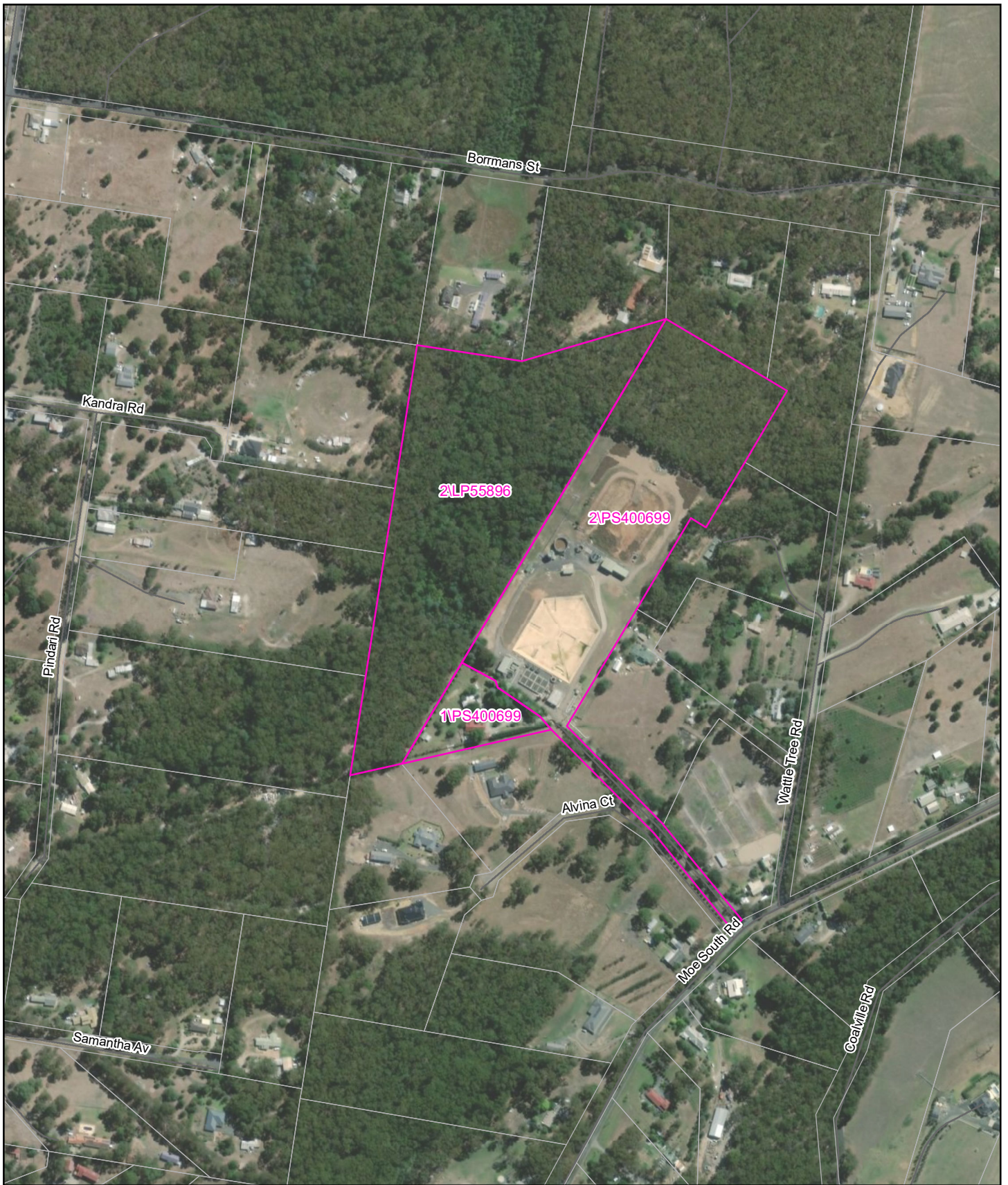
The request to rezone land from the RLZ to PUZ1 applies only to 58 Moe South Road, Moe South (Lot 1 / PS400699).

The concurrent planning permit application to facilitate the proposed upgrade works applies to all lots shown in the table below. A copy of title information for the properties below are provided at Appendix A.




Table 1 Property details

| Description           | Address                         | Lots / Title Info | Owner           |
|-----------------------|---------------------------------|-------------------|-----------------|
| Existing Moe WTP      | 56 Moe South Road,<br>Moe South | Lot 2 / PS 400699 | Gippsland Water |
|                       |                                 | Lot 2 / LP55896   |                 |
| Recently acquired lot | 58 Moe South Road,<br>Moe South | Lot 1 / PS400699  | Gippsland Water |

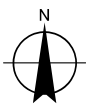
A Land Tenure Map is provided at Figure 2 overleaf.



LEGEND

-  Road
-  Parcels of interest
-  Parcel

Paper Size A4  
 0 30 60 120  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 55



Gippsland Water  
 Moe WTP Rezoning

Job Number | 31-12516874  
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Land Tenure

Figure 2

## 4. Proposed works

### 4.1 Description of works

The scope of works will comprise:

- Construction of a new 25 ML CWS basin (with operating levels similar to the existing water supply basin to allow efficient hydraulic operation)
- Hydraulic infrastructure including pipework, embankment pipe penetrations, overflow spillway, liner underdrain, valves and fittings, and interconnections
- Installation of a backwash pump station for the existing filters
- A new crushed-rock access track around the CWS outer embankment toe and on the CWS embankment crest
- Associated civil works including Guardrail/edge protection or similar to prevent vehicles entering the basin.
- Landscape planting along the boundary to the southern neighbouring property (as per agreement with neighbouring land owner)
- Creation of temporary stockpile / construction lay-down areas

To facilitate the above works, native vegetation will need to be removed to the minimum extent necessary. Impacts to native vegetation are discussed further in Section 5.1 and Section 7.5.1 of this report which includes investigation of avoid and minimise principles adopted by the project.

A high-pressure gas main is present along the northern boundary of the adjacent property to the south. The asset owner was consulted during the Functional Design phase and its requirements incorporated into the design.

The design and siting of the CWS basin has also taken into account other future upgrade works identified by Gippsland Water for the Moe WTP. The CWS basin design includes allowances for future plant infrastructure which could include upgrades to the plant's chemical storage and dosing systems, a new roof/cover for the existing 22ML basin, and UV disinfection upgrades.

A Site Context and Design Response Plan is provided at Figure 3.

A Preliminary Concept Plan for the works is provided at Figure 4.

#### 4.1.1 Access and services

Access to the new CWS basin will be provided from the existing Moe WTP property at 56 Moe South Road, Moe South.

All proposed site access tracks for the CWS will be connected to the existing access track servicing the WTP near the south-west corner of the existing basin.

Utility services including water and electricity will be connected back to the existing WTP site.

During the construction period, parking will be provided east of the proposed CWS basin and south of the existing clarifiers at the WTP.

#### 4.1.2 Construction

Construction of the new CWS basin will take approximately 15 months, including 3 months for demolition and vegetation removal works and 12 months of construction for the CWS basin and ancillary works.

To maintain water security and supply for the region, Gippsland Water require the construction of the basin to be completed by December 2022.

During construction of the second basin, the Moe WTP and existing CWS basin will remain operational to maintain water supply in the region.

The construction phase will involve the following steps:

- “No-go” zones set up where appropriate for the APA easement and pipeline, and for areas of native vegetation be retained
- Establishment of site boundary inclusive of sediment control
- Site preparation works including demolition, clearing and excavation to facilitate construction
- Onsite storage of stripped and cut material for offsite disposal or use in embankment construction and topsoiling dressing
- Construction of embankments, penetrations and access track
- Installation of basin, back wash pump, and associated hydraulic infrastructure
- Provision of landscaping

#### 4.1.3 Noise

Noise abatement has also been considered in the context of the design, construction and operation of the proposed expanded Moe WTP facility.

Through site location and design, the proposed CWS basin has been strategically sited to allow for the basin to be constructed to the same relative level as the existing CWS basin serving the Moe WTP. This has significantly reduced the need for additional water transfer pumps, electrical usage and noise emissions generated during the operation of the basin.

During construction and operation, noise levels will be managed in compliance with EPA requirements including EPA Guidelines *Noise from Industry in Regional Victoria (Publication 1411)*.

Once operational, the expanded WTP is expected to generate similar noise levels to that of the existing facility. The second water storage basin itself will not be a source of noise emission however the associated backwash pump proposed will generate low levels of noise.

Gippsland Water have commissioned GHD to prepare an Operational Noise Assessment for the project to ensure that compliance with noise requirements can be achieved. A copy of this assessment is provided at Appendix B.

The operational noise modelling and assessment undertaken has recommended that an acoustic enclosure be incorporated around the proposed backwash pump to ensure noise compliance is achieved for all sensitive receiver locations around the site, at all time periods – day, evening and night.

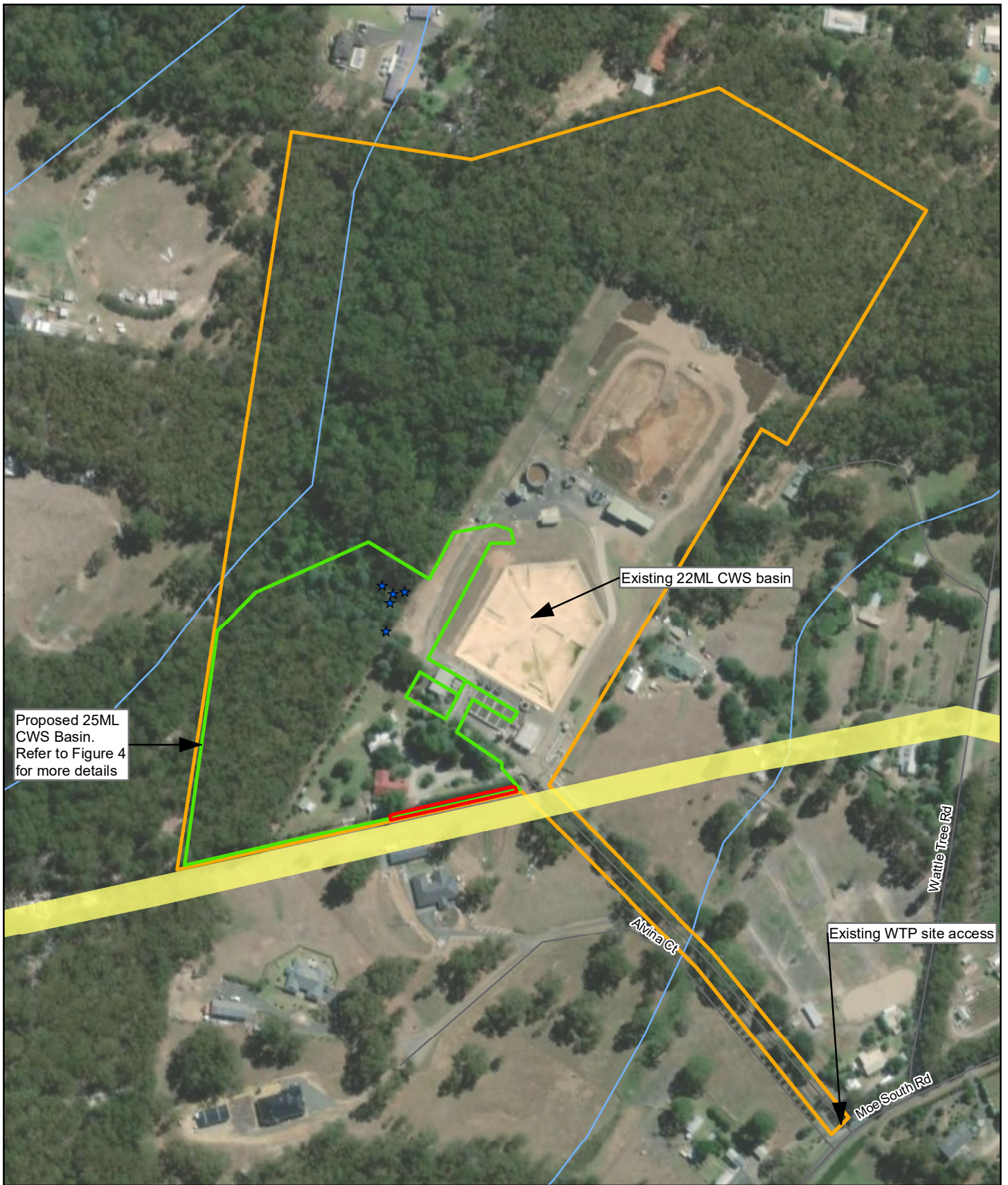
The noise enclosure is recommended to have the following minimum specifications:

- Construction from solid materials with a minimum sound Rw 32

- It is recommended the enclosure have a maximum size of 4m x 4m x 3m (ceiling height)
- Enclosure walls should be constructed of solid materials with an acoustic rating of Rw 32 and a minimum transmission loss as per Table 3 of Appendix B.
- Any enclosure doors or openings such as louvres should be located on the northern side of the enclosure facing away from sensitive receivers.
- Any duct work, openings, and penetrations for ventilation need to be acoustically treated such that it does not compromise the acoustic performance of the enclosure.

Gippsland Water will incorporate this recommended noise enclosure into their expansion design during the detailed design phase of the project. Amended plans providing further details of the proposed noise mitigation measure will be provided to Council as a condition of permit.

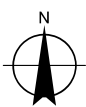
Overall with the proposed noise mitigation measure adopted, no adverse noise impacts are expected as part of the project.



**LEGEND**

- ★ Eucalyptus Strzeleckii - trees to be retained
- Stream
- Approximate High-pressure gas easement
- Proposed Expanded Moe WTP Site
- Proposed Extent of Landscaping
- Approximate Works Area Footprint
- Road

Paper Size A4  
 0 15 30 60  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 55



Gippsland Water  
 Moe WTP Rezoning

Job Number | 31-12516874  
 Revision | C  
 Date | 15/04/2020

**Site Context and  
 Design Response Plan**

**Figure 3**

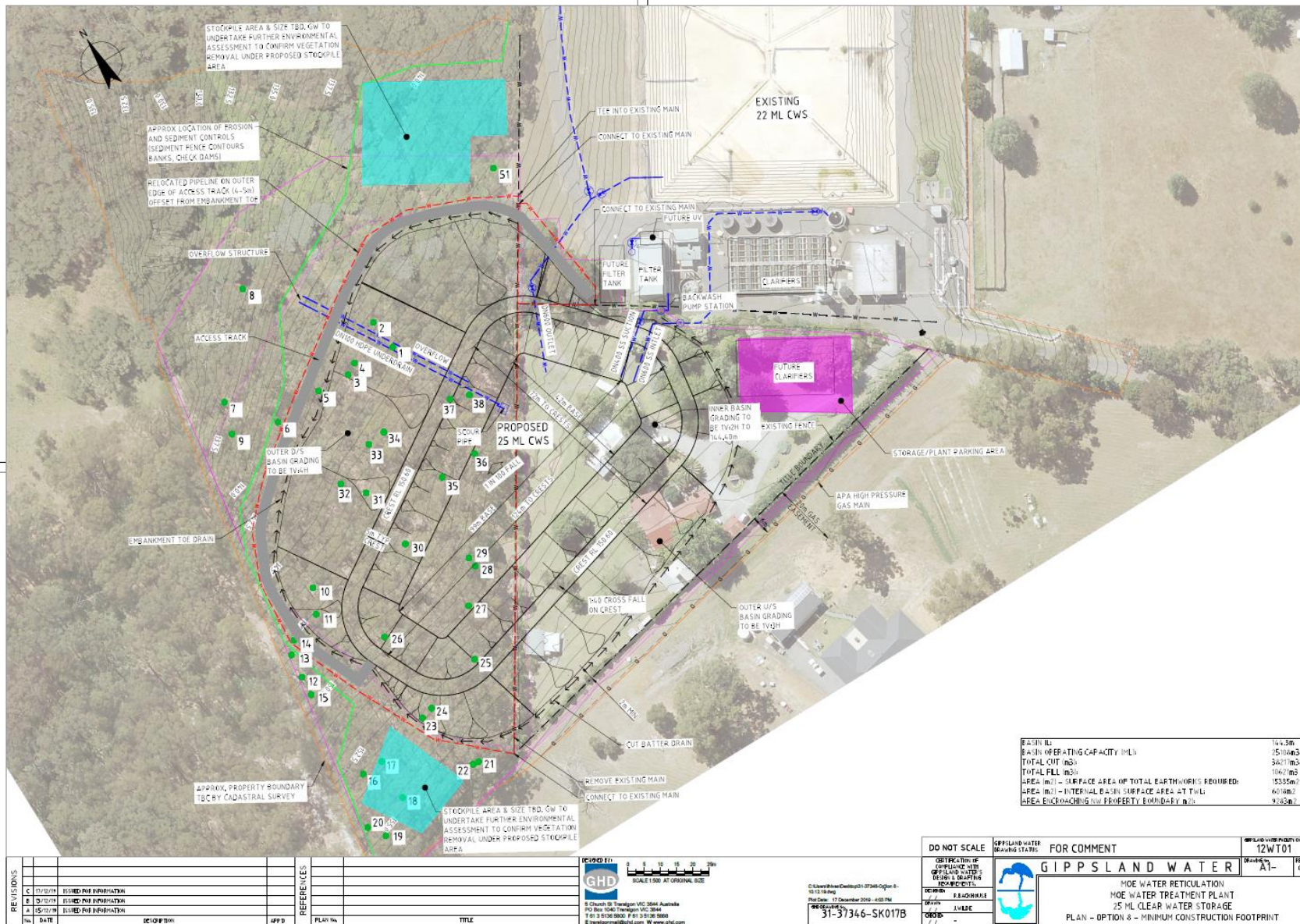


Figure 4 Preliminary concept plan

## 5. Environmental, heritage and other considerations

### 5.1 Flora and fauna

*Indigenous Design Environmental Management* (Indigenous Design) were commissioned by Gippsland Water to undertake an ecological assessment to inform associated environmental approval requirements for upgrades to the Moe Water Treatment Plant. A copy of this assessment is provided at Appendix C.

The study area that has been assessed traverses the two properties, with a clear distinction in the vegetation found between them. The part of the study area within 56 Moe South Road is completely undeveloped and hosts an almost total coverage of native vegetation. The part of the study area comprising the expanded site has been significantly modified and contains an existing residence, outbuildings, landscaped areas and cleared grazing land. A field survey of the study area was undertaken by Indigenous Design in November 2019 and February 2020.

#### 5.1.1 Flora

Vegetation across the study area comprises native patches, planted treed sections and areas dominated by degraded (non-native) exotic species.

Native vegetation patches from two Ecological Vegetation Classes (EVC's) were identified and categorised into five distinct habitat zones:

- Habitat zone 1, 3 & 5 (EVC 16: Lowland Forest) which covers a total area 1.98 ha within the study area
- Habitat zone 2 & 4 (EVC 29: Damp Forest) which covers a total area of 0.55 ha within the study area

All habitat zones form a single discrete area of native patch (total area 2.54 hectares) and are wholly contained within the existing Moe WTP property at 56 Moe South Road, Moe South. No native patches were identified within the newly acquired lot subject to the rezoning proposal, at 58 Moe South Road, Moe South.

No threatened ecological communities listed under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* were identified during the site inspection.

One significant flora species listed under the EPBC Act and the DELWP advisory list was identified on site, being the *Eucalyptus strzeleckii* (Strzelecki Gum), with five trees found in Habitat Zones 4 and 5. No impacts to Strzelecki Gums are currently proposed and tree retention zones will be protected as part of the project.

Additionally, twenty-four flora species were identified that are protected under the *Flora and Fauna Guarantee (FFG) Act (1988)*. A permit under the FFG Act will be required to take protected species from the site – see Section 5.6 for further discussion; with the exception of two Acacia species; *Acacia dealbata* (Silver Wattle) and *Acacia melanoxylon* (Blackwood) which are exempt from FFG permit requirements.

### 5.1.2 Fauna

A total of 14 fauna species were found to occur on site during site assessments. Of these, 13 are considered to be taxa native to Victoria.

The Protected Matters Search Tool (DAWE, 2019) was used to query a five kilometre radius of the study area and identified the possible presence of 28 significant fauna species, comprised of the following:

- 18 bird species;
- 1 amphibian species
- 6 mammal species
- 2 fish species
- 1 insect species

A likelihood assessment found that *Ninox strenua* (Powerful Owl), which is listed as vulnerable under the EPBC Act and the Department of Environment, Land, Water & Planning (DELWP) advisory list, and protected by the FFG Act, had a high likelihood of occurrence within the study area. A separate assessment has been undertaken to assess potential habitat impacts for this species which is discussed below.

Evidence of the presence of Burrowing Crayfish (*Engaeus sp.*), listed on the DELWP rare and threatened advisory list, was identified at the northern extent of the study area with a single “chimney” within an area of damp soils associated with site seepage. This species was identified outside of the current proposed works impact footprint.

All other rare or threatened fauna species identified by database searches within a 5 km radius of the site were assessed as unlikely to occur or be reliant on habitat within the study area.

#### Powerful Owl survey

Following the results of the Ecological Assessment undertaken for the project, a separate *Assessment of Habitat and Survey for Powerful Owl* was prepared by Indigenous Design in March 2020.

Targeted surveys undertaken in March did not detect Powerful Owl species or evidence of current occurrence within the study area. The project area may provide a broader foraging habitat for the Powerful Owl, however no potential nest sites (i.e hollow bearing trees) were identified.

Bushland within the existing Moe WTP site is contiguous with remnant vegetation and habitat in adjoining properties north and west, forming a total bushland area of approximately 15 hectares. Other suitable roosting and foraging habitat outside of the study area was recognised including the Edward Hunter Reserve to the north which itself hosts over 50 hectares of connected native vegetation patches.

The proposed expansion will impact 1.854 hectares of native vegetation within the south-west corner of 56 Moe South Road, Moe South. This scale of development is not expected to negatively impact the Powerful Owl given the broader habitat which exists within and surrounding the site.

Indigenous Design recommended that further investigation also occur in May-June during Powerful Owl breeding season, to provide a higher level of certainty of species presence in the area.

As such, Gippsland Water engaged Indigenous Design to undertake a supplementary targeted survey in May 2020 for the Powerful Owl. The supplementary survey did not detect Powerful

Owl or evidence of current occurrence or breeding at the site. The assessment confirmed that lack of species detection through call playback at the time (close to breeding season when owls are highly territorial) provides confidence that no Powerful Owls occupy the project area.

A copy of the *Assessment of Habitat and Survey for Powerful Owl (March 2020)* and the supplementary *Further Assessment of Habitat and Survey for Powerful Owl (May 2020)* are provided at Appendix D.

### 5.1.3 Vegetation removal and offsets

#### **Proposed vegetation removal**

Gippsland Water have made significant efforts to avoid and minimise impacts to vegetation as part of the expansion project.

To facilitate the proposed works, some native and non-native vegetation will be impacted as follows:

- 1.854 ha of native vegetation will be impacted by the works, including the removal of 43 large trees and potential impacts to the tree retention zone of one further large tree. These impacts are fully contained within 56 Moe South Road, Moe South.
- Planted vegetation including *Callitris rhomboidei* (Oyster pine), exotic hedges and pasture grasses, planted native trees and shrubs, and planted beds including *Hedera helix* (English Ivy) and *Vinca major* (Blue Periwinkle) within 58 Moe South Road, Moe South

It has been assumed that no other native vegetation has been approved to be removed or was removed without the required approvals, on the same property or on contiguous land in the same client ownership in the past 5 years.

Figures from the Ecological Assessment showing the location and extent of native vegetation losses as part of the project, and scattered and large trees within the study area are provided at Map 1 and Map 2 of Appendix C.

Gippsland Water will prepare a *Construction and Environmental Management Plan (CEMP)* prior to works commencing which will ensure environmental values within the site are protected during the construction phase of the project. The CEMP will be submitted to DELWP and the responsible authority for approval in accordance with permit conditions.

#### **Offset statement**

An ENSYM test scenario report was processed to identify the offsets that would apply to native vegetation losses proposed. A 'clearing' shapefile that outlined the extent of native vegetation deemed lost under the Project was added to the ENSYM test scenario program to produce a Vegetation Removal (NVR) report.

The ENSYM test scenario determined the following would apply to the Project:

- The proposal falls under the 'Detailed Assessment Pathway'
- Offset requirements equate to 1.481 General Habitat Units (GHU's) with a minimum strategic biodiversity score of 0.413 and 44 Large old trees; and
- Offsets must be located within the West Gippsland Catchment Management Authority (CMA) boundary or within the Latrobe City Council municipality

In accordance with the DELWP's Guidelines for the removal, destruction or lopping of native vegetation an offset statement is typically required providing evidence that an offset that meets the offset requirements for the native vegetation to be removed has been identified and can be secured.

Gippsland Water has a number of offset sites protected under Section 69 of the *Conservation Forest & Land Act 1987* through the Bushbroker Landowner agreement program and proposes to offset losses from this project through their current offset bank.

### Avoid and minimise statement

Avoid and minimise principles must be applied to the project design footprint of works with regards to any proposed native vegetation removal.

Application of these principles can be achieved by avoiding the removal of native vegetation via locating or designing the project works so that native vegetation is not removed. Minimising losses to native vegetation can be achieved via minimising the design construction footprint, restricting project works to areas of native vegetation that have the least biodiversity or other values or managing the works to minimise impacts on surrounding vegetation (DELWP, 2017).

Gippsland Water have made significant efforts to avoid and minimise impacts on native vegetation as outlined below:

- Purchase of additional lot (expanded site): The original proposal for the Moe WTP expansion involved building the additional CWS basin wholly within heavily treed land at the existing WTP property at 56 Moe South Road, Moe South (containing over 10.4 hectares of native vegetation). To date, this land has been strategically retained by Gippsland Water to allow for future plant development.

The residential property immediately south of the treatment plant (58 Moe South Road) became available for sale during the early stages of planning this project. Gippsland Water took the opportunity to buy the property (at a cost of approximately \$800,000) to accommodate part of the footprint for the CWS basin on land which was largely already cleared and modified with an existing dwelling.

This investment by Gippsland Water has reduced the ecological footprint of the proposed CWS basin by approximately 50% of what was originally proposed.

- Concept Design and Siting: In addition to the purchase of the additional lot, Gippsland Water have sought to reduce native vegetation impacts through the concept design stage as follows:
  - Construction footprint and laydown areas have been sited to minimise the impacts on EVC's, large old trees, and the five Strzelecki Gums which will be retained on site
  - The basin footprint has been minimised during the design process in consideration of site topography, to reduce impacts to the environment whilst still achieving the water storage volumes required for the expansion
  - The basin design accommodates a water storage volume which will ensure long-term operational capacity for the Moe WTP based on future growth estimates. This will avoid the need for additional water storage basins to be accommodated within the WTP site in the coming years.

A number of site restrictions also limits the ability to further avoid and minimise impacts to native vegetation as follows:

- The southern boundary of the expanded site straddles a high-pressure gas easement. A minimum setback of 2 metres from the southern boundary of this property has been proposed to ensure works and construction laydown areas do not encroach on the easement. This has meant a portion of cleared land within the newly acquired lot cannot be used to accommodate the works impact area.
- Maintaining the operations of the Moe Water Treatment Plant is crucial and places restrictions on the adjacent land for both construction laydown areas and to house the completed basin

- It is hydraulically optimal for the placement of the clear water storage basin to be at the same relative level (AHD) as the existing basin at the site. This limits where the basin can be positioned, but greatly reduces the electricity usage and noise emissions generated during the ongoing operation of the basin.

## 5.2 Geotechnical assessment

A Geotechnical Assessment was undertaken by GHD early 2020 to investigate sub-surface conditions for the project to inform the concept design stage.

Key findings of the assessment are as follows:

- Excavation of the site can be undertaken with conventional plant equipment (ie. scrapers, 20 tonne excavators)
- The naturally occurring stiff clay and medium dense sand, as well as compacted engineered fill are considered to be a suitable subgrade
- Excavated materials (comprising low to medium plasticity soil) are suggested for reuse as engineering fill with appropriate moisture conditioning and compaction
- One alternative design option, which would have required a retaining wall over 4 metres high, would require substantial foundations and be impractical to construct. The selected design option does not require construction of a retaining wall.
- Installation of an under liner seepage detection layer (ie. sand filter layer) is recommended. This would intercept any seepage and drain it from under the basin to a collection point to prevent saturation of the engineered fill embankments. This design element has been incorporated into the proposed design.

## 5.3 Heritage

No areas of Aboriginal cultural heritage sensitivity (CHS) have been identified within the Moe WTP or adjoining lot subject to the rezoning proposal. As shown in Figure 5 overleaf, an area of Aboriginal CHS is located north of the existing Moe WTP site, however this is well setback from the proposed works area for this project.

As part of a detailed site investigations and project planning process for the expansion project, Gippsland Water engaged Benchmark Heritage Management (BHM) to nonetheless undertake a preliminary heritage assessment for the proposed construction of the additional CWS basin.

A summary of heritage matters for the project are provided below:

- A Desktop Assessment undertaken found a total of eight registered Aboriginal Cultural Heritage Places (ACHP) within the wider geographic region, with no ACHPs within the proposed activity area
- A Standard Assessment was then undertaken which found the activity area was of potential archaeological sensitivity, and agreed to establish the potential for Aboriginal cultural heritage sensitivity through a Complex Assessment
- A Complex Assessment finally undertaken which concluded that the activity area has limited potential to retained Aboriginal cultural deposits
- A voluntary Cultural Heritage Management Plan (CHMP) has been prepared by BHM on behalf of Gippsland Water to take a precautionary approach to the expansion works. The CHMP will provide an overarching measure to identify, avoid and manage impacts to any unknown Aboriginal cultural heritage located during the construction phase of the activity.

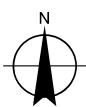
A copy of the Heritage Assessment / draft CHMP is provided at Appendix E.



**LEGEND**

- Road
- Stream
- - - Drain/Channel/Other
- Watercourse
- ▨ Lot subject to proposed rezoning (RLZ3 to PUZ1)
- ▭ Proposed expanded Moe WTP site
- ▭ Area of Aboriginal Cultural heritage Sensitivity

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 Grid: GDA 1994 MGA Zone 55



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Heritage

Figure 5

## 5.4 Visual amenity and landscaping

The existing Moe WTP site and newly acquired lot are well setback from Moe South Road (main road) and will be screened from public views along this arterial.

The proposed expansion works will be in keeping with the existing scale and character of water infrastructure at the Moe WTP, which has been a long-established facility servicing the Moe area.

The additional CWS basin proposed will have a maximum crest height similar to that of the existing basin. This design supports efficient hydraulic function and the transfer of water between the basins. Whilst the ground level of the proposed expansion site varies, the maximum protrusion of the basin crest above existing ground levels is expected to be approximately 5 metres.

Trees within the site and immediate surrounds have maximum canopy height of approximately 10 metres which will provide visual screening to the basin particularly from the north, west and southwest interfaces. The closest neighbouring dwelling to the south is well setback from the proposed expansion site, and will be located closer to the existing CWS basin at the WTP than the new proposed basin.

As part of early consultation with adjoining land owners to the south, Gippsland Water are proposing to provide additional landscaping along part of the southern boundary of 58 Moe South Road, Moe South. Refer to the Site Context and Design Response Plan at Figure 3.

This will comprise Lily Pily (*acmena smithii*) trees which are a fire-retardant plant. The Lilly Pily's will be planted in accordance with CFA requirements.

## 5.5 Bushfire Risk Management

The site is located within the Bushfire Management Overlay and within a designated bushfire prone area.

Whilst a planning permit is not triggered for the project under the Bushfire Management Overlay, an appropriate bushfire risk response for the proposal has been developed in consideration of CFA advice and State Policy requirements under Clause 13 of the Latrobe Planning Scheme.

Preliminary advice on the project was received from the CFA in December 2019 with further advice issued in May 2020 which has informed the proposed design of the expansion works. A copy of this advice is provided at Appendix F.

*Euca Planning Pty Ltd* were commissioned by Gippsland Water to undertake a bushfire assessment in May 2020 to assess and consider bushfire risk mitigation in the context of the project. A copy of this assessment is provided at Appendix G.

Overall, the proposal is considered to appropriately address bushfire risk management as follows:

- The project has addressed policy objectives at Clause 13.02-1S in relation to bushfire planning. This is discussed further in Section 3 of Appendix G and in Section 7.2.3 of this report.
- The proposal will decrease bushfire risk to the community, particularly for neighbouring residents immediately south of the expansion site through increased setback between these dwellings and vegetated areas
- The proposed expansion and rezoning will not increase sensitive uses at the site, rather it will remove an existing dwelling and replace it with water storage/treatment infrastructure

- In response to CFA preliminary advice, the proposed design incorporates:
  - A cleared area and fire access track around the part of the site which has an immediate interface with bushfire hazard (north-west part of the site)
  - ‘Low threat’ landscaping which will be provided in accordance with CFA requirements. Lilly Pilly’s (*acamena smithii*) have been proposed as a screening tree specifically in consideration of bushfire risk management. It is proposed these are planted in a single row and would form both a windbreak and amenity screening along the southern boundary of the site. This species has a low flammability FIREWISE score based on the CFA’s plant selection key, and is often described as fire resistant.
  - Buildings (back wash pump) and plant equipment which are located away from heavily treed areas, and proximate to existing like-infrastructure within the WTP
  - Maintenance of a vegetation-free zone around buildings and core plant equipment on site (already achieved at existing WTP site). Vegetation management procedures will be detailed in an Emergency Plan which Gippsland Water maintains for the existing WTP site. This document will be updated to ensure adequate bushfire management protocols (including information on CFA access and water supply connection in the event of a fire) are suitably established for the proposed expanded WTP facility.
  - Provision of a water supply connection for the CFA to the existing treated reticulated water mains at the WTP. This connection point would allow CFA access to water supply volumes well in excess of the 40,000 litres recommended. The location of the installation point and selection of appropriate fixtures and fittings for the connection will be provided in accordance with CFA requirements.
- Gippsland Water will continue to engage with the CFA during the assessment and approvals process to ensure appropriate bushfire planning requirements are satisfied for this project. The updated Emergency Plan containing emergency planning information for the site, including bushfire management protocols, will be provided to the CFA for review prior to works commencing.

## 5.6 Other statutory approvals

### 5.6.1 EBPC Act referral

The *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* establishes a Commonwealth process for assessment of proposed actions that are likely to have a significant impact on Matters of National Environmental Significance (MNES) or on Commonwealth land. An action (i.e. project, development, undertaking, activity, or series of activities), unless otherwise exempt, requires approval from the Commonwealth Environment Minister if they are considered likely to have an impact on any MNES.

No threatened ecological communities or fauna species listed under the EPBC Act were identified as part of the Ecological Assessment (Appendix C) prepared for the project.

One flora species listed under the EPBC Act and the DELWP advisory list was identified on site, Strzelecki Gum (*Eucalyptus strzeleckii*). All five individuals of this species identified within the project area will be protected and retained.

A referral is not deemed required for the works pursuant to the EPBC Act as per Section 4.1 of the Ecological Assessment at Appendix C.

### 5.6.2 Flora and Fauna Guarantee Act

The *Flora and Fauna Guarantee Act 1988 (FFG Act)* is the primary State legislation for the protection of native plants, native animals and ecological communities on public land and waters in Victoria. Species and ecological communities can be listed as threatened under the Act based on assessments by an independent Scientific Advisory Committee. Threatening processes may also be listed.

Under the FFG Act a permit is required from the DELWP to 'take' 'protected' flora species, 'listed communities' or 'threatened species' from public land (including the existing Moe WTP site). Removal of any protected flora taxa, listed flora species or listed communities may not be undertaken until this permit has been issued.

## 6. Consultation

### 6.1 Consultation with stakeholders

Gippsland Water have sought to engage early in the planning process with key stakeholders with regards to the proposed expansion and rezoning.

Preliminary discussions have been undertaken with the following stakeholders:

- Latrobe City Council
- Department of Environment, Land, Water and Planning
- Country Fire Authority
- Environment Protection Authority
- Energy Safe Victoria
- APA Group
- Adjoining land owners

Following pre-application discussions with Council and DELWP's regional office, Gippsland Water have obtained written confirmation of support from key stakeholders being APA Group (who own the high-pressure gas main), Energy Safe Victoria, Edward Hunter Heritage Bush Reserve Committee and four identified adjoining land owners:

- 21 Pindari Road, Moe South
- 25 Pindari Road, Moe South
- 30 Alvina Court, Moe South
- 38 Alvina Court, Moe South

A copy of Gippsland Water's engagement with key agencies to-date is provided at Appendix F. A copy of engagement with adjoining and nearby land owners is provided at Appendix H.

Preliminary discussions with Council and relevant agencies have helped inform a set of draft planning permit conditions for Council finalisation, which have been provided at Appendix I of this report.

## 7. Planning controls and policy context

### 7.1 Land use description

The proposed upgrade works including development of a Clear Water Storage basin falls within the scope of a 'Utility Installation' defined as:

*Land used: d) to collect, treat, transmit, store, or distribute water.*

### 7.2 Planning Policy Framework

The Planning Policy Framework (PPF) seeks to ensure the objectives of planning in Victoria (as set out in Section 4 of the *Planning and Environment Act 1987*) are fostered through appropriate land use and development planning policies.

The following policies are relevant to this project:

#### 7.2.1 Clause 11 Settlement

Both Clause 11.01-1S and Clause 11.01.1R seek to promote the sustainable urban growth of settlements across Victoria. The regional policy supports urban growth at both regional centres and sub-regional towns within Latrobe City, which includes the Moe settlement.

Clause 11.02-3S seeks to ensure development is sequenced so that adequate services are available for communities in areas of growth. A key strategy within this clause is to ...*ensure that planning for water supply, sewerage and drainage works receives high priority in the early planning for areas of growth.*

As discussed in Section 2.4 the Gippsland Regional Growth plan identifies Moe as a key settlement within Latrobe City, and as an area of anticipated future population growth.

#### 7.2.2 Clause 12 Environmental and landscape values

Clause 12.01-1S and Clause 12.01-2S seeks to protect and conserve Victoria's biodiversity and native vegetation. Impacts from land use and development should be avoided or minimised where possible and any removal of native vegetation should result in no net loss to the biodiversity of the State.

Whilst the proposed upgrade of the Moe WTP will required the removal of native vegetation, significant efforts have been made to avoid and minimise impacts to the environment as far as practicable; whilst still facilitating these important and strategic water infrastructure works.

Further information can be found in Section 5.1 and Section 7.5.1 of our report.

#### 7.2.3 Clause 13 Environmental risks and amenity

Clause 13.02-1S Bushfire planning is relevant to the project as the subject site is located within a designated bushfire prone area and affected by the Bushfire Management Overlay. The objective of this Clause is to strengthen the resilience of settlements and communities to bushfire through risk-based planning that prioritises human life.

As discussed in Section 5.5 of this report, Gippsland Water have had a bushfire assessment prepared by *Euca Planning* to appropriately assess and consider bushfire planning for the project (refer to Appendix G for full assessment against Clause 13.02).

Gippsland Water have also engaged early with the CFA to discuss the management of fire-risk through design, siting and management strategies for the project. Preliminary feedback from the CFA has informed the design of the basin, including the provision of an access track along the north-west half of the basin which interfaces with established native vegetation and provision of a water supply connection point for the CFA in the event of a fire.

The proposed expansion will not result in an increase in population or sensitive uses within or immediately surrounding the site, and it will not increase community vulnerability in the event of a bushfire. In the event of an emergency, emergency services access to the facility will be provided from the existing access track serving the Moe WTP. The proposed new access tracks around the second basin will also improve access for fire fighting vehicles to the south-west part of the property.

The strategic expansion of the Moe WTP will require the removal of dense treed vegetation within part of the WTP site, which will be offset in accordance with DELWP requirements. Whilst vegetation removal has been avoided and minimised as far as possible, the clearing that is required will provide a greater setback between the bushland interface (fuel source) and the closest sensitive uses immediately south (residences in Alvina Court). Construction of the water storage basin will also provide a greater physical buffer between these residences and areas of bushfire hazard.

Implementation of bushfire mitigation controls, including ongoing management of vegetation in accordance with defensible space guidelines, will be undertaken by Gippsland Water as part of their broader emergency planning activities for the Moe WTP site. Emergency planning protocols for the existing WTP will be updated in an Emergency Plan prior to works commencing to ensure appropriate bushfire risk mitigation is provided for the proposed expanded facility.

Given the nature of the expansion works, no alternative sites were investigated further afield outside of the BMO or designated bushfire prone areas for the construction of the second CWS basin.

Clause 13.05-1S Noise Abatement has also been considered in the context of both the construction and operation of the proposed expanded Moe WTP facility. Noise outputs from the project will be compliant with EPA's guidelines *Noise from Industry in Regional Victoria (EPA publication 1411)*. Gippsland Water will incorporate a noise enclosure around the proposed backwash pump for the expanded facility as part of its final design, in accordance with the recommendations of the Operational Noise Assessment undertaken for the project (Appendix B). As a result, no adverse noise impacts are expected as part of the works. Refer to Section 4.1.3 for further information.

#### 7.2.4 Clause 14 Natural resource management

Clause 14.02-1S and Clause 14.02-2S seek to protect Victoria's water resources and ensure the effective management of water supply and quality for the State. A key strategy of Clause 14.02-1S is to *...ensure the continued availability of clean, high-quality drinking water by protecting water catchments and water supply facilities.*

The Moe WTP treats raw water and provides drinking water to the surrounding region. This application seeks to ensure water supply and quality can be maintained in the future as demand in the area continues to grow.

### 7.2.5 Clause 15 Built environment

Clause 15.01-6S relates to design for rural areas and applies given the project seeks to build infrastructure within a rural part of Moe South. Design, siting and scaling of new development in rural areas should respect the valued rural character of its surrounding context.

The proposed upgrade works at the Moe WTP focus on the development of a second CWS basin. The existing WTP site is well set-back for Moe South Road and as such will not be readily visible to passing traffic or the general public along this main road.

The proposed CWS basin and its ancillary parts will be similar in form and scale to the existing water infrastructure present at the WTP site. The new basin has been designed to be of a consistent height (AHD) with the existing basin for optimum hydrological function.

Based on the topography of the site and vegetation present in the surrounding area, the visibility of the upgrade works will largely be contained to the nearest properties immediately south of the expanded site and potentially also properties west of the existing WTP site. As discussed in Section 6 of this report, the owners of these adjoining properties have been consulted with and have confirmed they do not object to the proposal.

### 7.2.6 Clause 19 Infrastructure

Clause 19.03-3S relates to '*Integrated water management*' and directly applies to the proposed expansion of the Moe WTP. The Clause seeks to ...*sustainably manage water supply, water resources, wastewater, drainage and stormwater through an integrated water management approach.*

Relevant strategies under the policy include to plan and co-ordinate ...*integrated water management, bringing together stormwater, wastewater, drainage, water supply, water treatment and re-use to, inter alia:*

- Take into account the catchment context
- Manage and use potable water efficiently
- Reduce pressure on Victoria's drinking water supplies
- Minimise drainage, water or wastewater infrastructure and operational costs
- Minimise the potential impacts of water, sewerage and drainage assets on the environment
- Protect significant water, sewerage and drainage assets from encroaching sensitive and incompatible uses

The inclusion of the expanded site within a zone designated for public use associated with 'service and utility' purposes is consistent with the intention of this policy to protect such significant water infrastructure.

## 7.3 Local planning policy framework

Under the transitional provisions included in Amendment VC148 to the Victorian Planning Provisions, the Municipal Strategic Statement (Clause 21) and Local Planning Policy Framework (Clause 22) within the Latrobe Planning Scheme must be considered in the absence of a Municipal Planning Strategy.

### 7.3.1 Clause 21.01 Introduction (municipal strategic statement)

Clause 21.01-2 references the *Gippsland Regional Growth Plan (Gippsland Local Government Network, 2014)* (Growth Plan) which recognises the Gippsland region as a fast growing part of Victoria, with an additional 116,000 people expected to live in the region by 2041.

Significant investment in the region, particularly efforts to diversify the economic profile of the area, could further increase population growth within this period.

The Growth Plan identifies Moe as an important settlement within Latrobe City (Gippsland's regional city) and one of the main population centres along the Princess Highway where forecast population growth is expected. The Gippsland region aims to build on a 'networked settlement approach', with population growth dispersed across the region but focused within Latrobe City and sub-regional centres.

In relation to the provision of water services, the Growth Plan states that:

*Rural and urban water corporations have prepared water supply demand strategies to manage future supplies of water for urban and industrial use with the aim of maintaining reliable water supply. These strategies include demand management and priority for water conservation, and options to augment supply infrastructure. When future integrated water cycle strategies are developed, they will need to consider the implications of the plan on future water demand and supply.*

*... Across Gippsland water supply has been assessed as meeting domestic and commercial demand for the short- to medium-term.*

In assessing the infrastructure considerations for key settlements and regional centres in Gippsland, the Growth Plan identifies that the Moe settlement area ...*may require some upgrade/augmentation to support growth* in the future.

A key strategy of the Growth Plan is to...

*Support ongoing investment in water infrastructure and management of water resources to enhance security and efficiency of water supply to industry and urban areas.*

Clause 21.01-5 details the Latrobe City Strategic Land Use Framework Plan which designates Moe and Newborough as 'supporting network towns' and areas where future growth should be promoted.

The Amendment and planning permit application seeks to support the future growth as directed under this Clause, by ensuring adequate water infrastructure can be provided to the Moe and Newborough regions.

### 7.3.2 Clause 21.03 environmental and landscape values

**Clause 21.03-9** seeks to protect the habitat and biodiversity values of Latrobe.

The planning permit application is accompanied by an Ecology Assessment report which has assessed all native vegetation present across the two properties and determined the impacts the proposal will have to the adjacent bushland.

**Clause 21.03-11** requires that changes to land use and development in the vicinity of major pipelines is carefully considered to ensure risks to human life and the functional operation of the pipelines are not impacted.

A high-pressure gas pipeline easement adjoins the expanded site to the immediate south. APA Group (who manage the pipeline easement) have been consulted with as part of this Amendment and do not object to the proposed Amendment and planning permit application.

### 7.3.3 Clause 21.04 Environmental risks

Clause 21.04-12 seeks to minimise the risk to life, property and the environment from bushfire. The Amendment and planning permit application responds to bushfire risk mitigation objectives within the broader Planning Policy Framework. A bushfire assessment has been prepared at Appendix G to inform the project, and the proposed development has been sited and designed

in consideration of early CFA advice. Overall, the project is not considered to increase bushfire risk in the area or threat to human life.

#### 7.3.4 Clause 21.05 Natural resource management

Clause 21.05-3 recognises water as one of Latrobe's most valuable resources, and water quality, security and management as key opportunity for the municipality. The Amendment supports this Clause proposing to expand a strategic water asset in Latrobe, the Moe WTP.

#### 7.3.5 Clause 21.08 Transport and infrastructure

The Amendment supports Clause 21.08-7 and Clause 21.08-11, which recognise that the efficient delivery of infrastructure (including water supply) is critical in enabling future urban and economic growth, attracting new investment to the region, and managing the municipality in a sustainable manner. Services must meet known and anticipated demands for physical, financial and population growth.

#### 7.3.6 Local planning policies

There are no local planning policies in the planning scheme.

### 7.4 Existing planning controls

This section details the zones, overlays and particular provisions which currently apply to the project.

#### 7.4.1 Zoning

##### **Public Use Zone – Schedule 1 (Service and Utility) (Clause 36.01 )**

The land at 56 Moe South Road, Moe South (comprising the existing Moe WTP site) is wholly contained within the Public Use Zone – Schedule 1 (Service and Utility) (PUZ1).

The purpose of the PUZ1 includes:

*To recognise public land use for public utility and community services and facilities.*

*To provide for associated uses that are consistent with the intent of the public land reservation or purpose.*

Under the provisions of the PUZ1, the use and development of land for a 'Utility Installation' does not require a planning permit.

Use of the land for a water treatment plant corresponds with the purpose of the public land reservation being 'Service and Utility'. The use of land for the Moe WTP is being carried out by the land manager, Gippsland Water.

##### **Rural Living Zone – Schedule 3 (Clause 35.03)**

Under the current provisions of the Latrobe Planning Scheme, the expanded site is zoned Rural Living Zone – Schedule 3 (RLZ3).

The purpose of the RLZ3 includes:

*To provide for residential use in a rural environment.*

*To provide for agricultural land uses which do not adversely affect the amenity of surrounding land uses.*

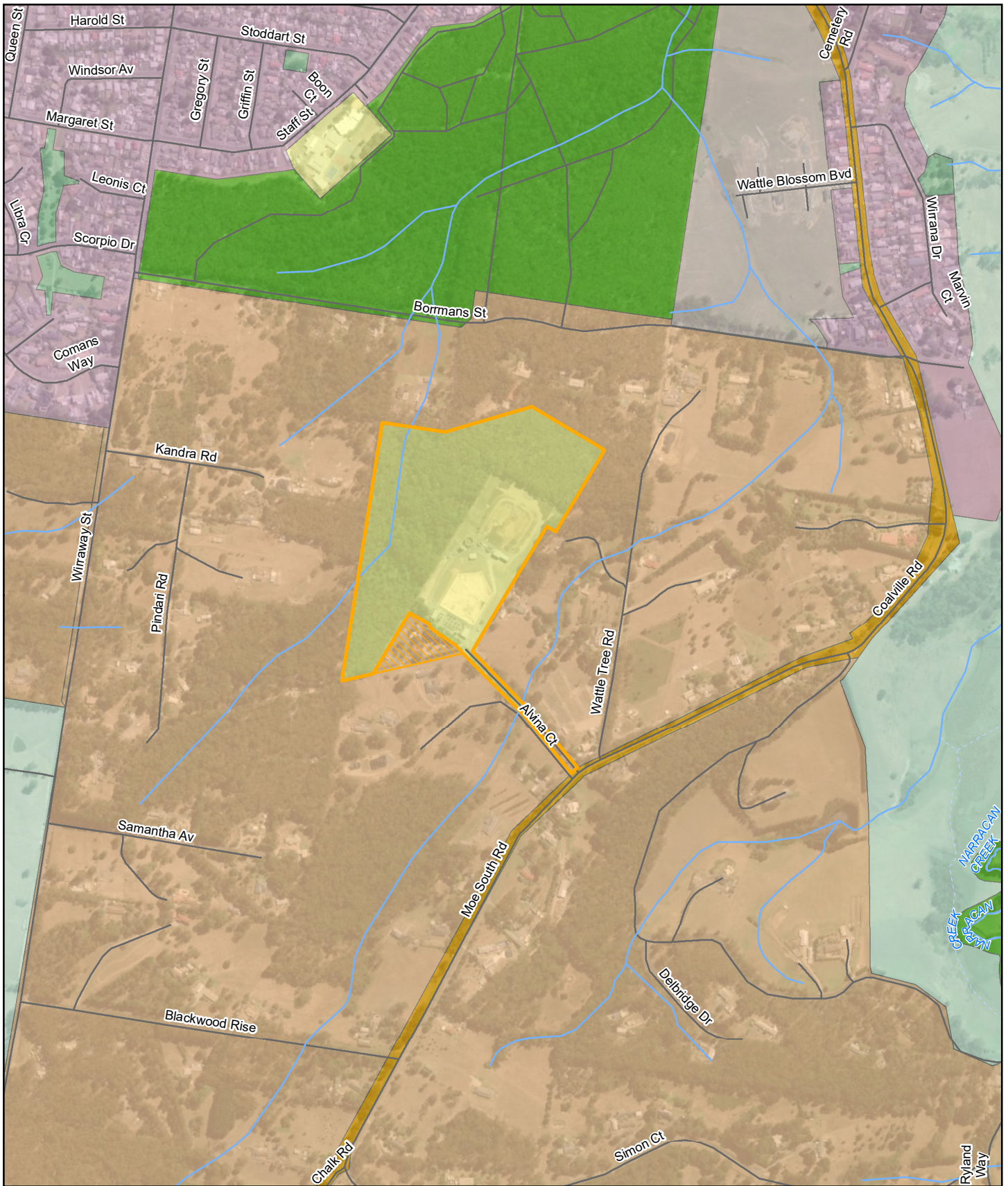
*To protect and enhance the natural resources, biodiversity and landscape and heritage values of the area.*

*To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision.*

Under the provisions of the RLZ3, the use and development of land for a “Utility Installation” requires a planning permit. The proposed PSA seeks to rezone the expanded site from RLZ3 to PUZ1 which would remove the need for a planning permit for use and development of the additional CWS basin.

The proposed CWS basin will be constructed in part (approximately half of its footprint) on land currently zoned RLZ3, with the remainder of the footprint being located within the PUZ1 being the existing Moe WTP site. The proposed rezoning of land at 58 Moe South Road will bring this newly acquired lot into conformity with the existing zoning of the Moe WTP.

A Zoning Map is provided at Figure 6 overleaf.

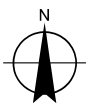


**LEGEND**

- Road
- Stream
- - - Drain/Channel/Other
- Watercourse
- ▨ Lot subject to proposed rezoning (RLZ3 to PUZ1)
- ▭ Proposed expanded Moe WTP site
- Planning zone**
- ▭ Farming
- ▭ General Residential
- ▭ Neighbourhood Residential
- ▭ Public Conservation & Resource
- ▭ Public Park and Recreation
- ▭ Public Use
- ▭ Road – Category 2
- ▭ Rural Living

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Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 55



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**Planning Zones**

**Figure 6**

## 7.4.2 Overlays

### **Design and Development Overlay – Schedule 1 (Major Pipeline Infrastructure) (Clause 43.02)**

The Design and Development Overlay – Schedule 1 (Major Pipeline Infrastructure) (DDO1) applies to the whole of the expanded site at 58 Moe South Road, Moe South and the southern portion of 56 Moe South Road, Moe South.

The objective of the DDO1 is:

*To ensure that all buildings and works and in particular buildings designed to accommodate people are sufficiently separated from high pressure pipelines to avoid a safety hazard.*

Pursuant to Clause 43.02, a planning permit is required for the construction of buildings and works. No exemptions are provided within Schedule 1 to this overlay.

In planning for the proposed Moe WTP expansion, Gippsland Water have engaged early with APA Group (owners of the high pressure gas pipeline) and Energy Safe Victoria (ESV) to ensure the additional CWS basin can be developed without interference to the pipeline asset.

Both APA Group and ESV have confirmed in writing that they have no objection to the proposed expansion works – refer to documentation at Appendix F.

No buildings designed to accommodate people are being proposed as part of the project. The proposed works footprint (including basin batters) will be setback a minimum of 2 metres from the southern boundary of 58 Moe South Road, Moe South to ensure earthworks do not impact the pipeline asset located within the adjoining property to the south.

### **Bushfire Management Overlay (Clause 44.06)**

The land at both 56 and 58 Moe South Road is almost wholly affected by the Bushfire Management Overlay (BMO), with the exception of part of the access track serving both properties.

The purpose of the BMO includes:

*To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire.*

*To identify areas where the bushfire hazard warrants bushfire protection measures to be implemented.*

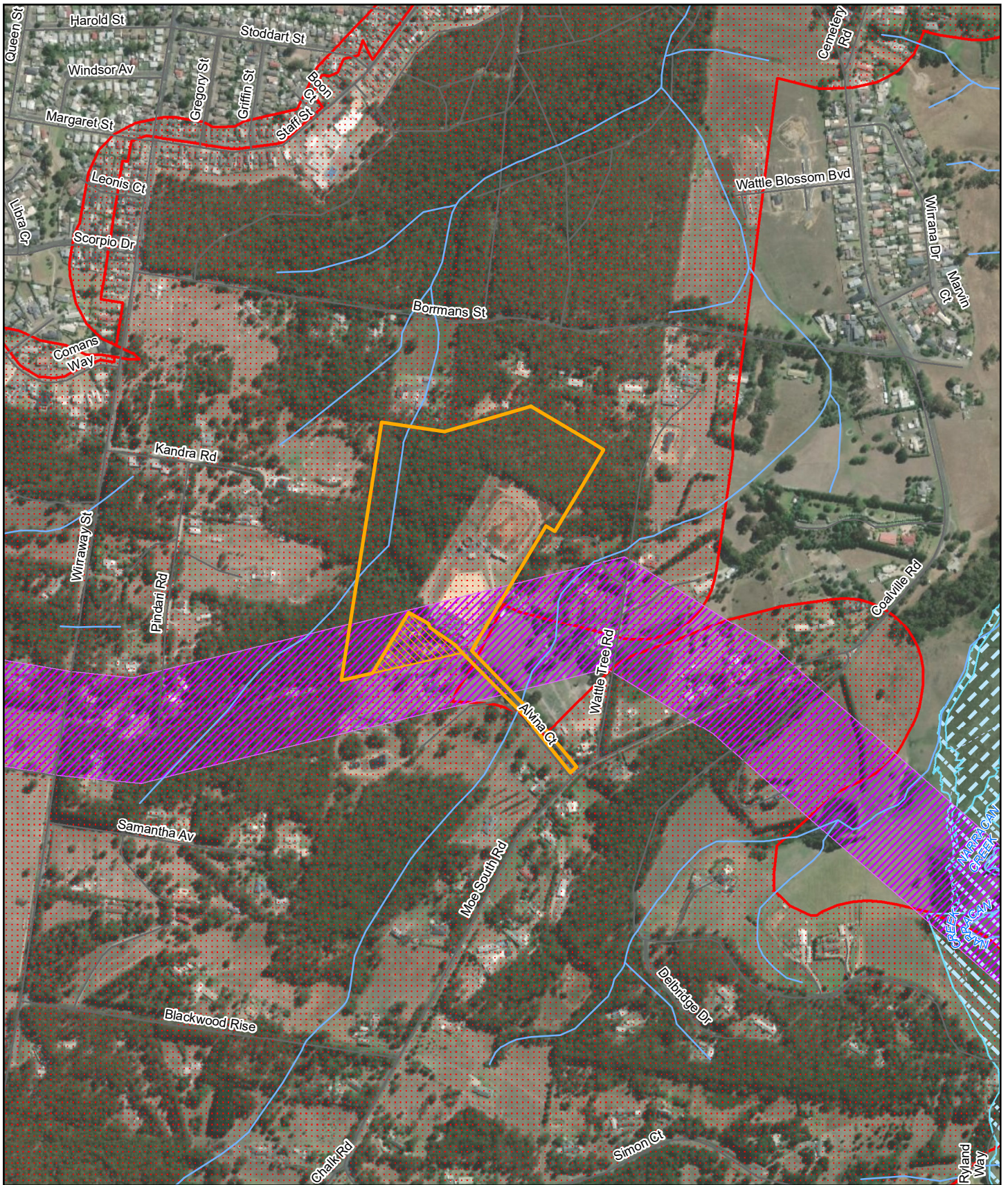
*To ensure development is only permitted where the risk to life and property from bushfire can be reduced to an acceptable level.*

The objectives contained within the Schedule to the BMO specifically relate to bushfire protection measures and referral requirements for applications seeking to construct or extend one dwelling on a lot.

Pursuant to Clause 44.06, a planning permit is not required to construct a building or carry out works associated with use of the land for a 'Utility Installation'.

Whilst a permit is not triggered under the BMO for the project, Gippsland Water have sought to engage with the CFA to ensure an appropriate bushfire risk management response is provided for the expansion works. A bushfire assessment has also been prepared for the project in response to CFA recommendations received by Gippsland Water. Refer to Section 5.5 of this report and Appendix G for further details.

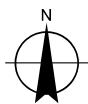
An Overlays Map is provided at Figure 7 overleaf.



**LEGEND**

- Road
- Stream
- - - Drain/Channel/Other
- Watercourse
- ▨ Lot subject to proposed rezoning (RLZ3 to PUZ1)
- ▭ Proposed expanded Moe WTP site
- ▨ Land Subject to Inundation
- Planning overlay**
- ▨ Bushfire Management
- ▨ Design And Development
- ▨ Floodway

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 Grid: GDA 1994 MGA Zone 55



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**Planning Overlays**

**Figure 7**

## 7.5 Particular provisions

### 7.5.1 Clause 52.17 Native vegetation

Pursuant to Clause 52.17 of the Latrobe Planning Scheme, a planning permit is required to remove, lop or destroy native vegetation.

Despite significant efforts undertaken to avoid and minimise impacts to native vegetation during the siting and design phase of the project, the removal of 1.854 ha of native vegetation, including impacts to 44 of large old trees, will be required to facilitate the works. These impacts are fully contained within 56 Moe South Road, Moe South.

The native vegetation to be removed is mapped as Location 2 and follows the detailed assessment pathway under the *Guidelines for the removal, destruction or lopping of native vegetation (DELWP, 2017)* – a Native Vegetation Removal Report is provided within the Ecological Assessment at Appendix C.

A response to the relevant Clause 52.17 application requirements is provided in Table 2. A response to the decision guidelines of Clause 52.17 is provided in Table 3.

Table 2 Clause 52.17 Application requirements

| No. | Relevant application requirement – Basic assessment pathway  | Response  |
|-----|--|---|
| 1   | <p>Information about the native vegetation to be removed, including:</p> <ul style="list-style-type: none"> <li>• The assessment pathway and reason for the assessment pathway. This includes the location category of the native vegetation to be removed.</li> <li>• A description of the native vegetation to be removed that includes: <ul style="list-style-type: none"> <li>– whether it is a patch or a scattered tree (or both)</li> <li>– the extent (in hectares)</li> <li>– the number and circumference (in centimetres measured at 1.3 metres above ground level) of any large trees within a patch</li> <li>– the number and circumference (in centimetres measured at 1.3 metres above ground level) of any scattered trees, and whether each tree is small or large</li> <li>– the strategic biodiversity value score</li> <li>– the condition score</li> <li>– if it includes endangered Ecological Vegetation Classes</li> <li>– if it includes sensitive wetland or coastal areas.</li> </ul> </li> <li>• Maps showing the native vegetation and property in context and containing: <ul style="list-style-type: none"> <li>– scale, north point and property boundaries</li> <li>– location of any patches of native vegetation and the number of large</li> </ul> </li> </ul> | <p>The assessment undertaken follows the detailed assessment pathway.</p> <p>Refer to Section 5.1.3 and the NVR report contained at Appendix C for further details.</p> <p>Offset requirements amount to 1.481 General Habitat Units (GHUs) with a minimum strategic biodiversity score of 0.413 and 44 large old trees</p> |

| No. | Relevant application requirement – Basic assessment pathway   | Response  |
|-----|---|---|
|     | <p>trees within the patch proposed to be removed</p> <ul style="list-style-type: none"> <li>– location of scattered trees proposed to be removed, including their size</li> </ul> <p>The offset requirement, determined in accordance with section 5 of the Guidelines, that will apply if the native vegetation is approved to be removed.</p>   |   |
| 2   | <p>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.</p>   | <p>Refer to Ecological Assessment at Appendix C and topographic details at Figure 1 of this report.</p> |
| 3   | <p>Recent, dated photographs of the native vegetation to be removed.</p>  | <p>Refer to Ecological Assessment at Appendix C.</p>  |
| 4   | <p>Details of any other native vegetation approved to be removed, or that was removed without the required approvals, on the same property or on contiguous land in the same ownership as the applicant, in the five year period before the application for a permit is lodged.</p>   | <p>Not applicable.</p>  |
| 5   | <p>An avoid and minimise statement.</p> <p>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. The statement should include a description of the following:</p> <ul style="list-style-type: none"> <li>• Strategic level planning – any regional or landscape scale strategic planning process that the site has been subject to that avoided and minimised impacts on native vegetation across a region or landscape</li> <li>• Site level planning – how the proposed use or development has been sited or designed to avoid and minimise impacts on native vegetation.</li> </ul> <p>That no feasible opportunities exist to further avoid and minimise impacts on native vegetation without undermining the key objectives of the proposal.</p> | <p>Refer to the avoid and minimise statement at Section 5.1.3 of this report.</p>                       |
| 6   | <p>A copy of any Property Vegetation Plan contained within an agreement made pursuant to section 69 of the <i>Conservation, Forests and Lands Act 1987</i> that applies to the native vegetation to be removed.</p>   | <p>Not applicable.</p>  |

| No. | Relevant application requirement – Basic assessment pathway   | Response   |
|-----|---|--|
| 7   | Where the removal of native vegetation is to create defensible space, a written statement explaining why the removal of native vegetation is necessary. This is not required when the creation of defensible space is in conjunction with an application under the Bushfire Management Overlay. | Not applicable. The application does not seek to remove vegetation for the purpose of creating defensible 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 6.  | Not applicable. The application is not under Clause 52.16.   |

Table 3 Clause 52.17 Decision guidelines

| No. | Decision guidelines to be considered   | Response  |
|-----|--|---|
| 1   | <p>Efforts to avoid the removal of, and minimise the impacts on, native vegetation should be commensurate with the biodiversity and other values of the native vegetation, and should focus on areas of native vegetation that have the most value. Taking this into account consider whether:</p> <p>The site has been subject to a regional or landscape scale strategic planning process that appropriately avoided and minimised impacts on native vegetation</p> <p>The proposed use or development has been appropriately sited or designed to avoid and minimise impacts on native vegetation</p> <p>Feasible opportunities exist to further avoid and minimise impacts on native vegetation without undermining the key objectives of the proposal</p> | <p>As discussed in Section 5.1.3 of this report, significant efforts have been made by Gippsland Water to avoid and minimise impacts on native vegetation as far as practicable whilst still facilitating critical upgrades to the Moe WTP.</p> <p>Refer to the avoid and minimise statement in Section 5.1, and the Ecological Assessment at Appendix C for further information.</p> <p>There are no alternative practically viable options for the location of the expansion works.</p> |

| No. | Decision guidelines to be considered   | Response   |
|-----|--|--|
| 2   | <p>The role of native vegetation to be removed in:</p> <ul style="list-style-type: none"> <li>• Protecting water quality and waterway and riparian ecosystems, particularly within 30 metres of a wetland or waterway in a special water supply catchment area listed in the Catchment and Land Protection Act 1994</li> <li>• Preventing land degradation, including soil erosion, salination, acidity, instability and water logging particularly: <ul style="list-style-type: none"> <li>– where ground slopes are more than 20 per cent</li> <li>– on land which is subject to soil erosion or slippage</li> <li>– in harsh environments, such as coastal or alpine areas</li> </ul> </li> <li>• Preventing adverse effects on groundwater quality, particularly on land <ul style="list-style-type: none"> <li>– where groundwater recharge to saline water tables occurs</li> <li>– that is in proximity to a discharge area</li> <li>– that is a known recharge area</li> </ul> </li> </ul> | <p>Refer to Section 5.1 of this report and the Ecological Assessment at Appendix C for further details.</p> <p>The vegetation removal will not create land slippage or soil erosion at the site.</p> <p>The proposed removal of native vegetation to facilitate the project is the minimum extent required to undertake the proposed works.</p>                                |
| 3   | <p>The need to manage native vegetation to preserve identified landscape values.</p>   | <p>The area of vegetation to be impacted (1.854 hectares including 44 large old trees) is limited to the area needed to undertake the works.</p> <p>The native vegetation to be cleared is unlikely to impact surrounding landscape values. The existing Moe WTP property currently contains over 10.4 hectares of native vegetation within undeveloped parts of the site.</p> |
| 4   | <p>Whether any part of the native vegetation to be removed, destroyed or lopped is protected under the <i>Aboriginal Heritage Act 2006</i>.</p>  | <p>Not applicable. The native vegetation is not protected under the <i>Aboriginal Heritage Act 2006</i>.</p>   |
| 5   | <p>The need to remove, destroy or lop native vegetation to create defendable space to reduce the risk of bushfire to life and property, having regard to other available bushfire risk mitigation measures</p>   | <p>Not applicable. The application does not seek to remove vegetation for the purpose of creating defendable space.</p>  |
| 6   | <p>Whether the native vegetation to be removed is in accordance with any Property Vegetation Plan (PVP) that applies to the site</p>   | <p>Not applicable. No Property Vegetation Plan applies to the site.</p>  |

| No.   | Decision guidelines to be considered   | Response  |
|---|--|---|
| 7   | Whether 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  | <p>Offset requirements equate to 1.481 General Habitat Units (GHU's) with a minimum strategic biodiversity score of 0.413 and 44 large old trees</p> <p>Gippsland Water has a number of offset sites protected under Section 69 of the <i>Conservation Forest &amp; Land Act 1987</i> through the Bushbroker Landowner agreement program and proposes to offset losses with this proposal within their current offset bank. An offset credit summary statement has been provided to DELWP in May 2020 as evidence that the offsets for the project can be secured at an existing Gippsland Water offset property.</p> |
| <b>Additional requirements for detailed assessment pathway applications</b> |  |   |
| 9   | <p>Consider the impacts on biodiversity based on the following values of the native vegetation to be removed:</p> <ul style="list-style-type: none"> <li>• The extent</li> <li>• The condition score</li> <li>• The strategic biodiversity value score</li> <li>• The number and circumference of any large trees</li> <li>• Whether it includes an endangered Ecological Vegetation Class</li> <li>• Whether it includes sensitive wetlands or coastal areas</li> </ul>   | <p>A Habitat Hectares Assessment was undertaken and found that native vegetation was classed as <i>EVC 16 Lowland Forest</i> and <i>EVC 29 Damp Forest</i> and comprised of five habitat zones. Refer to Appendix C for further information.</p> <p>43 large old trees are proposed to be removed with tree retention zone impacts expected for old further large old tree.</p> <p>There are no sensitive wetlands or coastal areas within close proximity of the site.</p>   |
| 10  | <p>Consider the impacts on habitat for rare or threatened species. Where native vegetation to be removed is habitat for rare or threatened species according to the Habitat importance maps, consider the following:</p> <ul style="list-style-type: none"> <li>• The total number of species' habitats</li> <li>• The species habitat(s) that require a species offset(s)</li> <li>• The proportional impact of the native vegetation removal on the total habitat for each species, as calculated in section 5.3.1</li> <li>• The conservation status of the species (per the Advisory Lists maintained by DELWP).</li> <li>• Whether the habitats are highly localised habitats, dispersed habitats, or important areas of habitat within a dispersed species habitat.</li> </ul> | <p>Refer to Section 5.1 of this report and the Ecological Assessment at Appendix C for discussion on fauna impacts.</p> <p>A likelihood assessment found that <i>Ninox strenua</i> (Powerful Owl), which is listed as vulnerable under the EPBC Act and the DELWP advisory list, and protected by the FFG Act, had a high likelihood of occurrence within the study area. All other fauna species were assessed as unlikely to occur within the study area.</p> <p>Two separate assessments have been undertaken for the Powerful Owl – refer to Appendix D.</p>  |

## 8. Proposed planning scheme amendment

### 8.1 Context of the amendment request

#### 8.1.1 Why is the Amendment required?

Gippsland Water own and operate the Moe Water Treatment Plant (WTP) located on land at 56 Moe South Road, Moe South. Currently the Moe WTP operates with one 22ML Clear Water Storage (CWS) basin which will soon reach capacity under projected future growth scenarios for the region.

Construction of a second CWS basin is required to be completed by December 2022 to increase water supply for the Moe/Newborough water supply system (including areas in Moe, Trafalgar and Yarragon) and to improve the resilience of Gippsland's overall water supply network in the long-term.

Gippsland Water have recently purchased an adjoining property at 58 Moe South Road, Moe South in order to facilitate the expansion of the WTP. This property was previously owned by Gippsland Water and used as a caretaker's residence for the WTP, prior to being sold privately for use as a rural residence.

The rezoning of the expanded site from Rural Living Zone – Schedule 3 (RLZ3) to Public Use Zone 1 (Service and Utility) will bring the site into conformity with the zoning of the existing WTP property at 58 Moe South Road, Moe South. The PSA will reflect the new ownership of the property and will facilitate the efficient use, development and ongoing maintenance of the property for water treatment and supply (public service and utility) purposes.

#### 8.1.2 What does the Amendment propose to do?

The PSA facilitates the use and development of the land at 58 Moe South Road, Moe South for the purpose of service and utility by Gippsland Water and will support the upgrade and expansion of the existing Moe Water Treatment Plant (WTP) located at 56 Moe South Road, Moe South.

The PSA proposes the following changes to the Latrobe Planning Scheme:

- Rezone land at 58 Moe South Road, Moe South from Rural Living Zone – Schedule 3 (RLZ3) to Public Use Zone 1 – Service and Utility (PUZ1)
- Amend Planning Scheme Map No. 68 to reflect changes

The PSA is a combined planning permit application and amendment under Section 96A of the *Planning and Environment Act 1987* (the Act).

The planning permit application applies to 58 Moe South Road, Moe South and 56 Moe South Road, Moe South (comprising Lot 2/PS400699 and Lot 2/LP55896) and is summarised at Section 9 of this report.

## 8.2 Use of Section 20(2)

Section 20(2) of the *Planning and Environment Act 1987* provides that the Minister for Planning may exempt a planning authority from full notice requirements subject to conditions which requires the planning authority to give notice of the amendment in a specified manner.

Gippsland Water have engaged with surrounding land owners early in the planning phase of this project.

Consent has been obtained for the proposed expansion works from key stakeholders including:

- Adjoining land owners at:
  - 21 Pindari Road, Moe South
  - 25 Pindari Road, Moe South
  - 30 Alvina Court, Moe South
  - 38 Alvina Court, Moe South
- Edward Hunter Heritage Bush Reserve Committee (nature conservation reserve north of existing Moe WTP)
- APA Group (owner of the gas pipeline easement)
- Energy Safe Victoria (regulator of gas pipeline infrastructure)

Preliminary consultation has also been undertaken with key authorities during the early development of this project, which has informed this application. Authorities consulted with include LaTrobe City Council, Environment Protection Authority, Country Fire Authority, Energy Safe Victoria and the Department of Environment, Land, Water and Planning.

Based on the level of consultation undertaken to date, including with adjoining land owners, the applicant applies to the Minister for Planning to grant an exemption from full notification requirements under Section 20(2) of the *Planning and Environment Act 1987*.

## 8.3 Appropriateness of the Amendment

The document *A Practitioner's Guide to Victorian Planning Schemes* (DELWP 2019) has replaced the previous Practice Notes which provided guidance on the application of the different elements of the VPP. Section 5 deals with choosing and applying provisions. In terms of Public land, it notes that Public land zones *are not intended to identify the legal status of the land or indicate the existing land use. They are intended to set out appropriate statutory requirements that apply to the use and development of the land in addition to the relevant land management legislation.*

The guidance suggests that application of a public use zone is appropriate where a public land manager should be able to use and develop public land without the need for a permit. It directs that a public use zone is appropriate where a public land manager needs some level of flexibility, protection or exemption that is different from the surrounding zone provisions because of the special nature of the public land or asset and its control.

In this instance, the surrounding zone – or the zone that applies to 58 Moe South Road, Moe South – is concerned with Rural Living and is not appropriate to the ongoing use and development of the land for water infrastructure.

The final qualifying comment in the guidance observes that *where the public land use is essentially of a commercial or business nature (such as an office or the provision of services) or comprises a community facility, the surrounding zoning will usually be appropriate.*

Gippsland Water is commercial in so far as it is an operating entity; however, it is primarily concerned with the delivery of water and waste water services to the Gippsland community. Therefore, application of the Public Use Zone 1 (Service and Utility) is entirely appropriate.

The proposed PSA will not result in any adverse environmental, social or economic impacts. It will give effect to the objectives of the *Planning and Environment Act 1987* specifically Section 4 (1)(e):

*(e) to protect public utilities and other assets and enable the orderly provision and co-ordination of public utilities and other facilities for the benefit of the community;*

This is in addition to complying with the direction of Section 12 (1)(a) of the *Planning and Environment Act 1987*.

It should be noted the site and the surrounding locality are largely affected by the Bushfire Management Overlay. The proposed change in zoning of the site to Public Use Zone 1 will not result in any increase to the risk to life, property, community infrastructure or the natural environment from bushfire.

## 9. **Section 96a planning permit application**

### 9.1 Use of Section 96a

Section 96a of the *Planning and Environment Act 1987* provides for a combined planning scheme amendment and planning permit process.

The process allows a planning authority, if requested to do so by a proponent, to simultaneously prepare and give notice of a proposed amendment to a planning scheme and notice of an application for a planning permit.

Under the combined process, a permit application can be for any purpose for which the planning scheme, as amended, will require a permit to be obtained, even if a permit could not be granted under the existing provisions of the planning scheme.

In the case of this proposal, the combined process is required to facilitate the efficient delivery of expansion works at the Moe WTP which is a key strategic project for the Latrobe region. Whilst use of the land as a utility installation is not 'prohibited' under the current zoning of the site (RLZ), the use is at odds with the objectives of the zone.

A permit would still be required under the planning scheme, as proposed to be amended, for buildings and works subject to the Design and Development Overlay – Schedule 1 and for removal of native vegetation pursuant to Clause 52.17.

Early consultation with Latrobe City Council and DELWP has assisted the permit applicant to identify the combined Section 96a approach as being the most suitable approval pathway given the planning context and timeframes involved with the Moe WTP expansion project.

### 9.2 Permit application summary

A planning permit is sought from Latrobe City Council, concurrently with the proposed PSA to rezone land at 58 Moe South Road, Moe South.

Under Section 96a of the *Planning and Environment Act 1987* Gippsland Water seek a planning permit for:

- Buildings and works associated with 'Utility Infrastructure' under the DDO1 (for both 56 and 58 Moe South Road, Moe South); and
- Removal, destruction and lopping of native vegetation under Clause 52.17 (only for 56 Moe South Road, Moe South)

A planning permit application form has been provided at Appendix J.

## 10. Conclusion

This combined planning scheme amendment request and planning permit application is made to Latrobe City Council on behalf of Gippsland Water to support the strategic expansion of the Moe WTP. This critical project seeks to construct an additional CWS basin to increase the capacity of water supply and improve water security for Moe and the wider Latrobe Region.

To facilitate these works and future upgrades to the WTP, Gippsland Water seek to rezone a parcel of land they have acquired adjacent to the existing WTP which was strategically selected in order to avoid and minimise impacts to native vegetation as part of the expansion project.

The PSA seeks to rezone this parcel from RLZ to PUZ1, bringing it into conformity with the balance of the existing Moe WTP facility.

To facilitate the efficient delivery of this regional project, a planning permit application has been submitted concurrently to allow for the removal of native vegetation under Clause 52.17, and for buildings and works to occur within the DDO1 to ensure the basin can be delivered for the Latrobe community by December 2022.

Gippsland Water have undertaken detailed consultation with adjoining landowners and key stakeholders in accordance with pre-application guidance received from Council and DELWP. Based on the level of engagement that has been completed for the project, it is also requested that exemption be sought from the Minister for Planning from full notification requirements and to be processed pursuant to Section 20(2) of the *Planning and Environment Act 1987*.

For the reasons outlined in this assessment, the proposal is considered to be consistent with the relevant provisions of the Latrobe Planning Scheme.

We respectfully request that Council support this request for a combined planning scheme amendment and planning permit application under Section 96a of the *Planning and Environment Act 1987* to allow for the critical upgrade of essential water infrastructure, to ensure water security and supply can be sustained for the growing Latrobe region.

## 11. **Disclaimer**

*This report: has been prepared by GHD for Gippsland Water and may only be used and relied on by Latrobe City Council and DELWP as part of the planning assessment for Gippsland Water's request for a combined planning scheme amendment and planning permit application for the Moe WTP expansion.*

*GHD otherwise disclaims responsibility to any person other than Gippsland Water arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.*

*The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report.*

*The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.*

## Appendices

## Appendix A – Certificates of title



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

VOLUME 10290 FOLIO 863

Security no : 124082416039B

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**LAND DESCRIPTION**

Lot 1 on Plan of Subdivision 400699W.

PARENT TITLES :

Volume 08035 Folio 517      Volume 08361 Folio 272

Created by instrument PS400699W 12/07/1996

**REGISTERED PROPRIETOR**

Estate Fee Simple

Sole Proprietor

CENTRAL GIPPSLAND REGION WATER CORPORATION of 55 HAZELWOOD ROAD TRARALGON  
VIC 3844

[AS253053M](#) 13/06/2019

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SEE [PS400699W](#) FOR FURTHER DETAILS AND BOUNDARIES

**ACTIVITY IN THE LAST 125 DAYS**

NIL

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

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

Street Address: 58 MOE SOUTH ROAD MOE SOUTH VIC 3825

**ADMINISTRATIVE NOTICES**

NIL

eCT Control      17829T RUSSELL KENNEDY

Effective from 13/06/2019

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|      |                    |  | \$0.00                                   |                       |

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|  |  |  | Service Fee(GST<br>exclusive): |               |
|  |  |  | GST Payable:                   | <b>\$0.00</b> |
|  |  |  | Total:                         | <b>\$8.68</b> |

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| TITLE PLAN   |  | EDITION 1   | TP 639833Y          |
|--|--|---|---------------------|
| <b>Location of Land</b><br>Parish: MOE<br>Township:<br>Section:<br>Crown Allotment:<br>Crown Portion:<br><br>Last Plan Reference: LP55896<br>Derived From: VOL 8361 FOL 267<br>Depth Limitation: 50 FEET   |  | <b>Notations</b><br><br>ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN   |                     |
| <b>Description of Land / Easement Information</b><br><br><div style="border: 1px solid black; padding: 5px; background-color: #ffffcc;">                         ENCUMBRANCES REFERRED TO<br/>                         As to any land coloured<br/>                         green - - - - -<br/><br/>                         THE CARRIAGE WAY AND --<br/>                         DRAINAGE EASEMENTS ----<br/>                         created by Transfer --<br/>                         2488373 - - - - -                     </div> |  | THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT<br>COMPILED: 04/10/2000<br>VERIFIED: A.D.<br><br><b>COLOUR CODE</b><br>G = GREEN |                     |
|  |  |   |                     |
| LENGTHS ARE IN LINKS   |  | Metres = 0.3048 x Feet<br>Metres = 0.201168 x Links   |                     |
|  |  |   | Sheet 1 of 1 sheets |



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**LAND DESCRIPTION**

Lot 2 on Plan of Subdivision 055896.

PARENT TITLE Volume 08277 Folio 961

Created by instrument B434215 25/07/1962

**REGISTERED PROPRIETOR**

Estate Fee Simple

Sole Proprietor

CENTRAL GIPPSLAND REGION WATER CORPORATION of HAZELWOOD ROAD TRARALGON VIC 3844

[AN247111D](#) 07/11/2016

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**ACTIVITY IN THE LAST 125 DAYS**

NIL

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

Street Address: 56 MOE SOUTH ROAD MOE SOUTH VIC 3825

**ADMINISTRATIVE NOTICES**

NIL

eCT Control 16238Y CENTRAL GIPPSLAND REGION WATER CORPORATION

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**LAND DESCRIPTION**

Lot 2 on Plan of Subdivision 400699W.

PARENT TITLES :

Volume 08035 Folio 517      Volume 08361 Folio 272

Created by instrument PS400699W 12/07/1996

**REGISTERED PROPRIETOR**

Estate Fee Simple

Sole Proprietor

CENTRAL GIPPSLAND REGION WATER CORPORATION of HAZELWOOD ROAD TRARALGON VIC 3844

[AN246330V](#) 07/11/2016

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**ACTIVITY IN THE LAST 125 DAYS**

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Effective from 07/11/2016

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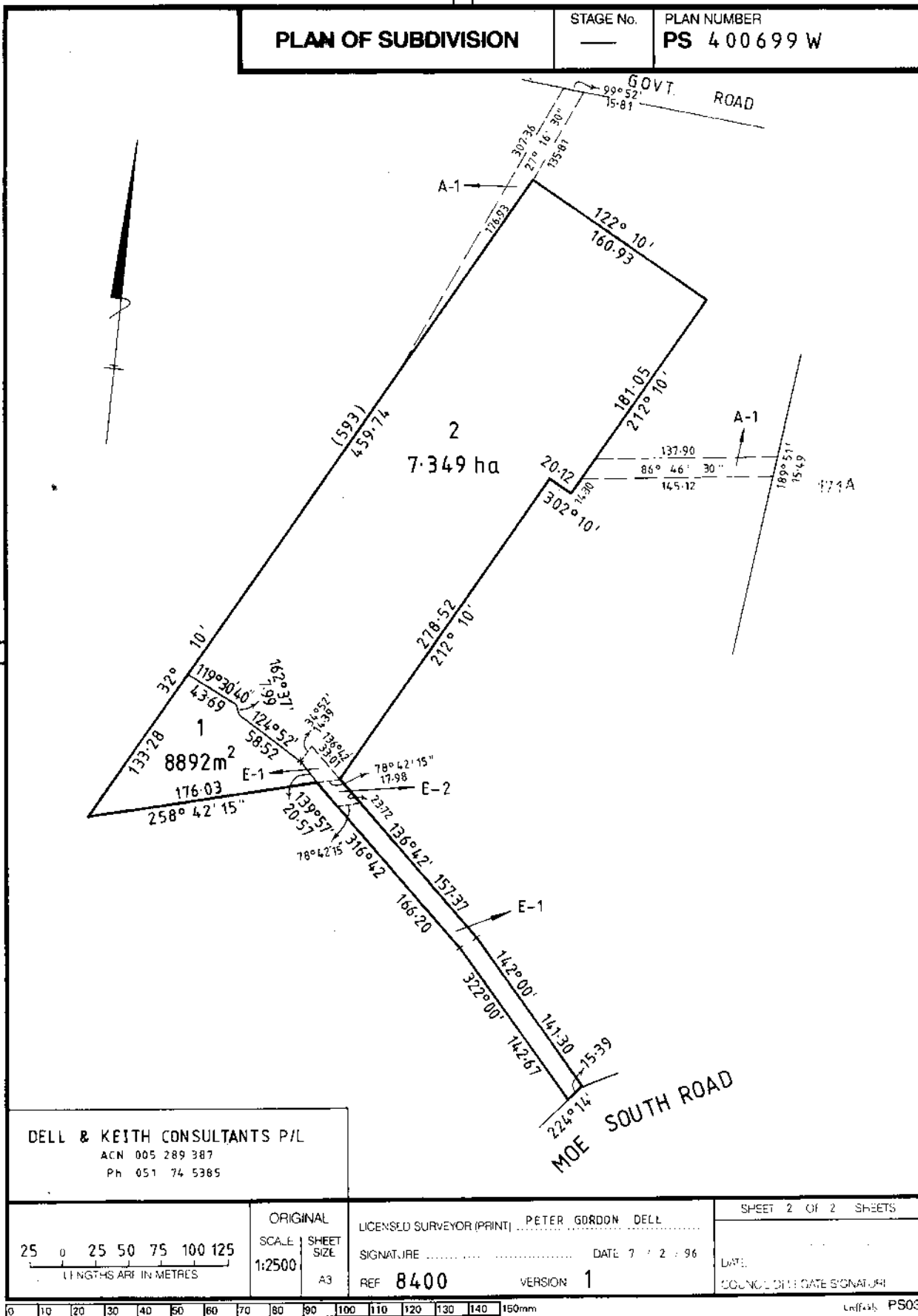
|      |                    |  |                                   |        |                       |
|------|--------------------|--|-----------------------------------|--------|-----------------------|
| Home | Account:<br>323237 |  | Authority Fee<br>(GST exclusive): | \$8.68 | 01/04/2020<br>03:01PM |
|      |                    |  |                                   | \$0.00 |                       |

|  |  |  |  |                                |        |
|--|--|--|--|--------------------------------|--------|
|  |  |  |  | Service Fee(GST<br>exclusive): |        |
|  |  |  |  | GST Payable:                   | \$0.00 |
|  |  |  |  | Total:                         | \$8.68 |

Your reference: A1490012  
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## Appendix B – Noise Assessment



# **Gippsland Water**

## Moe WTP Rezoning Noise Assessment

June 2020

# Glossary

| Term                       | Description   |
|----------------------------|---|
| Background Noise Level     | For a day, evening or night period means the arithmetic average of the $L_{A90}$ levels for each hour of that period for which the commercial, industrial or trade premises under investigation normally operates. The background level shall include all noise sources except noise from commercial, industrial or trade premises which appear to be intrusive at the point where the background level is measured (Victorian Government, 1989). |
| dB                         | Unit of measurement for Sound Pressure Level known as a decibel, which is 10 times the logarithm (base 10) of the ratio of a given sound pressure to a reference pressure; used as a unit of sound.   |
| dB(A)                      | 'A-weighted' decibel measurement as specified in Australian Standard AS IEC 61672- 2004 Electroacoustics - Sound level meters or its replacements.  |
| EPA                        | Environment Protection Authority.   |
| GDA94                      | The Geocentric Datum of Australia is a system of latitudes and longitudes, or east and north coordinates used to track locations.   |
| $L_{Aeq}$ (period)         | Equivalent sound pressure level: the steady sound level that, over a specified period of time which would produce the same energy equivalence as the fluctuating sound level actually occurring.  |
| $L_{A1}$ (period)          | The sound pressure level that is exceeded for 1% of the measurement period.   |
| $L_{A10}$ (period)         | The sound pressure level that is exceeded for 10% of the measurement period.  |
| $L_{A90}$ (period)         | The sound pressure level that is exceeded for 90% of the measurement period.  |
| $L_{Amax}$                 | The maximum sound level recorded during the measurement period.   |
| $L_{Amin}$                 | The minimum sound level recorded during the measurement period.   |
| Lin                        | LIN or linear is a device or circuit with a linear characteristic, meaning that a signal passing through the circuit is not distorted and/or it excludes a filter.  |
| Mitigation                 | Reduction in severity.  |
| NIRV                       | Noise from Industry in Regional Victoria (NIRV) - recommended maximum noise levels from commerce, industry and trade premises in regional Victoria - Publication 1411 October 2011 (Authorised and published by EPA Victoria, 200 Victoria Street, Carlton.)  |
| Project Specific Criteria  | The project specific level is the more stringent of the intrusive and amenity criteria.   |
| Receiver (Sensitive Use)   | A noise modelling term used to describe a map reference point where noise is predicted. A sensitive receiver would be a home, work place, church, school or other place where people spend time at which noise from the development can be heard. The assessment in this report looks at impacts within 10 m of the façade of the building as defined in the SEPP-N1.   |
| SEPP-N1                    | State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 No. S31, 16/5/1989, Gazette 15/6/1989;<br>- As varied 15/9/1992, No. G37, Gazette 23/9/1992<br>- As varied 31/10/2001, No. S183, Gazette 31/10/2001  |
| Sound Pressure Level (SPL) | The Sound Pressure level is the change in air pressure above and below the average atmospheric pressure (amplitude) caused by a passing pressure wave; this is then converted to decibels and can be abbreviated as SPL or $L_p$ .<br>The SPL can be calculated as:   |

| Term                    | Description   |
|-------------------------|---|
|                         | $SPL \text{ or } L_p = 10 \text{ Log}_{10} \left( \frac{P^2}{P_0^2} \right) [dB]$ <p>or more simply</p> $SPL \text{ or } L_p = 20 \text{ Log}_{10} P + 94 [dB]$ <p>Where:<br/> SPL or L<sub>p</sub> = Sound Pressure Level<br/> P = Root-mean-square (rms) sound pressure (Pascals or Pa)<br/> P<sub>0</sub> = International reference pressure 20 micropascals.</p>  |
| Sound Power Level (PWL) | <p>This is defined as the average rate at which sound energy is radiated from a sound source and is measured in watts (W). The Sound Power Level can be abbreviated as PWL or L<sub>w</sub>.</p> <p>The PWL can be calculated as:</p> $PWL \text{ or } L_w = 10 \text{ Log}_{10} \left( \frac{W}{W_0} \right) [dB]$ <p>or more simply</p> $PWL \text{ or } L_w = 10 \text{ Log}_{10}(W) + 120 [dB]$ <p>Where:<br/> PWL or L<sub>w</sub> = Sound Power Level<br/> W = acoustic energy of the source given in watts (W)<br/> W<sub>0</sub> = International reference sound power of 10<sup>-12</sup> Watt (W)</p> |

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# Appendices

Appendix A – EPA major urban area boundary

Appendix B – Model 3D Visualisation

Appendix C – Backwash pump specification

# 1. Introduction

GHD was engaged by Gippsland Water to conduct a noise assessment for the operation of a new backwash pump as part of their 25 ML clear water storage upgrade expansion to the west of the existing facility at 56 Moe South Road, Moe South (the site).

Gippsland Water have recently purchased a property at 58 Moe South Road, Moe South, adjoining the existing WTP site at 56 Moe South Road, Moe South, to facilitate the expansion.

The Moe WTP currently has a maximum production capacity of 24 ML/d with a peak day demand of 22 ML/d and peak instantaneous flow of 30 ML/day in sections of the plant.

The Moe water supply system serves the towns of Moe, Newborough, Yallourn North, Trafalgar, Yarragon and Darnum (north of freeway) as well as the Yallourn-W works area site of the Yallourn Power Station. Various rural properties in neighbouring localities are also served at Westbury, Moe South, Hernes Oak, Coalville, Narracan, Trafalgar South, Trafalgar East and Yarragon South.

Gippsland Water are proposing to construct a new 25ML Clear Water Storage (CWS) basin to expand the storage and processing capacity of the Moe WTP to meet the future needs of the Gippsland region and community.

Currently, there is only one 22 ML CWS storage basin at the Moe WTP which will reach capacity by 2021 under future growth scenarios. This will impact approximately 63 percent of the Moe/Newborough water supply system, including areas in Moe, Trafalgar and Yarragon.

Construction of a second CWS basin will improve the overall resilience of the Moe/Newborough water network and ensure adequate water supply is provided for the system in the long term. The second CWS basin will also be essential to providing for operational flexibility or redundancy when the existing CWS basin goes offline. Should the existing basin be taken offline, it is estimated that services to approximately 5,000 customers would be impacted.

## 1.1 Purpose of this report

The purpose of this report is to provide the results of noise modelling in order to assess whether the proposed new backwash pump at the Moe WTP will comply with the relevant noise guideline namely:

- *Noise from Industry in Regional Victoria (NIRV): Recommended maximum noise levels from commerce, industry and trade premises in regional Victoria (EPA publication 1411) (EPA Victoria, 2011).*

## 1.2 Scope and limitations

*This report: has been prepared by GHD for Gippsland Water and may only be used and relied on by Gippsland Water for the purpose agreed between GHD and the Gippsland Water as set out in section 1.1 of this report.*

*GHD otherwise disclaims responsibility to any person other than Gippsland Water arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.*

*The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.*

*The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to*

update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section 1.3 and throughout this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Gippsland Water and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

### **1.3 Assumptions**

The following assumptions were made in this assessment:

- Noise assessment is based on government data base sourced terrain data. GHD does not take any responsibility for accuracy of the terrain information. Note due to discrepancies between the government data set and client supplied data the client supplied topography data was discarded in favour of the government based topography data
- Utilised sound power for the backwash pump has been provided by Gippsland Water as presented in Appendix C
- The backwash pump is proposed to be located adjacent to the existing filter tank to the west of the existing clarifier tank. The backwash pump is understood to consist of one pump exposed to air (unenclosed)
- Noise emissions from the back wash pump are assessed against the zoning criteria of the EPA publication 1411 entitled *Noise from Industry in Regional Victoria (NIRV): Recommended maximum noise levels from commerce, industry and trade premises in regional Victoria* (EPA Victoria, 2011)
- No base line noise monitoring was undertaken as the project area sits within the NIRV and was not considered a 'Background Relevant Area' as defined under the NIRV guideline for regional Victoria.

