1025 Yan Yean Road Doreen Development Plan DPO5

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The Development Plan was approved by the City of Whittlesea on 5 August 2024, in accordance with Clause 43-04 Schedule 5 of the Whittlesea Planning Scheme.

05/08/2024……

Signature of the Responsible Authority

July 2024

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Contents

1.0 Introduction

This Development Plan is prepared to apply to the land located at 1025 Yan Yean Road, Doreen. The Development Plan has been prepared in accordance with the requirements of the Development Plan Overlay Schedule 5 of the Whittlesea Planning Scheme and will inform future residential subdivision and development of the land.

The purpose of the Development Plan is to achieve the following outcomes:

- Guide orderly planning for the site and the locality consistent with Council strategic policy expectations.
- Identify preferred land use outcomes for the land.
- Incorporate the priorities of specialist consultant works into future development of the site.
- Reinforce and enhance the local character of the broader surrounding area.
- Communicate the local road networks and access expectations for the land.
- Provide a clear framework detailing the future planning outcomes and objectives for the land to inform any future application for planning permit.

The application of the Development Plan Overlay over the site is shown below.

Fig. Development Plan Overlay 5 map

2.0 Site & Context

2.1 Regional Context

The site is located approximately 27km from the Melbourne CBD. The below shows the site's context within the metropolitan North Growth Corridor Plan positioned at the eastern edge of the northern growth area within Doreen.

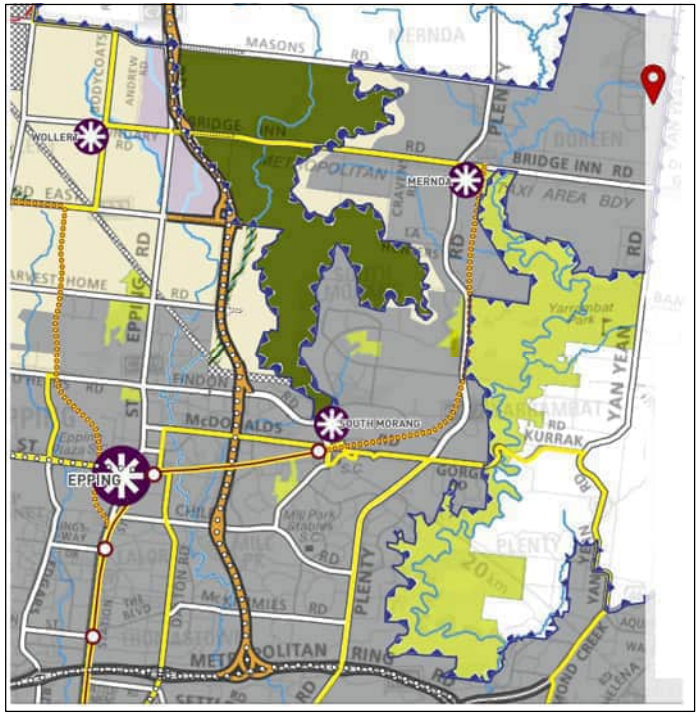
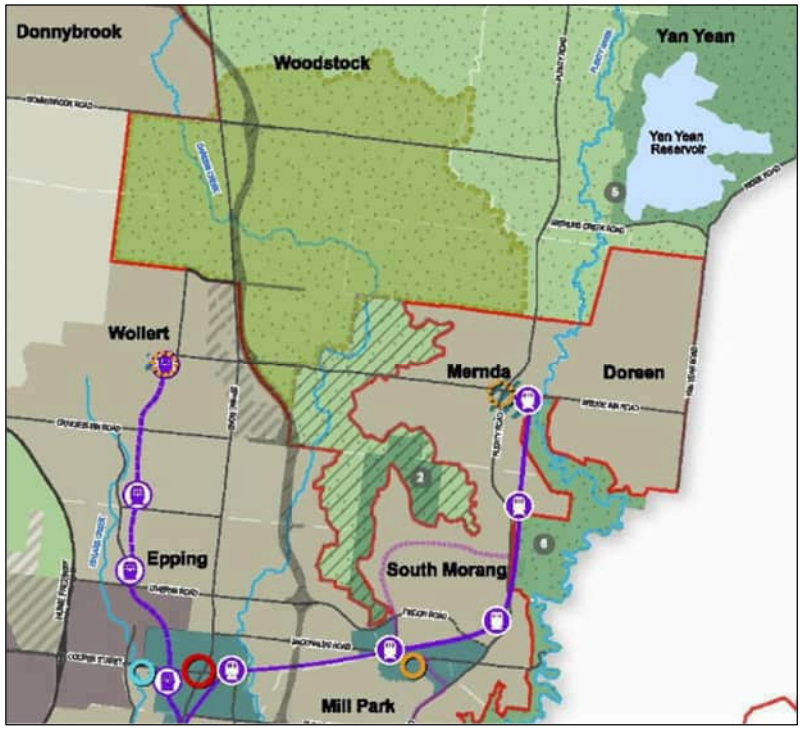


Fig. North Growth Corridor Plan extract

2.2 Local Context

As shown below within Council's strategic framework plan, the site is positioned at the eastern edge of the municipality along Yan Yean Road representing the Council's eastern boundary and at the urban edge with rural land use found to the east. The site represents one of the few remaining undeveloped lots in the immediate locality inside the Urban Growth Boundary zoned for residential development. Surrounding land has been developed to now support an established residential community.



Locality aerial (*Nearmap*)

Surrounding context

East

Yan Yean Road adjoins the east boundary consisting of a local arterial road with a single carriageway in each direction with at-grade dividing median. Farming land is found on the east side of Yan Yean Road located external to the UGB and within the City of Nillumbik.

South
Consists of a larger residential lot abutting the east half of the boundary at 2 Timbertop Drive supporting a single dwelling setback approximately 9 metres from the site. Laburnum Close is a short local residential street extending from Timbertop Drive which terminates at the south boundary of the site. This street will continue north into the site upon its development. Conventional sized residential lots in the range of 900 square metres supporting single dwellings are found west of Laburnum Close with their rear boundaries abutting the site. Conventional density residential development continues to the west.

West
Two residential lots adjoin the west boundary addressed to Holstein Place each supporting a single dwelling setback in the range of 4 to 6 metres from the share boundary with these areas supporting private open space. Each dwelling is single storey in height. A drainage easement adjoins the west boundary positioned within adjoining land supporting stormwater and sewer infrastructure. Residential development continues to the west.

North
Two residential lots adjoin the north boundary addressed to Mitchells Run with each supporting a single dwelling setback in the range of 6 to 8 metres from the share boundary. Each dwelling is single storey in height consisting of larger dwellings on larger lots. A drainage easement adjoins the boundary within adjoining land supporting stormwater and sewer infrastructure drain north. 1 Mitchells Run, being the east parcel, supports a large remnant River Red Gum located in proximity to the shared boundary. Public open space is provided further north with residential development, consisting of single dwellings.

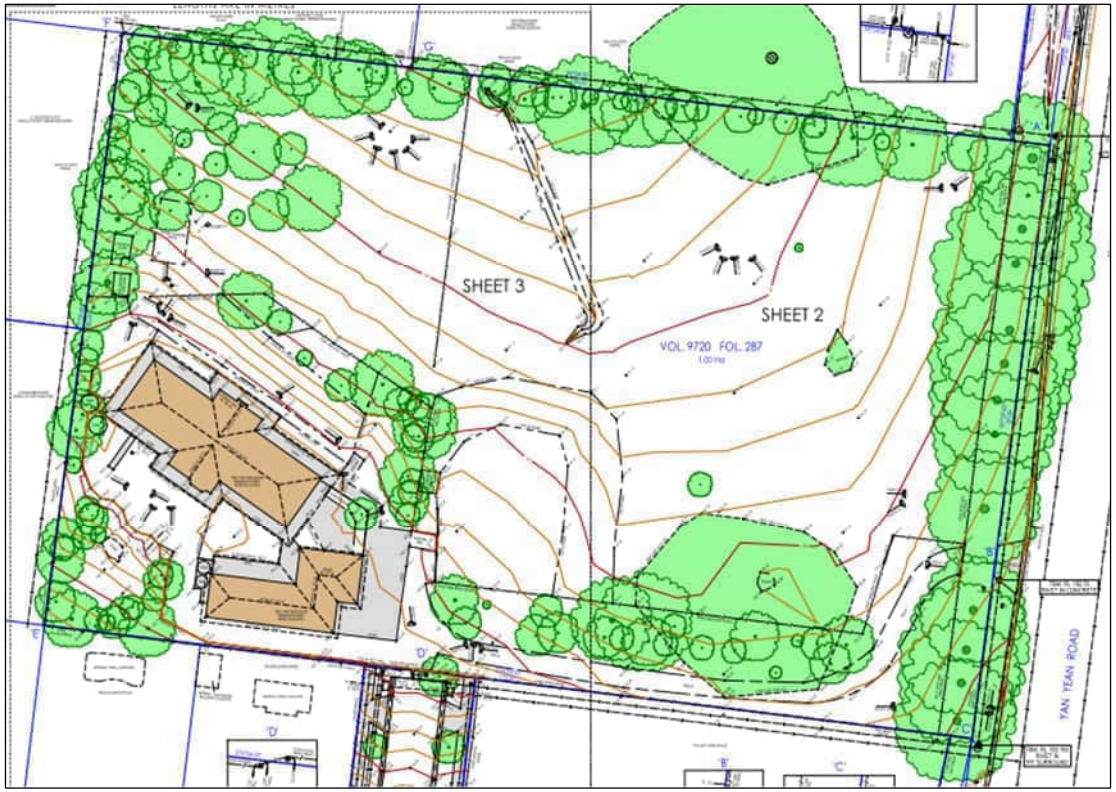
2.3 Development Plan Area

The subject land consists of one parcel addressed 1025 Yan Yean Road, Doreen, registered as Lot 1 on Plan of Subdivision LP206051B. The site is shown below.

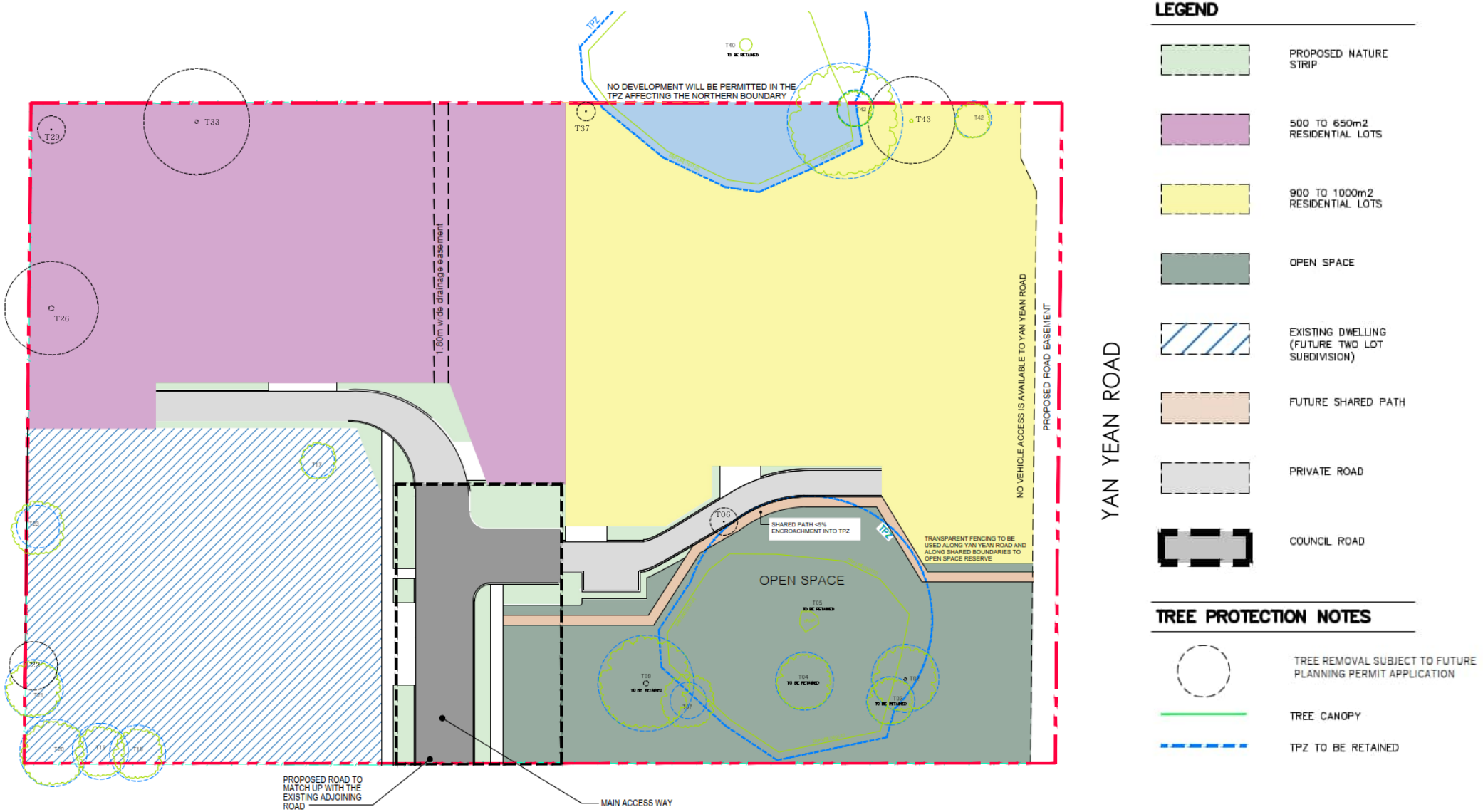
Fig. Site and context aerial image

Characteristics of the site are as follows.