### **1.4 Scope of works**

The scope of works for this backwash pump noise assessment was as follows:

- Review relevant site design information, including mechanical specifications, sound data to establish likely noise sources on site
- Undertake operational noise impact modelling using acoustic software (Cadna-A or SoundPlan) software for one conservative scenario. The noise model will include a computational model of the site and surrounding area
- Based on the results of the noise modelling, assess operational noise levels against the established noise criteria and provide commentary on the likely impact of site on sensitive receivers
- Where results show that operational noise are likely to exceed allowable noise limits then assess in principal mitigation options
- Prepare a report outlining the operational noise impact assessment, establishment of criteria and baseline noise monitoring.

## 2. Site

### 2.1 Existing site

The Moe WTP is located at 56 Moe South Road, Moe south; approximately 2.5 kilometres south of the Moe Township. The existing WTP site is irregular in shape and covers an area of approximately 0.15 square kilometres.

The site is accessed off Moe South Road via a dedicated access road approximately 298 metres long. Infrastructure within the existing WTP site is setback approximately 330 metres from Moe South Road.

Existing infrastructure within the Moe WTP site is concentrated in the southeast part of the property, with the balance of the property being covered in dense treed vegetation. The tree canopy within the vegetated areas on site is approximately 5-10 metres in height. The WTP site currently accommodates a 22ML CWS basin, sludge lagoon and sludge handling facility, pump station, filtration building, chlorine tank and chlorine gas dosing facility, combined inlet works system, and associated pipework and ancillary infrastructure.

### 2.2 Proposed expansion area

A triangular parcel of land sits along the southern boundary of the existing WTP site, known as 58 Moe South Road, Moe South. This property was previously owned by Gippsland Water and accommodated a caretaker's residence before being sold privately. Gippsland Water recently reacquired this lot to facilitate the proposed expansion of the Moe WTP. This land parcel is approximately 8,970 square metres in area and is accessed directly off the access track serving the Moe WTP.

The property currently accommodates a single residence (previously care-takers residence) and several outbuildings. Established vegetation is present close to the property entrance in the northeast part of the site. Scattered trees and shrubs are also present close to the dwelling and within the rear yard of the property. The balance of the land remains relatively clear, comprising open lawn areas.

### 2.3 Sensitive receivers

Land surrounding the Moe WTP is characterised by low density rural residential land use and development. Many of the properties which adjoin the WTP to the immediate west, north and northeast feature dense vegetation along their common boundary with the WTP. Properties which adjoin the WTP to the immediate south and south east are accessed from Alvina Court off Moe South Road.

The southern boundary of the expanded site abuts 30 Alvina Court, Moe South which features a single-storey rural residence and large shed/garage set back approximately 42 metres from its northern boundary.

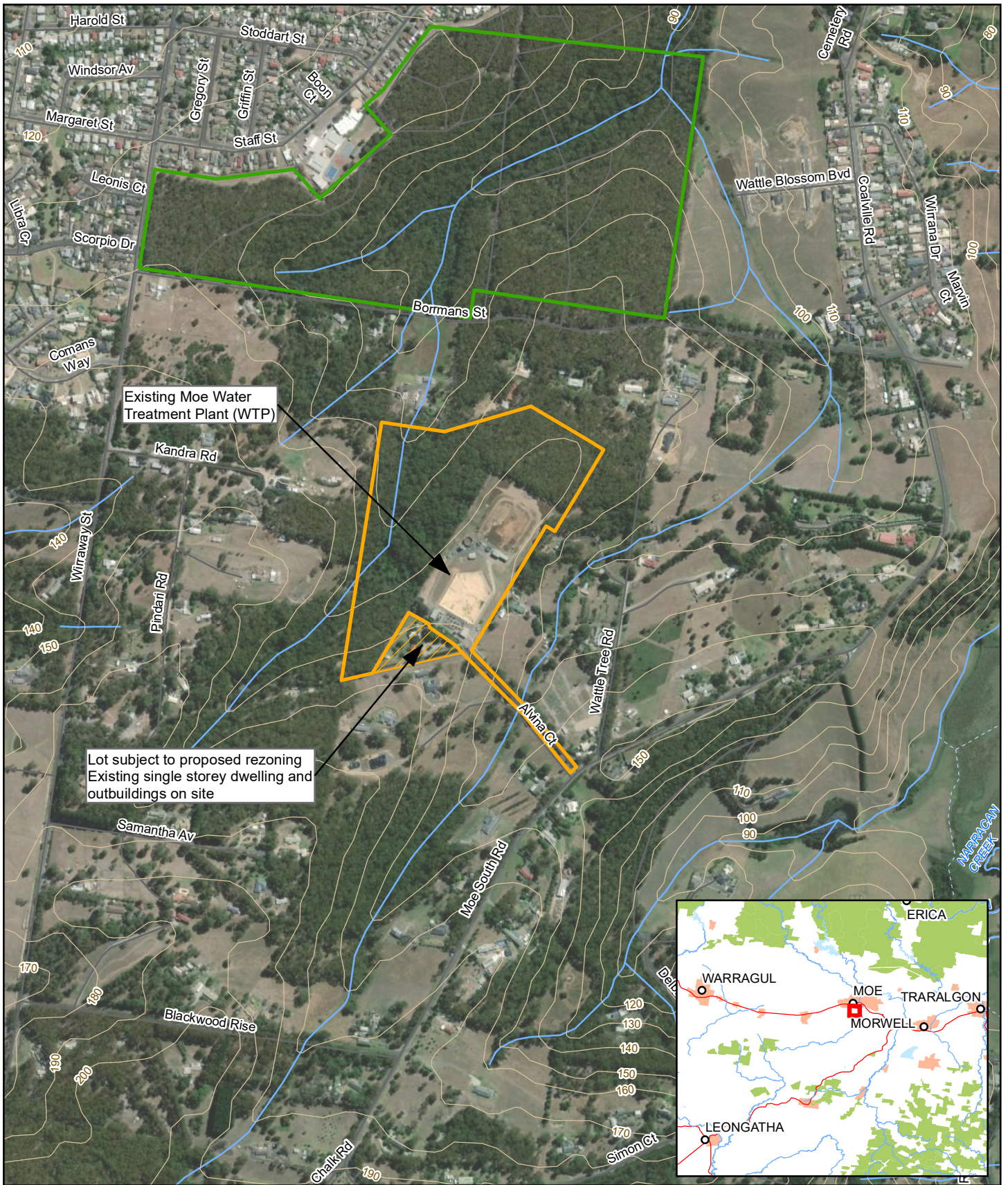
Further southwest is another rural residence located at 38 Alvina Court, Moe South. This property also features a single-storey dwelling and large shed/garage and shares its northern boundary with part of the existing Moe WTP site. The dwelling on this property is set back approximately 83 metres from its northern boundary.

To the west of the proposed WTP expansion area are properties located at 21 and 25 Pindari Road. These properties feature single dwellings setback approximately 186 metres and 311 metres from their eastern boundaries respectively. Both dwellings are set on large rural residential allotments and will be separated from the proposed works area by dense established treed vegetation.

Table 1 provides a list of the sensitive receiver IDs, coordinates and nearest approximate distance of each dwelling to the PUZ1 zone boundary, excluding the road section. The list extends out to within 500 m of the Moe WTP site centre in all compass directions. Figure 1 shows the Moe WTP and surrounding locality and Figure 2 shows sensitive receiver locations.

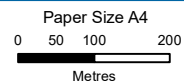
**Table 1 Sensitive receivers**

| Receiver ID | Approximate distance<br>from PUZ1 zone<br>boundary | X-Coordinate | y-Coordinate |
|-------------|--|--------------|--------------|
|             | (m)  | (m)          | m            |
| R1          | 20   | 435298       | 5771694      |
| R2          | 40   | 435376       | 5771812      |
| R3          | 190  | 435444       | 5771649      |
| R4          | 180  | 435557       | 5771778      |
| R5          | 290  | 435638       | 5771735      |
| R6          | 430  | 435714       | 5771619      |
| R7          | 410  | 435653       | 5771569      |
| R8          | 320  | 435516       | 5771521      |
| R9          | 370  | 435482       | 5771399      |
| R10         | 350  | 435409       | 5771347      |
| R11         | 330  | 435271       | 5771322      |
| R12         | 300  | 435337       | 5771375      |
| R13         | 290  | 435442       | 5771455      |
| R14         | 280  | 435447       | 5771486      |
| R15         | 90   | 435154       | 5771584      |
| R16         | 90   | 435068       | 5771525      |
| R17         | 180  | 435072       | 5771427      |
| R18         | 180  | 434831       | 5771762      |
| R19         | 160  | 434883       | 5771944      |
| R20         | 40   | 435083       | 5772107      |
| R21         | 160  | 435036       | 5772227      |
| R22         | 40   | 435312       | 5772144      |
| R23         | 60   | 435421       | 5772124      |
| R24         | 100  | 435531       | 5772115      |
| R25         | 170  | 435627       | 5772120      |
| R26         | 100  | 435582       | 5772003      |

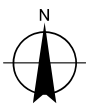


**LEGEND**

- 58 Moe South Road Moe South
- 56 Moe South Road Moe South
- Contours 10m
- Road
- Stream
- Drain/Channel/Other
- Watercourse
- Edward Hunter Heritage Bushland Reserve



Horizontal Datum: GDA 1994  
Grid: GCS GDA 1994

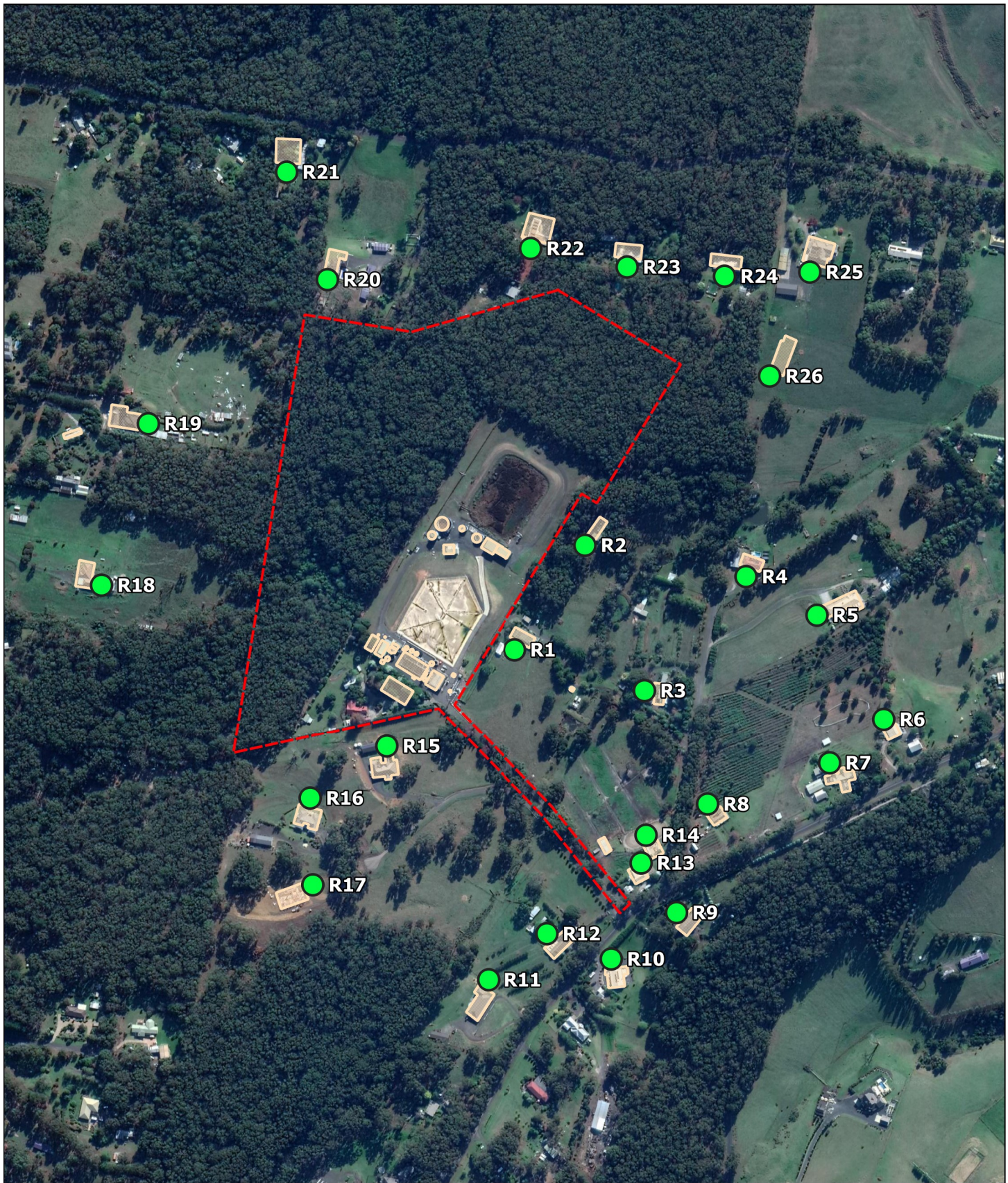


Gippsland Water  
Moe WTP Rezoning


Job Number | 31-12516874  
Revision | B  
Date | 08/04/2020

Locality

**Figure 1**

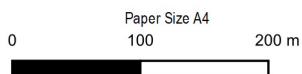


LEGEND

 Proposed expanded site

 Receiver

 Building



Map Projection: Universal Transverse Mercator  
Horizontal Datum: Geocentric Datum of Australia 1994  
Grid: Map Grid Of Australia, Zone 55



Gippsland Water  
Moe WTP Rezoning Noise Assessment

**Sensitive receiver locations**

Project No. 12516874  
Revision No. -  
Date. 29/05/2020

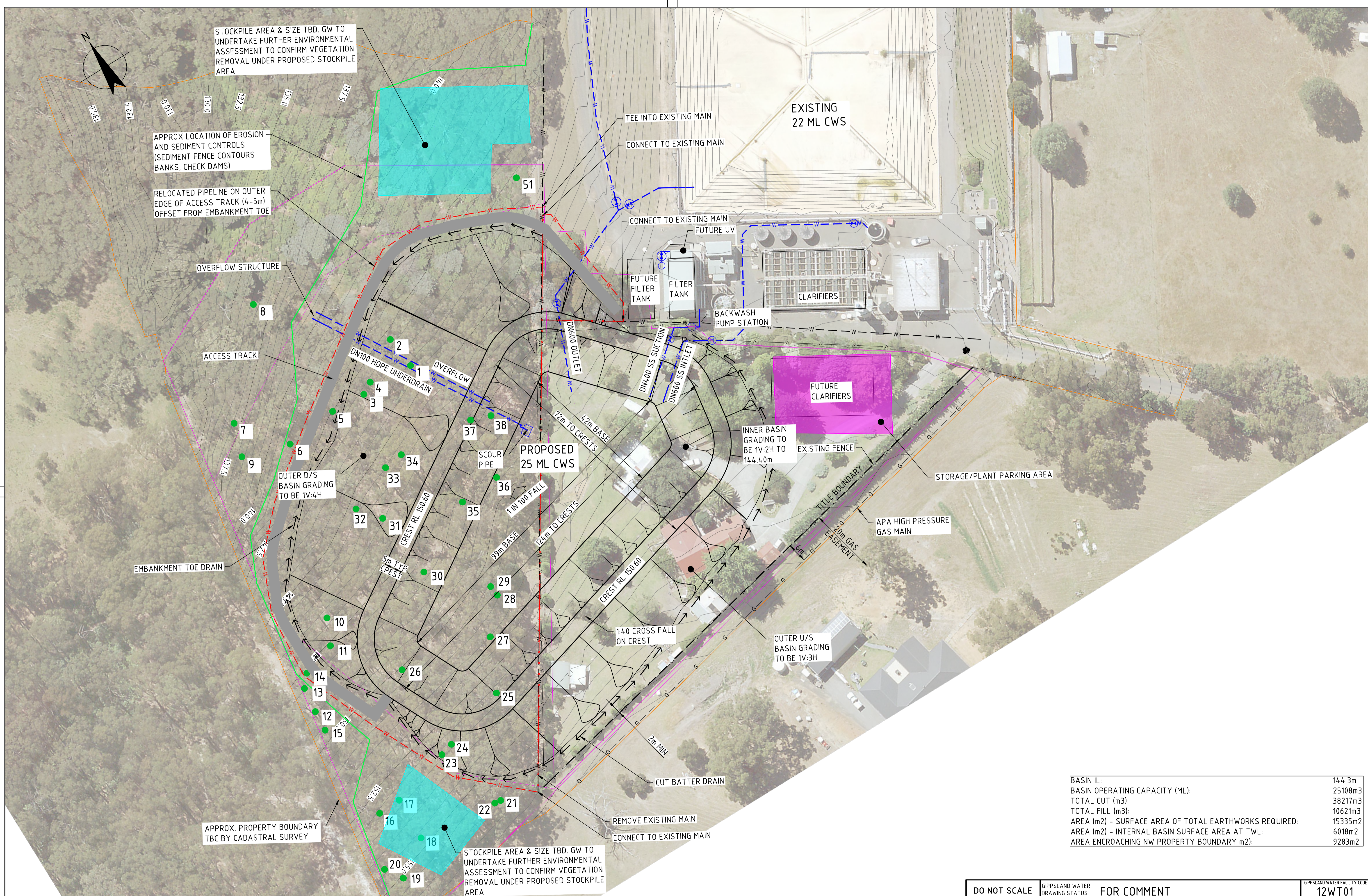
**FIGURE 2**

### 3. Proposed upgrade

Gippsland Water are proposing to construct a new 25ML Clear Water Storage (CWS) basin to expand the storage and processing capacity of the Moe WTP to meet the future needs of the Gippsland region and community. The proposed upgrade will consist of:

- A new 25 ML clean water storage (CWS) basin
- Hydraulic infrastructure including:
  - pipework
  - penetrations and operating levels
  - overflow spillway
  - liner underdrain
  - valves and fittings
  - pumps and interconnections.
- A new filter tank and backwash pump station
- A new access track and guard rail around the CWS
- Landscape planting.

Figure 3 outlines the location of the newly proposed 25 ML clear water storage facility and associated infrastructure including the backwash pump station location.



|  |         |
|--|---------|
| BASIN IL:  | 144.3m  |
| BASIN OPERATING CAPACITY (ML):                         | 25108m3 |
| TOTAL CUT (m3):  | 38217m3 |
| TOTAL FILL (m3):                                       | 10621m3 |
| AREA (m2) - SURFACE AREA OF TOTAL EARTHWORKS REQUIRED: | 15335m2 |
| AREA (m2) - INTERNAL BASIN SURFACE AREA AT TWL:        | 6018m2  |
| AREA ENCRANCHING NW PROPERTY BOUNDARY (m2):            | 9283m2  |

| REVISIONS | No. | DATE     | DESCRIPTION            | APP'D |
|-----------|-----|----------|------------------------|-------|
|           | C   | 17/12/19 | ISSUED FOR INFORMATION |       |
|           | B   | 13/12/19 | ISSUED FOR INFORMATION |       |
|           | A   | 05/12/19 | ISSUED FOR INFORMATION |       |

| REFERENCES | PLAN No. | TITLE |
|------------|----------|-------|
|            |          |       |

DESIGNED BY:  
 GHD  
 5 Church St Traralgon VIC 3844 Australia  
 PO Box 1040 Traralgon VIC 3844  
 T 61 3 5136 5800 F 61 3 5136 5888  
 E traralgonmail@ghd.com W www.ghd.com

SCALE 1:500 AT ORIGINAL SIZE

0 5 10 15 20 25m

DO NOT SCALE

CERTIFICATION OF COMPLIANCE WITH GIPPSLAND WATER'S DESIGN & DRAFTING REQUIREMENTS.

DESIGNED: P.BACKHOUSE  
 DRAWN: J.WILDE  
 CHECKED: / /

GIPPSLAND WATER FACILITY CODE: 12WT01  
 DRAWING No: A1-  
 REV: C

MOE WATER RETICULATION  
 MOE WATER TREATMENT PLANT  
 25 ML CLEAR WATER STORAGE  
 PLAN - OPTION 8 - MINIMUM CONSTRUCTION FOOTPRINT

FOR COMMENT

GIPPSLAND WATER

12WT01

A1- C

MOE WATER RETICULATION  
 MOE WATER TREATMENT PLANT  
 25 ML CLEAR WATER STORAGE  
 PLAN - OPTION 8 - MINIMUM CONSTRUCTION FOOTPRINT

## 4. Noise criteria

There are two key industrial noise control documents currently used in Victoria, namely:

- *State Environment Protection Policy – Control of Noise from Commerce, Industry and Trade No. N-1* (SEPP N-1) (Victorian Government, 1989)
- *Noise from Industry in Regional Victoria (NIRV): Recommended maximum noise levels from commerce, industry and trade premises in regional Victoria* (EPA publication 1411) (EPA Victoria, 2011).

The SEPP N-1 is applicable for sensitive receivers located in a *Major Urban Area (MUA)*, with potential impact from industrial noise. A 'Major Urban Area' is defined as:

- The part of *Melbourne* that is within the *SEPP N-1 boundary*
- The part of *Melbourne* that extends beyond the *SEPP N-1 boundary*, but is within the *Melbourne Urban Growth Boundary (UGB)*
- Land within the 'Major Urban Area' boundary of an Urban Centre with a population greater than 7000
- Land zoned either Residential Zone, Industrial Zone, Business Zone or Urban Growth Zone that is transected by the 'Major Urban Area' boundary of an Urban Centre with a population greater than 7000, then the whole of that zone shall be considered as part of the MUA.

The NIRV guideline is applicable for sensitive receivers located in a rural area outside of those areas outlined above that may potentially be impacted from industrial noise. A rural area is defined as:

*'... land that is not within a major urban area. It includes land in cities or towns with population below 7,000, and rural locations outside major urban areas'* (EPA Victoria, 2011).

### 4.1 Applicable method of assessment

The project area and nearby sensitive receivers are located beyond the SEPP N-1 area and the Melbourne Urban Growth Boundary (EPA Victoria, 2011) and areas designated as Major Urban Areas within Victoria (refer Appendix A), and are therefore assessed against the NIRV guideline.

#### 4.1.1 Determining the NIRV related criteria

The noise from industry in regional Victoria<sup>1</sup> guideline (NIRV) manages the impact of noise on residential and other noise-sensitive uses and should be applied when siting or designing new or expanded industry or plant and when government authorities assess applications for industry in regional Victoria.

NIRV sets the maximum noise level allowed in a noise sensitive area from commercial/industrial premises depending on the time of day and land use zoning. The first step is to determine the land-use zones of the receiving zone<sup>2</sup> and generating zone<sup>3</sup>. Once the receiving and generating zones are known, then using Table 1 in the NIRV guideline, the Zone Noise Levels are developed for each time period. The obtained Zone Noise Levels are then adjusted depending on the receiver-to-source distance to obtain the maximum allowable planning noise levels. In a

<sup>1</sup> Part of Victoria that extends beyond the SEPP N-1 area and Planning Urban Growth Boundary and not classified as Major Urban Area (EPA Victoria, 2011).

<sup>2</sup> 'Receiving zone' is the land-use zone in which the noise-sensitive area is located.

<sup>3</sup> 'Generating zone' is the land-use zone in which the noise emitter is located.

situation where background noise levels may be higher than usual for a rural area due to traffic noise or coastal noise, or the receiver is greater than 600m from the noise emitters zone boundary, background noise monitoring may be undertaken, and an adjustment of the Zone Noise Levels made accordingly to determine the maximum allowable noise levels.

No noise monitoring was undertaken for this assessment as the project area was not considered a 'background relevant area'.

Table 2 outlines the noise criteria for each assessed receiver within 500m of the Moe WTP, and is based on planning zones for both the noise generating and receiving zones.

**Table 2 NIRV noise criteria for the nearest identified receivers dB LAeq**

| Receiver ID | Daytime<br>7am – 6pm (Mon – Fri)<br>7am – 1pm (Sat) | Evening-time<br>6pm – 10pm (Mon – Fri)<br>1pm – 10pm (Sat)<br>7am – 10pm (Sun) | Night-time<br>10pm – 7am |
|-------------|---|--|--------------------------|
|             | dB LAeq   | dB LAeq  | dB LAeq                  |
| R1          | 45  | 40   | 35                       |
| R2          | 45  | 40   | 35                       |
| R3          | 45  | 39   | 34                       |
| R4          | 45  | 39   | 34                       |
| R5          | 45  | 38   | 33                       |
| R6          | 45  | 37   | 32                       |
| R7          | 45  | 37   | 32                       |
| R8          | 45  | 37   | 32                       |
| R9          | 45  | 37   | 32                       |
| R10         | 45  | 37   | 32                       |
| R11         | 45  | 37   | 32                       |
| R12         | 45  | 37   | 32                       |
| R13         | 45  | 38   | 33                       |
| R14         | 45  | 38   | 33                       |
| R15         | 45  | 40   | 35                       |
| R16         | 45  | 40   | 35                       |
| R17         | 45  | 39   | 34                       |
| R18         | 45  | 39   | 34                       |
| R19         | 45  | 39   | 34                       |
| R20         | 45  | 40   | 35                       |
| R21         | 45  | 39   | 34                       |
| R22         | 45  | 40   | 35                       |
| R23         | 45  | 40   | 35                       |
| R24         | 45  | 39   | 34                       |

| Receiver ID | Daytime<br>7am – 6pm (Mon – Fri)<br>7am – 1pm (Sat) | Evening-time<br>6pm – 10pm (Mon – Fri)<br>1pm – 10pm (Sat)<br>7am – 10pm (Sun) | Night-time<br>10pm – 7am |
|-------------|---|--|--------------------------|
|             | dB LAeq   | dB LAeq  | dB LAeq                  |
| R25         | 45  | 39   | 34                       |
| R26         | 45  | 39   | 34                       |

\*Generating zone: PUZ1 - PUBLIC USE ZONE - SERVICE AND UTILITY

\*\*Receiving zone: RLZ1 - RURAL LIVING ZONE - SCHEDULE 1

\*\*\*Base noise levels for each period are: Day 45 dB(A), Evening 37 dB(A), Night 32 dB(A)

## 5. Assessment

Operational noise modelling was undertaken to investigate the noise from pumping activities on nearby sensitive receiver locations. It is understood the backwash pump will operate for approximately one hour each day.

### 5.1 Modelling algorithm

Operational noise modelling was undertaken using Computer Aided Noise Abatement (CadnaA) Version 2020-MR1 noise modelling software with the ISO 9613-2, “*Acoustics – Attenuation of sound during propagation outdoors*” algorithm. This algorithm takes into account the presence of a well-developed moderate ground based temperature inversion, such as commonly occurs on clear, calm nights or ‘downwind’ conditions, which are favourable to sound propagation. As a result, predicted received noise levels are expected to represent a worst case scenario.

### 5.2 Modelling scenarios

One operational noise modelling scenario was undertaken as follows:

- 1x Backwash pump running continuously to simulate a worst-case 1 hour compliance period
- 1x Backwash pump running continuously to simulate a worst-case 1 hour compliance period with a backwash pump enclosure included to reduce noise to receivers R15 through R18.

### 5.3 Modelling assumptions

The following assumptions and parameters were adopted for this noise impact assessment:

- Backwash pump operates for approximately one hour each day
- Day, Evening and Night periods were designated as per the NIRV Guideline
- Ground absorption coefficient of 0.5 was used (where 0 is fully acoustically reflective ground and 1 is porous fully acoustically absorbing ground)
- Sensitive receivers were placed 1.5 m above the ground and the backwash pump was modelled at a height of 0.5 m above ground
- Modelling was based on atmospheric conditions of 10 °C and 70 per cent relative humidity
- Site topography and three dimensional terrain has been incorporated in the model
- Pump noise was modelled using the data for the existing pump servicing the Moe WTP, provided at Appendix C. It is expected that the same or similar pump will be used for the new basin, this can be confirmed once detailed design for the works is complete
- The future proposed Clarifier and Filter Tank building are included in the model.

### 5.4 Model results

Assessment of operational pumping noise against the more stringent criteria (i.e. night time noise criteria), will also result in compliance of project noise emissions with day and evening periods.

A five decibel (dB) penalty has been included in all predicted noise levels to take into account any tonality in the pumping noise levels.

Noise levels from the operation of a pumped backwash event is predicted to exceed the day, evening, and night-time criteria at receiver R15, the evening and night criteria at R16 and the night time criteria at receivers R9, R13, R14, R17, refer to Table 2 for all sensitive receiver criteria. The greatest exceedance is noted at the closest sensitive receiver to the South (R15) with a predicted noise level of 47 dB(A).

Accordingly further noise mitigation was considered in the form of a backwash pump acoustic enclosure. The enclosure provides for compliance at all sensitive receiver locations for all time periods Day, Evening, and Night with the highest predicted level being 32 dB(A) at sensitive receiver R15.

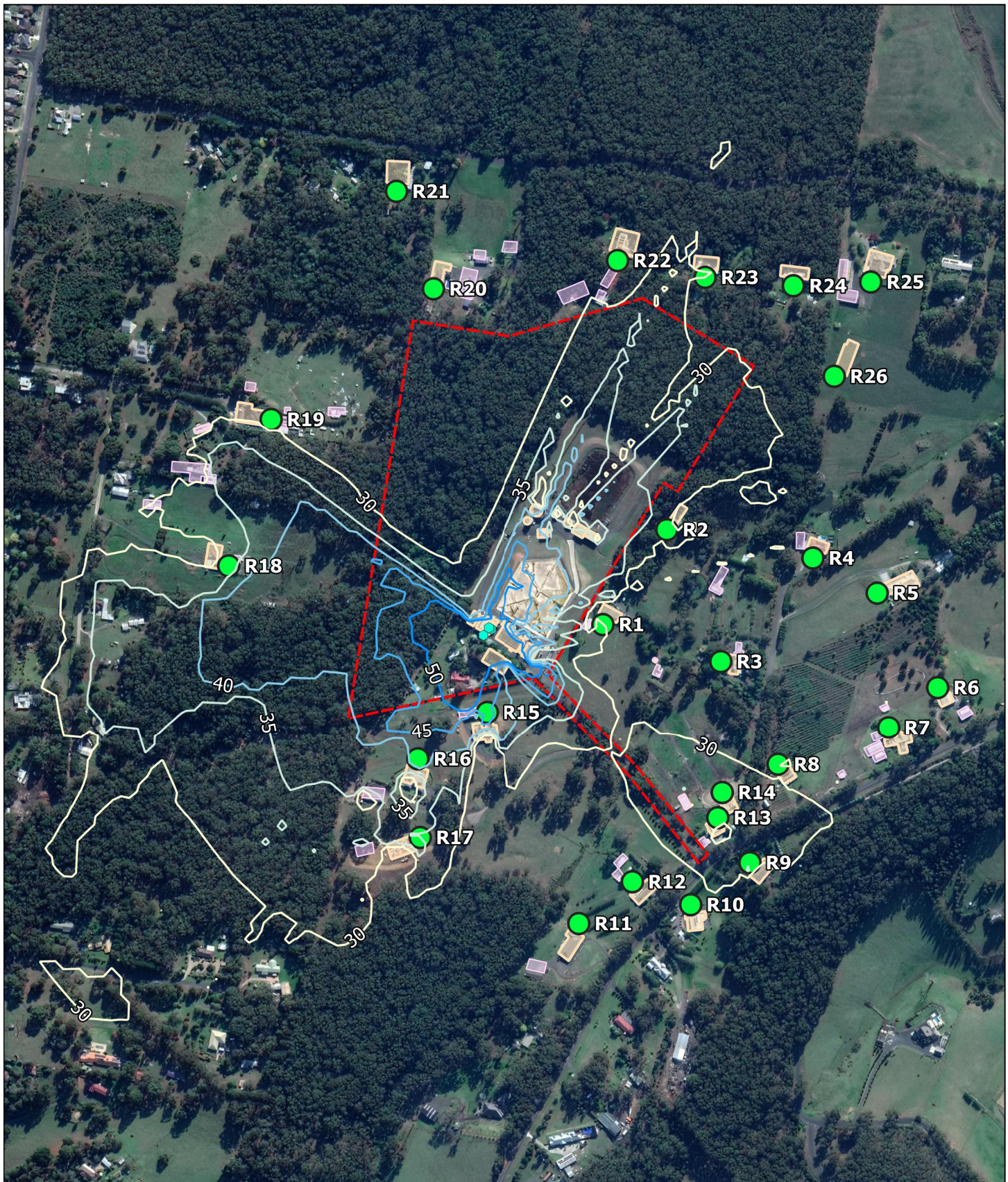
The enclosure is recommend to have the following minimum specifications:

- Construction from solid materials with a minimum sound reduction rating of Rw 32
- It is recommended the enclosure have a maximum size of 4m x 4m x 3m (ceiling height)
- Enclosure walls should be constructed of solid materials with an acoustic rating of Rw 32 and a minimum transmission loss as per Table 3.
- Any enclosure doors or openings such as louvres should be located on the northern side of the enclosure facing away from sensitive receivers.
- Any duct work, openings, and penetrations for ventilation need to be acoustically treated such that it does not compromise the acoustic performance of the enclosure.

**Table 3 Minimum enclosure transmission loss dB**

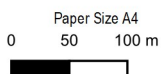
| Example Material | Octave midband frequency (Hz) |     |     |     |      |      |      |      | Rw dB |
|------------------|-------------------------------|-----|-----|-----|------|------|------|------|-------|
|                  | 63                            | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |       |
| 1.2 mm Steel     | 14                            | 17  | 22  | 27  | 33   | 39   | 45   | 45   | 32    |

Predicted noise contours are presented in Figure 4 and Figure 5, for unmitigated and mitigated scenarios respectively.



LEGEND

- ▭ Proposed expanded site
- ▭ Other structure
- Receiver
- Point source
- ▭ Building
- Noise contour L<sub>Aeq</sub> (dB)



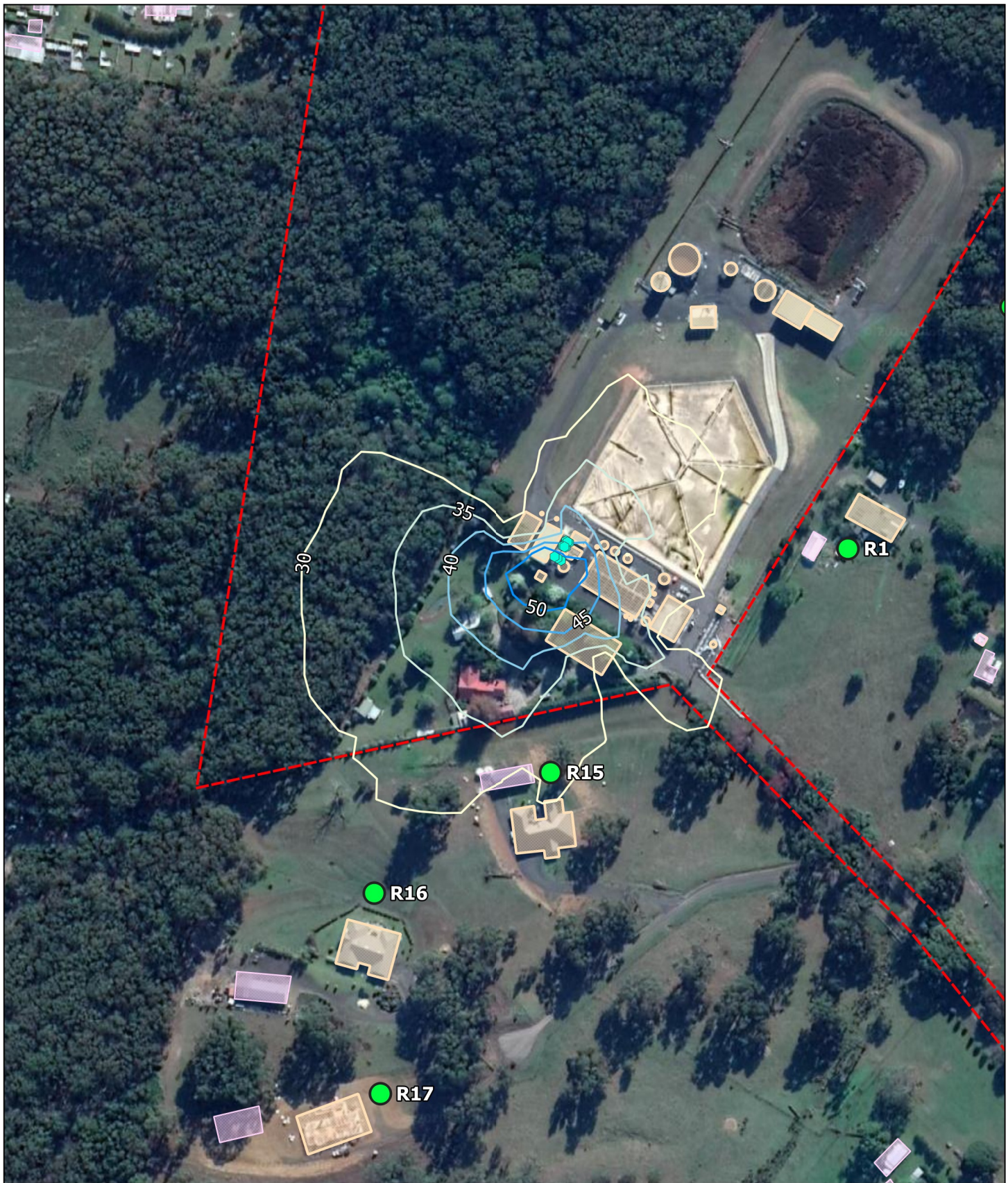
Map Projection: Universal Transverse Mercator  
 Horizontal Datum: Geocentric Datum of Australia 1994  
 Grid: Map Grid Of Australia, Zone 55



Gippsland Water  
 Moe WTP Rezoning Noise Assessment  
**Predicted noise contours -  
 operation**

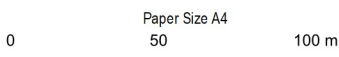
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**FIGURE 4**



LEGEND

- Proposed expanded site
- Other structure
- Receiver
- Building
- Point source
- Noise contour L<sub>Aeq</sub> (dB)



Map Projection: Universal Transverse Mercator  
 Horizontal Datum: Geocentric Datum of Australia 1994  
 Grid: Map Grid Of Australia, Zone 55



Gippsland Water  
 Moe WTP Rezoning Noise Assessment  
**Predicted noise contours -  
 operation with mitigation**

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**FIGURE 5**

G:\311\2516874\GIS\Maps\PDF  
 2020. While GHD has taken care to ensure the accuracy of this product, GHD and DATA CUSTODIAN(S), make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. GHD and DATA CUSTODIAN(S) cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.  
 Google Earth Imagery 2020. Created by: DM

## **6. Conclusion**

Night time noise criteria are critical for compliance. Noise levels from the proposed pump operation at the nearest sensitive receiver location (R15) and all other locations surrounding the site are predicted to comply with their strictest night time noise criteria (Table 2) following implementation of the recommendations within Section 5.4 of this report.

## 7. Bibliography

EPA Victoria. (2011). *Noise from Industry in Regional Victoria (NIRV) (EPA - Publication 1411)*. Victoria: EPA Victoria.

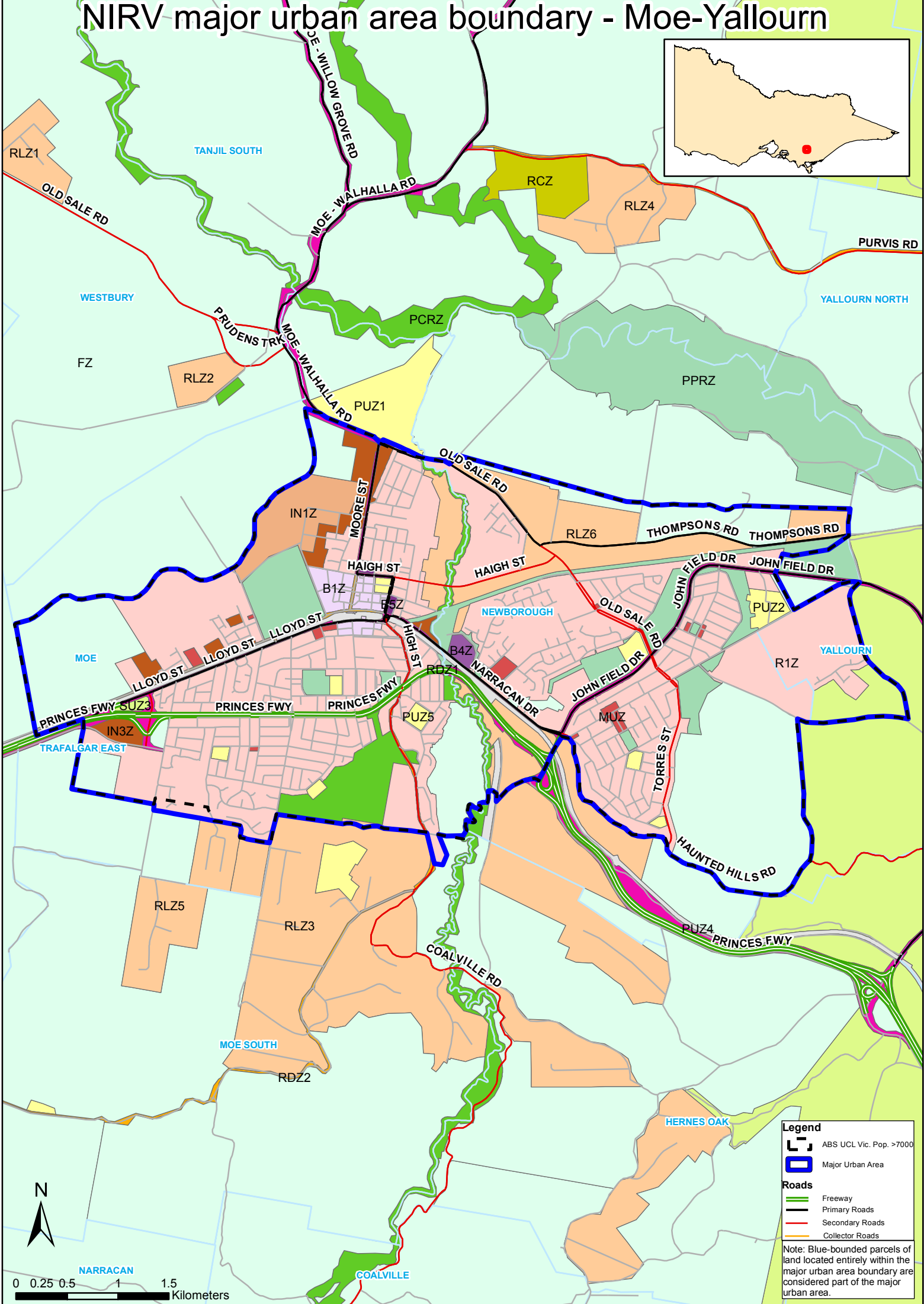
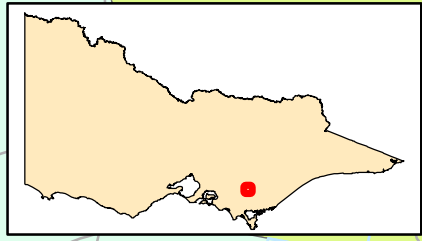
Victorian Government. (1989). *State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 (SEPP N-1)*. Melbourne: Environment Protection Authority Victoria.

# Appendices

# Appendix A – EPA major urban area boundary

Source: EPA Victoria Website: [https://ref.epa.vic.gov.au/business-and-industry/guidelines/noise-guidance/~/\\_media/Files/noise/docs/TownMaps/Noise\\_SEPP20111005\\_Moe-Yallourn.pdf](https://ref.epa.vic.gov.au/business-and-industry/guidelines/noise-guidance/~/_media/Files/noise/docs/TownMaps/Noise_SEPP20111005_Moe-Yallourn.pdf)

# NIRV major urban area boundary - Moe-Yallourn



0 0.25 0.5 1 1.5 Kilometers

**Legend**

- ABS UCL Vic. Pop. >7000
- Major Urban Area

**Roads**

- Freeway
- Primary Roads
- Secondary Roads
- Collector Roads

Note: Blue-bounded parcels of land located entirely within the major urban area boundary are considered part of the major urban area.

## Appendix B – Model 3D Visualisation



# **Appendix C** – Backwash pump specification

Thompsons Kelly & Lewis Engineering Sound Pressure Guarantee

**THOMPSONS KELLY & LEWIS**  
ENGINEERING  
**Sound Pressure Guarantee**

Program Version PC4.0

File :- Soundpred.xls

DATE:- 12-Mar-20

BY:- **HM**

PROP No:-

CLIENT:-

PUMP:- **MVE 250X250**

BASIS CURVE:- **R25361**

TAG NO:- -

**VARIABLES**

Water Pumps are divided into Two groups :- Above Floor or below floor including Turbine units while Slurry and Sewage are lumped together.

|  |             |          |
|--|-------------|----------|
| "A" Above Floor or "B" Below or "S" Sewage | <b>A</b>    |          |
| Pump duty flow in L/s.                     | <b>200</b>  |          |
| Pump BEP flow in L/s with duty Impeller.   | <b>250</b>  |          |
| Pump BEP Head in m with duty Impeller.     | <b>12.6</b> |          |
| NPSHA at the duty flow in m                | <b>10</b>   |          |
| NPSHR at the duty flow in m                | <b>6</b>    |          |
| Operating speed in r/min.                  | <b>1480</b> |          |
| Number of eyes in the first Stage Impeller | <b>1</b>    |          |
| Number of Stages                           | <b>1</b>    |          |
| Number of cutwaters per stage (majority)   | <b>1</b>    |          |
| No. Blades per Impeller (majority)         | <b>4</b>    | <b>4</b> |
| Impeller outside diameter in mm            | <b>257</b>  |          |
| Casing cutwater radius in mm               | <b>260</b>  |          |
| Do you require Sound Power Guarantee       | <b>Y</b>    |          |
| Do you require Vibration level Guarantee   | <b>Y</b>    |          |
| Do you require a special Vibration level   | <b>N</b>    |          |
| Overall length of Pump in mm               | <b>854</b>  |          |
| Overall width of Pump in mm                | <b>500</b>  |          |
| Overall height of Pump in mm               | <b>820</b>  |          |

|                          |               | Octave centre frequency in Hz in dB |     |     |     |    |    |    |    |     |
|--------------------------|---------------|-------------------------------------|-----|-----|-----|----|----|----|----|-----|
|                          | Overall dB(A) | 63                                  | 125 | 250 | 500 | 1k | 2k | 4k | 8k | 16k |
| Sound Pressure Pump Only | 82            | 79                                  | 77  | 78  | 77  | 77 | 76 | 71 | 67 | 59  |
| Sound Power Pump Only    | 96            | 93                                  | 91  | 92  | 91  | 91 | 90 | 85 | 81 | 73  |

Overall Site Vibration Level in mm/s RMS      3.6

All sound guarantees are for Pump Only in Free Field Conditions measured 1 metre from the pump and at its centre line (centre line of Discharge for a Vertical Spindle Pump) or 1 metre above the floor whichever is the greatest as per A.S. 1217 part 7 - 1985 or A.S. 1081.2 - 1990.

Should the Guarantee be based on works test then the Guarantee will be 2 dB higher.

Reference pressure is 20 micro Pascals.

Reference Power is 1E-12 watts

The Vibration guarantee is for levels measured on the Pump Bearing Housing in any plane. The works Vibration guarantee is 1.5 mm/s RMS higher. Vibration measurements will be in accordance with A.S. 2625 Parts 1 and 2 - 1983 or B.S. 4675 part 1 and 2 or ISO 2372, 2954 or 3945 Specifications.

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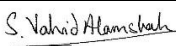

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45/[https://projectsportal.ghd.com/sites/pp17\\_02/moewtprezoning/ProjectDocs/Stage 2/12516874-REP\\_Moe\\_WTP\\_Noise\\_Assessment\\_V1.docx](https://projectsportal.ghd.com/sites/pp17_02/moewtprezoning/ProjectDocs/Stage 2/12516874-REP_Moe_WTP_Noise_Assessment_V1.docx)

Document Status

| Revision | Author  | Reviewer   |   | Approved for Issue |   |      |
|----------|---------|------------|---|--------------------|---|------|
|          |         | Name       | Signature   | Name               | Signature   | Date |
| Ver 0    | C.McVie | V.Alamshah |  | B.George           |  |      |
|          |         |            |   |                    |   |      |
|          |         |            |   |                    |   |      |

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# Appendix C – Ecological assessment



## Report for Gippsland Water

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Ecological Assessment - Moe Water  
Treatment Plant CWS Basin

**May 2020**

Ben Imbery, Antares Fuhrmann & Tania  
Brooker

---



## Citation

Imbery, B., Fuhrmann, A. & Brooker, T (2020), Ecological Assessment - Moe Water Treatment Plant CWS Basin. *Indigenous Design Environmental Management*, Research, Victoria.

Indigenous Design Environmental Management

1635 Main Road, Research

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William Doherty – Environmental Consultant, Indigenous Design Environmental Management

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| Draft 1.2 | 27/11/2019 | First draft, second review          | N. Noy      | N. Noy     |
| Draft 1.3 | 27/11/2019 | Draft released to client for review |             |            |
| Draft 2.1 | 24/03/2020 | Second draft, first review          | B. Imbery   | T. Brooker |
| Draft 2.2 | 27/03/2020 | Released for client review          |             |            |
| Final 3.1 | 06/04/2020 | Final version                       |             |            |
| Final 3.2 | 14/05/2020 | Addition of final NVR report        |             |            |

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## Executive Summary

### Project Description

Indigenous Design Environmental Management has been commissioned by Gippsland Water to undertake an ecological assessment and associated environmental approvals for upgrades to the Moe Water Treatment Plant Clearwater storage basin.

Two properties comprise the study area, with a clear distinction in the vegetation between them. The 56 Moe South Road property is completely undeveloped and hosts an almost total coverage of native vegetation. The 58 Moe South Road property has been significantly modified and contains an existing residence, outbuildings, landscaped areas and cleared grazing land. Field survey of the study area was undertaken by Indigenous Design in November 2019 and February 2020.

### Ecological Values

Vegetation across the study area comprises native patches, planted treed sections and areas dominated by degraded (non-native) exotic species. Native vegetation patches from two Ecological Vegetation Classes (EVC's) were identified and categorised into three Lowland Forest (EVC 16) habitat zones and two Damp Forest (EVC 29) habitat zones. 64 indigenous Large **Trees (LT's)** were also recorded within or immediately adjacent to the five habitat zones.

Habitat Zone numbers 1 - 5 were identified and mapped as covering almost completely the entire 56 Moe South Road property. Vegetation Quality Assessments (**VQA's**) were undertaken for these patches and their approximate total area covered 2.54 hectares.

No threatened ecological communities or fauna species listed under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* were identified during the site inspection. Evidence of one fauna species listed under the Department of Environment, Land, Water & Planning (DELWP) rare and threatened advisory list was found on site with a potential Burrowing Crayfish (*Engaeus* sp.) chimney identified along the northern boundary of the study area.

One flora species listed under the EPBC Act and the DELWP advisory list was identified on site, *Eucalyptus strzeleckii* (Strzelecki Gum). Additionally, twenty-four flora species were identified that are protected under the *Flora and Fauna Guarantee (FFG) Act (1988)*.

### Impacts to Rare or Threatened Species or Habitat

A likelihood assessment found that *Ninox strenua* (Powerful Owl), which is listed as vulnerable under the DELWP advisory list, and protected by the FFG Act, had a high likelihood of occurrence within the study area due to a previous record at the site. All other fauna species were assessed as unlikely to occur within the study area.

The following comments are made regarding the extent of impacts to potential habitat for rare or threatened species habitat under the final designs:

- No impacts to Strzelecki Gums are currently proposed through either removal or impacts to tree retention zones are proposed. If the construction footprint is amended and impacts will occur, a targeted survey to determine total numbers and assessment of this impact against the criteria for vulnerable species under the Significant Impact Guidelines (DSEWPC, 2016) will be required;
- The proposed works are unlikely to remove any habitat suitable for any other flora species listed under the EPBC Act or on the DELWP advisory list;
- The canopy trees scattered across the site are considered habitat for the Powerful Owl. The extent of impact to potential habitat for the Powerful Owl, disruption to its movements or impact upon any populations has not been assessed by this report and it is recommended that an expert be engaged to provide more specific advice in this regard;
- Evidence of the presence of burrowing crayfish at the northern extent of the study area is currently outside of the proposed construction footprint. If changes are made to the project footprint assessment by a species expert may be required to determine the actual species and if there are any considerations under the FFG Act; and
- All other rare or threatened fauna species identified in database searches within a 5 km search radius are considered unlikely to occur or be reliant on habitat within the study area.

#### Avoid/Minimise Principles

Under *Clause 52.17* of the Latrobe Planning Scheme, a planning permit is required to clear or disturb native vegetation within the study area. The information provided within this report and detailed specifically within *Section 5* is considered to satisfy the information requirements of the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017).

Gippsland Water originally designed the new Clearwater storage basin on land it already owned (56 Moe South Road), containing over 10.4 hectares of native vegetation, as this land had been strategically retained to allow for future plant development. The residential property next to the treatment plant (58 Moe South Road) became available for sale during the early stages of planning for this project and Gippsland Water took the opportunity to buy the property to use as part of the footprint for the Clearwater storage basin. This reduced the impact on native vegetation by approximately 50% from what was originally proposed. In addition, the following design and construction features have been incorporated into the clear water basins current design to minimise impacts to native vegetation:

- The placement of the basin on the site takes into account the gradient of the land to minimise the footprint of the proposed infrastructure, to ensure the risk to safety and the environment are both managed;
- Stockpiling locations essential for the project have been identified that require the least of remnant Large Tree removal. This includes a large stockpile area to be located on the 58 Moe South property, which has minimal ecological value;
- The Clearwater basins' design and construction footprint has focused on avoiding impacts to the five Strzelecki Gums identified on site; and
- The volume of the proposed basin has been selected to allow for predicted future growth in the region and will therefore prevent the need to build another basin at the site.

## Offset Requirements

A 'clearing' shapefile that outlined the extent of native vegetation deemed lost by this project (as per the construction footprint provided by Gippsland Water) was provided to DELWP to produce a Native Vegetation Removal (NVR) report. A total of 1.854 hectares of native vegetation (including the area of impacts to an adjacent large tree retention zone) is proposed to be removed, along with direct removal of 43 large trees and one large trees deemed lost due to tree retention zone impacts. The NVR identified the following that apply to the proposal:

- The proposal falls under the 'Detailed Assessment Pathway';
- Offset requirements amount to 1.481 General Habitat Units (GHUs) and 44 large trees, with a minimum strategic biodiversity score of 0.413; and
- Offsets must be located within the West Gippsland Catchment Management Authority (CMA) boundary or within the Latrobe City Council municipality.

## Legislation/Policy Implications

| Legislation (Act)  | Relevant Ecological Feature on Site   | Report/Approval required  |
|--|---|---|
| <i>Environment Protection and Biodiversity Conservation Act 1999</i> | One threatened species, <i>Eucalyptus strzeleckii</i> (Strzelecki Gum) was found to occur on site.  | No Strzelecki Gums are currently proposed for removal, and tree retention zones will also be avoided for the five trees identified. If the construction footprint is amended and impacts will occur, a targeted survey to determine total numbers and assessment of impacts against the criteria for vulnerable species under the Significant Impact Guidelines will be required.   |
| <i>State – Flora and Fauna Guarantee Act 1988</i>                    | High likelihood of occurrence of <i>Ninox strenua</i> (Powerful Owl).<br>Twenty-two protected flora species require removal.<br>Potential for <i>Engaeus sp.</i> (Burrowing Crayfish) presence within the study area but currently outside of the construction footprint. | 'Permit to Take Protected Flora' to be lodged with the DELWP that lists the protected flora species and number of plants that require removal.<br>Powerful Owl is listed as a Vulnerable species under this legislation. Engage an expert to provide targeted advice in regard to the potential impact of the project on Powerful Owl.<br>Confirmation of the Burrowing Crayfish species recorded at the northern extent of the study area may be required to determine if there are any further implications under the FFG Act if construction footprint is changed. |
| <i>Planning and Environment Act 1987</i>                             | 1.854 ha of native vegetation currently proposed to be cleared, up to 43 large size class trees within a patch and one large size class trees due to tree retention zone impacts.   | Under <i>Clause 52.17</i> of the Latrobe Planning Scheme, a planning permit is required to clear or disturb native vegetation within the study area.<br><b>In applying Victoria's native vegetation Guidelines, the proposal falls under the 'detailed' assessment pathway.</b><br>Offset requirements for a draft native vegetation clearing scenario amounts to 1.481 General Habitat Units with a Strategic Biodiversity Score of 0.413.   |
| <i>Catchment and Land Protection Act 1994</i>                        | Five noxious weeds were identified on site, four of which are regionally controlled and one restricted.   | Gippsland Water and the contractor must comply with the requirements of the Act to control/eradicate and avoid spreading these weeds onsite or to other areas.  |
| <i>Environmental Effects Act 1978</i>                                | The current extent of draft native vegetation clearing within habitat zones 2 & 4 (Damp Forest) is 0.226 ha, an endangered EVC.   | Native vegetation clearing is unlikely to impact on a significant proportion of known remaining habitat or population of a threatened species, however additional advice should be sought from an expert on the potential impact to Powerful Owl habitat / population.  |

| Legislation (Act)              | Relevant Ecological Feature on Site   | Report/Approval required  |
|--------------------------------|---|---|
| <i>State Wildlife Act 1979</i> | Up to 1.854 ha of native vegetation and 44 large old size class trees within a patch to be removed. | Persons engaged to remove, salvage, hold or relocate any native fauna must have a permit or approval issued by the DELWP. |
| <i>Water Act 1989</i>          | No water courses are present with the bounds of the assessment area.                                | No further consideration of any requirements under this Act is considered necessary.                                      |

# 1 Introduction

## 1.1 Project Background

Indigenous Design Environmental Management has been commissioned by Gippsland Water to undertake an ecological assessment and associated environmental approvals for upgrades to the Moe Water Treatment Plant Clearwater storage basin.

## 1.2 Objectives

The objectives of this assessment are to:

- Undertake database searches and existing literature analysis to identify the presence or potential presence of significant species or habitat;
- Complete an assessment of all vegetation and habitat on site including:
  - Assign all native patches into habitat zones and undertake habitat hectare assessments in line with approved Vegetation Quality Assessment methods;
  - Recording the GPS location and extent of all native vegetation patches;
  - Recording the GPS location of all scattered trees and large trees within native patches. Tree data recorded will include species, DBH, origin and whether likely to be planted;
  - Recording the GPS location and/or extent of any rare or threatened species or state or Commonwealth listed threatened ecological communities;
  - Record all fauna and the location and condition of any suitable habitat for threatened fauna species; and
  - Identify and assess the condition of any habitat corridors within the site that provide connections to surrounding habitat.
- Preparation of an Ecological Assessment report that includes:
  - Description of all site ecological values;
  - Identification of any permits or approvals that may be required under the following environmental related legislation:
    - *Environment Protection and Biodiversity Conservation Act 1999;*
    - *Flora and Fauna Guarantee Act 1988;*
    - *Catchment and Land Protection Act 1994;*
    - *Water Act 1989;*
    - *Planning and Environment Act 1987;*
    - *Wildlife Act 1975; and*
    - *Environment Effects Act 1978.*
  - Undertake an assessment of the likelihood of presence of any rare or threatened species;
  - Provide recommendations for opportunities to apply the avoidance and minimisation principles to any site development and identify any mitigation measures as appropriate;
  - Provide maps and GIS data to DELWP standards.
- Prepare supporting information and lodge applications for any required planning permits, FFG Act Protected Flora permits and other environmental permits.

### 1.3 Site Details

The study area (*Figure 1*) is located approximately two kilometres from the township of Moe, approximately 120 kilometres southeast of Melbourne, Victoria. It is situated within the Latrobe City Council and West Gippsland Catchment Management Authority.

The predominant land uses surrounding the study area are agriculture and rural lifestyle properties with pockets of native vegetation remaining scattered throughout a 2 kilometre radius. The township of Moe lies 2-3 kilometres to the north, with a built-up residential area devoid of native vegetation.

There is a clear distinction in the vegetation between the two properties that comprise the study area. The 56 Moe South Road property is completely undeveloped and hosts an almost total coverage of native vegetation. The 58 Moe South Road property has been significantly modified and contains an existing residence, outbuildings, landscaped areas and cleared grazing land.

Address: 56 Moe South Road, Moe

Local Government (Council): Latrobe City Council

Standard Parcel Identifier (SPI): Lot 2 LP55896 – 2\LP55896

Lot 2 PS400699 – 2\PS400699

Council Property Number: 43060

The site is subject to the following planning zones and overlays:

Planning Zones

Public Use Zone – Service and Utility (PUZ1)

Rural Living Zone – (RLZ1)

Planning Overlays

Bushfire Management Overlay (BMO)

Design and Development Overlay (DDO1)

Address: 58 Moe South Road, Moe

Local Government (Council): Latrobe City Council

Standard Parcel Identifier (SPI): 1\PS400699

Council Property Number: 43227

The site is subject to the following planning zones and overlays:

Planning Zones

Rural Living Zone – (RLZ1)

Planning Overlays

Bushfire Management Overlay (BMO)

Design and Development Overlay (DDO1)

(*Appendix 6*)

Additional Encumbrances

No mapped areas of 'cultural heritage sensitivity' are located within the study area, however this report does not consider any potential impacts of proposed development under the *Aboriginal Cultural Heritage Act 2006*.

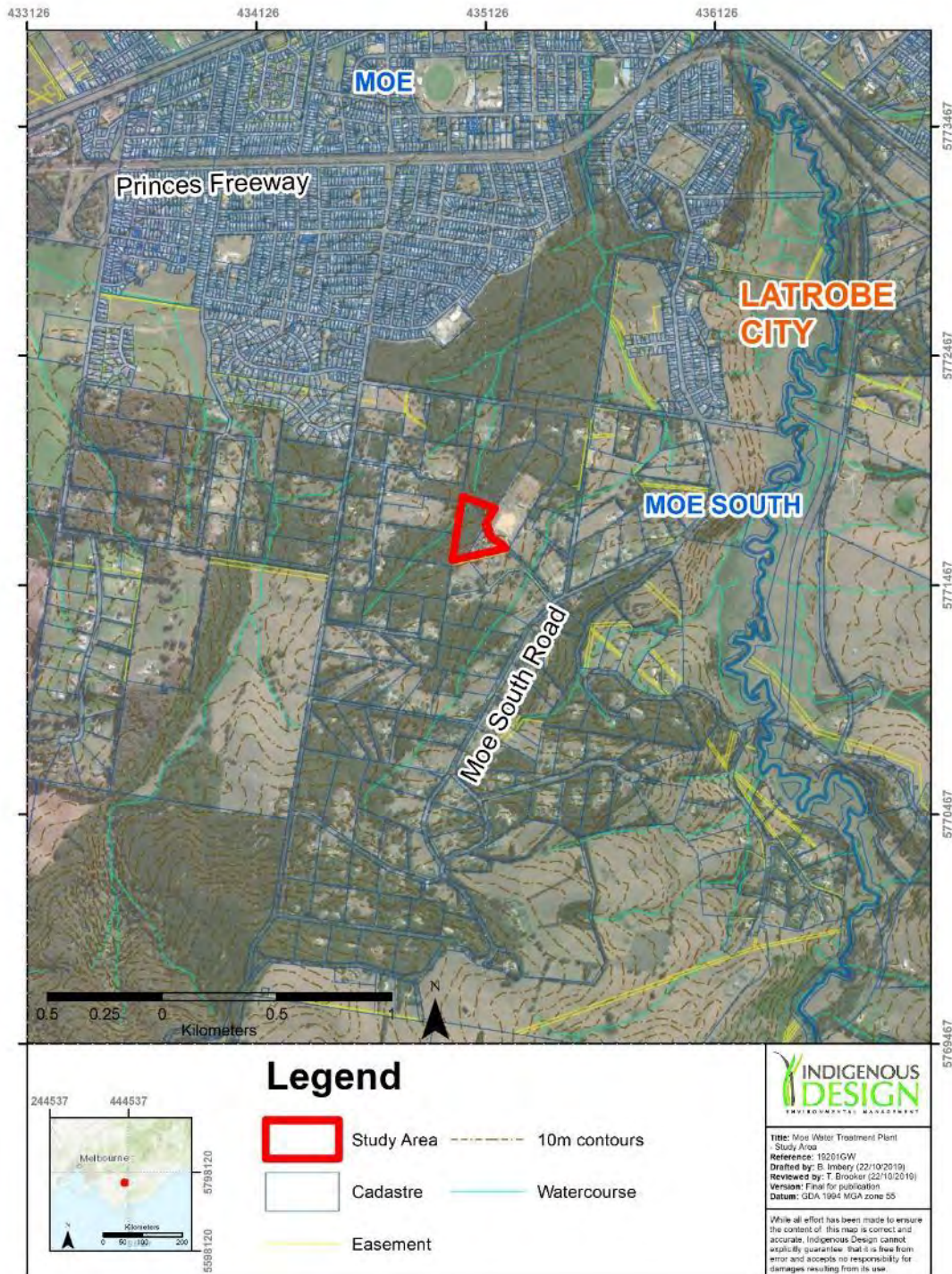


Figure 1: Study area

## 2 Description of Methods

### 2.1 Data and Literature Review

The DELWP's **Native Vegetation Information Management System** (DELWP, 2019) was used to determine the location risk and therefore the risk-based pathway for assessment of the proposal.

The DELWP's *Nature Kit* (DELWP, 2019c) was used to gain the following information:

- An insight into the overall distribution of native vegetation on the site and the Ecological Vegetation Class (EVC) to which any remnant vegetation may belong;
- The 'landscape context score' applicable to a particular habitat zone; and
- Guidance on the strategic biodiversity and habitat importance scores of vegetation located on-site.

Prior to field assessments the following resources were used to determine if any taxa listed or protected under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act), or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) have been, or potentially could be, located at the site:

- DELWP's *Victorian Biodiversity Atlas* (VBA) (DELWP, 2019e); and
- The Commonwealth's **Protected Matters Search Tool** (DAWE, 2019).

### 2.2 Field Survey

A Spring survey of the study area was undertaken by Indigenous Design in November 2019 and an additional day in February 2020. The survey was completed by the following:

Ben Imbery- **B.App.Sc. (Env. Mgt.)**, DELWP accredited native vegetation assessor, 10 years' experience in environmental consultancy and flora and fauna assessments.

Tania Brooker -**B.App.Sc (Env. Mgt.)**, DELWP accredited native vegetation assessor, 7 years' experience in environmental consultancy and flora and fauna assessments.

William Doherty - **B.Sc (Biotechnology)**, DELWP accredited native vegetation assessor, 7 years' experience in environmental consultancy and flora and fauna assessments.

The survey included:

- Recording all flora present. Flora species were recorded following the species nomenclature requirements of the VBA;
- Identification and recording of any flora and fauna communities including rare, threatened, protected species / communities or habitat;
- Recording and tabulating all data on native vegetation, trees within patches and scattered trees in accordance;
- Completing a fauna assessment that included the opportunistic observation of scats, footprints, diggings, burrows, tracks, incidental bird and other fauna observations and listening for frog and bird calls;

- Identifying and recording notes on any habitat features including vegetation type and structure, proximity to water, the presence of hollow bearing trees and stags, logs and other ground debris. The surrounding landscape was also observed and notes taken with reference to its habitat provision, intactness of native vegetation and connectivity with the study site; and
- Recording notes on specific issues such as noxious weed infestations and any evidence of pest animal disturbance including any active warrens or dens.

Digital GPS (DGPS) mapping (+/- 1m) was completed using a JunoT41 handheld Trimble device with Bluetooth DGPS receiver. The mapping included:

- Walking and recording the outer extent of all native patches, flora and fauna communities or habitat;
- Recording locations of all scattered trees and trees within native patches; and
- Recording the location of any rare, threatened or protected flora species and any noxious weed infestations.

### 2.2.1 Vegetation Assessment

Prior to the field survey, the DELWP modelling of Ecological Vegetation Classes on NatureKit (DELWP, 2019c) was examined. Onsite, EVC distribution across the site was assigned based on the study areas position in the wider landscape, landform, soils and floristic composition in comparison to the DELWP benchmarks for EVC.

Native vegetation is defined in the Victoria Planning Provisions (Definitions – Clause 72) as *‘plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses’*. DELWPs *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017) (the Guidelines) further defines native vegetation into two categories: 'remnant patches' and 'scattered trees' outlined below:

#### **A ‘remnant patch’ of native vegetation is either:**

- An area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native;
- Any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy; or
- Any mapped wetland included in the Current wetlands map, available in DELWP systems and tools.

#### **A ‘scattered tree’ is:**

- A native canopy tree that does not form part of a remnant patch.

(DELWP, 2017)

Following these definitions all native vegetation on site was categorised as either 'remnant patches' or 'scattered trees'.

Remnant patches were further categorised into EVCs and furthermore into habitat zones. These areas were GPS mapped and assessed using the habitat hectare method described by DSE (2004) in the

*Vegetation Quality Assessment Manual – Guidelines for applying the habitat hectares scoring method - Version 1.3.*

*2.2.1.1 Scattered Trees*

Any scattered trees on site were identified, GPS mapped and had their Diameter at Breast Height (DBH) recorded to determine the location of the Tree Retention Zone (TRZ) in relation to the planned works. In line with DELWP's standards the TRZ of scattered trees "is a specific area above and below the ground, with a radius 12 x the Diameter at Breast Height" (DSE, 2011). Any works affecting more than 10% of this area are considered to equate to a loss of the tree unless a qualified arborist can confirm that no significant damage will be caused.

Under the Guidelines (DELWP, 2017) large trees in patches are accounted for in the overall condition score of remnant patches, whilst the value of scattered trees are assigned a default area and condition score.

*2.2.1.2 Rare and threatened Species Impacts*

Under the Guidelines (DELWP, 2017) the presence of individuals or potential habitat for rare or threatened flora and fauna is assessed through the use of modelled data. Any threatened species habitat deemed to be affected by the modelling is accounted for in the specific offset requirements for the project as provided in the *Native Vegetation Removal* (NVR) report prepared by DELWP in relation to the project.

2.2.2 Fauna Habitat Assessment

All fauna species encountered incidentally during the field survey were recorded, however, no targeted fauna surveys were undertaken. A broad fauna habitat assessment was undertaken during the field survey that focused on identifying areas of potential habitat for any rare or threatened fauna species identified in database searches as having potential to utilise the site. The focus of this habitat assessment was to inform any recommendations to undertake further targeted surveys

2.3 Final Determination of Losses to Native Vegetation

The following methodology has been applied in calculating the impact for the proposal:

- All native vegetation within the final design boundary provided by Gippsland Water (email 03/04/2020) has been determined to be lost;
- For Scattered Trees deemed lost:
  - A 10 meter buffer is applied to small size class trees and a circular polygon is marked;
  - A 15 meter buffer is applied to large size class trees and a circular polygon is marked.
- For large canopy trees within patches deemed lost:
  - The outer canopy extent of the tree is marked as being a loss of that part of the patch.
  - The full extent of a remnant patch contained within the construction footprint / limit of works is marked as lost.

## 2.4 Definitions of Significance

The significance of a species or ecological community described in this report follows its listing status under Commonwealth or State legislation.

- National significance includes all species listed as critically endangered, endangered or vulnerable under the EPBC Act; and
- State Listed as critically endangered, endangered or vulnerable on the DELWP Advisory lists (DELWP, 2009)(DELWP, 2013) (DELWP, 2014) or Listed as threatened under the FFG Act.

## 2.5 Likelihood of Occurrence

In determining the likelihood of presence of a listed species a likelihood rating of present, high, moderate, low or unlikely is assigned. This rating is based on consideration of the following factors:

Was the species recorded on site or has it been previously recorded on the site;

- Is there likely to be a resident population within the local area (5km radius);
- Is suitable habitat present on site or is habitat modified but aspects of suitable habitat present;
- Is it possible the species may seasonally or opportunistically use resources within the local area; and
- Are there any records for the species within the local area within the last 5, 10 or 25 years.

## 2.6 Legislation and Policy

Any biodiversity related implications for the project were assessed against the following biodiversity legislation and policy:

- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) including related listing advice, recovery plans and criteria in the significant impact guidelines;
- Flora and Fauna Guarantee Act 1988 (FFG Act) including related action statements and listing advice;
- Planning and Environment Act 1987 including Clause 52.17 and any overlays applicable to the study area under the Macedon Ranges Shire Planning Scheme;
- **The DELWP's Guidelines for the removal, destruction or lopping of native vegetation (DELWP, 2017);**
- Catchment and Land Protection Act 1994 (CaLP Act) including noxious weed and pest animal listings;
- Water Act 1989;
- Wildlife Act 1979; and
- Environmental Effects Act 1987.

## 2.7 Limitations

The assessment was undertaken in November 2019 and February 2020. It is, therefore, possible that some annual, deciduous or dormant taxa may not have been visible. Additionally, some taxa have not been identified to specific or infraspecific rank due to the absence of flowering, or other material typically used for identification.

## 3 Ecological Values

### 3.1 Vegetation

There is a clear distinction in the vegetation between the two properties which are described separately below.

#### 56 Moe South Road

This property has a continuous canopy coverage that is provided primarily by *Eucalyptus obliqua* (Messmate Stringybark) throughout, alongside the occasional *Eucalyptus dives* (Broad-leaf Peppermint) across its mid slopes, and *Eucalyptus radiata* (Narrow-leaf Peppermint) mainly in its north western corner. Canopy cover is reasonable and canopy health is generally very good and there is a high proportion of large habitat trees.

The middle storey is denser at its northern edge where large shrubs such as *Olearia lirata* (Snowy Daisy-bush) and *Pomaderris aspera* (Hazel Pomaderris) are more common at the interface with damper areas to the north of the property. The middle and upper southern section have a relatively consistent modest coverage of small to medium shrubs that includes the species *Cassinia aculeata subsp. aculeata* (Common Cassinia), *Exocarpos cupressiformis* (Cherry Ballart) and *Pultenaea juniperina* s.l. (Prickly Bush-pea)

The ground layer is generally dominated by native grasses, sedges and herbs with the grass *Tetrarrhena juncea* (Forest Wire-grass) and *Goodenia lanata* (Trailing Goodenia) common alongside patches of orchids on the lower slopes.

Woody weeds are scattered throughout in limited densities while exotic grasses and herbaceous weeds occupy some small areas of ground layer disturbance along the eastern edge of the property.

#### 58 Moe South Road

Within this property the entrance to the residence is lined by plantings of mature exotic trees such as *Callitris rhomboidei* (Oyster Pine) and exotic hedges. The ground layer around the entrance is made up of open lawn areas dominated by exotic grasses or planted beds containing predominately exotic ornamentals and scramblers such as *Hedera helix* (English Ivy) and *Vinca major* (Blue Periwinkle).

The rear of the residence comprises cleared grazing land dominated by exotic pasture grasses including *Anthoxanthum odoratum* (Sweet Vernal-grass) and bordered by screen plantings of exotic and Australian native trees and shrubs.

#### 3.1.1 Ecological Vegetation Classes

Ecological Vegetation Classes (EVC) are a type of vegetation classification which aims to group plant communities according to common flora species, vegetation structure and common environmental factors such as elevation, soils and average rainfall.

The DELWP's *Naturekit* (DELWP, 2019c) displays the study area and its adjacent surrounds as comprising two modelled pre 1750s EVCs:

- EVC 16: *Lowland Forest*; and

- EVC 29: *Damp Forest*

The vast majority of the study area and its surrounds are modelled as being covered by EVC 16: *Lowland Forest* with a small pocket of EVC 29: *Damp Forest* occurring in the north west corner of the site.

Extant EVC mapping (DELWP, 2019c) shows the coverage of EVC 16: *Lowland Forest* has been significantly reduced within the wider surrounds of the study area, but remains largely present within the study area. EVC 29: *Damp Forest* is mapped as remaining in pockets along the watercourses in the surrounding area.

Field assessments confirmed the presence of EVC 16: *Lowland Forest* through the identification of a wide range of typical life forms across its DELWP assigned areas. EVC 29: *Damp Forest* was confirmed to be present in the north west corner of the site – running adjacent to a tributary which is neighbouring the study site to the west. The assignment of EVC within the study area closely aligns with the DELWP modelling of EVC distribution within the study area.

Figure 2 displays the distribution of EVCs within the study area and Table 1 details the Bioregional Conservation Status of the EVC present (DELWP, 2019a).

Table 1: Bioregional conservation status of assigned Ecological Vegetation Classes

| Ecological Vegetation Class   | Bioregional Conservation Significance |
|-------------------------------|---------------------------------------|
| EVC 16: <i>Lowland Forest</i> | Vulnerable                            |
| EVC 29: <i>Damp Forest</i>    | Endangered                            |

The DELWP Benchmark for *Lowland Forest* describes the EVC as:

*‘Open forest to 25m tall. It grows on a wide variety of geology and soils mostly on north and north westerly aspects. Characterised by an often heathy understory with a variety of other lifeforms including shrubs, grasses and herbs’.* (DELWP, 2019a)

The DELWP Benchmark for *Damp Forest* describes the EVC as:

*‘Grows on a wide range of geologies on well-developed generally colluvial soils on a variety of aspects, from sea level to montane elevations. Dominated by a tall eucalypt tree layer to 30m tall over a medium to tall dense shrub layer of broadleaved species typical of wet forest mixed with elements from dry forest types. The ground layer includes herbs and grasses as well as a variety of moisture-dependent ferns’.* (DELWP, 2019a)

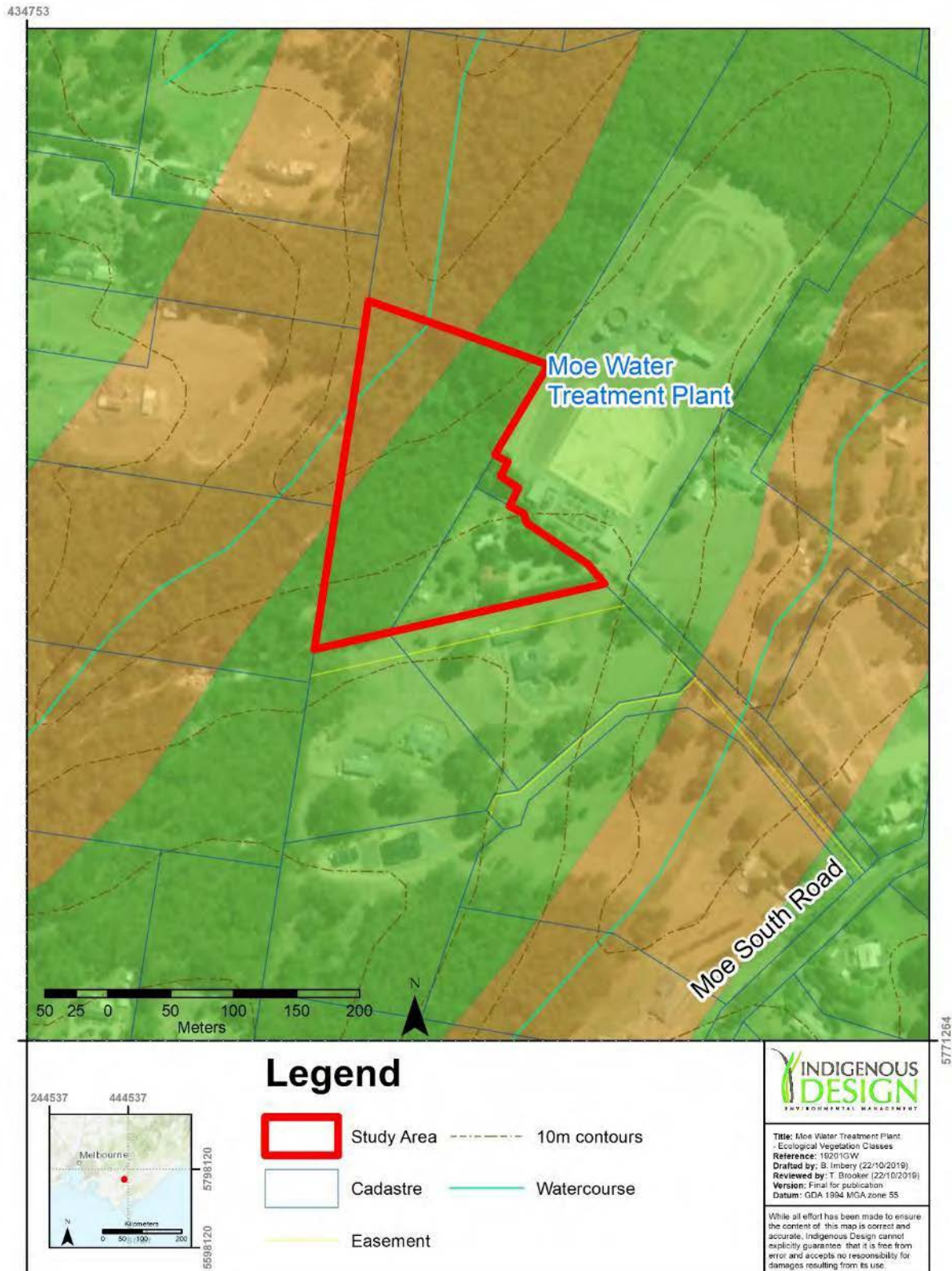


Figure 2: Distribution of assigned Ecological Vegetation Classes within the Study Area

### 3.1.2 Vegetation Quality Assessment

#### 3.1.2.1 *Native Patches- Habitat Zones*

The vegetation quality assessment identified and mapped native vegetation patches that covered almost completely the entire 56 Moe South Road property. No native patches were identified within the 58 Moe South Road property. The native patches were categorised into five distinct habitat zones; *EVC 16: Lowland Forest*- Habitat zone 1, 3 & 5 and *EVC 29: Damp Forest*- Habitat zone 2 & 4, which are described below. A habitat hectare assessment was undertaken against the benchmarks for each habitat zone and the results of these assessments are provided in *Appendix 7* and summarised in *Table 2*, along with the score attributed to each of the site condition components for each habitat zone, including landscape factors.

*EVC 16: Lowland Forest*- Habitat zones 1, 3 & 5 covers a total area 1.98 ha within the study area and *EVC 29: Damp Forest*- Habitat zones 2 & 4 covers a total area of 0.55 ha. All habitat zones form a single discrete area of native patch and the assessment recorded log levels, large trees, woody species recruitment, organic litter, weed cover etc. across the entirety of the zone.

*Map 1* displays the location and extent of all native patches mapped within the study area.

Table 2: Results of Vegetation Quality Assessments for Native Patch- Habitat Zones

|                                      |                          | Habitat Zone 1 | Habitat Zone 2 | Habitat Zone 3 | Habitat Zone 4 | Habitat Zone 5 |
|--------------------------------------|--------------------------|----------------|----------------|----------------|----------------|----------------|
| Bioregion - Victorian Volcanic Plain |                          | Lowland Forest | Damp Forest    | Lowland Forest | Damp Forest    | Lowland Forest |
| EVC Name (initials)                  |                          | LF             | LF             | LF             | LF             | LF             |
| EVC Number                           |                          | 16             | 29             | 16             | 29             | 16             |
| Bioregional Conservation Status      |                          | Vulnerable     | Endangered     | Vulnerable     | Endangered     | Vulnerable     |
| Max Score                            |                          | 100            | 100            | 100            | 100            | 100            |
| Site Condition                       | Large Old Trees          | 10             | 3              | 10             | 0              | 10             |
|                                      | Canopy Cover             | 5              | 3              | 5              | 0              | 5              |
|                                      | Understorey              | 25             | 15             | 20             | 15             | 20             |
|                                      | Lack of Weeds            | 15             | 13             | 11             | 7              | 11             |
|                                      | Recruitment              | 10             | 6              | 6              | 6              | 6              |
|                                      | Organic Matter           | 5              | 5              | 5              | 5              | 5              |
|                                      | Logs                     | 5              | 5              | 5              | 2              | 4              |
|                                      | Total Site Score         | 75             | 50             | 62             | 35             | 61             |
|                                      | Site score out of? eg 55 | 55             | 55             | 55             | 55             | 55             |
|                                      | Adjusted Site Score      |                | 61             | 50             | 62             | 61             |
| Landscape value                      | Patch Size               | 10             | 6              | 6              | 6              | 6              |
|                                      | Neighbourhood            | 10             | 3              | 3              | 3              | 3              |
|                                      | Distance to Core         | 5              | 3              | 3              | 3              | 3              |
| Habitat points out of 100            | 100                      | 73             | 62             | 74             | 47             | 73             |
| Habitat Score (hab points/100)       |                          | 0.73           | 0.62           | 0.74           | 0.47           | 0.73           |
| Total area of the Zone (ha)          |                          | 1.48           | 0.24           | 0.16           | 0.31           | 0.34           |
| Total HHA in the zone                |                          | 1.08           | 0.150          | 0.118          | 0.146          | 0.250          |
| Catchment                            |                          | West Gippsland | West Gippsland | West Gippsland | West Gippsland | West Gippsland |

#### EVC 16: Lowland Forest – Habitat Zone 1

All flora species recorded in this zone are listed in *Appendix 1*. The zone represents a largely intact high-quality remnant of *EVC 16: Lowland Forest* vegetation.

This zone forms habitat connections to other larger native patches within adjoining land to the north and south east of the treatment plant and is connected to the Edward Hunter Heritage Bushland Reserve by tree canopy that overhangs Borrman's Street to the north of the study area. Edward Hunter hosts over 50 hectares of connected native vegetation patches.

The vegetation quality assessment of the zone assigned an overall score of 73 points out of 100 indicative of the relatively healthy native canopy coverage, high proportion of large habitat trees, diverse native understorey and generally minimal weed presence.

The zone received the maximum score for large trees due to the high presence of large trees, primarily Messmate Stringybark and the occasional Broad-leaf Peppermint, and the generally good canopy health of these large trees. The zone received a high range score for its understorey and woody species recruitment that was reflective of the high diversity of shrubs, herbs, graminoids and scrambler species present. Common native understorey species recorded included *Acacia mucronata subsp. longifolia* (Narrow-leaf Wattle), *Epacris impressa* (Common Heath), *Billardiera scandens* s.l. (Common Apple-berry), *Tetrarrhena juncea* (Forest Wire-grass), *Platylobium formosum* spp. agg. (Handsome Flat-pea) and *Goodenia lanata* (Trailing Goodenia).

The limited presence and coverage of high threat weeds throughout the zone was reflected in the **relatively high score assigned for the 'lack of weeds' component**. The **environmental woody weed** *Pittosporum undulatum* (Sweet Pittosporum) species and exotic woody weed species *Genista linifolia* (Flax-leaf broom) are scattered as isolated individuals across the zone. Grassy and herbaceous weeds including *Anthoxanthum odoratum* (Sweet Vernal-grass), *Ehrharta erecta var. erecta* (Panic Veldt-grass), *Viola odorata* (Common Violet) and *Arctotheca calendula* (Capeweed) are found primarily along the eastern edge of the zone at the interface with adjacent cleared grazing land.

The zone scored relatively highly for its landscape values reflecting its relatively large overall connected patch size and short distance to a core vegetation/habitat areas in the Edward Hunter Bushland Reserve.

Figure 3 provides an example of remnant patch vegetation typical to Habitat Zone 1.



Figure 3: Example of vegetation typical to EVC 16: Lowland Forest- Habitat Zone 1

## EVC 29: Damp Forest – Habitat Zone 2

All flora species recorded in this zone are listed in *Appendix 1*. The zone represents a largely intact remnant of *EVC 29: Damp Forest* vegetation.

This zone forms habitat connections to other larger native patches within adjoining land to the north and south east of the treatment plant and to the Edward Hunter Heritage Bushland Reserve by tree canopy connections.

The vegetation quality assessment of the zone assigned an overall score of 62 points out of 100 **reflective of the zone's native understorey and limited weed presence but also of its lack of large trees** and modified canopy coverage. Only one large tree was recorded in the zone and the canopy layer, provided by Messmate Stringybark and Narrow-leaf peppermint trees, received a moderate score as canopy foliage cover above the benchmark canopy height was limited.

The zone received a moderate score for its understorey and woody species recruitment that was reflective of the high coverage and diversity of shrubs, ground ferns and graminoids present. Common native understorey species recorded included *Olearia lirata* (Snowy Daisy-bush), *Polyscias sambucifolia* (Elderberry Panax), *Blechnum cartilagineum* (Gristle Fern) and Forest Wire-grass.

The limited presence and coverage of high threat weeds throughout the zone was reflected in the **relatively high score assigned for the 'lack of weeds' component. The environmental woody weed** Sweet Pittosporum and the exotic scrambler weed species *Rubus fruticosus* spp. agg. (Blackberry) and *Lonicera japonica* (Japanese Honeysuckle) are found scattered as isolated individuals across the zone. The presence of exotic flora at the ground layer was minimal with only *Hypochaeris radicata* (Flatweed) and *Anthoxanthum odoratum* (Sweet Vernal-grass) recorded.

The zone scored relatively highly for its landscape values reflecting its relatively large overall connected patch size and short distance to a core vegetation / habitat area in the Edward Hunter Bushland Reserve.

*Figure 4* provides an example of remnant patch vegetation typical to Habitat Zone 2.



Figure 4: Example of vegetation typical to EVC 29: Damp Forest- Habitat Zone 2

#### EVC 16: Lowland Forest – Habitat Zone 3

All flora species recorded in this zone are listed in *Appendix 1*. The zone represents a largely intact high-quality remnant of *EVC 16: Lowland Forest* vegetation.

As with previous zones, this zone forms habitat connections to other larger native patches within adjoining land to the north and south east of the treatment plant.

The vegetation quality assessment of the zone assigned an overall score of 74 points out of 100 indicative of the healthy native canopy coverage, high proportion of large habitat trees, diverse native understorey, benchmark logs and organic cover and generally minimal weed presence.

The zone received the maximum score for large trees due to the high presence of large trees, dominated by Messmate Stringybark and Narrow-leaf Peppermints, and the good canopy health of these large trees. The zone received a high range score for its understorey and moderate woody species recruitment that was reflective of the high diversity of shrubs, herbs, graminoids and scrambler species present. Common native understorey species recorded included *Acacia melanoxylon* (Blackwood), *Leptospermum continentale* (Prickly Tea-tree), *Goodenia ovata* (Common Apple-berry), *Gonocarpus tetragynus* (Common Raspwort), and *Gahnia radula* (Thatch Saw-sedge).

The limited presence and coverage of high threat weeds throughout the zone was reflected in the high **score assigned for the 'lack of weeds' component**. However, the environmental woody weed

The zone scored relatively highly for its landscape values reflecting its relatively large overall connected patch size and short distance to a core vegetation/habitat areas in the Edward Hunter Bushland Reserve.

*Figure 5* provides an example of remnant patch vegetation typical to Habitat Zone 3.



Figure 5: Example of vegetation typical to EVC 16: Lowland Forest- Habitat Zone 3

#### EVC 29: Damp Forest – Habitat Zone 4

All flora species recorded in this zone are listed in *Appendix 1*. The zone represents a largely intact remnant of EVC 29: *Damp Forest* vegetation.

The vegetation quality assessment of the zone assigned an overall score of 47 points out of 100 **reflective of the zone's** lack of large trees and tree canopy coverage, with no Eucalypt species recorded within the zone. Weed coverage was higher than all other zones assessed, and large logs were below benchmark.

The zone received a moderate score for its understorey and woody species recruitment that was reflective of the high coverage and diversity of shrubs, ferns and graminoids present. Common native understorey species recorded included Hazel Pomaderis and Blackwoods which were greater than 5 metres in height, *Cyathea australis* (Rough Tree Fern), Gristle Fern and Hop Goodenia.

The presence and coverage of high threat weeds throughout the zone was reflected in the lower **'lack of weeds' component**, with Japanese Honeysuckle dominating in isolated areas.

The zone again scored relatively highly for its landscape values reflecting the connected patch size and short distance to a core vegetation area.

*Figure 6* provides an example of remnant patch vegetation typical to Habitat Zone 4.



Figure 6: Example of vegetation typical to EVC 29: Damp Forest- Habitat Zone 4

#### EVC 16: Lowland Forest – Habitat Zone 5

All flora species recorded in this zone are listed in *Appendix 1*. The zone represents a largely intact high-quality remnant of *EVC 16: Lowland Forest* vegetation.

The vegetation quality assessment of the zone assigned an overall score of 73 points out of 100 indicative of the relatively healthy native canopy coverage, high proportion of large habitat trees, diverse native understorey and generally minimal weed presence.

The zone was almost identical to Zone 1 and received the maximum score for large trees due to the high presence of large trees, primarily Messmate Stringybark and the occasional Narrow Leaf Peppermint, and the good canopy health of these large trees. The zone received a high range score for its understorey and woody species recruitment that was reflective of the high diversity of shrubs, herbs, graminoids and scrambler species present. Common native understorey species recorded included *Kunzea ericoides* (Burgan), Prickly Tea-tree, Silver Wattle, and *Acrotriche serrulata* (Honey Pots), along with large areas of Forest Wire-grass.

Again, the coverage of high threat weeds was low, with Sweet Pittosporum, *Acacia longifolia subsp. longifolia* (Sallow Wattle) and small blackberry germinants the only woody weed recorded. Grassy and herbaceous weeds again included Panic Veldt-grass, *Vinca major* (Blue Periwinkle) and *Solanum nigrum* (Black Nightshade) which were found primarily along the eastern edge of the zone.

*Figure 7* provides an example of remnant patch vegetation typical to Habitat Zone 5.



*Figure 7: Example of vegetation typical to EVC 16: :Lowland Forest- Habitat Zone 5*

### 3.1.3 Native Trees

*Map 1* shows the locations of all native trees which meet the definition of a 'large tree' (LT) under the relevant EVC benchmark. The species, size and size class category of each tree is detailed in *Table 3*. Also included are all (exotic or native) trees greater than 30 centimetres DBH that were recorded in the 58 Moe South Road property. Tree ID numbers listed in *Table 3* corresponded with those shown in *Map 1*.