Site area	1 hectare
Boundaries	Yan Yean Road (East) – 80 metres North – 125 metres West - 80 metres South - 125 metres
Existing development	Single dwelling consisting of a single building, brick veneer with metal sheet hipped roof. A detached brick double garage is located south of the dwelling towards the south boundary.
Existing use	Residential.
Access	One crossing is provided to Yan Yean Road which functions as a local arterial road.
Topography	Supports a fall from south to centrally along the north boundary of approximately 5 metres.
Vegetation	Consists of a combination of native and planted vegetation over the site. One very large River Red Gum is positioned towards the south-east. A row of planted cypress trees are found along Yan Yean Road with various garden plantings around the dwelling, along the driveway the north and west boundary.
Title	The title shows no covenant, section 173 agreement or other form of restriction affecting the land.
Easement	The site is not encumbered by an easement.
Heritage	The site is not subject to a Heritage Overlay. The land is identified as supporting potential cultural heritage sensitivity.



3.0 Development Plan



3.1 Outcomes

The development plan seeks to establish a planning framework that will allow for the following outcomes.

- Creation of new residential lots consistent with the specified lot sizes.
- Deliver a residential neighbourhood that exhibits a high level of amenity for residents.
- Creating a Council open space reserve which contributes to and enhances local character.
- Achieving an efficient and legible movement network which consists of public and private streets.
- Retention of the large River Red Gum within the open space reserve.
- Integrating the local street network into the existing network and avoiding direct access to Yan Yean Road.
- Establishment of a landscape response which complements the surrounding character and enhances the open space network including through the establishment of the canopy trees.
- Ensuring future development integrates appropriately with adjoining land to maintain residential amenity.

3.2 Response to the Mernda Strategy Plan

The Development Plan Overlay Schedules 5 requires the Development Plan to be generally in accordance with the Mernda Strategy Plan (MSP) and associated Precinct Plans. The site is located within Precinct 1 of the MSP, and specifically positioned at the south-east corner of the precinct as shown below.

Fig. Mernda Strategy, Precinct 1

The MSP identifies the site as supporting future residential development. Low-density residential development is nominated for the site as is the case for all residential land adjoining Yan Yean Road along the eastern boundary of the MSP area. The Precinct Plan shows the retention of vegetation in the south-east corner and along Yan Yean Road. The Development Plan supports the creation of larger residential lots along Yan Yean Road with lot size transitioning to the west consistent

with the established residential neighbourhood and the MPS. Consistent with the MSP the Development Plan achieves the retention of existing vegetation within the south-east of the site. Tree retention includes a large River Red Gum, which is shown below, along with other native vegetation within the public open space reserve. The Development Plan supports the land use and development outcomes envisaged in the MSP.

3.3 Development Plan Guidelines

G1 – The development plan is to support residential development complimented by a public open space reserve.

G2 – Subdivision is to ensure the size of residential lots are consistent with the Development Plan.

G3 – Dwellings are to be positioned to allow for the establishment of landscaping around the building, including the ability to plant a canopy tree within the front and rear setback areas.

G4 – Residential development is to ensure that works do not impact the health of vegetation located on adjoining land, including the large River Red Gum located on the north adjoining land as identified in the Development Plan.

G5 – Unless otherwise approved by the responsible authority residential lots are to support development of a single dwelling.

G6 – Earthworks and structures such as retaining walls and site cutting that are required in response to steeper topography are not to overwhelm or dominate the streetscape.

G7 – The street network is to consist of a public road, being the extension of Laburnum Close and private accessway generally in accordance with the Development Plan.

G8 – All lots are to be provided with a frontage to either the public or private street network.

G9 – Subdivision design is to ensure it responds to the findings and recommendations of the Stormwater Management Plan prepared by Incitus, dated December 2022.

G10 – Streetscape planting is to support a native and indigenous species them.

G11 – Unless with the consent of the responsible authority, the design of the extension of Laburnum Close is to be consistent the existing street cross section design as shown in the Development Plan.

G12 – The open space reserve is to be provided with passive surveillance through maximising residential lots fronting the reserve.

G13 – Allowance for road widening along Yan Yean Road will be required as detailed in the Development Plan.

G14 – Waste management will be undertaken in accordance with a Waste Management Plan submitted under the permit application to the satisfaction of Council.

3.4 Development Plan Land Budget Estimates

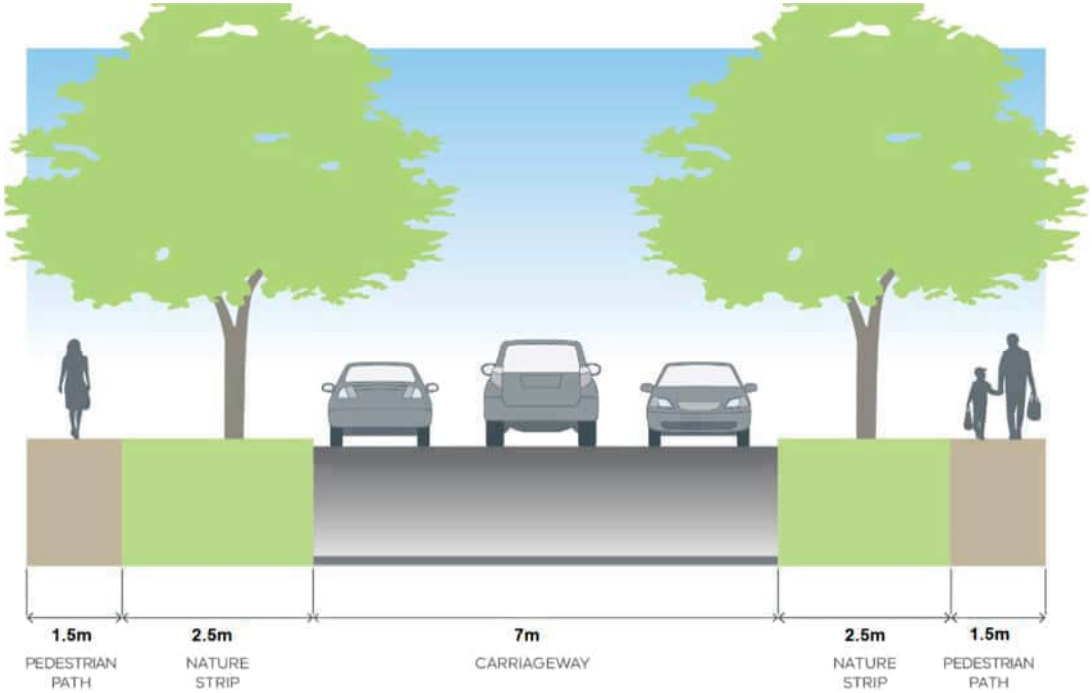
Table 1: Land Budget (indicative only)

Land Use	Percentage of Development %
Residential	60-65
Public Open Space	14
Roads	20-25
Road widening	1-2

*Estimate only and subject to future planning approval, detailed design & survey.

3.5 Street Cross Section

Extension of Laburnum Close (15m)



3.6 Infrastructure / Utilities

Stormwater
The site is located within the Laurimar Melbourne Water Drainage Services Scheme (DSS) area. The drainage scheme does not show any stormwater management facilities to be provided on the land. Stormwater management facilities of the drainage scheme have been provided as part of previous development throughout the broader area.

Stormwater flows will be conveyed within a piped system along Laburnum Close and the private street network along with the creation of drainage easements within residential lots. Local streets will be designed to cater for overland flows conveying flows to the existing Melbourne Water pipe connection at the north boundary as shown in the drainage scheme plan.

Stormwater Management will be undertaken in accordance with the prepared Stormwater Management Strategy by Incitus, to the satisfaction of Council and in accordance with approved engineering plans.

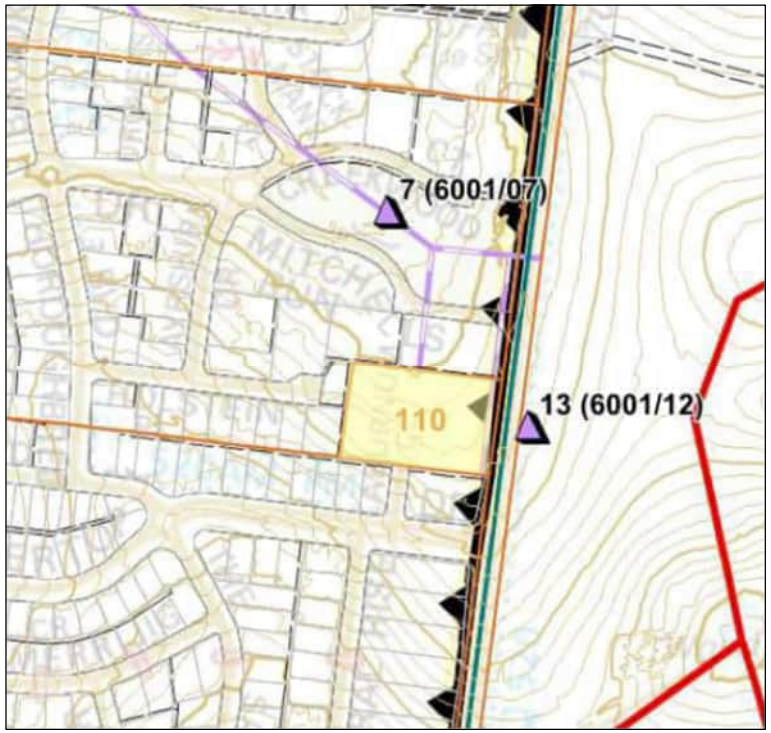


Fig. Laurimar DSS

Sewer
The land is located within the Yarra Valley Water service area. Development of the land will connect to the existing sewer network located in established residential land to the north as indicated on the YVW service maps. The preparation of detailed engineering plans will be required to be submitted and approved by Yarra Valley Water and Council prior to development of the land as part of any planning permit approval.

Fig. Local sewer network

The design of infrastructure provision within the private accessway will be subject to detailed design as part of the permit application process ensuring Council and service authority assets are accommodated.

Local service authorities will issue their respective conditions for inclusion on any permit. Development of the land will require the delivery of services to each lot prior to the issue of Statement of Compliance and registration of new titles.

3.7 Cultural Heritage

The site is identified as being subject to potential Aboriginal cultural heritage sensitivity as shown below. A Cultural Heritage Management Plan (CHMP) will be prepared as part of future planning for the site. An approved CHMP is to be submitted to the responsible authority prior to the issue of a planning permit. Section 61 of the Aboriginal Heritage Act 2006 sets out matters to be considered before finalising subdivision layout plans.

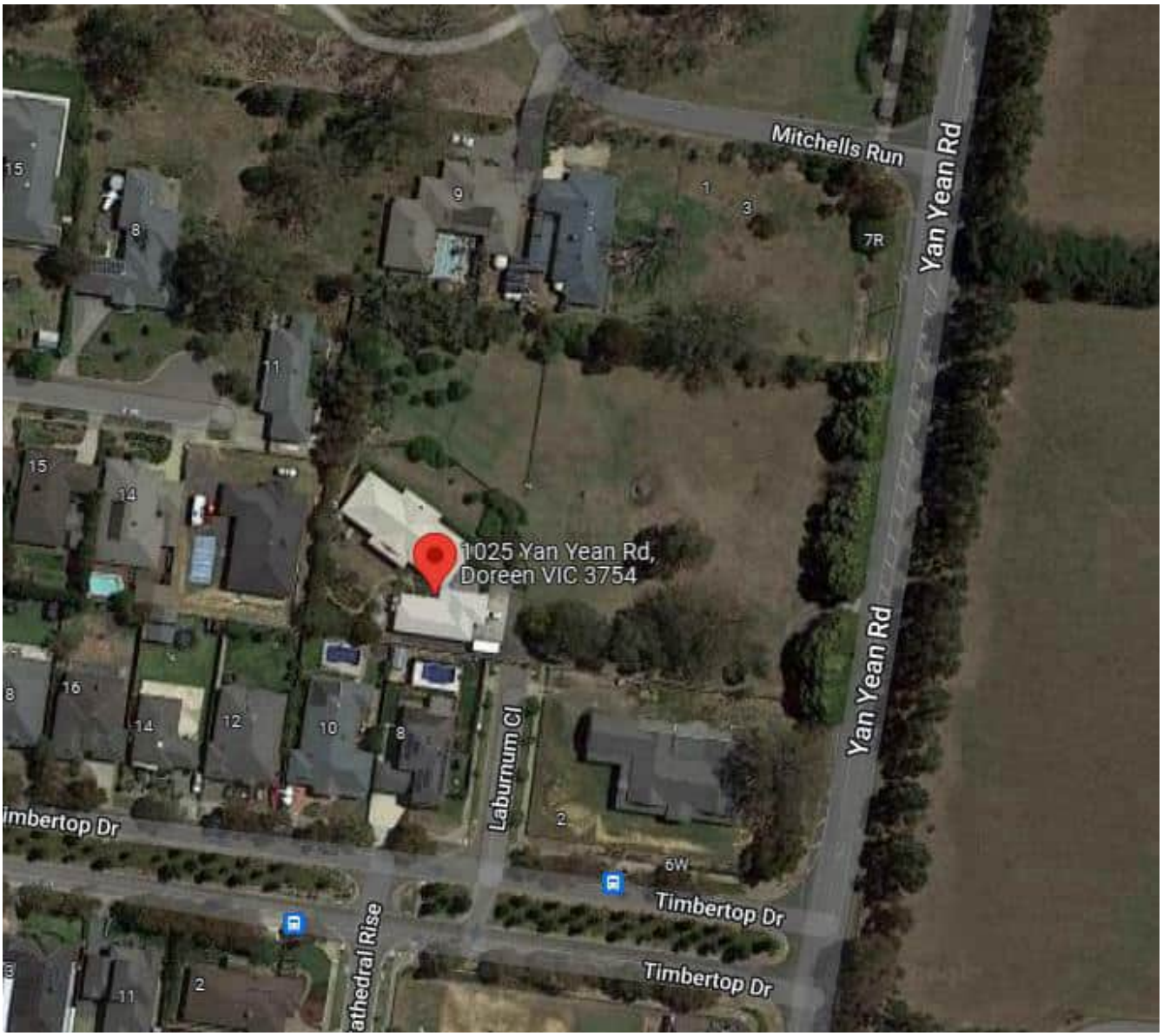
Fig. Aboriginal cultural heritage map (DTP)

3.8 Open space & development contributions

Public open space contribution obligations and development contributions will be satisfied as part of any permit and prior to the issue of titles.