Table 3: Scattered and large old tree information

| Tree ID No | Botanical Name              | Common Name           | Diameter at Breast Height (cm) | Size Category |
|------------|-----------------------------|-----------------------|--------------------------------|---------------|
| 1          | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 75                             | Large         |
| 2          | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 79                             | Large         |
| 3          | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 74                             | Large         |
| 4          | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 79                             | Large         |
| 5          | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 75                             | Large         |
| 6          | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 86                             | Large         |
| 7          | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 85                             | Large         |
| 8          | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 80                             | Large         |
| 9          | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 80                             | Large         |
| 10         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 71                             | Large         |
| 11         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 80                             | Large         |
| 12         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 93                             | Large         |
| 13         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 90                             | Large         |
| 14         | <i>Eucalyptus dives</i>     | Broad-leaf Peppermint | 74                             | Large         |
| 15         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 73                             | Large         |
| 16         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 130                            | Large         |
| 17         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 89                             | Large         |
| 18         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 98                             | Large         |
| 19         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 75                             | Large         |
| 20         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 82                             | Large         |
| 21         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 90                             | Large         |
| 22         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 120                            | Large         |
| 23         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 79                             | Large         |
| 24         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 81                             | Large         |
| 25         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 124                            | Large         |
| 26         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 101                            | Large         |
| 27         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 74                             | Large         |
| 28         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 92                             | Large         |
| 29         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 72                             | Large         |
| 30         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 84                             | Large         |
| 31         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 89                             | Large         |
| 32         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 79                             | Large         |
| 33         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 77                             | Large         |
| 34         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 71                             | Large         |
| 35         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 91                             | Large         |
| 36         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 78                             | Large         |
| 37         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 86                             | Large         |
| 38         | <i>Eucalyptus obliqua</i>   | Messmate Stringybark  | 87                             | Large         |
| 39         | <i>Callitris rhomboidea</i> | Oyster Pine           | 68                             | NA            |

| Tree ID No | Botanical Name                | Common Name            | Diameter at Breast Height (cm) | Size Category |
|------------|-------------------------------|------------------------|--------------------------------|---------------|
| 40         | <i>Callitris sp.</i>          | Pine                   | 63                             | NA            |
| 41         | <i>Cupressus sp.</i>          | Cypress                | 59                             | NA            |
| 42         | <i>Callitris rhomboidea</i>   | Oyster Pine            | 57                             | NA            |
| 43         | <i>Callitris rhomboidea</i>   | Oyster Pine            | 72                             | NA            |
| 44         | <i>Sequoia sempervirens</i>   | Coast Redwood          | 81                             | NA            |
| 45         | <i>Callitris rhomboidea</i>   | Oyster Pine            | 69                             | NA            |
| 46         | <i>Callitris sp.</i>          | Pine                   | 49                             | NA            |
| 47         | <i>Callistemin sp.</i>        | River Bottlebrush      | 81                             | NA            |
| 48         | <i>Quercus sp.</i>            | Oak                    | 72                             | NA            |
| 49         | <i>Quercus sp.</i>            | Oak                    | 93                             | NA            |
| 50         | <i>Quercus sp.</i>            | Oak                    | 71                             | NA            |
| 51         | <i>Eucalyptus strzeleckii</i> | Strzelecki Gum         | 15                             | NA            |
| 51         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 170                            | Large         |
| 52         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 80                             | Large         |
| 53         | <i>Dead Stag</i>              |                        | 72                             | Large         |
| 54         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 71                             | Large         |
| 55         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 82                             | Large         |
| 56         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 76                             | Large         |
| 57         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 82                             | Large         |
| 58         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 89                             | Large         |
| 59         | <i>Eucalyptus radiata</i>     | Narrow Leaf Peppermint | 110                            | Large         |
| 60         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 74                             | Large         |
| 61         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 78                             | Large         |
| 62         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 78                             | Large         |
| 63         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 105                            | Large         |
| 64         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 85                             | Large         |
| 65         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 84                             | Large         |
| 66         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 90                             | Large         |
| 67         | <i>Eucalyptus strzeleckii</i> | Strezelecki Gum        | 74                             | Large         |
| 68         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 76                             | Large         |
| 69         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 79                             | Large         |
| 70         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 76                             | Large         |
| 71         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 117                            | Large         |
| 72         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 71                             | Large         |
| 73         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 78                             | Large         |
| 74         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 75                             | Large         |
| 75         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 100                            | Large         |
| 76         | <i>Eucalyptus obliqua</i>     | Messmate Stringybark   | 113                            | Large         |

### 3.1.4 Significant Vegetation Communities

One threatened ecological community listed under the *EPBC Act* was identified in database searches within a five kilometre radius of the study area; the Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Native Grassland community.

This community is not present within the study area.

## 3.2 Flora Species

### 3.2.1 Flora Species Recorded

A total of 143 vascular plants were found to occur on site during site assessments. Of these, 92 are considered to be taxa native to Victoria. *Appendix 1* displays the results of the flora survey.

### 3.2.2 Significant Flora Species

The Protected Matters Search Tool (DAWE, 2019) was used to query a five kilometre radius of the study area and identified the possible presence of the following significant flora species:

- *Amphibromus fluitans* (River Swamp Wallaby-grass);
- *Dianella amoena* (Matted Flax-lily);
- *Eucalyptus strzeleckii* (Strzelecki Gum);
- *Glycine latrobeana* (Clover Glycine);
- *Prasophyllum frenchii* (Maroon Leek-orchid);
- *Pterostylis chlorogramma* (Green-stiped Greenhood);
- *Senecio psilocarpus* (Swamp Fireweed);
- *Xerochrysum palustre* (Swamp everlasting).

The Victorian Biodiversity Atlas (DELWP, 2019e) was used to query a five kilometre radius of the study area and identified the possible presence of the following additional six state significant flora species:

- *Caladenia australis* (Southern Spider-orchid);
- *Diuris X palachila* (Broad-lip Diuris);
- *Grevillea rosmarinifolia* (Rosemary Grevillea);
- *Caladenia vulgaris* (Slender Pink-fingers);
- *Eucalyptus fulgens* (Green Scentbark); and
- *Eucalyptus ignorabilis* s.s. (Grey Scentbark).

*Appendix 2* lists the results of the flora 5 kilometres database searches using the PMST (DAWE, 2019) and the VBA (DELWP, 2019e) within a five kilometre radius of the study area. *Appendix 3* provides an assessment of the likelihood of occurrence of these flora species within the study area.

One significant flora species was identified on site within the study area; *Eucalyptus strzeleckii* (Strzelecki Gum), with five trees found in Habitat Zones 4 & 5 (*Map 1*). This species is listed as 'Vulnerable' in Victoria (DSE, 2005) and under the *EPBC Act* and 'threatened' under the *FFG Act*. Only a relatively small proportion of the 56 Moe South Road property is considered potentially suitable habitat for Strzelecki Gum with the majority of the drier Lowland Forest habitat zone not considered suitable habitat. Aside from Strzelecki Gum, the 56 Moe South Road property is not considered to

provide potentially suitable habitat for any of the other rare or threatened flora species listed in *Appendix 2*.

Due to its high degree of modification, the 58 Moe South property is also not considered to provide potentially suitable habitat for any of the rare or threatened flora species listed in *Appendix 6*.

### 3.3 Fauna Species

#### 3.3.1 Fauna Species Recorded

A total of 14 fauna species were found to occur on site during site assessments. Of these, 13 are considered to be taxa native to Victoria. *Appendix 4* displays the results of the fauna survey.

Evidence of the presence of burrowing crayfish (*Engaeus* sp.) was identified at the northern extent of the study area with a single “chimney” within an area of damp soils associated with site seepage.

#### 3.3.2 Significant Fauna Species

The Protected Matters Search Tool (DAWE, 2019) was used to query a five kilometre radius of the study area and identified the possible presence of 28 significant fauna species, comprised of the following:

- 18 bird species;
- 1 amphibian species;
- 6 mammal species;
- 2 fish species; and
- 1 insect species.

The Victorian Biodiversity Atlas (DELWP, 2019e) was used to query a five kilometre radius of the study area and identified the possible presence of the following additional 18 state significant fauna species:

- 14 bird species;
- 2 mammal species;
- 1 fish species and
- 1 insect species.

*Appendix 2* lists the results of the fauna database searches using the PMST (DAWE, 2019) and the VBA (DELWP, 2019e) within a five kilometre radius of the study area. *Appendix 5* provides an assessment of the likelihood of occurrence of these fauna species within the study area.

The likelihood assessment found that *Ninox strenua* (Powerful Owl), which is listed as Vulnerable on the DELWP advisory list and protected by the FFG Act, had a high likelihood of occurrence within the study area, due to a previous record from the site. All other fauna species were assessed as unlikely to occur within the study area.

### 3.4 Species Habitat

Additional descriptions in regard to the available habitat within the study areas is provided below.

#### 56 Moe South Road

This property has been heavily modified and provides limited fauna habitat. Canopy trees within the property have no connection with surrounding areas of native vegetation and habitat and the ground layer habitat is degraded and dominated by exotic flora.

A small dam at the rear of the property, regularly accessed by stock, provides an occasional refuge for relatively common waterbirds such as *Chenonetta jubata* (Australian Wood Duck) observed during the survey. Other small ornamental ponds provide limited fauna habitat but may provide isolated breeding opportunities for common amphibian species such as *Crinia signifera* (Common Froglet).

The planted shrubs and trees along the eastern and south eastern fencelines provide an occasional stopover point and foraging location for mobile birds such as *Anthochaera carunculata* (Red Wattlebird) and the recorded *Phylidonyris novaehollandiae* (New Holland Honeyeater). The larger planted exotic trees concentrated in the eastern edge of the property are likely to support *Pseudocheirus peregrinus* (Common ring-tailed Possum) or *Trichosurus cunninghami* (Mountain Brush-tailed Possum)

Figure 8 provides an example of the fence line planted trees and shrubs described.



Figure 8: Example of planted trees and shrubs along south east fence line

#### 58 Moe South Road

Native vegetation within this property are contiguous with remnant vegetation and habitat to its north and west forming a total area of native vegetation / habitat of approximately 15 hectares. The habitat values within this property are described below.

#### Lowland Forest (Habitat Zones 1, 3 & 5)

These zones have a high proportion of large trees many with hollows that may be utilised by a range of fauna species from relatively common birds such as Cockatoos to arboreal mammals such as the Mountain Brush-tail Possum and possibly *Petaurus breviceps* (Sugar Glider). The relatively healthy

canopy layer also provides foraging opportunities for birds such as *Cormobates leucophaea* (White-throated Treecreeper). The canopy trees also provide good roosting and surveying positions for larger birds such as *Dacelo novaeguineae* (Laughing Kookaburra) and *Ninox strenua* (Powerful Owl). The Powerful Owl has been recorded onsite and a relatively short distance from the site within connected bushland to the north.

Small to medium shrubs are common throughout the understorey and provide good protective and foraging habitat for an array of forest birds such as the *Psophodes olivaceus* (Eastern Whipbird) and *Rhipidura albiscarpa* (Grey Fantail).

The ground layer has a diversity of vegetation structure from dense Forest Wire-grass patches to more open sections with scattered tussocks and coarse woody debris. The ground layer is likely to provide suitable habitat for reptiles such as *Austrelaps superbus* (Lowland Copperhead) and possibly ground dwelling mammals such as *Antechinus agilis* (Agile Antechinus).

These zones hold no permanent water or ephemeral wetland vegetation.

Figure 9 provides an example of typical habitat within the zones.



Figure 9: Example of typical habitat with EVC 16: Lowland Forest

#### Damp Forest (Habitat Zones 2 & 4)

These zones have a patchy canopy layer that is likely to provide foraging, roosting and surveying opportunities for a similar array of birds as described for *Lowland Forest-Habitat Zones*. It lacks any large trees and as a result does not provide many tree hollows for arboreal fauna to utilise.

The understorey holds scattered shrubs, dense patches of tree and ground ferns and Habitat Zone 2 has high levels of fallen logs. Being located at the upper end of a drainage line the zones are likely to

be visited by birds such as *Rhipidura albiscapa* (Grey Fantail) and *Sericornis frontalis* (White-browed Scrubwren) that favour slightly denser damper forest areas.

The ground layer provides habitat for reptiles and ground dwelling mammals like those likely to be found in the *Lowland Forest Habitat Zones* but is likely to be favoured more by amphibians, such as *Litoria ewingii* (Southern Brown Tree Frog) due to increased moisture levels and related moisture dependant plants.

These zones do not hold permanent water.

*Figures 10* provides an example of typical habitat within the zone.



*Figure 10: Example of typical habitat with EVC 29: Damp Forest*

## 4 Policy and Legislative Implications

### 4.1 Commonwealth – Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act establishes a Commonwealth process for assessment of proposed actions that are likely to have a significant impact on Matters of National Environmental Significance (MNES) or on Commonwealth land. An action (i.e. project, development, undertaking, activity, or series of activities), unless otherwise exempt, requires approval from the Commonwealth Environment Minister if they are considered likely to have an impact on any MNES. A referral under the EPBC Act is required if a proposed action is likely **to have a 'significant impact' on** any of the following MNES:

- World Heritage properties;
- National heritage places;
- Ramsar wetlands of international significance;
- Threatened species and ecological communities;
- Migratory and marine species;
- Commonwealth marine area;
- Nuclear actions (including uranium mining);
- Great Barrier Reef Marine Park; and
- A water resource, in relation to coal seam gas development and large coal mining development.

#### 4.1.1 Implications (Significant Impact Criteria)

The following comments are made in regard to the study area and implications of the EPBC Act:

- No threatened ecological communities were found to occur within the study area during the site inspection;
- One threatened flora species, *Eucalyptus strzeleckii* (Strzelecki Gum) was found to occur within the study area. No impacts to Strzelecki Gums are currently proposed and tree retention zones will also be avoided. If the construction footprint is amended and impacts will occur, a targeted survey to determine total numbers and assessment of this impact against the criteria for vulnerable species under the Significant Impact Guidelines (DSEWPC, 2016) will be required;
- All other flora species identified in the database searches, within a 5 km radius, that are listed as threatened under the EPBC Act are considered unlikely to occur within the study area;
- No threatened fauna species were recorded within the study area during the site inspection; and
- All fauna species identified in the database searches, within a 5 km radius, that are listed as threatened under the EPBC Act are considered unlikely to occur or be reliant on habitat within the study area.

## 4.2 State – Flora and Fauna Guarantee Act 1988

The *Flora and Fauna Guarantee Act 1988* (FFG Act) is the primary State legislation for the protection of native plants, native animals and ecological communities on public land and waters in Victoria. Species and ecological communities can be listed as threatened under the Act based on assessments by an independent Scientific Advisory Committee. Threatening processes may also be listed.

**Under the FFG Act a permit is required from the DELWP to ‘take’ ‘protected’ flora species, ‘listed communities’ or ‘threatened species’ from public land. Removal of any protected flora taxa, listed flora species or listed communities may not be undertaken until this permit has been issued (DELWP, 2019d)**

### 4.2.1 Implications

No threatened ecological communities are impacted by the proposal.

*Ninox strenua* (Powerful Owl) had a high likelihood of occurrence within the study area, with a previous record from within the site from 2013. The canopy trees scattered across all habitat zones are considered habitat for this species. The extent of impact to potential habitat for the Powerful Owl, disruption to its movements or impact upon any populations has not been assessed by this report and it is recommended that an expert be engaged to provide more specific advice in this regard.

Evidence of the presence of burrowing crayfish was found at the northern extent of the study area, however this is outside of the construction footprint proposed by Gippsland Water (03/04/2020). If the footprint is changed, further assessment by a species expert may be required to determine the species and if there are any further considerations under the FFG Act.

Twenty-four flora species were identified on site that are listed as protected under the FFG Act. Two Acacia species found on site; *Acacia dealbata* (Silver Wattle) and *Acacia melanoxydon* (Blackwood) are exempt from the requirement to obtain a permit for their removal under the FFG Act (DELWP, 2019d).

**Due to this proposal being located on public land, an application for a ‘Permit to Take Protected Flora’** must be lodged with the DELWP. Removal of any protected flora taxa may not be undertaken until this permit has been issued. *Table 4* provides the detail on flora protected under the FFG Act that may require removal, however a count of numbers will need to occur prior to the permit application.

*Table 4: Details of flora taxa protected under Flora and Fauna Guarantee Act 1988*

| Scientific Name                           | Common Name        |
|---|--------------------|
| <i>Acacia mucronate subsp. longifolia</i> | Narrow-leaf Wattle |
| <i>Acacia myrtifolia</i>                  | Myrtle Wattle      |
| <i>Acacia verticillata</i>                | Prickly Moses      |
| <i>Blechnum cartilagineum</i>             | Gristle Fern       |
| <i>Calochlaena dubia</i>                  | Common Ground-fern |
| <i>Cassinia aculeata</i>                  | Common Cassinia    |
| <i>Cassinia longifolia</i>                | Shiny Cassinia     |
| <i>Chiloglottis sp.</i>                   | Bird Orchid        |
| <i>Cryptostylis sp.</i>                   | Tongue Orchid      |
| <i>Cyathea australis</i>                  | Rough Tree-fern    |

| Scientific Name                               | Common Name          |
|---|----------------------|
| <i>Dipodium roseum</i>                        | Hyacinth Orchid      |
| <i>Epacris impressa</i>                       | Common Heath         |
| <i>Eucalyptus strzeleckii</i>                 | Strzelecki Gum       |
| <i>Lindsaea linearis</i>                      | Screw Fern           |
| <i>Melaleuca squarrosa</i>                    | Scented Paperbark    |
| <i>Olearia lirata</i>                         | Snowy Daisy-bush     |
| <i>Pterostylis pedunculata</i>                | Maroonhood           |
| <i>Senecio glomeratus</i>                     | Annual Fireweed      |
| <i>Senecio hispidulus</i>                     | Rough Fireweed       |
| <i>Stylidium armeria</i>                      | Common Trigger-plant |
| <i>Thelymitra ixioides</i>                    | Spotted Sun-orchid   |
| <i>Thelymitra</i> spp.                        | Sun Orchid           |
| <i>Thysanotus</i> sp.                         | Fringe Lily          |
| <i>Xanthorrhoea minor</i> subsp. <i>lutea</i> | Small Grasstree      |

### 4.3 State – Catchment and Land Protection Act 1994

In accordance with Section 20 of the CaLP Act, landholders and managers have a responsibility to take all reasonable steps to:

- Avoid causing or contributing to land degradation which causes or may cause damage to land of another land owner;
- Eradicate regionally prohibited weeds;
- Prevent the growth and spread of regionally controlled weeds on their land; and
- Prevent the spread of, and as far as possible, eradicate established pest animals.

#### 4.3.1 Implications

Five weeds declared noxious under the *Catchment and Land Protection Act 1994* (CaLP Act) were identified on site during assessments (*Table 5*). Four of these weeds are categorised within the West Gippsland Catchment Management Authority region as ‘Regionally Controlled’ and one are categorised as ‘Restricted’ (DELWP, 2019b).

*Table 5: Declared noxious weeds proclaimed under the Catchment and Land Protection Act 1994*

| Scientific Name                          | Common Name       | Classification        |
|--|-------------------|-----------------------|
| <i>Cirsium vulgare</i>                   | Spear Thistle     | Regionally controlled |
| <i>Genista linifolia</i>                 | Flax-leaf Broom   | Regionally Controlled |
| <i>Genista monspessulana</i>             | Montpellier Broom | Regionally Controlled |
| <i>Oxalis pes-caprae</i>                 | Soursob           | Restricted            |
| <i>Rubus fruticosus</i> spp. <i>agg.</i> | Blackberry        | Regionally Controlled |

To prevent the spread of noxious weeds listed in *Table 5*, Gippsland Water and the contractor engaged to carry out the works must be made aware of the presence of these weed species. Appropriate site weed hygiene practices must be employed to limit the spread of any existing noxious weeds within

the construction area. Similarly, vehicle hygiene practice must be employed to prevent the import or export of any noxious weeds to or from the construction area.

#### 4.4 State - Water Act 1987

Catchment Management Authorities have statutory responsibilities under Section 67 of the Water Act to monitor, manage, enforce, and administer control over all works which may impact upon designated waterways to ensure works undertaken do not adversely affect the health of those waterways.

A permit is required to undertake works on a designated waterway and can include activities such as:

- Crossings – bridges, fords, culverts;
- Deviations – waterway realignments;
- Extractions – sand, silt or gravel;
- Stabilisation – bank protection, retaining structures;
- Vegetation – fallen timber and vegetation removal, revegetation projects;
- Works – stormwater outlets, service crossings; and
- Other – jetty, river mouth opening, boardwalks.

##### 4.4.1 Implications

No water courses are present with the bounds of the assessment area, therefore there are no further considerations of any requirements under this Act is considered necessary.

#### 4.5 State – Wildlife Act 1979

The Wildlife Act 1975 provides the primary legislation for the protection and management of wildlife, the purposes of this Act are:

- To establish procedures in order to promote the protection and conservation of wildlife, the prevention of taxa of wildlife from becoming extinct and the sustainable use of and access to wildlife; and
- To prohibit and regulate the conduct of persons engaged in activities concerning or related to wildlife.

##### 4.5.1 Implications

Persons engaged to remove, salvage, hold or relocate any native fauna species during proposed construction works must have a permit under this Act to undertake such actions and ensure any actions to manage wildlife must be undertaken in accordance with the requirements of the Act or at the direction of DELWP.

## 4.6 State – Environmental Effects Act 1978

In Victoria, environmental impact assessments of proposed development projects are conducted through the Environmental Effects Statement (EES) process under the Environment Effects Act 1978 (EE Act). The Minister for Planning (the Minister) administers the EES process through the Ministerial Guidelines for Assessment of Environmental Effects (Ministerial Guidelines), whilst DELWP manages **this process (Victorian Auditor General’s Report, 2017)**.

A proponent should ask the Minister administering the Act whether an EES is required for projects or amended projects that could have a significant effect on the environment. If the Minister decides that an Environment Effects Statement (EES) is required, the project proponent is responsible for preparing the EES and undertaking the necessary investigations (DELWP, 2019f)

Referral criteria is based on either individual potential environmental effects or a combination of potential environmental effects.

### 4.6.1 Implications

The total extent of proposed native vegetation clearing within habitat zones 2 & 4 is 0.226 ha of Damp Forest, an endangered EVC. The native vegetation to be cleared is unlikely to constitute a potential long-term loss of significant proportion of known remaining habitat or population of a threatened species within Victoria, however additional advice should be sought from an expert on the potential impact to Powerful Owl habitat / population.

## 4.7 State – Planning and Environment Act 1987

### 4.7.1 Native Vegetation

Under *Clause 52.17* of the Latrobe Planning Scheme, a planning permit is required to clear or disturb native vegetation within the study area. Native vegetation will be impacted and or require removal under the proposal and as such, application of the '*Guidelines*' to obtain a planning permit for the works is necessary. The information provided within this report and detailed specifically within Section 5 is considered to satisfy the information requirements of the Guidelines.

## 5 Victoria's Native Vegetation Permitted Clearing Regulations

**The purpose of the Guidelines is to set out and describe the application of Victoria's state-wide policy** in relation to assessing the impacts of removing native vegetation on biodiversity and the calculation and establishment of offsets to compensate for this loss. (DELWP, 2017)

The Guidelines also detail the three-step approach of Avoid, Minimise and Offset as a key component of the policy. This approach aims to ensure that the removal of native vegetation is restricted to only what is reasonably necessary, and that biodiversity is appropriately compensated for any removal approved.

A combination of site-based and landscape information is used to calculate the biodiversity value (being a general or species habitat score) of native vegetation to be removed. This is calculated by the extent and condition score, combined to determine the site-based measure of biodiversity value.

The assessment pathway for an application to remove native vegetation reflects its potential impact on biodiversity and is determined by combining the location and extent of the native vegetation proposed to be removed, in accordance with Table 3 of the Guidelines.

The pathways are:

Basic - limited impacts on biodiversity.

Intermediate - **could impact on large trees, endangered EVC's, and sensitive wetlands and coastal areas.**

Detailed - **could impact on large trees, endangered EVC's, sensitive wetlands and coastal area and could significantly impact on habitat for rare or threatened species.** (DELWP, 2017)

### 5.1 Avoiding and Minimising Impacts on Native Vegetation

Avoid and minimise principles must be applied to the project design footprint of works with regards to any proposed native vegetation removal.

Application of these principles can be achieved by avoiding the removal of native vegetation via locating or designing the project works so that native vegetation is not removed. Minimising losses to native vegetation can be achieved via minimising the design construction footprint, restricting project works to areas of native vegetation that have the least biodiversity or other values or managing the works to minimise impacts on surrounding vegetation (DELWP, 2017).

In order to avoid and minimise native vegetation removal within the five habitat zones identified design measures or modifications should aim to:

- Adequately protect and retain any tracts of the Endangered EVC *Damp Forest* habitat zones;
- Adequately protect and retain the identified *Eucalyptus strzeleckii* (Strzelecki Gum), as shown in *Map 1*;
- Adequately protect and retain any riparian habitats and associated waterways located within close proximity to the assessment site, as shown in *Map 1* and *Map 2*; and

- Adequately protect and retain (if possible) any significant remnant Large Trees, as shown in *Map 1* (the removal of some or all of these trees may be unavoidable).

Gippsland Water originally designed the new Clearwater storage basin on land it already owned (56 Moe South Road), containing over 10.4 hectares of native vegetation, as this land had been strategically retained to allow for future plant development. The residential property next to the treatment plant (58 Moe South Road) became available for sale during the early stages of planning for this project and Gippsland Water took the opportunity to buy the property (at a cost of approximately \$800,000) to use the site as part of the footprint for the Clearwater storage. This reduced the amount of native vegetation to be removed by approximately 50% from what was originally proposed.

The following design and construction features have been incorporated into the Clearwater storage basins current design to minimise impacts to native vegetation:

- The placement of the basin on the site takes into account the gradient of the land to minimise the footprint of the proposed infrastructure, to ensure the risk to safety and the environment are both managed;
- Stockpiling locations essential for the project have been identified that require the least extent of remnant Large Old Tree removal. This includes a large stockpile area on the 58 Moe South property, which has minimal ecological value;
- The clear water basins design and construction footprint has focused on avoiding impacts to the five Strzelecki Gums identified on site; and
- The volume of the proposed basin has been selected to allow for predicted future growth in the region and will therefore prevent the need to build another basin at the site.

A number of site restrictions limits the ability to further avoid and minimise impacts to native vegetation:

- The cleared property located to the south of the proposed basin contains a gas easement that restricts the use of this land for stockpiling and construction purposes;
- Maintaining the operations of the Moe Water Treatment Plant is crucial and places restrictions on the adjacent land for both construction and to house the completed basin; and
- It is hydraulically optimal for the placement of the clear water storage basin to be at the same relative level as the existing basin at the site. This limits where the basin can be positioned, but greatly reduces the electricity usage and noise emissions generated during the ongoing operation of the basin.

## 5.2 Assessment of Proposed Native Vegetation Losses

No other native vegetation has been approved to be removed or was removed without the required approvals, on the same property or on contiguous land in the same client ownership in the past 5 years.

Gippsland Water provided a second version of the construction footprint (03/04/2020), incorporating avoid and minimise principles (as detailed above) which was overlaid on the identified habitat zones and other ecological assets within the study area.

The canopy of large trees immediately adjacent to the construction footprint were included in the loss area, along with one large tree with greater than 10% TRZ impacts outside of the construction footprint.

Map 2 provides the location and extent of all native vegetation deemed lost under the proposed design and Table 6 summarises the vegetation losses according to type and EVC.

Table 6 - Summary of Native Vegetation Deemed Lost

| Type          | Description                              | Area (ha) | Tree Loss |
|---------------|--|-----------|-----------|
| Native patch  | Habitat Zone 1 (EVC 16)                  | 1.485     | 38        |
| Native Patch  | Habitat Zone 2 (EVC 29)                  | 0.053     | 0         |
| Native patch  | Habitat Zone 4 (EVC 29)                  | 0.173     | 0         |
| Native patch  | Habitat Zone 5 (EVC 16)                  | 0.142     | 5         |
| TRZ - Tree 74 | <i>Eucalyptus obliqua</i> (HZ5 - EVC 16) | -         | 1         |
| Total         |  | 1.854     | 44        |

### 5.3 Offset Requirements

A 'clearing' shapefile that outlined the extent of native vegetation deemed lost under the Project was provided to DELWP to produce a Native Vegetation Removal (NVR) report (Appendix 8).

The NVR determined the following would apply to the Project:

- The proposal falls under the 'Detailed Assessment Pathway';
- Offset requirements equate to 1.481 **General Habitat Units (GHU's)** with a minimum strategic biodiversity score of 0.413 and 44 Large old trees; and
- Offsets must be located within the West Gippsland Catchment Management Authority (CMA) boundary or within the Latrobe City Council municipality.

### 5.4 Offset Statement

In accordance with the DELWP's **Guidelines for the removal, destruction or lopping of native vegetation** an offset statement is typically required providing evidence that an offset that meets the offset requirements for the native vegetation to be removed has been identified and can be secured.

Gippsland Water has a number of offset sites protected under Section 69 of the *Conservation Forest & Land Act 1987* through the Bushbroker Landowner agreement program and proposes to offset losses with this proposal within their current offset bank.

## 6 Conclusion and Recommendations

Vegetation across the study area comprises native patches, planted treed sections and areas dominated by degraded (non-native) exotic species. Vegetation Quality Assessments (VOA) were carried out which identified native vegetation patches from two Ecological Vegetation Classes (EVC) onsite. These patches were categorised into three Lowland Forest (EVC 16) habitat zones and two Damp Forest (EVC 29) habitat zones. In addition, 62 **Large Old Trees (LOT's)** were recorded within patches.

Habitat Zone numbers 1 - 5 were identified and mapped as covering almost completely the entire 56 Moe South Road property (approximately 2.54 hectares), with 1.854 hectares identified as potential being removed within the study area, along with the direct removal of 43 large trees and TRZ impacts on a further one large tree.

No threatened ecological communities listed under the *Environment Protection and Biodiversity Conservation* (EPBC) Act 1999 were identified within the study area nor any fauna species listed under this Act were identified during the site inspection. One flora species listed under the EPBC Act was identified on site, *Eucalyptus strzeleckii*, during the site inspection.

Two fauna species listed as rare or threatened by the Department of Environment, Land, Water & Planning (DELWP) advisory list have the potential to utilise the site, Powerful Owl and a species of Burrowing Crayfish. The following comments are made regarding the extent of impacts to potential habitat for rare or threatened species habitat under the final designs:

- No impacts to Strzelecki Gums are currently proposed and tree retention zones will be avoided. If the construction footprint is amended and impacts will occur, a targeted survey to determine total numbers and assessment of this impact against the criteria for vulnerable species under the Significant Impact Guidelines (DSEWPC, 2016) will be required;
- The canopy trees scattered across the site are considered habitat for the Powerful Owl, a species listed as Vulnerable on the DELWP advisory list and protected by the FFG Act. The extent of impact to potential habitat for the Powerful Owl, disruption to its movements or impact upon any populations has not been assessed by this report and it is recommended that an expert be engaged to provide more specific advice in this regard;
- Evidence of the presence of burrowing crayfish at the northern extent of the study area is currently outside of the proposed construction footprint. If changes are made to the footprint, further assessment by a species expert may be required to determine the actual species and if there are any considerations under the FFG Act; and
- All other rare or threatened fauna species identified in database searches within a 5 km search radius are considered unlikely to occur or be reliant on habitat within the study area.

A **'clearing' shapefile that outlined** the extent of native vegetation deemed lost by this project was provided to DELWP to produce a NVR report. The NVR identified the following offset requirements that apply to the proposal:

- **The proposal falls under the 'Detailed Assessment Pathway';**

- Offset requirements amount to 1.481 General Habitat Units (GHUs) and 44 large old trees, with a minimum strategic biodiversity score of 0.413; and
- Offsets must be located within the West Gippsland Catchment Management Authority (CMA) boundary or within the Latrobe City Council municipality.

A **'Permit to Take Protected Flora'** must be lodged with the DELWP that lists the twenty-four protected flora species and number of plants that require removal.

Five Declared Noxious Weeds were identified within the site, including four species categorised as **'Regionally Controlled'** and one species categorised as **'Restricted'**. To prevent the spread of noxious weeds appropriate site weed hygiene practices must be employed to limit the spread of any existing noxious weeds within the construction area. Similarly, vehicle hygiene practices must be employed to prevent the import or export of any noxious weeds to or from the construction area.

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## Glossary

|   |  |
|---|--|
| Avoid   | Avoiding removing any native vegetation when undertaking a use or development. This can be either by not permitting or not going ahead with the use or development, or locating it elsewhere so that removing native vegetation is not required.   |
| Biodiversity                                    | The variety of all life forms, the different plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part.   |
| Bioregion                                       | Biogeographic areas that capture the patterns of ecological characteristics in the landscape or seascape, providing a natural framework for recognising and responding to biodiversity values.   |
| Bioregional Conservation Status (BCS of an EVC) | A state-wide classification of the degree of depletion in the extent and/or quality of an Ecological Conservation Class (EVC) within a bioregion in comparison to the State's estimation of its pre-1750 extent and condition.   |
| Canopy Tree                                     | A tree, greater than five meters in height, that is normally found in the upper layer of a vegetation type. A tree, greater than five meters in height, that is normally found in the upper layer of a vegetation type.  |
| Diameter at Breast Height (DBH)                 | The diameter of the trunk of a tree measured over bark at 1.3m above ground level.   |
| Ecological Vegetation Class (EVC)               | A type of native vegetation classification that is described through a combination of its floristic, life form and ecological characteristics, and through an inferred fidelity to particular environmental attributes. Each EVC includes a collection of floristic communities (i.e. lower level in the classification that is based solely on groups of the same species) that occur across a biogeographic range, and although differing in species, have similar habitat and ecological processes operating. |
| EVC Benchmark                                   | A standard vegetation-quality reference point relevant to the vegetation type that is applied in habitat hectare assessments. Represents the average characteristics of a mature and apparently long-undisturbed state of the same vegetation type.  |
| General biodiversity equivalence score/units    | <b>Score or units used to quantify the relative overall contribution of a site to Victoria's biodiversity.</b>   |
| General offset                                  | An offset that is required when a proposal to remove native vegetation is not deemed, by application of the specific-general offset test, to have a significant impact on habitat for any rare or threatened species.  |
| General provisions                              | Operational requirements in planning schemes which are consistent across the state, relating to matters such as administrative provisions, ancillary activities and referral of applications.  |
| Habitat Hectares                                | Combined measure of condition and extent of native vegetation. This measure is obtained by <b>multiplying the site's condition score (measured between 0 and 1) with the area of the site (in hectares).</b>   |
| Habitat Score                                   | The score assigned to a habitat zone that indicates the quality of the vegetation relative to the Ecological Vegetation Class (EVC) benchmark – sum of the site condition score and landscape context score usually expressed as a percentage or on a scale of zero to 1.  |
| Habitat Zone                                    | A discrete area of native vegetation consisting of a single vegetation type (EVC) with an assumed similar quality. This is the base spatial unit for conducting a habitat hectare assessment.  |
| High Threat Weed                                | Introduced plant species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term, assuming on-going current site characteristics and disturbance regime.  |
| Large Old Tree (LOT)                            | A tree with a Diameter at Breast Height equal to or greater than the large tree diameter as specified in the relevant EVC benchmark.   |
| Location risk                                   | The risk that removing native vegetation in a particular location will have an impact on the persistence of rare or threatened species.  |
| Loss  | <b>Loss in the contribution to Victoria's biodiversity when native vegetation is fully or partially removed, as measured in biodiversity equivalence scores or units.</b>  |
| Minimise  | Locating, designing or managing a use or development to reduce the impacts on biodiversity from the removal of native vegetation.  |
| Native vegetation                               | Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'.  |
| Native vegetation condition                     | A site-based measure of how close native vegetation is to its mature natural state, as represented by a benchmark reflecting pre-settlement circumstances.   |
| Native vegetation particular provision          | Clause 52.17 in the Victoria Planning Provisions that relates to the removing, destroying or lopping of native vegetation.   |
| Offset  | Protection and management (including revegetation) of native vegetation at a site to generate a gain <b>in the contribution that native vegetation makes to Victoria's biodiversity. An offset is used to compensate for the loss to Victoria's biodiversity from the removal of native vegetation.</b>  |
| Permit  | A legal document that gives permission for a use or development on a particular piece of land.   |
| Permitted clearing                              | Removal of native vegetation for which a planning permit has been granted to remove native vegetation.   |

|   |   |
|---|---|
| Permitted clearing regulations                | The rules in the planning system that regulate permits for the removal of native vegetation.  |
| Responsible authority                         | The authority charged with the responsibility for administering and enforcing particular aspects of a planning scheme.  |
| Scattered Trees                               | An indigenous canopy tree that does not form part of a remnant patch of native vegetation (see definition of remnant patch of native vegetation).   |
| Security Gain                                 | This is gain from actions to enhance security of the on-going management and protection of native vegetation at the offset site, either by entering into an on-title agreement (for example under Section 173 of the <i>Planning and Environment Act 1987</i> ), or by locating the offset on land that has greater security than the clearing site, or by transferring private land to a secure public conservation reserve. |
| Site  | An area of land that contains contiguous patches of native vegetation or scattered trees, within the same ownership.  |
| Species persistence                           | The continued existence of a species into the future.   |
| Specific biodiversity equivalence score/units | With reference to a specific species, a score or units used to quantify the relative contribution of a site to <b>Victoria's biodiversity</b> .   |
| Small Tree (ST)                               | A tree with a Diameter at Breast Height (DBH) equal to or greater than 0.25 of the large tree diameter in the relevant EVC benchmark but less than the DBH for a medium old tree.   |
| Specific offset                               | An offset that is targeted to a particular species (or multiple species) impacted by the removal of native vegetation.  |
| Understorey                                   | The lower layers of vegetation, including the shrub layer, grass layer and ground layer. The understorey may comprise native and non-native species.  |
| Zone  | A zone in the Victoria Planning Provisions is a set of permitted uses of land which are defined spatially.  |

## Appendices

Appendices commence on the next page.

Appendix 1: Flora survey results

| Origin | Botanical Name                              | Common Name         | EPBC | VIC. Adv. | FFG | LF Z1 | DF Z2 | LF Z3 | DF Z4 | LF Z5 | 58 Moe Sth Road |
|--------|---|---------------------|------|-----------|-----|-------|-------|-------|-------|-------|-----------------|
|        | <i>Acacia dealbata</i>                      | Silver Wattle       |      |           |     | +     | +     |       | +     | +     |                 |
| *      | <i>Acacia decurrens</i>                     | Early Black-wattle  |      |           |     | +     |       |       |       |       |                 |
| #      | <i>Acacia longifolia subsp. longifolia</i>  | Sallow Wattle       |      |           |     | +     |       |       |       | +     |                 |
|        | <i>Acacia melanoxylon</i>                   | Blackwood           |      |           |     | +     | +     | +     | +     | +     |                 |
|        | <i>Acacia mucronata subsp. longifolia</i>   | Narrow-leaf Wattle  |      |           |     | +     |       |       |       | +     |                 |
|        | <i>Acacia myrtifolia</i>                    | Myrtle Wattle       |      |           |     | +     |       |       |       |       |                 |
|        | <i>Acacia verticillata</i>                  | Prickly Moses       |      |           |     | +     | +     |       | +     |       |                 |
|        | <i>Acaena novae-zelandiae</i>               | Bidgee-widgee       |      |           |     | +     |       |       |       | +     |                 |
|        | <i>Acrotriche serrulata</i>                 | Honey-pots          |      |           |     | +     | +     | +     | +     | +     |                 |
| *      | <i>Agapanthus praecox subsp. orientalis</i> | Agapanthus          |      |           |     |       |       |       |       |       | +               |
| *      | <i>Aira spp.</i>                            | Hair Grass          |      |           |     | +     |       |       |       |       | +               |
| *      | <i>Allium triquetrum</i>                    | Angled Onion        |      |           |     | +     |       |       |       |       |                 |
|        | <i>Amperea xiphoclada var. xiphoclada</i>   | Broom Spurge        |      |           |     | +     |       |       |       |       |                 |
|        | <i>Amyema pendula</i>                       | Drooping Mistletoe  |      |           |     | +     |       |       |       |       |                 |
| *      | <i>Anagallis arvensis</i>                   | Pimpernel           |      |           |     |       |       |       |       |       | +               |
| *      | <i>Anthoxanthum odoratum</i>                | Sweet Vernal-grass  |      |           |     | +     |       | +     |       |       | +               |
| *      | <i>Arctotheca calendula</i>                 | Cape weed           |      |           |     | +     |       |       |       |       | +               |
|        | <i>Asperula spp.</i>                        | Woodruff            |      |           |     |       |       |       |       | +     |                 |
|        | <i>Australina pusilla</i>                   | Shade Nettle        |      |           |     | +     |       |       |       |       |                 |
|        | <i>Banksia spinulosa var. cunninghamii</i>  | Hairpin Banksia     |      |           |     | +     |       |       |       |       |                 |
|        | <i>Bauera rubioides</i>                     | Wiry Bauera         |      |           |     | +     |       |       |       |       |                 |
| *      | <i>Bellis perennis</i>                      | English Daisy       |      |           |     |       |       |       |       |       | +               |
| *      | <i>Billardiera heterophylla</i>             | Bluebell Creeper    |      |           |     | +     |       |       |       |       |                 |
|        | <i>Billardiera scandens s.l.</i>            | Common Apple-berry  |      |           |     | +     | +     | +     |       | +     |                 |
|        | <i>Blechnum cartilagineum</i>               | Gristle Fern        |      |           |     | +     |       |       |       |       |                 |
|        | <i>Blechnum nudum</i>                       | Fishbone Water Fern |      |           |     |       | +     | +     | +     |       |                 |
|        | <i>Bulbine bulbosa</i>                      | Bulbine Lily        |      |           |     | +     |       |       |       |       |                 |
|        | <i>Burchardia umbellata</i>                 | Milkmaids           |      |           |     | +     |       |       |       |       |                 |
|        | <i>Calochlaena dubia</i>                    | Common Ground-fern  |      |           |     | +     | +     |       |       | +     |                 |
| *      | <i>Cardamine spp.</i>                       | Flick Weed          |      |           |     | +     |       |       |       |       |                 |
|        | <i>Carex appressa</i>                       | Tall Sedge          |      |           |     |       |       |       |       | +     |                 |
|        | <i>Cassinia aculeata</i>                    | Common Cassinia     |      |           |     | +     | +     | +     |       | +     |                 |
|        | <i>Cassinia longifolia</i>                  | Shiny Cassinia      |      |           |     | +     |       | +     | +     | +     |                 |
| *      | <i>Cenchrus clandestinus</i>                | Kikuyu              |      |           |     |       |       |       |       |       | +               |
| *      | <i>Centaurium erythraea</i>                 | Common Centaury     |      |           |     | +     |       |       |       | +     |                 |

| Origin | Botanical Name                                      | Common Name            | EPBC | VIC. Adv. | FFG | LF Z1 | DF Z2 | LF Z3 | DF Z4 | LF Z5 | 58 Moe Sth Road |
|--------|---|------------------------|------|-----------|-----|-------|-------|-------|-------|-------|-----------------|
|        | <i>Chiloglottis</i> spp.                            | Bird Orchid            |      |           |     | +     |       | +     |       | +     |                 |
| *      | <i>Cirsium vulgare</i>                              | Spear Thistle          |      |           |     | +     |       |       |       |       | +               |
|        | <i>Clematis aristata</i>                            | Mountain Clematis      |      |           |     | +     |       | +     | +     | +     |                 |
| *      | <i>Conyza</i> spp.                                  | Fleabane               |      |           |     |       |       |       |       |       | +               |
|        | <i>Coprosma quadrifida</i>                          | Prickly Currant-bush   |      |           |     |       | +     | +     | +     | +     |                 |
| *      | <i>Coprosma repens</i>                              | Mirror Bush            |      |           |     |       | +     |       |       |       |                 |
| *      | <i>Cotoneaster</i> spp.                             | Cotoneaster            |      |           |     | +     |       |       |       |       |                 |
|        | <i>Cotula australis</i>                             | Common Cotula          |      |           |     |       |       |       |       |       | +               |
|        | <i>Cryptostylis subulata</i>                        | Large Tongue-orchid    |      |           |     |       |       |       |       | +     |                 |
|        | <i>Cyathea australis</i>                            | Rough Tree-fern        |      |           |     | +     | +     |       | +     |       |                 |
|        | <i>Daviesia latifolia</i>                           | Hop Bitter-pea         |      |           |     | +     |       |       |       |       |                 |
|        | <i>Daviesia ulicifolia</i> subsp. <i>ulicifolia</i> | Gorse Bitter-pea       |      |           |     | +     |       |       |       |       |                 |
|        | <i>Dichondra repens</i>                             | Kidney-weed            |      |           |     | +     | +     |       |       |       |                 |
|        | <i>Dipodium punctatum</i> s.l.                      | Hyacinth Orchid        |      |           |     |       | +     |       |       | +     |                 |
|        | <i>Drosera peltata</i> s.s.                         | Pale Sundew            |      |           |     | +     | +     |       |       |       |                 |
| *      | <i>Ehrharta calycina</i>                            | Perennial Veldt-grass  |      |           |     |       |       |       |       |       | +               |
| *      | <i>Ehrharta erecta</i> var. <i>erecta</i>           | Panic Veldt-grass      |      |           |     | +     |       |       |       |       | +               |
|        | <i>Epacris impressa</i>                             | Common Heath           |      |           |     | +     | +     |       |       |       |                 |
| *      | <i>Erigeron karvinskianus</i>                       | Seaside Daisy          |      |           |     |       |       |       |       |       | +               |
|        | <i>Eucalyptus dives</i>                             | Broad-leaf Peppermint  |      |           |     |       | +     |       |       | +     |                 |
|        | <i>Eucalyptus obliqua</i>                           | Messmate Stringybark   |      |           |     | +     | +     | +     |       | +     |                 |
|        | <i>Eucalyptus radiata</i> s.l.                      | Narrow-leaf Peppermint |      |           |     | +     | +     | +     |       |       |                 |
|        | <i>Eucalyptus strzeleckii</i>                       | Strzelecki Gum         | V    | V         | L   |       |       |       | +     | +     |                 |
| *      | <i>Euphorbia peplus</i>                             | Petty Spurge           |      |           |     |       |       |       |       |       | +               |
|        | <i>Exocarpos cupressiformis</i>                     | Cherry Ballart         |      |           |     | +     | +     |       |       | +     |                 |
|        | <i>Gahnia radula</i>                                | Thatch Saw-sedge       |      |           |     | +     | +     | +     | +     | +     |                 |
| *      | <i>Galium aparine</i>                               | Cleavers               |      |           |     | +     |       |       |       |       |                 |
| *      | <i>Genista linifolia</i>                            | Flax-leaf Broom        |      |           |     | +     |       |       |       |       |                 |
| *      | <i>Genista monspessulana</i>                        | Montpellier Broom      |      |           |     |       |       |       |       |       | +               |
|        | <i>Gonocarpus humilis</i>                           | Shade Raspwort         |      |           |     |       | +     |       |       |       |                 |
|        | <i>Gonocarpus tetragynus</i>                        | Common Raspwort        |      |           |     | +     |       | +     |       |       |                 |
|        | <i>Goodenia lanata</i>                              | Trailing Goodenia      |      |           |     | +     |       |       |       |       |                 |
|        | <i>Goodenia ovata</i>                               | Hop Goodenia           |      |           |     | +     | +     | +     | +     | +     |                 |
| *      | <i>Hedera helix</i>                                 | English Ivy            |      |           |     |       | +     |       |       |       |                 |
| *      | <i>Holcus lanatus</i>                               | Yorkshire Fog          |      |           |     |       |       |       |       |       | +               |
|        | <i>Hydrocotyle</i> spp.                             | Pennywort              |      |           |     |       |       | +     | +     | +     |                 |
|        | <i>Hypericum gramineum</i> spp. agg.                | Small St John's Wort   |      |           |     | +     |       |       |       |       |                 |

| Origin | Botanical Name                               | Common Name               | EPBC | VIC. Adv. | FFG | LF Z1 | DF Z2 | LF Z3 | DF Z4 | LF Z5 | 58 Moe Sth Road |
|--------|--|---------------------------|------|-----------|-----|-------|-------|-------|-------|-------|-----------------|
| *      | <i>Hypochaeris radicata</i>                  | Flatweed                  |      |           |     | +     | +     | +     | +     | +     | +               |
| *      | <i>Jacobaea vulgaris</i>                     | Ragwort                   |      |           |     | +     |       |       |       |       |                 |
|        | <i>Kunzea ericoides</i>                      | Burgan                    |      |           |     | +     |       | +     | +     |       |                 |
|        | <i>Lagenophora stipitata</i>                 | Common Bottle-daisy       |      |           |     | +     |       | +     | +     | +     |                 |
|        | <i>Laphangium luteoalbum</i>                 | Jersey Cudweed            |      |           |     | +     |       |       |       |       | +               |
|        | <i>Lepidosperma elatius</i>                  | Tall Sword-sedge          |      |           |     | +     | +     |       |       | +     | +               |
|        | <i>Leptospermum continentale</i>             | Prickly Tea-tree          |      |           |     | +     |       | +     | +     | +     |                 |
|        | <i>Leptospermum myrsinoides</i>              | Heath Tea-tree            |      |           |     | +     | +     |       |       |       |                 |
|        | <i>Lindsaea linearis</i>                     | Screw Fern                |      |           |     | +     |       |       |       | +     |                 |
|        | <i>Lomandra filiformis subsp. filiformis</i> | Wattle Mat-rush           |      |           |     | +     |       | +     |       | +     |                 |
|        | <i>Lomandra longifolia subsp. exilis</i>     | Cluster-headed Mat-rush   |      |           |     | +     |       |       |       |       |                 |
|        | <i>Lomatia ilicifolia</i>                    | Holly Lomatia             |      |           |     | +     |       |       |       | +     |                 |
| *      | <i>Lonicera japonica</i>                     | Japanese Honeysuckle      |      |           |     |       | +     |       | +     | +     |                 |
| *      | <i>Lotus corniculatus</i>                    | Bird's-foot Trefoil       |      |           |     |       |       |       |       |       | +               |
| *      | <i>Lotus subbiflorus</i>                     | Hairy Bird's-foot Trefoil |      |           |     |       |       |       |       |       | +               |
|        | <i>Lythrum hyssopifolia</i>                  | Small Loosestrife         |      |           |     | +     |       |       |       | +     |                 |
|        | <i>Melaleuca squarrosa</i>                   | Scented Paperbark         |      |           |     |       | +     |       |       |       |                 |
| *      | <i>Mentha pulegium</i>                       | Pennyroyal                |      |           |     |       |       |       |       |       | +               |
|        | <i>Microlaena stipoides var. stipoides</i>   | Weeping Grass             |      |           |     | +     | +     | +     | +     | +     |                 |
|        | <i>Olearia lirata</i>                        | Snowy Daisy-bush          |      |           |     | +     | +     | +     | +     |       |                 |
|        | <i>Opercularia varia</i>                     | Variable Stinkweed        |      |           |     | +     | +     |       |       |       |                 |
| *      | <i>Oxalis incarnata</i>                      | Pale Wood-sorrel          |      |           |     | +     |       |       |       | +     | +               |
| *      | <i>Oxalis pes-caprae</i>                     | Soursob                   |      |           |     | +     |       |       |       |       |                 |
|        | <i>Pandorea pandorana subsp. pandorana</i>   | Wonga Vine                |      |           |     | +     | +     | +     | +     |       |                 |
| *      | <i>Passiflora tarminiana</i>                 | Banana Passion-fruit      |      |           |     |       |       |       | +     |       |                 |
|        | <i>Persicaria decipiens</i>                  | Slender Knotweed          |      |           |     | +     |       |       |       |       |                 |
| *      | <i>Pinus radiata</i>                         | Radiata Pine              |      |           |     | +     |       |       |       |       |                 |
| #      | <i>Pittosporum undulatum</i>                 | Sweet Pittosporum         |      |           |     | +     | +     | +     | +     | +     |                 |
|        | <i>Plantago debilis</i>                      | Shade Plantain            |      |           |     | +     |       |       |       |       |                 |
|        | <i>Platylobium montanum</i>                  | Handsome Flat-pea         |      |           |     | +     |       |       |       | +     |                 |
| *      | <i>Poa annua</i>                             | Annual Meadow-grass       |      |           |     |       |       |       |       |       | +               |
|        | <i>Poa labillardierei</i>                    | Common Tussock-grass      |      |           |     | +     |       |       |       |       |                 |
|        | <i>Poa morrisii</i>                          | Soft Tussock-grass        |      |           |     | +     |       | +     |       | +     |                 |
| *      | <i>Poa pratensis</i>                         | Kentucky Blue-grass       |      |           |     |       |       |       |       |       | +               |
| *      | <i>Polygonum arenastrum</i>                  | Wireweed                  |      |           |     |       |       |       |       |       | +               |
|        | <i>Polyscias sambucifolia</i>                | Elderberry Panax          |      |           |     | +     | +     | +     | +     | +     |                 |

| Origin | Botanical Name                                | Common Name         | EPBC | VIC. Adv. | FFG | LF Z1 | DF Z2 | LF Z3 | DF Z4 | LF Z5 | 58 Moe Sth Road |
|--------|---|---------------------|------|-----------|-----|-------|-------|-------|-------|-------|-----------------|
|        | <i>Pomaderris aspera</i>                      | Hazel Pomaderris    |      |           |     | +     | +     |       | +     | +     |                 |
|        | <i>Poranthera microphylla</i>                 | Small Poranthera    |      |           |     | +     |       |       |       |       |                 |
| *      | <i>Prunella vulgaris</i>                      | Self-heal           |      |           |     | +     |       |       |       |       |                 |
| *      | <i>Prunus laurocerasus</i>                    | Cherry Laurel       |      |           |     | +     |       |       |       |       |                 |
| *      | <i>Prunus spp.</i>                            | Prunus              |      |           |     | +     |       |       |       |       |                 |
|        | <i>Pteridium esculentum</i>                   | Austral Bracken     |      |           |     | +     | +     | +     | +     | +     |                 |
|        | <i>Pterostylis pedunculata</i>                | Maroonhood          |      |           |     |       | +     |       |       |       |                 |
|        | <i>Pultenaea gunnii</i>                       | Golden Bush-pea     |      |           |     |       | +     |       |       |       |                 |
|        | <i>Pultenaea juniperina s.l.</i>              | Prickly Bush-pea    |      |           |     | +     |       |       |       |       |                 |
|        | <i>Ranunculus spp.</i>                        | Buttercup           |      |           |     |       |       |       |       |       | +               |
| *      | <i>Rubus fruticosus spp. agg.</i>             | Blackberry          |      |           |     | +     | +     | +     | +     | +     | +               |
| *      | <i>Rumex obtusifolius subsp. obtusifolius</i> | Broad-leaf Dock     |      |           |     |       |       |       |       |       | +               |
|        | <i>Rytidosperma spp.</i>                      | Wallaby Grass       |      |           |     | +     |       |       |       |       |                 |
|        | <i>Schoenus apogon</i>                        | Common Bog-sedge    |      |           |     | +     |       |       |       | +     | +               |
|        | <i>Senecio glomeratus</i>                     | Annual Fireweed     |      |           |     | +     |       | +     |       | +     |                 |
|        | <i>Senecio hispidulus s.l.</i>                | Rough Fireweed      |      |           |     | +     |       |       |       |       |                 |
|        | <i>Solanum aviculare</i>                      | Kangaroo Apple      |      |           |     |       |       |       |       | +     |                 |
| *      | <i>Solanum nigrum s.s.</i>                    | Black Nightshade    |      |           |     |       |       |       |       | +     | +               |
| *      | <i>Sonchus oleraceus</i>                      | Common Sow-thistle  |      |           |     | +     |       |       |       | +     | +               |
|        | <i>Stylidium armeria</i>                      | Common Triggerplant |      |           |     | +     |       |       |       |       |                 |
| *      | <i>Taraxacum officinale spp. agg.</i>         | Garden Dandelion    |      |           |     |       |       |       |       |       | +               |
|        | <i>Tetrarrhena juncea</i>                     | Forest Wire-grass   |      |           |     | +     | +     | +     | +     | +     |                 |
|        | <i>Tetralochea ciliata</i>                    | Pink-bells          |      |           |     | +     |       |       |       |       |                 |
|        | <i>Thelymitra ixioides s.l.</i>               | Spotted Sun-orchid  |      |           |     | +     |       |       |       |       |                 |
|        | <i>Thelymitra spp.</i>                        | Sun Orchid          |      |           |     | +     |       |       |       |       |                 |
|        | <i>Thysanotus spp.</i>                        | Fringe Lily         |      |           |     | +     |       |       |       |       |                 |
| *      | <i>Trifolium dubium</i>                       | Suckling Clover     |      |           |     |       |       |       |       |       | +               |
| *      | <i>Vicia sativa</i>                           | Common Vetch        |      |           |     | +     |       |       |       |       |                 |
| *      | <i>Vinca major</i>                            | Blue Periwinkle     |      |           |     |       |       |       |       | +     | +               |
|        | <i>Viola hederacea sensu Willis (1972)</i>    | Ivy-leaf Violet     |      |           |     | +     | +     | +     | +     | +     |                 |
| *      | <i>Viola odorata</i>                          | Common Violet       |      |           |     | +     |       |       |       |       |                 |
|        | <i>Wahlenbergia stricta subsp. stricta</i>    | Tall Bluebell       |      |           |     |       |       | +     |       | +     |                 |
|        | <i>Xanthorrhoea minor subsp. lutea</i>        | Small Grass-tree    |      |           |     | +     |       |       |       |       |                 |
|        | <i>Xanthosia dissecta</i>                     | Cut-leaf Xanthosia  |      |           |     | +     |       |       |       |       |                 |
| *      | <i>Zantedeschia aethiopica</i>                | Arum Lily           |      |           |     |       |       |       |       |       | +               |

Key to Conservation Status and Origin

| Taxon Origin |   |
|--------------|---|
| #            | Native species that may be considered alien in some circumstances |
| *            | Exotic species  |

| Flora and Fauna Guarantee Act 1988 |  |
|------------------------------------|--|
| L                                  | Listed as a Threatened in Victoria                           |
| N                                  | Nominated for listing as Threatened in Victoria              |
| I                                  | Invalid or ineligible to be a Threatened species in Victoria |
| D                                  | Delisted as Threatened in Victoria                           |

| Commonwealth Environment Protection and Biodiversity Conservation Act 1999 |  |
|--|--|
| X  | Listed as Nationally Extinct               |
| CR   | Listed as Nationally Critically Endangered |
| E  | Listed as Nationally Endangered            |
| V  | Listed as Nationally Vulnerable            |
| CD   | Listed as Conservation Dependent           |

| Advisory List of Rare or Threatened Plants in Victoria (VROTS) (DEPI, 2014) |  |
|---|--|
| x   | Listed as Presumed Extinct in Victoria                         |
| rx  | Listed as Regionally Extinct in a geographic range of Victoria |
| ew  | Listed as Extinct in the Wild in Victoria                      |
| cr  | Listed as Critically Endangered in Victoria                    |
| e   | Listed as Endangered in Victoria                               |
| v   | Listed as Vulnerable in Victoria                               |
| nt  | Listed as Near Threatened in Victoria                          |
| r   | Listed as Rare in Victoria                                     |
| dd  | Listed as Data Deficient in Victoria                           |
| k   | Listed as Poorly Known in Victoria                             |

| Bilateral migratory bird agreements |   |
|-------------------------------------|---|
| J                                   | Japan-Australia Migratory Bird Agreement (JAMBA)                                      |
| C                                   | China-Australia Migratory Bird Agreement (CAMBA)                                      |
| RO                                  | Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)                        |
| B                                   | Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) |
| RA                                  | Ramsar Convention on Wetlands   |
| A                                   | Agreement on the Conservation of Albatrosses and Petrels (ACAP)                       |

## Appendix 2: Database Search Results

### EPBC Act Protected Matters Report



**Australian Government**  
**Department of the Environment and Energy**

## EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 28/10/19 11:31:19

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are  
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[Coordinates](#)  
Buffer: 5.0Km



## Summary

### Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

|   |      |
|---|------|
| <a href="#">World Heritage Properties:</a>                | None |
| <a href="#">National Heritage Places:</a>                 | None |
| <a href="#">Wetlands of International Importance:</a>     | 1    |
| <a href="#">Great Barrier Reef Marine Park:</a>           | None |
| <a href="#">Commonwealth Marine Area:</a>                 | None |
| <a href="#">Listed Threatened Ecological Communities:</a> | 1    |
| <a href="#">Listed Threatened Species:</a>                | 26   |
| <a href="#">Listed Migratory Species:</a>                 | 13   |

### Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

|  |      |
|--|------|
| <a href="#">Commonwealth Land:</a>                 | None |
| <a href="#">Commonwealth Heritage Places:</a>      | None |
| <a href="#">Listed Marine Species:</a>             | 19   |
| <a href="#">Whales and Other Cetaceans:</a>        | None |
| <a href="#">Critical Habitats:</a>                 | None |
| <a href="#">Commonwealth Reserves Terrestrial:</a> | None |
| <a href="#">Australian Marine Parks:</a>           | None |

### Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

|  |      |
|--|------|
| <a href="#">State and Territory Reserves:</a>    | 3    |
| <a href="#">Regional Forest Agreements:</a>      | 2    |
| <a href="#">Invasive Species:</a>                | 35   |
| <a href="#">Nationally Important Wetlands:</a>   | None |
| <a href="#">Key Ecological Features (Marine)</a> | None |

## Details

### Matters of National Environmental Significance

#### Wetlands of International Importance (Ramsar) [\[ Resource Information \]](#)

| Name                            | Proximity           |
|---------------------------------|---------------------|
| <a href="#">Gippsland Lakes</a> | 50 - 100km upstream |

#### Listed Threatened Ecological Communities [\[ Resource Information \]](#)

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

| Name   | Status                | Type of Presence                      |
|--|-----------------------|---------------------------------------|
| <a href="#">Gippsland Red Gum (Eucalyptus tereticornis subsp. mediana) Grassy Woodland and Associated Native Grassland</a> | Critically Endangered | Community likely to occur within area |

#### Listed Threatened Species [\[ Resource Information \]](#)

| Name   | Status                | Type of Presence   |
|--|-----------------------|--|
| <b>Birds</b>   |                       |  |
| <a href="#">Anthochaera phrygia</a><br>Regent Honeyeater [82338]                                   | Critically Endangered | Foraging, feeding or related behaviour likely to occur within area |
| <a href="#">Botaurus poiciloptilus</a><br>Australasian Bittern [1001]                              | Endangered            | Species or species habitat likely to occur within area             |
| <a href="#">Calidris ferruginea</a><br>Curlew Sandpiper [856]                                      | Critically Endangered | Species or species habitat may occur within area                   |
| <a href="#">Grantiella picta</a><br>Painted Honeyeater [470]                                       | Vulnerable            | Species or species habitat may occur within area                   |
| <a href="#">Hirundapus caudacutus</a><br>White-throated Needletail [682]                           | Vulnerable            | Species or species habitat known to occur within area              |
| <a href="#">Lathamus discolor</a><br>Swift Parrot [744]  | Critically Endangered | Species or species habitat likely to occur within area             |
| <a href="#">Numenius madagascariensis</a><br>Eastern Curlew, Far Eastern Curlew [847]              | Critically Endangered | Species or species habitat may occur within area                   |
| <a href="#">Rostratula australis</a><br>Australian Painted-snipe, Australian Painted Snipe [77037] | Endangered            | Species or species habitat likely to occur within area             |
| <b>Fish</b>  |                       |  |
| <a href="#">Galaxiella pusilla</a><br>Eastern Dwarf Galaxias, Dwarf Galaxias [56790]               | Vulnerable            | Species or species habitat known to occur within area              |
| <a href="#">Prototroctes maraena</a><br>Australian Grayling [26179]                                | Vulnerable            | Species or species   |

| Name  | Status                | Type of Presence<br>habitat likely to occur within area      |
|---|-----------------------|--|
| <b>Frogs</b>  |                       |  |
| <u><a href="#">Litoria raniformis</a></u><br>Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]  | Vulnerable            | Species or species habitat likely to occur within area       |
| <b>Insects</b>  |                       |  |
| <u><a href="#">Synemon plana</a></u><br>Golden Sun Moth [25234]   | Critically Endangered | Species or species habitat may occur within area             |
| <b>Mammals</b>  |                       |  |
| <u><a href="#">Dasyurus maculatus maculatus (SE mainland population)</a></u><br>Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184] | Endangered            | Species or species habitat may occur within area             |
| <u><a href="#">Isodon obesulus obesulus</a></u><br>Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]                                       | Endangered            | Species or species habitat may occur within area             |
| <u><a href="#">Mastacomys fuscus mordicus</a></u><br>Broad-toothed Rat (mainland), Tooarrana [87617]  | Vulnerable            | Species or species habitat likely to occur within area       |
| <u><a href="#">Petauroides volans</a></u><br>Greater Glider [254]   | Vulnerable            | Species or species habitat likely to occur within area       |
| <u><a href="#">Potorous tridactylus tridactylus</a></u><br>Long-nosed Potoroo (SE Mainland) [66645]   | Vulnerable            | Species or species habitat may occur within area             |
| <u><a href="#">Pteropus poliocephalus</a></u><br>Grey-headed Flying-fox [186]   | Vulnerable            | Foraging, feeding or related behaviour may occur within area |
| <b>Plants</b>   |                       |  |
| <u><a href="#">Amphibromus fluitans</a></u><br>River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]  | Vulnerable            | Species or species habitat likely to occur within area       |
| <u><a href="#">Dianella amoena</a></u><br>Matted Flax-lily [64886]  | Endangered            | Species or species habitat likely to occur within area       |
| <u><a href="#">Eucalyptus strzeleckii</a></u><br>Strzelecki Gum [55400]   | Vulnerable            | Species or species habitat known to occur within area        |
| <u><a href="#">Glycine latrobeana</a></u><br>Clover Glycine, Purple Clover [13910]  | Vulnerable            | Species or species habitat likely to occur within area       |
| <u><a href="#">Prasophyllum frenchii</a></u><br>Maroon Leek-orchid, Slaty Leek-orchid, Stout Leek-orchid, French's Leek-orchid, Swamp Leek-orchid [9704]                      | Endangered            | Species or species habitat likely to occur within area       |
| <u><a href="#">Pterostylis chlorogramma</a></u><br>Green-striped Greenhood [56510]  | Vulnerable            | Species or species habitat likely to occur within area       |
| <u><a href="#">Senecio psilocarpus</a></u><br>Swamp Fireweed, Smooth-fruited Groundsel [64976]  | Vulnerable            | Species or species habitat likely to occur within area       |
| <u><a href="#">Xerochrysum palustre</a></u><br>Swamp Everlasting, Swamp Paper Daisy [76215]   | Vulnerable            | Species or species habitat likely to occur within area       |

**Listed Migratory Species**

**[ Resource Information ]**

\* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

| Name  | Threatened            | Type of Presence                                       |
|---|-----------------------|--|
| <b>Migratory Marine Birds</b>   |                       |  |
| <a href="#">Apus pacificus</a><br>Fork-tailed Swift [678]                             |                       | Species or species habitat likely to occur within area |
| <b>Migratory Terrestrial Species</b>  |                       |  |
| <a href="#">Hirundapus caudacutus</a><br>White-throated Needletail [682]              | Vulnerable            | Species or species habitat known to occur within area  |
| <a href="#">Monarcha melanopsis</a><br>Black-faced Monarch [609]                      |                       | Species or species habitat known to occur within area  |
| <a href="#">Motacilla flava</a><br>Yellow Wagtail [644]                               |                       | Species or species habitat may occur within area       |
| <a href="#">Myiagra cyanoleuca</a><br>Satin Flycatcher [612]                          |                       | Breeding known to occur within area                    |
| <a href="#">Rhipidura rufifrons</a><br>Rufous Fantail [592]                           |                       | Species or species habitat known to occur within area  |
| <b>Migratory Wetlands Species</b>   |                       |  |
| <a href="#">Actitis hypoleucos</a><br>Common Sandpiper [59309]                        |                       | Species or species habitat may occur within area       |
| <a href="#">Calidris acuminata</a><br>Sharp-tailed Sandpiper [874]                    |                       | Species or species habitat may occur within area       |
| <a href="#">Calidris ferruginea</a><br>Curlew Sandpiper [856]                         | Critically Endangered | Species or species habitat may occur within area       |
| <a href="#">Calidris melanotos</a><br>Pectoral Sandpiper [858]                        |                       | Species or species habitat may occur within area       |
| <a href="#">Gallinago hardwickii</a><br>Latham's Snipe, Japanese Snipe [863]          |                       | Species or species habitat may occur within area       |
| <a href="#">Numenius madagascariensis</a><br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area       |
| <a href="#">Pandion haliaetus</a><br>Osprey [952]                                     |                       | Species or species habitat likely to occur within area |

**Other Matters Protected by the EPBC Act**

| Listed Marine Species  |            | [ Resource Information ]                         |
|--|------------|--|
| * Species is listed under a different scientific name on the EPBC Act - Threatened Species list. |            |  |
| Name   | Threatened | Type of Presence                                 |
| <b>Birds</b>   |            |  |
| <a href="#">Actitis hypoleucos</a><br>Common Sandpiper [59309]                                   |            | Species or species habitat may occur within area |
| <a href="#">Apus pacificus</a><br>Fork-tailed Swift [678]  |            | Species or species habitat likely to occur       |

| Name  | Threatened            | Type of Presence within area                           |
|---|-----------------------|--|
| <a href="#">Ardea alba</a><br>Great Egret, White Egret [59541]                        |                       | Species or species habitat known to occur within area  |
| <a href="#">Ardea ibis</a><br>Cattle Egret [59542]                                    |                       | Species or species habitat may occur within area       |
| <a href="#">Calidris acuminata</a><br>Sharp-tailed Sandpiper [874]                    |                       | Species or species habitat may occur within area       |
| <a href="#">Calidris ferruginea</a><br>Curlew Sandpiper [856]                         | Critically Endangered | Species or species habitat may occur within area       |
| <a href="#">Calidris melanotos</a><br>Pectoral Sandpiper [858]                        |                       | Species or species habitat may occur within area       |
| <a href="#">Gallinago hardwickii</a><br>Latham's Snipe, Japanese Snipe [863]          |                       | Species or species habitat may occur within area       |
| <a href="#">Haliaeetus leucogaster</a><br>White-bellied Sea-Eagle [943]               |                       | Species or species habitat likely to occur within area |
| <a href="#">Hirundapus caudacutus</a><br>White-throated Needletail [682]              | Vulnerable            | Species or species habitat known to occur within area  |
| <a href="#">Lathamus discolor</a><br>Swift Parrot [744]                               | Critically Endangered | Species or species habitat likely to occur within area |
| <a href="#">Merops ornatus</a><br>Rainbow Bee-eater [670]                             |                       | Species or species habitat may occur within area       |
| <a href="#">Monarcha melanopsis</a><br>Black-faced Monarch [609]                      |                       | Species or species habitat known to occur within area  |
| <a href="#">Motacilla flava</a><br>Yellow Wagtail [644]                               |                       | Species or species habitat may occur within area       |
| <a href="#">Myiagra cyanoleuca</a><br>Satin Flycatcher [612]                          |                       | Breeding known to occur within area                    |
| <a href="#">Numenius madagascariensis</a><br>Eastern Curlew, Far Eastern Curlew [847] | Critically Endangered | Species or species habitat may occur within area       |
| <a href="#">Pandion haliaetus</a><br>Osprey [952]                                     |                       | Species or species habitat likely to occur within area |
| <a href="#">Rhipidura rufifrons</a><br>Rufous Fantail [592]                           |                       | Species or species habitat known to occur within area  |
| <a href="#">Rostratula benghalensis (sensu lato)</a><br>Painted Snipe [889]           | Endangered*           | Species or species habitat likely to occur within area |

Extra Information

| State and Territory Reserves | [ Resource Information ] |
|------------------------------|--------------------------|
| Name                         | State                    |
| Coalville G218 B.R           | VIC                      |
| Coalville G219 B.R           | VIC                      |
| Westbury N.F.S.R.            | VIC                      |

| Regional Forest Agreements                                  | [ Resource Information ] |
|---|--------------------------|
| Note that all areas with completed RFAs have been included. |                          |
| Name  | State                    |
| <a href="#">Central Highlands RFA</a>                       | Victoria                 |
| <a href="#">Gippsland RFA</a>                               | Victoria                 |

**Invasive Species** [ Resource Information ]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

| Name   | Status | Type of Presence                                       |
|--|--------|--|
| <b>Birds</b>   |        |  |
| Acridotheres tristis<br>Common Myna, Indian Myna [387]         |        | Species or species habitat likely to occur within area |
| Alauda arvensis<br>Skylark [656]                               |        | Species or species habitat likely to occur within area |
| Anas platyrhynchos<br>Mallard [974]                            |        | Species or species habitat likely to occur within area |
| Carduelis carduelis<br>European Goldfinch [403]                |        | Species or species habitat likely to occur within area |
| Carduelis chloris<br>European Greenfinch [404]                 |        | Species or species habitat likely to occur within area |
| Columba livia<br>Rock Pigeon, Rock Dove, Domestic Pigeon [803] |        | Species or species habitat likely to occur within area |
| Passer domesticus<br>House Sparrow [405]                       |        | Species or species habitat likely to occur within area |
| Passer montanus<br>Eurasian Tree Sparrow [406]                 |        | Species or species habitat likely to occur within area |

| Name  | Status | Type of Presence                                       |
|---|--------|--|
| Pycnonotus jocosus<br>Red-whiskered Bulbul [631]  |        | Species or species habitat likely to occur within area |
| Streptopelia chinensis<br>Spotted Turtle-Dove [780]   |        | Species or species habitat likely to occur within area |
| Sturnus vulgaris<br>Common Starling [389]   |        | Species or species habitat likely to occur within area |
| Turdus merula<br>Common Blackbird, Eurasian Blackbird [596]   |        | Species or species habitat likely to occur within area |
| Turdus philomelos<br>Song Thrush [597]  |        | Species or species habitat likely to occur within area |
| <b>Mammals</b>  |        |  |
| Bos taurus<br>Domestic Cattle [16]  |        | Species or species habitat likely to occur within area |
| Canis lupus familiaris<br>Domestic Dog [82654]  |        | Species or species habitat likely to occur within area |
| Felis catus<br>Cat, House Cat, Domestic Cat [19]  |        | Species or species habitat likely to occur within area |
| Lepus capensis<br>Brown Hare [127]  |        | Species or species habitat likely to occur within area |
| Mus musculus<br>House Mouse [120]   |        | Species or species habitat likely to occur within area |
| Oryctolagus cuniculus<br>Rabbit, European Rabbit [128]  |        | Species or species habitat likely to occur within area |
| Rattus rattus<br>Black Rat, Ship Rat [84]   |        | Species or species habitat likely to occur within area |
| Sus scrofa<br>Pig [6]   |        | Species or species habitat likely to occur within area |
| Vulpes vulpes<br>Red Fox, Fox [18]  |        | Species or species habitat likely to occur within area |
| <b>Plants</b>   |        |  |
| Asparagus asparagoides<br>Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473] |        | Species or species habitat likely to occur within area |
| Carrichtera annua<br>Ward's Weed [9511]   |        | Species or species habitat may occur within area       |
| Chrysanthemoides monilifera<br>Bitou Bush, Boneseed [18983]   |        | Species or species habitat may occur within area       |
| Chrysanthemoides monilifera subsp. monilifera<br>Boneseed [16905]   |        | Species or species habitat likely to occur             |

| Name   | Status | Type of Presence within area                           |
|--|--------|--|
| <i>Cytisus scoparius</i><br>Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]   |        | Species or species habitat likely to occur within area |
| <i>Genista linifolia</i><br>Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]  |        | Species or species habitat likely to occur within area |
| <i>Genista monspessulana</i><br>Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]  |        | Species or species habitat likely to occur within area |
| <i>Genista</i> sp. X <i>Genista monspessulana</i><br>Broom [67538]   |        | Species or species habitat may occur within area       |
| <i>Lycium ferocissimum</i><br>African Boxthorn, Boxthorn [19235]   |        | Species or species habitat likely to occur within area |
| <i>Olea europaea</i><br>Olive, Common Olive [9160]   |        | Species or species habitat may occur within area       |
| <i>Rubus fruticosus</i> aggregate<br>Blackberry, European Blackberry [68406]   |        | Species or species habitat likely to occur within area |
| <i>Salix</i> spp, except <i>S.babylonica</i> , <i>S.x calodendron</i> & <i>S.x reichardtii</i><br>Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497] |        | Species or species habitat likely to occur within area |
| <i>Ulex europaeus</i><br>Gorse, Furze [7693]   |        | Species or species habitat likely to occur within area |

## Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

## Coordinates

-38.200882 146.260031,-38.201498 146.257188,-38.199794 146.257821,-38.199685 146.258078,-38.199651 146.25826,-38.199702 146.25855,-38.199837 146.25884,-38.199955 146.259022,-38.200098 146.25899,-38.20025 146.259237,-38.200385 146.259151,-38.200874 146.259999,-38.200882 146.260031

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- [Office of Environment and Heritage, New South Wales](#)
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- [Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [Department of Environment, Water and Natural Resources, South Australia](#)
- [Department of Land and Resource Management, Northern Territory](#)
- [Department of Environmental and Heritage Protection, Queensland](#)
- [Department of Parks and Wildlife, Western Australia](#)
- [Environment and Planning Directorate, ACT](#)
- [Birdlife Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
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- Natural history museums of Australia
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- [Online Zoological Collections of Australian Museums](#)
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
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- [Western Australian Herbarium](#)
- [Australian National Herbarium, Canberra](#)
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- [Ocean Biogeographic Information System](#)
- [Australian Government, Department of Defence Forestry Corporation, NSW](#)
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- [Australian Tropical Herbarium, Cairns](#)
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- [Australian Government National Environmental Science Program](#)
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- [Reef Life Survey Australia](#)
- [American Museum of Natural History](#)
- [Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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## VBA Results - Fauna

| Scientific Name                       | Common Name               | Victorian Advisory List | Conservation Status | Count of Sightings | Last Record |
|---------------------------------------|---------------------------|-------------------------|---------------------|--------------------|-------------|
| <i>Accipiter novaehollandiae</i>      | Grey Goshawk              | Vulnerable              | vu L                | 2                  | 14/11/2000  |
| <i>Acrodipsas brisbanensis</i>        | Large Ant Blue Butterfly  | Endangered              | en L                | 1                  | 01/01/1760  |
| <i>Ardea alba modesta</i>             | Eastern Great Egret       | Vulnerable              | vu L                | 1                  | 26/03/1999  |
| <i>Aythya australis</i>               | Hardhead                  | Vulnerable              | vu                  | 20                 | 1/01/2006   |
| <i>Biziura lobata</i>                 | Musk Duck                 | Vulnerable              | vu                  | 16                 | 18/04/2001  |
| <i>Ceyx azureus</i>                   | Azure Kingfisher          | Near threatened         | nt                  | 1                  | 27/06/2015  |
| <i>Dasyurus maculatus maculatus</i>   | Spot-tailed Quoll         | Endangered              | EN en L             | 1                  | 1/08/1962   |
| <i>Dromaius novaehollandiae</i>       | Emu                       | Near threatened         | nt                  | 1                  | 20/09/1999  |
| <i>Egretta garzetta</i>               | Little Egret              | Endangered              | en L                | 1                  | 29/11/1999  |
| <i>Falco subniger</i>                 | Black Falcon              | Vulnerable              | vu L                | 3                  | 16/10/2004  |
| <i>Galaxiella pusilla</i>             | Dwarf Galaxis             | Endangered              | VU en L             | 5                  | 26/03/2012  |
| <i>Hirundapus caudacutus</i>          | White-throated Needletail | Vulnerable              | VU vu L             | 1                  | 1/01/1977   |
| <i>Lewinia pectoralis</i>             | Lewin's Rail              | Vulnerable              | vu L                | 1                  | 8/04/2019   |
| <i>Litoria raniformis</i>             | Growling Grass Frog       | Endangered              | VU en L             | 1                  | 01/01/1788  |
| <i>Miniopterus schreibersii</i> GROUP | Common Bent-wing Bat      |                         | L                   | 2                  | 18/12/1971  |
| <i>Ninox strenua</i>                  | Powerful Owl              | Vulnerable              | vu L                | 1                  | 24/07/2013  |
| <i>Oxyura australis</i>               | Blue-billed Duck          | Endangered              | en L                | 15                 | 18/04/2001  |
| <i>Phalacrocorax varius</i>           | Pied Cormorant            | Near threatened         | nt                  | 1                  | 23/04/1999  |
| <i>Phascogale tapoatafa</i>           | Brush-tailed Phascogale   | Vulnerable              | vu L                | 1                  | 17/01/1930  |
| <i>Platalea regia</i>                 | Royal Spoonbill           | Near threatened         | nt                  | 6                  | 13/02/2001  |
| <i>Pteropus poliocephalus</i>         | Grey-headed Flying-fox    | Vulnerable              | VU vu L             | 1                  | 8/04/2019   |
| <i>Spatula rhynchotis</i>             | Australasian Shoveler     | Vulnerable              | vu                  | 15                 | 6/04/2000   |
| <i>Tandanus tandanus</i>              | Freshwater Catfish        | Endangered              | en L                | 1                  | 1/03/1993   |

VBA Results - Flora

| Scientific Name                    | Common Name            | Victorian Advisory List                          | Conservation Status | Count of Sightings | Last Record |
|------------------------------------|------------------------|--|---------------------|--------------------|-------------|
| <i>Caladenia australis</i>         | Southern Spider-orchid | Poorly known                                     | k                   | 1                  | 1/10/1947   |
| <i>Diuris X palachila</i>          | Broad-lip Diuris       | Rare   | r                   | 1                  | 7/09/1947   |
| <i>Grevillea rosmarinifolia</i>    | Rosemary Grevillea     | All infraspecific taxa included in Advisory List | P #                 | 1                  | 2/09/2013   |
| <i>Caladenia vulgaris</i>          | Slender Pink-fingers   | Rare   | r                   | 1                  | 7/12/2004   |
| <i>Eucalyptus strzeleckii</i>      | Strzelecki Gum         | Vulnerable                                       | VU vu L             | 4                  | 1/07/2011   |
| <i>Eucalyptus fulgens</i>          | Green Scentbark        | Rare   | r                   | 1                  | 7/12/2004   |
| <i>Eucalyptus ignorabilis</i> s.s. | Grey Scentbark         | Rare   | r                   | 1                  | 24/05/2012  |

## Appendix 3: Summary of the assessment of likelihood of presence for rare or threatened flora species identified within 5km database searches

| Taxon Name  | Taxon Common Name         | Conservation Status   |                         |                 | Count of Sightings | Date of Last Record | Preferred Habitat Notes   | Database Source | Likelihood of occurrence | Comments  |
|---|---------------------------|-----------------------|-------------------------|-----------------|--------------------|---------------------|---|-----------------|--------------------------|---|
|   |                           | EPBC Listing          | Victorian Advisory List | FFG Act Listing |                    |                     |   |                 |                          |   |
| Listed Threatened Ecological Communities  |                           |                       |                         |                 |                    |                     |   |                 |                          |   |
| <i>Gippsland Red Gum (Eucalyptus tereticornis subsp. Mediana) Grassy Woodland and Associated Native Grassland</i> |                           | Critically Endangered |                         |                 |                    |                     |   | DAWE            | Unlikely                 | Unlikely to be present on site  |
| Flora   |                           |                       |                         |                 |                    |                     |   |                 |                          |   |
| <i>Amphibromus fluitans</i>   | River Swamp Wallaby-grass | Vulnerable            |                         |                 |                    |                     | Natural and man-made water-bodies, including swamps, lagoons, billabongs and dams (DSEWPC 2016a).   | DAWE            | Unlikely                 | No records found in the local area in the past 25 years. No suitable habitat present. Unlikely to be present on site. |
| <i>Caladenia australis</i>  | Southern Spider-orchid    |                       | Poorly Known            |                 | 1                  | 1/10/1947           | Confined to the southern foothills of the Great Dividing Range between the Latrobe Valley and Kilmore, with an isolated record from Anglesea. Relatively common in moist, often grassy forest or woodland, often in shaded habitats (RBG 2016n) | VBA             | Unlikely                 | No records found in the local area in the past 25 years. Unlikely to be present on site.                              |
| <i>Caladenia vulgaris</i>   | Slender Pink-fingers      |                       | Rare                    |                 | 1                  | 7/12/2004           | Scattered across southern Victoria where sometimes locally common in heathland and coastal scrub on moisture-retentive sandy soil (RBG 2017a)   | VBA             | Unlikely                 | No suitable habitat present. Unlikely to be present on site.  |
| <i>Dianella amoena</i>  | Matted Flax-lily          | Endangered            | Endangered              | Listed          |                    |                     | Grassland and grassy woodland habitats, on well drained to seasonally wet fertile sandy loams to heavy cracking clay soils derived from Silurian or Tertiary sediments, or from volcanic geology (DEE 2019k)                                    | DAWE            | Unlikely                 | No records found in the local area in the past 25 years. No suitable habitat present. Unlikely to be present on site. |
| <i>Diuris X palachila</i>   | Broad-lip Diuris          |                       | Rare                    |                 | 1                  | 7/09/1947           | Grassy Dry Forest, Valley Grassy Forest, Escarpment Shrubland (NLC 2016a)   | VBA             | Unlikely                 | No records found in the local area in the past 25 years. No suitable habitat present. Unlikely to be present on site. |

| Taxon Name                      | Taxon Common Name  | Conservation Status |  |                 | Count of Sightings | Date of Last Record | Preferred Habitat Notes  | Database Source | Likelihood of occurrence | Comments   |
|---------------------------------|--------------------|---------------------|--|-----------------|--------------------|---------------------|--|-----------------|--------------------------|--|
|                                 |                    | EPBC Listing        | Victorian Advisory List                          | FFG Act Listing |                    |                     |  |                 |                          |  |
| <i>Eucalyptus fulgens</i>       | Green Scentbark    |                     | Rare   |                 | 1                  | 7/12/2004           | Occurs east from Healesville and Woori Yallock to the Latrobe Valley near Driffield. (RBG 2016w)   | VBA             | Low                      | Marginal habitat present on site   |
| <i>Eucalyptus ignorabilis</i>   | Grey Scentbark     |                     | Rare   |                 | 1                  | 24/05/2012          | Occurring sporadically, east from Erica, mainly on sandy, well-watered soils. (RBG 2017c)  | VBA             | Unlikely                 | No suitable habitat present. Not recorded on site during assessment.   |
| <i>Eucalyptus kitsoniana</i>    | Bog Gum            |                     | Rare   |                 |                    | 1/09/2003           | Victorian endemic. Occurring on coastal lowlands from Yarram -west to Cape Otway and Mt. Richmond near Portland. It also occurs on top of Mt. Oberon (Wilsons Promontory) and on nearby Snake Island (RBG 2019h)   | VBA             | Unlikely                 | Records found within 600m of the site. No suitable habitat on site. Unlikely to be present on site.                                  |
| <i>Eucalyptus strzeleckii</i>   | Strzelecki Gum     | Vulnerable          | Vulnerable                                       | Listed          | 4                  | 1/07/2011           | <i>Eucalyptus strzeleckii</i> is a large forest tree component of Herb-rich Foothill Forest and Gippsland Plains Grassy Woodland Ecological Vegetation Classes (John Davies, DPI, pers. comm) of the Strzelecki Ranges. It also occurs on flatter terrain at the edges of the Strzelecki Ranges, where it is largely restricted to the banks of watercourses or on river flats where soils are seasonally waterlogged (DSE 2010b). | VBA / DAWE      | Present                  | Species has been confirmed as present on site during field work. Multiple records found 4-5km north and west of the study site.      |
| <i>Glycine latrobeana</i>       | Clover Glycine     | Vulnerable          | Vulnerable                                       | Listed          |                    |                     | Grassland and grassy woodland habitats, less often in dry forests, and only rarely in heathland. Occur on a range of soil types including alluvial soils, and those derived from sandstones, mudstones, granite and basalt. Soils are usually clay but may also have high loam content (DSE 2010c).  | DAWE            | Unlikely                 | No records found in the local area in the past 25 years. No suitable habitat present. Unlikely to be present on site.                |
| <i>Grevillea rosmarinifolia</i> | Rosemary Grevillea |                     | All Intraspecific taxa included in Advisory List | Protected       | 1                  | 2/09/2013           | Woodland, Mallee and shrubland from the central west of New South Wales to central and western Victoria. (ANPSA 2016a)   | VBA             | Unlikely                 | Records found in Ed Hunter Reserve 1km north of the study site. No suitable habitat present. Not recorded on site during assessment. |
| <i>Prasophyllum frenchii</i>    | Maroon Leek-orchid | Endangered          | Endangered                                       | Listed          |                    |                     | Grassland and grassy woodland habitats, on sandy to black clay loams that are generally damp but well drained, although some sites are seasonally waterlogged (DSE 2010e).   | DAWE            | Unlikely                 | No records found in the local area in the past 25 years. No suitable habitat present. Unlikely to be present on site.                |

| Taxon Name                      | Taxon Common Name       | Conservation Status |                         |                 | Count of Sightings | Date of Last Record | Preferred Habitat Notes   | Database Source | Likelihood of occurrence | Comments  |
|---------------------------------|-------------------------|---------------------|-------------------------|-----------------|--------------------|---------------------|---|-----------------|--------------------------|---|
|                                 |                         | EPBC Listing        | Victorian Advisory List | FFG Act Listing |                    |                     |   |                 |                          |   |
| <i>Pterostylis chlorogramma</i> | Green-striped Greenhood | Vulnerable          |                         |                 |                    |                     | Grows in moist areas of heathy and shrubby forest on well-drained soils (RBG 2019ab)  | DAWE            | Unlikely                 | No records found in the local area in the past 25 years. No suitable habitat present. Unlikely to be present on site. |
| <i>Senecio psilocarpus</i>      | Swamp Fireweed          | Vulnerable          |                         |                 |                    |                     | Occurs on high quality herb-rich wetlands on plains. During winter such sites can be inundated with up to 60cm or more of water but are almost dry in summer. A tree canopy is absent from most sites or rarely, River Red Gum is the overstorey species in a woodland formation. (DEE 2019f) | DAWE            | Unlikely                 | No records found in the local area in the past 25 years. No suitable habitat present. Unlikely to be present on site. |
| <i>Xerochrysum palustre</i>     | Swamp Everlasting       | Vulnerable          | Vulnerable              | Listed          |                    |                     | Swamp Everlasting grows in wetlands including sedge-swamps and shallow freshwater marshes, often on heavy black clay soils. (DEE 2019j)   | DAWE            | Unlikely                 | No records found in the local area in the past 25 years. No suitable habitat present. Unlikely to be present on site. |

References

| SPECIES                       | TAG          | Title  | Detail  |
|-------------------------------|--------------|--|---|
| <i>Amphibromus fluitans</i>   | DSEWPC 2016a | Amphibromus fluitans- River Swamp Wallaby-grass                      | <a href="http://www.environment.gov.au/biodiversity/threatened/species/pubs/19215-conservation-advice.pdf">http://www.environment.gov.au/biodiversity/threatened/species/pubs/19215-conservation-advice.pdf</a>   |
| <i>Caladenia australis</i>    | DEE 2016b    | Southern Spider-orchid   | <a href="https://www.environment.gov.au/resource/national-recovery-plan-twelve-threatened-spider-orchid-caladenia-r-br-taxa-victoria-and">https://www.environment.gov.au/resource/national-recovery-plan-twelve-threatened-spider-orchid-caladenia-r-br-taxa-victoria-and</a>       |
| <i>Caladenia vulgaris</i>     | RBG 2017a    | Slender Pink-fingers   | <a href="https://vicflora.rbg.vic.gov.au/flora/taxon/971eb2fe-3234-48d8-8208-de38474a9374">https://vicflora.rbg.vic.gov.au/flora/taxon/971eb2fe-3234-48d8-8208-de38474a9374</a>   |
| <i>Corymbia maculata</i>      | FB 2016a     | Spotted Gum  | <a href="http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Corymbia_maculata.htm">http://www.florabank.org.au/lucid/key/Species%20Navigator/Media/Html/Corymbia_maculata.htm</a>   |
| <i>Dianella amoena</i>        | DEE 2019k    | National Recovery Plan for the Matted Flax-lily Dianella amoena      | <a href="https://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-matted-flax-lily-dianella%20amoena">https://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-matted-flax-lily-dianella%20amoena</a>       |
| <i>Diuris X palachila</i>     | NLC 2016a    | Broad-lip Diuris   | <a href="http://www.nillumbiklandcare.org.au/orchid/broad-tip-diuris">http://www.nillumbiklandcare.org.au/orchid/broad-tip-diuris</a>   |
| <i>Eucalyptus fulgens</i>     | RBG 2016w    | Green Scentbark  | <a href="https://vicflora.rbg.vic.gov.au/flora/taxon/813261d1-5b47-4ed1-bfd0-4974356fd4af">https://vicflora.rbg.vic.gov.au/flora/taxon/813261d1-5b47-4ed1-bfd0-4974356fd4af</a>   |
| <i>Eucalyptus ignorabilis</i> | RBG 2017c    | Grey Scentbark   | <a href="https://vicflora.rbg.vic.gov.au/flora/taxon/92c11315-ab8b-485b-a42f-31517c6bbe93">https://vicflora.rbg.vic.gov.au/flora/taxon/92c11315-ab8b-485b-a42f-31517c6bbe93</a>   |
| <i>Eucalyptus kitsoniana</i>  | RBG 2019h    | Bog Gum  | <a href="https://vicflora.rbg.vic.gov.au/flora/taxon/e9aa87a9-41f4-4287-8404-0befbe488a7">https://vicflora.rbg.vic.gov.au/flora/taxon/e9aa87a9-41f4-4287-8404-0befbe488a7</a>   |
| <i>Eucalyptus strzeleckii</i> | DEE 2019l    | National Recovery Plan for the Strzelecki Gum Eucalyptus strzeleckii | <a href="https://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-strzelecki-gum-eucalyptus-strzeleckii">https://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-strzelecki-gum-eucalyptus-strzeleckii</a> |

| <i>SPECIES</i>                  | TAG         | Title  | Detail  |
|---------------------------------|-------------|--|---|
| <i>Glycine latrobeana</i>       | DEE 2019m   | National Recovery Plan for the Clover Glycine<br>Glycine latrobeana          | <a href="https://www.environment.gov.au/resource/national-recovery-plan-clover-glycine-glycine-latrobeana">https://www.environment.gov.au/resource/national-recovery-plan-clover-glycine-glycine-latrobeana</a>   |
| <i>Grevillea rosmarinifolia</i> | ANPSA 2016a | Rosemary Grevillea   | <a href="http://anpsa.org.au/g-ros.html">http://anpsa.org.au/g-ros.html</a>   |
| <i>Prasophyllum frenchii</i>    | DEE 2019n   | National Recovery Plan for the Maroon Leek-orchid<br>(Prasophyllum frenchii) | <a href="https://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-maroon-leek-orchid-prasophyllum-frenchii">https://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-maroon-leek-orchid-prasophyllum-frenchii</a> |
| <i>Pterostylis chlorogramma</i> | RBG 2019ab  | Green-striped Greenhood  | <a href="https://vicflora.rbg.vic.gov.au/flora/taxon/c78519e2-4099-4eb7-8007-35dde25e13e6">https://vicflora.rbg.vic.gov.au/flora/taxon/c78519e2-4099-4eb7-8007-35dde25e13e6</a>   |
| <i>Senecio psilocarpus</i>      | DEE 2019f   | Swamp Fireweed   | <a href="http://www.environment.gov.au/biodiversity/threatened/species/pubs/64976-conservation-advice.pdf">http://www.environment.gov.au/biodiversity/threatened/species/pubs/64976-conservation-advice.pdf</a>   |
| <i>Xerochrysum palustre</i>     | DEE 2019j   | Swamp Everlasting  | <a href="https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=76215">https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=76215</a>   |

Key to Conservation

| Origin |                                     |
|--------|-------------------------------------|
| *      | Exotic species                      |
| #      | Native but some stands may be alien |

| Flora and Fauna Guarantee Act 1988 |   |
|------------------------------------|---|
| L                                  | Listed as a Threatened in Victoria              |
| P                                  | Protected Flora in Victoria                     |
| N                                  | Nominated for listing as Threatened in Victoria |
| I                                  | Invalid or Ineligible for listing.              |
| D                                  | Delisted as Threatened in Victoria              |

| Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999 |  |
|---|--|
| VU  | Listed as Nationally Vulnerable            |
| EN  | Listed as Nationally Endangered            |
| EX  | Listed as Nationally Extinct               |
| CR  | Listed as Nationally Critically Endangered |

| Advisory List of Threatened Plants in Victoria (DEPI 2014) |                                    |
|--|------------------------------------|
| x  | Presumed Extinct in Victoria       |
| e  | Listed as Endangered in Victoria   |
| v  | Listed as Vulnerable in Victoria   |
| r  | Listed as Rare in Victoria         |
| k  | Listed as Poorly Known in Victoria |

## Appendix 4: Fauna Survey Results

| ORIGIN | Zoological Name                     | Common Name                  | EPBC | VIC. Adv. | FFG | TREATY |
|--------|-------------------------------------|------------------------------|------|-----------|-----|--------|
|        | <i>Anthochaera carunculata</i>      | Red Wattlebird               |      |           |     |        |
|        | <i>Calyptorhynchus funereus</i>     | Yellow-tailed Black-Cockatoo |      |           |     |        |
|        | <i>Chenonetta jubata</i>            | Australian Wood Duck         |      |           |     |        |
|        | <i>Corvus coronoides</i>            | Australian Raven             |      |           |     |        |
|        | <i>Eolophus roseicapilla</i>        | Galah                        |      |           |     |        |
|        | <i>Motacilla alba</i>               | White Wagtail                |      |           |     | CAMBA  |
|        | <i>Pachycephala rufiventris</i>     | Rufous Whistler              |      |           |     |        |
|        | <i>Phylidonyris novaehollandiae</i> | New Holland Honeyeater       |      |           |     |        |
|        | <i>Platycercus elegans</i>          | Crimson Rosella              |      |           |     |        |
|        | <i>Psophodes olivaceus</i>          | Eastern Whipbird             |      |           |     |        |
|        | <i>Rhipidura albiscarpa</i>         | Grey Fantail                 |      |           |     |        |
|        | <i>Sericornis frontalis</i>         | White-browed Scrubwren       |      |           |     |        |
| *      | <i>Turdus merula</i>                | Common Blackbird             |      |           |     |        |
|        | <i>Vombatus ursinus</i>             | Common Wombat                |      |           |     |        |

### Key to Conservation Status and Origin

| Origin  |  |
|---|--|
| *   | Introduced   |
| *?  | Introduced but there is doubt that the taxon has ever been established in Victoria |
| ?   | There is doubt that the taxon has ever been established in Victoria                |
|   |  |
| Flora and Fauna Guarantee Act 1988  |  |
| IR  | Rejected, Invalid or Ineligible for listing as Threatened in Victoria              |
| L   | Listed as a Threatened in Victoria   |
| N   | Nominated for listing as Threatened in Victoria                                    |
|   |  |
| Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999 |  |
| C   | Listed as Nationally Critically Endangered   |
| E   | Listed as Nationally Endangered  |
| V   | Listed as Nationally Vulnerable  |
| X   | Listed as Nationally Extinct   |
|   |  |
| Advisory List of Threatened Vertebrate Fauna in Victoria (DSE, 2007)              |  |
| C   | Critically Endangered in Victoria  |
| DD  | Data Deficient - insufficient data exists to determine whether the taxon is secure |
| E   | Endangered in Victoria   |
| NT  | Near Threatened in Victoria  |

|    |                                 |
|----|---------------------------------|
| R  | Rare in Victoria                |
| V  | Vulnerable in Victoria          |
| XP | Presumed Extinct in Victoria    |
| XR | Regionally Extinct              |
| XW | Extinct in the Wild in Victoria |

Appendix 5: Summary of the assessment of likelihood of presence for rare or threatened fauna species identified within 5km database searches

| Scientific Name                  | Common Name         | Conservation Status   |                         |                 | Treaty                            | Count of Sightings | Date of Last Record | Preferred Habitat Notes   | Database Source | Likelihood of occurrence | Comments  |
|----------------------------------|---------------------|-----------------------|-------------------------|-----------------|-----------------------------------|--------------------|---------------------|---|-----------------|--------------------------|---|
|                                  |                     | EPBC Listing          | Victorian Advisory List | FFG Act Listing |                                   |                    |                     |   |                 |                          |   |
| <i>Birds</i>                     |                     |                       |                         |                 |                                   |                    |                     |   |                 |                          |   |
| <i>Accipiter novaehollandiae</i> | Grey Goshawk        |                       | Vulnerable              | Listed          |                                   | 2                  | 14/11/2000          | Found in most forest types, especially tall closed forests (BIB 2016a).   | VBA             | Unlikely                 | No suitable habitat on site. Unlikely but may be an occasional visitor on site. |
| <i>Actitis hypoleucos</i>        | Common Sandpiper    | Threatened            | Vulnerable              |                 | CAMBA<br>JAMBA<br>ROKAMBA<br>BONN |                    |                     | Found in coastal or inland wetlands, both saline or fresh. It is found mainly on muddy edges or rocky shores (BiB 2016b).   | DAWE            | Unlikely                 | No suitable habitat on site. Unlikely to be present on site.                    |
| <i>Anthochaera phrygia</i>       | Regent Honeyeater   | Critically Endangered | Critically Endangered   | Listed          |                                   |                    |                     | Occur mainly in dry box ironbark open-forest and woodland areas. feeding on the nectar from eucalypts such as the Mugga Ironbark, White Box and Yellow Box, and Blakeley's Red Gum on which they are reliant (DSEWPC 2016b).  | DAWE            | Unlikely                 | No suitable habitat on site. Unlikely to be present on site.                    |
| <i>Apus pacificus</i>            | Fork-tailed Swift   | Threatened            |                         |                 |                                   |                    |                     | They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes XX (DEE 2016b) | DAWE            | Unlikely                 | Highly mobile species – unlikely to be more than a very rare visitor.           |
| <i>Ardea modesta</i>             | Eastern Great Egret |                       | Vulnerable              | Listed          | CAMBA<br>JAMBA                    | 1                  | 26/03/1999          | Prefer shallow water, particularly when flowing, but may be seen on any watered area, including damp grasslands (DSE 2010a).  | VBA             | Unlikely                 | No suitable habitat on site. Unlikely to be present on site.                    |

| Scientific Name               | Common Name            | Conservation Status   |                         |                 | Treaty                   | Count of Sightings | Date of Last Record | Preferred Habitat Notes   | Database Source | Likelihood of occurrence | Comments   |
|-------------------------------|------------------------|-----------------------|-------------------------|-----------------|--------------------------|--------------------|---------------------|---|-----------------|--------------------------|--|
|                               |                        | EPBC Listing          | Victorian Advisory List | FFG Act Listing |                          |                    |                     |   |                 |                          |  |
| <i>Aythya australis</i>       | Hardhead               |                       | Vulnerable              |                 |                          | 20                 | 1/01/2006           | Found in freshwater swamps and wetlands and occasionally in sheltered estuaries. They prefer deep, fresh open water and densely vegetated wetlands for breeding (BiB 2016f).  | VBA             | Unlikely                 | No suitable habitat on site. Unlikely to be present on site. |
| <i>Biziura lobata</i>         | Musk Duck              |                       | Vulnerable              |                 |                          | 16                 | 18/04/2001          | Found in deep freshwater lagoons, with dense reed beds (Birdlife 2016b).  | VBA             | Unlikely                 | No suitable habitat on site. Unlikely to be present on site. |
| <i>Botaurus poiciloptilus</i> | Australasian Bittern   | Endangered            | Endangered              | Listed          |                          |                    |                     | Frequents reedbeds, and other vegetation in water such as cumbungi, lignum and sedges. The nest is a shallow structure of dry or green reeds, within a clump of reeds in water or a swamp (SA-MDB 2016).  | DAWE            | Unlikely                 | No suitable habitat on site. Unlikely to be present on site. |
| <i>Calidris acuminata</i>     | Sharp-tailed Sandpiper | Threatened            |                         |                 |                          |                    |                     | Prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, salt pans and hypersaline salt lakes inland. They also occur in saltworks and sewage farms (DEE 2019g) | DAWE            | Unlikely                 | No suitable habitat on site. Unlikely to be present on site. |
| <i>Calidris ferrunginea</i>   | Curlew Sandpiper       | Critically Endangered | Endangered              |                 |                          |                    |                     | Found on intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams and floodwaters (BL 2016a)   | DAWE            | Unlikely                 | No suitable habitat on site. Unlikely to be present on site. |
| <i>Calidris melanotos</i>     | Pectoral Sandpiper     | Threatened            |                         |                 | BONN<br>JAMBA<br>ROKAMBA |                    |                     | Found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire (DEE 2019h)  | DAWE            | Unlikely                 | No suitable habitat on site. Unlikely to be present on site. |

| Scientific Name                 | Common Name      | Conservation Status |                         |                 | Treaty                            | Count of Sightings | Date of Last Record | Preferred Habitat Notes   | Database Source | Likelihood of occurrence | Comments  |
|---------------------------------|------------------|---------------------|-------------------------|-----------------|-----------------------------------|--------------------|---------------------|---|-----------------|--------------------------|---|
|                                 |                  | EPBC Listing        | Victorian Advisory List | FFG Act Listing |                                   |                    |                     |   |                 |                          |   |
| <i>Ceyx azureus</i>             | Azure Kingfisher |                     | Near Threatened         |                 |                                   | 1                  | 27/06/2015          | The Azure Kingfisher is never far from water, preferring freshwater rivers and creeks as well as billabongs, lakes, swamps and dams, usually in shady overhanging vegetation. It occurs in parks on rivers, as well as duck ponds in urban areas. (Birdlife 2019b)  | VBA             | Unlikely                 | 1 record found approximately 1km north of the study site in Ed Hunter Reserve. Marginal suitable habitat present. Possible very occasional visitor to site.         |
| <i>Dromaius novaehollandiae</i> | Emu              |                     | Near Threatened         |                 |                                   | 1                  | 20/09/1999          | Habitat varies widely; arid inland plains, tropical woodlands, heathland, coastal dunes (Day and Simpson 2010).   | VBA             | Unlikely                 | Marginal suitable habitat on site. Unlikely to be present on site.  |
| <i>Egretta garzetta</i>         | Little Egret     |                     | Endangered              | Listed          |                                   | 1                  | 29/11/1999          | Frequents tidal mudflats, saltwater and freshwater wetlands, and mangroves (Day and Simpson 2010).  | VBA             | Unlikely                 | No suitable habitat on site. Unlikely to be present on site.  |
| <i>Falco subniger</i>           | Black Falcon     |                     | Vulnerable              |                 |                                   | 3                  | 16/10/2004          | Found along tree-lined watercourses and in isolated woodlands, mainly in arid and semi-arid areas. It roosts in trees at night and often on power poles by day (BiB 2016i).   | VBA             | Unlikely                 | Multiple records found 2-3kms north, east and west of the study site. Marginal habitat present. Species may occur rarely or as an opportunistic visitor to the area |
| <i>Gallinago hardwickii</i>     | Latham's Snipe   | Threatened          | Near Threatened         |                 | CAMBA<br>JAMBA<br>ROKAMBA<br>BONN |                    |                     | Found in small groups or singly in freshwater wetlands on or near the coast, generally among dense cover. They are found in any vegetation around wetlands, in sedges, grasses, lignum, reeds and rushes and also in saltmarsh and creek edges on migration. They also use crops and pasture (BiB 2016j). | DAWE            | Unlikely                 | No suitable habitat on site. Unlikely to be present on site.  |

| Scientific Name                      | Common Name               | Conservation Status   |                         |                 | Treaty                    | Count of Sightings | Date of Last Record | Preferred Habitat Notes   | Database Source | Likelihood of occurrence | Comments  |
|--------------------------------------|---------------------------|-----------------------|-------------------------|-----------------|---------------------------|--------------------|---------------------|---|-----------------|--------------------------|---|
|                                      |                           | EPBC Listing          | Victorian Advisory List | FFG Act Listing |                           |                    |                     |   |                 |                          |   |
| <i>Grantiella picta</i>              | Painted Honeyeater        | Vulnerable            | Vulnerable              | Listed          |                           |                    |                     | Found in dry open forests and woodlands and is strongly associated with mistletoe. It may also be found along rivers, on plains with scattered trees and on farmland with remnant vegetation. It has been seen in urban parks and gardens where large eucalypts are available (BiB 2016m).  | DAWE            | Unlikely                 | No records found in the past 25 years in the local area. Marginal suitable habitat on site. Unlikely to be present on site. |
| <i>Hirundapus caudacutus</i>         | White-throated Needletail | Vulnerable            | Vulnerable              | Listed          | CAMBA<br>JAMBA<br>ROKAMBA | 1                  | 1/01/1977           | In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable (Cramp 1985). Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland (Higgins 1999). (DSEWPCj). | VBA /<br>DAWE   | Unlikely                 | Highly mobile species – unlikely to be more than a very rare visitor.   |
| <i>Lathamus discolor</i>             | Swift Parrot              | Critically Endangered | Endangered              | Listed          |                           |                    |                     | Found in dry sclerophyll forests and woodlands, suburban parks and gardens and flowering fruit trees (BiB 2016t).   | DAWE            | Unlikely                 | No records found in the past 25 years in the local area. Unlikely to be present on site.                                    |
| <i>Lewinia pectoralis pectoralis</i> | Lewin's Rail              |                       | Vulnerable              | Listed          |                           | 1                  | 8/04/2019           | <b>Lewin's Rails inhabit permanent to ephemeral, fresh to saline wetlands that have dense emergent or fringing vegetation. They also use artificial habitats with similar structural features (SA-DEH 2016).</b>  | VBA             | Unlikely                 | No suitable habitat on site. Unlikely to be present on site.  |

| Scientific Name                  | Common Name         | Conservation Status   |                         |                 | Treaty                            | Count of Sightings | Date of Last Record  | Preferred Habitat Notes | Database Source | Likelihood of occurrence  | Comments |
|----------------------------------|---------------------|-----------------------|-------------------------|-----------------|-----------------------------------|--------------------|--|-------------------------|-----------------|---|----------|
|                                  |                     | EPBC Listing          | Victorian Advisory List | FFG Act Listing |                                   |                    |  |                         |                 |   |          |
| <i>Monarcha melanopsis</i>       | Black-faced Monarch | Threatened            |                         |                 |                                   |                    | Mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest, subtropical (notophyll) rainforest, mesophyll (broadleaf) thicket/shrubland, warm temperate rainforest (DEE 2016c) | DAWE                    | Unlikely        | No suitable habitat on site. Unlikely to be present on site.  |          |
| <i>Motacilla flava</i>           | Yellow Wagtail      | Threatened            |                         |                 |                                   |                    | Occurs in mainly salt works, paddocks, marshes, grassy wetlands (Day and Simpson 2010)   | DAWE                    | Unlikely        | No records found in the past 25 years in the local area. Unlikely to be present on site   |          |
| <i>Myiagra cyanoleuca</i>        | Satin Flycatcher    | Threatened            |                         |                 |                                   |                    | Occurs mainly in wetter, denser forests often at high elevations (Day and Simpson 2010)  | DAWE                    | Unlikely        | No suitable habitat on site. Unlikely to be present on site.  |          |
| <i>Ninox strenua</i>             | Powerful Owl        |                       | Vulnerable              | Listed          |                                   | 1                  | 24/07/2013   | VBA                     | High            | 1 record found within the study site in 2013. Suitable habitat present. Species may occur or as an opportunistic visitor to the area. |          |
| <i>Numenius madagascariensis</i> | Eastern Curlew      | Critically Endangered | Vulnerable              |                 | CAMBA<br>JAMBA<br>ROKAMBA<br>BONN |                    |  | DAWE                    | Unlikely        | No suitable habitat on site. Unlikely to be present on site.  |          |
| <i>Oxyura australis</i>          | Blue-billed Duck    |                       | Endangered              | Listed          |                                   | 15                 | 18/04/2001   | VBA                     | Unlikely        | No suitable habitat on site. Unlikely to be present on site.  |          |

| Scientific Name             | Common Name              | Conservation Status |                         |                 | Treaty | Count of Sightings | Date of Last Record  | Preferred Habitat Notes  | Database Source | Likelihood of occurrence   | Comments   |
|-----------------------------|--------------------------|---------------------|-------------------------|-----------------|--------|--------------------|--|--|-----------------|--|--|
|                             |                          | EPBC Listing        | Victorian Advisory List | FFG Act Listing |        |                    |  |  |                 |  |  |
| <i>Pandion haliaetus</i>    | Osprey                   | Threatened          |                         |                 |        |                    |  | Mainly occurs in mangroves, rivers and estuaries, inshore seas, coastal islands (Day and Simpson 2010) | DAWE            | Unlikely   | No suitable habitat on site. Unlikely to be present on site. |
| <i>Phalacrocorax varius</i> | Pied Cormorant           |                     | Near Threatened         |                 | 1      | 23/04/1999         | Found in marine habitats, including estuaries, harbours and bays. It is also found in mangroves and on large inland wetlands in eastern Australia. Breeds in colonies on coastal islands, flooded tree plains, mangroves and sometimes on artificial structures such as beacons (BiB 2016z).       | VBA  | Unlikely        | No suitable habitat on site. Unlikely to be present on site.                             |  |
| <i>Platalea regia</i>       | Royal Spoonbill          |                     | Near Threatened         |                 | 6      | 13/02/2001         | Found in shallow freshwater and saltwater wetlands, intertidal mud flats and wet grasslands. Will also use artificial wetlands such as sewage lagoons, salt fields, dams and reservoirs (BiB 2016aa).  | VBA  | Unlikely        | No suitable habitat on site. Unlikely to be present on site.                             |  |
| <i>Rhipidura rufifrons</i>  | Rufous Fantail           | Threatened          |                         |                 |        |                    | Mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts, usually with a dense shrubby understorey often including ferns. (DEE 2016d)  | DAWE   | Unlikely        | No records found in the past 25 years in the local area. Unlikely to be present on site. |  |
| <i>Rostratula australis</i> | Australian Painted Snipe | Endangered          | Critically Endangered   | Listed          |        |                    | Inhabits inland and coastal shallow freshwater wetlands, occurring in both ephemeral and permanent wetlands, particularly where there is grass. Individuals have been spotted in artificial dams, sewage ponds and waterlogged grasslands (DSEWPC 2016o).  | DAWE   | Unlikely        | No suitable habitat on site. Unlikely to be present on site.                             |  |
| <i>Spatula rhynchotis</i>   | Australasian Shoveler    |                     | Vulnerable              |                 | 15     | 6/04/2000          | All kinds of wetlands, preferring large undisturbed heavily vegetated freshwater swamps. It is also found on open waters and occasionally along the coast. Nests are built on the ground in dense vegetation, sometimes on a stump or hollow of a tree that is standing in water (Birdlife 2019a). | VBA  | Unlikely        | No suitable habitat on site. Unlikely to be present on site.                             |  |

| Scientific Name                     | Common Name              | Conservation Status |                         |                 | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes   | Database Source | Likelihood of occurrence | Comments   |
|-------------------------------------|--------------------------|---------------------|-------------------------|-----------------|--------|--------------------|---------------------|---|-----------------|--------------------------|--|
|                                     |                          | EPBC Listing        | Victorian Advisory List | FFG Act Listing |        |                    |                     |   |                 |                          |  |
| <i>Amphibians and Reptiles</i>      |                          |                     |                         |                 |        |                    |                     |   |                 |                          |  |
| <i>Litoria raniformis</i>           | Growling Grass Frog      | Vulnerable          | Endangered              | Listed          |        | 1                  | 01/01/1788          | This species is found mostly amongst emergent vegetation including Typha sp. (bullrush), Phragmites sp. (reeds) and Eleocharis sp.(sedges), in or at the edges of still or slow-flowing water bodies such as lagoons, swamps, lakes, ponds and farm dams. The Growling Grass Frog can be found floating in warmer waters in temperatures between 18–25°C. (DEE 2019u) | VBA / DAWE      | Unlikely                 | No suitable habitat on site. Unlikely to be present on site.   |
| <i>Mammals</i>                      |                          |                     |                         |                 |        |                    |                     |   |                 |                          |  |
| <i>Dasyurus maculatus maculatus</i> | Spot-tailed Quoll        | Endangered          | Endangered              | Listed          |        | 1                  | 1/08/1962           | Home range 100 to 200 ha. Trees with hollows, hollow logs on the ground, rocky outcrops, caves or rock crevices (Menkhorst, Knight 2010).   | VBA / DAWE      | Unlikely                 | No records found in the past 25 years in the local area. Unlikely to be present on site  |
| <i>Isodon obesulus obesulus</i>     | Southern Brown Bandicoot | Endangered          | Near Threatened         | Listed          |        |                    |                     | Home range 1 to 6 ha. Eucalypt woodlands and forests that have a dense shrubby understorey. Bandicoots often inhabit blackberry thickets (Menkhorst, Knight 2010).  | DAWE            | Unlikely                 | No records found in the past 25 years in the local area. Unlikely to be present on site  |
| <i>Mastacomys fuscus mordicus</i>   | Broad-toothed Rat        | Vulnerable          | Endangered              | Listed          |        |                    |                     | Occur in a wide range of environments from alpine herbfields to coastal tussock grassland (Menkhorst, Knight 2010)  | DAWE            | Unlikely                 | No records found in the past 25 years in the local area. Unlikely to be present on site  |
| <i>Miniopterus schreibersii</i>     | Common Bent-wing Bat     |                     |                         | Listed          |        | 2                  | 18/12/1971          | Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Hunt in forested areas, catching flying insects above the tree-tops (Menkhorst, Knight 2010).  | VBA             | Unlikely                 | Marginal suitable habitat found on site. No records found in the past 25 years in the local area. Unlikely to be found on site |

| Scientific Name                         | Common Name             | Conservation Status |                         |                 | Treaty | Count of Sightings | Date of Last Record   | Preferred Habitat Notes   | Database Source | Likelihood of occurrence   | Comments  |
|---|-------------------------|---------------------|-------------------------|-----------------|--------|--------------------|---|---|-----------------|--|---|
|   |                         | EPBC Listing        | Victorian Advisory List | FFG Act Listing |        |                    |   |   |                 |  |   |
| <i>Petauroides volans</i>               | Greater Glider          | Vulnerable          | Vulnerable              |                 |        |                    | The greater glider is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. It is primarily folivorous, with a diet mostly comprising eucalypt leaves, and occasionally flowers. The distribution may be patchy even in suitable habitat (Kavanagh 2000). The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species (Kavanagh 1984) (Menkhorst, Knight 2010). | DAWE  | Unlikely        | Marginal suitable habitat found on site. No records found in the past 25 years in the local area. Unlikely to be found on site |   |
| <i>Phascogale tapoafata</i>             | Brush-tailed Phascogale |                     | Vulnerable              | Listed          |        | 1                  | 17/01/1930  | Prefers open dry sclerophyll forest with large hollow bearing trees. Home range of 30-100 hectares and occur in low densities (Menkhorst, Knight 2010).                                   | VBA             | Unlikely   | No records found in the past 25 years in the local area. No suitable habitat on site. Unlikely to be present on site. |
| <i>Potorous tridactylus tridactylus</i> | Long-nosed Potoroo      | Vulnerable          | Near Threatened         | Listed          |        |                    | Home range 2 to 4 ha. Requires open, floristically diverse areas for foraging in conjunction with dense, complex shrubby vegetation for shelter from predators (Menkhorst, Knight 2010).  | DAWE  | Unlikely        | No suitable habitat on site. Unlikely to be present on site.   |   |
| <i>Pteropus poliocephalus</i>           | Grey-headed Flying-fox  | Vulnerable          | Vulnerable              | Listed          |        | 1                  | 8/04/2019   | Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy (Menkhorst, Knight 2010). | VBA / DAWE      | Unlikely   | No suitable habitat on site. Unlikely to be present on site.  |
| Fish                                    |                         |                     |                         |                 |        |                    |   |   |                 |  |   |

| Scientific Name                | Common Name              | Conservation Status |                         |                 | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes  | Database Source | Likelihood of occurrence | Comments   |
|--------------------------------|--------------------------|---------------------|-------------------------|-----------------|--------|--------------------|---------------------|--|-----------------|--------------------------|--|
|                                |                          | EPBC Listing        | Victorian Advisory List | FFG Act Listing |        |                    |                     |  |                 |                          |  |
| <i>Galaxiella pusilla</i>      | Dwarf Galaxias           | Vulnerable          | Endangered              | Listed          |        | 5                  | 26/03/2012          | Dwarf Galaxias has broad habitat requirements and occurs in slow flowing and still, shallow, permanent and temporary freshwater habitats such as swamps, drains and the backwaters of streams and creeks, often (but not always) containing dense aquatic macrophytes and emergent plants. Wetlands connected to a more permanent waterbody (such as river or creek) may also be vital to their long-term survival (particularly during extended dry conditions) and must therefore be considered as part of the habitat requirement critical to survival (DSEWPC 2016u) | VBA / DAWE      | Unlikely                 | No suitable habitat on site. Unlikely to be present on site. |
| <i>Prototroctes mareana</i>    | Australian Grayling      | Vulnerable          | Vulnerable              | Listed          |        |                    |                     | Inhabit cool, clear, freshwater streams with gravel substrate and areas alternating between pools and riffle zones. The species has been found over 100 km upstream from the sea (DSEWPC 2016v)  |                 | Unlikely                 | No suitable habitat on site. Unlikely to be present on site. |
| <i>Tandanus tandanus</i>       | Freshwater Catfish       |                     | Endangered              | Listed          |        | 1                  | 1/03/1993           | The species inhabits a diverse range of freshwater environments including rivers, creeks, lakes, billabongs and lagoons. It prefers clear, sluggish or still waters, but can also be found in flowing streams with turbid waters. Substrates range from mud to gravel and rock. (DEPI-NSW 2016)  | VBA             | Unlikely                 | No suitable habitat on site. Unlikely to be present on site. |
| <i>Insects</i>                 |                          |                     |                         |                 |        |                    |                     |  |                 |                          |  |
| <i>Acrodipsas brisbanensis</i> | Large Ant Blue Butterfly |                     | Endangered              | Listed          |        | 1                  | 1/01/1760           | Confined to remnants of open forest and woodland in central Victoria including Broadford and Mansfield. (DEE 2019t)  | VBA             | Unlikely                 | Unlikely to be present on site.                              |

| Scientific Name      | Common Name     | Conservation Status   |                         |                 | Treaty | Count of Sightings | Date of Last Record | Preferred Habitat Notes  | Database Source | Likelihood of occurrence | Comments   |
|----------------------|-----------------|-----------------------|-------------------------|-----------------|--------|--------------------|---------------------|--|-----------------|--------------------------|--|
|                      |                 | EPBC Listing          | Victorian Advisory List | FFG Act Listing |        |                    |                     |  |                 |                          |  |
| <i>Synemon plana</i> | Golden Sun Moth | Critically Endangered |                         | Listed          |        |                    |                     | Native temperate grassland and open grassy woodlands dominated by wallaby grass (DEC 2007). While previous studies suggested that the species prefers grasslands which have a greater than 40% coverage of wallaby grass over a given area (O'Dwyer & Attiwill 1999), more recent studies show a broader tolerance for other species compositions, including degraded grasslands dominated by exotic Chilean Needlegrass (DEE 2016a) | DAWE            | Unlikely                 | No suitable habitat on site. Unlikely to be present on site. |

References

| SPECIES                          | TAG            | Title                   | Detail  |
|----------------------------------|----------------|-------------------------|---|
| Birds                            |                |                         |   |
| <i>Accipiter novaehollandiae</i> | BiB 2016a      | Grey Goshawk            | <a href="http://www.birdsinbackyards.net/species/Accipiter-novaehollandiae">http://www.birdsinbackyards.net/species/Accipiter-novaehollandiae</a>   |
| <i>Actitis hypoleucos</i>        | BiB 2016b      | Common Sandpiper        | <a href="http://www.birdsinbackyards.net/species/Actitis-hypoleucos">http://www.birdsinbackyards.net/species/Actitis-hypoleucos</a>   |
| <i>Anthochaera phrygia</i>       | DSEWPC 2016b   | Regent Honeyeater       | <a href="https://www.environment.gov.au/biodiversity/threatened/publications/factsheet-regent-honeyeater-xanthomyza-phrygia">https://www.environment.gov.au/biodiversity/threatened/publications/factsheet-regent-honeyeater-xanthomyza-phrygia</a> |
| <i>Apus pacificus</i>            | DEE 2016b      | Fork-tailed Swift       | <a href="http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=678">http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=678</a>   |
| <i>Ardea modesta</i>             | DSE 2010a      | Action Statement No 120 | <a href="http://www.depi.vic.gov.au/_data/assets/pdf_file/0004/251185/Great_Egret_Ardea-alba.pdf">http://www.depi.vic.gov.au/_data/assets/pdf_file/0004/251185/Great_Egret_Ardea-alba.pdf</a>   |
| <i>Aythya australis</i>          | BiB 2016f      | Hardhead                | <a href="http://www.birdsinbackyards.net/species/Aythya-australis">http://www.birdsinbackyards.net/species/Aythya-australis</a>   |
| <i>Biziura lobata</i>            | Birdlife 2016b | Musk Duck               | <a href="http://www.birdlife.org/datazone/speciesfactsheet.php?id=363">http://www.birdlife.org/datazone/speciesfactsheet.php?id=363</a>   |
| <i>Botaurus poiciloptilus</i>    | SA-MDB 2016    | Australasian Bittern    | <a href="http://root.ala.org.au/bdrs-core/mdnrm/fieldguide/taxon.htm?id=29026">http://root.ala.org.au/bdrs-core/mdnrm/fieldguide/taxon.htm?id=29026</a>   |
| <i>Calidris acuminata</i>        | DEE 2019g      | Sharp-tailed Sandpiper  | <a href="http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=874">http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=874</a>   |
| <i>Calidris ferruginea</i>       | Birdlife 2016e | Curlew Sandpiper        | <a href="http://birdlife.org.au/bird-profile/curlew-sandpiper">http://birdlife.org.au/bird-profile/curlew-sandpiper</a>   |
| <i>Calidris melanotos</i>        | DEE 2019h      | Pectoral Sandpiper      | <a href="http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=858">http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=858</a>   |


| SPECIES                              | TAG                  | Title                                 | Detail  |
|--------------------------------------|----------------------|---------------------------------------|---|
| <i>Ceyx azureus</i>                  | Birdlife 2019b       | Azure Kingfisher                      | <a href="http://www.birdlife.org.au/bird-profile/azure-kingfisher">http://www.birdlife.org.au/bird-profile/azure-kingfisher</a>   |
| <i>Dromaius novaehollandiae</i>      | Day and Simpson 2010 | Field Guide to the Birds of Australia |   |
| <i>Egretta garzetta</i>              | Day and Simpson 2010 | Field Guide to the Birds of Australia |   |
| <i>Falco subniger</i>                | BiB 2016i            | Black Falcon                          | <a href="http://www.birdsinbackyards.net/species/Falco-subniger">http://www.birdsinbackyards.net/species/Falco-subniger</a>   |
| <i>Gallinago hardwickii</i>          | BiB 2016j            | Latham's Snipe                        | <a href="http://www.birdsinbackyards.net/species/Gallinago-hardwickii">http://www.birdsinbackyards.net/species/Gallinago-hardwickii</a>   |
| <i>Grantiella picta</i>              | BiB 2016m            | Painted Honeyeater                    | <a href="http://www.birdsinbackyards.net/species/Grantiella-picta">http://www.birdsinbackyards.net/species/Grantiella-picta</a>   |
| <i>Hirundapus caudacutus</i>         | DSEWPC 2016j         | White-throated Needletail             | <a href="http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=682">http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=682</a>                                       |
| <i>Lathamus discolor</i>             | BiB 2016t            | Swift Parrot                          | <a href="http://www.birdsinbackyards.net/species/Lathamus-dicolor">http://www.birdsinbackyards.net/species/Lathamus-dicolor</a>   |
| <i>Lewinia pectoralis pectoralis</i> | SA-DEH 2016          | Lewina pectoralis pectoralis          | Threatened Species Profile- South Australia- Department for Environment and Heritage  |
| <i>Monarcha melanopsis</i>           | DEE 2016c            | Black-faced Monarch                   | <a href="http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=609">http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=609</a>                                       |
| <i>Motacilla flava</i>               | Day and Simpson 2010 | Field Guide to the Birds of Australia |   |
| <i>Myiagra cyanoleuca</i>            | Day and Simpson 2010 | Field Guide to the Birds of Australia |   |
| <i>Ninox strenua</i>                 | Day and Simpson 2010 | Field Guide to the Birds of Australia |   |
| <i>Numenius madagascariensis</i>     | BiB 2016w            | Eastern Curlew                        | <a href="http://www.birdsinbackyards.net/species/Numenius-madagascariensis">http://www.birdsinbackyards.net/species/Numenius-madagascariensis</a>   |
| <i>Oxyura australis</i>              | Day and Simpson 2010 | Field Guide to the Birds of Australia |   |
| <i>Pandion haliaetus</i>             | Day and Simpson 2010 | Field Guide to the Birds of Australia |   |
| <i>Phalacrocorax varius</i>          | BiB 2016z            | Pied Cormorant                        | <a href="http://www.birdsinbackyards.net/species/Phalacrocorax-varius">http://www.birdsinbackyards.net/species/Phalacrocorax-varius</a>   |
| <i>Platalea regia</i>                | BiB 2016aa           | Royal Spoonbill                       | <a href="http://www.birdsinbackyards.net/species/Platalea-regia">http://www.birdsinbackyards.net/species/Platalea-regia</a>   |
| <i>Rhipidua rufifrons</i>            | DEE 2016d            | Rufous Faintail                       | <a href="http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=592">http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=592</a>                                       |
| <i>Rostratula australis</i>          | DSEWPC 2016o         | Australian Painted Snipe              | <a href="http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=77037">http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=77037</a>                                   |
| <i>Spatula rhynchotis</i>            | Birdlife 2019a       | Australasian Shoveler                 | <a href="http://datazone.birdlife.org/species/factsheet/22680243">http://datazone.birdlife.org/species/factsheet/22680243</a>   |
| <b>Amphibians &amp; Reptiles</b>     |                      |                                       |   |
| <i>Litoria raniformis</i>            | DEE 2019u            | Growling Grass Frog                   | <a href="http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?showprofile=Y&amp;taxon_id=1828">http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?showprofile=Y&amp;taxon_id=1828</a> |
| <b>Mammals</b>                       |                      |                                       |   |

| SPECIES                                 | TAG                    | Title  | Detail  |
|---|------------------------|--|---|
| <i>Dasyurus maculatus maculatus</i>     | Menkhorst, Knight 2010 | A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press. |   |
| <i>Isoodon obesulus obesulus</i>        | Menkhorst, Knight 2010 | A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press. |   |
| <i>Mastacomys fuscus mordicus</i>       | Menkhorst, Knight 2010 | A field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press. |   |
| <i>Miniopterus schreibersii</i>         | Menkhorst, Knight 2010 | A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press. |   |
| <i>Petauroides volans</i>               | Menkhorst, Knight 2010 | A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press. |   |
| <i>Phascagole tapoafata</i>             | Menkhorst, Knight 2010 | A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press. |   |
| <i>Potorous tridactylus tridactylus</i> | Menkhorst, Knight 2010 | A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press. |   |
| <i>Pteropus poliocephalus</i>           | Menkhorst, Knight 2010 | A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press. |   |
| Fish                                    |                        |  |   |
| <i>Galaxiella pusilla</i>               | DSEWPC 2016u           | Dwarf Galaxias   | <a href="http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=56790">http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=56790</a>   |
| <i>Prototroctes mareana</i>             | DSEWPC 2016v           | Australian Grayling  | <a href="http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=26179">http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=26179</a>   |
| <i>Tandanus tandanus</i>                | DEPI -NSW 2016         | Freshwater Catfish   | <a href="http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0005/635918/primefact-eel-tailed-catfish-population-in-the-murray-darling-basin.pdf">http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0005/635918/primefact-eel-tailed-catfish-population-in-the-murray-darling-basin.pdf</a> |
| Insects                                 |                        |  |   |
| <i>Acrodipsas brisbanensis</i>          | DEE 2019t              | Large Ant Blue Butterfly   | <a href="https://www.environment.vic.gov.au/_data/assets/pdf_file/0017/32516/Large_Ant-blue_Butterfly_Acrodipsas_brisbanensis.pdf">https://www.environment.vic.gov.au/_data/assets/pdf_file/0017/32516/Large_Ant-blue_Butterfly_Acrodipsas_brisbanensis.pdf</a>                       |
| <i>Synemon plana</i>                    | DEE 2016a              | Golden Sun Moth  | <a href="http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=25234">http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=25234</a>   |

Conservation Status Key

| Origin   |   |
|--|---|
| *  | Exotic species                                  |
| Flora and Fauna Guarantee Act 1988   |   |
| L  | Listed as a Threatened in Victoria              |
| P  | Protected Flora in Victoria                     |
| N  | Nominated for listing as Threatened in Victoria |
| I  | Invalid or Ineligible for listing.              |
| D  | Delisted as Threatened in Victoria              |
|  | C   |
| Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999  |   |
| VU   | Listed as Nationally Vulnerable                 |
| EN   | Listed as Nationally Endangered                 |
| EX   | Listed as Nationally Extinct                    |
| CR   | Listed as Nationally Critically Endangered      |
|  |   |
| Advisory List of Threatened Vertebrate Fauna in Victoria (DEPI 2013), Advisory List of Threatened Invertebrate Fauna in Victoria (DSE 2009). |   |
| EX   | Listed as Extinct in Victoria                   |
| RX   | Listed as Regionally Extinct in Victoria        |
| EW   | Listed as Extinct in the Wild                   |
| CR   | Listed as Critically Endangered                 |
| EN   | Listed as Endangered                            |
| VU   | Listed as Vulnerable                            |
| NT   | Listed as Near Threatened                       |
| DD   | Listed as Data Deficient                        |

Appendix 6: Property Report



### Property Report

from [www.land.vic.gov.au](http://www.land.vic.gov.au) on 25 November 2019 02:01 PM

**Address:** 56 MOE SOUTH ROAD MOE SOUTH 3825

**Lot and Plan Number:** This property has 2 parcels. See table below.

**Standard Parcel Identifier (SPI):** See table below.

**Local Government (Council):** LATROBE Council **Property Number:** 43060


**Directory Reference:** VicRoads 97 F5

**This property is in a designated bushfire prone area. Special bushfire construction requirements apply. Planning provisions may apply.**

Further information about the building control system and building in bushfire prone areas can be found in the Building Commission section of the Victorian Building Authority website [www.vba.vic.gov.au](http://www.vba.vic.gov.au)

#### Site Dimensions

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



**Area:** 151525 sq. m (15.2 ha)

**Perimeter:** 2384 m

For this property:

- Site boundaries
- Road frontages

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

9 dimensions shorter than 21m not displayed

Calculating the area from the dimensions shown may give a different value to the area shown above - which has been calculated using all the dimensions.

For more accurate dimensions get copy of plan at [Title and Property Certificates](#)

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**Parcel Details**

Letter in first column identifies parcel in diagram above

|   | Lot/Plan or Crown Description | SPI        |
|---|-------------------------------|------------|
| A | Lot 2 LP55896                 | 2\LP55896  |
| B | Lot 2 PS400699                | 2\PS400699 |

**State Electorates**

Legislative Council: EASTERN VICTORIA

Legislative Assembly: NARRACAN

**Utilities**

Rural Water Corporation: Southern Rural Water

Urban Water Corporation: Gippsland Water

Melbourne Water: outside drainage boundary

Power Distributor: AUSNET (Information about [choosing an electricity retailer](#))

**Planning Zone Summary**

Planning Zones: [PUBLIC USE ZONE - SERVICE AND UTILITY \(PUZ1\)](#)  
[SCHEDULE TO THE PUBLIC USE ZONE - SERVICE AND UTILITY \(PUZ1\)](#)  
[RURAL LIVING ZONE \(RLZ\)](#)  
[RURAL LIVING ZONE - SCHEDULE 1 \(RLZ1\)](#)

Planning Overlays: [BUSHFIRE MANAGEMENT OVERLAY \(BMO\)](#)  
[DESIGN AND DEVELOPMENT OVERLAY \(DDO\)](#)  
[DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 1 \(DDO1\)](#)

**Areas of Aboriginal Cultural Heritage Sensitivity:**

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

Planning information continued on next page

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Planning scheme data last updated on 21 November 2019.

A **planning scheme** sets out policies and requirements for the use, development and protection of land.

This report provides information about the zone and overlay provisions that apply to the selected land.

Information about the State and local policy, particular, general and operational provisions of the local planning scheme that may affect the use of this land can be obtained by contacting the local council or by visiting [Planning Schemes Online](#)

This report is NOT a **Planning Certificate** issued pursuant to Section 199 of the *Planning and Environment Act 1987*.

It does not include information about exhibited planning scheme amendments, or zonings that may affect the land.

To obtain a Planning Certificate go to [Titles and Property Certificates](#)

The Planning Property Report includes separate maps of zones and overlays

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

To view planning zones, overlay and heritage information in an interactive format visit [Planning Maps Online](#)

For other information about planning in Victoria visit [www.planning.vic.gov.au](http://www.planning.vic.gov.au)

#### **Areas of Aboriginal Cultural Heritage Sensitivity**

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

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

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

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

For further information about whether a Cultural Heritage Management Plan is required go to <http://www.aav.nrms.net.au/aavQuestion1.aspx>

More information, including links to both the Aboriginal Heritage Act 2006 and the Aboriginal Heritage Regulations 2018, can also be found here - <https://www.vic.gov.au/aboriginalvictoria/heritage/planning-and-heritage-management-processes.html>

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**Area Map**



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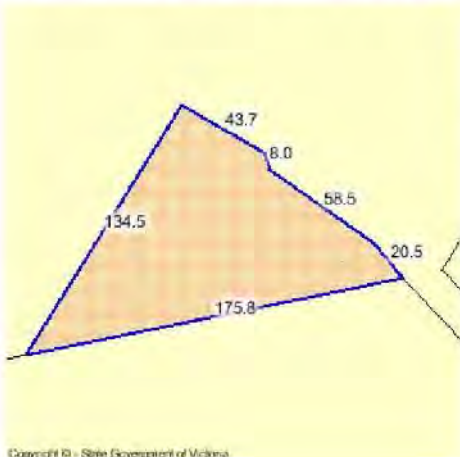
## Property Report

from [www.land.vic.gov.au](http://www.land.vic.gov.au) on 30 October 2019 02:39 PM  
**Address:** 58 MOE SOUTH ROAD MOE SOUTH 3825  
**Lot and Plan Number:** Lot 1 PS400699  
**Standard Parcel Identifier (SPI):** 1\PS400699  
**Local Government (Council):** LATROBE **Council Property Number:** 43227  
**Directory Reference:** VicRoads 97 F5

**This property is in a designated bushfire prone area. Special bushfire construction requirements apply. Planning provisions may apply.**  
Further information about the building control system and building in bushfire prone areas can be found in the Building Commission section of the Victorian Building Authority website [www.vba.vic.gov.au](http://www.vba.vic.gov.au)

### Site Dimensions

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



**Area:** 8955 sq. m  
**Perimeter:** 441 m

For this property:  
— Site boundaries  
— Road frontages

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

For more accurate dimensions get copy of plan at [Title and Property Certificates](#)

### State Electorates

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

### Utilities

**Rural Water Corporation:** Southern Rural Water  
**Urban Water Corporation:** Gippsland Water  
**Melbourne Water:** outside drainage boundary  
**Power Distributor:** AUSNET (Information about [choosing an electricity retailer](#))

Planning information continued on next page

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### Planning Zone Summary

- Planning Zone:** [RURAL LIVING ZONE \(RLZ\)](#)  
[RURAL LIVING ZONE - SCHEDULE 3 \(RLZ3\)](#)
- Planning Overlays:** [BUSHFIRE MANAGEMENT OVERLAY \(BMO\)](#)  
[DESIGN AND DEVELOPMENT OVERLAY \(DDO\)](#)  
[DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 1 \(DDO1\)](#)

Planning scheme data last updated on 23 October 2019.

A **planning scheme** sets out policies and requirements for the use, development and protection of land. This report provides information about the zone and overlay provisions that apply to the selected land. Information about the State and local policy, particular, general and operational provisions of the local planning scheme that may affect the use of this land can be obtained by contacting the local council or by visiting [Planning Schemes Online](#)

This report is NOT a **Planning Certificate** issued pursuant to Section 199 of the *Planning and Environment Act 1987*. It does not include information about exhibited planning scheme amendments, or zonings that may affect the land. To obtain a Planning Certificate go to [Titles and Property Certificates](#)

The Planning Property Report includes separate maps of zones and overlays

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

To view planning zones, overlay and heritage information in an interactive format visit [Planning Maps Online](#)

For other information about planning in Victoria visit [www.planning.vic.gov.au](http://www.planning.vic.gov.au)

### Area Map



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Appendix 7: Vegetation Quality Assessment

Department of Sustainability and Environment

### Vegetation Quality Field Assessment Sheet

Version 1.3 - October 2004

Site Name/No. MWTP Location Moe CWS Date 19.11.19  
 Assessor(s) A. FULFORD Map Name/No. Zone 1 AMG / MGA HZ1  
 Tenure 1920IGW EVC 16 LF Bioregion SP2 WANGG

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#### 'Site Condition Score'

1.59 ha

|                              |              |           |
|------------------------------|--------------|-----------|
| <b>Large Trees</b> (1.59 ha) | <b>Score</b> | <b>10</b> |
|------------------------------|--------------|-----------|

| Category & Description                                  | % Canopy Health* |        |       |
|---|------------------|--------|-------|
|   | > 70%            | 30-70% | < 30% |
| None present  | 0                | 0      | 0     |
| > 0 to 20% of the benchmark number of large trees/ha    | 3                | 2      | 1     |
| > 20% to 40% of the benchmark number of large trees/ha  | 4                | 3      | 2     |
| > 40% to 70% of the benchmark number of large trees/ha  | 6                | 5      | 4     |
| > 70% to 100% of the benchmark number of large trees/ha | 8                | 7      | 6     |
| <b>≥ the benchmark number of large trees/ha</b>         | <b>10</b>        | 9      | 8     |

Large trees are defined by diameter at breast height (dbh) - see EVC benchmark.  
 \* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).  
 28 = 1.59 ha \* 28.8  
 28.8 / 20 = 1.44 = 11%

|                                    |              |          |
|------------------------------------|--------------|----------|
| <b>Tree Canopy Cover</b> (1.59 ha) | <b>Score</b> | <b>5</b> |
|------------------------------------|--------------|----------|

| Category & Description                    | % Canopy Health * |        |       |
|---|-------------------|--------|-------|
|   | > 70%             | 30-70% | < 30% |
| < 10% of benchmark cover                  | 0                 | 0      | 0     |
| < 50% or > 150% of benchmark cover        | 3                 | 2      | 1     |
| <b>≥ 50% or ≤ 150% of benchmark cover</b> | <b>5</b>          | 4      | 3     |

Tree canopy is defined as those canopy tree species reaching ≥ 80% of mature height - see EVC benchmark description.  
 \* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

|                      |              |           |
|----------------------|--------------|-----------|
| <b>Lack of Weeds</b> | <b>Score</b> | <b>11</b> |
|----------------------|--------------|-----------|

| Category & Description          | 'high threat' weeds* |       |           |
|---------------------------------|----------------------|-------|-----------|
|                                 | None                 | ≤ 50% | > 50%     |
| > 50% cover of weeds            | 4                    | 2     | 0         |
| 25 - 50% cover of weeds         | 7                    | 6     | 4         |
| 5 - 25% cover of weeds          | 11                   | 9     | 7         |
| <b>&lt; 5% cover of weeds**</b> | 15                   | 13    | <b>11</b> |

\* proportion of weed cover due to 'high threat' weeds - see EVC benchmark for guide.  
 'High threat' weed species are defined as those introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.  
 The EVC benchmark lists typical weed species for the EVC in the bioregion and provides an estimate of their 'invasiveness' and 'impact'. In general, those weed species considered to have a *high impact* are considered *high threat* regardless of their invasiveness.  
 \*\* If total weed cover is negligible (<1%) and high threat weed species are present then score '13'.


|   |              |           |
|---|--------------|-----------|
| <b>Understorey Life forms</b> (14 Present, 13 Modified) | <b>Score</b> | <b>20</b> |
|---|--------------|-----------|

| LF Code from EVC benchmark | # spp observed / Benchmark spp. | % cover observed / Benchmark % cover | Present (✓) | Modified (✓) |
|----------------------------|---------------------------------|--------------------------------------|-------------|--------------|
| IT                         | 2/1                             | 5/5                                  | ✓           |              |
| T                          | 4/2                             | 8/10                                 | ✓           |              |
| MS                         | 17/8                            | 20/35                                | ✓           |              |
| SS                         | 19/4                            | 8/10                                 | ✓           |              |
| PS                         | 9/1                             | 1/1                                  | ✓           |              |
| MH                         | 14/6                            | 5/10                                 | ✓           |              |
| SH                         | 6/3                             | 1/5                                  | ✓           |              |
| LIG                        | 4/3                             | 1/10                                 |             | ✓            |
| LNG                        | 2/2                             | 10/10                                | ✓           |              |
| MTG                        | 10/3                            | 5/5                                  | ✓           |              |
| MNG                        | 3/2                             | 5/5                                  | ✓           |              |
| EF                         | 3/2                             | 5/5                                  | ✓           | ✓            |
| X                          | 3/3                             | 5/5                                  | ✓           |              |
| RL                         | 1/1                             | 5/10                                 | ✓           |              |
|                            | 1                               | 1                                    |             |              |

For life forms with benchmark cover of < 10%, considered 'present' if:  
 • any specimens are observed.  
 For life forms with benchmark cover of ≥ 10%, considered 'present' if:  
 • the life form occupies at least 10% of benchmark cover.  
 For life forms with benchmark cover of < 10%, then considered substantially 'modified' if the life form has either:  
 • < 50% of the benchmark species diversity; or  
 • no reproductively-mature specimens are observed.  
**Modified** (apply only where life form is 'present')  
 For life forms with benchmark cover of ≥ 10%, then considered substantially 'modified' if the life form has either:  
 • < 50% of benchmark cover; or  
 • < 50% of benchmark species diversity; or  
 • ≥ 50% of benchmark cover due largely to immature canopy specimens but the cover of reproductively-mature specimens is < 10% of the benchmark cover.

|                    |              |           |
|--------------------|--------------|-----------|
| <b>Understorey</b> | <b>Score</b> | <b>20</b> |
|--------------------|--------------|-----------|

| Category & Description                           | Score |
|--|-------|
| All strata and Life forms effectively absent     | 0     |
| Up to 50% of life forms present                  | 5     |
| ≥ 50% to 90% of Life forms present               | 10    |
| ≥ 90% of Life forms present                      | 15    |
| • of those present, ≥ 50% substantially modified | 15    |
| • of those present, < 50% substantially modified | 20    |
| • of those present, ≥ 50% substantially modified | 15    |
| • of those present, < 50% substantially modified | 20    |
| • of those present, none substantially modified  | 25    |



**Vegetation Quality Field Assessment Sheet**  
Version 1.3 - October 2004

Department of Sustainability and Environment

**Recruitment** **Score** 6

| Category & Description   |   | High diversity** | Low diversity** |
|--|---|------------------|-----------------|
| No evidence of a recruitment 'cohort'*                                     | within EVC not driven by episodic events        | 0                | 0               |
|  | within EVC driven by episodic events^           | 0                | 0               |
| Evidence of at least one recruitment 'cohort' in at least one life-form    | clear evidence of appropriate episodic event    | 0                | 0               |
|  | no clear evidence of appropriate episodic event | 5                | 5               |
| proportion of native woody species present that have adequate recruitment* | < 30%   | 3                | 1               |
|  | 30 - 70%  | 6                | 3               |
|  | ≥ 70%   | 10               | 5               |

\* 'cohort' refers to a group of woody plants established in a single episode (can include suppressed canopy species individuals).  
^ refer to EVC benchmark for clarification.  
\* treat multiple eucalypt canopy species as one species.  
\*\* high diversity defined as ≥ 50% of benchmark woody species diversity.

**Organic Litter** **Score** 5

| Category & Description             | Dominated by native organic litter | Dominated by non-native organic litter |
|------------------------------------|------------------------------------|--|
| < 10% of benchmark cover           | 0                                  | 0                                      |
| < 50% or > 150% of benchmark cover | 3                                  | 2                                      |
| ≥ 50% or ≤ 150% of benchmark cover | 5                                  | 4                                      |

**Species Recruitment** 25 17

| Woody species recorded in habitat zone                | Adequate Recruitment |
|---|----------------------|
| Eucalypt canopy (combined species)                    | ✓                    |
| <i>P. applea</i>                                      | ✓                    |
| <i>P. vitata</i>                                      | ✓                    |
| <i>P. sp.</i>   | ✓                    |
| <i>L. cont.</i>                                       | ✓                    |
| <i>A. dealbata</i>                                    | ✓                    |
| <i>S. coccinea</i>                                    | ✓                    |
| <i>G. ovalis</i>                                      | ✓                    |
| <i>K. pinnatifida</i>                                 | ✓                    |
| <i>T. cili.</i>                                       | ✓                    |
| <i>C. aculeata</i>                                    | ✓                    |
| <i>B. scandens</i>                                    | ✓                    |
| <i>L. sp.</i>   | ✓                    |
| number of woody spp. in EVC benchmark (SS and taller) | 15                   |

**Logs** **Score** 4

| Category & Description    | Large logs present* | Large logs absent* |
|---------------------------|---------------------|--------------------|
| < 10% of benchmark length | 0                   | 0                  |
| < 50% of benchmark length | 3                   | 2                  |
| ≥ 50% of benchmark length | 5                   | 4                  |

Large logs defined as those with diameter ≥ 0.5 of benchmark large tree dbh.  
\* present if large log length is ≥ 25% of EVC benchmark log length.  
# absent if large log length is < 25% of EVC benchmark log length.  
186/159 = 11.7% = 56.5%  
11.7/20 = 0.7/10 = 7%

**'Landscape Context Score'**

**Patch Size** **Score** 6

| Category & Description                     | Score |
|--|-------|
| < 2 ha                                     | 1     |
| Between 2 and 5 ha                         | 2     |
| Between 5 and 10 ha                        | 4     |
| Between 10 and 20 ha                       | 6     |
| ≥ 20 ha, but 'significantly disturbed'     | 8     |
| ≥ 20 ha, but not 'significantly disturbed' | 10    |

\* 'significantly disturbed' defined as per RFA 'Old Growth' analyses eg. roading, coupes, grazing etc. - effectively most patches within fragmented landscapes.

**Distance to Core Area** **Score** 3

| Distance   | Core Area not significantly disturbed* | Core Area significantly disturbed* |
|------------|--|------------------------------------|
| > 5 km     | 0                                      | 0                                  |
| 1 to 5 km  | 2                                      | 1                                  |
| < 1 km     | 4                                      | 3                                  |
| contiguous | 5                                      | 4                                  |

\* defined as per RFA 'Old Growth' analyses.

**Neighbourhood** **Score** 3

| Radius from site   | % Native vegetation* | Weighting | Score         |
|--|----------------------|-----------|---------------|
| 100 m  | 80                   | 0.03      | 2.4           |
| 1 km   | 40                   | 0.04      | 1.6           |
| 5 km   | 20                   | 0.03      | 0.6           |
| subtract 2 if the neighbourhood is 'significantly disturbed' |                      |           | 4.6 - 2 = 2.6 |
| Add Values and 'round-off'                                   |                      |           | 3             |

\* to nearest 20%.  
Multiply % native vegetation x Weighting for each radius from the zone (eg. 40% x 0.03 = 1.2); then add values to obtain final Neighbourhood Value.

|           |       | 'Site Condition Score' |                   |               |             |             |                | 'Landscape Context Score' |            |               |                       |       |
|-----------|-------|------------------------|-------------------|---------------|-------------|-------------|----------------|---------------------------|------------|---------------|-----------------------|-------|
| Component | Score | Large Trees            | Tree Canopy Cover | Lack of Weeds | Understorey | Recruitment | Organic Litter | Logs                      | Patch Size | Neighbourhood | Distance to Core Area | Total |
|           |       | Score                  | 10                | 5             | 11          | 20          | 6              | 5                         | 4          | 6             | 3                     |       |

**Vegetation Quality Field Assessment Sheet**

Version 1.3 - October 2004

Department of Sustainability and Environment

Site Name/No. MWTP Location Moe WTP Date 19/11/19 & 21/2/2020  
 Assessor(s) TB&WD, BI Map Name/No. Zone 2 AMG / MGA H22  
 Tenure 19201CW PRIVATE EVC 2a: Damp Forest Bioregion Strze Ranges

**'Site Condition Score'**

90cm dbh 20th  
**Large Trees** 1 in 0.242 **Score** 3

| Category & Description                                  | % Canopy Health*  |        |       |
|---|---|--------|-------|
|   | > 20%   | 30-70% | < 30% |
| None present  | 0   | 0      | 0     |
| > 0 to 20% of the benchmark number of large trees/ha    | <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">3</span> | 2      | 1     |
| > 20% to 40% of the benchmark number of large trees/ha  | 4   | 3      | 2     |
| > 40% to 70% of the benchmark number of large trees/ha  | 6   | 5      | 4     |
| > 70% to 100% of the benchmark number of large trees/ha | 8   | 7      | 6     |
| ≥ the benchmark number of large trees/ha                | 10  | 9      | 8     |

Large trees are defined by diameter at breast height (dbh) - see EVC benchmark.  
 \* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

$1 \div 0.242 = 4.13$   
 $4.13 \div 20 = 0.2 = 20\%$

**Tree Canopy Cover** BM 40% **Score** 3

| Category & Description             | % Canopy Health*  |        |       |
|------------------------------------|---|--------|-------|
|                                    | > 20%   | 30-70% | < 30% |
| < 10% of benchmark cover           | 0   | 0      | 0     |
| < 50% or > 150% of benchmark cover | <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">3</span> | 2      | 1     |
| ≥ 50% or ≤ 150% of benchmark cover | 5   | 4      | 3     |

Tree canopy is defined as those canopy tree species reaching ≥ 80% of mature height - see EVC benchmark description.  
 \* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

**Lack of Weeds** 2% HT 95% **Score** 13

| Category & Description  | 'high threat' weeds* |  |       |
|-------------------------|----------------------|--|-------|
|                         | None                 | < 50%  | > 50% |
| > 50% cover of weeds    | 4                    | 2  | 0     |
| 25 - 50% cover of weeds | 7                    | 6  | 4     |
| 5 - 25% cover of weeds  | 11                   | 9  | 7     |
| < 5% cover of weeds**   | 15                   | <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">13</span> | 11    |

\* proportion of weed cover due to 'high threat' weeds - see EVC benchmark for guide.  
 'High threat' weed species are defined as those introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.  
 The EVC benchmark lists typical weed species for the EVC in the bioregion and provides an estimate of their 'invasiveness' and 'impact'. In general, those weed species considered to have a high impact are considered high threat regardless of their invasiveness.  
 \*\* if total weed cover is negligible (<1%) and high threat weed species are present then score '13'.

**Understorey Life forms**

| LF Code from EVC benchmark | # spp observed / Benchmark spp. | % cover observed / Benchmark % cover | Present (✓) | Modified (✓) |
|----------------------------|---------------------------------|--------------------------------------|-------------|--------------|
| IT                         | 3/1                             | 20/5                                 | ✓           | ✗            |
| T                          | 5/4                             | 10/20                                | ✓           | ✗            |
| MS                         | 7/6                             | 25/30                                | ✓           | ✗            |
| SS                         | 8/1                             | 1/1                                  | ✓           | ✗            |
| LH                         | 2/2                             | 2/1                                  | ✓           | ✗            |
| MH                         | 3/8                             | 5/10                                 | ✓           | ✓            |
| SH                         | 4/1                             | 2/1                                  | ✓           | ✗            |
| LTG                        | 1/1                             | 1/1                                  | ✓           | ✗            |
| LNG                        | -/1                             | -/5                                  | -           | -            |
| MTG                        | -/3                             | -/10                                 | -           | -            |
| MNG                        | 3/2                             | 8/5                                  | ✓           | ✗            |
| CF                         | 3/3                             | 10/10                                | ✓           | ✗            |
| TRF                        | 1/1                             | 5/5                                  | ✓           | ✗            |
| SC                         | 1/3                             | 2/5                                  | ✓           | ✓            |
| BL                         | na/na                           | 12/20                                | ✓           | ✗            |
|                            | 1                               | 1                                    | 13/15       | 2/13         |

For life forms with benchmark cover of < 10%, considered 'present' if  
 • any specimens are observed.  
 For life forms with benchmark cover of ≥ 10%, considered 'present' if  
 • the life form occupies at least 10% of benchmark cover.  
 For life forms with benchmark cover of < 10%, then considered substantially 'modified' if the life form has either:  
 • < 50% of the benchmark species diversity; or  
 • no reproductively-mature specimens are observed.  
 For life forms with benchmark cover of ≥ 10%, then considered substantially 'modified' if the life form has either:  
 • < 50% of benchmark cover; or  
 • < 50% of benchmark species diversity; or  
 • ≥ 50% of benchmark cover due largely to immature canopy specimens but the cover of reproductively-mature specimens is < 10% of the benchmark cover.

**Understorey** **Score** 15

| Category & Description                           | Score  |
|--|--|
| All strata and Life forms effectively absent     | 0  |
| Up to 50% of life forms present                  | 5  |
| ≥ 50% to 90% of Life forms present               | 10   |
| • of those present, ≥ 50% substantially modified |  |
| • of those present, < 50% substantially modified | <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">15</span> |
| ≥ 90% of Life forms present                      | 15   |
| • of those present, ≥ 50% substantially modified |  |
| • of those present, < 50% substantially modified | 20   |
| • of those present, none substantially modified  | 25   |



**Vegetation Quality Field Assessment Sheet**  
Version 1.3 - October 2004

Depart.  
Sustainability  
Environme.

**Recruitment** **Score** 6

| Category & Description  |  | High diversity**           | Low diversity**  |
|---|--|----------------------------|--|
| No evidence of a recruitment 'cohort'                                   | within EVC not driven by episodic events                                   | 0                          | 0  |
|   | within EVC driven by episodic events^                                      | 0                          | 0  |
| Evidence of at least one recruitment 'cohort' in at least one life-form | clear evidence of appropriate episodic event                               | 0                          | 0  |
|   | no clear evidence of appropriate episodic event                            | 5                          | 5  |
|   | proportion of native woody species present that have adequate recruitment* | < 30%<br>30 - 70%<br>≥ 70% | 3<br><span style="border: 1px solid black; border-radius: 50%; padding: 2px;">5</span><br>10 |

+ 'cohort' refers to a group of woody plants established in a single episode (can include suppressed canopy species individuals).  
^ refer to EVC benchmark for clarification.  
\* treat multiple eucalypt canopy species as one species.  
\* high diversity defined as ≥ 50% of benchmark woody species diversity.

**Organic Litter** **Score** 5

50%

| Category & Description             | Dominated by native organic litter  | Dominated by non-native organic litter |
|------------------------------------|---|--|
| < 10% of benchmark cover           | 0   | 0                                      |
| < 50% or > 150% of benchmark cover | 3   | 2                                      |
| ≥ 50% or ≤ 150% of benchmark cover | <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">5</span> | 4                                      |

**Species Recruitment**

| Woody species recorded in habitat zone                | Adequate Recruitment                |
|---|-------------------------------------|
| Eucalypt canopy (combined species)                    | <input checked="" type="checkbox"/> |
| COON OJA  | <input type="checkbox"/>            |
| ACA MEL   | <input type="checkbox"/>            |
| MEL SGW   | <input type="checkbox"/>            |
| PELV SAM  | <input checked="" type="checkbox"/> |
| QAE LIR   | <input checked="" type="checkbox"/> |
| CPA IMP   | <input type="checkbox"/>            |
| LEPT MUR  | <input type="checkbox"/>            |
| ACA VEAT  | <input type="checkbox"/>            |
| CASS ACU  | <input type="checkbox"/>            |
| END CLP   | <input checked="" type="checkbox"/> |
| PER SER   | <input type="checkbox"/>            |
| PEL GUN   | <input type="checkbox"/>            |
| number of woody spp. in EVC benchmark (SS and taller) | 12                                  |

**Logs** **Score** 5

| Category & Description    | Large logs present*   | Large logs absent* |
|---------------------------|---|--------------------|
| < 10% of benchmark length | 0   | 0                  |
| < 50% of benchmark length | 3   | 2                  |
| ≥ 50% of benchmark length | <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">5</span> | 4                  |

Large logs defined as those with diameter ≥ 0.5 of benchmark large tree dbh.  
\* present if large log length is ≥ 25% of EVC benchmark log length.  
# absent if large log length is < 25% of EVC benchmark log length.  
72 = 0.08  
90 / 0.1ha  
90 = 30 = 3 30%

**'Landscape Context Score'**

**Patch Size** **Score** 6

| Category & Description                     | Score   |
|--|---|
| < 2 ha                                     | 1   |
| Between 2 and 5 ha                         | 2   |
| Between 5 and 10 ha                        | 4   |
| Between 10 and 20 ha                       | <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">6</span> |
| ≥ 20 ha, but 'significantly disturbed'     | 8   |
| ≥ 20 ha, but not 'significantly disturbed' | 10  |

\* 'significantly disturbed' defined as per RFA 'Old Growth' analyses eg. roading, coupes, grazing etc. - effectively most patches within fragmented landscapes.

**Distance to Core Area** **Score** 3

| Distance   | Core Area not significantly disturbed* | Core Area significantly disturbed*  |
|------------|--|---|
| > 5 km     | 0                                      | 0   |
| 1 to 5 km  | 2                                      | <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1</span> |
| < 1 km     | 4                                      | <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">3</span> |
| contiguous | 5                                      | 4   |

\* defined as per RFA 'Old Growth' analyses.

**Neighbourhood** **Score** 3

| Radius from site   | % Native vegetation | Weighting | Score    |
|--|---------------------|-----------|----------|
| 100 m  | 80                  | 0.03      | 2.4      |
| 1 km   | 40                  | 0.04      | 1.6      |
| 5 km   | 20                  | 0.03      | 0.6      |
| subtract 2 if the neighbourhood is 'significantly disturbed' |                     |           | 4.6 - 2  |
|  |                     |           | 2.6      |
| <b>Add Values and 'round-off'</b>                            |                     |           | <b>3</b> |

\* to nearest 20%.  
Multiply % native vegetation x Weighting for each radius from the zone (eg. 40% x 0.03 = 1.2); then add values to obtain final Neighbourhood Value.

**Final Habitat Score**

| Component | 'Site Condition Score' |                   |               |             |             |                |      | 'Landscape Context Score' |               | Total |                       |
|-----------|------------------------|-------------------|---------------|-------------|-------------|----------------|------|---------------------------|---------------|-------|-----------------------|
|           | Large Trees            | Tree Canopy Cover | Lack of Weeds | Understorey | Recruitment | Organic Litter | Logs | Patch Size                | Neighbourhood |       | Distance to Core Area |
| Score     | 3                      | 3                 | 13            | 15          | 6           | 5              | 5    | 6                         | 3             | 3     | 62                    |

**Vegetation Quality Field Assessment Sheet**  
Version 1.3 - October 2004

Department of Sustainability and Environment

Site Name/No. TB RWD Location Moe Date 2/2/20  
 Assessor(s) Moe WTP Map Name/No. Zone 3 AMG / MGA \_\_\_\_\_  
 Tenure Private EVC Lowland Forest Bioregion StrzeB Bioregion

**'Site Condition Score'**

Large Trees 0.16 ha 8 slots Score 10

| Category & Description                                  | % Canopy Health* |        |       |
|---|------------------|--------|-------|
|   | > 70%            | 30-70% | < 30% |
| None present  | 0                | 0      | 0     |
| > 0 to 20% of the benchmark number of large trees/ha    | 3                | 2      | 1     |
| > 20% to 40% of the benchmark number of large trees/ha  | 4                | 3      | 2     |
| > 40% to 70% of the benchmark number of large trees/ha  | 6                | 5      | 4     |
| > 70% to 100% of the benchmark number of large trees/ha | 8                | 7      | 6     |
| ≥ the benchmark number of large trees/ha                | <u>10</u>        | 9      | 8     |

Large trees are defined by diameter at breast height (dbh) - see EVC benchmark.

\* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

$8 \div 0.16 = 50$   
 $50 \div 20 = 2.5 = 250\%$

Tree Canopy Cover BM 30% Score 5

| Category & Description             | % Canopy Health* |        |       |
|------------------------------------|------------------|--------|-------|
|                                    | > 70%            | 30-70% | < 30% |
| < 10% of benchmark cover           | 0                | 0      | 0     |
| < 50% or > 150% of benchmark cover | 3                | 2      | 1     |
| ≥ 50% or ≤ 150% of benchmark cover | <u>5</u>         | 4      | 3     |

Tree canopy is defined as those canopy tree species reaching ≥ 80% of mature height - see EVC benchmark description.

\* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Lack of Weeds Score 11

| Category & Description  | 'high threat' weeds* |       |           |
|-------------------------|----------------------|-------|-----------|
|                         | None                 | < 50% | > 50%     |
| > 50% cover of weeds    | 4                    | 2     | 0         |
| 25 - 50% cover of weeds | 7                    | 6     | 4         |
| 5 - 25% cover of weeds  | 11                   | 9     | 7         |
| < 5% cover of weeds**   | 15                   | 13    | <u>11</u> |

\* proportion of weed cover due to 'high threat' weeds - see EVC benchmark for guide.

'High threat' weed species are defined as those introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.

The EVC benchmark lists typical weed species for the EVC in the bioregion and provides an estimate of their 'invasiveness' and 'impact'. In general, those weed species considered to have a 'high impact' are considered 'high threat' regardless of their invasiveness.

\*\* if total weed cover is negligible (<1%) and high threat weed species are present then score '13'.

**Understorey Life forms**

| LF Code from EVC benchmark | # spp observed / Benchmark spp. | % cover observed / Benchmark % cover | Present (✓) | Modified (✓) |
|----------------------------|---------------------------------|--------------------------------------|-------------|--------------|
| IT                         | 2/1                             | 2/5                                  | ✓           | -            |
| T                          | 1/2                             | 4/10                                 | ✓           | ✓            |
| MS                         | 10/8                            | 15/35                                | ✓           | ✓            |
| SS                         | 4/4                             | 5/10                                 | ✓           | -            |
| PS                         | 3/1                             | <1/1                                 | ✓           | -            |
| MH                         | 5/6                             | 5/10                                 | ✓           | -            |
| SH                         | 4/3                             | 2/5                                  | ✓           | -            |
| LTA                        | 0/3                             | 0/10                                 | -           | -            |
| LNG                        | 2/2                             | 5/10                                 | ✓           | -            |
| MTG                        | 2/3                             | <1/5                                 | ✓           | -            |
| MNG                        | 3/2                             | 2/5                                  | ✓           | -            |
| GF                         | 2/2                             | 15/15                                | ✓           | -            |
| SC                         | 2/3                             | 1/5                                  | ✓           | -            |
| BL                         | NA/NA                           | 5/10                                 | ✓           | -            |
|                            | 1                               | 1                                    |             |              |
|                            | 1                               | 1                                    | 13/14       | 2/13         |

**Present**  
 For life forms with benchmark cover of < 10%, considered 'present' if:  
 • any specimens are observed.

For life forms with benchmark cover of ≥ 10%, considered 'present' if:  
 • the life form occupies at least 10% of benchmark cover.

**Modified**  
 For life forms with benchmark cover of < 10%, then considered substantially 'modified' if the life form has either:  
 • < 50% of the benchmark species diversity; or  
 • no reproductively-mature specimens are observed.

For life forms with benchmark cover of ≥ 10%, then considered substantially 'modified' if the life form has either:  
 • < 50% of benchmark cover; or  
 • < 50% of benchmark species diversity; or  
 • ≥ 50% of benchmark cover due largely to immature canopy specimens but the cover of reproductively-mature specimens is < 10% of the benchmark cover.

Understorey Score 20

| Category & Description                           | Score |
|--|-------|
| All strata and Life forms effectively absent     | 0     |
| Up to 50% of life forms present                  | 5     |
| ≥ 50% to 90% of Life forms present               | 10    |
| • of those present, ≥ 50% substantially modified | 15    |
| • of those present, < 50% substantially modified | 15    |
| ≥ 90% of Life forms present                      | 15    |
| • of those present, ≥ 50% substantially modified | 20    |
| • of those present, < 50% substantially modified | 20    |
| • of those present, none substantially modified  | 25    |



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**Vegetation Quality Field Assessment Sheet**  
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**Score** 6

| Recruitment   |  |   | High diversity** | Low diversity** |
|---|--|---|------------------|-----------------|
| No evidence of a recruitment 'cohort'*                                  | within EVC not driven by episodic events                                   |   | 0                | 0               |
|   | within EVC driven by episodic events^                                      | clear evidence of appropriate episodic event    | 0                | 0               |
|   |  | no clear evidence of appropriate episodic event | 5                | 5               |
| Evidence of at least one recruitment 'cohort' in at least one life-form | proportion of native woody species present that have adequate recruitment^ | < 30%   | 3                | 1               |
|   |  | 30 - 70%  | 6                | 3               |
|   |  | ≥ 70%   | 10               | 5               |

+ 'cohort' refers to a group of woody plants established in a single episode (can include suppressed canopy species individuals).  
^ refer to EVC benchmark for clarification.  
° treat multiple eucalypt canopy species as one species.  
\* high diversity defined as ≥ 50% of benchmark woody species diversity.

**Species Recruitment**

| Woody species recorded in habitat zone                | Adequate Recruitment (✓) |
|---|--------------------------|
| Eucalypt canopy (combined species)                    |                          |
| Acacia Mel  | ✓                        |
| Billy shear   | ✓                        |
| Lept. oak   | ✓                        |
| Clear fir   |                          |
| grass acc   | ✓                        |
| Good oak  | ✓                        |
| Cap quad  | ✓                        |
| Kun'eri   |                          |
| Billy shear   |                          |
| 6/10  |                          |
| number of woody spp. in EVC benchmark (SS and taller) | 15                       |

**Organic Litter** 40% **Score** 5

| Category & Description             | Dominated by native organic litter | Dominated by non-native organic litter |
|------------------------------------|------------------------------------|--|
| < 10% of benchmark cover           | 0                                  | 0                                      |
| < 50% or > 150% of benchmark cover | 3                                  | 2                                      |
| ≥ 50% or ≤ 150% of benchmark cover | 5                                  | 4                                      |

**Logs** **Score** 5

| Category & Description    | Large logs present* | Large logs absent* |
|---------------------------|---------------------|--------------------|
| < 10% of benchmark length | 0                   | 0                  |
| < 50% of benchmark length | 3                   | 2                  |
| ≥ 50% of benchmark length | 5                   | 4                  |

Large logs defined as those with diameter ≥ 0.5 of benchmark large tree dbh.  
\* present if large log length is ≥ 25% of EVC benchmark log length.  
# absent if large log length is < 25% of EVC benchmark log length.

$38 \div 0.16 = 23.75 \text{ per } 0.1 \text{ ha}$        $23.75 \div 20 = 1.18$        $20 \div 0.16 = 125$   
118%      125/0.1 ha L Logs

**'Landscape Context Score'**

**Patch Size** **Score** 6

| Category & Description                     | Score |
|--|-------|
| < 2 ha                                     | 1     |
| Between 2 and 5 ha                         | 2     |
| Between 5 and 10 ha                        | 4     |
| Between 10 and 20 ha                       | 6     |
| ≥ 20 ha, but 'significantly disturbed'     | 8     |
| ≥ 20 ha, but not 'significantly disturbed' | 10    |

**Distance to Core Area** **Score** 3

| Distance   | Core Area not significantly disturbed* | Core Area significantly disturbed* |
|------------|--|------------------------------------|
| > 5 km     | 0                                      | 0                                  |
| 1 to 5 km  | 2                                      | 1                                  |
| < 1 km     | 4                                      | 3                                  |
| contiguous | 5                                      | 4                                  |

\* 'significantly disturbed' defined as per RFA 'Old Growth' analyses eg. roading, coupes, grazing etc. - effectively most patches within fragmented landscapes.

\* defined as per RFA 'Old Growth' analyses.

**Neighbourhood** **Score** 3

| Radius from site   | % Native vegetation* | Weighting | Score         |
|--|----------------------|-----------|---------------|
| 100 m  | 80                   | 0.03      | 2.4           |
| 1 km   | 40                   | 0.04      | 1.6           |
| 5 km   | 20                   | 0.03      | 0.6           |
| subtract 2 if the neighbourhood is 'significantly disturbed' |                      |           | 4.6 - 2 = 2.6 |
| Add Values and 'round-off'                                   |                      |           | 3             |

\* to nearest 20%.  
Multiply % native vegetation x Weighting for each radius from the zone (eg. 40% x 0.03 = 1.2); then add values to obtain final Neighbourhood Value.

| Final Habitat Score |                        |                   |               |             |             |                |                           |            |       |               |                       |
|---------------------|------------------------|-------------------|---------------|-------------|-------------|----------------|---------------------------|------------|-------|---------------|-----------------------|
| Component           | 'Site Condition Score' |                   |               |             |             |                | 'Landscape Context Score' |            | Total |               |                       |
|                     | Large Trees            | Tree Canopy Cover | Lack of Weeds | Understorey | Recruitment | Organic Litter | Logs                      | Patch Size |       | Neighbourhood | Distance to Core Area |
| Score               | 10                     | 5                 | 11            | 20          | 6           | 5              | 5                         | 6          | 3     | 3             | 74                    |

**Vegetation Quality Field Assessment Sheet**  
Version 1.3 - October 2004

Department of Sustainability and Environment

Site Name/No. IBAND Location Moe Date 21/2/20  
 Assessor(s) Moe WTP Map Name/No. Zone 4 AMG / MGA \_\_\_\_\_  
 Tenure Private EVC Camp Forest 19 Bioregion Grz Ranges

**'Site Condition Score'**

Large Trees 0.31ha OLOT Score 0

| Category & Description                                  | % Canopy Health* |        |       |
|---|------------------|--------|-------|
|   | > 70%            | 30-70% | < 30% |
| None present  | 0                | 0      | 0     |
| > 0 to 20% of the benchmark number of large trees/ha    | 3                | 2      | 1     |
| > 20% to 40% of the benchmark number of large trees/ha  | 4                | 3      | 2     |
| > 40% to 70% of the benchmark number of large trees/ha  | 6                | 5      | 4     |
| > 70% to 100% of the benchmark number of large trees/ha | 8                | 7      | 6     |
| ≥ the benchmark number of large trees/ha                | 10               | 9      | 8     |

Large trees are defined by diameter at breast height (dbh) - see EVC benchmark.  
 \* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Tree Canopy Cover BM 30% Score 0

| Category & Description             | % Canopy Health* |        |       |
|------------------------------------|------------------|--------|-------|
|                                    | > 70%            | 30-70% | < 30% |
| < 10% of benchmark cover           | 0                | 0      | 0     |
| < 50% or > 150% of benchmark cover | 3                | 2      | 1     |
| ≥ 50% or ≤ 150% of benchmark cover | 5                | 4      | 3     |

Tree canopy is defined as those canopy tree species reaching ≥ 80% of mature height - see EVC benchmark description.  
 \* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Lack of Weeds Score 7

| Category & Description  | 'high threat' weeds* |       |       |
|-------------------------|----------------------|-------|-------|
|                         | None                 | ≤ 50% | > 50% |
| > 50% cover of weeds    | 4                    | 2     | 0     |
| 25 - 50% cover of weeds | 7                    | 6     | 4     |
| 5 - 25% cover of weeds  | 11                   | 9     | 7     |
| < 5% cover of weeds**   | 15                   | 13    | 11    |

\* proportion of weed cover due to 'high threat' weeds - see EVC benchmark for guide.  
 \*\* High threat weed species are defined as those introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.  
 The EVC benchmark lists typical weed species for the EVC in the bioregion and provides an estimate of their 'invasiveness' and 'impact'. In general, those weed species considered to have a high impact are considered high threat regardless of their invasiveness.  
 \*\* if total weed cover is negligible (<1%) and high threat weed species are present then score '13'.

**Understorey Life forms**

| LF Code from EVC benchmark | # spp observed / Benchmark spp. | % cover observed / Benchmark % cover | Present (✓) | Modified (✗) |
|----------------------------|---------------------------------|--------------------------------------|-------------|--------------|
| IT                         | 0/1                             | 0/5                                  | ✗           | -            |
| T                          | 3/4                             | 15/20                                | ✓           | -            |
| MS                         | 8/6                             | 30/30                                | ✓           | -            |
| SS                         | 4/1                             | 2/1                                  | ✓           | -            |
| LH                         | -/2                             | 0/1                                  | ✗           | -            |
| MH                         | -/8                             | 0/10                                 | ✗           | -            |
| SH                         | 4/1                             | 2/1                                  | ✓           | -            |
| LTG                        | 1/1                             | 1/1                                  | ✓           | -            |
| LNG                        | 1/1                             | 2/5                                  | ✓           | -            |
| MTG                        | -/3                             | 0/10                                 | ✗           | -            |
| MNG                        | 1/2                             | 1/5                                  | ✓           | -            |
| GF                         | 2/3                             | 5/10                                 | ✓           | -            |
| TRF                        | 1/1                             | 1/5                                  | ✓           | -            |
| SC                         | 2/3                             | 1/5                                  | ✓           | -            |
| BL                         | 10/10                           | 10/20                                | ✓           | -            |
|                            | 1                               | 1                                    | 11/15       |              |

**Present**  
 For life forms with benchmark cover of < 10%, considered 'present' if:  
 • any specimens are observed.  
 For life forms with benchmark cover of ≥ 10%, considered 'present' if:  
 • the life form occupies at least 10% of benchmark cover.

**Modified**  
 (apply only where life form is 'present')  
 For life forms with benchmark cover of < 10%, then considered substantially 'modified' if the life form has either:  
 • < 50% of the benchmark species diversity; or  
 • no reproductively-mature specimens are observed.  
 For life forms with benchmark cover of ≥ 10%, then considered substantially 'modified' if the life form has either:  
 • < 50% of benchmark cover; or  
 • < 50% of benchmark species diversity; or  
 • ≥ 50% of benchmark cover due largely to immature canopy specimens but the cover of reproductively-mature specimens is < 10% of the benchmark cover.

Understorey Score 15

| Category & Description                           | Score |
|--|-------|
| All strata and Life forms effectively absent     | 0     |
| Up to 50% of life forms present                  | 5     |
| ≥ 50% to 90% of Life forms present               | 10    |
| • of those present, ≥ 50% substantially modified |       |
| • of those present, < 50% substantially modified | 15    |
| ≥ 90% of Life forms present                      | 15    |
| • of those present, ≥ 50% substantially modified |       |
| • of those present, < 50% substantially modified | 20    |
| • of those present, none substantially modified  | 25    |



**Vegetation Quality Field Assessment Sheet**  
Version 1.3 - October 2004

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**Recruitment** **Score** 6

| Category & Description  |  | High diversity** | Low diversity** |
|---|--|------------------|-----------------|
| No evidence of a recruitment 'cohort'†                                  | within EVC not driven by episodic events                                   | 0                | 0               |
|   | within EVC driven by episodic events^                                      | 0                | 0               |
| Evidence of at least one recruitment 'cohort' in at least one life-form | clear evidence of appropriate episodic event                               | 0                | 0               |
|   | no clear evidence of appropriate episodic event                            | 5                | 5               |
|   | proportion of native woody species present that have adequate recruitment* |                  |                 |
|   | < 30%  | 3                | 1               |
|   | 30 - 70%   | 6                | 3               |
|   | ≥ 70%  | 10               | 5               |

† 'cohort' refers to a group of woody plants established in a single episode (can include suppressed canopy species individuals).  
^ refer to EVC benchmark for clarification.  
\* treat multiple eucalypt canopy species as one species.  
\*\* high diversity defined as ≥ 50% of benchmark woody species diversity.

**Species Recruitment**

| Woody species recorded in habitat zone                | Adequate Recruitment (✓) |
|---|--------------------------|
| Eucalypt canopy (combined species)                    | ✓                        |
| Ar deal   | ✓                        |
| Peum asp  | ✓                        |
| ole lic   | ✓                        |
| Ac vert   | ✓                        |
| Kun eri   | ✓                        |
| Coo ova   | ✓                        |
| Cop quad  | ✓                        |
| Polis   | ✓                        |
| Ar mel  | ✓                        |
| Cass long   | ✓                        |
| Lept cant   | ✓                        |
| #   | 4/11                     |
| number of woody spp. in EVC benchmark (SS and taller) | 12                       |

**Organic Litter** *EM 50%* **Score** 5

| Category & Description             | Dominated by native organic litter | Dominated by non-native organic litter |
|------------------------------------|------------------------------------|--|
| < 10% of benchmark cover           | 0                                  | 0                                      |
| < 50% or > 150% of benchmark cover | 3                                  | 2                                      |
| ≥ 50% or ≤ 150% of benchmark cover | 5                                  | 4                                      |

**Logs** *30m/0.1ha* **Score** 2

| Category & Description    | Large logs present* | Large logs absent* |
|---------------------------|---------------------|--------------------|
| < 10% of benchmark length | 0                   | 0                  |
| < 50% of benchmark length | 3                   | 2                  |
| ≥ 50% of benchmark length | 5                   | 4                  |

Large logs defined as those with diameter ≥ 0.5 of benchmark large tree dbh.  
\* present if large log length is ≥ 25% of EVC benchmark log length.  
# absent if large log length is < 25% of EVC benchmark log length.

*10:031 3:22/0.1ha 3.22/30 = 0.10 = 10%*

**'Landscape Context Score'**

**Patch Size** **Score** 6

| Category & Description                     | Score |
|--|-------|
| < 2 ha                                     | 1     |
| Between 2 and 5 ha                         | 2     |
| Between 5 and 10 ha                        | 4     |
| Between 10 and 20 ha                       | 6     |
| ≥ 20 ha, but 'significantly disturbed'     | 8     |
| ≥ 20 ha, but not 'significantly disturbed' | 10    |

**Distance to Core Area** **Score** 3

| Distance   | Core Area not significantly disturbed* | Core Area significantly disturbed* |
|------------|--|------------------------------------|
| > 5 km     | 0                                      | 0                                  |
| 1 to 5 km  | 2                                      | 1                                  |
| < 1 km     | 4                                      | 3                                  |
| contiguous | 5                                      | 4                                  |

\* 'significantly disturbed' defined as per RFA 'Old Growth' analyses eg. roading, coupes, grazing etc. - effectively most patches within fragmented landscapes.

\* defined as per RFA 'Old Growth' analyses.

**Neighbourhood** **Score** 3

| Radius from site   | % Native vegetation* | Weighting | Score         |
|--|----------------------|-----------|---------------|
| 100 m  | 80                   | 0.03      | 2.4           |
| 1 km   | 40                   | 0.04      | 1.6           |
| 5 km   | 20                   | 0.03      | 0.6           |
| subtract 2 if the neighbourhood is 'significantly disturbed' |                      |           | 4.6 - 2 = 2.6 |
| Add Values and 'round-off'                                   |                      |           | 3             |

\* to nearest 20%.  
Multiply % native vegetation x Weighting for each radius from the zone (eg. 40% x 0.03 = 1.2); then add values to obtain final Neighbourhood Value.

**Final Habitat Score**

| Component | 'Site Condition Score' |                   |               |             |             |                |      | 'Landscape Context Score' |               | Total |                       |
|-----------|------------------------|-------------------|---------------|-------------|-------------|----------------|------|---------------------------|---------------|-------|-----------------------|
|           | Large Trees            | Tree Canopy Cover | Lack of Weeds | Understorey | Recruitment | Organic Litter | Logs | Patch Size                | Neighbourhood |       | Distance to Core Area |
| Score     | 0                      | 0                 | 7             | 15          | 6           | 5              | 2    | 6                         | 3             | 3     | 47                    |

**Vegetation Quality Field Assessment Sheet**

Version 1.3 - October 2004

Department of Sustainability and Environment

Site Name/No. MWTP Location Moe WTP Date 14/11/2020 & 21/12/2020  
 Assessor(s) B. T. B. & W. Map Name/No. Zone 15 AMG / MGA H2 J  
 Tenure Private EVC 16: Lowland Forest Bioregion Grz Ranges

**'Site Condition Score'**

70cm dbh  
 Large Trees 13 in 0.343 ha Score 10

| Category & Description                                  | % Canopy Health* |        |       |
|---|------------------|--------|-------|
|   | > 70%            | 30-70% | < 30% |
| None present  | 0                | 0      | 0     |
| > 0 to 20% of the benchmark number of large trees/ha    | 3                | 2      | 1     |
| > 20% to 40% of the benchmark number of large trees/ha  | 4                | 3      | 2     |
| > 40% to 70% of the benchmark number of large trees/ha  | 6                | 5      | 4     |
| > 70% to 100% of the benchmark number of large trees/ha | 8                | 7      | 6     |
| ≥ the benchmark number of large trees/ha                | <u>10</u>        | 9      | 8     |

Large trees are defined by diameter at breast height (dbh) - see EVC benchmark.

\* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

$13 \div 0.343 = 37.9$   
 $37.9 \div 20 = 1.89 = 19\%$

Tree Canopy Cover By 30% Score 5

| Category & Description             | % Canopy Health* |        |       |
|------------------------------------|------------------|--------|-------|
|                                    | > 70%            | 30-70% | < 30% |
| < 10% of benchmark cover           | 0                | 0      | 0     |
| < 50% or > 150% of benchmark cover | 3                | 2      | 1     |
| ≥ 50% or ≤ 150% of benchmark cover | <u>5</u>         | 4      | 3     |

Tree canopy is defined as those canopy tree species reaching ≥ 80% of mature height - see EVC benchmark description.

\* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Lack of Weeds Score 11

| Category & Description  | 'high threat' weeds* |       |           |
|-------------------------|----------------------|-------|-----------|
|                         | None                 | < 50% | > 50%     |
| > 50% cover of weeds    | 4                    | 2     | 0         |
| 25 - 50% cover of weeds | 7                    | 6     | 4         |
| 5 - 25% cover of weeds  | 11                   | 9     | 7         |
| < 5% cover of weeds**   | 15                   | 13    | <u>11</u> |

\* proportion of weed cover due to 'high threat' weeds - see EVC benchmark for guide.

'High threat' weed species are defined as those introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.

The EVC benchmark lists typical weed species for the EVC in the bioregion and provides an estimate of their 'invasiveness' and 'impact'. In general, those weed species considered to have a 'high impact' are considered 'high threat' regardless of their invasiveness.

\*\* If total weed cover is negligible (<1%) and high threat weed species are present then score '13'.

**Understorey Life forms**

| LF Code from EVC benchmark | # spp observed / Benchmark spp. | % cover observed / Benchmark % cover | Present (✓) | Modified (x) |
|----------------------------|---------------------------------|--------------------------------------|-------------|--------------|
| IT                         | 3/1                             | 5/5                                  | /           | x            |
| T                          | 3/2                             | 5/10                                 | /           | -            |
| MS                         | 10/8                            | 25/35                                | /           | -            |
| SS                         | 12/4                            | 7/10                                 | /           | -            |
| PS                         | 6/1                             | 1/1                                  | /           | x            |
| MH                         | 9/6                             | 5/10                                 | /           | -            |
| SH                         | 7/3                             | 1/5                                  | /           | x            |
| LTG                        | 1/3                             | <1/10                                | x           | -            |
| LNG                        | 2/2                             | 5/10                                 | /           | -            |
| MTG                        | 3/3                             | 1/5                                  | /           | x            |
| MNG                        | 3/2                             | 5/5                                  | /           | x            |
| GF                         | 3/2                             | 7/15                                 | /           | ✓            |
| SC                         | 1/3                             | 3/5                                  | /           | ✓            |
| BL                         | Nil/na                          | 5/10                                 | /           | -            |
|                            | 1                               | 1                                    | 13/14       | 2/13         |

For life forms with benchmark cover of < 10%, considered 'present' if  
 • any specimens are observed.

For life forms with benchmark cover of ≥ 10%, considered 'present' if  
 • the life form occupies at least 10% of benchmark cover.

For life forms with benchmark cover of < 10%, then considered substantially 'modified' if the life form has either:  
 • < 50% of the benchmark species diversity; or  
 • no reproductively-mature specimens are observed.

For life forms with benchmark cover of ≥ 10%, then considered substantially 'modified' if the life form has either:  
 • < 50% of benchmark cover; or  
 • < 50% of benchmark species diversity; or  
 • ≥ 50% of benchmark cover due largely to immature canopy specimens but the cover of reproductively-mature specimens is < 10% of the benchmark cover.

Understorey Score 20

| Category & Description                           | Score |
|--|-------|
| All strata and Life forms effectively absent     | 0     |
| Up to 50% of life forms present                  | 5     |
| ≥ 50% to 90% of Life forms present               | 10    |
| • of those present, ≥ 50% substantially modified | 15    |
| • of those present, < 50% substantially modified | 15    |
| ≥ 90% of Life forms present                      | 15    |
| • of those present, ≥ 50% substantially modified | 20    |
| • of those present, < 50% substantially modified | 25    |
| • of those present, none substantially modified  | 25    |



Depart.  
Sustainability  
Environme.

**Vegetation Quality Field Assessment Sheet**  
Version 1.3 - October 2004

**Score** 6

| Recruitment   |  | High diversity** | Low diversity** |
|---|--|------------------|-----------------|
| No evidence of a recruitment 'cohort'+                                  | within EVC not driven by episodic events                                   | 0                | 0               |
|   | within EVC driven by episodic events^                                      | 0                | 0               |
| Evidence of at least one recruitment 'cohort' in at least one life-form | clear evidence of appropriate episodic event                               | 0                | 0               |
|   | no clear evidence of appropriate episodic event                            | 5                | 5               |
|   | proportion of native woody species present that have adequate recruitment* |                  |                 |
|   | < 30%  | 3                | 1               |
|   | 30 - 70%   | 6                | 3               |
|   | ≥ 70%  | 10               | 5               |

+ 'cohort' refers to a group of woody plants established in a single episode (can include suppressed canopy species individuals).  
^ refer to EVC benchmark for clarification.  
\* treat multiple eucalypt canopy species as one species.  
\*\* high diversity defined as ≥ 50% of benchmark woody species diversity.

**Species Recruitment**

| Woody species recorded in habitat zone                | Adequate Recruitment |
|---|----------------------|
| Eucalypt canopy (combined species)                    | (✓)                  |
| <i>Eucalypt</i>                                       |                      |
| <i>Pom asp</i>  | /                    |
| <i>Ac Mol</i>   |                      |
| <i>Ac Myer</i>  | /                    |
| <i>Polys</i>  | /                    |
| <i>Cass ac</i>  |                      |
| <i>Cap guia d</i>                                     | /                    |
| <i>LEPT cont</i>                                      | /                    |
| <i>Cass long</i>                                      | /                    |
| <i>Kunz eric</i>                                      | /                    |
| <i>Ac serr</i>  |                      |
| <i>Plat Fern</i>                                      |                      |
| number of woody spp. in EVC benchmark (SS and taller) | 15                   |

6/16

**Score** 5

**Organic Litter**

| Category & Description             | Dominated by native organic litter | Dominated by non-native organic litter |
|------------------------------------|------------------------------------|--|
| < 10% of benchmark cover           | 0                                  | 0                                      |
| < 50% or > 150% of benchmark cover | 3                                  | 2                                      |
| ≥ 50% or ≤ 150% of benchmark cover | 5                                  | 4                                      |

**Score** 4

**Logs**

| Category & Description    | Large logs present* | Large logs absent* |
|---------------------------|---------------------|--------------------|
| < 10% of benchmark length | 0                   | 0                  |
| < 50% of benchmark length | 3                   | 2                  |
| ≥ 50% of benchmark length | 5                   | 4                  |

Large logs defined as those with diameter ≥ 0.5 of benchmark large tree dbh.  
\* present if large log length is ≥ 25% of EVC benchmark log length.  
# absent if large log length is < 25% of EVC benchmark log length.  
70 ÷ 0.18 ha = 38888      38888 ÷ 20 = 19444  
19444%  
LL 11 ÷ 0.18      61/0.18ha

**'Landscape Context Score'**

**Score** 6

**Patch Size**

|  |    |
|--|----|
| < 2 ha                                     | 1  |
| Between 2 and 5 ha                         | 2  |
| Between 5 and 10 ha                        | 4  |
| Between 10 and 20 ha                       | 6  |
| ≥ 20 ha, but 'significantly disturbed'     | 8  |
| ≥ 20 ha, but not 'significantly disturbed' | 10 |

**Score** 3

**Distance to Core Area**

| Distance   | Core Area not significantly disturbed* | Core Area significantly disturbed* |
|------------|--|------------------------------------|
| > 5 km     | 0                                      | 0                                  |
| 1 to 5 km  | 2                                      | 1                                  |
| < 1 km     | 4                                      | 3                                  |
| contiguous | 5                                      | 4                                  |

\* defined as per RFA 'Old Growth' analyses.