Appendices

- Stormwater Management Strategy
- Arborist Report
- Ecological Assessment



1025 Yan Yean Road, Doreen

Stormwater Strategy

Anand Ramakrishnan

19 December 2022

Revision: 0

Reference: 2223

Document control

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- Flows in this strategy have been calculated in accordance with ARR 2019
- Whilst it is acknowledged that by many that global climate is changing, unless otherwise stated, this document has not considered the impacts of climate change

Document control					
Report title	Stormwater Strategy				
Project number	2223				
File path	D:\Incitus\Barich Consulting - Incitus\Projects\2200\2223 1025 Yan Yean Road, Doreen SWS\Documents\Stormwater Strategy 1025 Yan Yean Road Doreen Rev0.docx				
Client	Anand Ramakrishnan				
Rev	**Date**	**Revision details/status**	**Author**	**Reviewed**	**Approver**
0	19 December 2022	Issued for authority approval	NJB	Reviewed 19.12.22	NJB

Contents

1 Introduction

Anand Ramakrishnan has engaged Incitus to undertake a Stormwater Strategy for the subdivision and development of the “site” at 125 Yan Yean Road, Doreen.

The 1 ha parcel of land is located approximately 29 km north of Melbourne in Doreen. The site is bounded by Yan Yean to the east, and existing residential development to the north, west and south. The site is located within Melbourne Water’s Laurimar Development Services Scheme. The site is illustrated in **Figure 1.1** below.

Figure 1.1 1025 Yan Yean Road, Doreen

Urbanisation leads to an increase in stormwater runoff and a subsequent increase in pollutant wash-off. It also has detrimental effects on the receiving waterways. In determining the urban structure, it is critical that assets required for drainage purposes are determined early so that the impacts from the increase of stormwater runoff due to urbanisation can be mitigated and all new development can proceed without the risk of flooding, of flooding neighbouring properties and without impacting on the natural environment and receiving waterways.

Undertaking a drainage assessment of the catchment that identifies the quantity of runoff, the conveyance of this runoff, the need to retard the runoff and the treatment and / or reuse

of the runoff will assist in determining the assets and / or land-take required for the stormwater management of this catchment. It will also identify the location of all stormwater assets.

Liveability and resilience should be incorporated into all new developments. With respect to stormwater management, this involves utilising the stormwater as an asset for the community whilst ensuring fundamentals such as flood protection, safety with respect to flow management and water supply security are maintained. This can be achieved through incorporation of best planning practices for stormwater management during the development of the urban structure.

This Stormwater Strategy for the development of 1025 Yan Yean Road outlines a management plan for the stormwater that is generated from the urbanisation of the land. It identifies the assets required to manage the increased surface water runoff from urbanisation and sets a framework to achieve the intent of the stormwater assets. The surface water management for the site has been optimised and designed to achieve multiple benefits for the community and the environment.

Figure 1.2 is a preliminary development layout plan for the site.

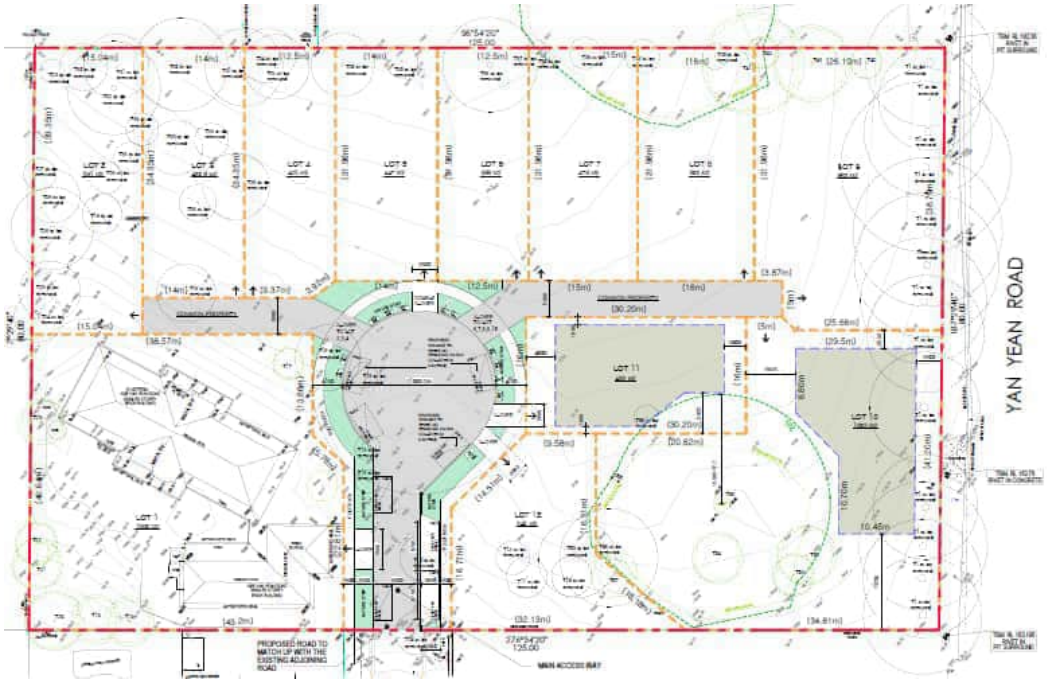

Figure 1.2 1025 Yan Yean Road, Doreen Preliminary Development Layout

2 Catchment Characteristics

The site at 1025 Yan Yean Road, Doreen is located on the west side of Yan Yean Road, approximately 50 m north of Timbertop Drive. The site is 1.0 ha in size. The average annual rainfall for the region is approximately 660 mm. The site is currently used for low-density residential purposes and has had significant modification to the pre-European catchment form.

The site drains to the northern boundary. The slopes are typically around 2 - 6%.

The site has a small external catchment with an area of approximately 0.53 ha contributing from the south. Allowance must be made for the conveyance of the stormwater runoff generated from these external catchments through the site, although the runoff from the catchment north of the site will be conveyed in a conventional drainage system with development of the site to the north.

Figure 2.1 depicts the general site characteristics.

Figure 2.1 Catchment Characteristics of 1025 Yan Yean Road, Doreen

3 Stormwater Management Objectives

In October 2018, the Victorian Government created the new Clause 53.18, Stormwater Management in Urban Development, in the Victorian Planning Provisions to ensure that stormwater generated from all forms of urban development is managed in an integrated way to mitigate the impacts of stormwater runoff on the environment, property and public safety, and to provide cooling, local habitat and amenity benefits.

One of the key elements to be met under Clause 53.18 of the VPPs is the stormwater management objectives and standards for subdivisions. The objectives for stormwater management for subdivisions are:

- To minimise damage to properties and inconvenience to the public from stormwater
- To ensure that the street operates adequately during major storm events and provides for public safety
- To minimise increases in stormwater and protect the environmental values and physical characteristics of receiving waters from degradation by stormwater
- To encourage stormwater management that maximises the retention and reuse of stormwater
- To encourage stormwater management that contributes to cooling, local habitat improvements and provision of attractive and enjoyable spaces

The stormwater management system should be:

- Designed and managed in accordance with the requirements and to the satisfaction of the relevant drainage authority.
- Designed and managed in accordance with the requirements and to the satisfaction of the water authority where use of stormwater is proposed
- Designed to meet the current best practice performance objectives for stormwater quality as contained in the Urban Stormwater-Best Practice Environmental Management Guidelines (Victorian Stormwater Committee,1999).
- Designed to ensure that flows downstream of the subdivision site are restricted to pre-development levels unless increased flows are approved by the relevant drainage authority and there are no detrimental downstream impacts.
- Designed to contribute to cooling, improving local habitat and providing attractive and enjoyable spaces.
- The stormwater management system should be integrated with the overall development plan including the street and public open space networks and landscape design.

For all storm events up to and including the 20% Average Exceedance Probability (AEP) standard:

- Storm water flows should be contained within the drainage system to the requirements of the relevant authority.
- Ponding on roads should not occur for longer than 1 hour after the cessation of rainfall.
- For storm events greater than 20% AEP and up to and including 1% AEP standard: Provision must be made for the safe and effective passage of stormwater flows. All new lots should be free from inundation or to a lesser standard of flood protection where agreed by the relevant flood plain management authority.

- Ensure that streets, footpaths, and cycle paths that are subject to flooding meet the safety criteria daVave < 0.35 m^2/s (where, da = average depth in metres and Vave = average velocity in metres per second).

The design of the local drainage network should:

- Ensure stormwater is retarded to a standard required by the responsible drainage authority.
- Ensure every lot is provided with drainage to a standard acceptable to the relevant drainage authority.
- Wherever possible, stormwater should be directed to the front of the lot and discharged into the street drainage system or legal point of discharge.
- Ensure that inlet and outlet structures take into account the effects of obstructions and debris build up.
- Any surcharge drainage pit should discharge into an overland flow in a safe and predetermined manner.
- Include water sensitive urban design features to manage stormwater in streets and public open space. Where such features are provided, an application must describe maintenance responsibilities, requirements, and costs.
- Any flood mitigation works must be designed and constructed in accordance with the requirements of the relevant floodplain management authority.

4 Development Services Scheme Works

The site is located within Melbourne Water's Laurimar Development Services Scheme (DSS). A scheme map sourced from Melbourne Water indicates that the scheme does not have any stormwater assets in the development. The Laurimar DSS is predominantly completed and does not require any additional drainage infrastructure to service this development. The scheme map for the site including the proposed works for the site is depicted in **Figure 4.1**. The site is represented as property 110 in the DSS.

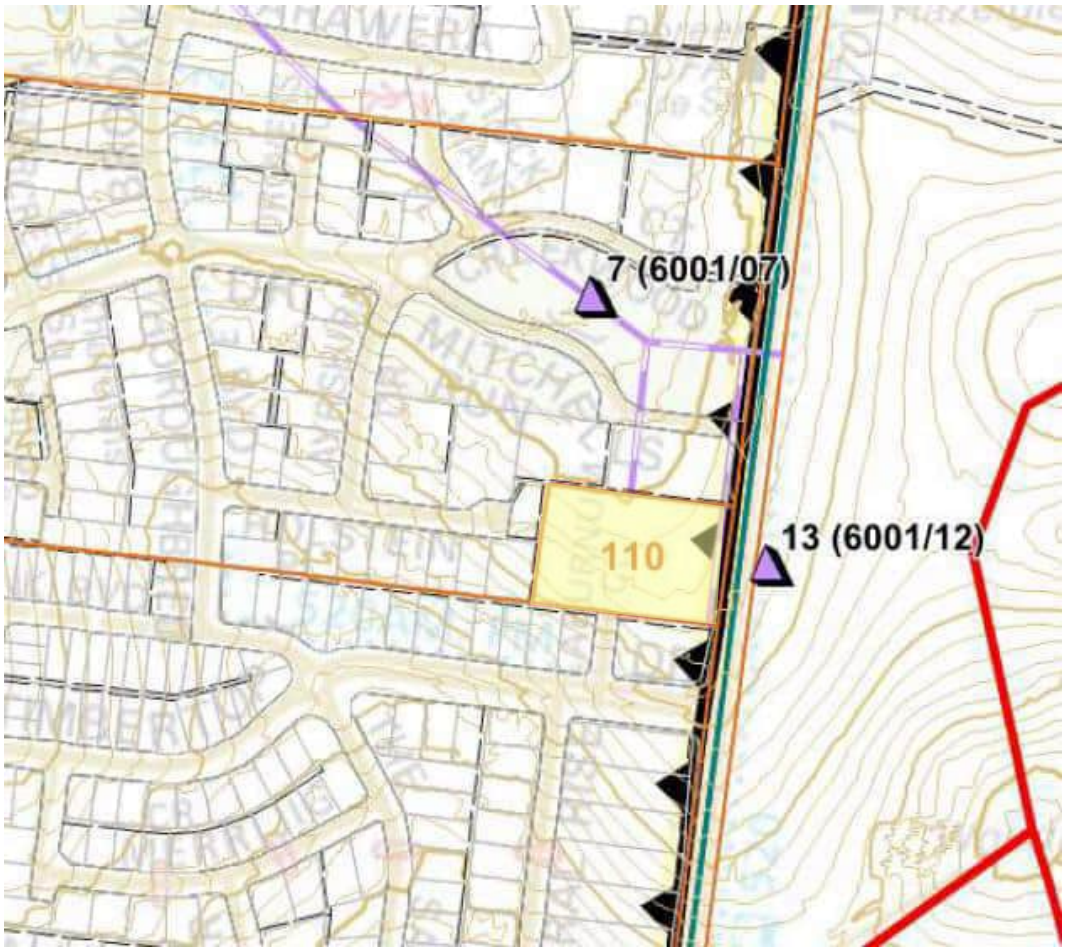

Figure 4.1 Melbourne Water's Laurimar Development Services Scheme

The Laurimar DSS provides for catchment scale treatment and retardation for stormwater runoff. The catchment scale treatment and retardation are existing and located downstream (i.e., to the north) of this site.

5 Stormwater Quantity

The drainage system for the development of the site at 1025 Yan Yean Road, Doreen will be designed to prevent property flooding occurring in a 1% Annual Exceedance Probability (AEP) storm event and the stormwater runoff can be safely conveyed through the development. To achieve this, the development will adopt a minor / major drainage system philosophy.

5.1 Minor Drainage System

The minor drainage system will consist of a subsurface pipe network designed to capture and convey all stormwater runoff generated from the catchment for rainfall events up to and including the 20% Annual Exceedance Probability (AEP) design storm for residential catchments.