\* 'significantly disturbed' defined as per RFA 'Old Growth' analyses eg. roading, coupes, grazing etc. - effectively most patches within fragmented landscapes.

**Score** 3

**Neighbourhood**

| Radius from site   | % Native vegetation* | Weighting |          |
|--|----------------------|-----------|----------|
| 100 m  | 80                   | 0.03      | 2.4      |
| 1 km   | 40                   | 0.04      | 1.6      |
| 5 km   | 20                   | 0.03      | 0.6      |
| subtract 2 if the neighbourhood is 'significantly disturbed' |                      |           | 4.6 - 2  |
|  |                      |           | 2.6      |
| <b>Add Values and 'round-off'</b>                            |                      |           | <b>3</b> |

\* to nearest 20%.  
Multiply % native vegetation x Weighting for each radius from the zone (eg. 40% x 0.03 = 1.2); then add values to obtain final Neighbourhood Value.

**Final Habitat Score**

| Component | 'Site Condition Score' |                   |               |             |             |                |      | 'Landscape Context Score' |               | Total |                       |
|-----------|------------------------|-------------------|---------------|-------------|-------------|----------------|------|---------------------------|---------------|-------|-----------------------|
|           | Large Trees            | Tree Canopy Cover | Lack of Weeds | Understorey | Recruitment | Organic Litter | Logs | Patch Size                | Neighbourhood |       | Distance to Core Area |
| Score     | 10                     | 5                 | 11            | 20          | 6           | 5              | 4    | 6                         | 3             | 3     | 73                    |

Appendix 8: NVR Report

## Native vegetation removal report

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 report **is not an assessment by DELWP** of the proposed native vegetation removal. Native vegetation information and offset requirements have been determined using spatial data provided by the applicant or their consultant.

Date of issue: 13/05/2020  
 Time of issue: 3:43 pm

Report ID: IND\_2020\_008

|            |                       |
|------------|-----------------------|
| Project ID | HabZones_VICGRID94_v2 |
|------------|-----------------------|

### Assessment pathway

| Assessment pathway                     | Detailed Assessment Pathway   |
|--|---|
| Extent including past and proposed     | 1.854 ha  |
| Extent of past removal                 | 0.000 ha  |
| Extent of proposed removal             | 1.854 ha  |
| No. Large trees proposed to be removed | 44  |
| Location category of proposed removal  | Location 2<br>The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species. |

#### 1. Location map





## Native vegetation removal report

### Offset requirements if a permit is granted

Any approval granted will include a condition to obtain an offset that meets the following requirements:

|   |   |
|---|---|
| <b>General offset amount<sup>1</sup></b>                | 1.481 general habitat units   |
| Vicinity  | West Gippsland Catchment Management Authority (CMA) or Latrobe City Council |
| Minimum strategic biodiversity value score <sup>2</sup> | 0.413   |
| Large trees   | 44 large trees  |

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

Appendix 1 includes information about the native vegetation to be removed

Appendix 2 includes information about the rare or threatened species mapped at the site.

Appendix 3 includes maps showing native vegetation to be removed and extracts of relevant species habitat importance maps

<sup>1</sup> The general offset amount required is the sum of all general habitat units in Appendix 1.

<sup>2</sup> Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required.

## Native vegetation removal report

### Next steps

Any proposal to remove native vegetation must meet the application requirements of the Detailed Assessment Pathway and it will be assessed under the Detailed Assessment Pathway.

If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. Council will refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

This *Native vegetation removal report* must be submitted with your application for a permit to remove, destroy or lop native vegetation.

Refer to the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines) for a full list of application requirements. This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway
- A description of the native vegetation to be removed (partly met)
- Maps showing the native vegetation and property (partly met)
- Information about the impacts on rare or threatened species.
- The offset requirements determined in accordance with section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs
- Details of past native vegetation removal
- An avoid and minimise statement
- A copy of any Property Vegetation Plan that applies
- A defensible space statement as applicable
- A statement about the Native Vegetation Precinct Plan as applicable
- A site assessment report including a habitat hectare assessment of any patches of native vegetation and details of trees
- An offset statement that explains that an offset has been identified and how it will be secured.

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Obtaining this publication does not guarantee that an application will meet the requirements of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes or that a permit to remove native vegetation will be granted.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes.

Appendix 1: Description of native vegetation to be removed

The species-general offset test was applied to your proposal. This test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the species offset threshold. The threshold is set at 0.005 per cent of the mapped habitat value for a species. When the proportional impact is above the species offset threshold a species offset is required. This test is done for all species mapped at the site. Multiple species offsets will be required if the species offset threshold is exceeded for multiple species.

Where a zone requires species offset(s), the species habitat units for each species in that zone is calculated by the following equation in accordance with the Guidelines:

$$\text{Species habitat units} = \text{extent} \times \text{condition} \times \text{species landscape factor} \times 2, \text{ where the species landscape factor} = 0.5 + (\text{habitat importance score}/2)$$

The species offset amount(s) required is the sum of all species habitat units per zone

Where a zone does not require a species offset, the general habitat units in that zone is calculated by the following equation in accordance with the Guidelines:

$$\text{General habitat units} = \text{extent} \times \text{condition} \times \text{general landscape factor} \times 1.5, \text{ where the general landscape factor} = 0.5 + (\text{strategic biodiversity value score}/2)$$

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 in a GIS file |       |          |                            |               |                 |                 | Information calculated by EnSym |                        |           |          |               |             |
|---|-------|----------|----------------------------|---------------|-----------------|-----------------|---------------------------------|------------------------|-----------|----------|---------------|-------------|
| Zone  | Type  | BioEVC   | BioEVC conservation status | Large tree(s) | Partial removal | Condition score | Polygon Extent                  | Extent without overlap | SBV score | HI score | Habitat units | Offset type |
| 1-A   | Patch | strz0016 | Vulnerable                 | 38            | no              | 0.730           | 1.485                           | 1.485                  | 0.510     |          | 1.228         | General     |
| 2-A   | Patch | strz0029 | Endangered                 | 0             | no              | 0.620           | 0.053                           | 0.053                  | 0.510     |          | 0.037         | General     |
| 4-A   | Patch | strz0029 | Endangered                 | 0             | no              | 0.470           | 0.173                           | 0.173                  | 0.510     |          | 0.092         | General     |
| 5-A   | Patch | strz0016 | Vulnerable                 | 6             | no              | 0.730           | 0.142                           | 0.142                  | 0.592     |          | 0.124         | General     |

Appendix 2: Information about impacts to rare or threatened species' habitats on site

This table lists all rare or threatened species' habitats mapped at the site.

| Species common name       | Species scientific name       | Species number | Conservation status | Group     | Habitat impacted       | % habitat value affected |
|---------------------------|-------------------------------|----------------|---------------------|-----------|------------------------|--------------------------|
| Strzelecki Gum            | <i>Eucalyptus strzeleckii</i> | 504558         | Vulnerable          | Dispersed | Habitat importance map | 0.0014                   |
| Bog Gum                   | <i>Eucalyptus kitsoniana</i>  | 501290         | Rare                | Dispersed | Habitat importance map | 0.0003                   |
| Powerful Owl              | <i>Ninox strenua</i>          | 10248          | Vulnerable          | Dispersed | Habitat importance map | 0.0000                   |
| Black Falcon              | <i>Falco subniger</i>         | 10238          | Vulnerable          | Dispersed | Habitat importance map | 0.0000                   |
| White-throated Needletail | <i>Hirundapus caudacutus</i>  | 10334          | Vulnerable          | Dispersed | Habitat importance map | 0.0000                   |
| Lace Monitor              | <i>Varanus varius</i>         | 12283          | Endangered          | Dispersed | Habitat importance map | 0.0000                   |
| Greater Glider            | <i>Petauroides volans</i>     | 11133          | Vulnerable          | Dispersed | Habitat importance map | 0.0000                   |

Habitat group

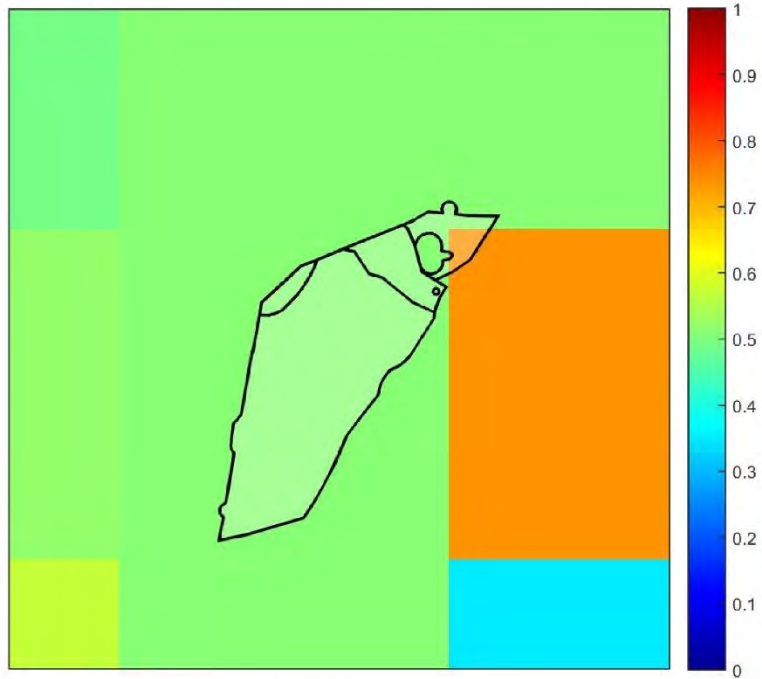
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

Habitat impacted

- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance scores in dispersed species habitat maps and selected VBA records
- Selected VBA record is an area in Victoria that represents a large population, roosting or breeding site etc.

### Appendix 3 – Images of mapped native vegetation

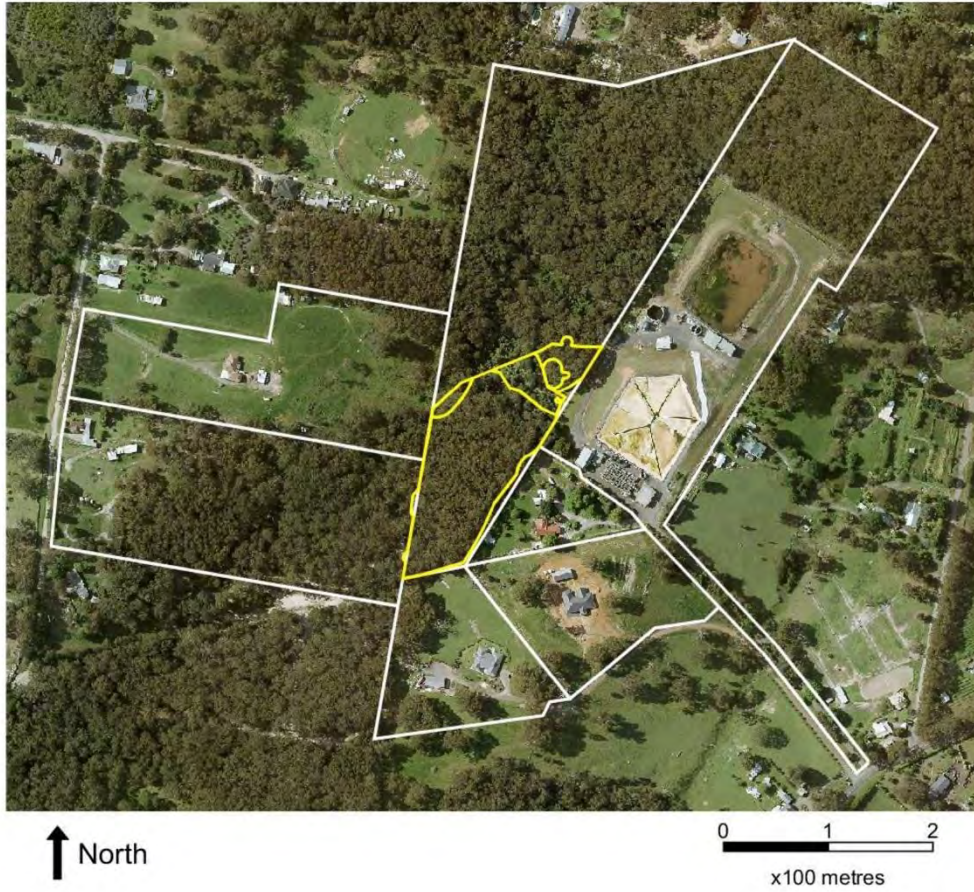
#### 2. Strategic biodiversity values map



#### 3. Aerial photograph showing mapped native vegetation



4. Map of the property in context

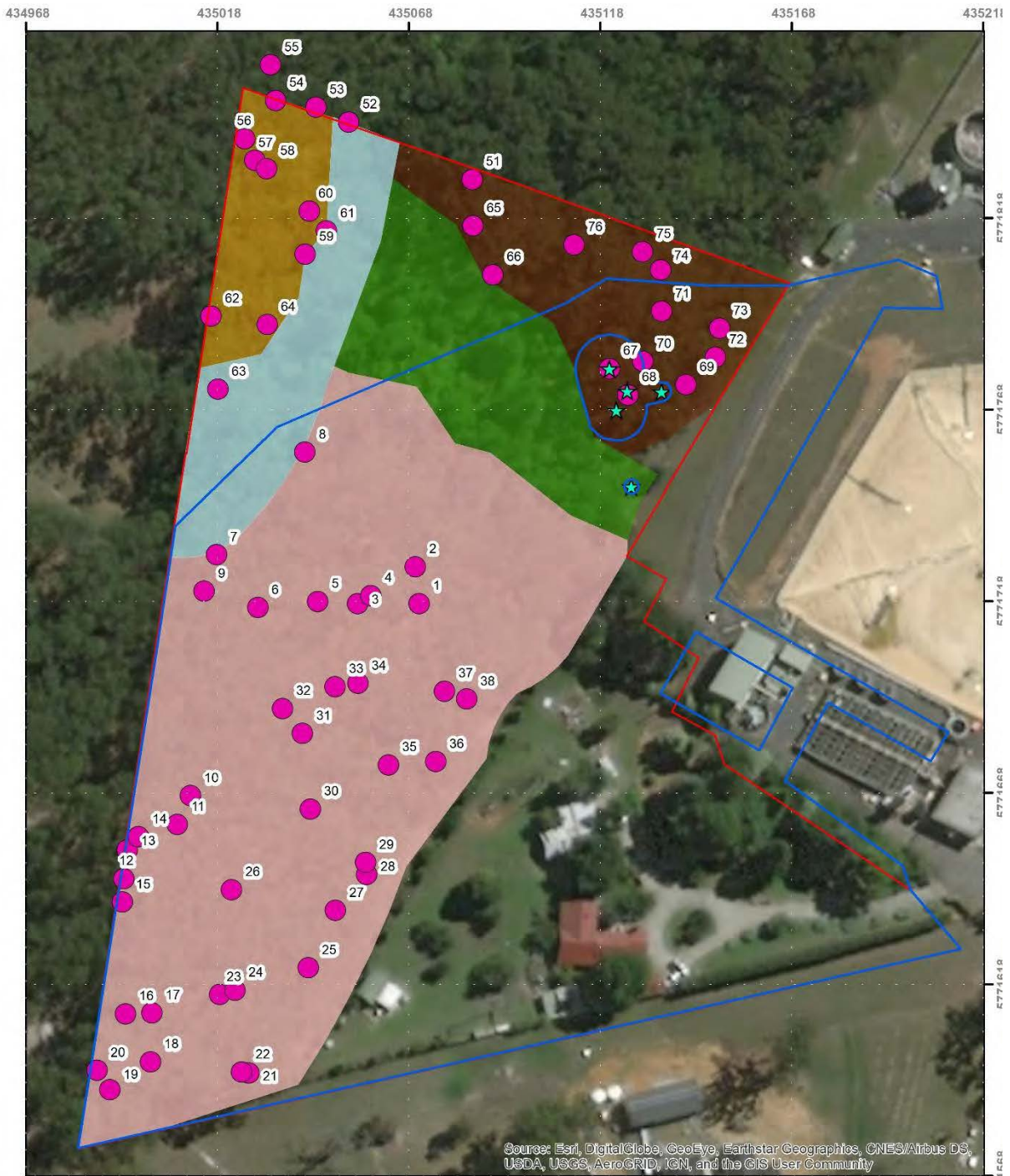


Yellow boundaries denote areas of proposed native vegetation removal.

## Maps

Maps commence on the next page.

Map 1 - Habitat Zones, Scattered and Large Trees



283365 483365  
5774473  
5774473

**Legend**

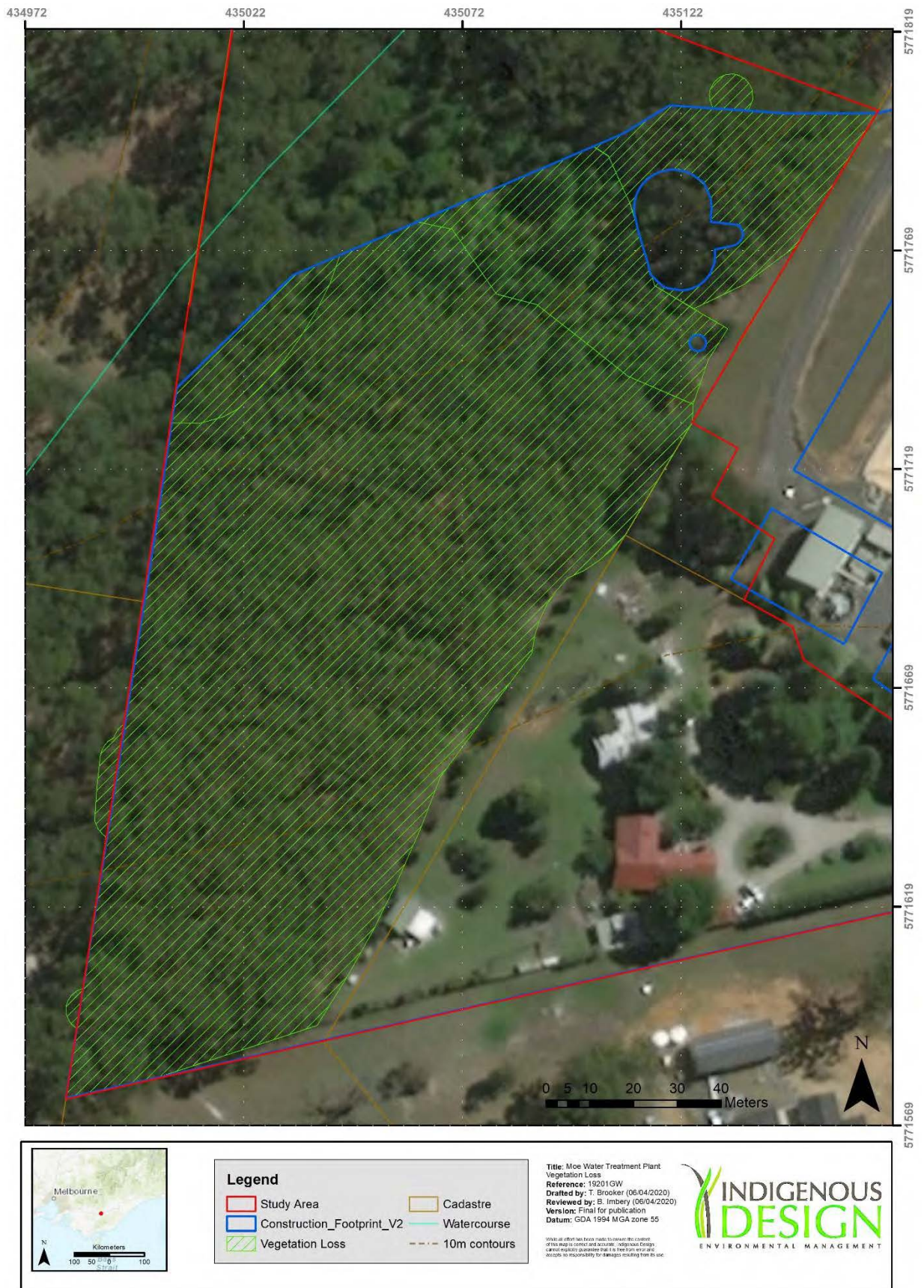
|  |   |
|--|---|
| <span style="border: 1px solid blue; padding: 2px;"> </span> Construction_Footprint_V2 | <span style="background-color: #FFC0CB; border: 1px solid #FFC0CB; padding: 2px;"> </span> Habitat Zone 1 |
| <span style="color: cyan;">★</span> Eucalyptus strzeleckii                             | <span style="background-color: #ADD8E6; border: 1px solid #ADD8E6; padding: 2px;"> </span> Habitat Zone 2 |
| <span style="border: 1px solid red; padding: 2px;"> </span> Study Area                 | <span style="background-color: #FFD700; border: 1px solid #FFD700; padding: 2px;"> </span> Habitat Zone 3 |
| <span style="color: magenta;">●</span> Large Old Trees                                 | <span style="background-color: #90EE90; border: 1px solid #90EE90; padding: 2px;"> </span> Habitat Zone 4 |
|  | <span style="background-color: #A0522D; border: 1px solid #A0522D; padding: 2px;"> </span> Habitat Zone 5 |

N

0 12.5 25 50 75 100  
Meters

**Title:** Moe Water Treatment Plant - Trees  
**Reference:** 19201GW  
**Drafted by:** T. Brooker (06/04/2020)  
**Reviewed by:** B. Imbery (06/04/2020)  
**Version:** Final for publication  
**Datum:** GDA 1994 VICGRID94

Map 2 – Location and extent of native vegetation losses under the proposal





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## Appendix D – Powerful Owl assessments

# **Gippsland Water – Moe Treatment Plant Assessment of Habitat and Survey for Powerful Owl**



Report to Indigenous Design

Environmental Management  
March 2020



E. McNabb

Ninox Pursuits Environmental Services  
PO Box 135  
Gembrook Victoria 3783

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**Cover photo:** Grassy Woodland at survey site 1, Gippsland Water treatment plant, Moe. (Photo Ninnox Pursuits).

## **Acknowledgements**

Thanks to Indigenous Design for their invitation to conduct this project.

Thanks to Jake Whitelaw (Gippsland Water) for support during fieldwork.

Figure 1 was created using Google Earth Pro.

## Summary

Targeted surveys for the *threatened* Powerful Owl at or near, Gippsland Water's water treatment plant in Moe, failed to detect the species or evidence of current occurrence. A deceased specimen found within the property was reported in 2013. Obsolete habitat modelling suggests that the area provides suitable habitat for the Powerful Owl. Subjective assessment suggests that the project area may provide a proportion of a broader foraging habitat although no potential nest sites (i.e. large hollow bearing trees) were identified.

A preferred prey item, Common Ringtail Possum is abundant across the local landscape.

Further investigation closer to the breeding season (May – June) is recommended to provide a higher level of certainty about the breeding status of the owls.

No other *threatened* nocturnal bird species were detected. One non-threatened nocturnal bird, the Southern Boobook was detected during playback survey.

The 15.6-hectare site currently contributes approximately 10.4 hectares of remnant bushland along the western and northern flanks of the infrastructure areas. These bushland areas potentially contribute as foraging and roosting areas.

The proposed development may excise approximately 2.6 hectares from the above bushland. Other, suitable roosting and foraging habitat outside of the study area was recognised including the Edward Hunter Reserve to the north. The Powerful Owl may range over the broader landscape including the study area although at this time, no such activity or evidence of presence was found.

Further investigation during May when Powerful Owls usually become highly reactive to call playback is recommended.

The proposed extension to the water treatment facility is not expected to negatively impact the Powerful Owl.

# 1 Introduction

Gippsland Water propose to extend its water storage/treatment facility onto currently forested land adjacent to and abutting its water treatment facility at Moe South. This extension will require clearing of approximately 2.6 ha of relatively unmodified forest (Figure 1).

One *threatened* nocturnal bird species, the Powerful Owl *Ninox strenua* has been recorded on the property, less than 100 metres from the perimeter of the proposed work area in July 2013 (DELWP 2020). This record was of a deceased bird and the nearest other record of Powerful Owl is 11.7 kilometres to the north-east, within Moondarra State Park (DELWP 2020).

The Flora & Fauna Guarantee Act (DSE 1988) requires Gippsland Water to meet compliance with the protection of native fauna at the subject site. Consequently, Gippsland Water recognise their obligation to assess the status of the Powerful Owl at the facility and reduce negative impacts on the species if possible.

Ninox Pursuits was invited to investigate the status of the Powerful Owl on the property, to identify potential impacts and recommend preliminary mitigation strategies where appropriate, which may be associated with the proposed extension project.

## 2 Methods

### 2.1 Review of existing information

The Department of Environment, Land and Water's Nature Kit website (DELWP 2020) was interrogated to provide information on threatened nocturnal bird species on and near the subject site.

### 2.2 Dusk watch

Dusk watch was used to detect owls calling at these times to reveal the roost location. If an owl was heard during dusk watch, compass bearings would be used to guide a daytime search for a roost site. Where a tree hollow was identified near a dusk watch site, it would be watched for owls or other hollow-dwelling fauna which may emerge.

### 2.3 Call Playback

Call playback. Pre-recorded digital (mp3) territorial calls broadcast at natural volume through a 10watt amplifier to elicit an audible or visual response from owls. Playback was conducted on two nights, one week apart, commencing one hour after sunset. Listening is continued after playback whilst a spotlight walk is conducted to search for owls that may have responded by flying quietly to the playback site and record other fauna (potential prey).

The playback sequence included four *threatened* species: Powerful Owl, Barking Owl *N. connivens*, Sooty Owl *Tyto tenebricosa* and Masked Owl *T. novaehollandiae* and Southern Boobook punctuated with listening periods between each species.

Playback sites were selected to provide strategic audio coverage of the subject site.

When an owl vocalises, compass bearing and an estimate of distance is noted to allow an estimate of position of calling owl. This response can direct subsequent area for on foot investigation.

Call playback involves a degree of disturbance. Hence, care was taken to avoid excessive use of call playback at individual sites. If unsolicited calling is noted, play back of the relevant species is omitted unless necessary to determine detailed information.

## *2.4 Spotighting*

Each playback session was followed by a spotlight search over approximately one Ha, of 10 minutes duration. These searches extend the listening period to check for owls that may call in response or fly in silently to the playback area. Arboreal mammals (i.e. prey) and other mammals were noted.

## *2.5 Daytime searches*

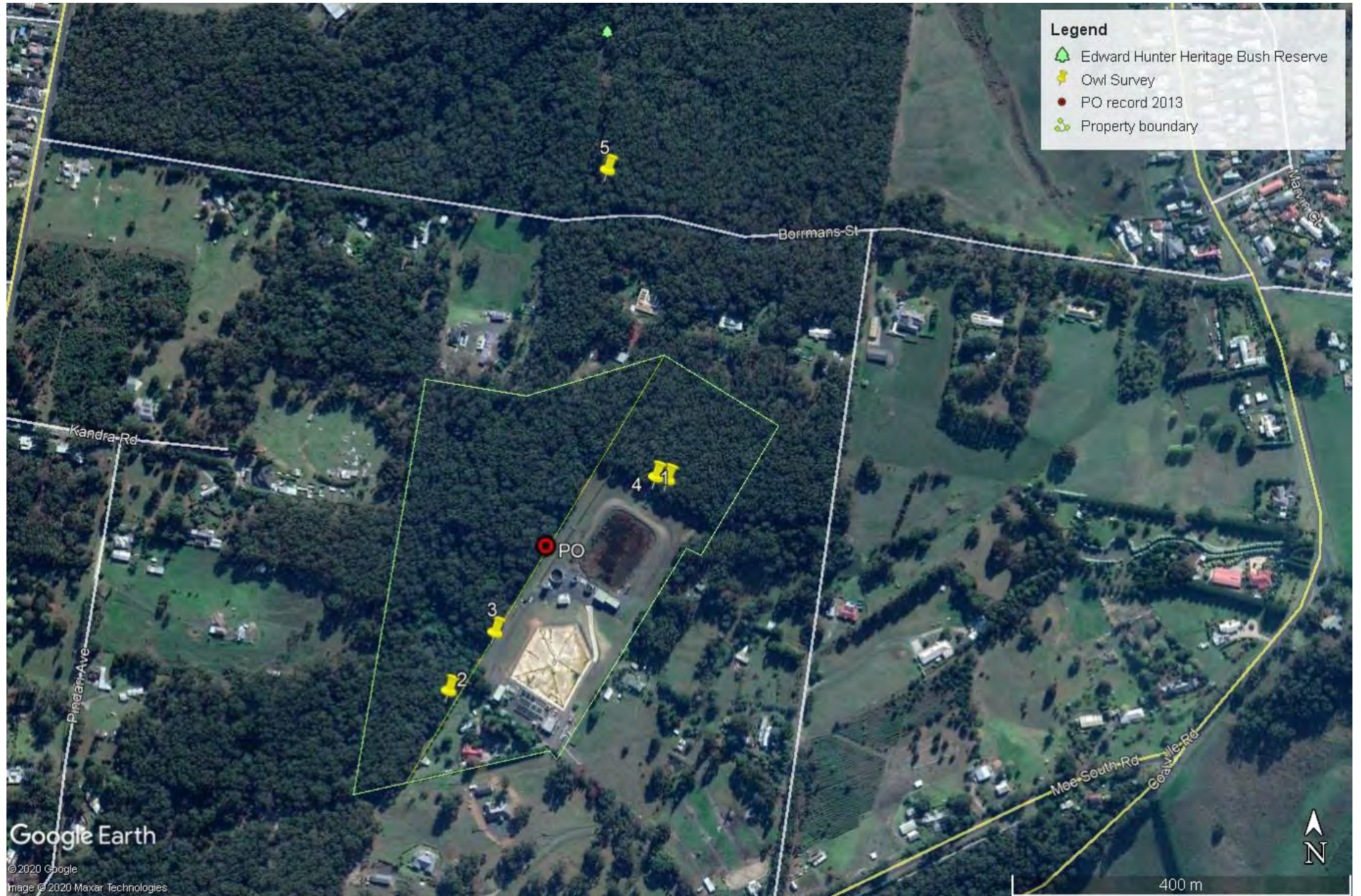
A daytime search involved either:

- Searching an area determined by compass bearings (triangulation) to a calling owl.
- Searching selected areas on foot to look for roosting owls or signs such as regurgitated pellets and/or faeces.

### **3 Data reporting**

All fauna data collected during surveys to be submitted to the Victorian Biodiversity Atlas.

Figure 1. Gippsland Water Treatment site, Moe. Owl survey map March 2020



## 4 Results

### 4.1 Existing information

For the one-minute grid block containing the water treatment plant and proposed extension site, the Nature Kit website revealed one record in 2013 of Powerful Owl (DELWP 2020; Figure 1). This record was of a dead bird reported by Shannon Dwyer near the interface between remnant forest and the cleared water treatment plant (Figure 1). There are no records of other threatened nocturnal birds in the grid block with nearest record of Powerful Owl 11.7 kilometres to the north-east in Moondarra State Park, .

### 4.2 Dusk watch

Dusk watch was conducted at sites one and three on 16<sup>th</sup> and 23<sup>rd</sup> March 2020 respectively (Figure 1). No large forest owls were detected during these dusk watches.

### 4.3 Call Playback

Call playback was conducted on sites one and two on 16<sup>th</sup> March 2020 and sites three, four and five on 23<sup>rd</sup> March 2020 (Figure 1). No threatened owl species were detected and one non-threatened owl, the Southern Boobook responded vocally to playback at site 3.

### 4.4 Spotlighting

A total of 12 Common Ringtail Possums *Pseudocheirus peregrinus* were detected during spotlighting of the five sites following playback. One Common Brushtail Possum *Trichosurus vulpecula* was detected at site five (in Edward Hunter Reserve) and two Southern Bobucks, *T. cunninghamii* were detected at site four, within the treatment plant property.

### 4.5 Daytime searching

A daylight search of the forested areas was conducted on the 16<sup>th</sup> March followed by a further search of the proposed extension area on 23 March 2020. No owls or evidence of owls was found. Further, no large hollow bearing trees (potential nest sites) were seen.

## 5 Discussion

Powerful Owls are known to occupy large home ranges. For example, recent work in Gippsland by Bilney (2013) showed an adult female to range over an area of between 871 and 1589 hectares depending upon the method of home range analysis. Although no Powerful Owl or evidence of one, was revealed during this study, a possibility remains that at some time, Powerful Owls may forage, roost or nest on the Gippsland Water treatment site at Moe. At the time of writing, no such evidence has come to light and it should be recognised that the one 2013 atlas record was of a dead individual, not a fit, resident bird.

Powerful Owls in Victoria breed during winter. Courting and nest selection occurs during late autumn and eggs are usually laid in early June (McNabb 1996). Powerful Owls are generally most responsive to call playback during late autumn when they defend their nesting territory from intruding conspecifics. The survey conducted herein should be considered to be preliminary. A brief playback survey in May is recommended to provide improved surety about the status of the Powerful Owl in the area.

The preferred prey of the Powerful Owl in Victoria is the Common Ringtail Possum (McNabb 1996). Although such prey numbers have been depleted across the broader landscape by the recent decade of drought and severe summers (McNabb *et al.* 2012), the landscape across the study site appears to support an abundant population of this prey species. Therefore, breeding should not be curtailed by lack of food.

Since the 2009 Black Saturday wildfires, prescribed burning targets have been increased with the aim to mitigate wildfire and protect communities and assets. Such planned burns in many cases, have led to destruction of hollow den and nest trees (E. McN. pers. obs.). Prey such as possums, gliders etc. is negatively impacted by loss of middle storey food plants and dens. Land managers should therefore consider such impacts if planning to burn and adopt strategies to protect sensitive owl and prey habitat.

This study has found that although a major proportion, 2.64 hectares (25%) of the 10.35 hectares of remnant habitat on the property may be lost due to the extension, negative impact on the Powerful Owl over the broader landscape should be minimal due to an apparent shortage of suitable nest sites and the abundance of favoured prey species, ringtail and brushtail possums.

Further survey work during May, close to the owls' breeding season may provide more conclusive evidence although it must be stressed that absence cannot be proven.

Construction of the proposed extension at the south end of the property, although 2.64 hectares of potential habitat may be lost, is not expected to negatively impact the status of the Powerful Owl in the area.

## 6 Conclusion

- Powerful Owls are not currently considered to be resident in the landscape including and surrounding the Gippsland Water Treatment site at Moe South.
- There is no record of a live Powerful Owl on or near the site.
- No breeding site has been identified on or near the site.
- The creation and maintenance the proposed extension area is not expected to negatively impact the owls because the owls have not been seen to forage, roost or nest within the mapped (Figure 1) property.
- The proposed works operation may negatively impact on unknown owl roost sites, although it is considered that the existence of large tracts of nearby habitat will provide alternative roost sites.
- Current land management practices have preserved habitat outside the proposed extension area.
- Future management should continue to consider impacts of future works on foraging, roosting and breeding sites.

## **7 Preliminary Recommendations**

- A call playback survey of the area for Powerful Owl in May is recommended when resident owls become most territorial. If a Powerful Owl is detected during above survey, make effort to determine potential impact if any, of the planned works on the Gippsland Water treatment site.

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## Appendix 1.

Co-ordinates of owl survey points on or near Moe Water Treatment Plant in March 2020. DW=Duskwatch; PB=Call playback; SL= Spotlighting, 10 min/1ha. (\*offsite. Zone 55, Map Datum GDA94).

| Date     | Site No | east   | south   | Notes    |
|----------|---------|--------|---------|----------|
| 16.03.20 | 1       | 435344 | 5771933 | DW;PB;SL |
| 16.03.20 | 2       | 435086 | 5771681 | PB;SL    |
| 23.03.20 | 3       | 435140 | 5771750 | DW;PB;SL |
| 23.03.20 | 4       | 435330 | 5771936 | PB;SL    |
| 23.03.20 | 5*      | 435268 | 5772307 | PB;SL    |
|          |         |        |         |          |
|          |         |        |         |          |
|          |         |        |         |          |
|          |         |        |         |          |
|          |         |        |         |          |
|          |         |        |         |          |

## Appendix 2.

Victorian Biodiversity Atlas record of Powerful Owl at Moe Water Treatment Plant, July 2013. (Zone 55, Map Datum GDA94)

| Species                 | east   | north   | Date |
|-------------------------|--------|---------|------|
| Powerful Owl (deceased) | 435205 | 5771869 | 2013 |

## Appendix 3.

Nocturnal fauna observed during surveys on or near Moe Water Treatment Plant in March 2020 (\*offsite).

| Site | <i>Ninox novaeseelandiae</i> | <i>Trichosurus vulpecula</i> | <i>T. cunninghami</i> | <i>Pseudochierus peregrinus</i> | <i>Vulpes vulpes</i> |
|------|------------------------------|------------------------------|-----------------------|---------------------------------|----------------------|
| 1    |                              |                              |                       | 1                               |                      |
| 2    | 1                            |                              |                       | 3                               |                      |
| 3    |                              |                              |                       | 2                               |                      |
| 4    |                              |                              | 2                     | 1                               |                      |
| 5*   |                              | 1                            |                       | 5                               | 1                    |
|      |                              |                              |                       |                                 |                      |

8<sup>th</sup> May 2020

**Jake Whitelaw**

Environmental Officer  
Gippsland Water  
55 Hazelwood Drive, Traralgon 3844  
Jake.whitelaw@gippswater.com.au

Dear Jake,

**RE: Further Assessment of Habitat and Survey for Powerful Owl - Moe Water Treatment Plant**

Please see supplementary report to Ninox Pursuits Environmental Managements Powerful Owl survey of the Moe Water Treatment plant completed in early May 2020.

This report completes the recommendation from the previous report (Ninox Pursuits, March 2020) to *“..complete a call playback survey of the area for Powerful Owl in May when resident owls become most territorial. If a Powerful Owl is detected during this survey, make effort to determine potential impact if any, of the planned works on the Gippsland Water treatment site”*.

No evidence of Powerful Owl occurrence was found in the landscape surrounding and including the Moe Water Treatment plant and there was no detection of the owl through call playback at this time, close to breeding season which provides confidence that no owls currently occupy the area.

Nothing further is required for the planning permit and approvals process in regard to recommendations made in the Indigenous Design’s Report *Ecological Assessment - Moe Water Treatment Plant CWS Basin* (Imbery, Fuhrmann & Brooker, April 2020).

Please feel free to contact me if you require anything further.

Regards,



Tania Brooker  
Consulting Manager

Supplementary report: May 2020

Gippsland Water – Moe Treatment Plant  
Further Assessment of Habitat  
and  
Survey for  
Powerful Owl

Report to Indigenous Design  
Environmental Management  
May 2020



E. McNabb

Ninox Pursuits Environmental Services  
PO Box 135  
Gembrook Victoria 3783

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## **Acknowledgements**

Thanks again to Indigenous Design Environmental Management.

Thanks again to Jake Whitelaw for field support.

Susie Dewar-McNabb assisted with field survey.

## Summary

Additional targeted survey for the *Threatened* Powerful at or near, Gippsland Water's water treatment plant in Moe, failed to detect the species or evidence of current occurrence.

## **1 Introduction**

Further investigation, closer to breeding season, into the status of the threatened Powerful Owl *Ninox strenua* was recommended by Ninox Pursuit in their March 2020 Report to Indigenous Design. This supplement reports on the recommended further investigation in May 2020.

## 2 Methods

Methods applied were as described in above report with modification of call playback (see below).

### 2.1 Call Playback

Call playback. Pre-recorded digital (mp3) territorial calls were broadcast at natural volume through a 10watt amplifier to elicit an audible or visual response from owls. Playback was conducted on one night (3<sup>rd</sup> May 2020), commencing one hour after sunset.

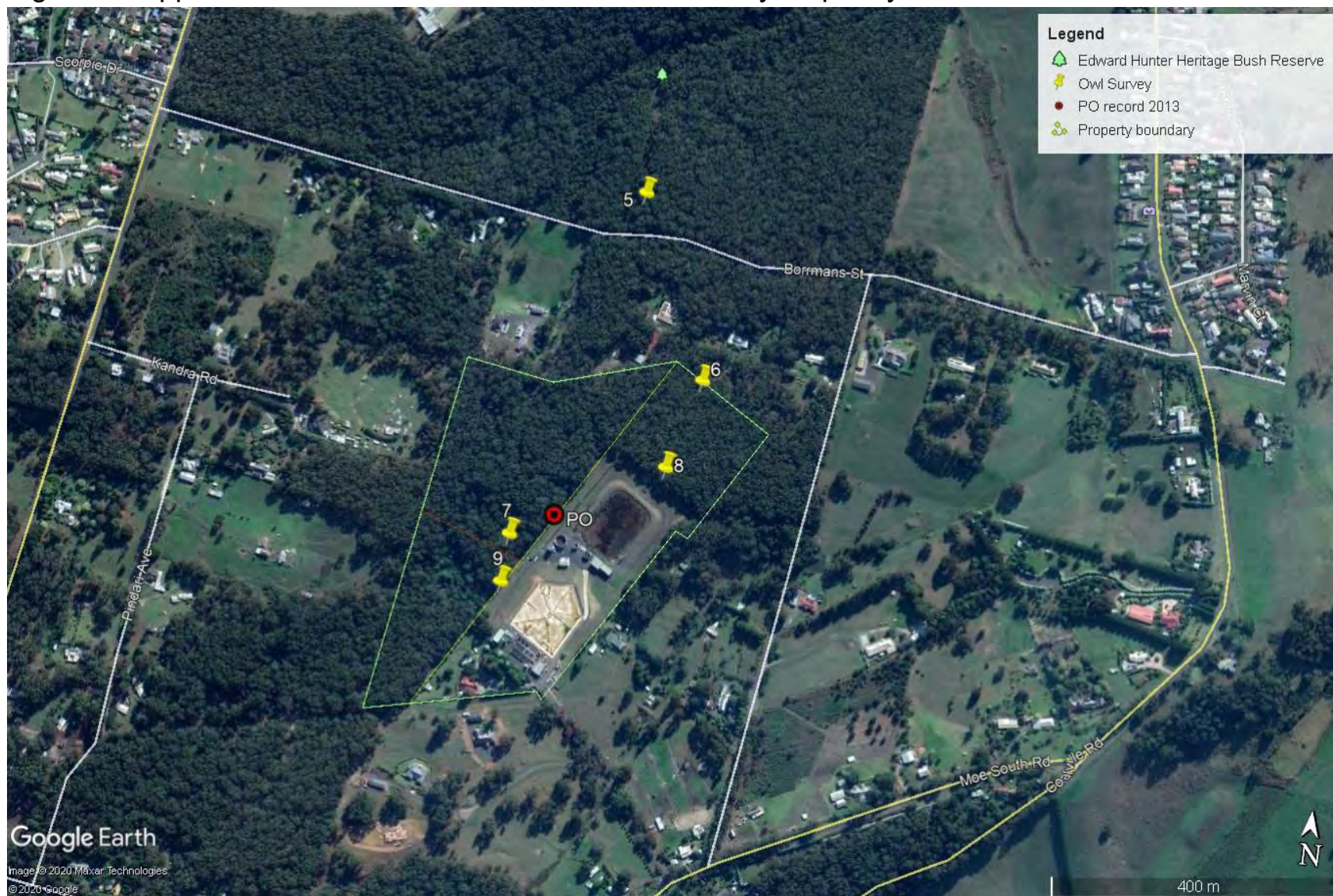
The playback sequence targeted only one species, the *threatened* Powerful Owl. Calls of this species were played for a period of six minutes followed by a ten-minute spotlighting search over approximately one hectare to search for and listen for, an owl which may have arrived silently. Arboreal mammals were also noted.

Playback sites were selected to provide strategic audio coverage of the subject site.

### **3 Data reporting**

All fauna data collected during surveys to be submitted to the Victorian Biodiversity Atlas.

Figure 1. Gippsland Water Treatment site, Moe. Owl survey map May 2020



## 3 Results

### 3.1 Dusk watch

Dusk watch was conducted simultaneously at sites 6 and 7 on 3<sup>rd</sup> May 2020 (Figure 1). No owls were detected during these dusk watches.

### 3.2 Call Playback

Call playback was conducted on sites 5, 8 and 9 respectively on 3<sup>rd</sup> May 2020. No owls were detected.

### 3.3 Spotlighting

One Common Ringtail Possum *Pseudocheirus peregrinus* and two Common Brushtail Possums *Trichosurus vulpecula* were detected during spotlighting within the treatment plant property. Two Common Ringtail Possums were detected after playback at the Edward Hunter Reserve. No owls were detected.

### 3.4 Daytime searching

No Powerful Owls or evidence of their occurrence was found during daylight on foot searching of the property. One (non-threatened) Southern Boobook *Ninox novaeseelandiae* was flushed from its roost during this searching.

## 4 Conclusion

- No evidence of Powerful Owl occurrence was found in the landscape surrounding and including the Gippsland Water Treatment plant.
- Absence cannot be proven. However, lack of detection through call playback at this time, close to breeding season when the owls are highly territorial, provides confidence that no owls currently occupy the area.
- There is no record of a live Powerful Owl on or near the site.
- No evidence of breeding was identified on or near the site at this time.

## Appendix 1.

Co-ordinates of owl survey points on or near Moe Water Treatment Plant 3rd May 2020. DW=Dusk watch; PB=Call playback; SL= Spotlighting, 10 min/1ha. (\*offsite. Zone 55, Map Datum GDA94).

| <b>Site No</b> | <b>east</b> | <b>south</b> | <b>Notes</b> |
|----------------|-------------|--------------|--------------|
| 6              | 435379      | 5772058      | DW           |
| 7              | 435143      | 5771816      | DW           |
| 8              | 435344      | 5771933      | PB;SL        |
| 9              | 435140      | 5771750      | PB;SL        |
| 5*             | 435268      | 5772307      | PB;SL        |

# Appendix E – Heritage assessment/draft CHMP



Proposed Construction of a Water Storage Basin at the Moe Water Treatment Plant, Moe South. Cultural Heritage Management Plan – Desktop, Standard and Complex Assessments

AV Management Plan Number: 17099

Size of Activity: Medium

Sponsor: Gippsland Water

Date: April 16<sup>th</sup>, 2020

Heritage Advisor: Matthew Barker

Author: Matthew Barker

ABORIGINAL CULTURAL HERITAGE: None

## Title Page

|                               |  |
|-------------------------------|--|
| TITLE OF MANAGEMENT PLAN:     | Proposed Construction of a Water Storage Basin at the Moe Water Treatment Plant, Moe South |
| AV CHMP NUMBER:               | 17099  |
| SIZE OF ACTIVITY AREA:        | 37978m <sup>2</sup> (Medium)   |
| LEVEL OF ASSESSMENT:          | Desktop, Standard and Complex Assessments  |
| SPONSOR:                      | Gippsland Water  |
| HERITAGE ADVISOR:             | Matthew Barker   |
| AUTHOR:                       | Matthew Barker   |
| DATE OF COMPLETION:           | April 16 <sup>th</sup> , 2020  |
| ABORIGINAL CULTURAL HERITAGE: | None   |

## Acknowledgements

Benchmark Heritage Management Pty Ltd (BHM P/L) wishes to acknowledge the following people for their assistance and participation in the production of this CHMP:

GunaiKurnai Land and Waters Aboriginal Corporation:

Russell Mullett - GLaWAC field representative.  
 Peter Ritchie - GLaWAC field representative.  
 Malcolm Morgan - GLaWAC field representative.  
 Daniel Hayes - GLaWAC field representative.

The Sponsor - Gippsland Water

Deb Archer - Coordinator Environment and Sustainability, GW.  
 Narelle James - Asset Land Planning Officer, GW.  
 Jake Whitelaw - Environmental Officer, GW.  
 Owen Beebe - Capital Planning Engineer, GW.  
 Tim Paton - Aboriginal Water Officer, GW.

## Disclaimer

The information contained in this CHMP references information contained in government heritage databases and similar sources and is, to the best knowledge of Benchmark Heritage Management Pty Ltd, true and correct at the time of report production. While this CHMP contains a summary of information it does not provide, nor does it intend to provide, an in-depth summary and assessment of all available research materials in relation to the Activity Area. Benchmark Heritage Management Pty Ltd does not accept liability for errors or omissions referenced in primary or secondary sources.

Any opinions expressed in this CHMP are those of Benchmark Heritage Management Pty Ltd and do not represent those of any third parties. Benchmark Heritage Management Pty Ltd have undertaken reasonable efforts to consult with Registered Aboriginal Parties and representatives of Aboriginal community groups who are, to the best of our knowledge and advice, the legal and proper representatives of the local Aboriginal community relevant to the Activity Area. However, Benchmark Heritage Management Pty Ltd will not be held responsible for opinions or actions which may be expressed by dissenting persons or organisations. This CHMP has been prepared to comply with the *Aboriginal Heritage Act 2006* and the *Aboriginal Heritage Regulations 2018*.

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## Abbreviations

ACHP: Aboriginal Cultural Heritage Place  
AV: Aboriginal Victoria  
BA: Bachelor of Archaeology  
BHM P/L: Benchmark Heritage Management Pty Ltd  
CHMP: Cultural Heritage Management Plan  
DPGS: Differential Global Positioning System  
EVC: Ecological Vegetation Community  
GDA: Geocentric Datum of Australia  
GW: Gippsland Water  
GLaWAC: GunaiKurnai Land and Waters Aboriginal Corporation  
LDAD: Low Density Artefact Distribution  
PAD: Potential Archaeological Deposit  
PAS: Potential Archaeological Sensitivity  
pH: Potential of Hydrogen  
RAP: Registered Aboriginal Party  
S: Section  
VAHR: Victorian Aboriginal Heritage Register

## Executive Summary

Compliance requirements are set out in Part 1 of the Cultural Heritage Management Plan.

### Activity, Location and Level of Assessment Undertaken

This CHMP has been prepared for proposed construction of a water storage basin at Moe Water Treatment Plant, Moe South, herein referred to as the Activity Area. The Activity Area is located in MGA Zone 55. All coordinates presented in this CHMP are referenced to GDA94/MGA55. The Activity Area is approximately 37978m<sup>2</sup> in size. The Activity Area is located approximately 135km east of the Melbourne CBD (see Maps 1-3). A Glossary of Terms is shown in Appendix 3.

### Results of Assessment: Desktop

The search identified a total of 8 registered ACHPs within the geographic region. These ACHPs consist of a total of 14 ACHP components comprising three ACHP component types (Table 5). No Aboriginal Historical References were identified within the geographic region. None of these ACHPs were located in the Activity Area. The Desktop Assessment concluded that artefact scatters and low density artefact distributions (LDADs) are the ACHP types most likely to occur within the Activity Area.

### Results of Assessment: Standard

The Standard Assessment was conducted on the 16<sup>th</sup> of March and was undertaken by Matthew Barker (who also supervised the Standard Assessment) and Annette Millar of Benchmark Heritage Management P/L with GLaWAC representatives Peter Ritchie and Malcolm Morgan. The field representatives of the GLaWAC agreed that the Activity Area was of potential archaeological sensitivity and agreed to establish the potential for Aboriginal cultural heritage by Complex Assessment to test the ACHP prediction model.

### Results of Assessment: Complex

The Complex Assessment was undertaken by Matthew Barker (Supervisor) on the 16-17<sup>th</sup> and 19<sup>th</sup> of March 2020 by Matthew Barker and Annette Millar of Benchmark Heritage Management P/L with GLaWAC representatives Peter Ritchie, Malcolm Morgan and Daniel Hayes. The excavation of two 1x1m Test Pits and twenty-eight 50x50cm Shovel Test Pits was undertaken (Tables 8-10, Map 7). No Aboriginal cultural heritage was identified in Test Pits 1-2 or Shovel Test Pits 1-28. These results indicate in conjunction with the Standard Assessment results that:

1. 58 Moe South Road is highly disturbed with only isolated areas of intact soils. This has been most likely caused by the construction and demolition of the former house and the subsequent construction of the existing house and associated infrastructure.
2. Parts of the forested area at 56 Moe South Road have been severely disturbed. The locations of the Shovel Test Pits in which the light grey silt layer was absent correlates to the locations of mounded soils and exposed clays indicating that activities associated with the construction of the existing treatment plant most likely impacted on sections of the forest; particularly those adjacent to the house and existing water treatment infrastructure.

The Complex Assessment demonstrated that the Activity Area has limited potential to retain Aboriginal cultural deposits.

### Aboriginal Cultural Heritage

No Aboriginal cultural heritage was identified during the CHMP assessment.

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## Part 1 -Cultural Heritage Management Conditions

### 1.0 Management Conditions

These conditions become compliance requirements once the Cultural Heritage Management Plan (CHMP) is approved. Failure to comply with a condition is an offence under Section 67A of the *Aboriginal Heritage Act 2006*.

The CHMP must be readily accessible to the Sponsor and their employees and contractors when carrying out the activity. No Aboriginal cultural heritage was located within the Activity Area; therefore, specific cultural heritage Management Conditions are not required.

#### 1.1 General Management Conditions

##### Management Condition 1

The following Management Condition is required prior to the implementation of the activity.

In order to provide a system for notification of the discovery of Aboriginal cultural heritage during ground disturbance works, it will first be necessary to provide a Cultural Heritage Induction to all contractors and workers undertaking ground disturbance works. The induction must inform all relevant personnel of:

- The presence of this CHMP;
- The purpose of this CHMP;
- The results of the CHMP;
- The Management Conditions made in the CHMP;
- The appropriate response to discovery of cultural heritage and Aboriginal Ancestral remains; and
- The results of non-compliance with this CHMP.

The induction must be presented by a GunaiKurnai Land and Waters Aboriginal Corporation (GLaWAC) representative. **At least two weeks' notice must be provided to the** GLaWAC prior to the intended induction date. A Request for a GLaWAC Representative form can be obtained by contacting the GLaWAC office by email [chm@glawac.com](mailto:chm@glawac.com).

This procedure must be organised and paid for by the Sponsor.

##### Management Condition 2

The following Management Condition is required during the implementation of the activity.

A hard copy of the approved CHMP must be kept on-site during the activity so that it can be referred to if required.

## 2.0 Contingency Plans

The contingency procedures contained in Section 2 of this report form part of the CHMP and *must* be incorporated into the development or Environmental Management Plan for the project. A copy of this CHMP must be held on site at all times.

The approved format for a CHMP states that, in accordance with *Clause 13(1) Schedule 2* of the *Aboriginal Heritage Regulations 2018*, a CHMP must also include specific contingency plans for:

- (a) the matters referred to in Section 61 of the *Aboriginal Heritage Act 2006*;
- (b) the resolution of any disputes between the Sponsor and relevant registered Aboriginal parties in relation to the implementation of the plan or the conduct of the activity;
- (c) reviewing compliance with the CHMP and mechanisms for remedying non-compliance;
- (d) the management of Aboriginal cultural heritage found during the activity; and
- (e) the notification, in accordance with the Act, of the discovery of Aboriginal cultural heritage during the carrying out of the activity.

Contingency plans are required, even in situations where it has been assessed that there is a low probability of ACHPs being located within an Activity Area

### 2.1 Section 61 Matters

Section 61 of the *Aboriginal Heritage Act 2006* is concerned with the avoidance and/or minimisation of harm to Aboriginal cultural heritage, and any specific measures required for the management of Aboriginal cultural heritage during and following the activity. Section 61 matters pertaining to undiscovered cultural heritage that may become exposed during the activity are discussed in Section 2.3.

### 2.2 Dispute Resolution

In the event of a dispute between the Sponsor and the Registered Aboriginal Party during the implementation of this CHMP, the following process must be implemented:

1. The parties must agree to use their best endeavours to resolve the dispute in good faith.
2. Initially the parties must identify the nature of the matter in dispute. The parties should agree in writing as to the nature of the matter in dispute within five working days of the dispute arising, with reference to the specific conditions or requirements in the CHMP.
3. Once the nature of the dispute is identified, the parties should meet within five working days to discuss any options or remedial actions that may resolve the matter/s in dispute.
4. If agreement can be reached between the parties in relation to remedial actions, this agreement should be recorded in writing and include a programme for the implementation of the action. In these circumstances, the Registered Aboriginal Party agree that it will use its best endeavours to ensure there are no avoidable delays to the schedule for the works.
5. If an agreement cannot be reached in relation to remedial actions, the parties agree to appoint (at a shared cost) an independent mediator to oversee a meeting between the parties.
6. The mediation meeting should be scheduled as soon as practicable.

7. The parties must attend the mediation meeting in good faith and use their best endeavours to resolve the dispute.
8. If agreement can be reached at the mediation meeting, this agreement should be recorded in writing and include a programme for the implementation of any remedial actions. In these circumstances the Registered Aboriginal Party agree that it will use its best endeavours to ensure there are no avoidable delays to the schedule for the works.
9. In the event that a mediated solution cannot be reached between the parties, any matter of non-compliance may be pursued under the *Aboriginal Heritage Act 2006*.

## 2.3 Discovery of Aboriginal cultural heritage during works

### 2.3.1 Unexpected discovery of Aboriginal Ancestral Remains

If any suspected Aboriginal Ancestral Remains are found during any activity, works must cease. The **Victoria Police and the State Coroner's Office** should be notified immediately. If there are reasonable grounds to believe the remains are Aboriginal, the Coronial Admissions and Enquiries hotline must be contacted immediately on 1300 888 544. This advice has been developed further and is described in the following 5-step contingency plan.

Any such discovery at the Activity Area must follow these steps.

#### 1) Discovery:

- If suspected Aboriginal Ancestral Remains are discovered, all activity in the vicinity must stop; and,
- The remains must be left in place, and protected from harm or damage.

#### 2) Notification:

- If suspected Aboriginal Ancestral Remains **have been found, the State Coroner's Office and the Victoria Police** must be notified immediately;
- If there is reasonable grounds to believe the remains are Aboriginal Ancestral Remains, the Coronial Admissions and Enquiries hotline must be immediately notified on 1300 888 544;
- All details of the location and nature of the Aboriginal Ancestral Remains must be provided to the relevant authorities;
- If it is confirmed by these authorities the discovered remains are Aboriginal Ancestral Remains, the person responsible for the activity must report the existence of them to the Victorian Aboriginal Heritage Council in accordance with Section 17 of the *Aboriginal Heritage Act 2006*.

#### 3) Impact Mitigation or Salvage:

- The Victorian Aboriginal Heritage Council, after taking reasonable steps to consult with any Aboriginal person or body with an interest in the Aboriginal Ancestral Remains, will determine the appropriate course of action as required by Section 18(2)(b) of the *Aboriginal Heritage Act 2006*;
- An appropriate impact mitigation or salvage strategy as determined by the Victorian Aboriginal Heritage Council must be implemented by the Sponsor.

#### 4) Curation and further analysis:

- The treatment of salvaged Aboriginal Ancestral Remains must be in accordance with the direction of the Victorian Aboriginal Heritage Council.

## 5) Reburial:

- Any reburial site(s) must be fully documented by an experienced and qualified archaeologist, clearly marked and all details provided to Aboriginal Victoria;
- Appropriate management measures must be implemented to ensure the Aboriginal Ancestral Remains are not disturbed in the future.

## 2.3.2 Unexpected discovery of other Aboriginal cultural heritage: During the Activity

There is potential for previously unknown Aboriginal cultural heritage to be uncovered during the proposed activity and during compliance inspections. **The Sponsor must at all times avoid unlawful harm to Aboriginal cultural heritage. The following contingency must be followed by the Sponsor if previously unrecorded Aboriginal cultural heritage is identified during the activity.**

If suspected Aboriginal cultural heritage is identified during the activity the following process applies:

- a) **The Site Supervisor must be immediately notified;**
- b) **All works within 10m of the location of suspected Aboriginal cultural heritage must be immediately suspended and the extent of the suspected Aboriginal Place isolated from further disturbance by safety webbing and star pickets. No-go signage must be attached to the temporary fencing around any Aboriginal cultural heritage at all times. The no-go signage must be visible at all times. The suspected Aboriginal cultural heritage must not be removed;**
- c) Work may continue in other parts of the Activity Area, away from the 10m buffer around the suspected Aboriginal Place; however, if further suspected Aboriginal cultural heritage is identified, these works must also be suspended;
- d) **A Heritage Advisor must be notified within 24 hours of the discovery of suspected Aboriginal cultural heritage;**
- e) The GLaWAC must be contacted within 24 hours. The Heritage Advisor must facilitate the involvement of the GLaWAC. This must include an on-site investigation and assessment of the significance of the cultural heritage;
- f) **A Heritage Advisor and a representative(s) of the GLaWAC must inspect the suspected Aboriginal cultural heritage as soon as is practical. First and foremost, it will be necessary to determine if the suspected Aboriginal cultural heritage is indeed Aboriginal cultural heritage. If the suspected Aboriginal cultural heritage is determined not to be Aboriginal cultural heritage by the Heritage Advisor and the representative(s) of the GLaWAC works may recommence;**
- g) **If the suspected Aboriginal cultural heritage is determined to be Aboriginal cultural heritage by the Heritage Advisor and the representative(s) of the GLaWAC; the Heritage Advisor must determine if it is part of an already known site or should be registered as a new site and update and/or complete site records as appropriate and advise on possible management strategies for the Aboriginal cultural heritage;**
- h) **Section (S) 61 matters relating to harm avoidance or minimisation measures must be explored by the Heritage Advisor in consultation with the representative(s) of the GLaWAC and the Sponsor. Harm must be avoided as a priority;**

- i) The Sponsor must attempt to avoid harm to the Aboriginal Cultural Heritage Place. Relocating the activity to avoid any Aboriginal Cultural Heritage Place must be considered and adopted where possible. Where this is not achievable attempts must be made to minimise harm to Aboriginal cultural heritage;
- j) Within a period of 5 working days a decision must be made by the Heritage Advisor, in consultation with **the representative(s) of the GLaWAC and the Sponsor, as to the management of the Aboriginal cultural heritage;**
- k) Possible Management Conditions may include, but are not limited to – avoidance of harm to Aboriginal cultural heritage (priority); minimisation of harm to Aboriginal cultural heritage; retention of potentially artefact bearing topsoil in the Activity Area; archaeological salvage (either by machine or hand); surface collection of artefacts; a combination of one or more of the aforementioned; or no action required;
- l) **Aboriginal Victoria must be notified of the discovery and decision in relation to the management of the newly identified Aboriginal cultural heritage through the submission of the appropriate Victorian Aboriginal Heritage Registry forms and (if applicable) an amended CHMP or salvage excavation report;**
- m) **Spatial data and a place inspection form for any salvage works must also be lodged with the VAHR within 30 days.** Depending on the extent and Complexity of the salvage excavation, a report for a small salvage excavation must be finalised within 90 days while for a large and Complex one this may be up to six months.
- n) **The Heritage Advisor may advise the Site Supervisor when suspended construction works can proceed. In general, works may recommence:**
  - When the appropriate protective measures have been taken;
  - Where the relevant Aboriginal cultural heritage records have been updated and/or completed;
  - Where all parties agree there is no prudent or feasible course of action; or
  - Once any relevant dispute has been resolved.
- o) **Custody of any Aboriginal cultural heritage material identified during the activity must be ascribed to the GLaWAC.**

#### 2.4 Reporting discovery of Aboriginal cultural heritage during works

The project manager must appoint a qualified Heritage Advisor for the duration of the project, who will be available to advise and act on the discovery of suspected Aboriginal cultural heritage. The Heritage Advisor will need to:

1. Be available to visit the site and inspect any items of suspected Aboriginal cultural heritage that may be found during any development.
2. Document any items of Aboriginal cultural heritage that are found during any development and report the sites to AV by means of completing an AV site card and registering the site.
3. Complete the ACHP documentation in association with a representative of the GLaWAC.
4. The heritage advisor in consultation with GLaWAC must advise on appropriate treatment or salvage of any Aboriginal cultural heritage.

5. Provide adequate reporting on the treatment of any Aboriginal cultural heritage to standards required by AV.

## 2.5 Custody and Management of Aboriginal Cultural Heritage Discovered During Works

In any case where previously unrecorded Aboriginal cultural material is located during the assessment, it will be the responsibility of the Heritage Advisor to:

1. Catalogue the Aboriginal cultural heritage;
2. Label and package the Aboriginal cultural heritage with reference to provenance;
3. With the GLaWAC arrange storage of the Aboriginal cultural heritage in a secure location with copies of the catalogue and assessment documentation; and
4. Custody of any Aboriginal cultural heritage material identified during the activity must be ascribed to the GLaWAC.

## 2.6 Reviewing Compliance with the CHMP

Under Section 67A of the *Aboriginal Heritage Act 2006* the Sponsor must comply with approved CHMP. The Sponsor of an approved CHMP is guilty of an offence under Section 67A; Parts 1, 3 and 5 with the corresponding penalties listed under Parts 2, 4 and 6:

- (1) The Sponsor of an approved CHMP is guilty of an offence if—
  - (a) the Sponsor by an act or omission fails to comply with the conditions of the approved CHMP; and
  - (b) at the time of the act or omission the Sponsor knew that the act or omission failed to comply with the conditions of this CHMP.
- (2) A Sponsor of an approved CHMP who is guilty of an offence under subsection (1) is liable to a penalty not exceeding—
  - (a) in the case of a natural person, 600 penalty units;
  - (b) in the case of a body corporate, 3000 penalty units.
- (3) The Sponsor of an approved CHMP is guilty of an offence if—
  - (a) the Sponsor by an act or omission fails to comply with the conditions of the approved CHMP; and
  - (b) at the time of the act or omission the Sponsor was reckless as to whether the act or omission failed to comply with the conditions of this CHMP.
- (4) A Sponsor of an approved CHMP who is guilty of an offence under subsection (3) is liable to a penalty not exceeding—
  - (a) in the case of a natural person, 300 penalty units;
  - (b) in the case of a body corporate, 1500 penalty units.
- (5) The Sponsor of an approved CHMP is guilty of an offence if—
  - (a) the Sponsor by an act or omission fails to comply with the conditions of the approved CHMP; and
  - (b) at the time of the act or omission the Sponsor was negligent as to whether the act or omission failed to comply with the conditions of this CHMP.

- (6) A Sponsor of an approved CHMP who is guilty of an offence under subsection (5) is liable to a penalty not exceeding—
- (a) in the case of a natural person, 60 penalty units;
  - (b) in the case of a body corporate, 300 penalty units.

The Sponsor must ensure that compliance with this Cultural Heritage Management Plan is reviewed. A review process must be incorporated in the Environmental Management Plan or similar document for the project. The Management Conditions shown in Section 1 must be listed in the Environmental Management Plan. There must be a mechanism included in the CHMP (such as a checklist or database) to indicate when the recommended actions for Aboriginal cultural heritage have been carried out. The project manager must be responsible for maintaining this list. Any associated documentation which accompanies the actions must be recorded on the checklist or database.

The record of compliance must be maintained by the project manager at all times and must be available for inspection by Authorised Officers and Aboriginal Heritage Officers.

It is illegal to harm cultural heritage outside of the Conditions contained within this CHMP. Authorised Officers and Aboriginal Heritage Officers from Aboriginal Victoria and the GLaWAC may conduct CHMP compliance audits.

A checklist is provided below in Table 1 that specifies what measures will be undertaken to review compliance with the CHMP. The site manager must verify that the measures specified below have been undertaken.

Table 1: Checklist for Reviewing Compliance with this CHMP

| CHECKLIST FOR REVIEWING COMPLIANCE WITH THIS CHMP   |     |    |
|---|-----|----|
|   | Yes | No |
| Prior to works occurring  |     |    |
| 1: Has an induction taken place in accordance with Management Condition 1?  |     |    |
| During Works  |     |    |
| 2: Is a hard copy of the approved CHMP available on site in accordance with Management Condition 2? Is the approved CHMP accessible to all project staff in accordance with Management Condition 2? |     |    |
| If Possible Aboriginal Cultural Heritage has been Discovered  |     |    |
| 1: Has the site Supervisor been notified in accordance with Contingency 2.3.2 (a)?  |     |    |
| 2: Has all construction activity within 10m of the Aboriginal cultural heritage stopped in accordance with Contingency 2.3.2 (b)?   |     |    |
| 3: Has the Aboriginal cultural heritage been protected (e.g. with fencing) in accordance with Contingency 2.3.2 (b)?  |     |    |
| 4: Has the cultural heritage been left undisturbed in accordance with Contingency 2.3.2 (b)?  |     |    |
| 5: Has a Heritage Advisor been contacted within 24 hours in accordance with Contingency 2.3.2 (d)?  |     |    |
| 6: Has the GLaWAC been contacted in accordance with Contingency 2.3.2 (e)?  |     |    |
| 7: Has the Aboriginal cultural heritage been inspected by the Heritage Advisor and GLaWAC in accordance with Contingency 2.3.2 (f)?   |     |    |

|   |  |  |
|---|--|--|
| 8: If cultural heritage is discovered, has it been evaluated and recorded by a Heritage Advisor and a new site record or an existing registration updated and submitted to the VAHR in accordance with Contingency 2.3.2 (g)?   |  |  |
| 9: Have S61 matters in relation to the Aboriginal cultural heritage been considered in accordance with Contingency 2.3.2 (h)?   |  |  |
| 10: Have all options to avoid harm been explored in accordance with Contingency 2.3.2 (i)?  |  |  |
| 11: Has a decision on how to manage the cultural heritage been made with 3 working days? In consultation with the Sponsor and GLaWAC in accordance with Contingency 2.3.2 (j)?  |  |  |
| 12: Has <b>Aboriginal Victoria</b> been notified of the discovery and decision in relation to the management of the newly identified Aboriginal cultural heritage through the submission of the appropriate Victorian Aboriginal Heritage Registry forms and (if applicable) an amended CHMP or salvage excavation report in accordance with Contingency 2.3.2 (l)? |  |  |
| 13: Has the GLaWAC informed the Sponsor that works can recommence in accordance with Contingency 2.3.2 (n)?   |  |  |
| 14: Has custody of any Aboriginal cultural heritage material identified during the activity been ascribed to the GLaWAC in accordance with Contingency 2.3.2 (o)?   |  |  |
| Discovery of Aboriginal Ancestral Remains   |  |  |
| 1: In relation to suspected Aboriginal Ancestral Remains, have the State <b>Coroner's</b> Office and Victoria Police been notified? Has the Coronial Admissions and Enquiries hotline been contacted on 1300 888 544?   |  |  |
| 2: Have all works stopped within the Activity Area?   |  |  |
| 3: Have the remains been protected with above ground fencing and no-go signage?   |  |  |
| 4: If the remains are Aboriginal Ancestral Remains, has the Victorian Aboriginal Heritage Council been notified?  |  |  |
| 5: Has the Victorian Aboriginal Heritage Council determined an appropriate mitigation/salvage strategy?   |  |  |
| 6: Have the mitigation/salvage works been implemented?  |  |  |
| 7: Have the salvaged finds/remains been treated in accordance with the direction of the Victorian Aboriginal Heritage Council?  |  |  |
| Reburial Procedure: Aboriginal Ancestral Remains  |  |  |
| 1: Has a suitably qualified archaeologist been engaged to fully document the reburial site?   |  |  |
| 2: Has the reburial site been clearly marked?   |  |  |
| 3: Have all details been provided to AV?  |  |  |
| 4: Have appropriate Management Conditions been implemented to ensure the Aboriginal Ancestral Remains are not disturbed in the future?  |  |  |
| Changes to Activity   |  |  |
| 1: Has statutory approval been obtained for any changes to the activity?  |  |  |

Review of this CHMP can be undertaken at any time by project delegates representing the Sponsor, or an agreed independent reviewer, to ensure that all parties are complying with the terms of this CHMP.

To ensure compliance with the terms of this CHMP the site manager must verify that the measures specified in the above checklist have been undertaken. If any of the following breaches occur the site manager must action the relevant remedy (Table 2). The aim of this process must be to resolve non-compliance issues by immediately actioning processes to remedy non-compliance through consultation with the GLaWAC representatives, and the Heritage Advisor. If mechanisms for remedying non-compliance are not actioned and resolution cannot be reached then ultimately, the Minister may order a cultural heritage audit to be carried out. Details of cultural heritage audits can be obtained from Part 6, Division 1 of the *Aboriginal Heritage Act 2006*.

Table 2: Potential Breaches and Remedies

| Potential Breach  | Remedy   |
|---|--|
| Prior to works occurring  |  |
| 1: A cultural heritage induction has not taken place.                                   | All works must stop. A cultural heritage induction must be organised within 1 working day and undertaken with 5 working days.  |
| During Development  |  |
| 1: A hard copy of the CHMP has not been kept on site.                                   | If a copy of the approved CHMP has not been kept on site, then all works must cease until the CHMP is supplied and distributed to all site workers.  |
| 2: Activity has not ceased within 10m if Aboriginal cultural heritage has been located. | Activity must cease immediately within 10m of the find and the Secretary notified within 48 hours. A Heritage Advisor must immediately be notified to assess the find.   |
| 3: The GLaWAC has not been notified of any Aboriginal cultural heritage.                | Notify the GLaWAC and AV within 24 hours   |
| 4: Harm to Aboriginal cultural heritage has occurred?                                   | <p>Work must cease immediately. The Sponsor must notify the GLaWAC within 48 hours. The Sponsor must immediately notify a Heritage Advisor and the GLaWAC to assess the level of harm. The Sponsor and the GLaWAC must undertake the following process:</p> <ul style="list-style-type: none"> <li>• Details of the harm must be documented by the Sponsor, the Heritage Advisor and GLaWAC representatives;</li> <li>• A meeting must be held within 48 hours to attempt to mitigate further harm;</li> <li>• The understanding of the issue by both parties must be clearly stated by the Heritage Advisor and GLaWAC representatives during the course of the meeting;</li> <li>• The parties must reach a resolution;</li> </ul> |

|  |  |
|--|--|
|  | <ul style="list-style-type: none"> <li>• The objective of the meeting must be to discuss and arrive at an understanding of the matter being disputed and reach a negotiated settlement of the dispute. This may include a formal protocol between the Sponsor and GLaWAC representatives; and</li> <li>• The resolution to the dispute must be recorded in writing and signed off on by both parties.</li> </ul> |
| <p>5. Activity has not ceased if potential Aboriginal Ancestral Remains have been located.</p> | <p>All work within vicinity of the Aboriginal Ancestral Remains must cease immediately. The Sponsor must immediately action the procedure outlined in Contingency 2.3.1.</p>   |

The Project Manager and any personnel involved with supervision of future construction must read the CHMP and be aware of the legal requirements of the CHMP and contingency procedures concerning Aboriginal heritage within the Activity Area. The Project Manager (or other relevant Supervisory staff) must be responsible for implementing any conditions contained in the CHMP.

The Project Manager must set in place internal processes of communication, which ensure that they are notified prior to any contractors conducting works (including archaeological contractors) at any of the ACHPs on the property.

Contact Details for Gippsland Water

Deb Archer  
 Gippsland Water  
 Environment and Sustainability Co-ordinator  
 Gippsland Water  
 PO Box 348 Traralgon VIC 3844  
 T 03 5177 4632  
 M 0419 560 135  
 F 03 5174 0103  
[debbie.archer@gippswater.com.au](mailto:debbie.archer@gippswater.com.au)

Contact details for GunaiKurnai Land and Waters Aboriginal Corporation

Russell Mullett  
 RAP MANAGER  
 GunaiKurnai Land and Waters Aboriginal Corporation (GLaWAC)  
 Forestec, 27 Scriveners Road, Kalimna West VIC 3909  
 T 03 5152 5100 | F 03 5152 1666 | M 0448 268 203  
 Email [rapmanager@glawac.com.au](mailto:rapmanager@glawac.com.au)

## Part 2 - Assessment

### 3.0 Introduction

This Cultural Heritage Management Plan (CHMP) has been prepared for the proposed construction of a water storage basin at Moe Water Treatment Plant, Moe South, herein referred to as the Activity Area (see Maps 1-2).

The purpose of the CHMP is to identify and assess the nature, extent and significance of Aboriginal Cultural Heritage Places within the Activity Area. The CHMP provides mitigation, protection and contingency procedures for the management of cultural heritage values before, during and after development of the land.

#### 3.1 Reasons for Preparing the Cultural Heritage Management Plan

Under the *Aboriginal Heritage Regulations 2018* (r.7) a mandatory CHMP is required if;

- a) all or part of the Activity Area for the activity is within an area of cultural heritage sensitivity; and
- b) all or part of the activity is a high impact activity.

This Cultural Heritage Management Plan (CHMP) is a voluntary CHMP, because the proposed Activity Area is not within an area of cultural heritage sensitivity as defined under Division 3 of the *Aboriginal Heritage Regulations 2018*.

In accordance with Section 61 of the *Aboriginal Heritage Act (2006)*, the following mandatory matters are considered by this CHMP:

- Whether the activity will be conducted in a way that avoids harm to Aboriginal cultural heritage;
- If it does not appear to be possible to conduct the activity in a way that avoids harm to Aboriginal cultural heritage, whether the activity will be conducted in a way that minimises harm to Aboriginal cultural heritage;
- Any specific measures required for the management of Aboriginal cultural heritage likely to be affected by the activity, both during and after the activity;
- Any contingency plans required in relation to disputes, delays and other obstacles that may affect the conduct of the activity; and
- Requirements relating to the custody and management of Aboriginal cultural heritage during the course of the activity.

#### 3.2 Notice of Intention to Prepare a CHMP

A Notice of Intent (NOI) to prepare this CHMP, as required by Section 54 of the Act was submitted to the Secretary, Aboriginal Victoria (AV) on the 19<sup>th</sup> of February 2020. A copy of the NOI is attached as

Appendix 1. AV replied to the NOI on the 19<sup>th</sup> of February 2020 and allocated this project with the CHMP Number 17099.

The RAP with responsibility for the Activity Area is the GunaiKurnai Land and Waters Aboriginal Corporation (GLaWAC). The GLaWAC responded in writing on the 24<sup>th</sup> of February 2020 to the Notice of Intent outlining their intentions to evaluate the CHMP (Appendix 2).

### 3.3 Location of the Activity Area and the Current Landowner

The Activity Area is located at, and is comprised of, the property known as, 56 Moe South Road, Moe South being lot 2 on LP55896 and part lot 2 on PS400699 and 58 Moe South Road, Moe South being Lot 1 PS400699, City of Latrobe. The Activity Area is approximately 37978m<sup>2</sup> in size. The Activity Area is located within the township of Moe South, which is located approximately 140km east of the Melbourne CBD (see Maps 1-3).

The Activity Area is owned by the Sponsor – Gippsland Water. The Activity Area contains:

- 56 Moe South Road, lot 2 on LP55896 comprises dense regenerated forest with fire tracks along the eastern and western boundaries;
- 56 Moe South Road, lot 2 on PS400699 contains the existing Moe Water Treatment facility comprising tarmac hardstands and gravel access roads.
- 58 Moe South Road contains an existing house with associated infrastructure that is currently tenanted.

The Activity Area is located in MGA Zone 55. All coordinates presented in this CHMP are with reference to GDA94/MGA Zone 55. A more detailed description of the location and extent of the Activity Area, including cadastral details, is included in Section 5 of this CHMP.

### 3.4 Sponsor for the CHMP

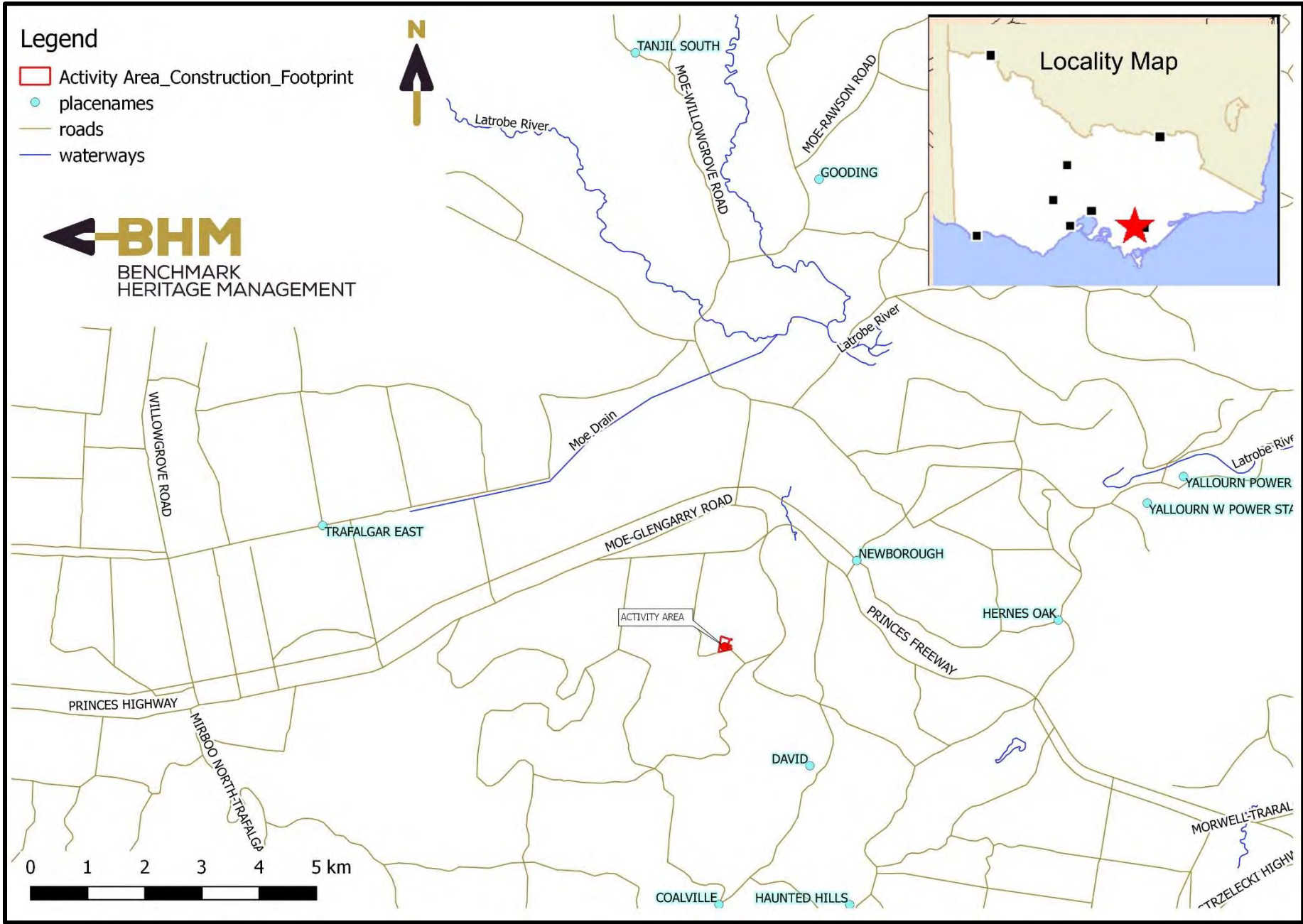
The Sponsor for this CHMP is Gippsland Water.

### 3.5 Name, Qualifications and Experience of the Heritage Advisor

The Heritage Advisor (HA) who has undertaken this CHMP is Matthew Barker. Matthew (Supervisor) has a Bachelor of Archaeology (2004) with Honours (2005) in Archaeology from Latrobe University and has been working in the field of Aboriginal archaeology for fifteen years. Matthew was assisted in the field by Annette Millar. Annette has a Graduate Diploma in Archaeology from Latrobe University (2018) and has had three years experience working in the field of Aboriginal archaeology.

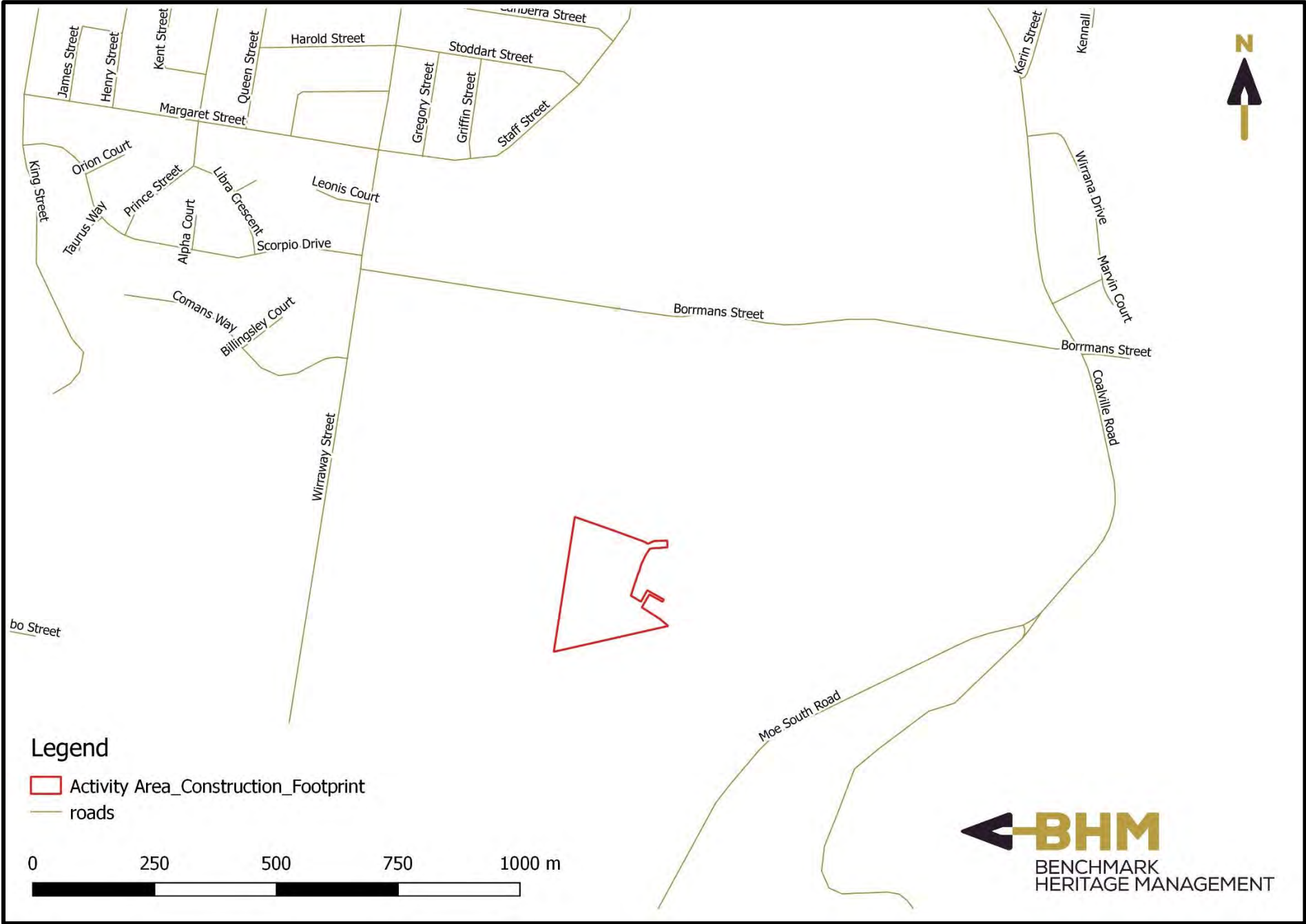
### 3.6 Registered Aboriginal Party (RAP) with Responsibility for the Activity Area

The RAP with responsibility for the Activity Area is the GLaWAC. The GLaWAC responded in writing on the 24<sup>th</sup> of February 2020 to the Notice of Intent outlining their intentions to evaluate the CHMP (Appendix 2).



Map 1: Activity Area Location: Regional View  
 56 Moe South Road, Moe South being lot 2 on LP55896 and part lot 2 on PS400699 and 58 Moe South Road, Moe South being Lot 1 PS400699

CHMP 17099: PROPOSED CONSTRUCTION OF A WATER STORAGE BASIN AT THE MOE WATER TREATMENT PLANT, MOE SOUTH



Map 2: Activity Area Location: Local View

## 4.0 Activity Description

The proposed activity is the proposed construction of a water storage basin (see Figure 1). 58 Moe South Road, Moe South is zoned Rural Living Zone (RLZ) and 56 Moe South Road, Moe South is zoned Public Utility Zone (PUZ1). Permitted uses are shown in Appendix 4.

The sequence of activities which will occur during the course of any subsequent development is likely to be as follows:

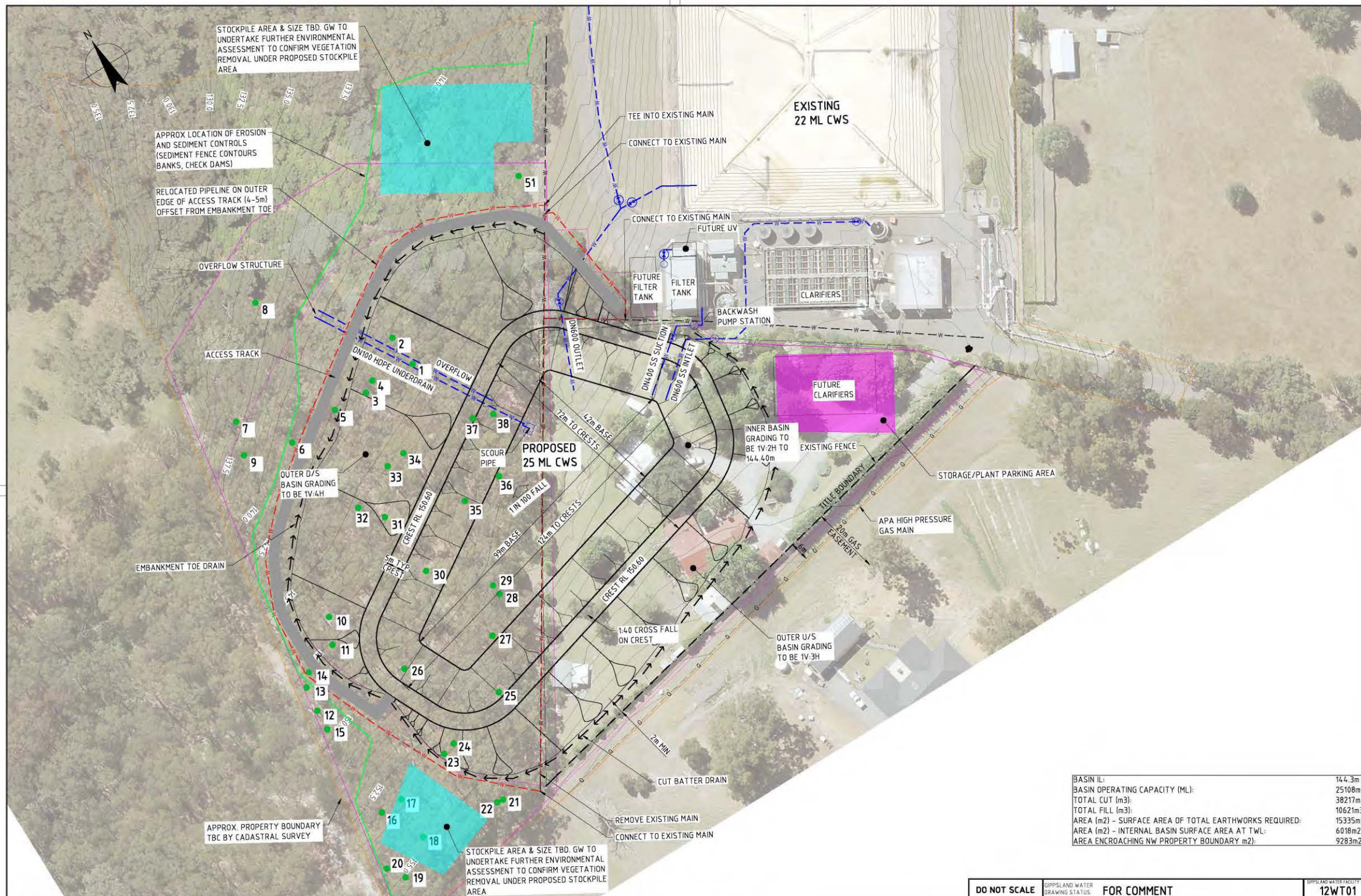
1. Demolition of the existing house and services on 58 Moe South Road including removal of septic.
2. Clearance of the trees and vegetation on 58 Moe South Road, and 56 Moe South Road, lot 2 on LP55896.
3. New pipe laid via excavated trenches around base of proposed basin embankments such that existing pipe that is in the proposed basin footprint can be removed
4. Existing pipe removed and disposed via excavator
5. Site scrape to remove organic material using scraper
6. Bulk excavation using excavators for the raw water storage basin to varying depths.
7. Installation of pipelines (overflow, inlet, outlet), utilising excavators.
8. Installation of services (electricity, telecommunications) utilising excavators.
9. Excavation for driveways/access track using excavators.
10. Construction will then take place in accordance with the design of the Sponsor.
11. Landscaping works will also occur according to the design of the Sponsor.

A summary of typical trench widths and depths of excavation of each construction activity is provided below in Table 3:

Table 3: Typical Activity Depths

| Activity   | Method / Excavation type   | Excavation details / depth (m)  |
|--|--|---|
| Demolition / site clearing   |  |   |
| House demolition   | Excavator  | Approximately 1m for footing/slab removal                                 |
| Service removal, i.e. electricity, communication, water, stormwater, sewer, etc. | Excavator for trenching  | Approximately 1m  |
| Tree removal, grubbing, stump removal  | Excavator / dozer for whole assessment area                                    | Approximately 2.5m for large stump removal                                |
| Septic removal   | Excavator for bulk excavation for septic tank, and trenching for lateral pipes | Approximately 1.5m to 2m deep for septic tank, likely 600 mm for laterals |
| Service relocation   |  |   |
| Pipe relocation / new pipe   | Excavator to trench and lay new pipe around outside of planned access track.   | 900 mm wide trench approximately 1.5m deep                                |
| Pipe removal   | Excavator to trench, lift and dispose 225mm dia. AC pipe                       | 900mm wide trench approximately 1.5m deep                                 |
| Basin construction   |  |   |

|   |   |  |
|---|---|--|
| Site preparation / clean-up/<br>scrape including stockpile<br>area(s) | Scraper / dozer   | Approximately 500mm deep<br>across site          |
| Bulk excavation   | Excavator<br>Construction footprint as per<br>31-37346-SK017B | Depths vary across site,<br>approximately 8m     |
| Pipe installation (overflow,<br>inlet, and outlet)                    | Excavated trenches  | 900mm wide trench,<br>Approximate depths to 1.5m |
| Access Track  | Excavator   | Approximately 1m                                 |
| Embankment/fill construction  | Excavator   | Approximately 6m                                 |



|  |         |
|--|---------|
| BASIN I/L:   | 14.4.3m |
| BASIN OPERATING CAPACITY (ML):                         | 25108m3 |
| TOTAL CUT (m3):  | 38217m3 |
| TOTAL FILL (m3):                                       | 10621m3 |
| AREA (m2) - SURFACE AREA OF TOTAL EARTHWORKS REQUIRED: | 15335m2 |
| AREA (m2) - INTERNAL BASIN SURFACE AREA AT TWL:        | 6018m2  |
| AREA ENCRoACHING NW PROPERTY BOUNDARY (m2):            | 9283m2  |

| <b>REVISIONS</b><br><table border="1"> <thead> <tr> <th>No.</th> <th>DATE</th> <th>DESCRIPTION</th> <th>APPD</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>11/12/19</td> <td>ISSUED FOR INFORMATION</td> <td></td> </tr> <tr> <td>B</td> <td>13/12/19</td> <td>ISSUED FOR INFORMATION</td> <td></td> </tr> <tr> <td>A</td> <td>05/12/19</td> <td>ISSUED FOR INFORMATION</td> <td></td> </tr> </tbody> </table> | No.      | DATE                   | DESCRIPTION            | APPD | C | 11/12/19 | ISSUED FOR INFORMATION |  | B | 13/12/19 | ISSUED FOR INFORMATION |  | A | 05/12/19 | ISSUED FOR INFORMATION |  | <b>REFERENCES</b><br><table border="1"> <thead> <tr> <th>PLAN No.</th> <th>TITLE</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table> | PLAN No. | TITLE |  |  | DESIGNED BY:<br>SCALE 1:500 AT ORIGINAL SIZE<br>9 Church St Traralgon VIC 3844 Australia<br>PO Box 1040 Traralgon VIC 3844<br>T 61 3 5136 9800 F 61 3 5136 9888<br>E traralgon@ghd.com W www.ghd.com | GIPPSLAND WATER<br>DRAWING STATUS: FOR COMMENT<br>31-37346-SK017B<br>17 December 2019 - 4:03 PM<br>P BACKHOUSE<br>J WILDE | <b>GIPPSLAND WATER</b><br>MOE WATER RETICULATION<br>MOE WATER TREATMENT PLANT<br>25 ML CLEAR WATER STORAGE<br>PLAN - OPTION 8 - MINIMUM CONSTRUCTION FOOTPRINT | GIPPSLAND WATER FACILITY CODE: 12WT01<br>DRAWING No: A1-<br>REV: C |
|--|----------|------------------------|------------------------|------|---|----------|------------------------|--|---|----------|------------------------|--|---|----------|------------------------|--|---|----------|-------|--|--|--|---|--|--|
|  | No.      | DATE                   | DESCRIPTION            | APPD |   |          |                        |  |   |          |                        |  |   |          |                        |  |   |          |       |  |  |  |   |  |  |
|  | C        | 11/12/19               | ISSUED FOR INFORMATION |      |   |          |                        |  |   |          |                        |  |   |          |                        |  |   |          |       |  |  |  |   |  |  |
| B  | 13/12/19 | ISSUED FOR INFORMATION |                        |      |   |          |                        |  |   |          |                        |  |   |          |                        |  |   |          |       |  |  |  |   |  |  |
| A  | 05/12/19 | ISSUED FOR INFORMATION |                        |      |   |          |                        |  |   |          |                        |  |   |          |                        |  |   |          |       |  |  |  |   |  |  |
| PLAN No.   | TITLE    |                        |                        |      |   |          |                        |  |   |          |                        |  |   |          |                        |  |   |          |       |  |  |  |   |  |  |
|  |          |                        |                        |      |   |          |                        |  |   |          |                        |  |   |          |                        |  |   |          |       |  |  |  |   |  |  |
| DO NOT SCALE   |          |                        |                        |      |   |          |                        |  |   |          |                        |  |   |          |                        |  |   |          |       |  |  |  |   |  |  |
| FOR COMMENT  |          |                        |                        |      |   |          |                        |  |   |          |                        |  |   |          |                        |  |   |          |       |  |  |  |   |  |  |

Figure 1: Indicative Development Plan

## 5.0 Extent of the Activity Area Covered by the Cultural Heritage Management Plan

The Activity Area is located at, and is comprised of, the property known as 56 Moe South Road, Moe South being lot 2 on LP55896 and part lot 2 on PS400699 and 58 Moe South Road, Moe South being Lot 1 PS400699, City of Latrobe. The Activity Area is approximately 37978m<sup>2</sup> in size.

The ground surface of the Activity Area comprises the upper slopes and lower slopes of a gentle hill that slopes from east to west with the lowest point in the northwestern corner.

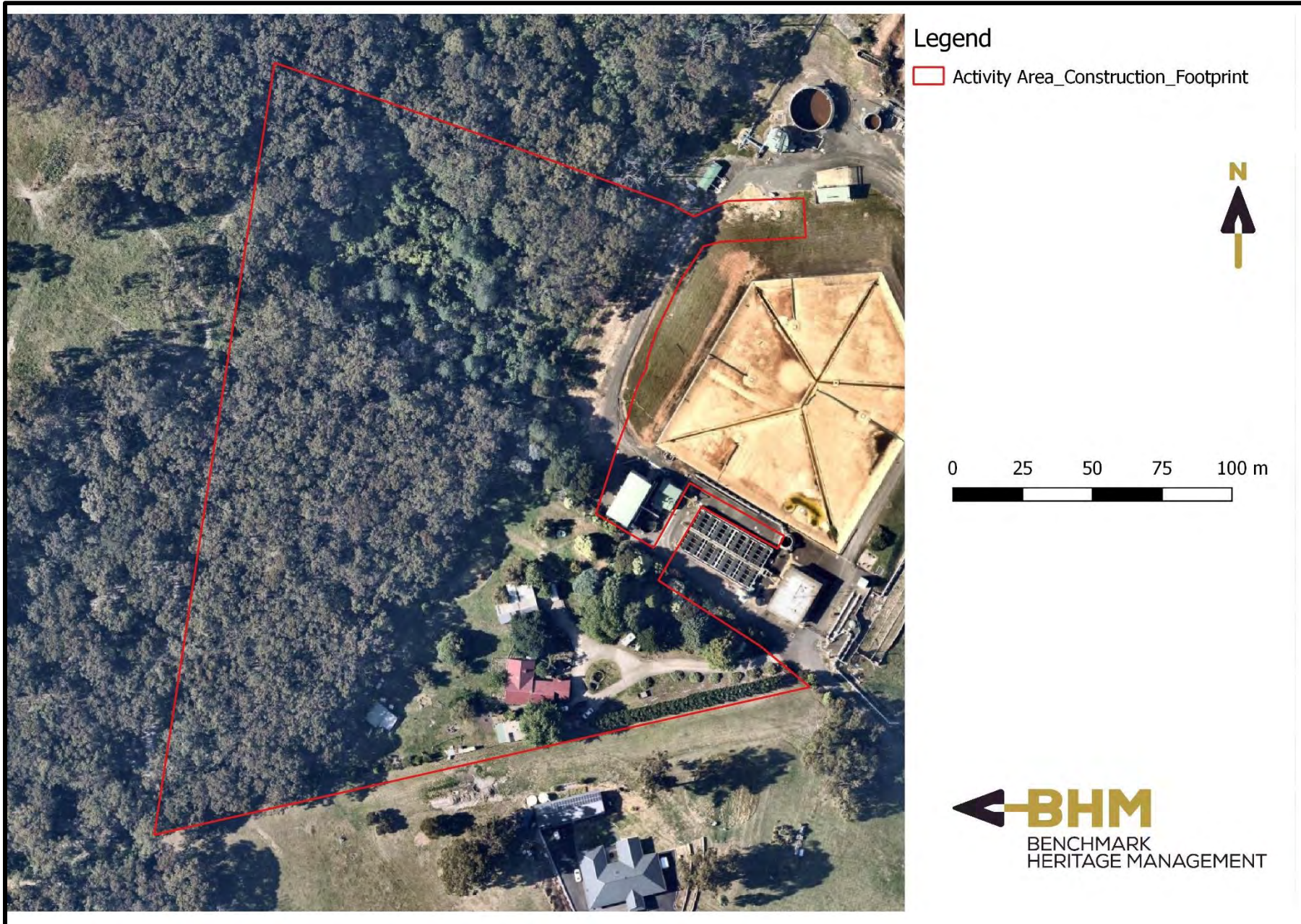
The Activity Area contains:

- 56 Moe South Road, lot 2 on LP55896 comprises dense regenerated forest with fire tracks along the eastern and western boundaries;
- 56 Moe South Road, lot 2 on PS400699 contains parts of the existing Moe Water Treatment facility comprising tarmac hardstands and gravel access roads.
- 58 Moe South Road contains an existing house with associated infrastructure that is currently tenanted.

The Activity Area is bordered by rural - residential lots to the south, east and west with the existing treatment plant to the north.

The existing conditions of the Activity Area are shown in Map 3.

The Activity Area is located in MGA Zone 55. All coordinates presented in this CHMP are with reference to GDA94/MGA Zone 55.



Map 3: Activity Area Location

## 6.0 Documentation of Consultation

This section outlines the consultation which was undertaken in relation to this CHMP and includes references to all relevant documentation submitted for this project.

### 6.1 Names and Functions of Representatives Appointed by the RAP

Russell Mullett – RAP Manager – GLaWAC.

Peter Ritchie – GLaWAC field representative.

Malcolm Morgan – GLaWAC field representative.

Daniel Hayes - GLaWAC field representative.

Documentation of consultation is shown in Table 4.

Table 4: Documentation of Consultation

| Name and Organisation | Date   | Type of Communication                      | Discussion  |
|-----------------------|--|--|---|
| BHM P/L               | 19 <sup>th</sup> of February 2020                      | Email                                      | Submission of Notice of Intent to Prepare a CHMP.   |
| AV                    | 19 <sup>th</sup> of February 2020                      | Email                                      | AV replied to the Notice of Intent to Prepare a CHMP and assigned the project number 17099.   |
| GLaWAC                | 24 <sup>th</sup> of February 2020                      | Email                                      | GLaWAC response to the NOI.   |
| BHM P/L / GW / GLaWAC | 28 <sup>th</sup> of February 2020                      | Meeting                                    | Inception meeting with the GLaWAC   |
| GLaWAC                | 29 <sup>th</sup> of February 2020                      | Email                                      | Informing GLaWAC of the proposed project and requesting fieldwork dates for the Standard and Complex Assessment.  |
| GLaWAC                | 16 <sup>th</sup> of March 2020                         | Standard Assessment and on site discussion | The results of the Standard Assessment were first discussed with the GLaWAC field representatives in terms of most likely areas in which to locate Aboriginal cultural material and placement of the Test Pits. |
| GLaWAC                | 16-17 <sup>th</sup> and 19 <sup>th</sup> of March 2020 | Complex Assessment and on site discussion  | Following the Complex Assessment, the results were discussed in terms of number of excavated pits and disturbance.  |
| BHM P/L / GW/GLaWAC   | 23 <sup>rd</sup> of March 2020                         | Phone Meeting                              | Results of Standard and Complex Assessment; Management Conditions.  |

## 6.2 Participation in the Conduct of the Assessment

The Standard Assessment was undertaken by Matthew Barker (Supervisor) and Annette Millar of Benchmark Heritage Management P/L on the 16<sup>th</sup> of March 2020 with GLaWAC representatives Peter Ritchie and Malcolm Morgan.

The Complex Assessment was undertaken by Matthew Barker (Supervisor) and Annette Millar of Benchmark Heritage Management P/L on the 16<sup>th</sup>, 17<sup>th</sup> and 19<sup>th</sup> of March 2020 with GLaWAC representatives Peter Ritchie, Malcolm Morgan and Daniel Hayes.

## 6.3 Consultation in Relation to Methodology

- Project Inception Meeting

A project inception meeting was held for this CHMP on the 28<sup>th</sup> of February 2020. The meeting was attended by Matthew Barker (BHM P/L), Russell Mullett (RAP Manager, GLaWAC), Deb Archer (Coordinator Environment and Sustainability, GW), Owen Beebe (Capital Planning Engineer, GW) and Tim Paton (Aboriginal Water Officer, GW).

The purpose of this meeting was to address:

1. Proposed Activity;
2. Current conditions within the Activity Area;
3. ACHPs and reports within the geographic region;
4. Cultural heritage likely to be found within the Activity Area;
5. Proposed Standard Assessment methodology; and
6. Proposed Complex Assessment methodology.

Russell Mullett (RAP Manager, GLaWAC) stated that a series of Shovel Test Pits must be excavated, and the location of the Test Pit(s) determined by the results of these excavations and the landform allowing the 1x1m Test Pit(s) to be placed at points most likely to contain cultural heritage material.

- Standard Assessment

The GLaWAC representatives both agreed that a Complex Assessment be undertaken in the Activity Area.

- Complex Assessment

The proposed methodology was discussed during a meeting with the GLaWAC representatives prior to the commencement of fieldwork and during the Complex Assessment. GLaWAC representatives Peter Ritchie, Malcolm Morgan and Daniel Hayes were constantly consulted throughout the Complex Assessment about the placement of the pits.

- Complex Assessment Results and Conditions

A results meeting was held by phone for this CHMP on the 23<sup>rd</sup> of March 2020. The meeting was attended by Matthew Barker (BHM P/L), Deb Archer (Coordinator Environment and Sustainability, GW), Narelle James (Asset Land Planning Officer, GW) and Jake Whitelaw (Environmental Officer, GW). Russell Mullett (RAP Manager, GLaWAC) could not attend the meeting and was later consulted by Gippsland Water.

The following conditions were proposed by Russell Mullett (RAP Manager, GLaWAC) on the 23<sup>rd</sup> of March 2020.

- A copy of the approved CHMP must be kept on-site during construction works associated with the activity so that it can be referred to if required.
- A cultural heritage induction must occur prior to works occurring.

#### 6.4 Summary of Outcomes of Consultation

- Two meetings were held between BHM P/L and the GLaWAC.
- The GLaWAC provided input regarding the background information, excavation results and conditions contained in this CHMP.
- Russell Mullett (RAP Manager, GLaWAC) requested the above conditions on the on the 23<sup>rd</sup> of March 2020.

## 7.0 Aboriginal Cultural Heritage Assessment

### 7.1 Desktop Assessment

The aim of the Desktop Assessment was to produce an ACHP prediction model, which would assist in the design of the fieldwork, the interpretation of the fieldwork results, the assessment of cultural significance and the design of the Management Conditions. The Desktop Assessment involved a review of:

- Standard ethnographic sources to identify the likely Traditional Owners and a review of any written and oral local history regarding Aboriginal people in the geographic area;
- Environmental resources available to Aboriginal people within the region of the Activity Area;
- The Victorian Aboriginal Heritage Register (VAHR) at Aboriginal Victoria (AV) and previous archaeological studies, to identify any previously registered ACHPs either within or surrounding the Activity Area and the results of previous archaeological assessments;
- The land-use history of the Activity Area, particularly evidence for the extent and nature of past land disturbance; and
- The landforms or geomorphology of the Activity Area and identification and determination of the geographic region of which the Activity Area forms a part that is relevant to the Aboriginal cultural heritage that may be present in the Activity Area.

This information was used to produce an ACHP prediction model (Section 7.1.9). The ACHP prediction model assists in determining the types of ACHPs which may potentially occur within the Activity Area, the possible contents of these ACHPs, the possible past use of the landscape by Aboriginal people and the likely extent of ground disturbance to ACHPs. The information provided by the ACHP prediction model is used constructively in designing the survey strategy, by, for example, allowing the field team to target areas which have a high probability of containing ACHPs. No obstacles were encountered during the preparation of this Desktop Assessment.

#### 7.1.1 Search of the Victorian Aboriginal Heritage Register

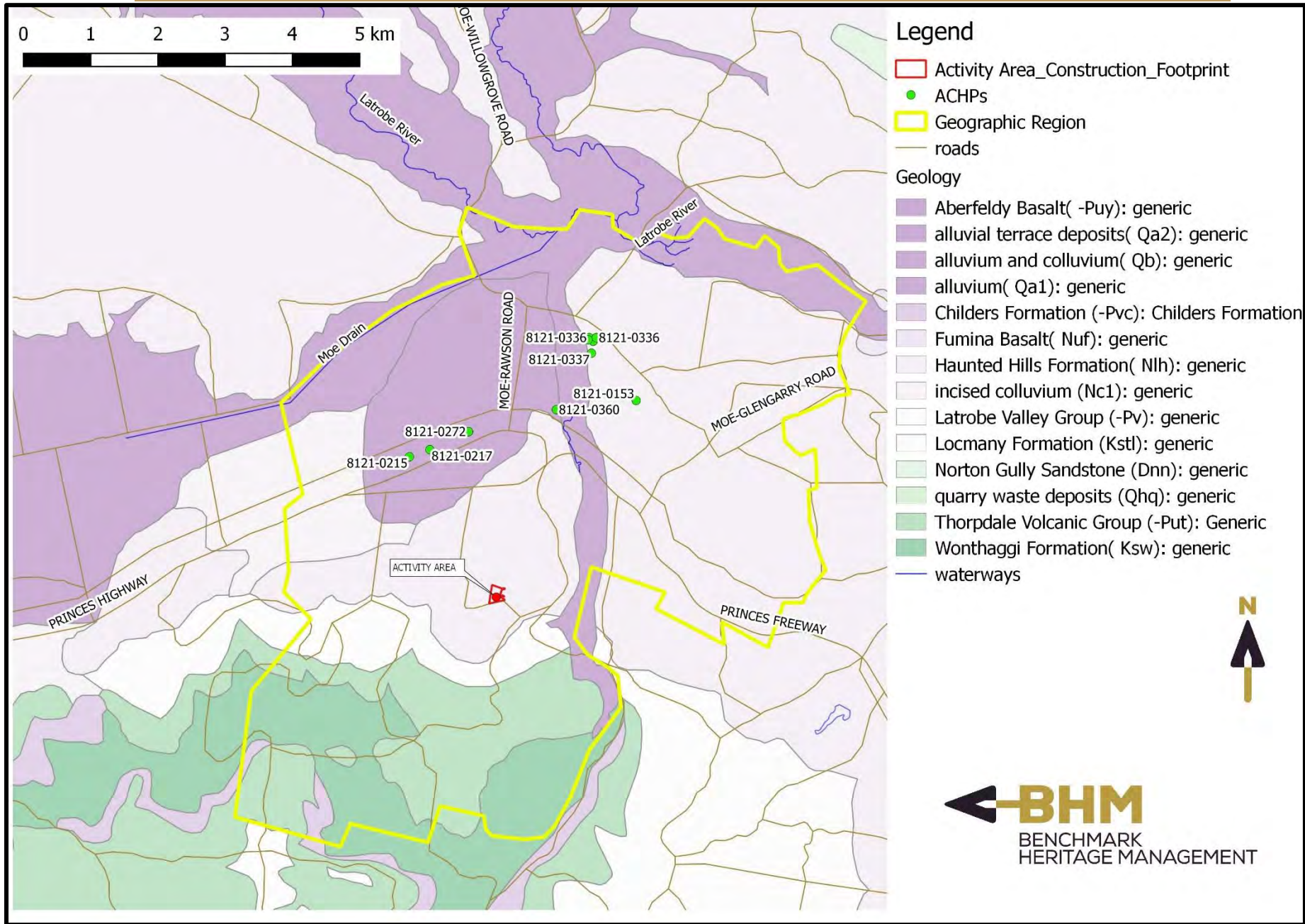
The VAHR online database maintained by Aboriginal Victoria was searched to identify any previously registered Aboriginal Cultural Heritage Places (ACHPs) within the Activity Area and surrounding geographic region, as well as the results of previous archaeological assessments. The VAHR was accessed on the 19<sup>th</sup> of February 2020 by Matthew Barker.

There has been no previous archaeological assessment of the Activity Area. No ACHPs are located within 200m of the Activity Area. The nearest is VAHR 8121-0217 located 2.18km northwest of the current Activity Area. VAHR **8121-0217** comprises an isolated artefact noted during an archaeological survey of the rail corridor.

#### 7.1.2 The Geographic Region

The geographic region in which the Activity Area is located is defined for the purposes of this CHMP, as the townships of Moe, Moe South and Newborough (Map 4). This area had been identified as the

geographic region for the purposes of this CHMP as it is considered to be of relevance to predicting the nature, extent and significance of any Aboriginal cultural heritage located in the Activity Area. Specifically, the geographic region as defined, samples a variety of landforms, environmental determinants and resources that likely influenced Aboriginal occupation of, and places near to, the Activity Area.



Map 4: Geographic Region

### 7.1.3 Registered ACHPs in the Geographic Region

As discussed above the selected geographic region is the townships of Moe, Moe South and Newborough. Searching an area with this extent ensured that a relevant and representative sample of information was obtained.

The search identified a total of 8 registered ACHPs within the geographic region. These ACHPs consist of a total of 14 ACHP components comprising three (3) ACHP component types (Table 5). No Aboriginal Historical References were identified within the geographic region. None of these ACHPs are located within the Activity Area. None of these ACHPs are located within the Activity Area.

Table 5: ACHP types in the region of the Activity Area

| ACHP Type                          | Frequency (No) | Components |
|------------------------------------|----------------|------------|
| Artefact Scatter                   | 6              | 7          |
| Low Density Artefact Distribution  | 1              | 6          |
| Artefact Scatter/Object Collection | 1              | 1          |
| Total                              | 8              | 14         |

Table 5 shows that stone artefact ACHPs, either artefact scatters or LDADs, account for 100% of all of the ACHP component types in the search area (n=13) if the object collection is discounted. It should also be noted that due to changing conventions for the recording of ACHPs over time, some of the ACHPs listed as 'artefact scatters' may in fact represent 'isolated artefacts', as early recording forms made no distinction between the two ACHP types. Furthermore, isolated artefacts are today recorded as a form of LDAD.

### 7.1.4 Previous Works in the Geographic Region Relevant to the Activity Area

Given the numerous CHMPs that have been undertaken in the geographic region, it was determined that the following discussion would be based on the results of all previous archaeological assessments and CHMPs within the geographic region.

#### Regional Investigations

There have been few regional archaeological investigations in the surrounding region and none of these has incorporated the Activity Area. In general, these studies have shown that there is a high probability that Aboriginal Cultural Heritage Places will occur in landforms such as creek banks and dry elevated rises bordering watercourses and floodplains that the most common Aboriginal Cultural Heritage Place types are likely to be artefact scatters and, where suitable trees remain, culturally modified trees.

There has been only one regional study that has included Moe. This study is of relevance to the current investigation as it runs parallel to the pipeline alignment, as it was confined to the railway easement of the Gippsland rail line. However, the following information has been collated from site cards as no report is listed on the Victorian Aboriginal Heritage Register. In 2003, Rhodes conducted a sample survey of the Gippsland Railway line as part of the Regional Fast Rail Project. Two low density stone artefact scatters were found close to Moe River as part of monitoring construction works (8121-0215 and 0217). A later survey conducted by Pauline Mullet recorded a further low density surface artefact scatters within the rail reserve (8121-0272).

A number of archaeological investigations have been carried out near Moe, of which those relevant to the current investigation are discussed below.

In 1981 Wesson and Beck conducted an archaeological survey of the Driffield Project area, an area between Morwell and Yallourn and south to Yinnar. During this assessment, although less than 1% of the study area received survey coverage, 132 ACHPs were recorded, comprising 22 surface scatters of stone artefacts, 4 scarred trees and 2 stone sources. The authors considered that ACHP location was affected by proximity to water, access to and availability of resources and other natural resources (e.g. stone), vantage, drainage and type of ground surface. Apart from possibly three coarse grained silcrete sources in the Haunted Hills Gravels, the largest of which was recorded during this investigation as an Aboriginal quarry site (VAHR 8121-0087). The fine grained silcrete which was found to dominate the stone artefacts recorded does not occur in the Driffield study area and no source for this rock type has yet to be found. In terms of ACHP situation, there was a bias towards the tops (36%) and sides of rises (35%), with side of creek and undulating land (10%) also having ACHPs. Level plains and river terraces had the least number of ACHPs (5%), **though the authors' note that the number of ACHPs located was directly affected by ground surface visibility conditions.** The largest number of ACHPs was located within the Hills landform, and this was also the land system that received greater survey coverage due to higher levels of ground surface visibility.

Djekic (1998) conducted a survey of the Latrobe Valley Coalfields in 1981, including a section of the Moe Township. The Moe township area included 26 square kilometres of river valley that has been cleared for grazing and residential uses (Djekic 1998: 18). A vehicular survey of this area was undertaken. A total of 48 possible ACHPs were recorded during the survey, although none of these were located in the Moe township survey area. These ACHPs included 12 artefact scatters, 21 isolated artefact occurrences, 11 scarred trees, 2 middens, 1 quarry site (later determined to be a natural occurrence) and 1 grinding grooves site (Djekic 1998: 21). The majority of these Aboriginal places were found in association with waterways and elevated landforms. The ACHPs were primarily located on the upper slopes of hills, on the plain and lower slopes of hills, with several ACHPs also located on the crest of hills, the rolling terrain and the river terrace (Djekic 1998, 24). Aside from a basalt edge-ground axe, all of the artefact scatter and isolated artefact occurrences comprised flaked stone. Silcrete was the predominant raw material represented in the artefact assemblages. Chert and quartz were also present, and consisted of either waste flakes or flaked pieces (Djekic 1998: 27). A low number of cores were identified, and Djekic surmised that this finding may indicate that the initial stages of stone artefact manufacture occurred closer to the source of the raw materials (Djekic 1998: 31).

### Local Investigations

The majority of studies conducted prior to the introduction of the *Aboriginal Heritage Act (2006)* consisted of archaeological surveys. As a result of these surveys, a range of ACHP types have been identified across a variety of landforms, including low density scatters on low-lying plains, and higher density ACHPs on hills and areas within the vicinity of freshwater sources. A number of CHMPs have been undertaken within the local area since the introduction of the *Aboriginal Heritage Act (2006)*. These are typically more detailed studies than those surveys above, which are based on surface evidence. Test excavation undertaken as part of the Complex Assessment of a CHMP allows for the testing of landform patterning conclusions, irrespective of surface evidence which can be biased in areas of greater erosion or ground surface visibility. CHMPs located within Moe, Moe South and Newborough are summarised below. These studies tend to indicate that major water-courses such as Narracan Creek may have been more favourable to past Aboriginal people than minor watercourses such as tributaries and smaller creeks. Aboriginal Places can therefore be expected to be larger and more complex along major watercourses, reflecting longer term occupation of these areas

| Study or CHMP  | Report/<br>CHMP no | Distance from<br>Activity Area | Landform  | Excavation  | Stratigraphy  | Aboriginal cultural heritage                       |  |  |  |
|--|--------------------|--------------------------------|---|---|---|--|--|--|--|
|  |                    |                                |   |   |   | VAHR No.   | Landform/s   | Depth/Soil Type  | Cultural Materials   |
| Brown and Sciusco<br>1995: Old Sale Road<br>Moe<br><br>Archaeological<br>Survey  | 829                | 1.7km north                    | Low-lying plain   | n/a   | n/a   | VAHR 8121-0153                                     | Gentle north<br>west facing hill<br>slope  | n/a  | Silcrete waste/un-<br>utilised angular<br>fragment   |
| Murphy 2007:<br>Future Residential<br>Development And<br>Extension To An<br>Existing Golf Course,<br>Newborough<br>approximately 3km<br>north.<br><br>Archaeological<br>Survey | 3626               | 4.5km<br>northeast             | Drainage line<br>(comprising<br>approximately 10%<br>of the property),<br>gentle hill slopes<br>(approximately 80%<br>of the property), the<br>existing Yallourn golf<br>course<br>(approximately 10%)  | n/a   | n/a   | n/a  | n/a  | n/a  | n/a  |
| Barker and Barker<br>2012: Proposed<br>Residential<br>Development at<br>Coalville Road, Moe<br>South.<br><br>Desktop, Standard<br>and Complex<br>Assessments                   | 12219              | 558m northeast                 | The Activity Area<br>was traversed by a<br>tributary of Narracan<br>Creek, indicated by a<br>silted up channel,<br>with a series of low<br>undulating hills and<br>ridgelines running<br>along both sides of<br>the creek.  | Two 50x50cm<br>Test Pits and 188<br>40x40cm Shovel<br>Test Pits                   | Context 1: 0-190/200mm: Brown clay loam (7.5YR<br>5/3 Brown) with a pH of 6.<br><br>Context 2: 190/200-400mm: Dark brown clay loam<br>topsoil (7.5YR 3/3) moist, fine grained with plant<br>matter, pH 6.<br><br>Context 3: 400-600mm: Strong brown (7.5YR 5/6)<br>moist to wet clay, pH 6.5.   | n/a  | n/a  | n/a  | n/a  |
| Albrecht 2013:<br>Proposed Old Sale<br>Road Newborough,<br>Latrobe Valley<br>Residential Subdivision<br><br>Desktop, Standard and<br>Complex Assessments                       | 12612              | 3.67km<br>northeast            | Steep to moderately<br>inclined alluvial<br>terrace overlooking<br>Narracan Creek (IA-<br>1a), the level, flat to<br>very gently inclined<br>plain comprising the<br>majority of the<br>Activity Area and the<br>flat low-lying<br>floodplain of<br>Narracan Creek. | 50x50cm Test<br>Pit, two 1x1m<br>Test Pits, and 46<br>40x40cm Shovel<br>Test Pits | Context 1: Dark grey compact sandy silt to<br>approximately 120mm (10YR 3/1; pH 7).<br><br>Context 2: Mid to light grey firm to compact silt to<br>approximately 300mm (10YR 5/1; pH 7).<br><br>Context 3: Light orangish mottled grey compact silty<br>clay with gravelly inclusions to approximately<br>400mm (10YR 6/4; pH 6).<br><br>Context 4: Light orangish grey dry cemented clayey<br>silt to approximately 1082mm (10YR 5/5 and 10YR<br>6/4; pH 6). | VAHR 8121-0336<br>VAHR 8121-0337<br>VAHR 8121-0338 | VAHR 8121-0338<br>and 8121-0337<br>were identified<br>along the edge of<br>the alluvial<br>terrace<br>overlooking<br>Narracan Creek.<br>The low density<br>artefact<br>distribution<br>(VAHR 8121-<br>0336) was<br>identified on the<br>flat plain | VAHR 8121-0336<br>found a 150-450mm<br>in mid to light grey<br>brown silt, and orange<br>grey clayey silt<br>deposits<br><br>VAHR 8121-0337<br>comprised 87 stone<br>artefacts located<br>between 200-400mm<br>in mid to light grey<br>brown silt, and orange<br>grey clayey silt<br>deposits.<br><br>VAHR 8121-0338 | VAHR 8121-0336<br>comprised three<br>silcrete and three<br>quartz artefacts<br><br>VAHR 8121-0337<br>comprised 87 stone<br>artefacts made of<br>silcrete (n=50),<br>quartz (n=30),<br>quartzite (n=3),<br>crystal quartz<br>(n=1), volcanic<br>(n=1) and rose<br>quartz (n=1). |

|  |       |                 |   |   |   |                |   |   |  |
|--|-------|-----------------|---|---|---|----------------|---|---|--|
|  |       |                 |   |   |   |                |   | comprised 96 stone artefacts located between 300-900mm in mid to light grey brown silt, and orange grey clayey silt deposits.                           | VAHR 8121-0338 comprised 96 stone artefacts made of silcrete (n=91), quartz (n=3), fine-grained siliceous (n=1) and rose quartz (n=1).   |
| Barker and Barker 2013: Proposed Residential Development– 110-120 Waterloo Road, Moe.<br><br>Desktop, Standard and Complex Assessments                             | 12583 | 2.2km northeast | Gentle slope to the Moe River floodplain                        | A 1x1m Test Pit and 22 3x1m backhoe transects       | Context 1: 0-100/300mm: Greyish brown medium grained clay loam (10 YR 5/2) topsoil moist, fine grained with plant matter, pH 6<br><br>Context 2: 100/300-650mm. Very hard light grey (10 YR 7/1) silty loam with reddish brown clay inclusions toward base (7.5YR 6/6 Reddish Yellow) with a soil pH of 6.5.<br><br>Context 3: 650-690+mm. Reddish brown very hard and compact clay (7.5YR 6/6 Reddish yellow) with a soil pH of 6.5.   | n/a            | n/a   | n/a   | n/a  |
| Tunn & Foley 2014: 18 Albert St, Moe.<br><br>Desktop, Standard and Complex Assessments   | 13169 | 2.3km northeast | upper and lower alluvial terrace associated with Narracan Creek | Five 1x1m Test Pits                                 | Context 1: A1 Horizon. 0 – 200mm. Soft, swampy black sandy silty clay loam, wet. Dense grass root zone and high organic content.ph 6.5<br><br>Context 2: A2 Horizon 210-380mm+. Compact light grey silty clay, moist. Occasional fine (<5mm) alluvial sub angular quartz gravels, and charcoal flecks.ph 6.<br><br>Trench became flooded from water table at 350mm depth below surface.   | VAHR 8121-0360 | High terrace landform feature, associated with Narracan Creek | Artefacts were recovered the A2 alluvial horizon  | 13 silcrete stone artefacts located between 300-500mm. Due to the presence of a partially backed artefact in the assemblage, it was tentatively suggested to be Holocene in age (Tunn & Foley 2014: 72). |
| Mitchell 2017: Proposed Aged Care Facility and Residential Subdivision, 18 Albert Street and 1C Haigh Street, Moe<br><br>Desktop, Standard and Complex Assessments | 14642 | 2.3km northeast | Alluvial floodplain and alluvial terraces                       | Two 1x1m Test Pits, and 22 50x50cm Shovel Test Pits | Context 1: 0-150mm: Moist, medium compaction, very dark brown/black humic loam. Frequent grass roots. 10YR 2/1 black, pH 7 ½.<br><br>Context 2: 150-220mm: Moist, medium compaction, mottled orange brown loam. Grass roots and occasional burnt clay flecks. 10YR 2/2 very dark brown, pH 7.<br><br>Context 3: 220-260mm: Moist, medium compaction, mottled dark brown grey clayey silt. Frequent charcoal flecks and occasional burnt clay flecks. 10YR 4/1 dark grey, pH 8 ½.<br><br>Context 4: 260-400mm: Moist to wet, soft to medium compaction, light grey clayey silt. Manganese inclusions. 10YR 6/1 grey, pH 8<br><br>Context 5: 400-720mm: Damp to wet, medium | VAHR 8121-0360 | High terrace landform feature, associated with Narracan Creek | Artefact located from 260-400mm in light grey clayey silt. 10YR and 400-720mm IN damp to wet, medium compaction, mottled light grey orange clayey silt. | All the artefacts in the assemblage are manufactured from silcrete, with the majority of artefacts (n=64) recovered from a depth of 300-400mm.   |

|   |       |             |   |  |   |                |          |  |                        |
|---|-------|-------------|---|--|---|----------------|----------|--|------------------------|
|   |       |             |   |  | compaction, mottled light grey orange clayey silt, becoming more clayey with depth. 10YR 6/2 light brownish grey, pH 8.<br><br>Base: 720mm: Damp, mottled orangey grey clay, sterile. 10YR 5/6 yellowish brown, pH 8.   |                |          |  |                        |
| Dowdell 2019: Proposed gas distribution pipeline along High Street, Railway Crescent and Narracan Drive, Moe.<br><br>Desktop and Standard Assessments | 15974 | 2.4km north | Slopes and alluvial terraces            | n/a  | n/a   | n/a            | n/a      | n/a  | n/a                    |
| Lopez 2020: Regional Rail Revival Gippsland, Gippsland Line Upgrade Warragul To Newborough<br><br>Desktop, Standard and Complex Assessments           | 16267 | 2.5km north | Low-lying floodplain and elevated rises | Four 1x1m Test Pits, and 67 50x50cm Shovel Test Pits | Context 1: 0-100mm: Very dark greyish brown compact clayey silt: 10YR 5/2, pH: 6.5<br><br>Context 2: 100-200mm: Mid greyish brown highly compact clayey silt. Grey silty clay appearing with depth. 10YR 4/2, pH: 6<br><br>Context 3: 200-350mm: Grey brown compact silty clay. Dry. Frequent charcoal flecks (<30 mm) and moderate coffee rock inclusions. 10YR 4/2, pH: 6 | VAHR 8121-0395 | Low rise | The subsurface artefacts were excavated from a compact clayey/sandy silt deposit, at depths of 150-250mm | Six silcrete artefacts |

### 7.1.5 Historical and Ethno-historical Accounts of the Geographic Region

The Desktop Assessment must include a review of historical and ethnohistorical accounts of Aboriginal occupation in the geographic region (r.61 (1) (d)). Therefore, a review of the historical and ethnohistorical accounts of Aboriginal occupation within the geographic region has been undertaken. No specific oral history has been provided in relation to the Activity Area from the GLaWAC.

A brief review of Aboriginal history in the region of the Activity Area is set out below. This does not encompass all of the historical information available on the Gunai people of Gippsland, nor does it include any oral history from the Gunai that may be relevant to the Activity Area.

Prior to European settlement, Aboriginal people occupied all aspects of the Victorian landscape, governed by a distinct system of land ownership. Aboriginal social organisation was extremely complex with marriage, social, and inter-group relationships based on tribe (or language group), descent, clan and moiety. The tribe was the largest unit of division, and consisted of people who shared a common language. Members of the same language group also shared the same rules of descent (either matrilineal or patrilineal), and claimed ownership of a particular region. Clans claimed common descent from ancestors (individual branches of a family tree) and these smaller groups also held particular tracts of land. Moieties divided the entire language group into complimentary social groups, governing not only the social and ceremonial status of individuals but also their marriageability. Inter-marriage of persons from the same moiety was not allowed (Coutts 1981).

The Activity Area was occupied by one of the five Gunai clans or groups, these being Brabralung, Braiakaulung, Brataulung, Krauatunglung and Tatunglung (Howitt 1904: 73). The earliest reference to the language name was in 1878 (Howitt in Smyth 1878). The Braiakaulung were the Gunai clan who occupied the current Activity Area, **who ‘...claimed all the country west of Providence Ponds, watered by the Avon, Macalister, Thompson and Latrobe Rivers, down to the junction of the Latrobe to Wellington, thence eastward by the Lakes to (somewhere) near Roseneath, thence northward(s) to the Providence Ponds’ (Orr et al 2008: 17 following Fison and Howitt 1880:229).**

Clan boundaries frequently corresponded to major geographical features such as rivers, mountain ranges, or valleys. The lands of the Brabralung were occupied by a number of clans and the current Activity Area was occupied by the Munji clan. The pre-contact population estimates for the Gunai people are between 4000-5000 people (Nicolson 1998).

Members of the Gunai were divided into two totemic groups according to sex. Men belonged to Yerang and women to Djeetgang; which are the names of small birds. According to Howitt, people were banned from hunting the bird which gave its namesake to the group (Howitt 1904: 135). Gathering of good resources was also apparently divided between the sexes, with the men responsible for hunting larger game, spearing fish and the cooking and division of meat, while women were responsible for collecting the largest proportion of food, collecting various plant foods, shellfish, hunting smaller animals and line and net fishing on the canoes and lakes (Rhodes 1996: 17).

**Gunai’ or ‘Kurnai’ is the word used for ‘man’ and by extension the word used for ‘person’ (Wesson 2000:17). ‘Kurnic’ refers to the Gippsland group of languages which belongs to the Pama-Nyugan language family. Among Gunaikurnai, three local dialects were spoken: ‘Nulit’ in the west, ‘Muk-thang’ in the centre and ‘Thang-quai’ in the east.**

Within the territory of the Braiakaulung, there were a number of “named groups” as Wesson has described them (2000:20-45). These included Bundan-ruk, Bunjil Daan, Bunjil Kraura, Bunjil Nelung,

and Nigothoruk. These named groups have been used by some writers to denote clans or tribes. However, it is rarely clear from the sources, what social, political or economic structures the terms denoted. In the areas of Tyers Park, the nearest named group was the Bunjil Kraura, also known as Woollum, Woolloom, Woollam-ba-bellum-bellum, Wolloom, Wollum, and Upper Latrobe tribe (Wesson 2000:28). The meaning of kraura is taken as “west wind”, and their location is described variously as: “...the people of the Latrobe river at Longford, ...the Braiakaulung up the Glengarry, ...up the country between Morwell, Rosedale, Toongabbie, ...on the Latrobe at Rosedale, ...at the Hill Top (Longford) and along the Latrobe as far as Rosedale, ...filling the space in the boundary between the Brataulung and the Braiakaulung and ...all the country west of the Bunjil Daan” (the Bunjil Daan occupied the Maffra area on the Avon River) (Wesson 2000:27- 8).

From the available evidence it is likely that the Bunjil Kraura focussed their activities on the lower Latrobe Valley, where the river, the rich alluvial flats and perhaps the western margins of Lake Wellington would have provided them with rich hunting grounds and food resources. The upper reaches of their territory gave them access to Mount Warragul and the alpine country to the north where the Bogong Moth could be found.

The headman was also called Bunjil Kraura, who was the father of **Billy Wood’s Wife, Sarah or Warrawort. Bobby Coleman wrote that ‘Bunjil Kraura lived up at the country between Morwell, Rosedale Toongabbie’** (Bobby Coleman n.d. in Wesson 2000:28 following Orr et al 2008: 18).

No oral testimony concerning the Activity Area has been received from the GLaWAC.

#### Post-Contact History

The establishment of whaling stations on Wilsons Promontory from 1828 and farms from the 1830s onward destroyed Gunaikurnai way of life. After settlement of the mainland several massacres and the introduction of diseases decreased Gunaikurnai population to a mere 200 around the 1860s (Keen 2004:9 based on Howitt).

**By the late 1840’s most of the open grazing area had been occupied by European settlers.** This had a devastating effect on the Gunai people. Within ten years the Gunai clans had lost access to land and resources that were the central components of their cultural life. The effects of disease, dispossession, inter-tribal conflict, alcohol and conflict with Europeans combined to dramatically reduce the Gunai population. Conflict between the two groups occurred mainly in response to pressure placed on traditional Aboriginal food resources by dispossession of their land. Starving Aboriginal people were forced to steal sheep, and often murdered or assaulted a squatter resulting in harsh reprisals.

In the census of 1840, it was recorded that there were 100s of men women and children at the Latrobe River, while Tyers records 300 in 1844. However, numbers vary widely in subsequent decades – 3 men, 3 women, 0 children in 1852, 54 men, 51 women in 1862, 22 men, 17 women, 7 boys, 5 girls in 1863 and 51 persons in 1864 (Wesson 2000:28 quoting various primary sources).

A report in the 1850 census by Tyers reveals the desperate state of the Gunaikurnai people (Tyers 1850 cited in Wesson 2000: 36) stated that

**‘50 men, women and children camped at Lucknow without any clothes other than pieces of blankets and small scraps of possum rug...It is the severest of winters and I can bear testimony of the deplorable condition of the Aborigines... the temperature was 36 degrees Fahrenheit.’**

From the time that McMillan and Strzelecki conducted their explorations through the region, conflict was inevitable, as the European settlers who subsequently arrived wanted the lakes, shores and land

for themselves. A number of attacks and reprisal raids followed, the first of which involved between 200-300 Aborigines attacking McMillan's station near Stratford in 1840. This event, known as the 'first attack' (Gardner 1993: 13), heralded more numerous and severe raids.

One such raid is dated to 1843 at Warrigal Creek near Woodside. In July 1843, a local pastoralist, Ronald Macalister was speared to death near Port Albert. In response Angus Macmillan, one of the first white settlers in Gippsland organised a party of whites that massacred approximately 90-150 on the banks of Warrigal Creek. This event has become known as the Warrigal Creek massacre, and is one of the largest known massacres in Australian history involving the deaths of between 50 (Morgan 1997:55) and 150 (Wells 1986:5).

By the 1860s, the majority of the remaining Gunaikurnai were living at the Lake Tyers Mission and Ramahyuck Mission (Keen 2004: 9 based on Howitt 1904).

### 7.1.6 The Landforms and Geomorphology of the Activity Area

Geomorphologically, the Activity Area is situated within the unit of High Terraces and Fans – Gippsland which is part of an extensive landscape of low relief south of the Great Divide. The current Activity Area lies on a low lying plain referred to as of low relief located around the Darnum, Loy Yang, Giffard, Leongatha South and the Munro Plains (DEDJTR 2020a and b).

The soils of the Activity Area have developed from colluvial deposits from the hills and ridges of Haunted Hills Formation sediment. During the Late Pliocene to Pleistocene (5.3 million years ago to 11,500 years ago) alluvial fans and floodplains covered much of the onshore basin, giving rise to the Haunted Hill Formation. The Haunted Hills Gravel is primarily composed of quartz, but also contains clay, feldspar, granitic fragments, tourmaline, cassiterite, and other heavy minerals. The quartz is primarily clear granitic quartz, which is sub-angular to sub-rounded and ranges in size from fine sand to cobbles. The cobbles tend to be better rounded and are found sparsely throughout the sediment. The largest cobbles are approximately 60mm by 40mm. Large clay rip-up clasts as well as thick clay beds are also found at some of the sites and a matrix of clay is found throughout the area. In appearance the formation displays sand, silt and gravel in various shades of brown, yellow, red and white; variably sorted; commonly strongly oxidised with ironstone near the top and also within the formation.

Soils on the Activity Area are acidic duplex soils (Geological Survey of Australia - Cochrane et al 1995: 51). The A horizon is usually grey to pale grey silt and sand and the subsoils are a red/orange/grey mottled clay (Cochrane et al 1995: 51). When wet, the soils swell, closing soil pores. This impedes the flow of water through the soil and causes water logging (Cochrane et al 1995: 51). The compact sand/silt nature of the subsoils causes them to become suspended in water when wet, and in consequence they can be eroded by moving water (Cochrane et al 1995: 51). In dry conditions, the A horizon sets hard.

In 2020 GHD undertook a geotechnical investigation of the sub-surface soils on behalf of Gippsland Water to a maximum depth of 9.45m below the ground surface. The sub-surface conditions were described as:

- FILL – PAVEMENT – Consisting of a mixture of silt and 20mm of fine crushed rock (Note: only encountered at BH02). Overlying material typically comprising:
- SANDY CLAY / CLAY with SAND (CL-CH) – Typically greyish brown, yellowish brown, dusky yellow and dark brown fine to coarse grain sand, generally moist, soft to firm and ranges in thickness from 0.4m to 1.2m (Note: only encountered at BH01 and BH02). Overlying material typically comprising:

- CLAY (CI-CH) / SILT (MH) – Typically reddish brown/reddish orange to light yellowish/bluish grey at depth, with the occasional sandy lens (fine to coarse grain sand). Generally moist, firm to very stiff and ranges in thickness from 1.3m to 6.6m. Overlying material typically comprising:
- SAND (SP) / SILTY SAND (SM) – Typically yellowish brown, dusky yellow and light grey to white, fine to medium grain sand. Generally moist and dense, becoming denser with depth, extending to borehole termination depth.

### 7.1.7 The Environmental Determinants of the Activity Area

The Desktop Assessment included a review of the physical context and natural resources present within the geographic region. These environmental variables can determine how people used the landscape in the past. This information is used to gain an understanding of past human behaviours and provides an indication of where ACHPs may be located within the landscape. These environmental factors are summarised below.

#### 1. Climate

Temperature averages at Moe indicate a cold to hot maximum average of 6.8°C in July to 22.9°C in February. The annual average rainfall for the area is 687mm. These climate conditions would have placed no restrictions on Aboriginal or European occupation of the area (LCC 1991).

In the past however, the climatic conditions have fluctuated considerably. The late Pleistocene and early Holocene environment within the geographic region was one of gradual and continuous change (Murphy 2011). The changing environmental conditions provided different sets of resources (access to freshwater, flora and fauna) for the Aboriginal populations inhabiting the region. During the Pleistocene, sea levels were in general much lower than present. A broad model of climatic change in the region is as follows (Dodson, Fullager & Head 1992, following Murphy 2011):

- 20,000 – 15,000 years ago the climate was cooler, drier and windier than present. There was reduced vegetation and less water;
- 15,000 – 12,000 years ago the climate was more arid, but temperatures were warmer;
- 12,000 – 8,000 years ago the climate was becoming wetter and milder;
- 8,000 – 5,000 years ago the climate was warmer and moister than present;
- 5,000 years ago, to present, the temperatures have cooled, and conditions are drier.

#### 2. Water Sources

Sources of fresh water would have existed in close proximity to the present Activity Area. Narracan Creek is located approximately 1km east of the Activity Area and a minor ephemeral watercourse traverses the Activity Area. The Moe Swamp was 4km to the northwest would have been a significant water source and would have provided a perennial supply of water.

In addition to the more permanent source of water described above, during winter water would have collected in depressions and may have lasted for several days (Sullivan 1981: 8).

### 3. Description of Existing and Pre-Contact Vegetation

The Activity Area falls within the Gippsland Plains bioregion ((DELWP 2020a). The Pre-1750 vegetation comprised EVC 29 Wet or Damp Forest and EVC 16 Lowland Forest ((DELWP 2020a). The former of which comprises 90% of the study area, whilst the latter comprises a narrow strip approximately 40m wide along the western edge of the Activity Area.

EVC 29 Wet or Damp Forest occurs under moderate rainfall regimes of 700-800 mm per annum on fertile, well-drained, colluvial or alluvial soils on gently undulating lower slopes and valley floors. The tall, open overstorey may contain a variety of eucalypts, usually species of moister or more fertile sparse shrub cover. A rich array of herbs, lilies, grasses and sedges dominate the ground layer. Valley forests supported tree species including manna gum (*Eucalyptus viminalis*), river peppermint (*E. elata*), narrow leaf peppermint (*E. radiata*) and mountain grey gum (*E. cypellocarpa*). The understorey consisted of climbers, broad-leafed and narrow-leafed shrubs, ferns (including tree ferns), scrambling grasses and soft-leafed herbs. In the areas most prone to flooding, swamp species may have thrived. Such swamp species include rushes, common reeds (*Phragmites australis*) and sedges including tangled lingum (*Muehlenbeckia cunninghamii*).

EVC 16 Lowland Forest comprises widespread eucalypt forest on relatively fertile, moderately well-drained soils in areas of relatively high rainfall; characterised by the diversity of life forms and species in the understorey including a range of shrubs, grasses and herbs. This widespread dry forest type grows on soils of moderate fertility on the foothills of the Great Dividing Range through to the foothills of the Strzelecki ranges and Wilsons Promontory National Park to far East Gippsland. The understorey varies from shrubby to heathy to sedgy and may even be grassy as fertility increases. It occurs mostly in the intermediate rainfall areas of the foothills where it occupies the dry aspects and dry crests where incident radiation is greatest but may also occur in the lower rainfall/lower fertility areas of the Gippsland plains. In the foothill areas, Damp Forest develops immediately down slope where sufficient topographic protection is available. Lowland Forest merges into Gippsland Plains Grassy Woodland or South Gippsland Plains Grassland as fertility increases and with decreasing fertility on the most infertile sands, Heathy Woodland and Sand Heathland occur. The vegetation is dominated by a tall eucalypt tree layer to 30 m tall over a medium to tall dense shrub layer of broadleaved species typical of wet forest mixed with elements from dry forest types. The ground layer includes herbs and grasses as well as a variety of moisture-dependent ferns including occasional tree ferns.

The Activity Area and surrounding region would have provided rich floral resources for Aboriginal people. Silver wattle may have been employed by local Indigenous peoples in the production of stone **axe handles, its gum used as a food source or 'mixed with ash to make a waterproof paste, used for fixing holes in bark water vessels'** (Zola and Gott, 1996: 38). Tussock grasses may have been used to make baskets and mats, and the tubers of water-ribbons had the potential to provide a valuable food source for local inhabitants (Zola and Gott, 1996: 58, 12). River red gums potentially provided Indigenous inhabitants with bark for a variety of uses including the building of shelters and canoes, and its gum was also employed for medicinal purposes (Zola and Gott, 1992: 14 and 55). The red gum was popular amongst European settlers as well, who used it primarily for construction (Zola and Gott, 1996: 14).

Water plants including cumbungi (*Typha spp.*) and water ribbons (*Triglochin*) would also have been gathered from these creeks. The roots and tubers of lilies would have been collected and roasted and

would have provided a staple food. The fruits of plants such as the native raspberry and the common apple-berry provided a common and sweet food source (Zola & Gott 1996: 49-50).

Manna Gum – the sugary sap was eaten; the wood was used to make shields and water vessels and the leaves were placed over fires as the smoke was thought to assist in reducing fever (Zola and Gott 1992: 38). Black Wattle – the gum was eaten or dissolved in water for a sweet drink. Austral Bracken – the liquid of the young stems was rubbed onto the skin to relieve insect bites (Zola and Gott 1992: 56) and the roots were roasted and then ground into a paste in order to make a damper (Zola and Gott 1992: 37). Tussock Grass – the fibrous leaves were used to make string (Zola and Gott 1992:58). Melaleuca – the soft bark was used as cloths to wrap babies (Zola and Gott 1992:63). A diverse fauna would have also provided a rich resource for Aborigines.

Roots such as the yam daisy (*Microserus scapigera* or *lanceolata*) and native carrot as well as seeds and fruits were important staples in the diet (Zola and Gott 1992:58). Yams, roots and tubers were roasted in hot coal-fired earth ovens, or ground, mixed with water and formed into dough which was also baked in the ovens. Recent research has also uncovered how Aboriginal people used fire strategically and purposefully to increase the germination of valuable tuberous plant sources such as the vanilla lily (Walsh 1987: 89).

Early observers, such as R. B. Smyth, noted that Aboriginal dwelling places were carefully situated **within a day's reach of several** different environments, for example woodlands, grassy plains, river or coastal areas. This meant that groups could be flexible about finding food and resources from a range of sources (Coutts 1981: 17 and 52). Through his review of both contemporary and archaeological sources Coutts (1981:) concluded that 'plants were the mainstay of the Aboriginal diet' in Victoria, with many hundreds of species known to have been exploited.

Plant foods were extensively exploited by the Aboriginal people and included berries, fungi, roots, tubers, bulbs, leaves, and pith from fleshy plants, seeds and sap. Gum was also collected from the wattle and stored in known locations for seasons when food was less abundant (Thomas cited in Sullivan 1981: 25). Reeds and other grasses were used for making fishing nets and baskets (Coutts 1981: 14–15, 18).

An ecological assessment was undertaken by Fuhrmann and Imbery (2019). In terms of the current vegetation conditions the following was observed:

#### 56 Moe South Road

This property has a continuous canopy coverage that is provided primarily by *Eucalyptus obliqua* (Messmate Stringybark) throughout, alongside the occasional *Eucalyptus dives* (Broad-leaf Peppermint) across its mid slopes, and *Eucalyptus radiata* (Narrow-leaf Peppermint) mainly in its north western corner. Canopy cover is reasonable and canopy health is generally very good and there is a high proportion of large habitat trees.

The middle storey is denser at its northern edge where large shrubs such as *Olearia lirata* (Snowy Daisy-bush) and *Pomaderris aspera* (Hazel Pomaderris) are more common at the interface with damper areas to the north of the property. The middle and upper southern section have a relatively consistent modest coverage of small to medium shrubs that includes the species *Cassinia aculeata* subsp. *aculeata* (Common Cassinia), *Exocarpos cupressiformis* (Cherry Ballart) and *Pultenaea juniperina* s.l. (Prickly Bush-pea).

The ground layer is generally dominated by exotic grasses, sedges and herbs with the grass *Tetrarrhena juncea* (Forest Wire-grass) and *Goodenia lanata* (Trailing Goodenia) common alongside patches of orchids on the lower slopes.

Woody weeds are scattered throughout in limited densities while exotic grasses and herbaceous weeds occupy some small areas of ground layer disturbance along the eastern edge of the property.

#### 58 Moe South Road

Within this property the entrance to the residence is lined by plantings of mature exotic trees such as *Callitris rhomboidei* (Oyster Pine) and exotic hedges. The ground layer around the entrance is made up of open lawn areas dominated by exotic grasses or planted beds containing predominately exotic ornamentals and scramblers such as *Hedera helix* (English Ivy) and *Vinca major* (Blue Periwinkle). The rear of the residence comprises cleared grazing land dominated by exotic pasture grasses including *Anthoxanthum odoratum* (Sweet Vernal-grass) and bordered by screen plantings of exotic and Australian native trees and shrubs.

#### 4. Information on Fauna of the Activity Area

A number of inland animals would have been present within the geographic area, these include the Eastern Grey Kangaroo (*Macropus giganteus*), Common Brushtail Possum (*Trichosurus vulpecula*), Common Ringtail Possum (*Pseudocheirus peregrinus*), Short Beaked Echidna (*Tachyglossus aculeatus*) and the Wombat (*Vomatus ursinus*). Birds, bird eggs and reptiles may have also been utilised. Birds, such as Emu and Bustards, were also eaten, as were bird eggs. Birds were caught with throwing sticks or in traps. Fish were important resources and were speared in rivers and swamps or caught in nets (Thomas cited in Sullivan 1981: 24). Although use of the hook and line was observed, it is likely that this was a practice resulting from contact with sealers (Sullivan 1981: 24).

Clan groups also took advantage of the annual migration of eels to the sea, constructing systems of weirs, traps and other means of harvesting this abundant food source (Coutts 1981: 7: 44–45, 237–239). Large scale hunts did not form the basis for daily nutrition, but tended to be organised between clans for ritual purposes as much as for food. Large numbers of people would gather together, form a circle of several kilometres in diameter and move inwards to drive the animals into traps for slaughter (Coutts 1981: 6).

Animals were not only taken for food. The skins of kangaroos and possums, for example, were processed and used for clothing. Bone was used for tools and utensils as well as for body adornment, and stomach lining was used for fishing line.

#### 5. Stone Resources

The Haunted Hills landform is known to have supplied pre-contact Aboriginal people with a variety of raw stone materials. There are no significant outcrops of stone occurring within the Activity Area. To the north of the Activity Area, a number of Palaeozoic and Mesozoic rocks outcrop, and to the south west, basalts of Oligocene age also occur (LCC 1980: 275). The main form of naturally occurring stone within the Activity Area is small water-worn quartz pebbles. To the north of the Activity Area, a number of Palaeozoic and Mesozoic rocks outcrop, and to the south west, basalts of Oligocene age also occur (LCC 1980: 275). The main form of naturally occurring stone within the Activity Area is small water-worn quartz pebbles.

### 7.1.8 Land Use History Relevant to the Activity Area

The west Gippsland region was settled by Europeans following the initial exploration of the area by Paul Strzelecki and Angus McMillan between 1839 and 1841. This saw the establishment of pastoral occupation in the plains and open valleys of the Latrobe Valley (Spreadborough and Anderson 1983). The main economic activities in the region were pastoral including beef, dairy and sheep raising, and agricultural. Clearance of land for farming and timber extraction went hand in hand. The construction of the Gippsland Line in the late 1870s facilitated the increase of timber milling, which became a major economic activity in the region in the late 19th and early 20th centuries, feeding the demands for fuel and construction material in the booming metropolitan areas. Smaller tramways were developed as a cheap, efficient, and year-round means of conveying timber to the rail lines where it was destined for the Melbourne market (Howell-Meurs 2006).

Extensive coal extraction began in the Latrobe valley with the establishment of the Great Morwell Coal Mining Company, which operated an open cut mine on the north bank of the Latrobe River from 1886. However, it was not until the construction of the State Electricity Commission briquette plant in Yallourn in 1921 that the local coal industry became firmly established. The study area appears to have remained predominantly pastoral land since first European settlement. Primary agricultural impacts on the area include clearing of scrub and timber and ploughing. Clearing of dense forest and vegetation such as that recorded by settlers would have involved practices such as uprooting and extraction of stumps, which frequently impact dramatically on ground surface. Clear felling of forest generally results in periods of ground exposure, during which, ground surface devoid of stabilizing native vegetation, and not yet stabilized by introduced pastoral grass species is vulnerable to denudation through rainfall and runoff. As noted, local rainfall is substantial.

The population of Moe has hovered around the 15,000 mark since 1961. Primarily the product of brown coal deposits, Moe grew rapidly in the 1950s as did nearby Yallourn, which completely disappeared in the 1980s when the model township was resumed as a coal mine. The Victorian Housing Commission built 1500 homes in Moe for electricity and railway workers. The privatisation of **Victoria's electricity industry, under the Kennett Liberal Government in the 1990s, saw a rapid rise in unemployment and a halving of house prices.** The city itself has good facilities and a pleasant landscape setting in the wider Gippsland context, but it unlikely to ever grow again as quickly as it did in the 1950s.

Moe is situated at the western end of the Latrobe Valley, on the Princes Highway and Gippsland railway line. The area to the west was originally an extensive swamp, bounded to the north by the Great Dividing Range and to the south by the Strzelecki Ranges. The marshland was generally known as **'The Mowie'; the name**, with various spellings, said to be derived from an Aboriginal word meaning swamp.

A pastoral run, Merton Rush, was taken up in the area in 1846. From 1861 the small settlement of Westbury, north-west of present Moe, was a staging post on the coach route into Gippsland which skirted to the north of the swamp. However, from 1877 when the railway into Gippsland was constructed, a settlement developed around the railway station. The town was surveyed in 1878 and there were soon hotels, stores, banks, churches **a school (1879) and a mechanics' institute (1884).** The Shire of Narracan was proclaimed in 1878 and shire offices were opened in Moe in 1885.

Farm selectors arrived in the Moe district in 1873. During 1894-99 swamplands were drained and farm blocks keenly sought after. A co-operative dairy (butter) factory opened in 1906 and continued until 1980. Agriculture, however, would take second place.

## Coal

In the late 1870s black coal was discovered in the Narracan Creek valley to the south of Moe. This lent strength to the movement for a branch rail line which was completed in 1888. There were stations at Coalville, about 7km from Moe, at Narracan about 10km away, and at Thorpdale, the end of the line, 17km from Moe. Several coal mines operated around Coalville until the late 1890s. Farm produce was also transported to Moe by rail.

## Regional town

Moe was also the junction for coach services to the goldfields of Tanjil and Walhalla to the north. In 1884, the Moe Forest Reserve, west of the town, was opened for selection and in 1888 work began on draining the Moe Swamp (Victorian Places 2020). This was completed in 1899, when the first allotments were sold. The *Australian handbook* described the township in 1903:

**MOE** (38° 10' S. lat., 146° 11' E. long.), a township, with post, telegraph, savings bank, and money-order offices, in the county of Buln-Buln, electoral district of Gippsland West, and police district of Sale, lying 229 feet above sea-level. It is a railway station on the Gippsland Railway, distant 80 miles E. of Melbourne; fares, 14s. 3d. and 9s. 8d., and is the principal place in the shire of Narracan. It has one coffee palace, and Retreat, Moe and Club hotels. It is on Narracan creek, near its junction with the Latrobe river, and is the centre of a large agricultural district. The principal buildings here are the railway station, shire hall and court-house, police-station, mechanics' institute (1,200 vols.), six stores, State school (No. 2,142), and L.O.L. Churches: Roman Catholic, Church of England, and Wesleyan. Colonial Bank open Tuesdays and Fridays once a month. This district has been selected, under the 19th clause of the Land Act, but dairying, mining and grazing are the chief pursuits of the people. It consists principally of scrub land, in some parts heavily timbered, and of excellent quality. A few miles from Moe, at Coalville, are the Moe and North Coalville mines. At Thorpdale, the terminus of the Narracan Valley railway line, which branches from here, several sawmills have been erected. Moe is the starting-point to the mining districts N. and E. of Walhalla. Coaches run to Tanjil and to Walhalla (two daily), fare 5s. Formation: volcanic. Population, 350, of the district about 1,200. Newspaper: *Narracan Shire Advocate*, published weekly, on Saturdays.

In 1909, the shire offices were moved to Trafalgar, west of Moe. A railway line from Moe to Walhalla was opened in 1910. Purvis Stores, opened for business in Moe in 1910 eventually opening throughout the Latrobe Valley. (Their slogan was 'Purvis for Service'. The firm became the Aussie Disposal chain.) The township of Moe serviced the surrounding agricultural district and by 1933 had 898 inhabitants.

## Industry

The development of the Yallourn open cut coal mine and power station in the 1920s contributed to regions development, providing employment and trade. Lake Narracan was first constructed by blocking the outlet of the Latrobe River between 1959 and 1961 as part of the water supply for the

Latrobe valley power station cooling towers. The dam has a capacity of 8,600 megalitres (ML) and full supply level is 47.7m AHD.

Moe grew rapidly after the end of World War II. Labour was needed for the brown coal mines and electricity generation industries at Yallourn and Morwell to the east. Much of this labour was provided through immigration from Britain and Europe. House-building land at Yallourn had all been used up. From 1947 to the mid-1950s the Housing Commission built 1500 homes in Moe, mainly south of the railway for the workers and their families. By 1955, **the population was 13,500. The town's focus** was now the industrial Latrobe Valley rather than the rural countryside. Its area included Newborough. In 1963, it was declared a city. As Moe grew, it attracted secondary industries, such as textile and clothing mills, manufacture of concrete pipes, furniture and aerated waters, processing of dairy products, timber milling, engineering works, and photographic developing and processing.

The Activity Area has been settled by Europeans since the 1880s. From this time various landscape changes have been made, such as clearing of scrub and timber and ploughing. These initial impacts would have resulted in the possible destruction of culturally scarred trees and a variety of surface ACHPs such as stone arrangements and the spatial and temporal integrity of stone artefact scatters. Aboriginal stone artefacts may have survived however little information will now remain regarding how these artefacts were originally deposited. The potential for ACHPs of high scientific significance (as significance is linked to condition) is therefore low.

#### Specific Land Use History

European settlement would have significantly impacted on ACHPs in the Activity Area. As the Activity Area would have been densely vegetated, the removal of this native vegetation would have caused a great deal of ground disturbance.

Figure 2 shows that the Activity Area was covered in dense woodland in 1945 although there are two possible structures (possibly a house and a dam) in the general location of the Activity Area. Figure 3 shows a photograph of the treatment plant looking east in 1961. A brick house is located at the rear of the treatment close to the location of the existing house. The bushland forming the west of the Activity Area is evident also.

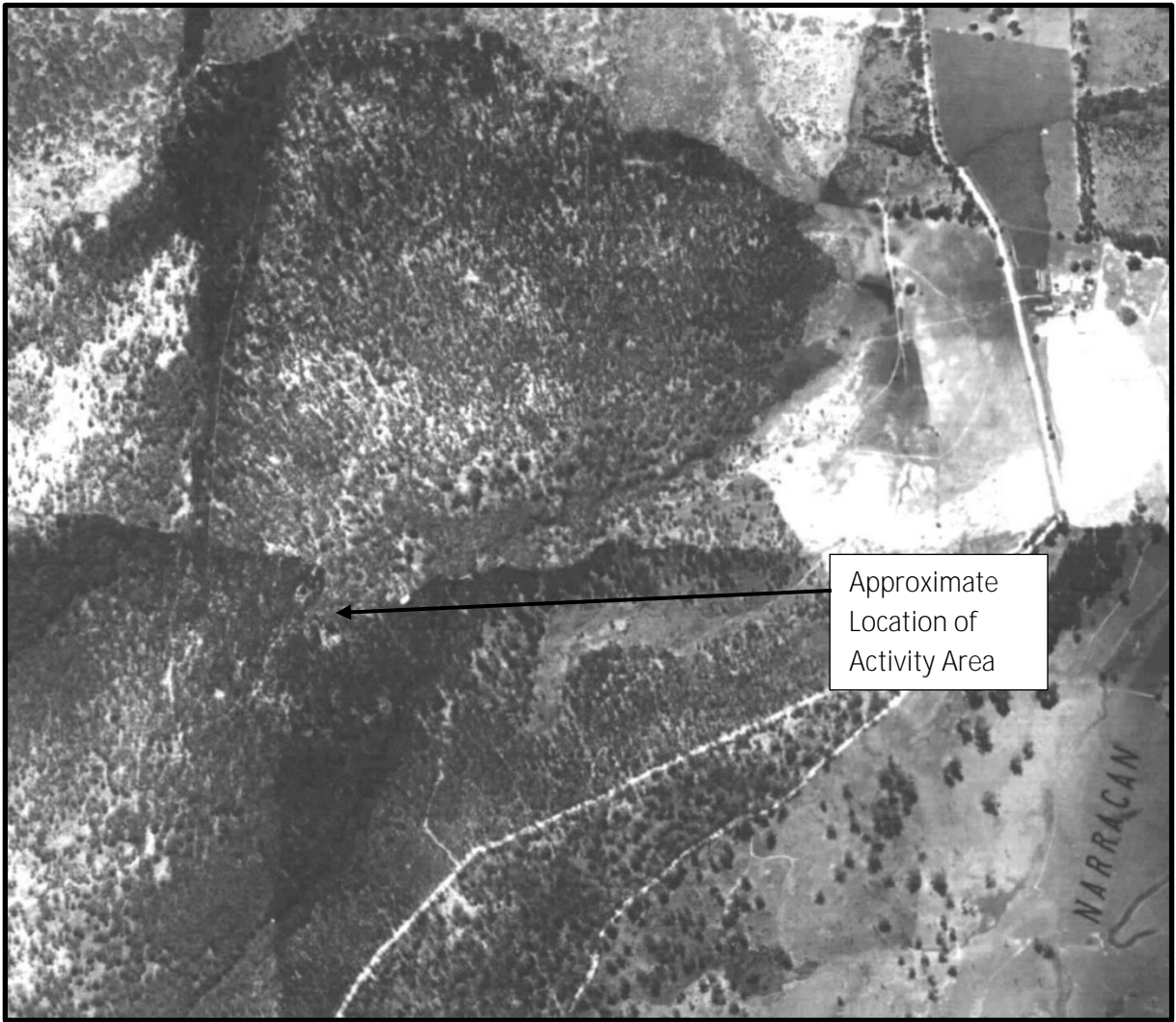


Figure 2: 1945 Aerial Photograph (DELWP 2019b)



Figure 3: 1961 Photograph showing the Newly Constructed Treatment Plant with the Operators House at the Rear

The land use history of the Activity Area shows that the Activity Area has been subject to previous ground disturbance to some degree and includes:

#### 56 Moe South Road

- Removal of native vegetation for the sections of the existing treatment plant. As this section of the Activity Area was in an EVC in which eucalypts were the dominant species, the removal of this native vegetation would have caused a great deal of ground disturbance. Impacts to the land will have involved burning, clearing and grubbing of the original vegetation, along with draining and construction of channels associated disturbance of the upper soil layers, erosion following vegetation clearance and levelling to create a flat surface.
- Construction of access roads and associated infrastructure in 1961.

#### 58 Moe South Road

- Removal of native vegetation. As this section of the Activity Area was in an EVC in which eucalypts were the dominant species, the removal of this native vegetation would have caused a great deal of ground disturbance. Impacts to the land will have involved burning, clearing and grubbing of the original vegetation, along with draining and construction of channels associated disturbance of the upper soil layers, erosion following vegetation clearance and levelling to create a flat surface.

- Construction of a house in 1961 and associated infrastructure. Demolition of the house shown in Figure 3 in the 1980s and construction of the existing house and associated infrastructure.

#### 7.1.9 Conclusions from the Desktop Assessment

The conclusions from the Desktop Assessment and the basis for the ACHP prediction model are as follows:

- The Activity Area has not been subject to previous archaeological assessment;
- There are no ACHPs located within 200m of the Activity Area;
- There are 8 previously registered ACHPs located in the geographic region comprising 14 components;
- A minor watercourse traverses the western half of the Activity Area;
- Artefact scatters are the most likely ACHP types to be located with the Activity Area;
- ACHP types have been identified across a variety of landforms, including low density scatters on low-lying plains, and higher density ACHPs on hills and areas within the vicinity of freshwater sources;
- Previous studies tend to indicate that major water-courses such as Narracan Creek may have been more favourable to past Aboriginal people than minor watercourses such as tributaries and smaller creeks. Aboriginal Places can therefore be expected to be larger and more complex along major watercourses, reflecting longer term occupation of these areas;
- There exists a potential for sub-surface archaeological deposits in areas that have experienced minimal disturbance; and
- There would have been a range of plant, animal and mineral resources available for Aboriginal people living in, or in the region of the Activity Area

The following ACHP prediction model has been developed based on the available information:

- A watercourse is located within the Activity Area. Ethnographic information suggests that Aboriginal people camped in areas adjacent to fresh water. The archaeological record has also indicated that the remains of Aboriginal campsites are more likely to be located adjacent to water sources whether permanent or ephemeral. The watercourse is likely to have been a reliable seasonal water source as well as providing a greater variety of faunal and floral resources.
- The watercourse and its sheltered valley would have served as an ideal campsite either during hot weather, when there would have been shade in the eucalypt woodland, or during wetter periods, when fresh water would have been locally available, and the hills and ridgelines would have provided drier campsites.
- Stone artefact deposits (artefact scatters or LDADs) and scarred trees are the most likely ACHP types to be present;

- Stone artefact deposits are most likely to be in a sub-surface context, within a depth range of 0-30cm in silt deposits;
- Scarred trees may be present if remnant vegetation survives;
- Based on the results of the Desktop Assessment the potential for in-situ survival of Aboriginal cultural material is:
  - Highest in the undisturbed areas of the Activity Area away from the location of the treatment plant, house, driveways, shedding etc.) and service trenches;
- If undisturbed soil deposits are located within the Activity Area; it is possible that Aboriginal cultural material will occur; and
- The distance of the Activity Area to a source of permanent freshwater may be a determinant in the presence or absence of Aboriginal cultural heritage. An ephemeral drainage line is located in the northwest of the Activity Area.

## 7.2 Standard Assessment

### 7.2.1 Justification for Survey

*R.62 of the Aboriginal Heritage Regulations 2018* states:

(1) Subject to subregulation (2), a Standard Assessment is required if the results of a Desktop Assessment show that it is reasonably possible that Aboriginal cultural heritage is present in the Activity Area.

As the results of the Desktop Assessment showed that it was reasonably possible that Aboriginal cultural heritage is present in the Activity Area and consequently it was necessary to proceed to a Standard Assessment.

### 7.2.2 Aims of Standard Assessment

The aims of the Standard Assessment (archaeological survey) were to:

- Attempt to identify Aboriginal cultural heritage;
- Undertake consultation with representative(s) of the GLaWAC;
- Identify any areas of potential archaeological sensitivity deposit (that may require sub-surface testing) and;
- Document the extent of significant ground disturbance in the Activity Area.

### 7.2.3 Standard Assessment Methodology

The Standard Assessment was undertaken by Matthew Barker (Supervisor) and Annette Millar of Benchmark Heritage Management P/L on the 16<sup>th</sup> of March 2020 with GLaWAC representatives Peter Ritchie and Malcolm Morgan.

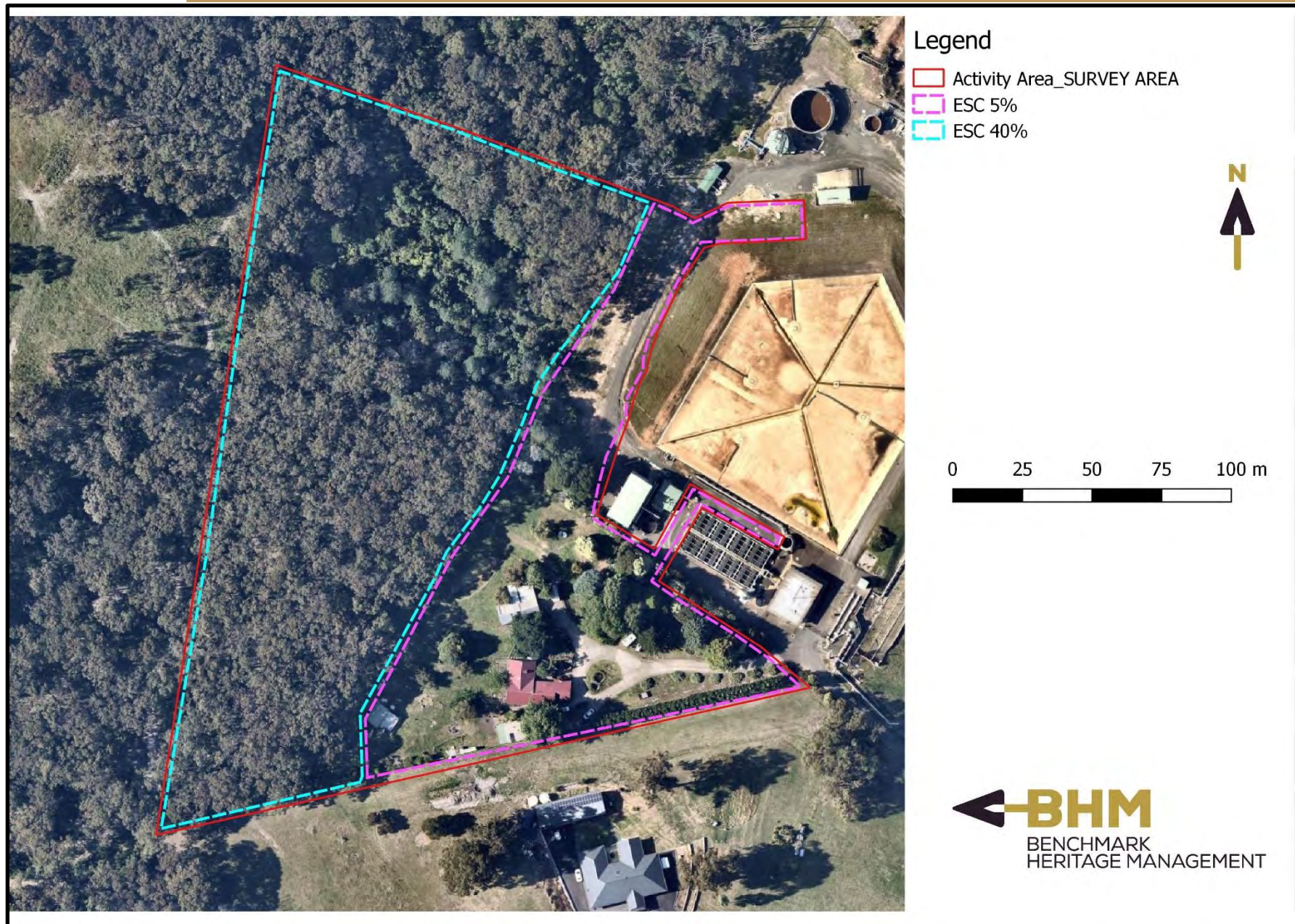
Owing to the small size of the Activity Area and the dense vegetation coverage observed upon arrival the decision was made, in consultation with the GLaWAC representatives, to survey the Activity Area on an opportunistic basis rather than walking linear transects (see Map 5).

Focus was concentrated on areas of high ground surface visibility. All mature trees were inspected to determine if they were culturally scarred. Areas of potential archaeological sensitivity/deposits (PAS and PAD) and significant ground disturbance were recorded. Ground surface visibility and surface exposure was recorded in order to determine the effective ground survey coverage. A range pole with 20cm increments was included in all photographs (Table 7, Plates 1-14).

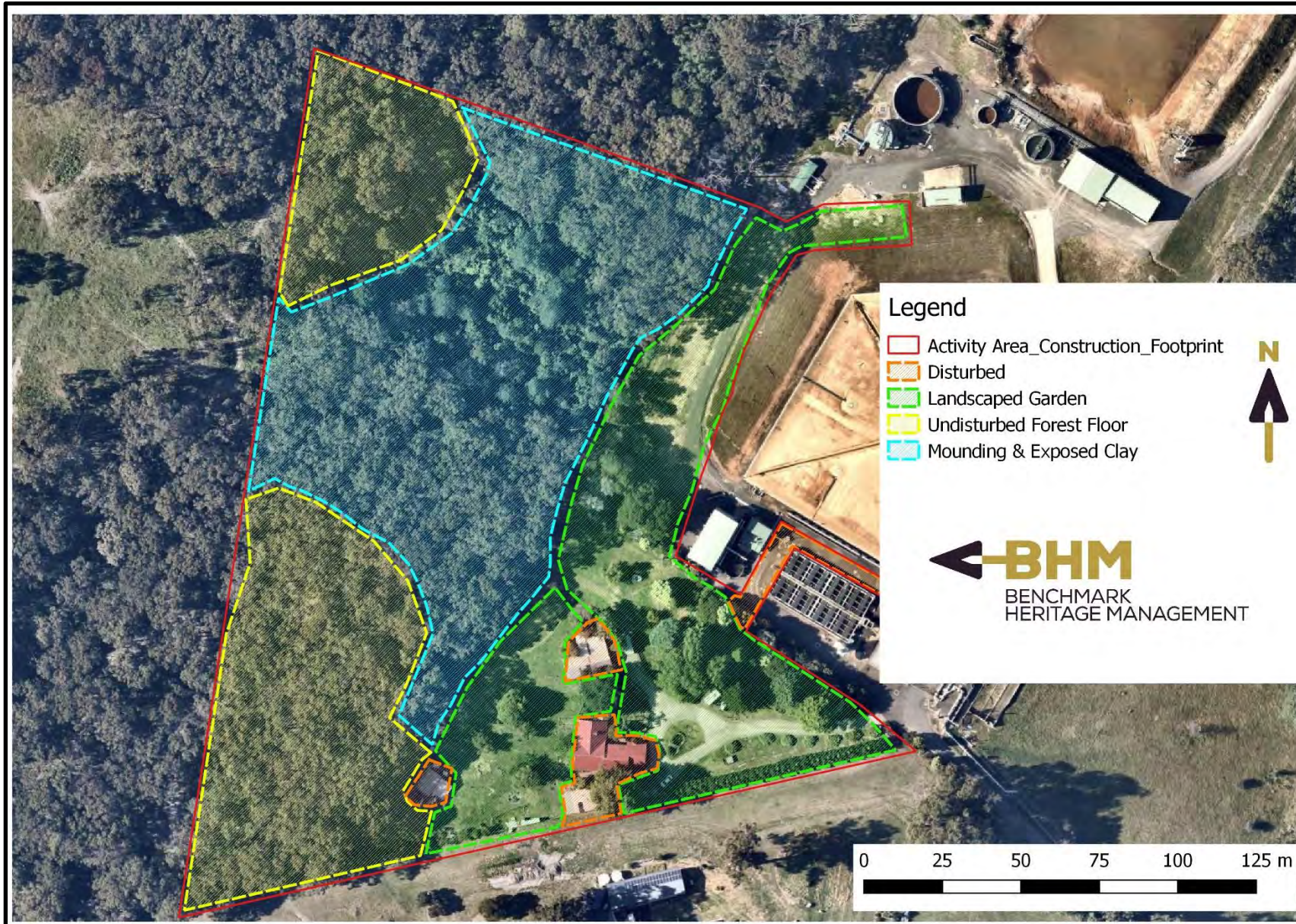
Ground surface visibility is a measure of factors which may obscure archaeological materials and can be defined as how much of the surface is visible and what other factors (such as vegetation, gravels or leaf litter) may limit the detection of archaeological materials (Burke and Smith 2004). The higher the level of ground surface visibility, the more likely it is that Aboriginal cultural material can be identified; therefore, a good level of ground surface visibility enables a better representation of places than areas where the ground surface is obscured (Ellender and Weaver 1994).

Ellender and Weaver (1994) attempted to quantify ground surface visibility for a 1m<sup>2</sup> area:

- 0-5%: Unable to see soil;
- 5-10%: Occasional glimpse of soil;
- 10-20%: Occasional patch of bare ground;
- 20-50%: Frequent patches of bare ground;
- 50-70%: About half the ground bare; and
- 75-100%: More than half the bare ground; ploughed fields.



Map 5: Standard Assessment Map – Effective Survey Coverage



Map 6: Standard Assessment Map – Disturbance

#### 7.2.4 Results of Standard Assessment

The Standard Assessment noted the following:

##### 56 Moe South Road, lot 2 on LP55896

- 56 Moe South Road, lot 2 on LP55896 comprises dense regenerated forest with fire tracks along the eastern and western boundaries (Plates 7-14).
- The highest point is the southern boundary with a gentle slope to the lowest point on the western boundary.
- The northeast was characterised by ponding water and mounds of clay; the former indicating the presence of an impermeable clay layer on the surface and the latter past disturbance (Plates 12-14).
- Areas with exposed grey clay silt were noted throughout the centre and south of the Activity Area (Plates 8 and 10).
- Areas of exposed clays were also noted in patches particular adjacent to the fire track on the eastern boundary.
- The fire track along the western boundary has been excavated to a maximum of 900mm in places.

##### 56 Moe South Road, lot 2 on PS400699

56 Moe South Road, lot 2 on PS400699 contains a section of the existing Moe Water Treatment facility comprising a tarmac hardstands and a gravel access track.

##### 58 Moe South Road

- 58 Moe South Road contains an existing house with associated infrastructure (Plates 1-6).
- The house is located on the eastern boundary and is accessed by a tarmac driveway.
- There are numerous sheds, garages and outbuildings throughout with a small dam on the western boundary which has been excavated to 2-3m in depth.
- The land slopes gently from the centre of the eastern boundary.
- The gardens were almost entirely covered by grass and vegetation resulting in an average ground surface visibility of less than 5%.
- Small patches of exposed grey silt were noted in places.
- An excavated trench was noted 5m west of the existing house revealing the sub-surface soils which comprised grey silt overlying reddish brown clay (Plate 5).
- Exotic trees were note throughout with several mature European Oaks and citrus trees.

#### 7.2.5 Standard Assessment Constraints

Significant constraints were encountered during the Standard Assessment comprising:

- 58 Moe South Road contains an existing house with associated infrastructure which could not be assessed.
- The gardens of 58 Moe South Road were almost entirely covered by grass and vegetation resulting in an average ground surface visibility of less than 5%. The grass and vegetation prevented effective archaeological assessment.

- The small sections of the Activity Area within the current treatment plant were either covered by gravel, infrastructure or dense grass preventing effective archaeological assessment.
- The forested area had generally good ground surface visibility of approximately 50%; consequently, however the remaining 50% could not be assessed.

### 7.2.6 Land Disturbance

The evidence for ground disturbance (Map 6) includes:

- Vegetation clearance would have contributed to soil erosion and the movement of any Aboriginal cultural material that may have existed on the ground surface; thus, the removal of topsoils and the destruction of any surface or near surface Aboriginal cultural materials. Vegetation clearance is not considered to be significant ground disturbance.
- Mounding of clays was noted in the far north of the Activity Area. This may be associated with the construction of the existing treatment plant.
- A section of the forested area is covered by immature trees with mounded clay indicating that disturbance has taken place.
- The fire track along the western boundary has been excavated to a maximum of 900mm in places.
- Construction of the house, shedding, driveways and services.
- Construction of the infrastructure associated with the existing treatment plant.

### 7.2.7 Ground Surface Visibility and Effective Survey Coverage

Effective coverage is quantified to account for ground surface visibility and exposure limitations to survey coverage and gives a good estimate of the actual proportion of the Activity Area investigated.

Effective survey coverage (ECS) in the entire Activity Area (Plates 1-14) in Table 6 was good (36.9%), and therefore there was a possibility of identifying archaeological deposits on the surface.

Survey coverage is shown in Map 5 with ground surface visibility conditions and coverage summarised in Table 6. The ground surface visibility in the boundaries of 58 Moe South Road and the treatment plant was low (30% of the total area), approximately 5% overall, due to the presence of dense grass and built infrastructure. The forested section of the Activity Area had generally good ground surface visibility comprised of approximately 70% of the total area). An analysis of the survey coverage results reveals that that 36.9% (13868.9m<sup>2</sup> out the total 37978m<sup>2</sup>) was effectively surveyed.

Areas not subject to field survey included:

1. The locations of built infrastructure.
2. Areas of dense vegetation.

Table 6: Ground Surface Visibility and Effective Survey Coverage

| Property  | Area Surveyed (m <sup>2</sup> ) | Visibility (%) | Effective Survey Coverage (m <sup>2</sup> ) | Effective Survey Coverage (%) |
|---|---------------------------------|----------------|---|-------------------------------|
| 56 Moe South Road, lot 2 on LP55896 and lot 2 on PS400699 | 26600                           | 50             | 13300                                       | 50                            |
| 58 Moe South Road   | 11378                           | 5              | 568.9                                       | 5                             |

### 7.2.8 Aboriginal Cultural Heritage Identified

No ACHPs were identified within during the Standard Assessment (this includes artefact scatters, scarred trees or rock shelters). No caves or cave entrances were noted within the Activity Area. The absence of any evidence for ACHPs is likely due to dense grass coverage and resulting low ground surface visibility that characterised the majority of the Activity Area.

### 7.2.9 Conclusions of the Standard Assessment

The GLaWAC representatives considered it possible that buried former ground surfaces may be present within the Activity Area. The field representatives of the GLaWAC agreed that the Activity Area was of potential archaeological sensitivity and agreed to establish the potential for Aboriginal cultural heritage by Complex Assessment to test the ACHP prediction model.

Due to a lack of ground surface visibility and the potential for buried ACHPs within the Activity Area, the Standard Assessment has determined that there is a requirement to undertake a further Complex Assessment for this activity, prior to the preparation of a CHMP document. In accordance with r.64, it was decided that a Complex Assessment was required and was therefore undertaken.

Plate 1: View of existing house on 58m Moe South Road (M. Barker 16/3/20), facing southeast



Plate 2: View of house, shedding and exposed grey silt (M. Barker 16/3/20), facing northwest.



Plate 3: View of dense grass and driveway at (M. Barker 16/3/20), facing southwest.



Plate 4: View of outbuilding (M. Barker 16/3/20), facing southeast.



Plate 5: View of excavated pit showing soils profile (M. Barker 16/3/20), facing east.



Plate 6: View of exposed compact clay silt (M. Barker 16/3/20), facing south



Plate 7: View of fire track long eastern boundary of 56 Moe South Road (M. Barker 16/3/20), facing north



Plate 8: View of exposed grey silt and yellow sandy clay (M. Barker 16/3/20)



Plate 9: View of slope to low point on western boundary of 56 Moe South Road (M. Barker 16/3/20), facing north



Plate 10: View of exposed grey silt (M. Barker 16/3/20), facing north



Plate 11: View of exposed clay in southern end of the forested section of 56 Moe South Road (M. Barker 16/3/20), facing north



Plate 12: View of ponding water and exposed clay at northeastern end of the forested section of 56 Moe South Road (M. Barker 16/3/20), facing west



Plate 13: View of mounded clays at northeastern end of the forested section of 56 Moe South Road (M. Barker 16/3/20), facing west



Plate 14: View of mounded clay in the centre north of 56 Moe South Road (M. Barker 16/3/20), facing north



Table 7: Standard Assessment Photographs

### 7.3 Complex Assessment

#### 7.3.1 Justification for Sub-surface Testing

Regulation 64 of the *Aboriginal Heritage Regulations 2018* states:

- (1) A Complex Assessment is required if the Desktop Assessment or Standard Assessment shows that—
- (a) Aboriginal cultural heritage is, or is likely to be, present in the Activity Area; and
  - (b) it is not possible to identify the extent, nature and significance of the Aboriginal cultural heritage in the Activity Area unless a Complex Assessment is carried out.

### 7.3.2 The Sub-Surface Testing Aims

The aims of the Complex Assessment were to:

- Determine if Aboriginal cultural heritage is located in the Activity Area and if so, establish the extent, nature and significance of said Aboriginal cultural heritage;
- Test the ACHP prediction model developed in the Desktop Assessment and refined in the Standard Assessment;
- Record the sub-surface stratigraphic composition of the landform and investigate a representative sample of sub-surface sediments;
- Identify any undisturbed (in-situ) sub-surface deposits; and
- Enable an accurate scientific significance assessment to be made.

A Complex Assessment comprising hand excavation was carried out as part of this CHMP. The aim of the sub-surface testing/excavation was to establish if the proposed activity is likely to cause harm to Aboriginal cultural heritage. The Complex Assessment was undertaken on the 16, 17<sup>th</sup> and 19<sup>th</sup> of March 2020 by Matthew Barker (Supervisor) and Annette Millar of Benchmark Heritage Management P/L with GLaWAC representatives Peter Ritchie, Malcolm Morgan and Daniel Hayes.

### 7.3.3 Sub-surface Testing Methodology

#### Excavation of Test Pit

As required by the *Aboriginal Heritage Regulations 2018 r65(4)*, a Test Pit (Test Pit 1) was excavated to determine the soil stratigraphy (see Map 7, Table 8) and to determine whether there were sub-surface deposits of cultural materials.

Controlled excavation was undertaken in accordance with the guidelines set out in Burke and Smith (2004). Test Pit 1 was excavated by context using a flat edged shovel with a 30cm blade, trowels and 30cm hand shovels. The deposits were excavated in arbitrary 5cm spits. All contexts were be fully excavated, sieved and recorded before proceeding to excavate the next context.

The depth of each context is shown in Table 8. A soil section was drawn once excavation was completed. A photographic record of the surface, base of each context and the soil section was made. A range pole(s) with increments of 20cm was included in all photographs of excavation. Soil descriptions and other natural and cultural features were recorded on standard excavation forms. pH levels were taken of each context and a Munsell Chart was consulted to provide soil colour descriptions.

All of the excavated soil was passed through a sieve with 5mm mesh. In the event that any cultural material was recovered, the procedure was to place the artefacts in bags with labels identifying the context of the artefacts. Any artefacts recovered from the excavation were to be retained for later analysis at the office of BHM P/L.

The centre of Test Pit 1 was spatially recorded using a Topcon GRS-1 DGPS with sub one metre accuracy as per AV (2008) target standard for recording Aboriginal heritage places. The location of Test Pit 1 is shown in Map 7. A stratigraphic section of Test Pit 1 is shown in Table 8. GDA94/MGA55

co-ordinates are shown in Table 8. Test Pit 2 was also excavated (Map 7). A stratigraphic section of Test Pit 2 is shown in Table 9. GDA94/MGA55 co-ordinates are shown in Table 9.