As the localised, minor drainage catchments have an area less than 60 ha, the system will be designed in accordance with the Victorian Planning Authority's Engineering Design and Construction Manual.

The subsurface drainage network will be provided to the boundary of all lots in the subdivision in accordance with the requirements and to the satisfaction of the Whittlesea City Council. Where possible, the allotments will be graded to the front with the legal point of discharge in the street drainage. The drainage system will be designed to ensure that the inlet structures account for the effects of obstructions and build-up of debris.

Figure 5.1 illustrates a potential layout for the minor drainage in the site.

It is proposed to capture and convey the peak 1% AEP design flow from the site to the existing 525 mm diameter RCP stub nominated as the legal point of discharge. The existing stub connects to a 675 mm diameter RCP.

It is estimated the capacity of this existing 675 mm diameter RCP is 1.26 m^3/s. Based on the pipe information obtained from a Dial Before You Dig enquiry, the maximum catchment contributing to the existing 675 mm diameter RCP is 2.607 ha. The peak 20% AEP design flow from this catchment is 0.31 m^3/s, including this site. The peak 1% AEP design flow for the catchment, including this site, is 0.76 m^3/s. Therefore, the existing pipe has capacity to convey the peak flows generated from this site without retardation.

Figure 5.1 7 1025 Yan Yean Road, Doreen Possible Minor Drainage Layout

5.2 Major Drainage System

The primary objective of the major drainage system is to provide flood protection for the allotments based on the 1% AEP storm event and to ensure the overland flow can be safely conveyed through the development. This will be via overland flow paths contained within road reserves prior to discharging into the drainage reserve.

The development is located within Melbourne Water's Laurimar Development Services Scheme (DSS). The DSS provides for catchment scale retardation, none of which is within this site.

The development of the site will be designed so that the allotments are set a minimum of 150 mm above the overland flow conveyed through the road reserves.

Figure 5.2 illustrates the major catchments for the development.

Figure 5.2 1025 Yan Yean Road, Doreen Major Catchments

The development of the site must make allowance for the conveyance of external catchment runoff. The runoff from the external catchments and within the site must be safely conveyed through the road reserves. The gap flow will be captured at Catchment B and conveyed in a pipeline to the existing drainage stub.

Table 5.1 outlines the runoff for the catchments and the anticipated overland flow conveyance.

Table 5.1 Major Drainage System Catchment Runoff

Catch	Area (ha)	AE (ha)	Additional catchment runoff	∑ae (ha)	Tc (mins)	$I_{1\% AEP}$ (mm/h)	$Q_{1\% AEP}$ (m^3/s)	Q_{GAP} (m^3/s)
A	0.53	0.33	-	0.33	6	178	0.16	0.10
B	0.57	0.35	A	0.68	7	169	0.32	0.16
C	0.43	0.31	A, B	0.99	8	161	0.44	0.04

A 450 mm diameter RCP is required to convey the peak 1% AEP design flow through the proposed drainage easement and connect it to the existing 525 mm diameter pipe stub. It is estimated that this pipe will have a grade of 1 in 50, and a capacity of 0.40 m^3/s.

The development will require 3 x 900 mm x 600 mm grated side entry pits (GSEPs) to capture the peak 1% AEP design flow at Catchment B. It is recommended that the development adopt a total of 4 x GSEPs, with 2 located on each side of the court bowl in the low points. This will allow for additional blockage of these pits.

5.3 Overland Flow Safety

It is imperative that the development conveys the overland flows safely along road reserves. This requires ensuring the overland flow along major flow paths complies with floodway safety requirements.

The recommended safety limits for residential developments are as follows (from the *Guidelines for Development in Flood Affected Areas*):

- V.dmax <= 0.3 m^2/s
- Vmax <= 2.0 m/s
- dmax <= 0.30 m

For the minimum road grades to comply with the engineering standards, the maximum overland flow which can be safely conveyed along a 15 m access street is 3 m^3/s. The maximum overland flow which can be safely conveyed along a 15 m access street at a grade of 10% is 0.5 m^3/s. These figures have been based on 1 dimensional steady state hydraulic modelling using the software program HEC-RAS.

The development will not exceed the safe limit for overland flow along any access street, with the maximum gap flow for the development 0.16 m^3/s. It should be noted that this flow can be conveyed through a 15 m road reserve at a grade of 10% and still contain the required 150 mm freeboard within the road reserve.

6 Stormwater Quality Treatment

The State Environment Protection Policy (Waters of Victoria) defines the required water quality conditions for urban waterways. The aim of stormwater quality treatment is to reduce typical pollutant loads from urban areas to Best Management Practices as defined in the following targets:

Table 6.1 Best Practice Pollutant Reduction Targets

Pollutant	Performance Objective
Total Suspended Solids (TSS)	80% reduction from typical urban load
Total Phosphorous (TP)	45% reduction from typical urban load
Total Nitrogen (TN)	45% reduction from typical urban load
Gross Pollutants (GP)	70% reduction from typical urban load
Flows	Maintain discharges for the 1.5 year ARI at pre-development levels

Source: Urban Stormwater: Best Practice Environmental Management Guidelines – Victorian Stormwater Committee, 1999.

The Laurimar Development Services Scheme adopts a holistic approach to stormwater quality. For this site, the treatment for the site is a constructed wetland system located to the north-west on Laurimar Drain.

Based on the achieving the density requirements and complying with the engineering design standards; it is not recommended to include any on-site treatment for this development. We recommend the payment of contributions to Melbourne Water for the treatment to be undertaken regionally within the DSS.

7 Outfall Arrangement

Melbourne Water's Laurimar DSS and Whittlesea City Council have determined the legal point of discharge for the site as the existing 525 mm diameter pipe stub located along the northern boundary of the site. The invert level of the existing stub will be determined prior to construction. The design plans indicate the stub has an IL of 178.51 m AHD and a grade of 1 in 200, with a capacity of 0.30 m^3/s. The peak 1% AEP design flow to be captured and conveyed in this pipeline is approximately 0.24 m^3/s. Thus, there is no requirement for any on-site detention.

The pipe stub and the outfall are existing therefore no temporary works are required. The downstream pipe capacity is estimated to be 1.26 m^3/s, which is sufficient capacity to convey the peak 20% AEP design flow from the catchment including the development of this site, and the peak 1% AEP design flow for the catchment.

Figure 7.1 illustrates the nominated legal point of discharge for the site.

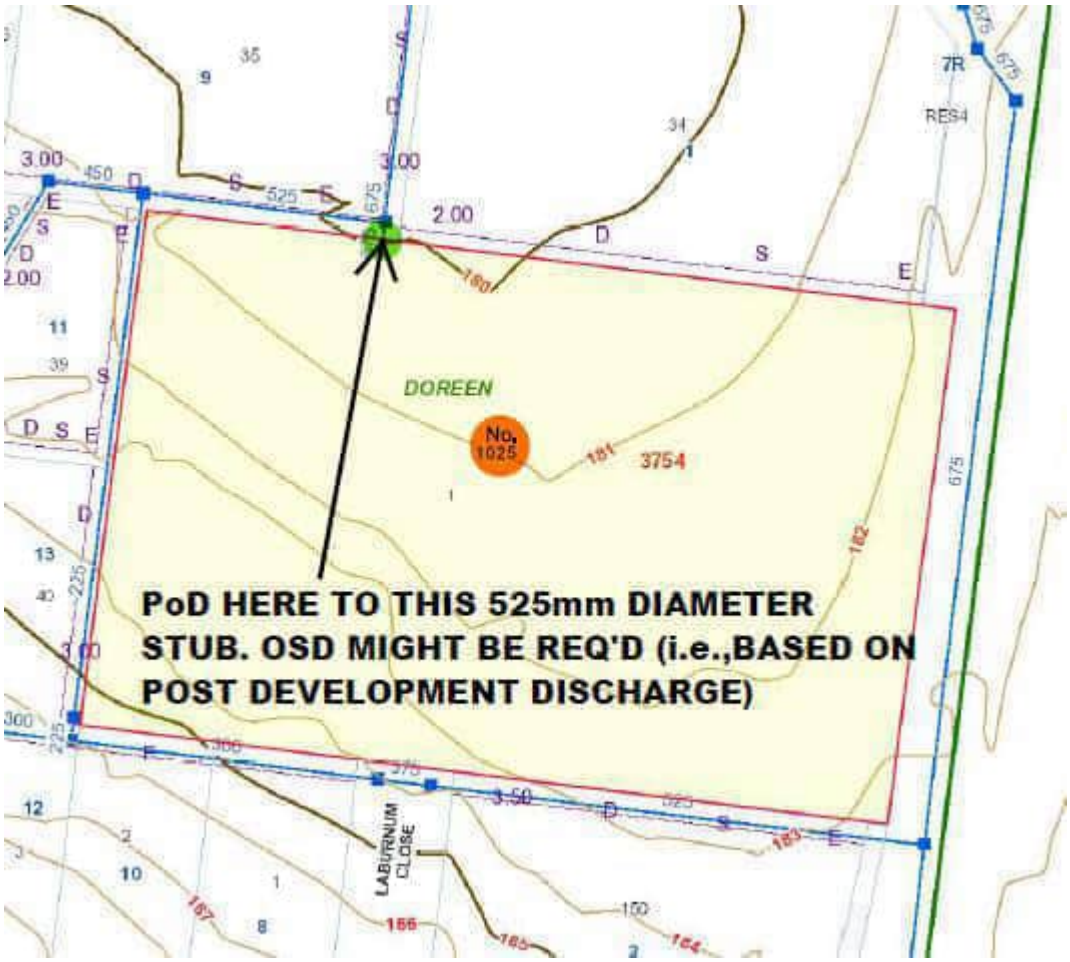

Figure 7.1 Legal Point of Discharge for 1025 Yan Yean Road, Doreen

8 Site Management

The proposed drainage system for the site ensures that receiving waters are protected from sediment runoff and other offensive pollutants.

During construction of the development, the contractor must have an approved Site Environmental Management Plan (SEMP) in place, which is to be complied with for the duration of the construction phase. The plan should include measures comprising:

- Sandbags and filters to prevent sediment laden stormwater runoff from the site
- Dust suppressants
- Excess spoil to be removed from construction vehicles construction zone
- Securing of waste stockpiles
- Measures to protect the conservation zone

9 Conclusion

The development of 1025 Yan Yean Road, Doreen is located within Melbourne Water's Laurimar Development Services Scheme; and is required to meet the drainage standards specified by the Whittlesea City Council.

The development will provide pipe drainage infrastructure to convey a minimum of the 20% AEP design flows for residential catchments to minimise nuisance flooding occurrences in regular rainfall events. The gap flows, i.e., the difference between the 1% AEP design flows and the pipe flows, will be safely conveyed through the development along road reserve corridors, as well as a 1% AEP pipeline through a drainage easement to the existing outfall stub.

The Melbourne Water DSS provide catchment scale retardation and stormwater quality treatment for the runoff generated from the urbanisation of this site. None of these assets are located within this site.

The outfall for the development is an existing stub located along the northern property boundary. The outfall has sufficient capacity to convey the peak flows generated from the development of this site.

10 References

Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors), 2019, Australian Rainfall and Runoff: A Guide to Flood Estimation, Commonwealth of Australia

CSIRO, 2006, Urban Stormwater: Best Practice Environmental Management Guidelines

Department of Environment Land Water and Planning, February 2019, Guidelines for Development in Flood Affected Areas

Engineers Australia, 1987, Australian Rainfall and Runoff

Melbourne Water, 2022, Planning and Building website page

Melbourne Water, 2018, Guidelines for the Use of MUSIC

Melbourne Water, 2005, WSUD Engineering Procedures: Stormwater

Victorian Planning Authority, December 2019, Engineering Design and Construction Manual for Subdivision in Growth Areas

Appendix A – Intensity Frequency Duration Data

Doreen Intensity Frequency Duration Table

Label: Doreen
Latitude: Requested: -37.480043 Nearest grid cell: 37.4875 (S)
Longitude: Requested: 144.982541 Nearest grid cell: 144.9875 (E)

Duration	Average Exceedance Probability						
	63.20%	50%#	20%*	10%	5%	2%	1%
1 min	90.3	102	141	172	205	255	298
2 min	76.5	85	115	138	163	201	233
3 min	68.8	76.7	104	126	149	184	214
4 min	63	70.5	96.5	117	139	172	200
5 min	58.4	65.4	90.2	109	130	162	189
10 min	43.5	49.1	68.5	83.7	100	125	146
15 min	35.3	39.8	55.8	68.1	81.6	102	119
20 min	30	33.9	47.3	57.7	69.1	86.1	101
25 min	26.3	29.6	41.3	50.3	60.2	74.9	87.6
30 min	23.6	26.5	36.7	44.7	53.4	66.4	77.7
45 min	18.2	20.4	28.1	34	40.5	50.3	58.7
1 hour	15.1	16.9	23	27.8	33.1	41	47.8
1.5 hour	11.6	12.9	17.4	21	24.8	30.6	35.7
2 hour	9.55	10.6	14.3	17.2	20.3	25	29.1
3 hour	7.3	8.09	10.9	13	15.4	18.9	21.9
4.5 hour	5.59	6.2	8.33	9.99	11.8	14.5	16.7
6 hour	4.63	5.15	6.94	8.32	9.81	12	13.9
9 hour	3.55	3.96	5.38	6.47	7.64	9.34	10.8
12 hour	2.94	3.29	4.5	5.42	6.41	7.82	9.01
18 hour	2.24	2.53	3.49	4.22	5	6.08	6.97
24 hour	1.84	2.08	2.91	3.52	4.16	5.05	5.76
30 hour	1.58	1.79	2.51	3.04	3.59	4.34	4.95
36 hour	1.38	1.57	2.21	2.68	3.17	3.82	4.34
48 hour	1.12	1.28	1.8	2.18	2.58	3.09	3.49

Duration	Average Exceedance Probability						
	63.20%	50%#	20%*	10%	5%	2%	1%
72 hour	0.822	0.939	1.32	1.6	1.88	2.23	2.5
96 hour	0.655	0.746	1.04	1.25	1.47	1.74	1.94
120 hour	0.547	0.621	0.86	1.03	1.2	1.41	1.57
144 hour	0.472	0.533	0.73	0.87	1.01	1.19	1.32
168 hour	0.416	0.467	0.634	0.752	0.872	1.02	1.14

Appendix B – Flow Computations

1% AEP Design Flows

Catchment	Tc (mins)	Area (ha)	C	Ae (ha)	ΣAe (ha)	I_{100} (mm/hr)	Q_{100} (m^3/s)
A	6	0.53	0.622	0.33	0.33	178	0.16
B	7	0.67	0.622	0.35	0.68	169	0.32
C	8	0.43	0.714	0.31	0.99	161	0.44

Note: $C'_{10} = 0.13724$
For f = 50%; $C_{1\%} = 0.622$
f = 60%; $C_{1\%} = 0.712$

Appendix C – Legal Point of Discharge

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PRELIMINARY ARBORICULTURAL ASSESSMENT

SITE ADDRESS: 1025 Yan Yean Road, Doreen 3754

REPORT DATE: 24th February 2022

TREETEC REFERENCE: yany0222cw_PAR

PREPARED FOR:
Lava Stone Pty Ltd ATF Lava Stone Trust
1025 Yan Yean Road, Doreen
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0423 328 887

PREPARED BY:
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This preliminary report is intended to inform the design of the development.