### Excavation of Shovel Test Pits

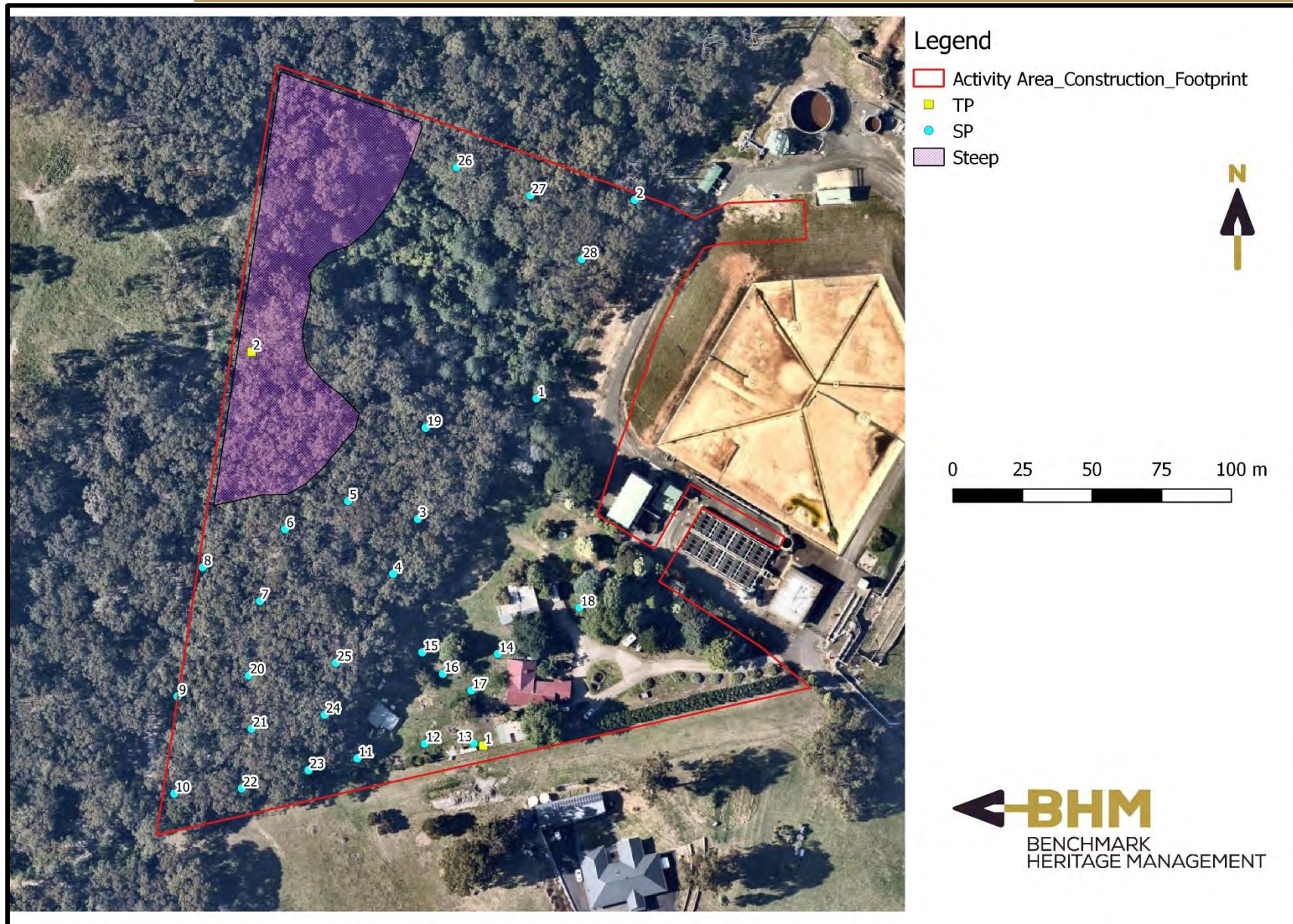
The excavation of twenty-eight 50cm x 50cm Shovel Test Pits was undertaken during sub-surface testing (Table 10, Map 7).

Shovel Test Pits were undertaken to examine the general stratigraphy; changes in stratigraphy and to provide improved sample size and investigate the extent of sub-surface disturbance within the Activity Area.

The Shovel Test Pits were excavated using a shovel with a 30cm blade. Initially, the grass and surface soil was stripped off each hole to a depth of approximately 5cm. Soil within the Shovel Test Pit hole was then excavated in increments of 10cm until the basal layer was reached.

The soil from each Shovel Test Pit was sieved by the field team using hand sieves with a 5mm mesh. Soil data and the location of any cultural materials were recorded on field forms. A section of the vertical soil profile of each Shovel Test Pit was recorded. A range pole with increments of 20cm was included in all photographs of excavation. The outlined procedure for dealing with cultural materials, if found, was to place any cultural material in bags with labels identifying their context. A photographic record of each Shovel Test Pit was also made. Any artefacts recovered were to be retained for later analysis at the office of BHM P/L. The centre of each Shovel Test Pit was spatially recorded using a Topcon GRS-1 DGPS with sub one metre accuracy as per AV (2008) target standard for recording Aboriginal heritage places.

The excavated Shovel Test Pit locations are shown in Map 7. The stratigraphy of the Shovel Test Pits is shown in Table 10. GDA94/MGA 55 co-ordinates are shown in Appendix 4.



Map 7: Sub-Surface Testing Locations

### 7.3.4 Results of the Sub-surface Testing

#### Excavation of Test Pit 1

As required by the *Aboriginal Heritage Regulations 2018*, a Test Pit was initially excavated to determine the soil stratigraphy (see Plate 15, Map 7 and Table 8). Test Pit 1 was excavated on the highest point of the Activity Area on the eastern boundary of 56 Moe South Road.

There was evidence of disturbance in the form of plastic, brick, dog bones and glass in Context 1. No Aboriginal cultural heritage was identified in Test Pit 1. No dating samples of cultural deposits and or stratigraphic layers were obtained. The provenance and stratigraphic data from the Test Pit is contained in Table 8.

The soils were considered characteristic of acidic duplex soils (see Section 7.1.6) and comprised an A horizon (below the humic upper layer – Context 1) of light grey silt and sand and a B Horizon of yellowish red clay (Cochrane et al 1995: 51).

In terms of soil pH; the acidity of the soils excavated within the current Activity Area indicates preservation of organic material is unlikely.

Table 8: Summary excavation data from Test Pit 1.

|  |   |
|--|---|
| GDA 94/MGA55 Coordinates   | 435098.637e, 5771606.974n   |
| Size   | 1x1m  |
| Stratigraphy   |   |
| Context 1  | 0-220mm: Fine grained greyish brown silty loam (7.5YR 2/3, pH 6). Inclusions such as dog bones, brick fragments, plastic and glass in the upper 200mm. The transition was abrupt. |
| Context 2  | 220-310mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.  |
| Context 3  | 310-410mm: Compact cemented yellowish red clay with decomposed sandstone gravel (5YR 5/8, pH 6).  |
| Depth of Excavation  | 410m  |
| Evidence of Disturbance  | Evidence of disturbance was noted in the form of dog bones, brick fragments, plastic and glass in the upper 200mm.  |
| Section Drawing of West Wall   |   |
| Plate 15: Photo by M. Barker (17/3/20) after excavation showing stratigraphic profile of Test Pit 1 facing north |   |
| Vertical artefact distribution   | None  |

### Excavation of Test Pit 2

Details of Test Pit 2 and a photograph (Plate 16) are contained below in Table 9. Test Pit 2 was placed adjacent to the minor watercourse on the western boundary of the Activity Area in area characterised by light grey silt exposed on the surface.

The soil profile is representative of the typical soil profile described in Section 7.1.6 which describes the soils as acidic duplex soils (see Section 7.1.6) and comprised an A horizon (below the humic upper layer – Context 1) of light grey silt and a B Horizon of brownish yellow clay (Cochrane et al 1995: 51).

dating samples of cultural deposits and or stratigraphic layers were obtained. The provenance and stratigraphic data from the Test Pit is contained in Table 9.

In terms of soil pH; the acidity of the soils excavated within the current Activity Area indicates preservation of organic material is unlikely.

Table 9: Summary excavation data from Test Pit 2

|  |   |
|--|---|
| GDA 94/MGA55 Coordinates   | 435015.343e, 5771748.56n  |
| Size   | 1x1m  |
| Stratigraphy   |   |
| Context 1  | 0-220mm: Fine grained greyish brown silty loam (7.5YR 2/3, pH 6). Inclusions such as dog bones, brick fragments, plastic and glass in the upper 200mm. The transition was abrupt. |
| Context 2  | 220-310mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.  |
| Context 3  | 310-410mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  |
| Depth of Excavation  | 360cm   |
| Evidence of Disturbance  | None  |
| Section Drawing of West Wall   |   |
| Plate 16: Photo by M. Barker (19/3/20) after excavation showing stratigraphic profile of Test Pit 2 facing north |   |
| Vertical artefact distribution   | None  |

### Shovel Test Pits 1-28

The locations of the Shovel Test Pits can be found in Map 7. No Aboriginal cultural heritage was identified in Shovel Test Pits 1-28. No dating samples of cultural deposits and or stratigraphic layers were obtained due to the lack of Aboriginal cultural heritage located in Shovel Test Pits 1-28. The stratigraphy of the individual Shovel Test Pits is contained in Table 10. GDA94/MGA 55 co-ordinates are shown in Appendix 5. Shovel Test Pits 1-10, 19-28 were excavated in the forested area. Shovel Test Pits 6-10, 20-25 displayed a relatively intact soil profile with a thin layer of compact grey silt overlying 6yellow clay. Shovel Test Pits 1-5, 19, 26-28 were considered disturbed and had no silt layer with clay immediately below the surface. Examples are shown in Plates 17-18.



Plate 17: Photo by M. Barker (16/3/20) showing an example of intact profile in Shovel Test Pit 7



Plate 18: Photo by M. Barker (16/3/20) showing an example of soil profile in Shovel Test Pit 5 with clay on the surface and no silt layer

Shovel Test Pits 11-18 were excavated in the gardens of the house. The pits along the southern edge displayed a relatively intact soil profile (with minor modern construction and household debris In Contexts 1-2) with a thin layer of compact grey silt overlying yellow clay with decomposing sandstone at the base (Shovel Test Pits 11-13). The remaining pits were highly disturbed with the silt layer absent (Shovel Test Pits 14-18). Examples are shown in Plates 19-22.



Plate 19: Photo by M. Barker (17/3/20) showing an example of intact profile in Shovel Test Pit 11



Plate 20: Photo by M. Barker (17/3/20) showing an example of intact profile in Shovel Test Pit 13



Plate 21: Photo by M. Barker (17/3/20) showing an example of soil profile in Shovel Test Pit 17 showing highly disturbed sub-surface soils.



Plate 22: Photo by M. Barker (17/3/20) showing an example of soil profile in Shovel Test Pit 15 showing highly disturbed sub-surface soils

Table 10: Shovel Test Pits 1-28 Stratigraphic Detail

| Shovel Test Pit | Stratigraphy  | Presence of Cultural Material |
|-----------------|---|-------------------------------|
| 1               | Context 1: 0-260mm: Fine grained strong brown (7.5YR 4/6, pH 6) clayey loam. Inclusions such as gravel and glass in the upper 260mm. The transition was abrupt.<br>Context 2: 260-410mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (7.5YR 6/8, pH 6).                               | No                            |
| 2               | Context 1: 0-60mm: Fine grained greyish brown silty loam (7.5YR 2/3, pH 6). The transition was abrupt.<br>Context 2: 60-100mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  | No                            |
| 3               | Context 1: 0-180mm: Fine grained strong brown (7.5YR 4/6, pH 6) clayey loam. The transition was abrupt.<br>Context 2: 180-310mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  | No                            |
| 4               | Context 1: 0-170mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 2: 170-240mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  | No                            |
| 5               | Context 1: 0-110mm: Fine grained greyish brown silty loam (7.5YR 2/3, pH 6). The transition was abrupt.<br>Context 2: 110-160mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  | No                            |
| 6               | Context 1: 0-220mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 2: 220-360mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  | No                            |
| 7               | Context 1: 0-210mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 2: 210-370mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  | No                            |
| 8               | Context 1: 0-210mm: Fine grained greyish brown silty loam (7.5YR 2/3, pH 6). The transition was abrupt.<br>Context 2: 210-240mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 3: 240-370mm: Compact cemented yellowish red clay with decomposed sandstone gravel (5YR 5/8, pH 6). | No                            |
| 9               | Context 1: 0-260mm: Fine grained greyish brown silty loam (7.5YR 2/3, pH 6). The transition was abrupt.<br>Context 2: 260-280mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 3: 280-300mm: Compact cemented yellowish red clay with decomposed sandstone gravel (5YR 5/8, pH 6). | No                            |
| 10              | Context 1: 0-210mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 2: 210-350mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  | No                            |

|    |   |    |
|----|---|----|
| 11 | Context 1: 0-170mm: Highly cemented light grey silt (5YR 5/1, pH 6) with glass and gravel. The transition was abrupt.<br>Context 2: 170-240mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  | No |
| 12 | Context 1: 0-240mm: Fine grained greyish brown silty loam (7.5YR 2/3, pH 6). Inclusions such as brick fragments, plastic and glass in the upper 200mm. The transition was abrupt.<br>Context 3: 240-370mm: Compact cemented yellowish red clay with decomposed sandstone gravel (5YR 5/8, pH 6).  | No |
| 13 | Context 1: 0-170/220mm: Fine grained greyish brown silty loam (7.5YR 2/3, pH 6). Inclusions such as brick fragments, dog bones, gravel and glass in the upper 200mm. The transition was abrupt.<br>Context 2: 170/220-360mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 3: 360-400mm: Compact cemented yellowish red clay with decomposed sandstone gravel (5YR 5/8, pH 6). | No |
| 14 | Context 1: 0-180mm: Fine grained greyish brown silty loam (7.5YR 2/3, pH 6). Inclusions such as brick fragments and glass in the upper 200mm. The transition was abrupt.<br>Context 2: 180-200mm: Compact cemented yellowish red clay with decomposed sandstone gravel and brick fragments(5YR 5/8, pH 6).  | No |
| 15 | Context 1: 0-220mm: Fine grained greyish brown silty loam (7.5YR 2/3, pH 6). Inclusions such as ceramic fragments and glass in the upper 200mm. The transition was abrupt.<br>Context 2: 220-270mm: Compact cemented yellowish red clay with decomposed sandstone gravel (5YR 5/8, pH 6).   | No |
| 16 | Context 1: 0-140mm: Fine grained greyish brown silty loam (7.5YR 2/3, pH 6). Inclusions such as brick fragments, ceramic fragments and glass in the upper 200mm. The transition was abrupt.<br>Context 2: 140-170mm: Compact cemented yellowish red clay with brick fragments throughout (5YR 5/8, pH 6).   | No |
| 17 | Context 1: 0-140mm: Fine grained greyish brown silty loam (7.5YR 2/3, pH 6). Inclusions such as brick fragments, ceramic fragments, wood and glass in the upper 200mm. The transition was abrupt.<br>Context 2: 140-170mm: Compact cemented yellowish red clay with brick fragments throughout (5YR 5/8, pH 6).   | No |
| 18 | Context 1: 0-180mm: Fine grained greyish brown silty loam/ (7.5YR 2/3, pH 6). Inclusions such as brick fragments, metal fragments and glass in the upper 200mm. The transition was abrupt.<br>Context 2: 190-200mm: Compact cemented yellowish red clay with decomposed sandstone gravel (5YR 5/8, pH 6).   | No |
| 19 | Context 1: 0-60mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 2: 60-100mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  | No |
| 20 | Context 1: 0-40mm: Fine grained greyish brown silty loam/ (7.5YR 2/3, pH 6). The transition was abrupt.<br>Context 2: 40-310mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 3: 310-370mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  | No |

|    |  |    |
|----|--|----|
| 21 | Context 1: 0-60mm: Fine grained greyish brown silty loam/ (7.5YR 2/3, pH 6). The transition was abrupt.<br>Context 2: 60-280mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 3: 280-300mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).   | No |
| 22 | Context 1: 0-40mm: Fine grained greyish brown silty loam/ (7.5YR 2/3, pH 6). The transition was abrupt.<br>Context 2: 40-310mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 3: 310-370mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).   | No |
| 23 | Context 1: 0-40mm: Fine grained greyish brown silty loam/ (7.5YR 2/3, pH 6). The transition was abrupt.<br>Context 2: 40-130mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 3: 130-280mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).   | No |
| 24 | Context 1: 0-80mm: Fine grained greyish brown silty loam/ (7.5YR 2/3, pH 6). The transition was abrupt.<br>Context 2: 80-310mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 3: 310-340mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).   | No |
| 25 | Context 1: 0-140mm: Fine grained greyish brown silty loam/ (7.5YR 2/3, pH 6). The transition was abrupt.<br>Context 2: 140-210mm: Highly cemented light grey silt (5YR 5/1, pH 6). The transition was abrupt.<br>Context 3: 210-240mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6). | No |
| 26 | Context 1: 0-170mm: Fine grained greyish brown silty loam/ (7.5YR 2/3, pH 6). The transition was abrupt.<br>Context 2: 170-230mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  | No |
| 27 | Context 1: 0-160mm: Fine grained greyish brown silty loam/ (7.5YR 2/3, pH 6). The transition was abrupt.<br>Context 2: 160-200mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  | No |
| 28 | Context 1: 0-180mm: Fine grained greyish brown silty loam/ (7.5YR 2/3, pH 6). The transition was abrupt.<br>Context 2: 180-220mm: Compact cemented brownish yellow clay with decomposed sandstone gravel inclusions (10YR 6/8, pH 6).  | No |

### 7.3.5 Complex Assessment Constraints and Limitations

The major constraint encountered during the Complex Assessment comprised:

- The location of the house, shedding and driveways which could not be assessed.
- Dense vegetation in the forested section which could not be assessed.

### 7.3.6 Conclusions of the Sub-Surface Testing

Two 1x1m Test Pits and twenty-eight Shovel Test Pits were excavated, to establish the soil stratigraphy of the Activity Area and to assess the likelihood of Aboriginal cultural material being located within the Activity Area. No Aboriginal cultural heritage was identified in Test Pits 1-2 and Shovel Test Pits 1-28.

The excavation allowed the extent of the disturbance to be determined:

1. Test Pit 1 and Shovel Test Pits 11-18 displayed evidence of disturbance in Contexts 1-2 comprising gravel, wood, dog bones, plastic, brick, metal, ceramic and glass fragments.
2. Test Pit 2 and Shovel Test Pits 6-10, 20-25 displayed a relatively intact soil profile with a thin layer of compact grey silt overlying yellow clay.
3. Shovel Test Pits 1-5, 19, 26-28 were considered disturbed and had no silt layer with clay immediately below the surface. Shovel Test Pit 1 had gravel and glass in the upper 260mm.

These results indicate in conjunction with the Standard Assessment results that:

3. 58 Moe South Road is highly disturbed with only isolated areas of intact soils. This has been most likely caused by the construction and demolition of the former house and the subsequent construction of the existing house and associated infrastructure.
4. Parts of the forested area at 56 Moe South Road have been severely disturbed. The locations of the Shovel Test Pits in which the light grey silt layer was absent correlates to the locations of mounded soils and exposed clays indicating that activities associated with the construction of the existing treatment plant most likely impacted on sections of the forest; particularly those adjacent to the house and existing water treatment infrastructure.

In general, the soil profile is representative of the typical soil profile described in Section 7.1.6 which describes the soils as acidic duplex soils (see Section 7.1.6) and comprised an A horizon (below the humic upper layer – Context 1) of grey silt and sand and a B Horizon of yellowish red clay (Cochrane et al 1995: 51).

Possible reasons for the absence of Aboriginal cultural material in the Activity Area include:

- The Activity Area may not have been a favourable location to camp.
- Construction of the house, existing treatment plant and associated infrastructure.

The Complex Assessment demonstrated that the Activity Area has limited potential to retain Aboriginal cultural deposits.

## 8.0 Details of Aboriginal Cultural Heritage in the Activity Area

No Aboriginal cultural heritage was identified in Test Pits 1-2 or Shovel Test Pits 1-28.

## 9.0 Consideration of Section 61 Matters

### 9.1 Section 61 Matters

Section 3(a) of the *Aboriginal Heritage Act 2006* states that the principal objective of the legislation is to recognise, protect and conserve Aboriginal cultural heritage in Victoria.

This section discusses the effects that the proposed activity will have on any Aboriginal cultural heritage located within the Activity Area, and whether or not the Sponsor has addressed measures to avoid or minimise harm.

Section 61 of the *Aboriginal Heritage Act 2006* states that the following matters are to be considered in assessing whether a CHMP relating to an activity is to be approved—

- a) whether the activity will be conducted in a way that avoids harm to Aboriginal cultural heritage;
- b) if it does not appear to be possible to conduct the activity in a way that avoids harm to Aboriginal cultural heritage, whether the activity will be conducted in a way that minimises harm to Aboriginal cultural heritage;
- c) any specific measures required for the management of Aboriginal cultural heritage likely to be affected by the activity, both during and after the activity;
- d) any contingency plans required in relation to disputes, delays and other obstacles that may affect the conduct of the activity; and
- e) requirements relating to the custody and management of Aboriginal cultural heritage during the course of the activity.

No Aboriginal cultural heritage was found and therefore there is no requirement to address Section 61 (a-c).

### 9.2 Are there particular Contingency Plans that might be necessary?

There are several contingency plans that may be necessary during the project. In particular, it is necessary to have a contingency in place for the unexpected discovery of cultural material and for the unexpected discovery of a burial. These and other contingency plans are discussed in detail in Section 2.

### 9.3 What Custody and Management Arrangements might be needed?

Prior to any reburial or repatriation to the GLaWAC, cultural material should be stored in a secure location with copies of the catalogue and assessment documentation.

The location of any potential reburial or repatriation site must be recorded with a DPGS and an updated object collection submitted to the VAHR, showing the location of the reburial site. The recording must be carried out by a heritage advisor and a representative of the GLaWAC (RAP).

### 9.4 Cumulative Impact Statement

This section outlines the cumulative impacts of the activity on cultural heritage within the Activity Area and the wider region. In accordance with Section 61 of the *Aboriginal Heritage Act 2006*, it is concluded

that the activity will not harm any known or identified Aboriginal cultural heritage. No previously identified Aboriginal cultural heritage or newly identified Aboriginal cultural heritage places are located in the Activity Area.

This section considers the magnitude of cumulative impacts and the significance of cumulative effects of the proposed development on Aboriginal cultural heritage. The cumulative impacts of Aboriginal cultural heritage have been calculated based on the combination of the overall impact of development within the geographic region, and how this development has impacted Aboriginal cultural heritage.

It is difficult to determine the cumulative impact of the proposed activity on Aboriginal cultural heritage within the geographic region as:

- So much of what was likely once present has been impacted, and was impacted prior to the introduction of the *Aboriginal Heritage Act 2006* by land clearance, agriculture; and the large scale development of residential and commercial precincts and associated infrastructure.
- There was a paucity of archaeological assessment in the geographic region prior to the introduction of the *Aboriginal Heritage Act 2006*.
- No region (however defined) has been the subject of a comprehensive and systematic survey in which base data of how many ACHPs are/were present can be absolutely defined. Subsequently, the base datum for assessment can only be Aboriginal cultural heritage material that has been identified and recorded, and preferably preserved in-situ, in order to determine a calculation of loss.
- There is no agreed criteria or explicit guidance on a method for assessing potential cumulative effects on cultural heritage material.

It is therefore considered difficult to establish a reference point from which to assess cumulative impact.

Whilst archaeological assessment of the geographic region has increased in recent years - post-introduction of the *Aboriginal Heritage Act 2006*, this has resulted in the identification of large numbers of ACHPs and highlights the fact that much impact to Aboriginal cultural heritage likely occurred prior to the introduction of the *Aboriginal Heritage Act 2006*.

It is highly likely that a large number of ACHPs have been subject to disturbance and/or destruction from the mid-nineteenth century onwards from land clearance; agricultural activity and construction of the treatment plant and residential housing; representing several ACHP types including artefacts scatters, scarred trees, ceremonial ACHPs and burials. The cumulative impact of past land clearance is therefore considered to be high.

The development of this CHMP is the overarching measure that will assist in the identification of ACHPs, determination of heritage significance, avoidance and minimisation of harm if possible, mitigation and management of impacts, and carrying out consultation with Traditional Owner stakeholders. The contingency arrangements included in Section 2 of this CHMP deal with any unknown Aboriginal cultural heritage located during the construction phase of the activity.

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## Appendices

## Appendix 1: Notice of Intent to Prepare a Cultural Heritage Management Plan

Premier  
and Cabinet

## Notice of Intent to prepare a Cultural Heritage Management Plan for the purposes of the *Aboriginal Heritage Act 2006*

This form can be used by the Sponsor of a Cultural Heritage Management Plan to complete the notification provisions pursuant to s.54 of the *Aboriginal Heritage Act 2006* (the "Act").

For clarification on any of the following please contact Victorian Aboriginal Heritage Register (VAHR) enquiries on 1800-726-003.

### SECTION 1 - Sponsor information

Sponsor: Gippsland Water Ltd  
 ABN/ACN: 75 830 750 413  
 Contact Name: Deb Archer  
 Postal Address: PO Box 348 Traralgon VIC 3844  
 Business Number: 03 5177 4632 Mobile: \_\_\_\_\_  
 Email Address: debbie.archer@gippswater.com.au

### Sponsor's agent (if relevant)

Company: \_\_\_\_\_  
 Contact Name: \_\_\_\_\_  
 Postal Address: \_\_\_\_\_  
 Business Number: \_\_\_\_\_ Mobile: \_\_\_\_\_  
 Email Address: \_\_\_\_\_

### SECTION 2 - Description of proposed activity and location

Project Name: Proposed Raw water storage basin at the Moe Water Treatment Plant  
 Municipal district: Latrobe City Council

Clearly identify the proposed activity for which the cultural heritage management plan is to be prepared (ie. Mining, road construction, housing subdivision)

Utility installation (not telco) \_\_\_\_\_

### SECTION 3 - Cultural Heritage Advisor

|                       |                                      |                                      |
|-----------------------|--------------------------------------|--------------------------------------|
| <u>Matthew Barker</u> | <u>Benchmark Heritage Management</u> | <u>matthew@benchmarkheritage.com</u> |
| <i>Name</i>           | <i>Company</i>                       | <i>Email address</i>                 |

### SECTION 4 - Expected start and finish date for the cultural heritage management plan

Start Date: 19-Feb-2020 Finish Date: 31-May-2020

Submitted on: 19 Feb 2020



Premier and Cabinet

**SECTION 5 - Why are you preparing this cultural heritage management plan?**

- A cultural heritage management plan is required by the Aboriginal Heritage Regulations 2007  
*What is the high Impact Activity as it is listed in the regulations?*  
Utility installation (not telco)  
Is any part of the activity an area of cultural heritage sensitivity, as listed in the regulations? No
- Other Reasons (Voluntary)
- An Environment Effects Statement is required
- A Cultural Heritage Management Plan is required by the Minister for Aboriginal Affairs.
- An Impact Management Plan or Comprehensive Impact Statement is required for the activity

**SECTION 6 - List the relevant registered Aboriginal parties (if any)**

*This section is to be completed where there are registered Aboriginal parties in relation to the management plan.*  
Gunaikurnai Land and Waters Aboriginal Corporation

**SECTION 7A - List the relevant Aboriginal groups or Aboriginal people with whom the Sponsor intends to consult (if any)**

*This section is to be completed only if the proposed activity in the management plan is to be carried out in an area where there is **no Registered Aboriginal Party**.*

**SECTION 7B - Describe the intended consultation process (if any)**

*This section is to be completed only if the proposed activity in the management plan is to be carried out in an area where there is **no Registered Aboriginal Party**.*

**SECTION 8 – State who will be evaluating this plan (mandatory)**

*The plan is to be evaluated by:*

- Joint - Registered Aboriginal Party AND The Secretary
- A Registered Aboriginal Party  
If checked, list the relevant Registered Aboriginal Party Evaluating: Gunaikurnai Land and Waters Aboriginal Corporation
- The Secretary
- Victorian Aboriginal Heritage Council

**SECTION 9 – Preliminary Aboriginal Heritage Tests (PAHTs)**

*List the Reference Number(s) of any PAHTs conducted in relation to the proposed activity:*

**SECTION 10 - Notification checklist**

Submitted on: 19 Feb 2020



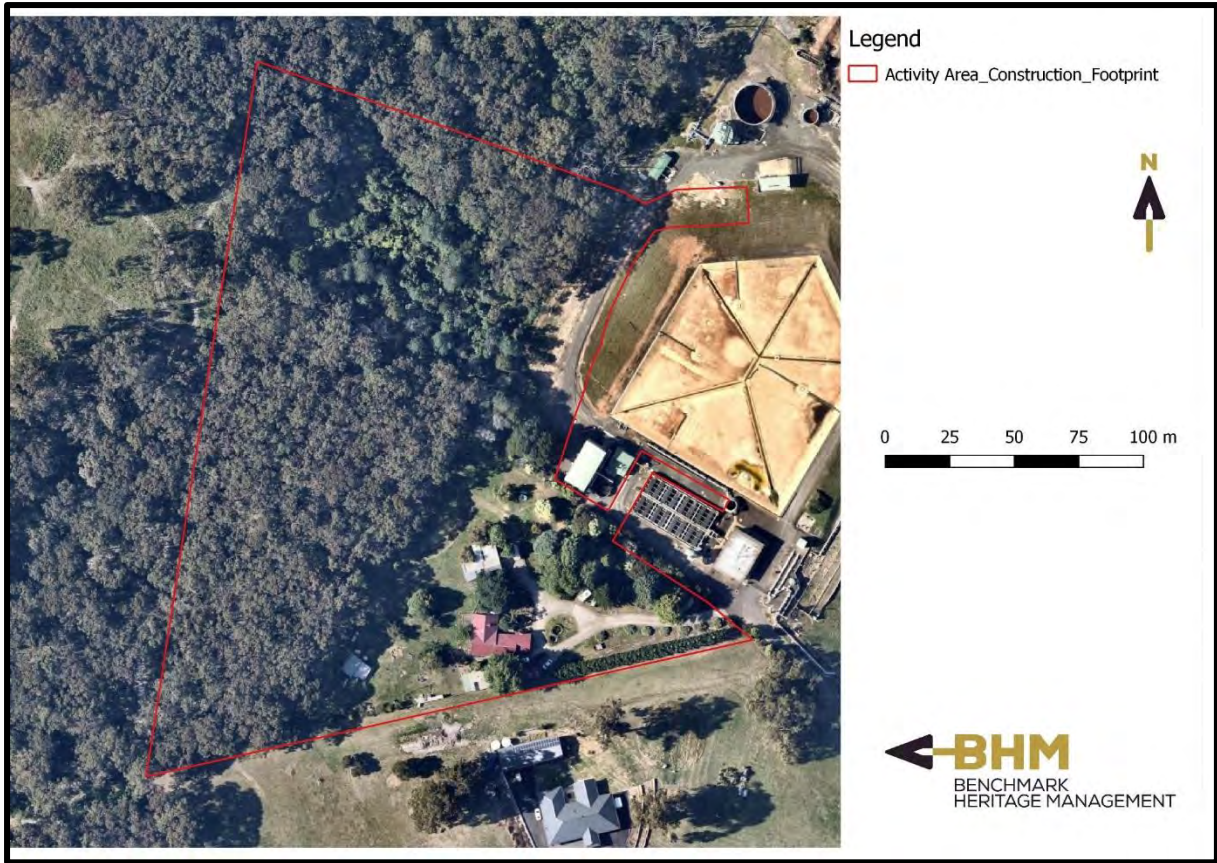
Premier  
and Cabinet

Ensure that any relevant registered Aboriginal party/ies is also notified. A copy of this notice with a map attached may be used for this purpose.  
(A registered Aboriginal party is allowed up to 14 days to provide a written response to a notification specifying whether or not it intends to evaluate the management plan.)

In addition to notifying the Deputy Director and any relevant registered Aboriginal party/ies, a Sponsor must also notify any owner and/or occupier of any land within the area to which the management plan relates. A copy of this notice with a map attached may be used for this purpose.

Ensure any municipal council, whose municipal district includes an area to which the cultural heritage management plan relates, is also notified. A copy of this notice, with a map attached, may also be used for this purpose.

Submitted on: 19 Feb 2020



## Appendix 2: Response from the GLaWAC



24 February 2020

Attention: Debbie Archer  
PO Box 348  
TRARALGON VIC 3844

Dear Ms Archer,

**RE: Notice of Intent to Prepare a Cultural Heritage Management Plan – Proposed Raw Water Storage Basin at the Moe Water Treatment Plant**

The Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC) acknowledge receipt of the Notice of Intent to Prepare a Cultural Heritage Management Plan (NOI) under s. 54 of the *Aboriginal Heritage Act 2006* for the project — Proposed Raw Water Storage Basin at the Moe Water Treatment Plant — dated 24<sup>th</sup> February 2020.

In accordance with s.55 of the *Aboriginal Heritage Act 2006* the GLaWAC give notice of its intention to evaluate the plan.

GLaWAC intends to consult with the Sponsor and Heritage Advisor in relation to the assessment of the area for the purposes of the plan, the conditions to be included in the plan and to participate in the conduct of the assessment.

We look forward to working with you on the protection and management of our cultural heritage.

Yours sincerely

Daniel Miller  
Manager on Country  
Registered Aboriginal Party

Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)  
Forestec, 27 Scriveners Road, Kalimna West VIC 3909  
T 03 5152 5100 | F 03 5152 1666 | M 0400917723 | E: [rapmanager@glawac.com.au](mailto:rapmanager@glawac.com.au)  
|W <http://www.gunaikurnai.org>



## Appendix 3: Glossary

### A

Angular fragment: A piece of stone that is blocky or angular, not flake-like.

Archaeology: The study of the remains of past human activity.

Area of Archaeological Sensitivity: A part of the landscape that contains demonstrated occurrences of cultural material. The precise level of sensitivity will depend on the density and significance of the material.

Artefact scatter: A surface scatter of cultural material. Aboriginal artefact scatters are defined as being the occurrence of five or more items of cultural material within an area of about 100m<sup>2</sup> (Aboriginal Victoria 1993). Artefact scatters are often the only physical remains of places where people have lived camped, prepared and eaten meals and worked.

### B

BP: Before Present. The present is defined as 1950.

Backed blade (geometric microlith): Backing is the process by which one or more margins contain consistent retouch opposite to the sharp working edge. A backed blade is a blade flake that has been abruptly retouched along one or more margins opposite the sharp working edge. Backed pieces include backed blades and geometric microliths. Backed blades are a feature of the Australian Small Tool Tradition dating from between 5,000 and 1,000 years ago in southern Australia (Mulvaney 1975).

Blade: A stone flake that is at least twice as long as it is wide.

Burial: Usually a sub-surface pit containing human remains and sometimes associated artefacts.

### C

Core: A stone piece from which a flake has been removed by percussion (striking it) or by pressure. It is identified by the presence of flake scars showing the negative attributes of flakes, from where flakes have been removed.

### E

Ethnography: The scientific description of living cultures.

Exposure: Refers to the degree to which the sub-surface of the land can be observed. This may be influenced by natural processes such as wind erosion or the character of the native vegetation, and by land use practices, such as ploughing or grading. It is generally expressed in terms of the percentage of the sub-surface visible for an observer on foot.

### F

Flake: A stone piece removed from a core by percussion (striking it) or by pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Formal tool: An artefact that has been shaped by flaking, including retouch, or grinding to a predetermined form for use as a tool. Formal tools include scrapers, backed pieces and axes.

G

GDA94 or Geocentric Datum of Australia 1994: A system of latitudes and longitudes, or east and north coordinates centred at the centre of the earth's mass. GDA94 is compatible with modern positioning techniques such as the Global Positioning System (GPS). It supersedes older coordinate systems (AGD66, AGD84). GDA94 is based on a global framework, the IERS Terrestrial Reference Frame (ITRF), but is fixed to a number of reference points in Australia. GDA94 is the Victorian Government Standard and spatial coordinates for excavations, transects and places in CHMP documents.

H

Hearth: an organic sub-surface feature; it indicates a place where Aboriginal people cooked food. The remains of a hearth are usually identifiable by the presence of charcoal and sometimes clay balls (like brick fragments) and hearth stones. Remains of burnt bone or shell are sometimes preserved within a hearth.

Holocene, recent or postglacial period: The time from the end of the Pleistocene Ice Age (c. 10,300 BP) to the present day.

I

In-situ: A description of any cultural material that lies undisturbed in its original point of deposition.

L

Land System: Description for an area of land based on an assessment of a series of environmental characteristics including geology, geomorphology, climate, soils and vegetation

M

Midden: Shell middens vary widely in size composition and Complexity. Deposits vary in Complexity, they range from being homogenous to finely stratified deposits. Material which may be found in middens includes different shell species, stone artefacts, hearths and animal bones.

Q

Quarry (stone/ochre source): A place where stone or ochre is exposed and has been extracted by Aboriginal people. The rock types most commonly quarried for artefact manufacture in Victoria include silcrete, quartz, quartzite, chert and fine-grained volcanics such as greenstone.

Quartz: A mineral composed of silica with an irregular fracture pattern. Quartz used in artefact manufacture is generally semi-translucent, although it varies from milky white to glassy. Glassy quartz can be used for conchoidal flaking, but poorer quality material is more commonly used for block fracturing techniques. Quartz can be derived from waterworn pebble, crystalline or vein.

P

Pleistocene: The dates for the beginning and end of the Pleistocene generally correspond with the last Ice Age. That is from 3.5 to 1.3 million years ago. The period ends with the gradual retreat of the ice sheets, which reached their present conditions around 10,300 BP.

Pre-contact: Before contact with non-Aboriginal people.

Post-contact: After contact with non-Aboriginal people.

R

Raw material: Organic or inorganic matter that has not been processed by people.

Registered Aboriginal Cultural Heritage Places: These are Aboriginal sites registered on the Victorian Aboriginal Heritage Register (VAHR).

Regolith: The mantle of unconsolidated soil/sediments/weathered rock materials forming the surface of the land that rests upon the bedrock.

S

Scarred trees: Aboriginal derived scars are distinct from naturally occurring scars by their oval or symmetrical shape and occasional presence of steel, or more rarely, stone axe marks on the scar's surface. Other types of scarring include toeholds cut in the trunks or branches of trees for climbing purposes and removal of bark to indicate the presence of burials in the area. Generally, scars occur on River red gums (*Eucalyptus camaldulensis*) or grey box (*E. microcarpa*) trees. River red gums are usually found along the margins of rivers, creeks and swamps with grey box on near and far floodplains. Size and shape of the scar depended on the use for which the bark was intended. For example, bark was used for a variety of dishes and containers, shields, canoes and construction of huts.

Significance: The importance of a heritage place or place for aesthetic, historic, scientific or social values for past, present or future generations.

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. It ranges in texture from very fine grained to coarse grained. At one extreme it is cryptocrystalline with very few clasts. It generally has characteristic yellow streaks of titanium oxide that occur within a grey and less commonly reddish background. Used for flaked stone artefacts.

Spit: Refers to an arbitrarily defined strata of soil removed during excavation.

Stratification: The way in which soil forms in layers.

Stratified deposit: Material that has been laid down, over time, in distinguishable layers.

Stratigraphy: The study of soil stratification (layers) and deposition.

Stone Artefact: A piece of stone that has been formed by Aboriginal people to be used as a tool or is a by-product of Aboriginal stone tool manufacturing activities. Stone artefacts can be flaked such as points and scrapers or ground such as axes and grinding stones.

T

Tool: A stone flake that has undergone secondary flaking or retouch.

Transect: A fixed path along which one excavates or records archaeological remains.

V

Victorian Aboriginal Heritage Register: A list of all registered Aboriginal cultural heritage places (Aboriginal Places) in Victoria.

Visibility: Refers to the degree to which the surface of the ground can be observed. This may be influenced by natural processes such as wind erosion or the character of the native vegetation, and by land use practices, such as ploughing or grading. It is generally expressed in terms of the percentage of the ground surface visible for an observer on foot.

#### REFERENCES

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## Appendix 4: City of Latrobe Zone Permitted Uses

VICTORIA PLANNING PROVISIONS

**35.03**  
31/07/2018  
VC14B

**RURAL LIVING ZONE**

Shown on the planning scheme map as **RLZ** with a number (if shown).

**Purpose**

To implement the Municipal Planning Strategy and the Planning Policy Framework.

To provide for residential use in a rural environment.

To provide for agricultural land uses which do not adversely affect the amenity of surrounding land uses.

To protect and enhance the natural resources, biodiversity and landscape and heritage values of the area.

To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision.

**35.03-1**  
06/09/2019  
VC15a

**Table of uses**

**Section 1 - Permit not required**

| Use   | Condition   |
|---|---|
| Bed and breakfast   | No more than 10 persons may be accommodated away from their normal place of residence.<br><br>At least 1 car parking space must be provided for each 2 persons able to be accommodated away from their normal place of residence.       |
| Community care accommodation                                    | Must meet the requirements of Clause 52.22-2.   |
| Dependent person's unit   | Must be the only dependent person's unit on the lot.<br><br>Must meet the requirements of Clause 35.03-2.   |
| Domestic animal husbandry (other than Domestic animal boarding) | Must be no more than 2 animals.   |
| Dwelling (other than Bed and breakfast)                         | The lot must be at least the area specified in a schedule to this zone. If no area is specified, the lot must be at least 2 hectares.<br><br>Must be the only dwelling on the lot.<br><br>Must meet the requirements of Clause 35.03-2. |
| Home based business   |   |
| Informal outdoor recreation                                     |   |
| Poultry farm  | Must be no more than 100 poultry (not including emus or ostriches).<br><br>Must be no more than 10 emus and ostriches.  |
| Racing dog husbandry  | Must be no more than 2 animals.   |
| Railway   |   |
| Tramway   |   |
| Any use listed in Clause 62.01                                  | Must meet the requirements of Clause 62.01.   |

VICTORIA PLANNING PROVISIONS

**Section 2 - Permit required**

| Use   | Condition   |
|---|---|
| Accommodation (other than Community care accommodation, Dependent person's unit and Dwelling)   |   |
| Agriculture (other than Apiculture, Broiler farm, Domestic animal husbandry, Intensive animal production, Racing dog husbandry and Timber production) |   |
| Bar   | The site must not have direct access to a rural freeway   |
| Broiler farm - if the Section 1 condition to Poultry farm is not met  | Must be no more than 10,000 chickens  |
| Car park  | Must be used in conjunction with another use in Section 1 or 2.   |
| Convenience shop  | The leasable floor area must not exceed 80 square metres.<br>The site must not have direct access to a rural freeway. |
| Dependent person's unit - if the Section 1 condition is not met   | Must meet the requirements of Clause 35.03-2.   |
| Domestic animal boarding  |   |
| Dwelling (other than Bed and breakfast) - if the Section 1 condition is not met   | Must meet the requirements of Clause 35.03-2  |
| Freeway service centre  | Must meet the requirements of Clause 53.05.   |
| Hotel   | The site must not have direct access to a rural freeway.  |
| Leisure and recreation (other than Informal outdoor recreation and Motor racing track)  |   |
| Market  |   |
| Medical centre  |   |
| Place of assembly (other than Amusement parlour, Carnival, Cinema based entertainment facility, Circus and Nightclub)                                 |   |
| Plant nursery   |   |
| Postal agency   |   |
| Primary produce sales   |   |
| Racing dog husbandry - if the Section 1 condition is not met  | Must meet the requirements of Clause 53.12  |
| Restaurant  | The site must not have direct access to a rural freeway.  |

VICTORIA PLANNING PROVISIONS

| Use  | Condition   |
|--|---|
| <b>Rural industry (other than Abattoir and Sawmill)</b>                                      |   |
| Service station  | <p>The site must either:</p> <ul style="list-style-type: none"> <li>Adjoin a commercial zone or Industrial zone.</li> <li>Adjoin, or have access to, a road in a Road Zone.</li> </ul> <p>The site must not exceed either:</p> <ul style="list-style-type: none"> <li>3000 square metres.</li> <li>3600 square metres if it adjoins on two boundaries a road in a Road Zone.</li> </ul> <p>The site must not have direct access to a rural freeway.</p> |
| Store  | Must be in a building, not a dwelling, and used to store equipment, goods, or motor vehicles used in conjunction with the occupation of a resident of a dwelling on the lot.  |
| Timber production  | Must meet the requirements of Clause 53.11.   |
| Utility installation (other than Minor utility Installation and Telecommunications facility) |   |
| Any other use not in Section 1 or 3  |   |

**Section 3 - Prohibited**

| Use   |
|---|
| Abattoir  |
| Amusement parlour   |
| Brothel   |
| Cinema based entertainment facility   |
| Industry (other than Rural Industry)  |
| Intensive animal production   |
| Motor racing track  |
| Nightclub   |
| Office (other than Medical centre)  |
| Retail premises (other than Bar, Convenience shop, Hotel, Market, Plant nursery, Postal agency, Primary produce sales and Restaurant) |
| Saleyard  |
| Sawmill   |
| Transport terminal  |
| Warehouse (other than Store)  |

VICTORIA PLANNING PROVISIONS

**35.03-2**  
19/01/2006  
VC37

**Use of land for a dwelling**

A lot used for a dwelling must meet the following requirements:

- Access to the dwelling must be provided via an all-weather road with dimensions adequate to accommodate emergency vehicles.
- The dwelling must be connected to a reticulated sewerage system or if not available, the waste water must be treated and retained on-site in accordance with the State Environment Protection Policy (Waters of Victoria) under the *Environment Protection Act 1970*.
- The dwelling must be connected to a reticulated potable water supply or have an alternative potable water supply with adequate storage for domestic use as well as for fire fighting purposes.
- The dwelling must be connected to a reticulated electricity supply or have an alternative energy source.

These requirements also apply to a dependent person's unit.

**35.03-3**  
31/07/2018  
VC146

**Subdivision**

A permit is required to subdivide land.

Each lot must be at least the area specified for the land in a schedule to this zone. If no area is specified, each lot must be at least 2 hectares.

A permit may be granted to create smaller lots if any of the following apply:

- The subdivision is the re-subdivision of existing lots and the number of lots is not increased.
- The number of lots is no more than the number the land could be subdivided into in accordance with a schedule to this zone.
- The subdivision is by a public authority or utility service provider to create a lot for a utility installation.

**VicSmart applications**

Subject to Clause 71.06, an application under this clause for a development specified in Column 1 is a class of VicSmart application and must be assessed against the provision specified in Column 2.

| Class of application   | Information requirements and decision guidelines |
|--|--|
| Subdivide land to realign the common boundary between 2 lots where:  | Clause 59.01                                     |
| <ul style="list-style-type: none"> <li>▪ Each new lot is at least the area specified for the land in the zone or the schedule to the zone.</li> <li>▪ The area of either lot is reduced by less than 15 percent.</li> <li>▪ The general direction of the common boundary does not change.</li> </ul> |  |
| Subdivide land into 2 lots where each new lot is at least the area specified for the land in the zone or the schedule to the zone.   | Clause 59.12                                     |

**35.03-4**  
08/09/2019  
VC159

**Buildings and works**

A permit is required to construct or carry out any of the following:

- A building or works associated with a use in Section 2 of Clause 35.03-1. This does not apply to:

VICTORIA PLANNING PROVISIONS

- An alteration or extension to an existing dwelling provided the floor area of the alteration or extension is not more than the area specified in a schedule to this zone or, if no area is specified, 100 square metres. Any area specified must be more than 100 square metres.
- An out-building associated with an existing dwelling provided the floor area of the out-building is not more than the area specified in a schedule to this zone or, if no area is specified, 100 square metres. Any area specified must be more than 100 square metres.
- An alteration or extension to an existing building used for agriculture provided the floor area of the alteration or extension is not more than the area specified in the schedule to this zone or, if no area is specified, 100 square metres. Any area specified must be more than 100 square metres. The building must not be used to keep, board, breed or train animals.
- A rainwater tank.
- Earthworks specified in a schedule to this zone, if on land specified in a schedule.
- A building which is within any of the following setbacks:
  - The setback from a Road Zone Category 1 or land in a Public Acquisition Overlay to be acquired for a road, Category 1 specified in the schedule to this zone or, if no setback is specified, 30 metres.
  - The setback from any other road or boundary specified in the schedule to this zone.
  - The distance from a dwelling not in the same ownership specified in the schedule to this zone.
  - 100 metres from a waterway, wetlands or designated flood plain.

**VicSmart applications**

Subject to Clause 71.06, an application under this clause for a development specified in Column 1 is a class of VicSmart application and must be assessed against the provision specified in Column 2.

| Class of application   | Information requirements and decision guidelines |
|--|--|
| Construct a building or construct or carry out works with an estimated cost of up to \$250,000 where the land is not: <ul style="list-style-type: none"> <li>• Used for Domestic animal husbandry, Pig farm, Poultry farm, Poultry hatchery, Racing dog husbandry or Rural industry.</li> <li>• Within 30 metres of land (not a road) which is in a residential zone.</li> </ul> Any works must not be earthworks specified in the schedule to the zone. | Clause 59.13                                     |

**35.03-5**  
31/07/2018  
VC148

**Decision guidelines**

Before deciding on an application to use or subdivide land, construct a building or construct or carry out works, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate:

**General issues**

- The Municipal Planning Strategy and the Planning Policy Framework.
- Any Regional Catchment Strategy and associated plan applying to the land.
- The capability of the land to accommodate the proposed use or development.

## VICTORIA PLANNING PROVISIONS

- Whether the site is suitable for the use or development and whether the proposal is compatible with adjoining and nearby land uses.

**Agricultural issues**

- The capacity of the site to sustain the agricultural use.
- Any integrated land management plan prepared for the site.
- The potential for the future expansion of the use or development and the impact of this on adjoining and nearby agricultural and other land uses.

**Environmental issues**

- The impact on the natural physical features and resources of the area and in particular any impact caused by the proposal on soil and water quality and by the emission of noise, dust and odours.
- The impact of the use or development on the flora, fauna and landscape features of the locality.
- The need to protect and enhance the biodiversity of the area, including the need to retain vegetation and faunal habitat and the need to revegetate land including riparian buffers along waterways, gullies, ridgelines, property boundaries and saline discharge and recharge area.
- The location of on-site effluent disposal areas to minimise the impact of nutrient loads on waterways and native vegetation.

**Design and siting issues**

- The impact of the siting, design, height, bulk, colours and materials to be used, on the natural environment, major roads, vistas and water features and the measures to be undertaken to minimise any adverse impacts.
- The impact on the character and appearance of the area or features of architectural, historic or scientific significance or of natural scenic beauty or importance.
- The location and design of existing and proposed infrastructure including roads, gas, water, drainage, telecommunications and sewerage facilities.
- Whether the use or development will require traffic management measures.

**35.03-6**  
31/07/2019  
VC146

**Signs**

Sign requirements are at Clause 52.05. This zone is in Category 3.

**36.01**  
31/07/2018  
VC146

**PUBLIC USE ZONE**

Shown on the planning scheme map as PUZ with a number.

**Purpose**

To implement the Municipal Planning Strategy and the Planning Policy Framework.

To recognise public land use for public utility and community services and facilities.

To provide for associated uses that are consistent with the intent of the public land reservation or purpose.

**36.01-1**  
23/09/2011  
VCT7

**Table of uses**

**Section 1 - Permit not required**

| Use                            | Condition   |
|--------------------------------|---|
| Railway                        |   |
| Railway station                | The total leasable floor area for the selling of food, drink and other convenience goods and services must not exceed 50 square metres.   |
| Tramway                        |   |
| Any use listed in Clause 62.01 | Must meet the requirements of Clause 62.01.   |
| Any other use                  | The use must be for the purpose described in the table to Clause 36.01-6 which corresponds to the notation on the planning scheme map.<br><br>The use must be carried out by or on behalf of the public land manager. |

**Section 2 - Permit required**

| Use | Condition |
|-----|-----------|
|-----|-----------|

**Section 3 - Prohibited**

| Use |
|-----|
| Nil |

**36.01-2**  
19/01/2008  
VC37

**Permit requirement**

A permit is required to:

- Construct a building or construct or carry out works for any use in Section 2 of Clause 36.01-1. This does not apply to navigational beacons and aids.
- Subdivide land.

**36.01-3**  
19/01/2008  
VC37

**Application requirements**

An application for a permit by a person other than the relevant public land manager must be accompanied by the written consent of the public land manager, indicating that the public land manager consents generally or conditionally either:

- To the application for permit being made.

- To the application for permit being made and to the proposed use or development.

**36.01-4**  
31/07/2018  
VC148

**Decision guidelines**

Before deciding on an application to use or subdivide land, construct a building or construct or carry out works, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate:

- The Municipal Planning Strategy and the Planning Policy Framework.
- The comments of any Minister or public land manager having responsibility for the care or management of the land or adjacent land.
- Whether the development is appropriately located and designed, including in accordance with any relevant use, design or siting guidelines.

**36.01-5**  
19/01/2008  
VC37

**Permit not required**

A permit is not required to use land, or to construct a building or construct or carry out works on land, listed in a schedule to this zone, provided any condition in the schedule is complied with.

**36.01-6**  
19/01/2008  
VC37

**Table of public land use**

| Shown on the planning scheme map | Purpose of public land use |
|----------------------------------|----------------------------|
| PUZ1                             | Service & Utility          |
| PUZ2                             | Education                  |
| PUZ3                             | Health & Community         |
| PUZ4                             | Transport                  |
| PUZ5                             | Cemetery/Crematorium       |
| PUZ6                             | Local Government           |
| PUZ7                             | Other public use           |

**36.01-7**  
31/07/2018  
VC148

**Signs**

Sign requirements are at Clause 52.05. This zone, except for the PUZ4 (Transport), is in Category 4 unless a different requirement is specified in the schedule to this zone.

For land within the PUZ4 (Transport), the sign category which applies is the category which applies to the adjoining zone nearest to the land. If land is equidistant from two or more adjoining zones, the least restrictive category applies.

Where the Road Zone is the nearest adjoining zone, a permit is required to display a sign.

## Appendix 5: ACHP Listing Report for the Geographic Region Showing ACHP Components

| Place Number | Name                           | Number      | Type                              |
|--------------|--------------------------------|-------------|-----------------------------------|
| 8121-0153    | DINWOODIE 1                    | 8121-0153-1 | Artefact Scatter                  |
| 8121-0215    | WATERLOO IA 1                  | 8121-0215-1 | Artefact Scatter                  |
| 8121-0217    | LLOYD ST AS 1                  | 8121-0217-1 | Artefact Scatter                  |
| 8121-0272    | WATERLOO ROAD MOE              | 8121-0272-1 | Artefact Scatter                  |
| 8121-0272    | WATERLOO ROAD MOE              | 8121-0272-2 | Object Collection                 |
| 8121-0336    | Old Sale Road 3                | 8121-0336-1 | Low Density Artefact Distribution |
| 8121-0336    | Old Sale Road 3                | 8121-0336-2 | Low Density Artefact Distribution |
| 8121-0336    | Old Sale Road 3                | 8121-0336-3 | Low Density Artefact Distribution |
| 8121-0336    | Old Sale Road 3                | 8121-0336-4 | Low Density Artefact Distribution |
| 8121-0336    | Old Sale Road 3                | 8121-0336-5 | Low Density Artefact Distribution |
| 8121-0336    | Old Sale Road 3                | 8121-0336-6 | Low Density Artefact Distribution |
| 8121-0337    | Old Sale Road 2                | 8121-0337-1 | Artefact Scatter                  |
| 8121-0338    | Old Sale Road 1                | 8121-0338-2 | Artefact Scatter                  |
| 8121-0360    | Albert Street Artefact Scatter | 8121-0360-1 | Artefact Scatter                  |

## Appendix 6: GDA 94/MGA 55 Co-ordinates

| Shovel Test Pit | GDA 94/MGA 55 Easting | GDA 94/MGA 55 Northing |
|-----------------|-----------------------|------------------------|
| 1               | 435117.7149           | 5771731.837            |
| 2               | 435153.0936           | 5771803.196            |
| 3               | 435075.1009           | 5771688.512            |
| 4               | 435066.1884           | 5771668.749            |
| 5               | 435050.0317           | 5771694.93             |
| 6               | 435027.3894           | 5771684.809            |
| 7               | 435018.3583           | 5771658.971            |
| 8               | 434997.7656           | 5771671.149            |
| 9               | 434988.9147           | 5771624.695            |
| 10              | 434987.5501           | 5771589.72             |
| 11              | 435053.3897           | 5771602.444            |
| 12              | 435077.5846           | 5771607.711            |
| 13              | 435095.1309           | 5771607.852            |
| 14              | 435103.8681           | 5771639.945            |
| 15              | 435076.738            | 5771640.554            |
| 16              | 435084.1014           | 5771632.833            |
| 17              | 435094.3336           | 5771626.853            |
| 18              | 435133.1727           | 5771656.607            |
| 19              | 435077.9212           | 5771721.308            |
| 20              | 435014.3337           | 5771632.234            |
| 21              | 435015.3426           | 5771613.056            |
| 22              | 435011.8089           | 5771591.607            |
| 23              | 435035.7807           | 5771598.17             |
| 24              | 435041.5865           | 5771618.103            |
| 25              | 435045.6241           | 5771636.775            |
| 26              | 435089.0239           | 5771814.923            |
| 27              | 435115.5193           | 5771804.83             |
| 28              | 435133.9397           | 5771781.869            |

**Melbourne Office**

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## Appendix F – Preliminary advice from authorities



**Fire Safety Referrals**

**Fire & Emergency Management**

Email: [firesafetyreferrals@cfa.vic.gov.au](mailto:firesafetyreferrals@cfa.vic.gov.au)

Telephone: 03 9262 8578

**Our Ref:** 27000-441254-96092

16 December 2019

Katrina Lee  
GHD  
LVL 18180 Lonsdale Street  
**MELBOURNE VIC 3000**

Dear Katrina

**PRELIMINARY COMMENTS ON DRAFT AMENDMENT MATERIAL**

**Proposal:** Rezone Moe Treatment Plan to Public Use Zone / Buildings and works

**Location:** 58 Moe South Road Moe South

Thank you for providing some preliminary material and seeking to meet with CFA to discuss the future rezoning of the land and additional buildings and works at the site.

Following on from our discussion last week and to assist in further preparation of relevant material, CFA can provide the following preliminary advice for your consideration:

- It is likely that CFA would support the rezoning of the land to Public Use Zone/ buildings and works at the site, subject to the inclusion of an appropriate response to bushfire.
- The proposal may seek to consider:
  - Including an area of managed vegetation adjacent the site boundaries that have an immediate interface with a bushfire hazard. These areas could include fire access tracks to enable easier and safer fire fighting on the site.
  - Ensure new vegetation to be planted on the site is provided in accordance with defensible space requirements (these can be found in Table 6 of Clause 53.02).
  - Design and site buildings to respond to the bushfire risk.
  - Minimising and managing vegetation around buildings, it is recommended that this concept be applied to the whole site, including existing buildings. From the aerial images, it appears that this is already being undertaken.
  - Provide a static water supply to assist in the protection of buildings on the site in the event of a fire. Using the water within the basins on the site is unlikely to be suitable for fire fighting, given the location of the water and potential for contamination to the drinking water supply. A 40,000 litre static water supply is recommended.
  - Ensuring a bushfire emergency management plan is developed to manage staff on the site and what to do to protect the infrastructure in the event of a bushfire. Gippsland Water may already have a plan in place that could form part of the information incorporated into the

future application to demonstrate that this has been done (it may need amendment to cater for any change at the site).

- The amendment documentation and explanatory report should address policy at Clause 13.02-1S. CFA recognises that an application like this one is likely to be a little more difficult to interpret in the context of the current policy and we have therefore provided more commentary than would be typical to assist in developing an appropriate policy response. CFA would recommend the inclusion of a bushfire report that includes information that considers the following:
  - Landscape bushfire risk (i.e. include a description of the bushfire risk beyond the site – information to assist you to develop a bushfire landscape assessment can be found in the DELWP Technical Guide for BMO applications. Whilst it is not a strategic assessment guideline, it is a useful tool to be able to refer to if you are not familiar with bushfire landscape assessments).
  - Alternative locations – Clause 13.02-1S includes consideration around settlement growth and alternative locations. CFA recommends that you include some discussion around the site and its context and importance as a community asset. Similar to that which you have provided in the table in your earlier email.
  - Availability of safer areas – Again, this type of proposal does not fit easily into the policy assessment, however, it would be beneficial for the amendment material to identify access and egress routes in the event of an emergency and identify what people at the site will do in the event of a bushfire (this is likely to link back to the required emergency management plan).
  - Site based exposure – Clause 13.02-1S identifies radiant heat exposure benchmarks for new development – this will not be applicable to the buildings and works on the site. However, it is recommended that the amendment material identify that siting, construction and building design has been considered and will reasonably respond to the bushfire risk, also what is being done around the site/buildings to manage and minimise risks i.e. link to the need to manage vegetation and that this will be done to defensible space standards. Locking in the management of vegetation should also be addressed i.e. will it form part of a maintenance plan at Gippsland Water, will a vegetation management plan be developed?
  - Areas of high biodiversity – CFA recommends that this be addressed in the report, although this is not an issue for CFA to comment on, it is still a relevant policy consideration under Clause 13.02-1S.
  - No increase in risk and Community Resilience – Include some information that captures all the bushfire protection measures being used and identify the strategic importance of the asset, including that it is located adjacent areas of hazard and will act as a buffer to more sensitive uses.

CFA apologises that we were not able to facilitate a meeting before Christmas however we welcome the opportunity to discuss the proposal in more detail in the new year and once some more detailed amendment material becomes available.

Yours sincerely



**Anne Coxon**  
Land Use Planning Team Manager  
**Fire & Emergency Management**



**Fire Safety Referrals**  
**Fire & Emergency Management**  
Email: [firesafetyreferrals@cfa.vic.gov.au](mailto:firesafetyreferrals@cfa.vic.gov.au)  
Telephone: 03 9262 8578

**Our Ref:** 27000-441254-99535  
**Telephone:** 9262 8578  
**Council Ref:** C124

13 May 2020

Karen Egan  
Latrobe City Council  
P OBox 264  
**MORWELL VIC 3840**

Dear Karen

### LETTER OF ADVICE

**Proposal:** PRELIMINARY COMMENT AMENDMENT C124  
**Location:** Moe Water Treatment Plant - 58 & 56 Moe South Road Moe South

Thank you for your email raising matters you wish to discuss with CFA in relation to the proposed Moe Water Treatment Plant Upgrade. This feedback is intended to assist in the Bushfire response for your request under Section 96A of the Planning and Environment Act 1987 to the rezone land and upgrade of the Moe Water Treatment Plant. This feedback responds to an email from GHD on CFA dated 7 April 2020 and a request from Latrobe Council to provide preliminary advice on the application. C

CFA provided preliminary advice to GHD (Katrina Lee) on 16 December 2020. Information considered included a draft locality plan (Figure 1, Job No 31-12516874, Rev A, Date 22/11/2019), Land Tenure Plan (Figure 2, Job No. 31-12516874, Rev A, Date: 24/11/2019) and draft Functional Design Drawings (Job No 31-37346-G001, Co02, , 12WTO1, Drawing No A1, 22/11/19). CFA's response is included as Appendix 5 in the submitted Strategic Assessment Report (GHD, April 2020).

CFA can provide the following additional comments on the proposed Amendment / Planning Permit Application:

- No landscape or bushfire hazard site assessment has been prepared in support of the application. Rather the proposal includes permit conditions that seek to defer the provision of bushfire assessment and the provision of bushfire protection measures to the development phase of the proposal. Given the priority afforded the bushfire under Clause 714.02-3 and 13.02-1S, CFA strongly recommends that a bushfire assessment is prepared as part of this application and that a separate bushfire management plan is prepared that includes all of the proposed bushfire protection measures that are proposed or recommended by CFA.
- The addition of access tracks between the proposed works and established vegetation is noted within the application material. Unfortunately, it is difficult to



**Fire Safety Referrals**  
**Fire & Emergency Management**

Email: [firesafetyreferrals@cfa.vic.gov.au](mailto:firesafetyreferrals@cfa.vic.gov.au)

Telephone: 03 9262 8578

determine. the width of the access and whether it is appropriate for fire appliances. The width of the access track should be a minimum of 3.5m wide with a clearance of 4m above the access. This should forms part of the conditions and be shown a separate bushfire management plan.

- Access to the site from 56 Moe South Road should ensure that it is designed in accordance with the following requirements, unless otherwise agreed in writing by the relevant fire authority:
  - Curves must have a minimum inner radius of 10m.
  - The average grade must be no more than 1 in 7 (14.4 per cent) (8.1 degrees) with a maximum of no more than 1 in 5 (20 per cent) (11.3 degrees) for no more than 50m.
  - Have a minimum trafficable width of 3.5m of all- weather construction.
  - Be clear of encroachments for at least 0.5m on each side and 4m above the accessway.
  - Dips must have no more than a 1 in 8 (12.5 per cent) (7.1 degrees) entry and exit angle.
  - Incorporate a workable area for fire fighting vehicles close and near buildings.
  - Incorporate a turning circle for fire fighting vehicles to be able to exit the site is a forwards direction.
  - Incorporate passing bays at least every 200m which must be at least 20m long and have a minimum trafficable width of 6m.
  
- The proposal seeks to use the treated reticulated water mains at the Moe Water Treatment Plan in the event of a fire in lieu of a 40,000 litre static water supply. CFA offers no object to appropriate CFA fittings be added to the current connection to the reticulated system or a supplementary hydrant or system of hydrants at the site. However, a separate 40,000 litre static water supply is strongly encouraged at the site that meets the following requirements:
  - Is shown on a bushfire management plan prepared for the site.
  - Is stored in an above ground water tank constructed of concrete or metal.
  - All fixed above-ground water pipes and fittings required for fire fighting purposes must be made of corrosive resistant metal.
  - Include a separate outlet for occupant use.
  - Incorporate a ball or gate valve (British Standard Pipe (BSP) 65mm) and coupling (64 mm CFA 3 thread per inch male fitting).
  - Be located within 60 metres of the outer edge of the approved building.
  - The outlet/s of the water tank must be within 4m of the accessway and be unobstructed.
  - Be readily identifiable at the site entrance and signed within the site.
  - Any pipework and fittings must be a minimum of 65 mm (excluding the CFA coupling).
  
- The application is not clear on the extent or area of defendable space proposed to reduce bushfire risk. CFA recommends that the application clearly show the area of the site to be maintained in accordance with defendable space, being the following requirements:
  - Grass must be short cropped and maintained during the declared fire danger period.



## Fire Safety Referrals

### Fire & Emergency Management

Email: [firesafetyreferrals@cfa.vic.gov.au](mailto:firesafetyreferrals@cfa.vic.gov.au)

Telephone: 03 9262 8578

- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
  - Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.
  - Plants greater than 10 centimetres in height must not be placed within 3m of a window or glass feature of the building.
  - Shrubs must not be located under the canopy of trees.
  - Individual and clumps of shrubs must not exceed 5 sq. metres in area and must be separated by at least 5 metres.
  - Trees must not overhang or touch any elements of the building.
  - The canopy of trees must be separated by at least 5 metres.
  - There must be a clearance of at least 2 metres between the lowest tree branches and ground level.
- 
- Given the surrounding level of bushfire risk, particularly vegetation located on to the west and south west of the site, a canopy separation of 5m is encouraged. This may be viewed subject to justification in the bushfire assessment.
  - The drawings show two stockpile areas. It is unclear what will be stored in these stockpile areas. These areas should avoid stockpiling dangerous or hazardous material or other highly flammable objects, unless agreed with CFA's Dangerous Goods Team prior to the exhibition of the amendment. A higher level of vegetation management and clearing around these areas may be required depending on what will be stockpiled.
  - CFA's previous advice, letter dated 16 December 2019, regarding the inclusion of a bushfire report and suggested matters to be considered is still supported.
  - CFA requests a fully copy of the application be provided.

CFA looks forward to reviewing the vegetation management plan and bushfire report once it has been prepared. Please do not hesitate to contact Luci Johnston on 9262 8672 if you would like to discuss this matter in more detail.

Yours sincerely

**Anne Coxon**  
**Land Use Planning Team Manager**  
**Fire & Emergency Management**

C.C Katrina Lee  
GHD  
[Katrina.lee@ghd.com](mailto:Katrina.lee@ghd.com)

Our Ref: FOL/18/657/30

18 November 2019

Mr Paul Young  
Asset Planning Manager  
Gippsland Water  
55 Hazelwood Road  
TRARALGON VIC 3844

Dear Mr Young

**PROPOSED REZONING OF LAND AT 58 MOE SOUTH ROAD, MOE SOUTH**

I refer to your email to Sarah Auld of 8 November 2019 in relation to the proposed rezoning of land at 58 Moe South Road, Moe South.

We understand Gippsland Water proposes a combined rezoning and planning permit application to facilitate the development of the land as a clear water storage basin.

An existing high pressure gas pipeline is located adjacent to the northern boundary of the site, which is owned and operated by APA. We have received correspondence between the APA and Gippsland Water confirming APA has no objection to the proposed rezoning, and requests to review the final design and construction methodology to ensure that there is no impact to the pipeline.

Energy Safe Victoria has no objection to the proposed rezoning or planning permit application.

Should you have any questions or require anything further please do not hesitate to contact me on 9271 5440 or [anastasia.kontogiorgis@energysafe.vic.gov.au](mailto:anastasia.kontogiorgis@energysafe.vic.gov.au).

Yours sincerely



Anastasia Kontogiorgis  
**MANAGER, GAS & PIPELINE INFRASTRUCTURE SAFETY**



Our Ref: 5010553

23 March 2020

Gippsland Water  
55 Hazelwood Road  
TRARALGON VIC 3844

Attention: Owen Beebe, Engineer Capital Planning

Dear Owen,

**PROPOSED CLEAR WATER STORAGE BASIN – MOE WATER TREATMENT PLANT  
58 MOE SOUTH ROAD, MOE SOUTH**

Thank you for the opportunity to provide a response in relation to the proposed planning scheme amendment as outlined in your letter received via email

**Ministerial Direction 19**

There has been recent recognition of the preventative value of EPA's early involvement in strategic land use planning. This is reflected in Ministerial Direction 19, which requires planning authorities to seek early advice from EPA when undertaking strategic planning processes that may result in significant impacts on the environment, amenity and human health due to pollution and waste.

It is in this context that EPA provides the comments below.

**Our Understanding of the Proposal**

We understand that Gippsland Water (GW) are proposing a new clear water storage basin at the Moe Water Treatment Plant (WTP); which will be facilitated by a combined planning scheme amendment (PSA) and planning permit for native vegetation removal. The scope of works will include:

- *New 25 ML Clear Water Storage (CWS) Basin constructed in part on the new property to the south, and the vegetated land to the west;*
- *Interconnecting pipework between the WTP and the new proposed basin;*
- *Access track around the new basin;*
- *Associated civil works, guardrail around new basin, etc.*

The planning scheme amendment proposes to rezone the land required for the CWS basin on an adjoining property at 58 Moe South Road, Moe South from Rural Living Zone – Schedule 3 (RLZ3) to Public Use Zone 1 (Service and Utility). It is stated that this proposal *“will bring the site into conformity with the zoning of the existing WTP property. The Amendment will reflect the new ownership of the property and will facilitate the efficient use and development of the property for water treatment and supply (public service and utility) purposes.”*

It is further understood that the proposal will allow a larger amount of treated water storage to occur at the site, but is not expected to increase the output of the WTP or increase the waste stream, i.e. sludge production.

## Background

Gippsland Water own and operate the Moe Water Treatment Plant (WTP) located on land at 56 Moe South Road, Moe South. Currently, there is only one 22 ML CWS storage basin at the Moe WTP which will soon reach capacity under future growth scenarios. This will impact approximately 63 percent of the Moe/Newborough water supply system, including areas in Moe, Trafalgar and Yarragon.

Construction of a second CWS basin will improve the overall resilience of the Moe/Newborough water network and ensure adequate water supply is provided for the system in the long term. The second CWS basin will also be essential to providing for operational flexibility or redundancy when the existing CWS basin goes offline.

## Assessment

### Recommended Separation Distances

With reference to relevant EPA regulations and guidelines, it is noted that EPA Publication 1518, *Recommended Separation Distances for Industrial Residual Air Emissions (IRAE)* applies only to offsite odour and dust emissions from industries which have the potential to impact on human health and wellbeing, local amenity and aesthetic enjoyment. It does not apply to noise, vibration, ambient and hazardous air pollutants. Furthermore, Publication 1518 does not include any specific reference to water treatment plants. Therefore there is no applicable recommended separation distance that needs to be considered for this proposal.

### Noise

Having regard to the proposed location of the clear water storage basin, and location of existing nearby residential dwellings (sensitive uses) as shown in the image below, GW should give consideration to whether the proposal will generate any adverse noise impacts on these dwellings, and if so – adopt necessary noise mitigation measures consistent with EPA regulations and guidelines for industrial noise to avoid or minimise adverse impacts.

<https://www.epa.vic.gov.au/about-epa/publications/1412>



## Conclusion

Based on the supplied documentation and the assessment above, EPA generally supports the proposal.

EPA notes that GW are not the planning authority and the La Trobe City Council, as the relevant planning authority, may still seek to obtain the views of EPA in satisfying the requirements of MD19.

If our preliminary assessment is not aligned with your view of the environmental risk, or if the proposal is amended, please contact Trisha Brice, Planning Team Lead (Strategic) on 9194 5404.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'T Brice', with a stylized flourish at the end.

**Trisha Brice**  
Planning Team Lead (Strategic)  
Major Projects and Planning  
**EPA Victoria**

CC: Lorrae Dukes, Latrobe City Council

**From:** [Paul Young \(InTouch\)](#)  
**To:** [Owen Beebe \(InTouch\)](#)  
**Cc:** [Rohan Beaton \(InTouch\)](#)  
**Subject:** FW: Rezoning of Land near the Moe Water Treatment Plant  
**Date:** Tuesday, 20 August 2019 10:41:12 AM  
**Attachments:** [image005.png](#)  
[image004.png](#)  
[RE 58 Moe South Road Moe South.msg](#)

FYI

## **Paul Young**

Asset Planning Manager

Gippsland Water

Ph: (03) 51 774 728

Mob: 0427 314 144

email: [paul.young@gippswater.com.au](mailto:paul.young@gippswater.com.au)

---

**From:** Lorrae Dukes <[Lorrae.Dukes@latrobe.vic.gov.au](mailto:Lorrae.Dukes@latrobe.vic.gov.au)>  
**Sent:** Wednesday, 14 August 2019 3:43 PM  
**To:** Paul Young <[Paul.Young@gippswater.com.au](mailto:Paul.Young@gippswater.com.au)>  
**Cc:** Karen Egan <[Karen.Egan@latrobe.vic.gov.au](mailto:Karen.Egan@latrobe.vic.gov.au)>  
**Subject:** RE: Rezoning of Land near the Moe Water Treatment Plant

Hi Paul

Please see attached a response from Suzy at DELWP regarding the progression of the Amendment. The department wouldn't support a 20(4) Amendment, but would support an application being made through a full Planning Scheme Amendment with a request to exempt from notice under 20(2). The benefit of this is not a broad notification, it is targeted to specific stakeholders (who we have already identified), if we received no objections we would progress quickly.

If objections are received however, there is still a possibility of a planning panel. This process still needs to go through to Council for key points in the process also.

The Amendment would be to:

- Rezone to Public Use Zone;
- Apply a Specific Control Overlay
- Introduce a incorporated document which exempted the need for the permit (linked to the SCO);
- Amend Schedule to Clause 72.04 to include incorporated document

Based on the advice received, we would propose the following:

- Gippsland Water (or consultant) prepare Amendment documents, including:
  - o Planning report with justification for the amendment;
  - o Assessment of Strategic Assessment Guidelines
  - o Draft amendment documents (including explanatory report, incorporated document, proposed zone map and specific control overlay);
  - o Any technical data to support the amendment (if required)
- Lodge the Planning Scheme Amendment - \$3050.86
- Latrobe to process the Amendment as a proponent led Planning Scheme Amendment and request exemption from notice. We can give more specific timeframes when lodged.

It might be good if you talk to neighbours of the property to see if they have any concerns about it to flag any potential issues.

A list of fees as we progress the Amendment is below:

| Stage Number | What the fee is for                                | Fee  | Who is the fee paid to                               |
|--------------|--|--|--|
| 1            | Considering a request to amend the Planning Scheme | \$3050.86*   | Latrobe City Council                                 |
| 2            | Considering submissions which request a change     | Up to 10 submissions<br>\$15,121.01*<br>11 to 20 submissions<br>\$30,212.40*<br>20+ submissions \$40,386.87* | Latrobe City Council                                 |
| 3            | Adoption of the Amendment                          | \$481.32*  | Latrobe City Council                                 |
| 4            | Approval of the Amendment                          | \$481.32*  | Department of Environment, Land, Water and Planning. |

Please note: If a Planning Panel is required, Latrobe City Council will require a full fee recovery for this process, this fee differs depending on complexity, duration etc.

\*Fees are increased annually.

If you require any further information, I am more than happy to discuss this further.

Thanks

cid:image003.jpg@01D4CEBA.A0AA47E0



**Lorrae Dukes**  
Coordinator Strategic Planning  
City Development  
P 03 5128 5462  
M 0417 512 540  
E [lorrae.dukes@latrobe.vic.gov.au](mailto:lorrae.dukes@latrobe.vic.gov.au)

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141 Commercial Rd,  
Morwell 3840  
PO Box 264

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---

**From:** [Paul.Young@gippswater.com.au](mailto:Paul.Young@gippswater.com.au) [<mailto:Paul.Young@gippswater.com.au>]

**Sent:** Monday, 12 August 2019 3:56 PM

**To:** Karen Egan; Lorrae Dukes

**Subject:** FW: Rezoning of Land near the Moe Water Treatment Plant

Karen/Lorrae,

Please find below an email from APA Group regarding their position for the rezoning of the land near the Moe Water Treatment Plant.

Can you please advise the best way forward to rezone this land (highlighted) to PUZ1 and what else you need.

Thanks,

***Paul Young***

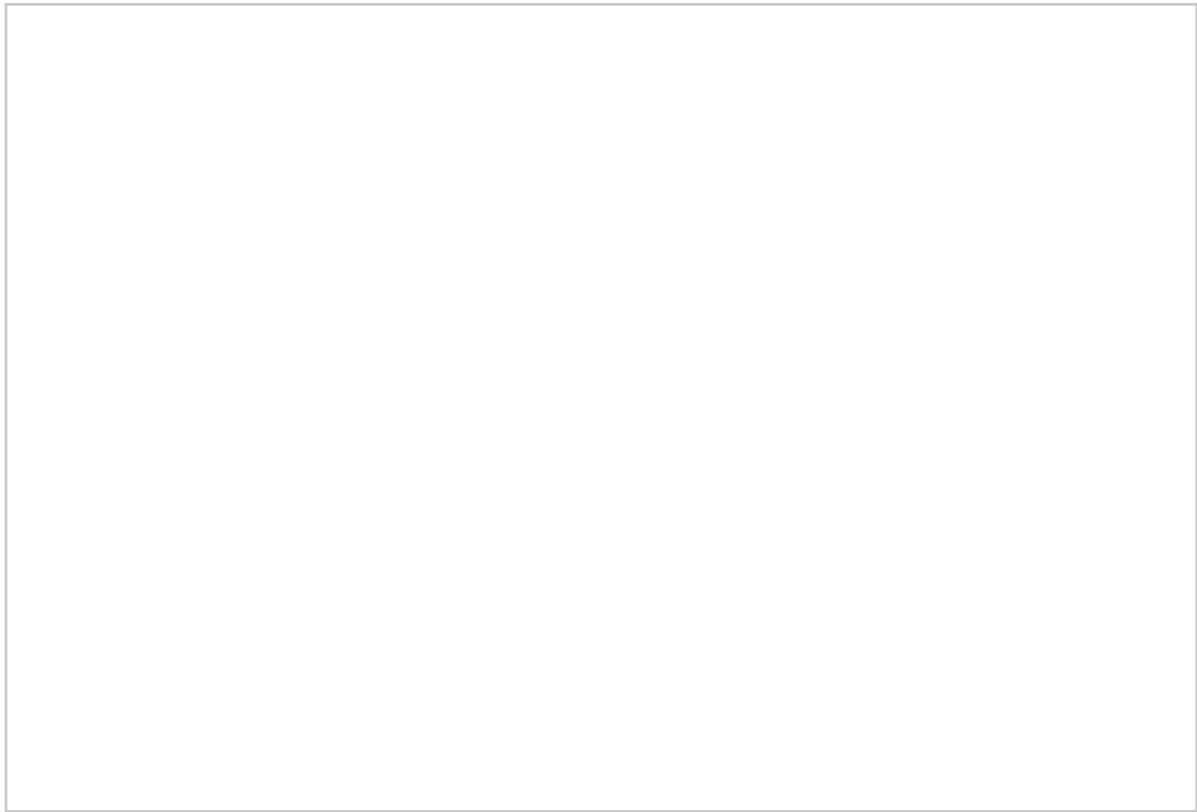
Asset Planning Manager

Gippsland Water

Ph: (03) 51 774 728

Mob: 0427 314 144

email: [paul.young@gippswater.com.au](mailto:paul.young@gippswater.com.au)



---

**From:** Mielczarek, Michael <[Michael.Mielczarek@apa.com.au](mailto:Michael.Mielczarek@apa.com.au)>  
**Sent:** Wednesday, 7 August 2019 4:32 PM  
**To:** Paul Young <[Paul.Young@gippswater.com.au](mailto:Paul.Young@gippswater.com.au)>  
**Subject:** FW: Rezoning of Land near the Moe Water Treatment Plant

Dear Paul,

Further to my previous email and as discussed at our meeting, I would like to confirm that APA has no objection to the proposed rezoning of the site.

As discussed APA would like to review the final design and construction methodology to ensure that there is no impact to the pipeline.

Feel free to pass this email onto Council and feel free to contact me if you require and additional clarification.

Kind regards,

Michael Mielczarek  
Senior Urban Planner

**APA Group**  
Infrastructure Planning and Protection  
Level 14, IBM Building  
60 City Road  
Southbank VIC 3006

d 03 8533 2141  
m +61 472 876 288  
e [Michael.Mielczarek@apa.com.au](mailto:Michael.Mielczarek@apa.com.au)  
w [www.apa.com.au](http://www.apa.com.au)

---

**From:** Mielczarek, Michael  
**Sent:** Wednesday, 7 August 2019 4:27 PM  
**To:** Karambelas, Chris <[Chris.Karambelas@apa.com.au](mailto:Chris.Karambelas@apa.com.au)>; Ogilvie, Glenn <[Glenn.Ogilvie@apa.com.au](mailto:Glenn.Ogilvie@apa.com.au)>; 'Paul.Young@gippswater.com.au' <[Paul.Young@gippswater.com.au](mailto:Paul.Young@gippswater.com.au)>; 'Michael.Johnstone@gippswater.com.au' <[Michael.Johnstone@gippswater.com.au](mailto:Michael.Johnstone@gippswater.com.au)>  
**Subject:** FW: Rezoning of Land near the Moe Water Treatment Plant - Meeting with Gippsland Water and APA MOM18-07-19

Hi All ,

Please find below my version of the minutes of meeting for you, Please advise if there are any changes required

When: Thursday, 18 July 2019 1:00 PM-2:00 PM (UTC+10:00) Canberra, Melbourne, Sydney.

Where: RES MEL 1408 Southern Cross (8 seats) (0386268476)

#### Minutes of meeting

1. Construction work to commence in 2020 – For Information
2. Retaining wall 4 m from pipeline easement and 10 m from the centreline of the pipeline– For Information
3. Gippsland Water require APA to write to say they are in support of the rezoning – Michael Mielczarek to respond.
4. However APA will want to review construction detail and methodology to confirm works will not impact the pipeline – Paul Young to submit works and detail plan for review
5. APA advise that they require a formal request with reference to the latest drawings. APA will advise that it has no objection with the design drawings and it will issue a Third Party Works Authorisation based on approved Construction Management Plan, approved for construction drawings and SWMS. – Paul Young
6. 3<sup>rd</sup> Party Infrastructure design features – For Information
  - a. Overflow away from pipeline
  - b. HDPE liner in basin has a design life of 20 years
7. Pipeline design features and third party protection requirements – For Information
  - a. Bored piles are preferred over driven piles
  - b. Vibration limit on pipeline is 10 mm/s peak particle vibration
  - c. Require vibration monitoring during construction activities
8. Initial feedback
  - a. No issues with the design
9. Issue cathodic protection drawings – Glenn Ogilvie
10. Check integrity of APA pipeline – Glenn Ogilvie
11. Temporary fence off pipeline easement under a Third Party Works Authorisation – For Information
12. Issue third party request by submitting a Construction Management Plan using 580-TP-L-0001\_5 Third Party CMP Template. CMP to reference approved construction drawings and SWMS. CMP to be issued to APA for review and approval – Paul Young
13. Post Meeting Note: Going forward, the new focal point is Scott Mitchell and all future correspondence by third party to use [thirdpartyprojects@apa.com.au](mailto:thirdpartyprojects@apa.com.au). Chris Karambelas to be in copy on the correspondence.

#### Attendees

##### APA

- Michael Mielczarek
- Chris Karambelas
- Glenn Ogilvie

##### Gippsland Water

- [Paul Young](#)
- Jessica Vepin
- Kate Robbins
- Michael Johnston

#### Attachments

- Moe Water Treatment Plant Attendees Register MOM 18-07-19.pdf
- Moe Water Treatment Plant Interaction with APA Pipeline MOM 18-07-19.zip
- 580-TP-L-0001\_5 Third Party CMP Template

Kind regards,

Michael Mielczarek  
Senior Urban Planner

**APA Group**  
Infrastructure Planning and Protection  
Level 14, IBM Building  
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Southbank VIC 3006

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m +61 472 876 288  
e [Michael.Mielczarek@apa.com.au](mailto:Michael.Mielczarek@apa.com.au)  
w [www.apa.com.au](http://www.apa.com.au)

-----Original Appointment-----

**From:** Mielczarek, Michael

**Sent:** Thursday, 11 July 2019 9:30 AM

**To:** Mielczarek, Michael; [Paul.Young@gippswater.com.au](mailto:Paul.Young@gippswater.com.au); Karambelas, Chris; Ogilvie, Glenn; Dawson, Peter

**Subject:** Rezoning of Land near the Moe Water Treatment Plant - Meeting with Gippsland Water and APA

**When:** Thursday, 18 July 2019 1:00 PM-2:00 PM (UTC+10:00) Canberra, Melbourne, Sydney.

**Where:** RES MEL 1408 Southern Cross (8 seats) (0386268476)

Meeting at APA offices as outlined below

Michael Mielczarek  
Senior Urban Planner

**APA Group**  
Infrastructure Planning and Protection  
Level 14, IBM Building  
60 City Road  
Southbank VIC 3006

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m +61 472 876 288  
e [Michael.Mielczarek@apa.com.au](mailto:Michael.Mielczarek@apa.com.au)  
w [www.apa.com.au](http://www.apa.com.au)

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\*\*\*\*\*

# Appendix G – Bushfire Assessment



# Bushfire Planning Considerations Report

## Moe Water Treatment Plant Expansion

### Proposed Planning Scheme Amendment and S96A

### Planning Permit Application

May 27<sup>th</sup>, 2020.

Version 1.0

Euca Planning Pty Ltd

PO Box 570, Warragul 3820.

Phone: 0418 597 662 Email: [info@eucaplanning.com.au](mailto:info@eucaplanning.com.au)

Director & Principal Consultant: Deanne Smith

Qualifications/Accreditations:

- Registered Planner (Planning Institute of Australia)
- Level 3 Accredited Bushfire Planning and Design Practitioner
- Masters of Planning (Professional) – Deakin University
- Postgraduate Certificate in Bushfire Planning and Management – The University of Melbourne (2013)
- Graduate Diploma of Applied Science (Agricultural Studies) – Charles Sturt University
  - Graduate Certificate in Public Sector Management – Flinders University
  - Bachelor of Science – University of Melbourne (1996)

Memberships

- Member of Planning Institute of Australia (MPIA)
- Corporate Bronze Member of Fire Protection Association of Australia

Disclaimer

This report has been made with careful consideration and with the best information available to Euca Planning Pty Ltd at the time of writing. Before relying on information in this report, users should evaluate the accuracy, completeness and relevance of the information provided for their purposes. Euca Planning Pty Ltd do not guarantee that it is without flaw or omission of any kind and therefore disclaim all liability for any error, loss or other consequence that may arise from you relying on any information in this report.

Requirements detailed in this document do not guarantee survival of the buildings or the occupants. The client is strongly encouraged to develop and practice a bushfire survival plan.

Information and assistance including a template for a Bushfire Survival Plan is provided as part of the 'Fire Ready Kit' available through the CFA website at [www.cfa.vic.gov.au](http://www.cfa.vic.gov.au) or through your local CFA Regional office.

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Version Control

|                  | Name         | Date Completed | Comments              |
|------------------|--------------|----------------|-----------------------|
| Field Assessment | Deanne Smith | 21 May 2020    |                       |
| Report           | Deanne Smith | 27 May 2020    |                       |
| Revision         | Deanne Smith | 27 May 2020    | Input from GHD and GW |

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## 1.0 Introduction

This Report has been prepared to support Gippsland Water's request for a Planning Scheme Amendment (PSA) and combined Section 96 Planning Permit Application to facilitate the proposed upgrade and expansion of the existing Moe Water Treatment Plant (WTP).

The report has been presented consistent with the content of the Latrobe Planning Scheme, in particular Clause 13.02. The report establishes the context by providing factual information which is important when considering the way bushfire considerations may impact on the future use of the land. A structured approach to risk identification and management follows which can be used to provide decision makers with information to explain the bushfire risk and inform future design response to that risk.

## 2.0 Locality and Site Description

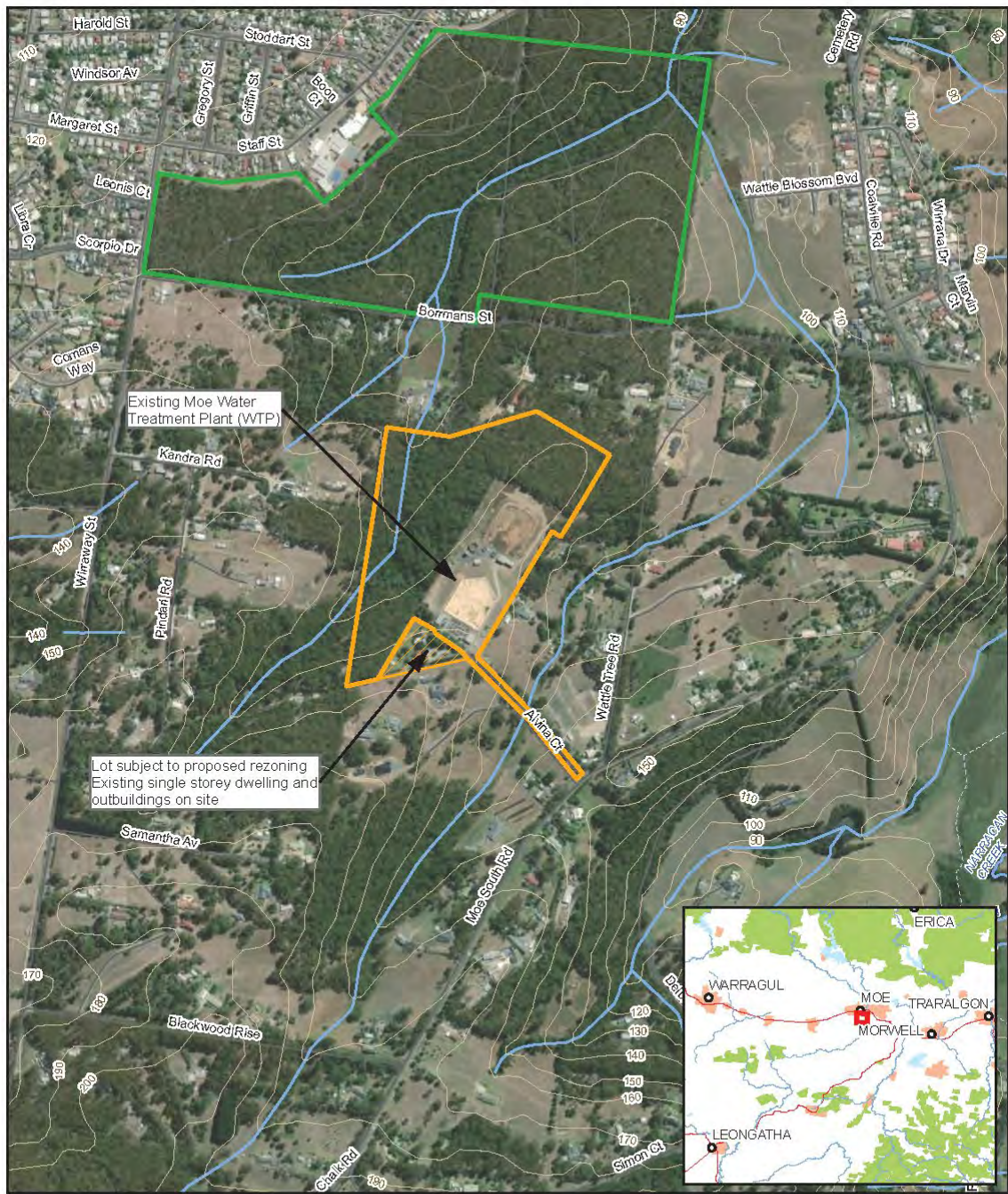
The Moe WTP is located at 56 Moe South Road, Moe South; approximately 2.5 kilometres south of the Moe Township. The existing WTP site is irregular in shape and covers an area of approximately 15 hectares.

The WTP is accessed from Moe South Road via dedicated access road approximately 298 metres long. The infrastructure within the existing WTP is setback approximately 330 metres from Moe South Road, and concentrated in the south-eastern portion of the property. The balance of the land is dense forest vegetation.

The site that is the subject of this report is a triangular parcel of land that sits along the southern boundary of the existing WTP site, uses the same access route and is known as 58 Moe South Road, Moe South. The land is approximately 8,970 square metres in area and currently accommodates a single residence and several outbuildings.

The land at 58 Moe South Road, Moe South, is zoned Rural Living Zone – Schedule 1 (RLZ1) and the land at 56 Moe South Road, Moe South is zoned Public Use Zone – Schedule 1 (PUZ1).

The subject land comprising both parcels is depicted in Figure 1 overleaf, extracted from Strategic Assessment Report (GHD, April 2020).



- LEGEND**
- 58 Moe South Road Moe South
  - 56 Moe South Road Moe South
  - Contours 10m
  - Road
  - Stream
  - Drain/Channel/Other
  - Watercourse
  - Edward Hunter Heritage Bushland Reserve

Paper Size A4  
 0 50 100 200  
 Metres  
 Horizontal Datum: GDA 1994  
 Grid: GCS GDA 1994



Gippsland Water  
 Moe WTP Rezoning

Job Number 31-12516874  
 Revision B  
 Date 08/04/2020

Locality

Figure 1

© 2020. Whilst every care has been taken to prepare this map, GHD (and DATA CUSTODIAN) make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.  
 Data source: DELWP, Vicmap, 2019; GHD, 2019; Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Created by: cjauniau

Figure One – Site Context Plan with subject land shown bounded by yellow (GHD, 2020)

The request to rezone land from the RLZ1 to PUZ1 applies only to 58 Moe South Road, Moe South (Lot 1 PS400699).

The concurrent planning permit application to facilitate the upgrade works applies to the following three lots:

- 56 Moe South Road, Moe South – Lot 2 PS 400699 and Lot 2 LP55896
- 58 Moe South Road, Moe South – Lot 1 PS400699

Moe is the nearest township and is located directly north of the site with the only forest vegetation being contained on the WTP land or in the Edward Hunter Reserve as depicted in Figure Two.