Contents

1 Introduction

1.1 Purpose

Treetec has been engaged to provide an assessment of the tree population at or in close proximity to 1025 Yan Yean Road, Doreen (the site).

This report provides information to assist with the design and location of all proposed works, and advice on the protection of those trees likely to be retained at or near the site.

Following finalisation of designs, an arboricultural impact assessment should be prepared to be submitted with the planning application (if required).

This report is not suitable for council submission.

1.2 Scope

- Undertake a ground based visual assessment of the tree population at or near the site.
- Provide details on the subject trees including their species, arboricultural values, condition, and dimensions
- Provide general comments on measures likely to be required to enable the protection of the subject trees.

1.3 Method

- An arboricultural assessment of the site was undertaken by Chris White on the 18th February 2022.
- All observations were taken at ground level, using stage 1 of the Visual Tree Assessment (VTA) method (Mattheck and Breloer 1994).
- Tree dimensions and condition have been categorised in line with the Appendix 7.2 - Glossary.

1.4 Limitations

- Root assessment requiring excavation was not undertaken. Therefore, root condition has not been included unless above ground signs, such as soil heaving or cracking were observed
- Aerial examination (tree climbing) was not undertaken
- Tree height and canopy width were estimated
- Environmental weeds, shrubs, dead trees and juvenile exotic trees of low amenity/retention value were not assessed individually
- Diameter at Breast Height (DBH) of trees growing on adjoining properties was estimated.

For the full list of assumptions and limitations for this report please refer to Appendix 7.1

1.5 Planning scheme and applicable overlays

The site is covered by the Whittlesea Shire Council Scheme and is zoned General Residential Zone – Schedule 1 (GRZ1).

Overlays

- Development Contributions Plan Overlay-Schedule 5 (DCPO5)
- Development Plan Overlay- Schedule 5 (DPO5)
- Incorporated Plan Overlay- Schedule 1 (IPO1)

- Vegetation Protection Overlay- Schedule 1 (VPO1)

2 Findings

2.1 Site summary

The site is a large landholding and supports a single story brick residence with a freestanding brick double garage. There are two small sheds on the property. Significant revegetation works have been undertaken at the property, and non-indigenous native trees line the southern, western and northern boundaries. *Acacia*, *Hakea*, *Banksia* and *Eucalyptus* species have been commonly planted. The eastern boundary of the site is shielded from Yan Yean Road by a Monterey Cypress hedge. A very large River Red Gum is a feature of the front of the site. The interior of the site is clear with the exception of mixed fruit trees that have been planted to the north of the residence.

2.2 Vegetation on adjoining land

Tree number	Location
Tree 14	Located in the road reserve on the southern boundary of the subject site
Tree 40	Growing in the property to the north of the subject site

2.3 Tree data

TREE #	SPECIES	COMMON NAME	TYPE	DBH (CM)	HEIGHT (M)	SPREAD (M)	STRUCTURE	HEALTH	AGE	RETENTION VALUE	ULE (YRS)	TPZ (M)
1 (x13)	*Hesperocyparis macrocarpa*	Monterey Cypress	Exotic	~60	11	10	Good	Fair	Mature	Medium	15-40	7.2
	Notes: Row of 13 trees planted along the eastern (front) boundary of the site. At least three trees in group appear to be in significant decline in health with at least 50% of their canopy deceased.											
2	*Allocasuarina littoralis*	Black Sheoak	Australian Native	17	6	6	Good	Good	Semi-mature	Low	15-40	2.0
3	*Eucalyptus melliodora*	Yellow Box	Indigenous	28	9	6	Good	Good	Semi-mature	Low	40+	3.4
	Notes: Main stem removed from 2.2 metres height											
4	*Acacia melanoxylon*	Blackwood	Indigenous	18	8	7	Good	Good	Mature	Low	15-40	2.2
5	*Eucalyptus camaldulensis*	River Red Gum	Indigenous	153	17	22	Good	Good	Mature	High	40+	15.0
	Notes: Co-dominant from 5 metres height- union appears sound. Slight dieback in some branch tips. Small to medium deadwood throughout.											
6	*Eucalyptus camaldulensis*	River Red Gum	Indigenous	12	7	3	Good	Poor	Juvenile	Low	0-5	2.0
	Notes: Very thin canopy. Epicormic shoots up trunk.											
7	*Melaleuca armillaris*	Giant Honey-myrtle	Australian Native	18	8	7	Good	Good	Semi-mature	Low	40+	2.2
8	*Eucalyptus botryoides*	Southern Bangalay	Australian Native	48	11	9	Good	Good	Semi-mature	Medium	40+	5.8

TREE #	SPECIES	COMMON NAME	TYPE	DBH (CM)	HEIGHT (M)	SPREAD (M)	STRUCTURE	HEALTH	AGE	RETENTION VALUE	ULE (YRS)	TPZ (M)
9	*Eucalyptus camaldulensis*	River Red Gum	Indigenous	60	15	10	Good	Good	Semi-mature	Medium	40+	7.2
10	*Hakea laurina*	Pincushion Hakea	Australian Native	15	7	6	Good	Good	Mature	Low	15-40	2.0
11	*Callistemon* sp	Bottlebrush	Australian Native	15	6	7	Good	Good	Mature	Low	15-40	2.0
12	*Quercus palustris*	Pin Oak	Exotic	<10	6	4	Good	Good	Juvenile	Low	40+	2.0
13	*Grevillia robusta*	Silky Oak	Australian Native	29	9	7	Good	Fair	Semi-mature	Low	15-40	3.5
	Notes: Dieback in upper canopy. Past removal of some lower branches.											
14	*Eucalyptus botryoides*	Southern Bangalay	Australian Native	17	9	7	Good	Good	Juvenile	Low	40+	2.0
	Notes: Tree located 0.4 metres from the fence line in the road reserve to the south of the subject site.											
15 (x3)	*Agonius flexuosa*	Willow Myrtle	Australian Native	<10	7	6	Good	Good	Semi-mature	Low	15-40	2.0
16	*Leptospermum petersonii*	Lemon-scented Tea-tree	Australian Native	22	6	7	Good	Good	Mature	Low	40+	2.6
	Notes: Multi-stemmed from near-ground- union appears sound.											
17	*Platanus* sp	Sycamore	Exotic	14	6	5	Good	Good	Juvenile	Low	40+	2.0
18	*Malus* sp	Apple	Exotic	18	7	8	Good	Good	Semi-mature	Low	40+	2.2

TREE #	SPECIES	COMMON NAME	TYPE	DBH (CM)	HEIGHT (M)	SPREAD (M)	STRUCTURE	HEALTH	AGE	RETENTION VALUE	ULE (YRS)	TPZ (M)
19 (x3)	*Casuarina torulosa*	Forest Oak	Australian Native	28	8	7	Good	Good	Mature	Low	40+	3.4
20	*Callistemon* sp	Bottlebrush	Australian Native	35	6	7	Good	Good	Mature	Low	15-40	4.2
	Notes: Multi-stemmed from near ground- union appears sound.											
21	*Allocasuarina littoralis*	Black Sheoak	Australian Native	19	7	6	Good	Good	Mature	Low	15-40	2.3
22	*Kunzea leptospermoides*	Yarra Burgan	Indigenous	16	6	6	Good	Good	Mature	Low	15-40	2.0
23	*Callistemon* sp	Bottlebrush	Australian Native	22	6	8	Unknown	Good	Mature	Low	15-40	2.6
	Notes: Multi-stemmed from near ground- union not visible due to creeper growth											
24	*Callistemon viminalis*	Weeping Bottlebrush	Australian Native	22	6	8	Good	Good	Mature	Low	15-40	2.6
	Notes: Multi-stemmed from near ground- union appears sound.											
25	*Eucalyptus* sp	Gum	Australian Native	38	9	10	Fair	Good	Mature	Medium	40+	4.6
	Notes: Recent failure of large leader.											
26	*Eucalyptus leucoxylon*	Yellow Gum	Indigenous	40	9	9	Good	Good	Mature	Medium	40+	4.8
	Notes: Co-dominant primary union from 1 metre high- union appears sound.											
27	*Eucalyptus* sp	Mallee	Australian Native	28	8	8	Good	Good	Mature	Low	40+	3.4
28	*Hakea laurina*	Pincushion Hakea	Australian Native	18	7	6	Good	Good	Mature	Low	40+	2.2

TREE #	SPECIES	COMMON NAME	TYPE	DBH (CM)	HEIGHT (M)	SPREAD (M)	STRUCTURE	HEALTH	AGE	RETENTION VALUE	ULE (YRS)	TPZ (M)
29	*Eucalyptus leucoxylon*	Yellow Gum	Indigenous	<12	7	4	Good	Good	Juvenile	Low	40+	2.0
30 (x4)	*Eucalyptus* sp	Mallee	Australian Native	17	8	8	Good	Good	Semi-mature	Low	40+	2.0
31 (x3)	*Melaleuca armillaris*	Giant Honey-myrtle	Australian Native	18	7	7	Good	Good	Mature	Low	15-40	2.2
32 (x2)	*Eucalyptus* sp	Gum	Australian Native	27	10	8	Good	Good	Semi-mature	Low	40+	3.2
33 (x2)	*Eucalyptus leucoxylon*	Yellow Gum	Indigenous	28	9	8	Good	Good	Semi-mature	Low	40+	3.4
34	*Hakea laurina*	Pincushion Hakea	Australian Native	25	7	7	Good	Good	Mature	Low	15-40	3.0
35	Pear, Apple, Plum, peach	Various Fruit Trees	Exotic	~18	6	7	Good	Good	Mature	Low	15-40	2.2
	Notes: Group of fruit trees planted in the north-western corner of the property.											
36	*Eucalyptus* sp	Gum	Australian Native	47	14	10	Good	Good	Mature	High	40+	5.6
	Notes: Co-dominant primary union from 1 metre high- union appears sound.											
37	*Acacia melanoxylon*	Blackwood	Indigenous	16	7	5	Good	Good	Juvenile	Low	40+	2.0
38	*Acacia floribunda*	White Sallow Wattle	Australian Native	22	7	7	Good	Good	Mature	Low	15-40	2.6
39	*Hakea laurina*	Pincushion Hakea	Australian Native	16	5	4	Good	Good	Semi-mature	Low	15-40	2.0

TREE #	SPECIES	COMMON NAME	TYPE	DBH (CM)	HEIGHT (M)	SPREAD (M)	STRUCTURE	HEALTH	AGE	RETENTION VALUE	ULE (YRS)	TPZ (M)
40	*Eucalyptus camaldulensis*	River Red Gum	Indigenous	~130	22	24	Good	Good	Mature	High	40+	15.0
	Notes: Tree growing ~7 metres from the fenceline on the property to the north of the subject site. Multi-stemmed from 4 metres height- union appears sound. Approximately 10% of the canopy overhangs the subject site.											
41	*Eucalyptus* sp	Gum	Australian Native	40	9	9	Good	Good	Semi-mature	Medium	40+	4.8
42 (x2)	*Corymbia maculata*	Spotted Gum	Australian Native	18	9	8	Good	Good	Semi-mature	Low	40+	2.2
43	*Eucalyptus melliodora*	Yellow Box	Indigenous	32	9	8	Good	Good	Semi-mature	Medium	40+	3.8

LEGEND

Tree Number and Amenity Value

- # -High
- # -Medium
- # -Low

Tree Protection Zone (TPZ) - to be retained

N

SITE PLAN

1025 Yan Yean Road, Doreen

S/T **Trees/shrubs shown on this plan that have not been individually assessed are either; small, low amenity value, or unlikely to be impacted by works.**

TPZ no go zones must be established (as per the above plan) to exclude access from the protected TPZ. Protective fencing (unless otherwise directed) must be of a chain mesh or similar type at a minimum height of 1.8m and held in place with concrete feet. Signage must be placed on the fencing and be clearly visible- "TPZ- No Access".

Date: 21/02/2022

Drawn to scale @ A3 (Not to print scale)

Treetec Ref: yany0222cw_PAR

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3 Discussion

3.1 Retention Value

All trees assessed for this report have been assigned a retention value which seeks to make a judgement on the importance of that tree in the landscape. General principles to assist with the determination of the retention value of a tree are provided in section 7.2- Glossary.

It is important to note that a retention value of 'Low' does not suggest that a tree should be removed (all trees provide value to a site) nor does a low rating suggest that a regulatory authority will be agreeable to the removal of a particular tree. Subject to the existence of vegetation-specific overlays or relevant local laws, engagement should be had with the regulatory authority on all trees considered for removal.

3.2 Preliminary design

The tree population on site is comprised predominantly of semi-mature and mature exotic and non-indigenous native species. The Vegetation Protection Overlay that exists across the site may have implications for the trees that are permitted to be removed.

The purpose of the Vegetation Protection Overlay is:

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To protect areas of significant vegetation. To ensure that development minimises loss of vegetation.
- To preserve existing trees and other vegetation.
- To recognise vegetation protection areas as locations of special significance, natural beauty, interest and importance.
- To maintain and enhance habitat and habitat corridors for indigenous fauna.
- To encourage the regeneration of native vegetation.

Under the VPO, a permit is required to remove any native vegetation. Whilst the VPO appears to have a particular regard to River Red Gums, there are many native species on the site, and further consultation with Whittlesea Council may be necessary to understand the definition of native vegetation in the context of the VPO. Subject to their determination, it may be necessary to seek a permit to remove any tree that is native to Australia.

Regardless of the VPO, higher value trees should be protected and incorporated into planning for the sites/s. Trees on neighbouring sites (including the road reserves) that are not within the ownership of the proponent may need to be protected. Consideration must be given to the soil within the nominated TPZ and to the roots and canopy where these tree parts are within, or overhang, the subject site. Consultation with the owner of the trees must be had if there is any potential for the future development to adversely impact any trees not within the subject site.

Protection of trees, both during the planning and construction phases, will benefit the long-term amenity of the site and streamline the planning permit process.

All activities near trees should be planned to avoid adversely impacting those trees, the soil within the Tree Protection Zone (TPZ) and the trunk and branches should be protected.

Examples of works that can adversely impact trees include:

- Demolition works

- Site cut and fill
- Parking and movement of construction vehicles
- Storage of construction materials
- Installation of driveways and pathways
- Trenching for underground services
- ALL activity within the TPZ.

3.3 Permit requirements

Engagement should be had with Whittlesea Shire Council if there is the potential for the development to impact native trees on the property**.**

The indigenous River Red Gum on the site may require a permit under clause 52.17 of the Whittlesea Shire Council planning scheme should be removal of this tree be planned.

No other trees assessed appear to have specific permit requirements relevant to their removal.

4 Conclusion

The arboricultural assessment undertaken at 1025 Yan Yean Road, Doreen comprised 43 trees (including eight tree groups). Tree 14 is growing within the road reserve to the south of the subject site, tree 40 is growing on the property to the north of the subject site, and the remaining trees are growing within the boundaries of the subject site.

The table below is a summary of the retention values of the 43 trees assessed.

Descriptions of amenity values can be found in appendix 7.2- Glossary.

Summary of assessed trees		
Retention Value	**Tree or group number**	
	Trees on site	**Trees on neighbouring properties**
High	Tree 5, 36	Tree 40
Medium	Tree group 1, tree 8, 9, 25, 26, 41 and 43	
Low	Trees 2-4, 6, 7, 10-13, Tree group 15, trees 16-24, trees/tree groups 27-35, 37-39, tree group 42.	Tree 14

5 Recommendations

- Protect all trees proposed to be retained from adverse impact, particularly medium to higher value trees and all trees on adjoining properties
- Include scaled Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) on proposed plans for all assessed trees (see tree data)
- If encroachments within TPZs are unavoidable, ensure less than 10% of the total area is impacted. The area lost should be compensated for elsewhere and contiguous with the TPZ
- All works should be shown on plans. Site cut and fill, location of buildings, driveways and pathways, all underground services, including storm water and sewerage
- Design of any underground services and landscaping should be cognisant of root protection. Do not excavate within the nominated Tree Protection Zones of retained trees including those trees on neighbouring properties unless permitted by the responsible authority.

6 References

Department of Environment, Land, Water and Planning. VicPlan, Accessed January 2022, Available at: https://mapshare.vic.gov.au/vicplan/

Mattheck, C. and Breloer, H. (1994), *The Body Language of Trees: A Handbook for Failure Analysis*, London: HMSO.

Standards Australia (2009), AS 4970-2009 Protection of trees on development sites

Standards Australia (2007), AS 4373-2007 Pruning of amenity trees

7 Appendix

7.1 Assumptions & Limitations

1. ***Treetec*** does not assume responsibility for legal matters, and assumes that legal descriptions, titles and ownerships are correct and good.
2. ***Treetec*** assumes that any property or project is not in violation of any applicable codes, ordinances, statutes or other government regulations.
3. ***Treetec*** takes all reasonable care to ensure all referenced material is accurate and quoted in correct context but does not take responsibility for information quoted or supplied.
4. ***Treetec*** shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including the payment of an additional fee for such services.
5. Loss or alteration of any part of this report invalidates the entire report.
6. Possession of this report, or a copy thereof, does not imply right of publication or use for any purpose by anyone but the person to whom it is addressed, without the prior written consent of ***Treetec***.
7. All, or any part of the contents of this report, or any copy thereof, shall not be used for any purpose by anyone but the person to whom it is addressed, without the written consent of ***Treetec***.
8. This report shall not be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the written consent of ***Treetec***.
9. This report and any values expressed herein represent the opinion of ***Treetec*** and ***Treetec's*** fee is in no way contingent upon the reporting of a specified value, the occurrence of a subsequent event, nor upon any finding to be reported.
10. Site plans, diagrams, graphs and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
11. Information in this report covers only those items that were examined in accordance with the Terms of Reference, and reflects the condition of those items that were examined at the time of the inspection.
12. Inspections are limited to visual examination of accessible components unless otherwise stated in the "Method of Inspection".
13. There is no warranty or guarantee, expressed or implied, that the problems or deficiencies of the plants or property in question may not arise in the future.
14. Due to the dynamic nature of trees and development there can be no guarantee that the Useful Life Expectancy (ULE) of the subject tree/s won't be adversely impacted.

7.2 Glossary

AGE CATEGORY	The age of the tree is represented as Juvenile, Semi-mature, Mature or Senescent.	
	Juvenile:	A young tree, given normal environmental conditions for that tree it will not yet flower or fruit.
	Semi-mature:	Able to reproduce but not yet nearly the size of a mature specimen in that location.
	Mature:	Has reached or nearly reached full size and spread for that species in the given location.
	Senescent:	Health and / or structure is being adversely impacted by the old age of the tree.
ARBORICULTURAL VALUES	Values assigned to a tree or group of trees to provide an overview of their significance with consideration to a range of factors (see below)	
RETENTION VALUE	A rating assigned to a tree or group of trees based on; Amenity Value, Useful Life Expectancy (ULE), suitability for the site, location, cultural or historical significance, legislative vegetation controls (such as Planning or Local Law). Age is a primary consideration as it is the determining factor when considering how long it would take to replace the amenity lost when trees are removed. For proposed development, the retention value may help shape decisions to ensure site amenity value is maximised. Tree removal may require a planning permit. Check with your local council prior to removing any vegetation.	
	High:	Worthy of retention and incorporation into any development proposal. Medium or High Amenity Value, 15>40 years or greater Useful Life Expectancy (ULE), rare or endangered/ ecologically valuable.
	Medium:	Should be considered for retention, if practicable. Low or Medium Amenity Value, 15-40 years or less ULE. May be minimal canopy cover in the local area (loss would be detrimental to the landscape).
	Low:	Low Amenity Value, 5-15 years or less ULE, may be problematic to retain. Retain if desired, otherwise consider removal.
CALLUS	Tissue that forms over a cut or damaged plant surface immediately after wounding, usually followed by Cork (*woundwood*). Wounds include pruning cuts and the site of branch failures, etc.	
CANOPY SPREAD	Overall size of the canopy as looking from a plan view. Recorded at the widest point.	
CO-DOMINANT STEMS	Two stems of approximately the same thickness and height originating from the same position in the tree.	
COMMON NAME	A non-scientific name commonly used for that tree.	
DEAD (AS DEAD)	Cessation of all metabolic processes (or very soon to be)	
DEVELOPMENT	The use of land including; the subdivision of land, erection or demolition of a building or works, the carrying out of a work, road works, the installation of utilities and services, and any other act, matter or thing as defined by the relevant legislation.	
DIAMETER AT BREAST HEIGHT (**DBH**)	The diameter of the trunk measured at or near 1.4m above ground level. Where there is more than 1 stem originating below 1.4m the measurement recorded is calculated as described in AS 4970-2009.	
EPICORMIC GROWTH (also see coppice)	New shoots forming from dormant buds within the bark on the trunk and/or branches.	

FORM	Reference to the symmetry of the crown as observed from all angles and in accordance with the morphology of that species, and documented as Poor, Fair or Good.	
HEALTH	A trees vigour as exhibited by the crown density, leaf colour, seasonal extension growth, presence of stress indicators, ability to withstand diseases and pests, and the degree of dieback. Where a deciduous tree is inspected without foliage and health is undetermined a '?' will be noted.	
	Dead:	Cessation or near cessation of all metabolic processes.
	Poor:	Indicating symptoms of extreme stress such as minimal foliage, or extensively damaged leaves from pests and diseases. Death probable if condition of tree deteriorates.
	Fair:	Some minor deadwood or terminal dieback indicating a stressed condition. Minor leaf damage from pests.
	Good:	Usual for that species given normal environmental conditions – full canopy with only minor deadwood, normal leaf size and extension growth, minimal pest or disease damage
HEIGHT	The distance in metres from the ground to the highest point in the crown, calculated in the vertical plane. This measurement unless otherwise specified is an estimation only.	
IMPACT ASSESSMENT	An assessment of adverse impact the proposed works are likely to have on a tree or tree group. May be short or long term; usually judged on the likely reduction in ULE directly attributable to the works. Impact usually relates to the level of TPZ encroachment, but also factors the type of impact. One or more factors may apply.	
	Low:	Proposed works are outside of the TPZ and impacts are likely to be nil. Or, minor damage may occur such as; smaller roots may be damaged or a small area of canopy pruned. Unlikely to significantly impact tree health, form, or ULE.
	Moderate:	Direct (physical wounding), or indirect (environmental impacts) are possible, root damage may occur, canopy pruning likely, and an occurrence will reduce the ULE.
	High:	Tree/s likely to be lost in the medium or short term, or adversely impacted so that tree health, and therefore, ULE are significantly reduced, or the tree will become unstable and/or present an unacceptable level of risk.
	Proposed to be removed:	Trees that are within the footprint of works and proposed to be removed by the client, or are not viable to retain due to the factors listed in the conclusions of this report. Trees proposed for removal are not always required to be removed.
INCLUDED BARK UNION	A union within a tree that has included bark (bark pressing on bark), these unions are usually poorly attached and more likely to fail as the included bark is equivalent to a split. Often characterized by an acute angle and sometimes forming ribs or flaring immediately below the union where the tree reacts to the weakness by placing secondary growth. Though these unions are weaker than a 'good' union, the risk of failure cannot be calculated and a poor union does not automatically justify the removal of the tree.	
LOPPING / TOPPING (includes coppicing)	The removal of parts of a tree giving no consideration to the trees natural defence systems.	
PRUNING	Systematic removal of branches of a plant whilst giving consideration to the trees natural defence systems.	
RESPONSIBLE AUTHORITY	Those bodies, such as councils, responsible for the area to which the report relates to	

STRUCTURAL ROOT ZONE (**SRZ**)	The area around the base of a tree required for the tree's stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in metres. This zone considers a tree's structural stability only, this is different from the root zone required for a tree's vigour and long-term viability, which will usually be a much larger area.	
STRUCTURE	Reference to the structural integrity of the tree with consideration of the crown, trunk and roots. Determined using the Visual Tree Assessment (VTA) method (Mattheck and Breloer 1994). The failure of small (<60mm calliper) live or dead limbs is normal and not considered here.	
	Very poor:	Clear indications that a significant failure is likely in the near future
	Poor:	Obvious signs of structural weakness and a failure is likely, one might expect a significant failure event within the next 5 years, possibly tomorrow
	Fair:	Signs of weakness present though not obviously significant, likely to become worse over time
	Good:	No obvious signs of structural weakness
TREE	Long-lived, woody perennial plant with one or relatively few main, self-supporting, stems or trunks. Greater than (or usually greater than) 3.0m in height (or as defined by the responsible authority).	
TREE NUMBER	Identifying number allocated to individual trees or groups of trees, may be used to locate trees using site plans or tags on trees.	
TREE PROTECTION ZONE (**TPZ**)	An exclusion area radius measured from the centre of the trunk at ground level that allows for protection of canopy and roots; both the structural roots that give the tree stability and the smaller absorption roots. The radius of the TPZ is normally calculated for each tree by multiplying the DBH × 12. The minimum distance will be 2m and maximum 15 as stipulated in AS 4970-2009 – Protection of Trees on Development Sites.	
TREETEC REFERENCE	Unique identifier assigned to an individual report by Treetec	
TYPE	Status of the species as it relates to the location.	
	Indigenous:	Naturally occurring to the local area
	Victorian Native:	Naturally occurring within Victoria
	Australian Native:	Naturally occurring within Australia
	Exotic:	Introduced species to Australia
USEFUL LIFE EXPECTANCY (**ULE**)	Useful Life Expectancy is an estimation of how many years a tree can reasonably be retained in the landscape provided growing conditions do not significantly worsen and any recommended works are completed. It takes into consideration factors such as risk, species, age, health and site conditions. Usually represented as either 0, <5, 5 - 15, 15 - 40, or >40.	
WORKS	Any physical activity in relation to development. See 'development'.	

7.3 General comments

Pruning standards/Lopping

An Australian Standard exists to give guidance on pruning of trees (*AS 4373 2007 - Pruning of Amenity Trees*).

It is important that all remedial works are carried out by a competent contractor in accordance with the Australian Standard.

Lopping, as defined within the standard, is detrimental to trees and often results in decay and poorly attached epicormic shoots. Natural Target Pruning methods should be used wherever possible when removing sections from trees.