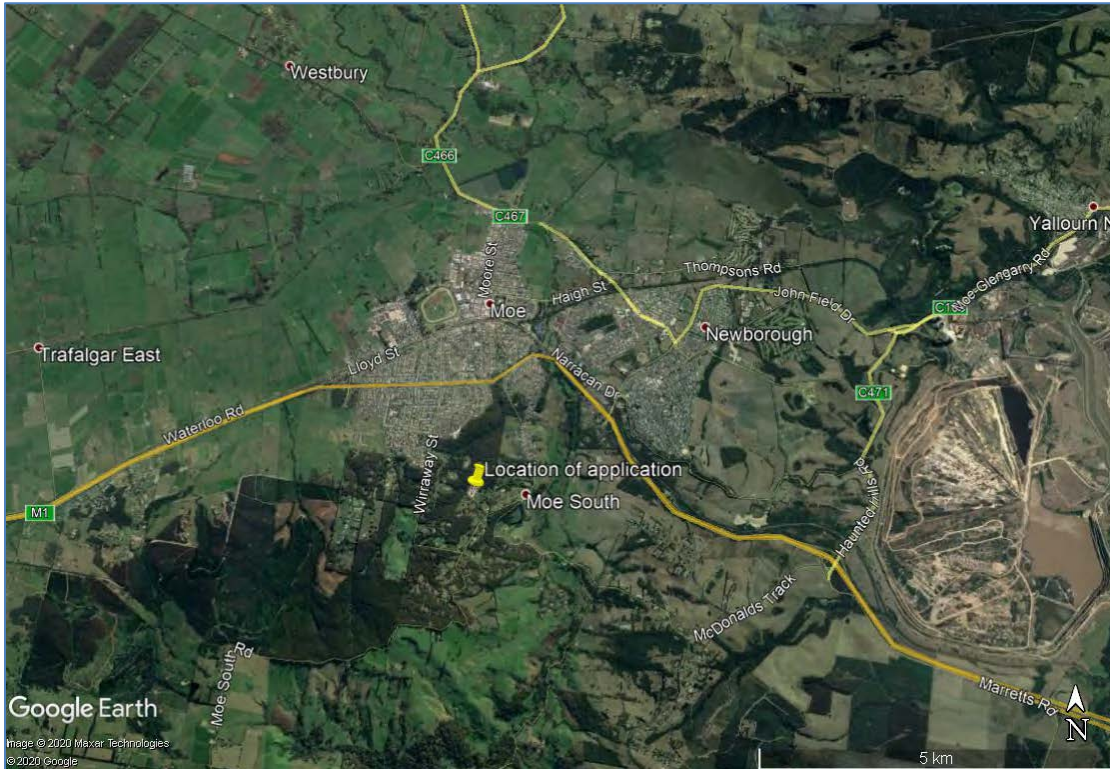


Figure Two: Location of Moe (Google Earth, 2020)

## 3.0 Planning Policy

### 3.1 State Planning Policy Overview

The planning assessment and response provided for the proposal needs to be considered against the State Planning Policy Framework in relation to bushfire. This consideration is provided below.

Clause 71.02-3 (integrated decision making) of the Planning Scheme has been recently amended and provides that:

*Planning authorities and responsible authorities should endeavour to integrate the range of policies relevant to the issues to be determined and balance conflicting objectives in favour of net community benefit and sustainable development for the benefit of present and future generations.*

*However in bushfire affected areas, planning authorities and responsible authorities must prioritise the protection of human life over all other policy considerations.*

Clause 13.02 (Bushfire) of the Planning Scheme applies to all decision making and seeks to:

*To strengthen the resilience of settlements and communities to bushfire through **risk-based planning** that prioritises the protection of human life.*

[Emphasis added]

Clause 13.02-1S includes a number of strategies to achieve that objective. Broadly these strategies include:

- prioritising the protection of human life;
- requiring a robust assessment of the bushfire hazard and risk assessment before any strategic or statutory decision is made; and
- directing population growth and new settlements to low risk locations.

Importantly in relation to protection of human life, Clause 13.02-1S includes the following strategies:

*Give priority to the protection of human life by:*

- *Prioritising the protection of human life over all other policy considerations.*
- *Directing population growth and development to low risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire.*
- *Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision making at all stages of the planning process.*

In relation to bushfire hazard identification and assessment, Clause 13.02-1S includes the following strategies:

*Identify bushfire hazard and undertake appropriate risk assessment by:*

- *Applying the best available science to identify vegetation, topographic and climatic conditions that create a bushfire hazard.*
- *Considering the best available information about bushfire hazard including the map of designated bushfire prone areas prepared under the Building Act 1993 or regulations made under that Act.*
- *Applying the Bushfire Management Overlay to areas where the extent of vegetation can create an extreme bushfire hazard.*
- *Considering and assessing the bushfire hazard on the basis of:*
  - *Landscape conditions - meaning conditions in the landscape within 20 kilometres (and potentially up to 75 kilometres) of a site;*
  - *Local conditions - meaning conditions in the area within approximately 1 kilometre of a site;*
  - *Neighbourhood conditions - meaning conditions in the area within 400 metres of a site; and*
  - *The site for the development.*
- *Consulting with emergency management agencies and the relevant fire authority early in the process to receive their recommendations and implement appropriate*

*bushfire protection measures.*

- *Ensuring that strategic planning documents, planning scheme amendments, planning permit applications and development plan approvals properly assess bushfire risk and include appropriate bushfire protection measures.*
- *Not approving development where a landowner or proponent has not satisfactorily demonstrated that the relevant policies have been addressed, performance measures satisfied or bushfire protection measures can be adequately implemented.*

In relation to settlement planning, Clause 13.02-1S includes the following relevant strategies:

*Plan to strengthen the resilience of settlements and communities and prioritise protection of human life by:*

- ...
- *Ensuring the bushfire risk to existing and future residents, property and community infrastructure will not increase as a result of future land use and development.*
- *Achieving no net increase in risk to existing and future residents, property and community infrastructure, through the implementation of bushfire protection measures and where possible reduce bushfire risk overall.*
- ...

In relation to areas of biodiversity conservation value, Clause 13.02-1S includes the following strategies:

*Ensure settlement growth and development approvals can implement bushfire protection measures without unacceptable biodiversity impacts by discouraging settlement growth and development in bushfire affected areas that are important areas of biodiversity.*

When these strategies are read together it is clear that the rezoning of the land is required to provide a considered assessment of the bushfire risk on existing residents and community infrastructure. The purpose of this report is to undertake such an assessment for the area contained in the proposal, including an assessment of the likely fire behaviour and the risk to existing residents and the community infrastructure (WTP).

In the context of strategic planning decisions, these strategies need to be read as on balance and consider the '*net increase in risk to existing ... residents, property and community infrastructure*'. As it relates to the objectives at Clause 13.02 of the Planning Scheme, it is necessary to ensure that the protection of human life is prioritised when decisions are made. However the strategies listed at Clause 13.02-1S in the Planning Scheme are not 'mandatory requirements' and it is not necessary to 'tick every box'. It is more important to ensure that decisions are consistent with the State policy objectives and build resilient communities.

## 3.2 State Planning Policy Assessment

### 3.2.1 Objective

Clause 13.02-1S seeks to *'strengthen the resilience of settlements and communities to bushfire through risk-based planning that prioritises the protection of human life'*.

### 3.2.2 Application

The policy must be applied to all planning and decision making under the Planning and Environment Act 1987 relating to land which is within a designated bushfire prone area; or subject to a Bushfire Management Overlay; or proposed to be used or developed in a way that may create a bushfire hazard.

#### Bushfire Prone Area

The planning proposal area is included in the Bushfire Prone Area (BPA) – Figure Three. As described in Planning Advisory Note 46 (2013), the BPA is a building regulation tool that identifies where moderate bushfire hazard can be expected. It applies to areas subject to the BMO, and to areas that experience a lower head fire intensity modelled to be between 4,000kW/m and 30,000kW/m. This level of hazard informs areas declared as bushfire prone in the building system. Areas at the upper end of the bushfire intensity range (that is 28,000kW/m and above and referred to as BHL1b) are considered, where appropriate, for applying the BMO based on the advice of the relevant fire authority.

The entire planning proposal site is subject to the BPA. The greater area in Moe South is also in the BPA reflecting the moderate bushfire hazard that can be expected from the grassland, woodland and forest tracts that characterize this area.



Figure Three: Extent of the Bushfire Prone Area across the site and in the vicinity (VicPlan, DELWP, 2020).

In December 2018, Clause 13.02-1S of the Latrobe Planning Scheme was amended to specifically refer to Bushfire Prone Areas and to strengthen the consideration of bushfire risk in all planning decisions. As the site is fully contained within the Bushfire Prone Area bushfire risk must be considered.

### Bushfire Management Overlay

The Bushfire Management Overlay applies to the entire site – Figure Four



Figure Four: Current extent of Bushfire Management Overlay on the site and nearby (VicPlan, DELWP, 2020).

As described in Planning Advisory Note 46 (2013), the BMO is a planning scheme provision used to guide the development of land in areas of high bushfire hazard. The location, design and construction of development and the implementation of bushfire protection measures must be considered under a BMO. The BMO applies to areas where there is potential for extreme bushfire behaviour, such as a crown fire and extreme ember attack and radiant heat.

The most significant bushfire hazard where head fire intensity is modelled to be 30,000kW/m or more informed where the BMO should apply. Inputs to this calculation included physical characteristics including vegetation, topography and separate fire behaviour models appropriate to the vegetation classification. Whilst areas of contiguous vegetation of less than 4Ha were excluded, buffers within 150 metres of vegetation were included in recognition of research that 92% of house loss occurs within this distance (Blanchi, Lucas, Leonard, & Finkle, 2010).

Initiated by a recommendation of the 2009 Victorian Bushfires Royal Commission, the BMO was mapped using hazard data developed by the Department of Environment and Primary Industries (DEPI). Revised mapping was verified by Councils during 2016 and 107 and then gazetted on October 3<sup>rd</sup>, 2017. As a result, the consideration of bushfire risk has informed this proposal.

### 3.2.3 Strategies

#### Protection of human life

| <i>Give priority to the protection of human life by:</i>  | <i>Response</i>  |
|---|--|
| <p>Prioritising the protection of human life over all other policy considerations</p>   | <ul style="list-style-type: none"> <li>• The land has been deemed as required to enable the expansion of the Moe South WTP and meet the requirements of the land manager, Gippsland Water.</li> <li>• The northern parcels are currently zoned Public Use Zone – Schedule 1 however the southern parcel is proposed to be rezoned from Rural Living Zone – Schedule 1 to Public Use Zone – Schedule 1. The land must be rezoned to a zone suitable for public purposes.</li> <li>• The proposal does not introduce a residential zone, or a zone where an ‘as of right’ will exist for dwellings (i.e. a permit trigger will exist for an application on any part of the subject land for a dwelling through either the zone or an overlay). In fact, the proposal is to demolish the existing dwelling (former caretaker’s residence).</li> <li>• The proposed new zone does not provide assumptions for the future ability to subdivide land nor include purposes that premise residential land uses. Given the combined nature of the Planning Scheme Amendment with a Planning Permit there is a high level of certainty that residential outcomes for the site are not pursued or continued.</li> <li>• The proposed Public Use Zone – Schedule 1 recognises the land use for public utility and community services and facilities and to provide for associated uses that are consistent with the intent of the public land reservation or purpose.</li> </ul> |
| <p>Directing population growth and development to low risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire.</p> | <ul style="list-style-type: none"> <li>• The surrounding landscape is diverse in its zoning, land use and development patterns attributable to the mix of development including established rural living (immediate surrounds), new residential to the north west, public conservation land to the north and established conventional residential to the north.</li> <li>• The southern parcel for rezoning and</li> </ul>   |

|  |   |
|--|---|
|  | development increases the separation from the bushfire hazard for the neighbor's dwelling to the south.   |
| Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision-making at all stages of the planning process. | The identification of this land for development and expansion of the WTP ensures that valued vegetation can be retained. The use of the additional parcel of land for a development that is largely devoid of vegetation, constructed of non-combustible materials and containment of water decreases the bushfire risk to existing dwellings directly south in Alvina Court. The rezoning of the land provides a clear direction for the proposal, particularly as it is accompanied by a planning permit application. |

#### Bushfire hazard identification and assessment

| <i>Identify bushfire hazard and undertake appropriate risk assessment by:</i>  | <i>Response</i>   |
|--|---|
| Applying the best available science to identify vegetation, topographic and climatic conditions that create a bushfire hazard.   | The Latrobe Planning Scheme requires the proposal to respond to bushfire based on current assessment methods. Clauses 13.02, 44.06 and 53.02 are considered for the land with the importance of bushfire planning being strengthened by Clause 71.02-3 <i>Integrated Decision Making</i> . The assessment method aligns with AS3959-2018, and is provided in this report (see Section 4).               |
| Considering the best available information about bushfire hazard including the map of designated bushfire prone areas prepared under the Building Act 1993 or regulations made under that Act.   | Consistent with the revised Clause 13.02, the proposal must respond to the Bushfire Prone Area. This report demonstrates that a site-specific response is achieved with consideration of the type of development, the importance of the community infrastructure and minimizing negative impacts to the greater area.   |
| Applying the Bushfire Management Overlay in planning schemes to areas where the extent of vegetation can create an extreme bushfire hazard   | The BMO applies to the land. The development proposed is a use not prescribed in Clause 44.06-2 of the BMO. However, the BMO application to the land reinforces the high fire danger of the area as addressed by this report and the proposed development.  |
| Considering and assessing the bushfire hazard on the basis of: <ul style="list-style-type: none"> <li>• Landscape conditions - meaning the conditions in the landscape within 20 kilometres and potentially up to 75 kilometres from a site;</li> <li>• Local conditions - meaning conditions in the area within approximately 1 kilometre from a site;</li> <li>• Neighbourhood conditions - meaning</li> </ul> | In light of the recent changes to Clause 13.02 and the addition of this assessment requirement, an assessment is provided in Section 4.0 of this report. As it is a rezoning, three scales of consideration are applied - Landscape conditions at 20km, Local conditions at 10 km, and Neighbourhood conditions at 1km. The site conditions are considered through the Bushfire Hazard Site Assessment. |

|   |  |
|---|--|
| <p>conditions in the area within 400 metres of a site; and,</p> <ul style="list-style-type: none"> <li>• The site for the development</li> </ul>  |  |
| <p>Consulting with emergency management agencies and the relevant fire authority early in the process to receive their recommendations and implement appropriate bushfire protection measures.</p>  | <p>CFA is not a formal referral authority for the proposal however the view of CFA is required for the Planning Scheme Amendment to proceed. Initial CFA comments have been received and responded to in the design and this report (Appendix Three).</p>  |
| <p>Ensuring that strategic planning documents, planning scheme amendments, planning permit applications and development plan approvals properly assess bushfire risk and include appropriate bushfire protection measures</p>                     | <p>The content of this report provides a solid foundation for the proposal to proceed. The planning permit can be conditioned to ensure that the development implements appropriate bushfire protection measures (e.g. defensible space, water supply and emergency planning).</p>   |
| <p>Not approving development where a landowner or proponent has not satisfactorily demonstrated that the relevant policies have been addressed, performance measures satisfied or bushfire protection measures can be adequately implemented.</p> | <p>This element of the revised Clause 13.02 is the most important element and empowers the Responsible Authority to not approve a permit application until it is satisfied with the bushfire protection measures being implemented. Gippsland Water fully understand their land ownership requirements including stewardship of the land and its values. An integrated response to the bushfire mitigation measures is provided that is embedded in the inherent operations of the site (Section 5). Gippsland Water can readily implement the bushfire protection measures and satisfactorily has addressed bushfire policy of the Latrobe Planning Scheme.</p> |

### Settlement Planning

|   |   |
|---|---|
| <p><i>Plan to strengthen the resilience of settlements and communities and prioritise protection of human life by:</i></p>  | <p><i>Response</i></p>  |
| <p>Ensuring the bushfire risk to existing and future residents, property and community infrastructure will not increase as a result of future land use and development.</p> | <p>The proposed rezoning of the land enables the construction of the new basin and associated infrastructure. By virtue of its construction and operating characteristics, the infrastructure will deliver a reduced risk of bushfire to the neighboring landowners to the south. Additionally, the construction will enable the WTP to undertake maintenance works on their infrastructure ensuring water quality specifications are retained for the community the infrastructure services. The current infrastructure does not enable this flexibility. The design response delivers a robust solution within the constraints of the land and the existing infrastructure provision.</p> |

|   |   |
|---|---|
| <p>Achieving no net increase in risk to existing and future residents, property and community infrastructure, through the implementation of bushfire protection measures and where possible reduce bushfire risk overall.</p> | <p>Currently, the proposal provides a design response that considers the presence of conservation values, the desired future use of the land, and the existing interfaces. Of note, the increase in separation for the adjacent existing dwellings from the forest vegetation in the west is optimal. Ready access is achieved between the basin and the hazard, and the easement in the neighbors land provides a defensible fire fighting location to taking advantage of the separation created and maintaining visibility of the hazard and accessibility to the infrastructure to be protected. This development will decrease the risk of bushfire to the existing residents, and decrease the potential for the water treatment services to be detrimentally affected.</p> |
|---|---|

#### Areas of high biodiversity conservation value

Ensure settlement growth and development approvals can implement bushfire protection measures without unacceptable biodiversity impacts by discouraging settlement growth and development in bushfire affected areas that are of high biodiversity conservation value.

Response: The site has a presence of conservation area to the north and west. These areas have been considered in the assessment of bushfire risk, and the decision of Gippsland Water to purchase the land for construction of a large portion of the basin. This decision 'avoided' additional removal of native vegetation. The development is an example of where siting for native vegetation outcomes is complementary to a reduction in the risk of bushfire.

#### 3.2.4 Policy guidelines

| Planning must consider as relevant:  | Response  |
|--|---|
| Any relevant approved State, regional and municipal fire prevention plan.                            | This has been considered in this report which can be used to inform future planning permit application assessments.   |
| AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).          | This is relevant through the derivation of Bushfire Attack Levels, and is considered for the site assessment process. |
| Building in bushfire-prone areas - CSIRO & Standards Australia (SAA HB36-1993, May 1993).            | This is the handbook to AS3959-2009 and is not of relevance to this type of application.                              |
| Any Bushfire Prone Area map prepared under the Building Act 1993 or regulations made under that Act. | The updated Bushfire Prone Area map has been considered in this report.   |

## 4.0 Bushfire Risk

In light of the recent changes to Clause 13.02 and the addition of this assessment requirement, an assessment on bushfire risk consistent with Clauses 13.02, and 44.06 is provided. As it is a Development Plan area, three scales of consideration are applied - Landscape conditions at 20km, Local conditions at 10 km, and Neighbourhood conditions at 1km. The site conditions are considered through the Bushfire Hazard Site Assessment.

### 4.1 Landscape Conditions

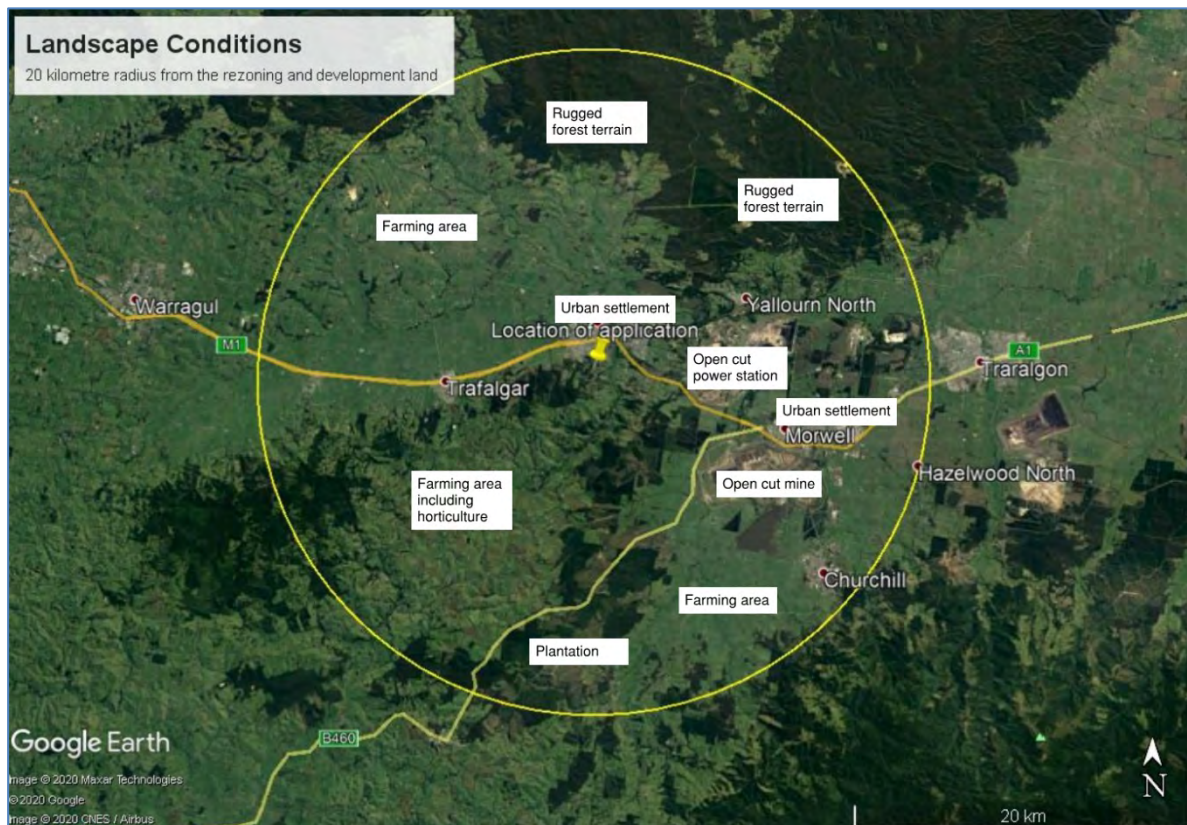


Figure Five: Location within the context of 20km radius from the site (Google Earth, 2020)

The landscape risk of a site is an important consideration when mitigating bushfire hazards – Figure Five. The landscape risk is the combination of a number of elements in the surrounding landscape. These relate to the vegetation extent, the area available to a landscape bushfire, the orientation of the ridgelines and the steepness of the terrain, the accessibility to low threat areas and the quality of the road networks surrounding the site.

Within 20 kilometres of the site, key features include:

- The extensive grassland for farming along the highway corridor and in the farming highlands to the south-west
- Rugged forest terrain to the north and plantation in the south
- Open-cut mines to the east
- Urban settlement along the Princes Highway traversing east to west

This site is positioned on the southern side of the Moe township between amidst rural living parcels. The vegetation in the broader landscape is forest, woodland and grassland. The location has a moderate risk of bushfire. Of influence is the limited fire run and lack of connectivity between the northern forest and the southern forest. Management of this site, provides a greater level of protection to the allotments to the south.

## 4.2 Local Conditions

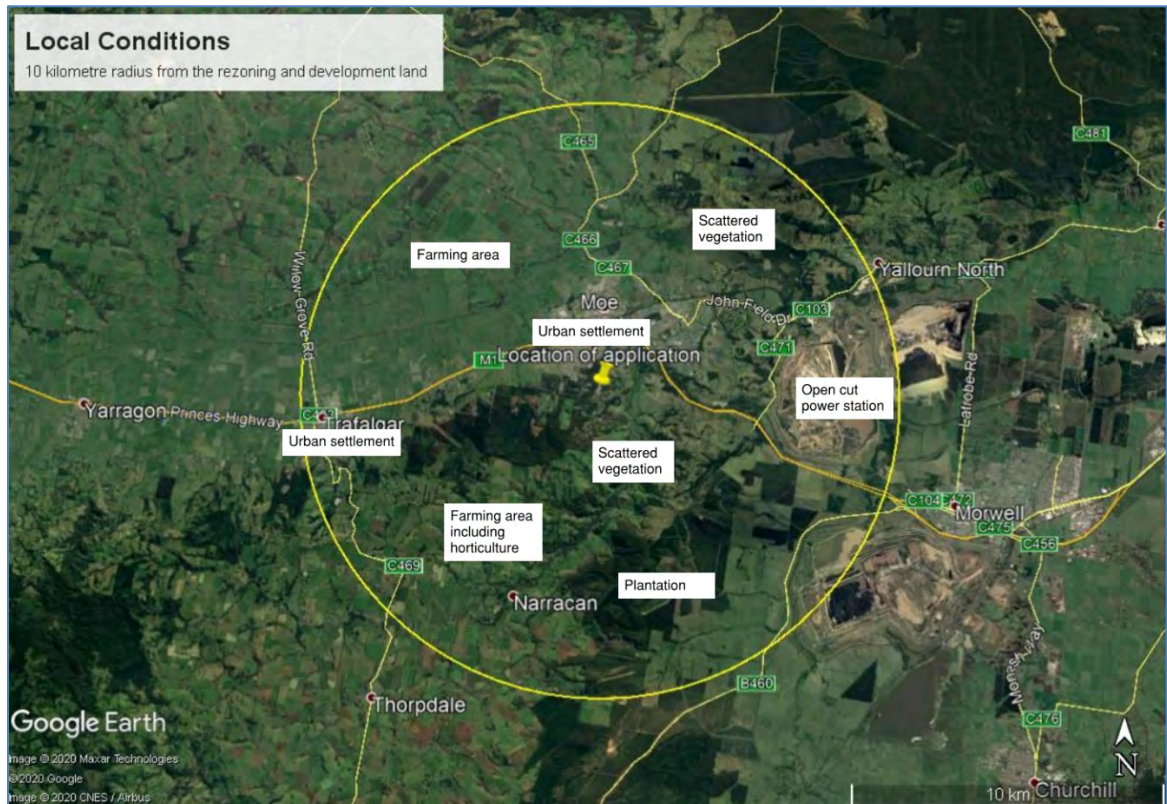


Figure Six: Location within the context of 10km radius from the site (Google Earth, 2020)

Within 10 kilometres of the site – Figure Six, key features include:

- The urban settlements of Traralgon and Moe
- The Princes Highway extending west to east, being the main route through Gippsland
- The predominance of grassland
- Two main tracts of vegetation – one on the northern aspect of the Strzelecki Range and approaching the site from the west; and the second tract approaching from the south
- The presence of the open cut power station to the east
- The presence of farmland (grassland) between the settlements

### 4.3 Neighbourhood Conditions

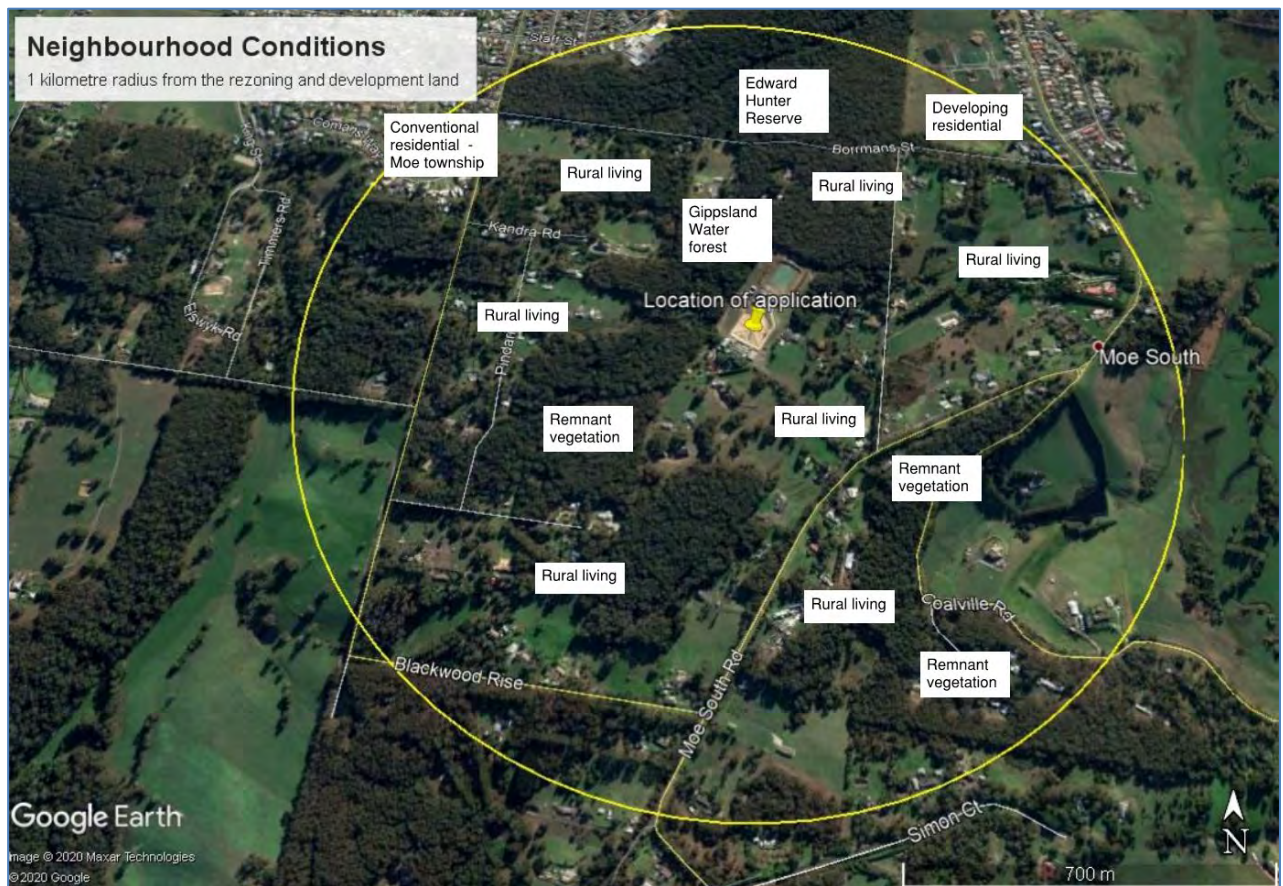


Figure Seven: Location within the context of 1km radius from site (Google Earth, 2020)

Key features located within 1 kilometre of the site – Figure Seven - include:

- Established residential area to the north-west and developing residential in the north-east;
- Edward Hunter Reserve to the north
- Patches of dense remnant vegetation with sufficient connectivity to carry fire through the area
- Excellent road connectivity
- Proximity to a BAL-LOW area in the Moe Township to the north-west
- Extensive rural living areas

### 4.4 Bushfire Scenarios

#### Scenario 1 – Bushfire from the north

The worst scenario for this site is a fire approaching from the north which has the potential for a 1300 metre fire run through forest vegetation. The vegetation from the Edward Hunter Reserve in the north is connected through rural living land to the forest vegetation on the WTP land. Fire prevention works occur in the Edward Hunter Reserve however the extent of works is not sufficient to prevent an ignition or a fire run. This fire has the ability to run through to the south of the plan into the rural living area. This fire scenario is likely to provide radiant heat and embers to the site. This fire is not a landscape fire, but a localised fire threat that will respond to response and fire mitigation.

### Scenario 2 – Bushfire from the South

To the south is a rural living area managed as low threat vegetation and grassland. Some remnant vegetation is located further south and could ignite the grassland and could provide ember attack as it has a fire run through forest and woodland of approximately 300 metres.

### Scenario 3 – Bushfire from the west

A fire approaching from the west is likely to arise from the flank of a Scenario 1 fire. This fire would be a local fire and will present radiant heat and ember attack to the site from a fire run of 100 to 300 metres.

## 4.5 Bushfire Hazard Site Assessment

The vegetation in the area was classified according to AS 3959:2018, Technical Guide: Planning Permit Applications Bushfire Management Overlay (DELWP, 2017) and the Overall Fuel Hazard Assessment Guide (DSE, 2010). The AS 3959:2018 approach uses a generalised description of vegetation based on the AUSLIG (Australian Natural Resources Atlas” No.7 Native Vegetation) classification system. According to this method, vegetation can be classified into seven categories. Each category indicates a particular type of fire behaviour and these categories or classifications are then used to determine bushfire intensity. An indication of the Ecological Vegetation Classes in the landscape is provided below in Figure Eight.

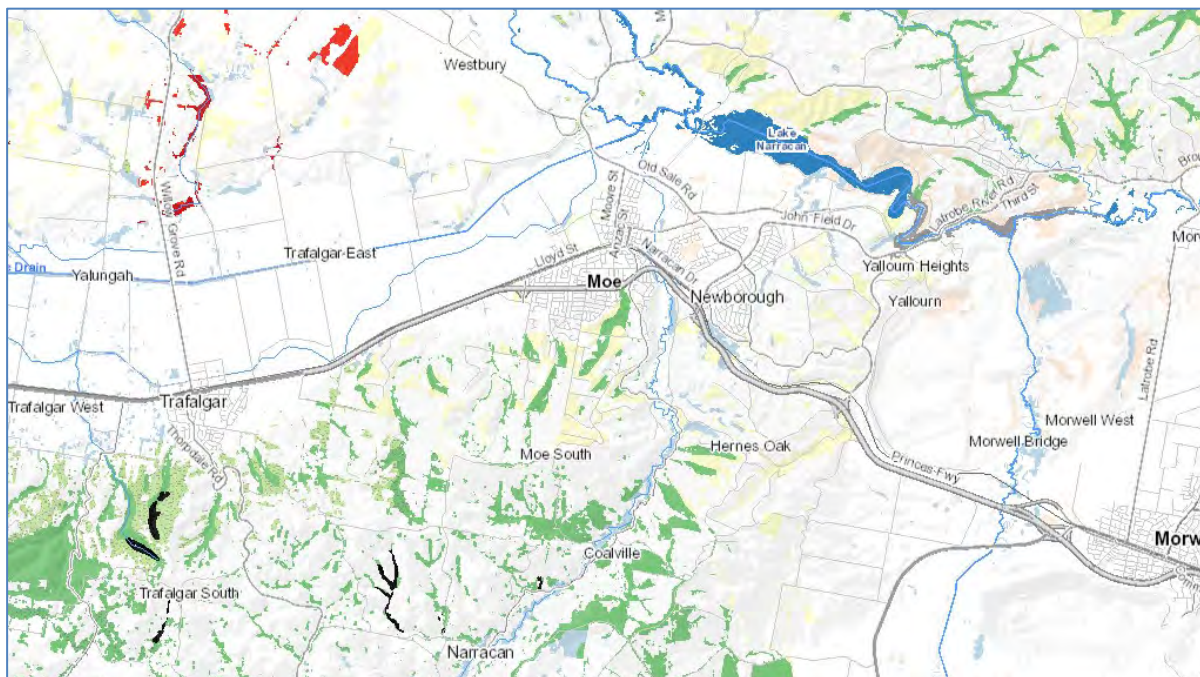


Figure Eight: Vegetation in the area – Damp Forest (green), Lowland forest (yellow), and Warm Temperate Rainforest (black)(Source: Naturekit, 2020)

A Bushfire Hazard Site Assessment has been prepared for the land and focused on the development area which includes the land to be rezoned and part of the exiting site – Figure Nine.

# Planning Map

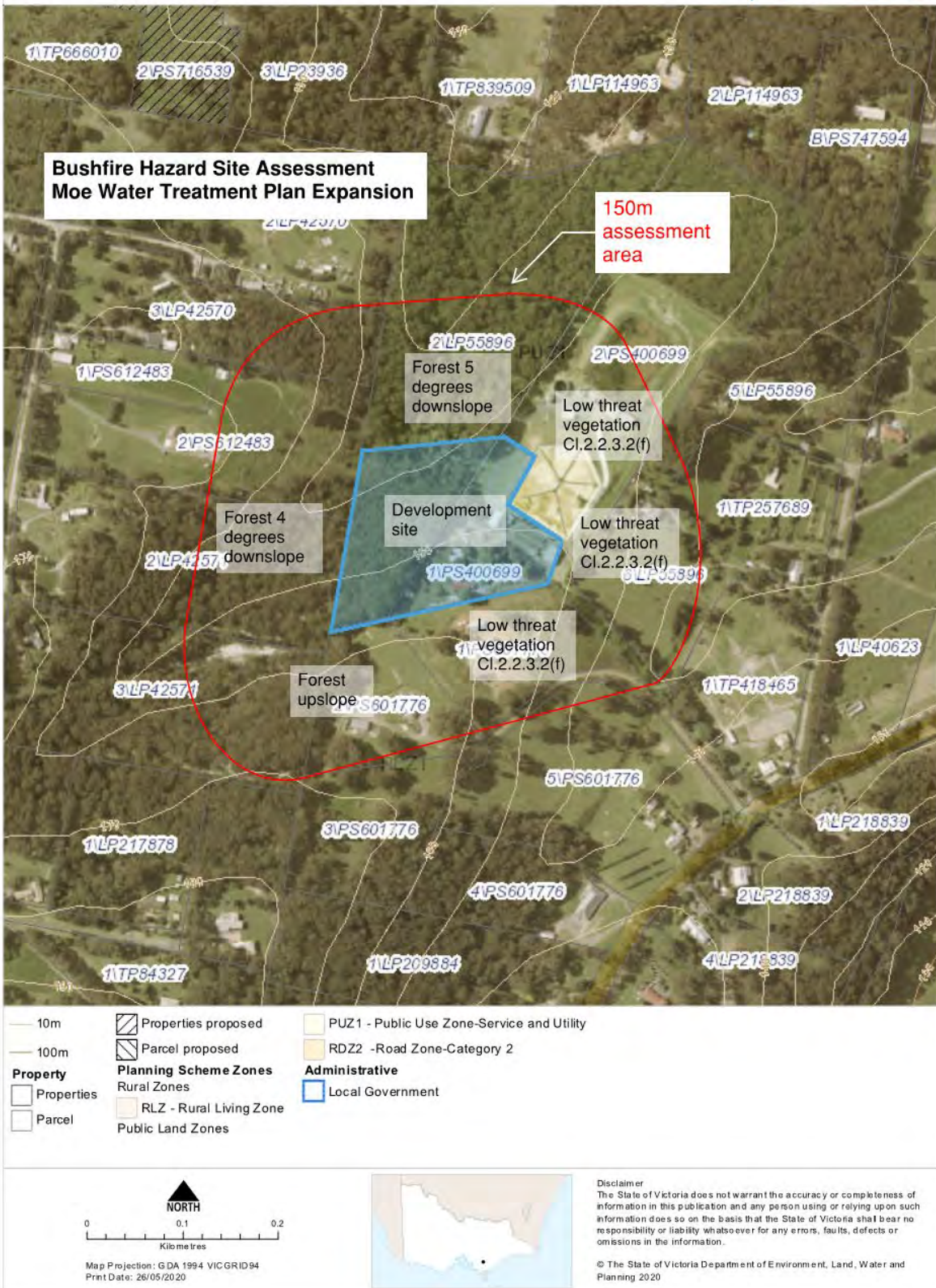


Figure Nine: Bushfire Hazard Site Assessment for the site

Vegetation Classification: Forest

AS3959:2018 Definition:

*Open forest or Low open forest – Trees 10-30 m high; 30-70% foliage cover (may include understorey of sclerophyllous low trees and tall scrubs or grass). Typically dominated by eucalypts.*

Site Description:

The proposed dwelling has forest with a 4 degree downslope to the west, a 5 degree downslope to the north and upslope to the south-west. The separation of the forest from the access track at the toe of the batter of the basin varies from 5 to 20 metres depending on location. The effect of the forest is to provide radiant heat and ember attack. The radiant heat from any fire other than a low intensity fire will prevent fire suppression vehicles operating on the northern and western sides of the new basin. Increased separation exists around the existing basin. Firefighting vehicles are better positioned within the southern neighbour's land as they will be exposed to a reduced radiant heat (approximately 160 metres of separation), have a clear working space and be close to the infrastructure requiring protection. The easement along the boundary prevents built form, and enables access.



Image – Forest to the west of the parcel to be rezoned, where it will be removed for construction



Image (above) – Forest to the north of the proposed basin, near one of the proposed stockpiles.

Image (below) – The forest interface to the west of the existing basin

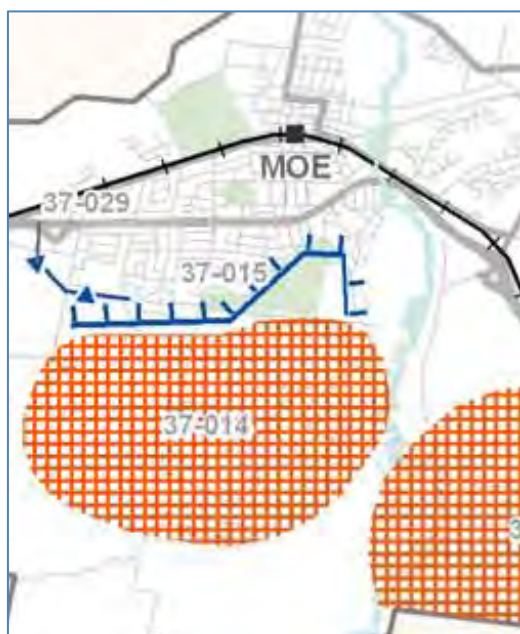


## 4.6 Other considerations in relation to bushfire

The Regional Bushfire Planning Assessment (RBPA) for the Gippsland Region (2012) provides a high level analysis of locations where the bushfire hazard may impact on planning objectives. The RBPA provides information where a range of land use planning matters intersect with a bushfire hazard to influence the level of risk to life and property from bushfire. This information is required to be used as part of strategic land use and settlement planning at the regional, municipal and local levels.

*“The RBPA is not a statutory planning provision and does not directly translate into planning schemes. However, it complements planning scheme provisions such as the Bushfire Management Overlay (BMO) by providing spatial and qualitative information from a variety of sources which together can inform considerations about where bushfire should be assessed early in the strategic planning process.”* RBPA – Gippsland Region (2012).

Of particular note, the identified area codes of 37-014 and 37-015 relate to the bushfire hazard interface between the land and the Moe Township (Figure Ten), and are detailed as:



- 37-014 Moe South - Cluster of medium size rural-residential lots in a rural landscape, with dense and scattered vegetation located throughout. The northern boundary of the settlement interfaces with the Edward Hunter Heritage Reserve.
- 37-015 Moe South - Southern boundary of small residential lots in Moe South interfaces with a bushfire hazard.

Figure Ten: Extract from Latrobe Municipal Map – Map 2 contained in the Regional Bushfire Planning Assessment – Gippsland Region (2012)

Areas that constitute ‘BAL-LOW’ are provided by the existing residential area north-west in Moe township.

AS 3959:2018 defines that the Bushfire Attack Level shall be classified BAL-LOW where the vegetation is one or a combination of any of the following:

### 2.2.3.2 Exclusions – Low threat vegetation and non-vegetated areas

The following vegetation shall be excluded from a BAL assessment:

- (a) Vegetation of any type that is more than 100 m from the site
- (b) Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified vegetation.
- (c) Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each

other or of other areas of vegetation being classified vegetation.

- (d) Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified vegetation.
- (e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.
- (f) Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks.

NOTES:

- 1. Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack (recognizable as short-cropped grass for example, to a nominal height of 100 mm).
- 2. A windbreak is considered a single row of trees used as a screen or to reduce the effect of wind on the leeward side of the trees.

Low threat vegetation occurs to the south in the closest rural living lots that have mown lawns and minimal vegetation around their dwellings. There are also non-vegetated areas occupied by houses, roads, and the WTP.

Image (below) – Low threat vegetation (minimal landscaping, hard paved surfaces) around the existing plant.





Image (above) – Low threat vegetation adjacent dwelling to the south

There is no recorded fire history in the immediate area for the vegetation, which is typical given the damp nature of the vegetation and proximity to settlement (Figure Eleven).

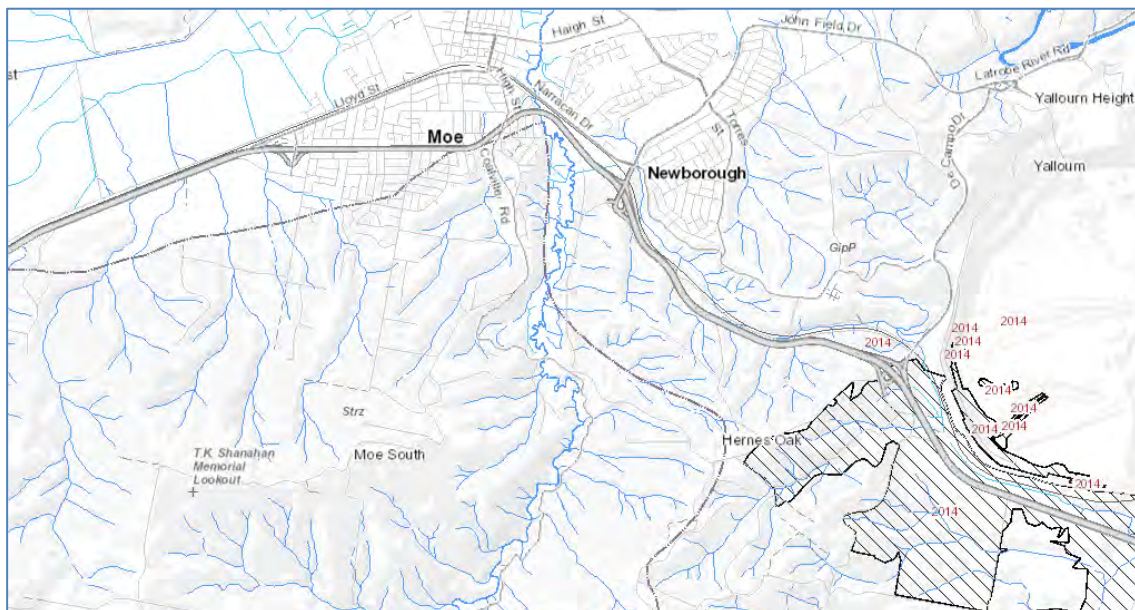


Figure Eleven: Fire history in the nearby area – predominantly the 2014 fire along the Princes Highway (Naturekit, 2020).

#### 4.7 Municipal Fire Prevention Plan

The Municipal Fire Prevention Plan identifies fire risk and the works to be undertaken to mitigate that bushfire risk. The Municipal Fire Prevention Officer should be considered for internal referral when considering applications providing a new use or enhancement of vegetation. In this case, the existing use of the Moe WTP is being extended across an adjacent parcel of land and provides a reduction in the risk of fire by the removal of vegetation to enable the development.

#### 4.8 Surrounding Road network

The site is accessed by a dedicated driveway approximately 298 metres long and extending north-west from Moe South Road. Moe South Road is a main access road through the area.

The site access (top) and the Moe South Road (bottom)







The buildings associated with the new basin are located with the greatest separation from the hazard being proximal to the existing buildings. As is usual practice these buildings will be constructed of concrete, masonry and metal with minimal combustible items contained inside and external to the buildings. The immediate surrounds of the buildings will be non-vegetated and all-weather surface providing for ease of maintenance and decreased opportunity for ember attack to ignite them.

#### 5. Water supply

A water connection point is to be installed on the distribution pipeline which reaches the site from the 1ML Moe South Tank (Full Supply Level 211m AHD) and is received at sufficient pressure and flow to enable firefighting (150m AHD) as shown in Appendix Five. The installation location will be in accordance CFA advice but will be within 4 metres of fire vehicle access. The location will be considered alongside written advice received from CFA with regards to the fire protection requirements for building and dangerous goods. The water supply is guaranteed, and separate from the treatment facility so there is no concern of contamination from firefighting vehicles. This design response is more inherent to normal operations than the provision of static water supply for firefighting.

#### 6. Emergency Planning

The site already has legislative requirements for emergency planning. As the development will incur a change in the site operations, the emergency plan will be reviewed and will ensure that the operations of the site are refined for days of high fire danger and at times when there is a fire occurrence in the locality. The site already has the ability to be remotely operated and this is acknowledged in the site's existing emergency planning. It is important that Gippsland Water consider the risk of bushfire for its operations, its staff and the dangerous goods kept onsite. A specific Bushfire Management Plan has not been prepared for endorsement as part of planning approvals as there is no permit requirement for the proposal in Clause 44.06 of the Latrobe Planning Scheme. The bushfire mitigation measures are best considered in conjunction with the site's operations and the full emergency management planning process.

#### 7. Landscaping

The existing site has demonstrated that minimal landscaping is undertaken. The existing row of cypresses on the southern lot being rezoned is proposed to be replaced with 'lily-pilly' (*Acmena smithii*) or similar to provide screening for the dwelling to the south. As the land to the south is mown grass, it is considered to be 'low threat vegetation'. A single row of trees (lily-pillies for example) is appropriate to be planted as a screen and would constitute a 'low threat' or 'excludable' vegetation in AS3959:2018 as they would meet the definition of a windbreak, or similar. GHD have used the 'Plant Selection Key' and the advice in *Landscaping for Bushfire: Garden Design and Plant Selection* (CFA, 2011) to guide the plant choice.

## 6.0 Conclusion

As detailed in the report and provided in more detail in Section 5.0, the proposal is an appropriate response to the bushfire considerations of the Latrobe Planning Scheme. The development design and the application to amend the zone of the southern portion of land, considers its place in the broader context of Moe, the contribution to community of the infrastructure and its local context. The proposal decreases the bushfire risk to the existing residents.

## 7.0 References

AN68 Bushfire State Planning Policy VC140

Blanchi, R., Lucas, C., Leonard, J., & Finkele, K. (2010). Meteorological conditions and wildfire-related house loss in Australia. *International Journal of Wildland Fire*, 19(7), 914-926.

CFA (2011) *Landscaping for Bushfire: Garden Design and Plant Selection*.

[https://www.cfa.vic.gov.au/documents/20143/72271/landscaping\\_for\\_bushfire.pdf/1c6084e1-159e-a820-b0b3-6dc077e661c0](https://www.cfa.vic.gov.au/documents/20143/72271/landscaping_for_bushfire.pdf/1c6084e1-159e-a820-b0b3-6dc077e661c0)

GHD (2020) *Strategic Assessment Report: Moe Water Treatment Plant Expansion Proposed Planning Scheme Amendment and S96A Planning Permit Application for Gippsland Water*.

Standards Australia (2018) *Construction of Buildings in Bushfire Prone Areas*. Standards Australia, North Sydney, NSW.

The State of Victoria Department of Environment, Land, Water and Planning (2017) *Planning Permit Applications Bushfire Management Overlay – Technical Guide*.

The State of Victoria Department of Planning and Community Development (2012) *Regional Bushfire Planning Assessment – Gippsland Region*.

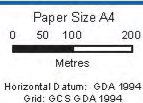
The State of Victoria Department of Transport, Planning and Local Infrastructure (2014) *Planning Practice Note 64 – Local Planning for Bushfire Protection*. Victorian Government, Melbourne.

The State of Victoria Department of Transport, Planning and Local Infrastructure (2013) *Planning Advisory Note 46: Bushfire Management Overlay Mapping Methodology and Criteria*. Victorian Government, Melbourne.

# Appendix One – Location Plan



- LEGEND**
- 58 Moe South Road Moe South
  - 58 Moe South Road Moe South
  - Contours 10m
  - Road
  - Stream
  - Drain/Channel/Other
  - Watercourse
  - Edward Hunter Heritage Bushland Reserve



Gippsland Water  
Moe WTP Rezoning

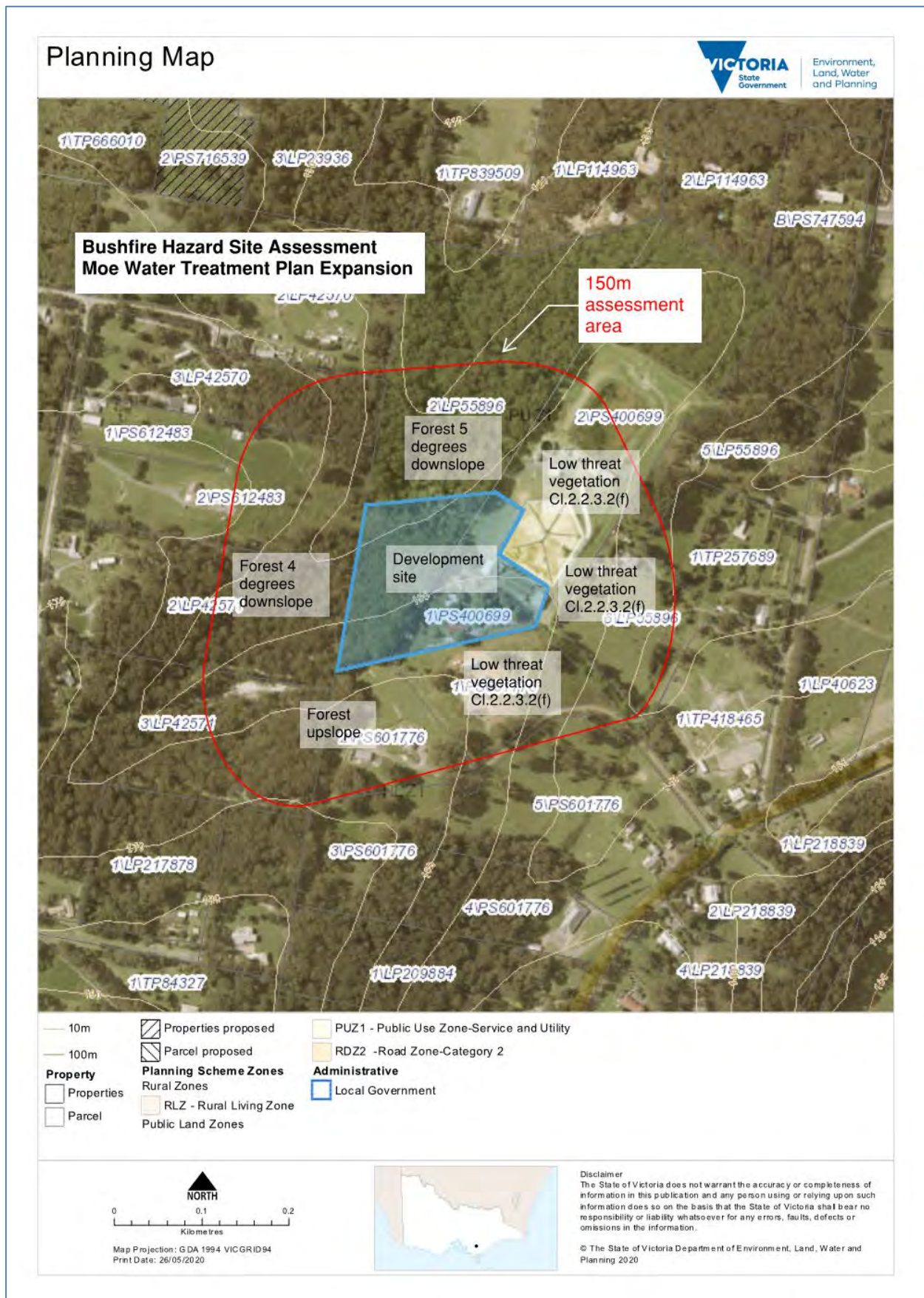
Job Number 31-12516874  
Revision B  
Date 08/04/2020

Locality

Figure 1

6:\31\12516874\GIS\Maps\Deliverables\31\_12516874\_KBM\_A4P.mxd  
180 Lonsdale Street Melbourne VIC 3000 Australia T 61 3 8687 8000 F 61 3 8687 8111 E mel@mail@ghd.com W www.ghd.com  
© 2020. Whilst every care has been taken to prepare this map, GHD (and DATA CUSTODIAN) make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.  
Data source: DELWP, Vicmap, 2019; GHD, 2019; Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Created by: cjanua

Appendix Two – Bushfire Hazard Site Assessment



## Appendix Three – CFA preliminary comments

Patron: The Honourable Linda Dessau AM, Governor of Victoria



**Fire Safety Referrals**  
**Fire & Emergency Management**  
Email: [firesafetyreferrals@cfa.vic.gov.au](mailto:firesafetyreferrals@cfa.vic.gov.au)  
Telephone: 03 9262 8578

**Our Ref: 27000-441254-96092**

16 December 2019

Katrina Lee  
GHD  
LVL 18180 Lonsdale Street  
MELBOURNE VIC 3000

Dear Katrina

### PRELIMINARY COMMENTS ON DRAFT AMENDMENT MATERIAL

**Proposal:** Rezone Moe Treatment Plan to Public Use Zone / Buildings and works  
**Location:** 58 Moe South Road Moe South

Thank you for providing some preliminary material and seeking to meet with CFA to discuss the future rezoning of the land and additional buildings and works at the site.

Following on from our discussion last week and to assist in further preparation of relevant material, CFA can provide the following preliminary advice for your consideration:

- It is likely that CFA would support the rezoning of the land to Public Use Zone/ buildings and works at the site, subject to the inclusion of an appropriate response to bushfire.
- The proposal may seek to consider:
  - Including an area of managed vegetation adjacent the site boundaries that have an immediate interface with a bushfire hazard. These areas could include fire access tracks to enable easier and safer fire fighting on the site.
  - Ensure new vegetation to be planted on the site is provided in accordance with defendable space requirements (these can be found in Table 6 of Clause 53.02).
  - Design and site buildings to respond to the bushfire risk.
  - Minimising and managing vegetation around buildings, it is recommended that this concept be applied to the whole site, including existing buildings. From the aerial images, it appears that this is already being undertaken.
  - Provide a static water supply to assist in the protection of buildings on the site in the event of a fire. Using the water within the basins on the site is unlikely to be suitable for fire fighting, given the location of the water and potential for contamination to the drinking water supply. A 40,000 litre static water supply is recommended.
  - Ensuring a bushfire emergency management plan is developed to manage staff on the site and what to do to protect the infrastructure in the event of a bushfire. Gippsland Water may already have a plan in place that could form part of the information incorporated into the

future application to demonstrate that this has been done (it may need amendment to cater for any change at the site).

- The amendment documentation and explanatory report should address policy at Clause 13.02-1S. CFA recognises that an application like this one is likely to be a little more difficult to interpret in the context of the current policy and we have therefore provided more commentary than would be typical to assist in developing an appropriate policy response. CFA would recommend the inclusion of a bushfire report that includes information that considers the following:
  - Landscape bushfire risk (i.e. include a description of the bushfire risk beyond the site – information to assist you to develop a bushfire landscape assessment can be found in the DELWP Technical Guide for BMO applications. Whilst it is not a strategic assessment guideline, it is a useful tool to be able to refer to if you are not familiar with bushfire landscape assessments).
  - Alternative locations – Clause 13.02-1S includes consideration around settlement growth and alternative locations. CFA recommends that you include some discussion around the site and its context and importance as a community asset. Similar to that which you have provided in the table in your earlier email.
  - Availability of safer areas – Again, this type of proposal does not fit easily into the policy assessment, however, it would be beneficial for the amendment material to identify access and egress routes in the event of an emergency and identify what people at the site will do in the event of a bushfire (this is likely to link back to the required emergency management plan).
  - Site based exposure – Clause 13.02-1S identifies radiant heat exposure benchmarks for new development – this will not be applicable to the buildings and works on the site. However, it is recommended that the amendment material identify that siting, construction and building design has been considered and will reasonably respond to the bushfire risk, also what is being done around the site/buildings to manage and minimise risks i.e. link to the need to manage vegetation and that this will be done to defensible space standards. Locking in the management of vegetation should also be addressed i.e. will it form part of a maintenance plan at Gippsland Water, will a vegetation management plan be developed?
  - Areas of high biodiversity – CFA recommends that this be addressed in the report, although this is not an issue for CFA to comment on, it is still a relevant policy consideration under Clause 13.02-1S.
  - No increase in risk and Community Resilience – Include some information that captures all the bushfire protection measures being used and identify the strategic importance of the asset, including that it is located adjacent areas of hazard and will act as a buffer to more sensitive uses.

CFA apologises that we were not able to facilitate a meeting before Christmas however we welcome the opportunity to discuss the proposal in more detail in the new year and once some more detailed amendment material becomes available.

Yours sincerely



**Anne Coxon**  
Land Use Planning Team Manager  
Fire & Emergency Management



**Fire Safety Referrals**  
**Fire & Emergency Management**  
Email: [firesafetyreferrals@cfa.vic.gov.au](mailto:firesafetyreferrals@cfa.vic.gov.au)  
Telephone: 03 9262 8578

**Our Ref:** 27000-441254-99535  
**Telephone:** 9262 8578  
**Council Ref:** C124

13 May 2020

Karen Egan  
Latrobe City Council  
P OBox 264  
**MORWELL VIC 3840**

Dear Karen

#### LETTER OF ADVICE

**Proposal:** PRELIMINARY COMMENT AMENDMENT C124  
**Location:** Moe Water Treatment Plant - 58 & 56 Moe South Road Moe South

Thank you for your email raising matters you wish to discuss with CFA in relation to the proposed Moe Water Treatment Plant Upgrade. This feedback is intended to assist in the Bushfire response for your request under Section 96A of the Planning and Environment Act 1987 to the rezone land and upgrade of the Moe Water Treatment Plant. This feedback responds to an email from GHD on CFA dated 7 April 2020 and a request from Latrobe Council to provide preliminary advice on the application. C

CFA provided preliminary advice to GHD (Katrina Lee) on 16 December 2020. Information considered included a draft locality plan (Figure 1, Job No 31-12516874, Rev A, Date 22/11/2019), Land Tenure Plan (Figure 2, Job No. 31-12516874, Rev A, Date: 24/11/2019) and draft Functional Design Drawings (Job No 31-37346-G001, Coo2, , 12WTO1, Drawing No A1, 22/11/19). CFA's response is included as Appendix 5 in the submitted Strategic Assessment Report (GHD, April 2020).

CFA can provide the following additional comments on the proposed Amendment / Planning Permit Application:

- No landscape or bushfire hazard site assessment has been prepared in support of the application. Rather the proposal includes permit conditions that seek to defer the provision of bushfire assessment and the provision of bushfire protection measures to the development phase of the proposal. Given the priority afforded the bushfire under Clause 714.02-3 and 13.02-1S, CFA strongly recommends that a bushfire assessment is prepared as part of this application and that a separate bushfire management plan is prepared that includes all of the proposed bushfire protection measures that are proposed or recommended by CFA.
- The addition of access tracks between the proposed works and established vegetation is noted within the application material. Unfortunately, it is difficult to

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Telephone: 03 9262 8578

determine the width of the access and whether it is appropriate for fire appliances. The width of the access track should be a minimum of 3.5m wide with a clearance of 4m above the access. This should form part of the conditions and be shown a separate bushfire management plan.

- Access to the site from 56 Moe South Road should ensure that it is designed in accordance with the following requirements, unless otherwise agreed in writing by the relevant fire authority:
  - Curves must have a minimum inner radius of 10m.
  - The average grade must be no more than 1 in 7 (14.4 per cent) (8.1 degrees) with a maximum of no more than 1 in 5 (20 per cent) (11.3 degrees) for no more than 50m.
  - Have a minimum trafficable width of 3.5m of all-weather construction.
  - Be clear of encroachments for at least 0.5m on each side and 4m above the accessway.
  - Dips must have no more than a 1 in 8 (12.5 per cent) (7.1 degrees) entry and exit angle.
  - Incorporate a workable area for fire fighting vehicles close and near buildings.
  - Incorporate a turning circle for fire fighting vehicles to be able to exit the site in a forwards direction.
  - Incorporate passing bays at least every 200m which must be at least 20m long and have a minimum trafficable width of 6m.
- The proposal seeks to use the treated reticulated water mains at the Moe Water Treatment Plant in the event of a fire in lieu of a 40,000 litre static water supply. CFA offers no objection to appropriate CFA fittings be added to the current connection to the reticulated system or a supplementary hydrant or system of hydrants at the site. However, a separate 40,000 litre static water supply is strongly encouraged at the site that meets the following requirements:
  - Is shown on a bushfire management plan prepared for the site.
  - Is stored in an above ground water tank constructed of concrete or metal.
  - All fixed above-ground water pipes and fittings required for fire fighting purposes must be made of corrosion resistant metal.
  - Include a separate outlet for occupant use.
  - Incorporate a ball or gate valve (British Standard Pipe (BSP) 65mm) and coupling (64 mm CFA 3 thread per inch male fitting).
  - Be located within 60 metres of the outer edge of the approved building.
  - The outlet/s of the water tank must be within 4m of the accessway and be unobstructed.
  - Be readily identifiable at the site entrance and signed within the site.
  - Any pipework and fittings must be a minimum of 65 mm (excluding the CFA coupling).
- The application is not clear on the extent or area of defendable space proposed to reduce bushfire risk. CFA recommends that the application clearly show the area of the site to be maintained in accordance with defendable space, being the following requirements:
  - Grass must be short cropped and maintained during the declared fire danger period.



**Fire Safety Referrals**

**Fire & Emergency Management**

Email: [firesafetyreferrals@cfa.vic.gov.au](mailto:firesafetyreferrals@cfa.vic.gov.au)

Telephone: 03 9262 8578

- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
  - Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.
  - Plants greater than 10 centimetres in height must not be placed within 3m of a window or glass feature of the building.
  - Shrubs must not be located under the canopy of trees.
  - Individual and clumps of shrubs must not exceed 5 sq. metres in area and must be separated by at least 5 metres.
  - Trees must not overhang or touch any elements of the building.
  - The canopy of trees must be separated by at least 5 metres.
  - There must be a clearance of at least 2 metres between the lowest tree branches and ground level.
- Given the surrounding level of bushfire risk, particularly vegetation located on to the west and south west of the site, a canopy separation of 5m is encouraged. This may be viewed subject to justification in the bushfire assessment.
  - The drawings show two stockpile areas. It is unclear what will be stored in these stockpile areas. These areas should avoid stockpiling dangerous or hazardous material or other highly flammable objects, unless agreed with CFA's Dangerous Goods Team prior to the exhibition of the amendment. A higher level of vegetation management and clearing around these areas may be required depending on what will be stockpiled.
  - CFA's previous advice, letter dated 16 December 2019, regarding the inclusion of a bushfire report and suggested matters to be considered is still supported.
  - CFA requests a fully copy of the application be provided.

CFA looks forward to reviewing the vegetation management plan and bushfire report once it has been prepared. Please do not hesitate to contact Luci Johnston on 9262 8672 if you would like to discuss this matter in more detail.

Yours sincerely

**Anne Coxon**  
Land Use Planning Team Manager  
Fire & Emergency Management

C.C Katrina Lee  
GHD  
[Katrina.lee@ghd.com](mailto:Katrina.lee@ghd.com)

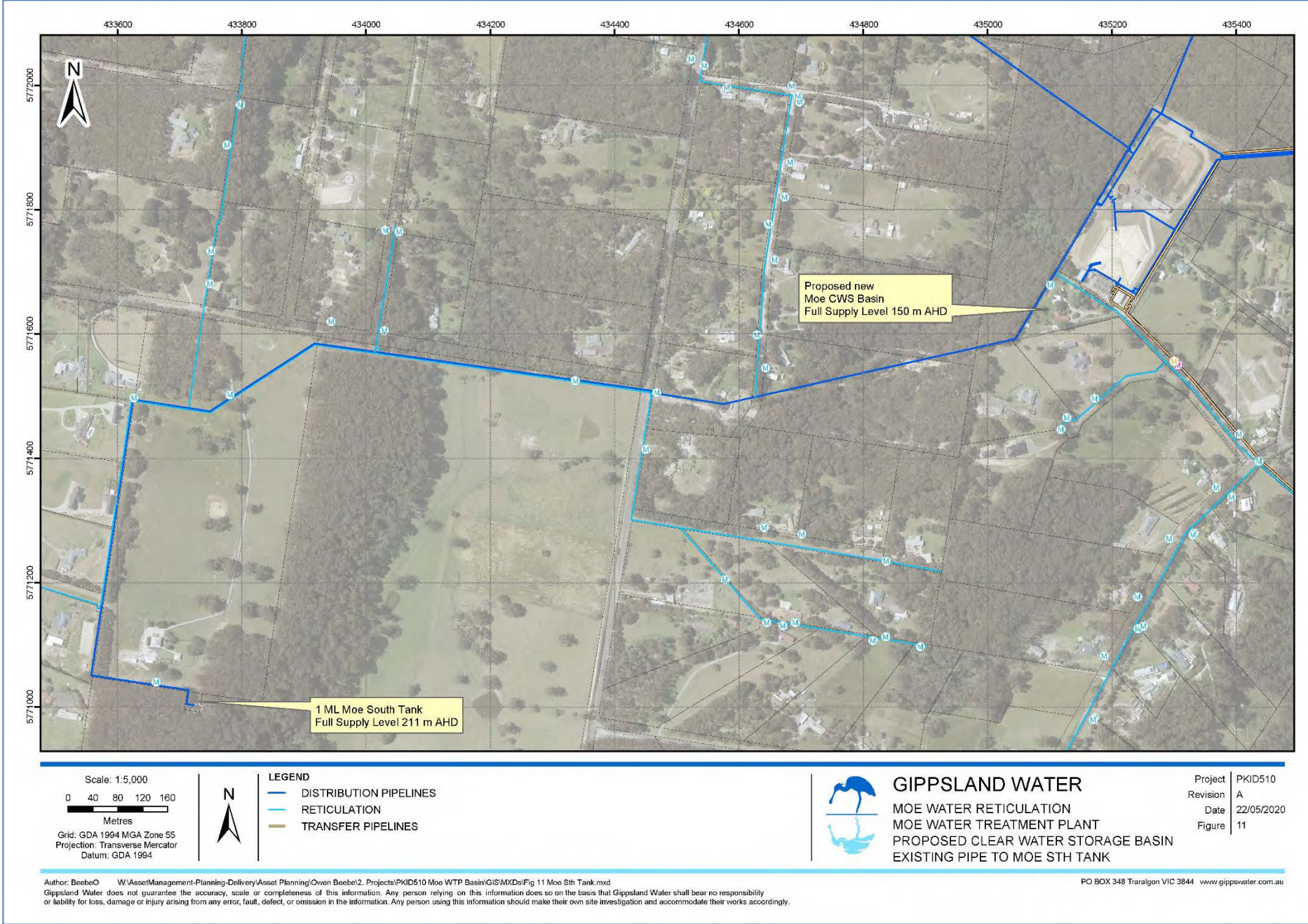
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# Appendix Five – Supply of water for firefighting



## Appendix H – Consultation documentation

10 March, 2020

Philip Buckton  
25 PINDARI ROAD, MOE 3825

Dear Philip,

**Proposed Water Storage Basin at Moe Water Treatment Plant Planning Scheme Amendment**

Gippsland Water recently purchased the property at 58 Moe South Road with the intention of constructing a new water storage basin. The proposed water storage basin is required to increase the water supply contingency of the Moe/Newborough system, and to also ensure there is adequate storage for future developments.

The property at 58 Moe South Road is currently designated as RLZ3, which is defined as a Rural Living Zone – Schedule 3. For us to construct the new water storage basin Gippsland Water requires a Planning Scheme Amendment to change the current zone of RLZ3 to PUZ1 (Public Use Zone – Schedule 1). As the proposed construction borders your property, the Latrobe City Council (LCC) and the Department of Environment, Land, Water and Planning (DELWP) have requested we attain your approval for the planning scheme amendment.

In addition to the Planning Scheme Amendment to rezone the land from RLZ3 to PUZ1, the project will involve the removal of native vegetation, and this will require a Planning Permit for Native Vegetation Removal issued by the LCC.

We have commenced a detailed flora and fauna assessment for the project to determine the extent/type of native vegetation that may be impacted by the project. We will also conduct cultural heritage assessments to determine whether or not we need a detailed Cultural Heritage Management Plan for the project, and whether we need to recover any cultural heritage artefacts.

Gippsland Water is intent on minimising as much native vegetation removal as possible, which is one of the reasons why we have purchased the property at 58 Moe South Road to construct part of the water storage basin over.

The environmental assessment that is currently underway will determine what offsets Gippsland Water are required to obtain as a result of these native vegetation losses.

We are seeking your written approval stating that you have no objection to the rezoning of 58 Moe South Road from RLZ1 to PUZ1 and that you have no objection for the planning permit for the removal of the native vegetation required to construct the water storage basin.

Therefore we have attached a letter and self-addressed envelope for your signature and any comments you might have. Also attached are plans showing the location of the proposed water storage basin in relation to your property, and concept design plans showing the proposed water storage basin in more detail.

If you have any questions please do not hesitate to contact myself on 5177 4728, 0427 314 144, or via email at [paul.young@gippswater.com.au](mailto:paul.young@gippswater.com.au)

Yours faithfully,

Paul Young  
**MANAGER ASSET PLANNING**

Attachments:

1. Locality plan showing your property and the proposed location of the proposed water storage basin
2. Concept design drawing of the likely basin
3. A letter for your signature and comment if you have no objections to the native vegetation removal, and the rezoning, such that we can construct this vital infrastructure

**ATT: Paul Young, Manager Asset Planning**

We / I

..... PHILIP BUCKTON .....

The owner(s) of the following address:

..... 25 Pindari Road, Moe South .....

Do not object  Object  (tick one)

To the rezoning of 58 Moe South Road from Rural Living Zone - Schedule 3 to Public Use Zone - Schedule 1.

Any comments:

.....  
.....  
.....

Signed:

.....  .....

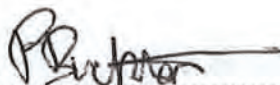
Do not object  Object  (tick one)

To the planning permit for native vegetation removal on 56 Moe South Road for the construction of a new water storage basin.

Any comments:

.....  
.....  
.....  
.....

Signed:

.....  .....

435500  
435250  
435000  
434750  
5771500  
5771500



Project PKID510  
 Revision A  
 Date 10/03/2020  
 Figure 3

**GIPPSLAND WATER**  
 MOE WATER RETICULATION  
 MOE WATER TREATMENT PLANT  
 PROPOSED CLEAR WATER STORAGE BASIN  
 LOCALITY PLAN



**LEGEND**  
 GIPPSLAND WATER  
 PROPERTY BOUNDARY  
 PROPOSED WATER STORAGE BASIN OPTION 8



Scale: 1:2,500  
 0 20 40 60 80  
 Metres  
 Grid: GDA 1994 MGA Zone 55  
 Projection: Transverse Mercator  
 Datum: GDA 1994





**ATT: Paul Young, Manager Asset Planning**

We/I JAMES GRIMM

The owner(s) of the following address:

21 PINDARI RD MOE SOUTH

Do not object  Object  (tick one)

To the rezoning of 58 Moe South Road from Rural Living Zone - Schedule 3 to Public Use Zone - Schedule 1.

Any comments:

Signed: [Signature]

Do not object  Object  (tick one)

To the planning permit for native vegetation removal on 56 Moe South Road for the construction of a new water storage basin.

Any comments:

Signed: [Signature]



Essential. For life.

ATT: Paul Young, Manager Asset Planning

We ~~LY~~

JOSEPH DICKASON, GRACE DICKASON

The owner(s) of the following address:

30 ALVINA CRT

MOE STH. 3825

VIC.



Do not object  Object  (tick one)

To the rezoning of 58 Moe South Road from Rural Living Zone - Schedule 3 to Public Use Zone - Schedule 1.

Any comments:

- \* IF ASBESTOS IS PRESENT AT DEMOLITION SITE APPROPRIATE PRECAUTIONS SHOULD BE UNDERTAKEN.
- \* IF ANY PERMANENT LIGHTING, TO BE KEPT WITHIN SITE.
- \* REMOVE CYPRESS TREES ON BORDER & REPLACE WITH 3METRE MAX (APPROX) LILYPILLY
- \* AT THE COMPLETION OF PROJECT, PROFESSIONAL CLEANING OF SOLAR PANELS & GUTTERS (SHED & HOUSE) & WINDOWS

Signed:

- \* IF ANY MULCHING & CHIPPING TO BE DONE WITH VEGETATION REMOVAL WE REQUEST SOME TRUCK LOADS.

Do not object  Object  (tick one)

To the planning permit for native vegetation removal on 56 Moe South Road for the construction of a new water storage basin.

- \* ALVINA CRT & G.W. DRIVEWAYS ABUT EACH OTHER, COULD THE SEALED ENTRANCES BE KEPT PROPERLY MAINTAINED DURING THIS PROJECT.

Any comments:

- \* IF ANY MULCHING & CHIPPING TO BE DONE WITH VEGETATION REMOVAL WE REQUEST SOME TRUCK LOADS TO ABOVE ADDRESS.
- \* NEW LILYPILLY SCREEN TO EXTEND TO AREA OF EXISTING LARGE MAPLE TREE AT EXISTING HOUSE SITE.
- \* KEEP NOISE & FUGITIVE DUST TO MINIMUM IF POSSIBLE.

Signed:

Handwritten signatures



Essential. For life.

ATT: Paul Young, Manager Asset Planning

We / I

George Anthony & Paula Jane Hallinan

The owner(s) of the following address:

38 Alvinia ct  
Moe South Vic 3825

Do not object  Object  (tick one)

To the rezoning of 58 Moe South Road from Rural Living Zone - Schedule 3 to Public Use Zone - Schedule 1.

Any comments:

Signed:

[Handwritten signatures]

Do not object  Object  (tick one)

To the planning permit for native vegetation removal on 56 Moe South Road for the construction of a new water storage basin.

Any comments:

Signed:

[Handwritten signatures]

8th April 2020

Edward Hunter Heritage Bush Reserve Committee of Management (EHHBR CoM)

Response to the New Treated Water Storage Basin Proposal at the Gippsland Water Moe Water Treatment Plant

Proposal for construction of a 25MI storage basin to be located within newly acquired residential land (58 South Moe Road) adjacent to the SW region of the existing Treated Storage Basin (22MI)

The EHHBR CoM raised a series of queries for the video conference, organised via Sean-Paul Smith (LCC Env Co-Ord), the summary and responses of which is found below:

1. The EHHBR CoM supports the project in principle as the project is necessary to provide future community water supply reliability and increased capacity.
2. The local environment is actually impacted to some extent as the proposed offsets will occur elsewhere. GW has advised there's an offset bank totaling 650 hectares in Sunny Creek, which is the closest in type of vegetation.
3. At request of CoM, GW has indicated they can supply
  - o The flora and fauna assessment within the construction zone, as the listing may provide increased knowledge re the EHHBR.
  - o The Cultural Heritage Management Plan results for this location; even though previous site works have disturbed this region, we have oral anecdotal comments that the designated waterway was at times occupied up until the mid-1950s.
4. The erosion controls during construction of the new basin need to be exceedingly generous. The CoM regularly samples water quality entering the EHHBR Reserve from the minor water course on the West side and on the designated waterway on the East side of the MWTP. We relayed our past experience with poor controls during the construction of a dam in the paddock to the east of the Reserve which resulted in over 20 exceedances. GW have assured the committee that erosion controls are being held to a standard exceeding that set by the EPA, with active management of contractors and an expanded environmental management team to be able to take proactive management of these kinds of aspects of the project.
5. At our request, GW has agreed the CoM can visit the site (when appropriate) particularly to gain an understanding of the process associated with release of water into the minor watercourse on the west side of the MWTP and any possible changes in the future.
6. GW agreed that the CoM can also have access to any reports associated with Powerful Owls in the MWTP area.
7. GW have agreed that there might be some consideration of seeds taken from the Eucalyptus Strzeleckii trees on the site, as the CoM is interested in maintaining the genetic diversity of the trees in the area
8. In addition, a constructive opening discussion was made of the utility of water discharge to the Reserve, particularly given the importance to the gully through which water is currently flowing from the general vicinity of the water treatment plant.

Bruce King (chairperson)

Greg Mitchell (secretary/treasurer)

Julie Murray (member)

# Appendix I – Draft permit conditions

## **Moe WTP Expansion Draft Permit Conditions**

*For development of a clear water storage basin and associated removal of native vegetation.*

### **Amended Plans Required**

1. Before the development starts, amended plans to the satisfaction of the responsible authority must be submitted to and approved by the responsible authority. When approved, the plans will be endorsed and will then form part of the permit.

The plans must be drawn to scale with dimensions and three copies must be provided. The plans must be generally in accordance with the plans submitted with the application but modified to show:

- a) Vegetation to be removed and retained in the context of the final layout of proposed works, including Tree Protection Zones where required;
- b) Any bushfire protection measures proposed in the *Strategic Assessment Report (May 2020)* and *Bushfire Assessment (May 2020)* submitted for the project.
- c) Additional details of car parking areas including surface materials proposed and if the car parking areas are to be temporary or permanent;
- d) Sections and elevations of the basin and associated works;
- e) Any noise mitigation measures recommended in the *Operational Noise Assessment (May 2020)* submitted for the project.

### **Permit Conditions Notification and Compliance**

2. Before works start, the permit holder must inform and instruct all persons undertaking the vegetation removal or works on site about permit conditions and the need to comply with all statutory requirements or approvals.

### **Endorsed Plans Not Altered**

3. The development as shown on the endorsed plans must not be altered without the written consent of the Responsible Authority.

### **General Amenity**

4. The development must be managed so that the amenity of the area is not adversely affected by the emission of noise, artificial light, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit or oil.

### **Noise Control**

5. Noise levels emanating from the land must comply with the requirements of the Environment Protection Authority's Information Bulletin No. N3/89 *Interim Guidelines for Control of Noise from Industry in Country Victoria*

### **Landscape Plan**

6. Before the development starts, a landscape plan to the satisfaction of the responsible authority must be submitted to and approved by the responsible authority. When approved, the plan will be endorsed and form part of the permit. The plan must be drawn to scale with dimensions, north point and scale and three copies must be provided. The plan must show:

- a) a planting schedule of all proposed trees, shrubs and ground covers, including botanical names, common names, pot sizes, sizes at maturity, and quantities of each plant and their location on the site
  - b) all species selected must be of low fire risk, not likely to become environmentally invasive to the satisfaction of the responsible authority and the Country Fire Authority.
7. Before the use of the development starts or by such later date as is approved by the responsible authority in writing, the landscaping works shown on the endorsed plans must be carried out and completed to the satisfaction of the responsible authority.
  8. Landscaping to provide visual screening must be provided along the eastern part of the southern boundary of 58 Moe South Road, Moe South in general accordance with *Figure 3 Site Context and Design Response Plan* of the Strategic Assessment Report.
  9. The landscaping shown on the endorsed landscape plan must be maintained to the satisfaction of the responsible authority, including that any dead, diseased or damaged plants are to be replaced.

### **Construction Environmental Management Plan**

10. Before any works begin, a Construction Environmental Management Plan to the satisfaction of the Department of Environment, Land, Water and Planning must be submitted to and approved by the Responsible Authority. When approved, the plan will be endorsed and will form part of this permit. The plan must include:
  - a) A detailed description of the measures to be implemented to:
    - i. protect the native vegetation to be retained during construction works, which must include the erection of a native vegetation protection fence around all native vegetation to be retained on site, including tree protection zones of all native trees to be retained. All tree protection zones must comply with *AS 4970-2009 Protection of Trees on Development Sites*.
    - ii. avoid or minimise impacts to all ecological values of the subject land, including but not limited to details of measures:
      - a. to be implemented to prevent adverse impacts on any aquatic habitat and waterways during the construction period (sediment control measures)
      - b. to prevent contaminants (e.g. oils, chemicals) from entering any aquatic habitat or waterways as a result of accidental spills
      - c. to implement a weed/disease/pest hygiene measures that prevents the spread of existing and/or introduction of new weeds, diseases or pests to the site. This must include, but is not limited to:
        - wash down and inspection of vehicles, machinery and boots before entering/leaving the site
        - control of existing weeds including measures for accurate identification
        - weed control methods that do not have adverse impacts on native vegetation to be retained, frogs, aquatic species and habitat or areas of poor drainage.

These measures must include details of the person/s responsible for implementation and compliance.

- b) an amended site plan, drawn to scale with dimensions and georeferences (such as VicGrid94 co-ordinates) at a landscape and site level, that clearly shows:
  - i. the location and identification of the land affected by this permit, including standard parcel identifiers for freehold land
  - ii. the location and area of all native vegetation present, including scattered trees, that are permitted to be removed under this permit
  - iii. all areas of native vegetation to be retained
  - iv. buffers or set back areas from construction impact zones that include the tree and vegetation protection zones of all native vegetation to be retained. Tree protection zones must accord with AS 4970—2009 *Protection of trees on development sites*.

#### **Native vegetation to be retained**

- 11. Within the area of native vegetation to be retained and any tree protection zone associated with the permitted use and/or development, the following is prohibited:
  - a) any vehicle or pedestrian access, trenching or soil excavation, and
  - b) storage or dumping of any soils, materials, equipment, vehicles, machinery or waste products, and
  - c) entry or exit pits for underground services, and
  - d) any other actions or activities that may result in adverse impacts to retained native vegetation.

#### **Removal of vegetation**

- 12. The native vegetation permitted to be removed, destroyed or lopped under this permit is 1.854 hectares of patch native vegetation including 44 large trees, with a strategic biodiversity score of 0.531.
- 13. All vegetation removal works must be in accordance with the endorsed plan(s) to the satisfaction of the Responsible Authority.
- 14. Vegetation removal and disposal must not cause damage to vegetation stands to be retained and to drainage lines and/or watercourses.
- 15. Felled timber containing hollows must be retained and located on-site to the satisfaction of the responsible authority upon the advice of the Department of Environment, Land, Water and Planning.

#### **Native vegetation offsets**

- 16. To offset the removal of 1.854 hectares of native vegetation including 44 large trees, the permit holder must secure the following native vegetation offset in accordance with the Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017):
  - a) A general offset of 1.481 general habitat units:
    - i. located within the West Gippsland Catchment Management Authority boundary or Latrobe City Council municipal district
    - ii. with a minimum strategic biodiversity score of at least 0.413.

The offsets secured must also protect 44 large trees.

17. Before any native vegetation is removed, evidence that the required offset for the project has been secured must be provided to the satisfaction of the Responsible Authority. This evidence must be one or both of the following:
  - a) An established first party offset site including a security agreement signed by both parties, and a management plan detailing the 10 year management actions and ongoing management of the site, and/or
  - b) credit extract(s) allocated to the permit from the Native Vegetation Credit Register.
18. A copy of the offset evidence will be endorsed by the responsible authority and form part of this permit. Within 30 days of endorsement of the offset evidence by the responsible authority, a copy of the endorsed offset evidence must be provided to the Department of Environment, Land, Water and Planning at the Traralgon regional office via [Gippsland.Planning@delwp.vic.gov.au](mailto:Gippsland.Planning@delwp.vic.gov.au).
19. Where the offset includes a first party offset(s), the permit holder must provide an annual offset site report to the responsible authority by the anniversary date of the execution of the offset security agreement, for a period of 10 consecutive years. After the tenth year, the landowner must provide a report at the reasonable request of a statutory authority.
20. Within 12 months of the completion of the project, offset requirements can be reconciled with the written agreement of the responsible authority and the Department of Environment, Land, Water and Planning.

#### **Bushfire conditions**

21. Before development starts, an Emergency Plan must be submitted to and approved by the Country Fire Authority. The plan must contain details of bushfire management protocols and information including:
  - a) Vegetation-management procedures to address defensible space guidelines;
  - b) Access information for emergency services in the event of a fire;
  - c) Country Fire Authority water supply connection point location and access information;
  - d) Storage and handling procedures for any dangerous goods.

The plan must not be altered unless otherwise agreed in writing by Country Fire Authority.
22. The permit holder must provide for access for fire fighting purposes that must:
  - a) have a minimum trafficable width of 3.5m of all-weather construction
  - b) only contain curves with a minimum inner radius of 10m
  - c) have an average grade of not more than 1 in 7 (14.4 percent or 8.1 degrees) with a maximum of not more than 1 in 5 (20 percent or 11.3 degrees) for no more than 50m
  - d) incorporate a turning area for fire fighting vehicles where the access is more than 100m in length.
23. Exempt for areas of retained native vegetation, during the fire danger period, all grassy areas around the infrastructure and emergency vehicle access tracks must be short cropped and maintained to reduce fire risk.

## **Cultural Heritage Management**

24. Prior to ground disturbance works commencing, a Cultural Heritage Induction must be provided to all contractors and workers undertaking such works to inform them of:

- a) The presence, purpose and results of the Cultural Heritage Management Plan;
- b) The procedure to follow should cultural heritage material or Aboriginal Ancestral remains be discovered during the construction of works.

The induction must be presented by a GunaiKurnai Land and Waters Aboriginal Corporation (GLaWAC) representative. At least two weeks' notice must be provided to GLaWAC of the proposed induction date.

25. A hardcopy of the approved Cultural Heritage Management Plan must be kept on-site during the construction of works.

## **Expiry of Permit**

26. This permit will expire if one of the following circumstances applies:

- a) the development is not started within two (2) years of the date of this permit
- b) the development is not completed within four (4) years of the date of this permit.

27. The Responsible Authority may extend the periods referred to if a request is made in writing before the permit expires; or

- a) within six (6) months after the permit expires where the development has not yet started, or
- b) within twelve (12) months after the permit expires where the development allowed by the permit has lawfully commenced before the permit expiry.

## **Permit Note**

1. Before works start, the permit holder must obtain a Third Party Works Authorisation from the APA Group for the works.
2. Before any works on public land start, a permit to take protected flora under the *Flora and Fauna Guarantee (FFG) Act 1988* is required. To obtain an FFG permit or further information, please contact a Natural Environment Program officer at the Traralgon regional office of the Department of Environment, Land, Water and Planning on (03) 5172 2111.

# Appendix J – Planning permit application form



Office Use Only

Application No.:

Date Lodged: / /

# 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.

Planning Enquiries  
Phone: 1300 367 700  
Web: <http://www.latrobe.vic.gov.au>

Clear Form

## The Land **i**

① Address of the land. Complete the Street Address and one of the Formal Land Descriptions.

### Street Address \*

|  |          |           |
|--|----------|-----------|
| Unit No.:  | St. No.: | St. Name: |
| Suburb/Locality: <b>REFER TO SEPARATE PAGE ATTACHED.</b> |          | Postcode: |

### 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.:  Section No.:

Parish/Township Name:

If this application relates to more than one address, please click this button and enter relevant 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.

② For what use, development or other matter do you require a permit? \*

If you need help about the proposal, read: [How to Complete the Application for Planning Permit Form](#)

**BUILDINGS AND WORKS ASSOCIATED WITH THE CONSTRUCTION OF AN ADDITIONAL CLEAR WATER STORAGE BASIN ('UTILITY INSTALLATION') AND THE REMOVAL OF NATIVE VEGETATION TO FACILITATE THE EXPANSION OF THE MOE WATER TREATMENT PLANT.**

**✎** 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.

③ Estimated cost of development for which the permit is required \*

Cost \$ **6.2 MIL** **⚠** You may be required to verify this estimate.

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

## Existing Conditions **i**

④ Describe how the land is used and developed now \*

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

**56 MOE SOUTH ROAD - CURRENTLY USED AND DEVELOPED AS THE MOE WATER TREATMENT PLANT**

**58 MOE SOUTH ROAD - CURRENTLY ACCOMODATES A SINGLE DWELLING AND SEVERAL OUTBUILDINGS (WAS PREVIOUSLY OWNED BY GIPPSLAND WATER AS A CARETAKERS RESIDENCE)**

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

## Title Information i

### 5 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 i

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

#### Applicant \*

The person who wants the permit.

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

Please provide at least one contact phone number \*

#### 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.

|   |                         |  |
|---|-------------------------|--|
| Name:   |                         |  |
| Title: <b>MR</b>  | First Name: <b>PAUL</b> | Surname: <b>YOUNG</b>                        |
| Organisation (if applicable): <b>GIPPSLAND WATER - MANAGER ASSET PLANNING</b> |                         |  |
| Postal Address:   |                         | If it is a P.O. Box, enter the details here: |
| Unit No.:   | St. No.: <b>55</b>      | St. Name: <b>HAZELWOOD ROAD</b>              |
| Suburb/Locality: <b>TRARALGON</b>   |                         | State: <b>VIC</b> Postcode: <b>3844</b>      |

|                               |             |   |
|-------------------------------|-------------|---|
| Contact person's details *    |             | Same as applicant (if so, go to 'contact information') <input type="checkbox"/> |
| Name:                         |             |   |
| Title:                        | First Name: | Surname:  |
| Organisation (if applicable): |             |   |
| Postal Address:               |             | If it is a P.O. Box, enter the details here:                                    |
| Unit No.:                     | St. No.:    | St. Name:   |
| Suburb/Locality:              |             | State: Postcode:  |

|                                   |  |
|-----------------------------------|--|
| <b>Contact information</b>        |  |
| Business Phone:                   | Email: <b>paul.young@gippswater.com.au</b> |
| Mobile Phone: <b>0427 314 144</b> | Fax:                                       |

|   |             |  |
|---|-------------|--|
| Name:   |             | Same as applicant <input type="checkbox"/>   |
| Title:  | First Name: | Surname:                                     |
| Organisation (if applicable): <b>CENTRAL GIPPSLAND REGION WATER CORPORATION</b> |             |  |
| Postal Address:   |             | If it is a P.O. Box, enter the details here: |
| Unit No.:   | St. No.:    | St. Name: <b>HAZELWOOD ROAD</b>              |
| Suburb/Locality: <b>TRARALGON</b>   |             | State: <b>VIC</b> Postcode: <b>3844</b>      |
| Owner's Signature (Optional):   |             | Date: <input type="text"/>                   |
|   |             | day / month / year                           |

## Declaration i

### 7 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: **15/04/2020**

day / month / year

## Need help with the Application?

If you need help to complete this form, read [How to complete the Application for Planning Permit form](#)  
General information about the planning process is available at [www.dpcd.vic.gov.au/planning](http://www.dpcd.vic.gov.au/planning)

Contact Council's planning department to discuss the specific requirements for this application and obtain a planning permit checklist. Insufficient or unclear information may delay your application.

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

No  Yes

28 NOVEMBER 2019 - MEETING HELD WITH KAREN EGAN AND LOUISE ROSSER  
11 OCTOBER 2019 - MEETING HELD WITH KAREN EGAN AND LORRAE DUKES


## Checklist

9 Have you:

\* PLEASE SEND INVOICE TO APPLICANT  
(PAUL.YOUNG@GIPPSWATER.COM.AU)  
FOR PAYMENT ASAP.

Filled in the form completely?

\* Paid or included the application fee?

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

 Provided all necessary supporting information and documents?

A full, current copy of title information for each individual parcel of land forming the subject site

A plan of existing conditions.

Plans showing the layout and details of the proposal

Any information required by the planning scheme, requested by council or outlined in a council planning permit checklist.

If required, a description of the likely effect of the proposal (eg traffic, noise, environmental impacts).

Completed the relevant Council planning permit checklist?

Signed the declaration (section 7)?

## Lodgement

Lodge the completed and signed form, the fee payment and all documents with:

Latrobe City Council

### Contact information:

Telephone: 1300 367 700

Email: [latrobe@latrobe.vic.gov.au](mailto:latrobe@latrobe.vic.gov.au)

DX: 217733

### Deliver application in person, by fax, or by post:

Print Form

Make sure you deliver any required supporting information and necessary payment when you deliver this form to the above mentioned address. This is usually your local council but can sometimes be the Minister for Planning or another body.

### Save Form:

Save Form To  
Your Computer

You can save this application form to your computer to complete or review later or email it to others to complete relevant sections.

**SECTION 1 (THE LAND) ATTACHMENT**

**ADDRESS 1**

**56 MOE SOUTH ROAD, MOE SOUTH VIC 3825  
LOT 2 / PS 400699 & LOT 2 / LP55896**

**ADDRESS 2**

**58 MOE SOUTH ROAD, MOE SOUTH VIC 3825  
LOT 1 / PS400699**

GHD

Level 18 180 Lonsdale Street  
Melbourne VIC 3000



T: 61 3 8687 8000 F: 61 3 8687 8111 E: melmail@ghd.com

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12516874-751-31/[https://projectsportal.ghd.com/sites/pp17\\_02/moewtprezoning/ProjectDocs/Stage2/12516874\\_Moe WTP Rezoning\\_PSA Strategic Assessment Report\\_Rev1.docx](https://projectsportal.ghd.com/sites/pp17_02/moewtprezoning/ProjectDocs/Stage2/12516874_Moe WTP Rezoning_PSA Strategic Assessment Report_Rev1.docx)

Document Status

| Revision | Author | Reviewer |   | Approved for Issue |   |           |
|----------|--------|----------|---|--------------------|---|-----------|
|          |        | Name     | Signature   | Name               | Signature   | Date      |
| 0        | K Lee  | B George |   | B George           |   | 14/4/2020 |
| 1        | K Lee  | B George |  | B George           |  | 29/5/2020 |
|          |        |          |   |                    |   |           |

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