7.4 Impact on trees

Physical/Mechanical damage to trees

Physical damage to tree parts, particularly the trunk, provides entry points for pests and diseases such as fungal infections. This may cause long-term decay and can lead to partial or complete tree failure and death.

Alteration of soil levels

Alteration of soil levels around trees will affect the root zone and stability of a tree as well as tree metabolism. This may result in reduced tree health, excessive deadwood, thinning foliage and poor vigour. It can take years for impacts to become evident, at which time it is usually irreversible.

Works within a TPZ

Works such as site cut and fill, re-grading, installation of underground services, building footings or landscaping have the potential to damage tree roots.

It may be possible to work within a TPZ without significantly impacting a tree, however the size and number of roots in the area, and the specifics of the tree and its resilience to impacts, would all need to be reviewed prior to commencement. Design and construction methods may need alteration to minimise adverse impacts.

Site cut and fill has the potential to physically impact roots and thus should be located to ensure minimal disturbance within the TPZ of retained trees. If a shallow cut is proposed within a TPZ, consider increasing fill to eliminate the cut. If the grade is to be raised, the material should be coarser or more porous than the underlying material. If site cuts must occur, avoid batter cuts and instead design a vertical retaining wall to minimise disturbance.

Installation of underground services should also be routed outside TPZs; if there is no other option, they should be installed using non-destructive methods such as air or hydro excavation, or installed by boring under the TPZ at a depth of at least 700 mm (where practicable). The project arborist should assess the likely impacts of boring (including bore pit locations) on retained trees.

Driveways and pathways should not encroach into a TPZ; if encroachment is unavoidable, any hard surfaces should:

1) not involve any scraping or excavation – most small absorbing roots are within the upper 100mm of soil.
2) be constructed of a permeable material and laid on a base and sub-base specifically designed to allow the movement of water through and into the soil below.

If buildings are permitted within a TPZ, foundations should be suspended on piers leaving the ground undisturbed other than the careful placement of pier holes. The bottom of supporting beams should be above existing ground level or, if this is not possible, beams should run radially

away from the tree trunk. There should be no excavation of any description, including piers, within a Structural Root Zone (SRZ).

All works within TPZs must be approved by the responsible authority prior to commencement.

Description of TPZ encroachment

In accordance with *Australian Standard 4970-2009 (Protection of trees on development sites)* encroachment and TPZ variations is determined as per below.

General

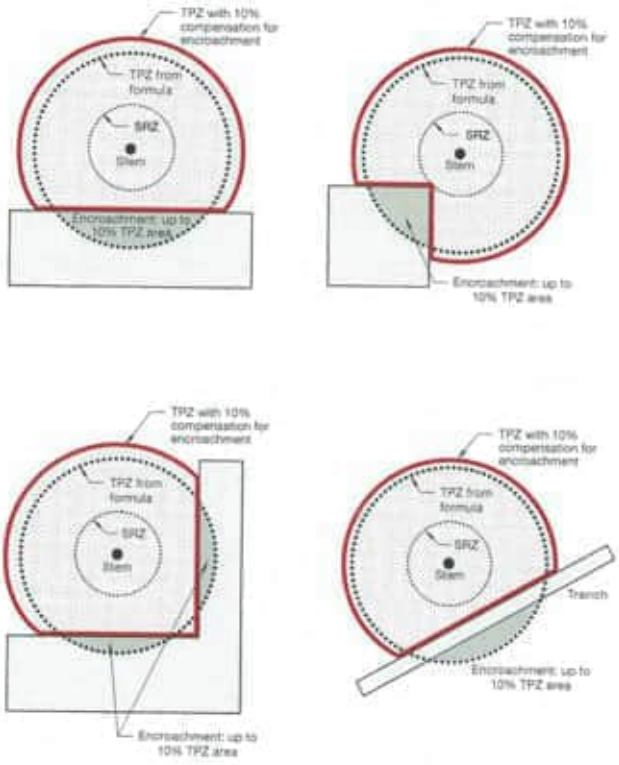
It may be possible to encroach into or make variations to the standard TPZ. Encroachment includes excavation, compacted fill and machine trenching.

Minor encroachment

If the proposed encroachment is less than 10% of the area of the TPZ and is outside the SRZ detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. Variations must be made by the project arborist considering relevant factors listed in (see standard)...

Major encroachment

If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ, the project arborist must demonstrate that the tree(s) would remain viable. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation by non-destructive methods and consideration of relevant factors listed in (see standard)...



NOTE: Less than 10% TPZ area and outside SRZ. Any loss of TPZ compensated for elsewhere.

Any additional encroachment that becomes necessary as the site works progress should be reviewed by the project arborist and be approved by the Responsible Authority before being carried out.

Where the project arborist identifies roots to be pruned within or at the outer edge of the TPZ, they should be pruned with a final cut to undamaged wood. Pruning cuts should be made with sharp tools such as secateurs, pruners, handsaws or chainsaws. Pruning wounds should not be treated with dressings or paints.

It is not acceptable for roots within the TPZ to be severed with machinery such as backhoes or excavators.

7.5 Protection of retained trees

Establishment of Tree Protection Zones

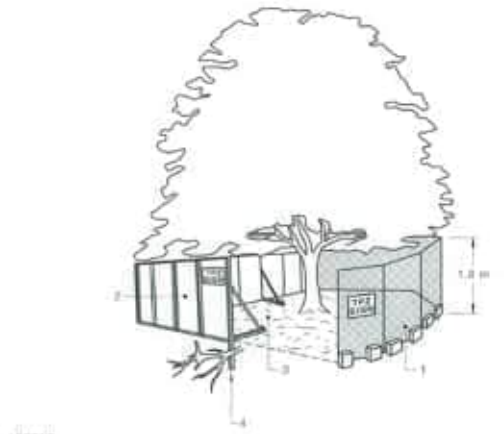
The tree protection zone (TPZ) is the principal means of protecting trees on development sites. Usually fencing will delineate the Tree Protection Zones (TPZ) as defined by *AS 4970-2009 Protection of trees on development sites.*

Fencing is installed following permitted vegetation removal and pruning, but prior to site establishment. Unless stated otherwise and approved by the responsible authority, fencing should be retained until completion of all construction related activity.

Tree protection zone fencing

The fence must provide high visibility and act as a physical barrier to construction activity. The fence should be adequately signed "Tree Protection Zone – No Access", be sturdy and prevent the entry of heavy equipment, vehicles, workers and the public.

Where feasible, tree protection fencing will consist of chain wire mesh panels held in place with concrete feet. Where chain mesh fencing is impractical to implement, alternate protection measures must be arranged.



Source – AS 4970-2009 Protection of trees on development sites (Tree Protection)

Restricted activities within TPZ

A TPZ area may surround a single tree or group, or a patch of vegetation. Activities that must NOT be carried out within a TPZ unless permitted by the Responsible Authority include, but are not limited to, the following:

(a) machine excavation including trenching;
(b) excavation for silt fencing;
(c) cultivation;
(d) storage;
(e) preparation of chemicals, including preparation of cement products;
(f) parking of vehicles and plant;
(g) refuelling;
(h) dumping of waste;
(i) wash down and cleaning of equipment;
(j) placement of fill;
(k) lighting of fires;
(l) soil level changes;
(m) vehicle movement – access ways;
(n) changes of grade;
(o) temporary or permanent installation of utilities and signs, and
(p) damage to the tree.

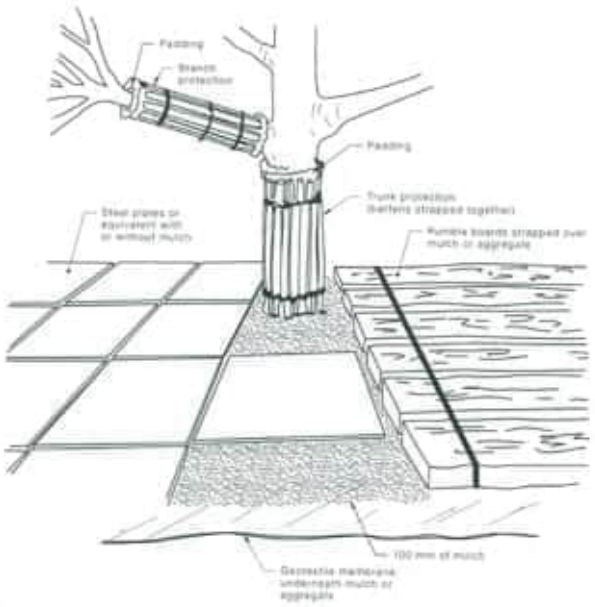
Alternative protection measures

If temporary access to the TPZ is required, protection for the trunk, branches or ground may be required. The materials and positioning of protection will be specified by the project arborist.

For temporary foot traffic through the TPZ, this may be facilitated using sheets of heavy plywood or similar material; this should not be considered a long term solution.

For machinery access within the TPZ, ground protection should be utilised to prevent root damage and soil compaction. Measures may include a permeable membrane such as geotextile fabric beneath a layer of mulch, or crushed rock below rumble boards. These measures may also be applied to root zones beyond the TPZ.

Where roots within the TPZ are exposed during approved works, temporary root protection should be installed to prevent them drying out. This may include jute mesh or hessian sheeting as multiple layers over any exposed roots and the excavated soil profile, extending to the full depth of the root zone. Root protection sheeting should be pegged in place and kept moist at all times.



NOTES:

1. For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.
2. Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.

Source – AS 4970-2009 Protection of trees on development sites
(Ground Protection)

7.6 Alternative design options

Designing all works outside the TPZ is the preferred option to ensure trees remain viable post construction. The options below may mitigate some tree damage and facilitate works within TPZs if approved by the Responsible Authority.

Non-destructive investigation

Air or Hydro excavation can be utilised to explore the proposed encroached TPZ area. These methods use compressed air or high pressure water to dislodge soil without damaging larger roots. This option should be employed during the design stage to identify roots, and during construction to minimise impacts.

Non-destructive investigation

Pier and beam construction

Pier footings with beams above ground level, or cantilevered to support the floor of a building can be used to minimise encroachment into a TPZ and root damage. Consideration must be given to the soil type and lost catchment area beneath a raised structure. Footings should be positioned so as not to damage larger (>30mm diameter) roots.

Permeable paving

Permeable paving enables a hard surface to be created whilst also allowing moisture to penetrate into the soil below, unlike traditional concrete paving. However, paving usually requires excavation to create a stable base and therefore may not be a solution for all situations.

Bridging over the TPZ

Post footings with cross members to support a bridge like structure raised above the TPZ can be used for driveways or pathways. Footings should be positioned so as not to damage larger (>30mm diameter) roots. Structures should be engineered to tolerate the expected loads.

Bridging over the TPZ

Report for Anand Ramakrishnan

Ecological Assessment and Native Vegetation Removal report for 1025 Yan Yean Road, Doreen

Ben Imbery

December 2022

Citation

Ben Imbery (2022), Ecological Assessment and Native Vegetation Report for 1025 Yan Yean Road, Doreen. ID Ecological Management, Research, Victoria.

ID Ecological Management
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Disclaimer

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Acknowledgements

Anand Ramakrishnan – Client, Lavastone Pty. Ltd.

Tim Hamilton – Director, Activate Town Planning Consultancy

Tara Wilding – Property Access, Tara McGrath Real Estate

Tania Brooker – Consulting Manager, ID Ecological Management

Nicole Noy – Managing Director, ID Ecological Management

Version Control

Status	Date	Revision type	Reviewed by	Amended by
Draft 1.1	19/12/2022	First draft, first review	Tania Brooker	Ben Imbery
Draft 2.1	20/12/2022	First draft, second review	Nicole Noy	Ben Imbery
Draft 3.1	22/12/2022	NVR and NV Credit Search Results added		Ben Imbery
Final Draft 4.1	22/12/2022	Final Draft released to client		

Contents

Executive Summary

Project Description

ID Ecological Management (Indigenous Design) has been commissioned by Anand Ramakrishnan of Lavastone Pty. Ltd. to undertake an assessment of native vegetation and biodiversity values at the property 1025 Yan Yean Road, Yan Yean. The assessment relates to a proposed subdivision of the site and includes consideration of impacts to native vegetation from the development as required under Clause 52.17 of the Whittlesea Planning Scheme.

Assessment of all native vegetation within the study area was completed by ID Ecological on the 23rd of November 2022.

Study Area- Ecological Values

The site is located within the Highlands Southern Fall Bioregion, with EVC 55: *Plains Grassy Woodland* the assigned EVC over most the site. The site assessment identified one small native patch and four scattered trees, which included one large size class tree, on the site. Overall, the site has been significantly modified from its original vegetation condition and all remaining areas of the site are dominated by exotic flora species or host planted vegetation.

The one native patch identified, comprising of native ground layer flora species, was located near the eastern boundary, and was labelled (*Plains Grassy Woodland*) Habitat Zone 1. It received a relatively poor habitat score of 0.17 (17 points out of 100), indicative of its highly modified state and limited native species diversity.

The site's primary habitat function is in providing a 'stepping stone' of tree cover for various native and exotic bird species moving through the landscape, as well as providing nesting and foraging habitat for a variety of relatively common native bird species such as Wattlebirds and corvid species. The standout habitat feature on the site is the large remnant River Red Gum (Tree ID number 5), though no hollows were observed on the tree.

No threatened species or ecological communities were found to occur on site and the likelihood assessment found that no threatened flora species were likely to occur on the site. Two threatened bird species, *Callocephalon fimbriatum* (Gang-gang Cockatoo) and *Lathamus discolor* (Swift Parrot), are considered possible occasional visitors to the site, and were assigned a low likelihood of occurrence. All other threatened fauna species with potential to occur within the site were determined to be unlikely to occur within the site.

Avoid/Minimise Principles

The *Proposed Subdivision Plan* has been configured to avoid the dripline of Tree ID number 5 which is clearly the most significant remnant tree on the site. As the tree is located within a lot less than 0.4 hectares the tree is deemed lost and is required to be offset under Victoria's native vegetation policy. The client has advised they will be seeking to provide for the permanent protection of the tree by attaching a Section 173 Agreement to Lot 10 that secures its protection (Anand Ramakrishnan, pers. comm. 15/12/2022).

It is worth noting that the one area of native patch that is impacted by the proposal is a highly modified native vegetation remnant with negligible habitat value. The patch was likely to have been classified as 'degraded treeless vegetation' under Victoria's earlier native vegetation regulations, giving an indication of its relatively poor quality.

Native Vegetation impacts

Victoria's native vegetation policy requires that all native vegetation within lot sizes less than 0.4 hectares be deemed lost at the point of subdivision. All of the 12 proposed lots are below 0.4 hectares meaning all native vegetation identified on site is considered lost. This comprises of:

- 0.020 hectares of Plains Grassy Woodland patch vegetation;
- 1 large size class scattered trees; and
- 3 small size class scattered trees.

15 other individual trees that are locally indigenous or native to Victoria will be lost under the proposal. These trees are in lines along the property boundaries or along the edge of the driveway and are exempt from permit requirements under Clause 52.17 and the Vegetation Protection Overlay-Schedule 1 as 'Planted Vegetation'.

Offset Requirements

The clearing shapefile outlining the extent of native vegetation deemed lost under the final design, was submitted to the DELWP's native vegetation support, who processed and provided a Native Vegetation Removal (NVR) report. The NVR identified the following offset requirements that apply to the proposal:

- 'Intermediate' assessment pathway;
- Offset requirements are 0.038 General Habitat Units (GHUs) with a minimum strategic biodiversity score of 0.384 and 1 large tree; and
- Offsets must be located within the Port Phillip and Westernport Catchment Management Authority (CMA) boundary or within the Whittlesea City Council municipality.

Legislation/Policy Implications

Legislation and Policy	Relevant Ecological Feature on Site	Report/Approval required
Environment Protection and Biodiversity Conservation (EPBC) Act 1999	No threatened flora or fauna species or communities, listed under the EPBC Act, were identified on site or were determined to be likely to occur. The project does not impact on any Matters of National Environmental Significance (MNES).	No further consideration required.
State – Flora and Fauna Guarantee Act 1988	Not Applicable	As this proposal does not occur on public land, no further consideration regarding the FFG Act is required.

Legislation and Policy	Relevant Ecological Feature on Site	Report/Approval required
Planning and Environment Act 1987	Native vegetation deemed lost under the proposal includes: • 0.020 hectares of Plains Grassy Woodland patch vegetation; • 1 large size class scattered tree; and • 3 small size class scattered trees.	Under Clause 52.17 and the Vegetation Protection Overlay- Schedule 1 of the Whittlesea Planning Scheme, a planning permit is required to clear or disturb native vegetation within the study area. In applying Victoria's Native Vegetation Permitted Clearing regulations the proposal falls under the 'intermediate' assessment pathway. Offset requirements amount to 0.038 General Habitat Units with a Strategic Biodiversity Score of 0.384 and 1 Large Tree.
Catchment and Land Protection Act 1994	No weed species that are declared noxious under the Catchment and Land Protection Act 1994 (CaLP Act) were identified anywhere on the site (Agriculture Victoria, 2022).	No further consideration required.
State Wildlife Act 1979	Numerous planted native and exotic canopy trees are proposed for removal that may be occupied by native fauna.	Persons engaged to remove, salvage, hold or relocate any native fauna must have a permit or approval issued by the DELWP.
Water Act 1989	There are no designated waterways located within or nearby to the site, therefore no further consideration regarding this Act is required.	No further consideration required.

1 Introduction

1.1 Project Background

ID Ecological Management (Indigenous Design) has been commissioned by Anand Ramakrishnan of Lavastone Pty. Ltd. to undertake an assessment of native vegetation and biodiversity values at the property 1025 Yan Yean Road, Yan Yean. The assessment relates to a proposed subdivision of the site and includes consideration of impacts to native vegetation under the development as required under Clause 52.17 and the Vegetation Protection Overlay- Schedule 1 of the Whittlesea Planning Scheme.

Appendix 1 provides the development plans titled; *Proposed Subdivision Plan, 1025 Yan Yean Road, Doreen. TP, 23/11/2022.*

The site measures 1 hectare in area and presents as a rural lifestyle property with an existing dwelling, adjoining garage and domestic living area located in the south west corner. Plantings of trees and shrubs line the sites boundaries, while the remainder of the site is mostly open grazing land.

The site assessment for this report was undertaken on the 23rd of November 2022.

1.2 Objectives

The objectives of this assessment include:

Collation of relevant project information including:

- Review relevant databases, including Victorian Biodiversity Atlas, Protected Matters Search Tool and Naturekit for mapped EVC's and for records and identification of potentially present threatened species.

Undertake site assessment, including:

- A complete flora list;
- Incidental observations of fauna;
- Photographs of the site;
- Map and record all native vegetation patches and complete vegetation quality (habitat hectare) assessments;
- Map and record locations and diameter at breast height of all scattered and large trees in patches to accuracy of approximately <3m;
- Identification and mapping of the location or extent of any species or communities protected by either the *Environment Protection & Biodiversity Conservation Act 1999* or *Flora & Fauna Guarantee Act 2019;* and
- Map and record habitat features throughout the study area such as tree hollows, logs, waterbodies, drainage lines or other habitat characteristics which may be utilised by threatened fauna.

Prepare a report that includes:

- An executive summary;
- Description of methods;
- Results of background and field survey;
- An assessment of the likelihood of occurrence for all threatened species identified in a 5km database search area;
- Recommendations for any further works or investigations such as targeted threatened species surveys or the like;
- Identification of any permits, approvals or management plans that may be required for the project under any applicable State or Federal legislation;
- Identification of mitigation measures for any Matters of National Significance considered to have potential to be impacted by the proposal. This would only be completed for any species or communities confirmed to occur within the site or considered likely to possibly occur on site;
- A determination of impacts to native vegetation under the current site development plans, consistent with the requirements of the *Guidelines for the removal, destruction or lopping of native vegetation*;
- Includes responses to the information requirements of the *Guidelines for the removal, destruction or lopping of native vegetation*;
- Maps to DELWP standards that show the locations of all ecological features identified and the extent of impacts to native vegetation under the current site development plans; and
- Conclusion and Recommendations (where applicable) for each of the items listed above.

1.3 Study Area

The study area (the site), shown in *Figure 1*, includes the property at 1025 Yan Yean Road and Laburnum Close in Doreen. It is located approximately 1.3 km south east from the town centre of Doreen and approximately 29 km north east of the Melbourne CBD. The site is located within the City of Whittlesea Local Government Area (LGA), the Port Phillip and Westernport Catchment Management region and the Highlands Southern Fall Bioregion.

The site is located at the outer eastern edge of the developed centre of Doreen. Land west of Yan Yean Road is covered in residential allotments, while east of Yan Yean Road large undeveloped lots remain that are used for agriculture or rural living. Fragmented strips of riparian native vegetation remain along the Plenty River located approximately 2.5km west of the site and small bushland conservation reserves are scattered throughout the Doreen town centre and along Laurimar Creek.

Closer to the site remnant native vegetation is scarce and mostly represented by individual or small isolated clusters of mature canopy trees. These trees are found within nearby roadsides, small public reserves, agricultural land, and less commonly within larger residential lots. The overall coverage of native vegetation within a 1 k radius of the site is no greater than 10%.

Within the site the presence of remnant native vegetation is minimal and consists of one large remnant tree and a small section of native grass cover that persists within the cleared pasture near the eastern boundary.

Areas that hold remnant vegetation within the surrounds of the site include:

- Yan Yean Reservoir Park and its protected area of catchment land which is located approximately 3 km north of the site at its closest point. Over 1,000 hectares of native bushland surrounds the Reservoir, broken only by unmade access roads and occasional locations of historical land clearing;
- Plenty Gorge Parklands which are located approximately 3 km south east of the site. The Parklands hold discontinuous patches or native riparian vegetation and native patches across an approximate 2 km long section of the Plenty River.

The site is subject to the following planning provisions:

Clauses

Clause 52.17 – Native Vegetation

Planning Zones

General Residential Zone- Schedule 1 (GRZ1).

Planning Overlays

Development Contributions Plan Overlay- Schedule 5 (DCPO5);
Development Plan Overlay- Schedule 5 (DPO5);
Incorporated Plan Overlay- Schedule 1 (IPO1);
Vegetation Protection Overlay- Schedule 1 (VPO1).
(DELWP, 2022a)

Additional Encumbrances

The property to the adjacent south of the site has a feature that is marked as being of 'cultural heritage sensitivity'. The buffer placed over this feature extends into the south east corner of the site.

Any potential impacts of the proposal in relation to this matter must be considered under the Aboriginal Cultural Heritage Act 2006 (Aboriginal Victoria, 2022).

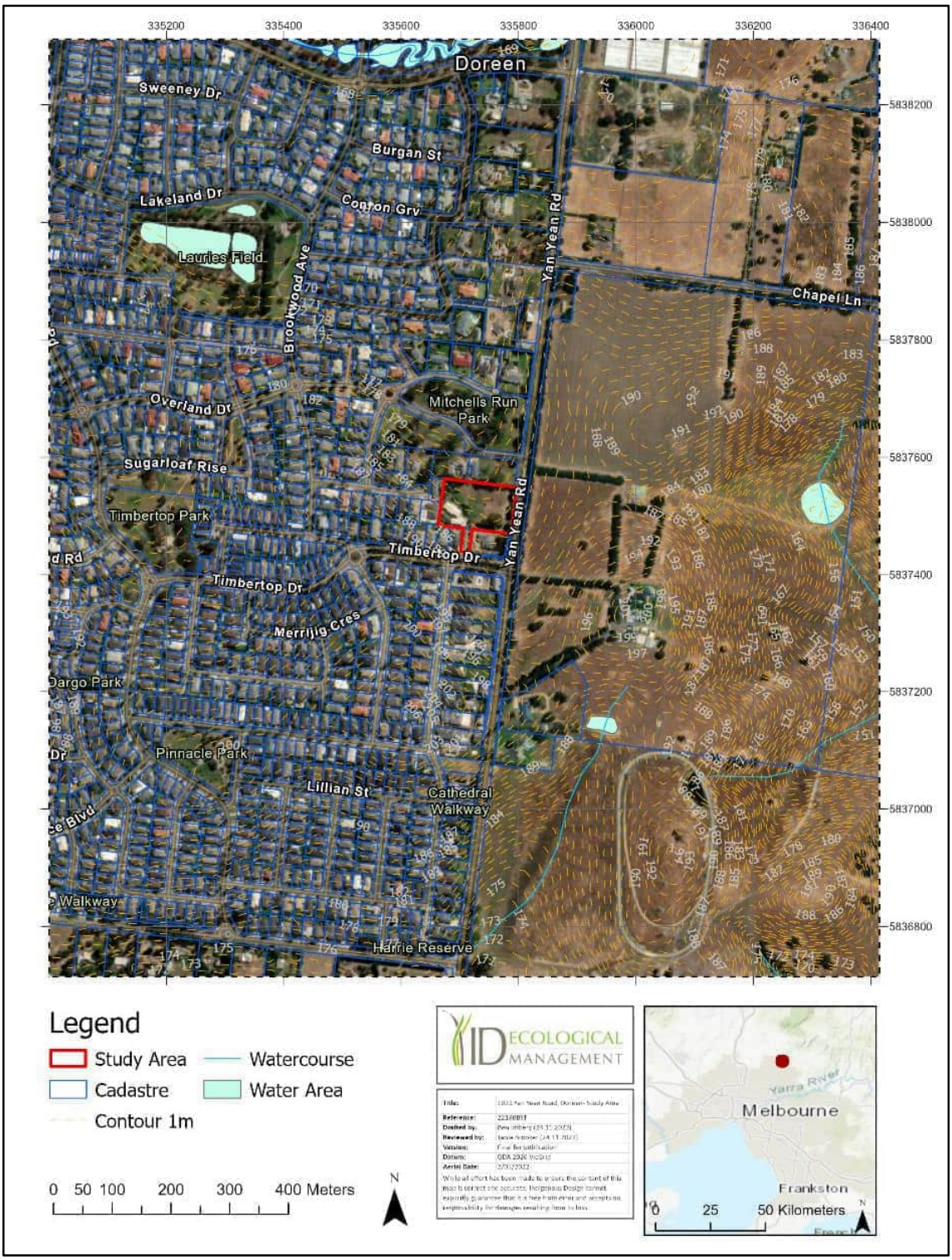


Figure 1: Study area

2 Description of Methods

2.1 Data and Literature Review

The DELWP's online interactive map, *Naturekit* (DELWP, 2022b) was used to gain 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 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 *NatureKit Victoria* (DELWP, 2022b);
- DELWP's *Victorian Biodiversity Atlas* (VBA) (DELWP, 2022c);
- The DELWP's Native Vegetation Information Management System (NVIM) (DELWP, 2022d); and
- The Commonwealth's Protected Matters Search Tool (DoEE, 2022).

2.2 Field Survey

Assessment of the site was undertaken on November 23rd 2022 by Ben Imbery, B.A.Sc. (Env. Mgt.), a DELWP accredited native vegetation assessor with 15 years' experience in environmental consultancy and flora and fauna assessments.

Assessment of the site's flora and fauna and habitat values included:

- Recording all flora present. Flora species were recorded following the species nomenclature requirements of the VBA;
- Completion of a Vegetation Quality Assessment (VQA) for all native patches. These areas were GPS (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*;
- Recording all scattered and large old trees including collecting data on species, DBH and any habitat features (i.e. nests or hollows);
- Identification and recording of any flora and fauna communities including any threatened, protected species / communities or habitat;
- 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 regarding 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.

GPS mapping was completed using the ArcCollector application paired with a handheld Android device. An average recording accuracy of approximately +/- 4m was achieved.

The mapping included:

- Walking and recording a GPS location of the extent of all native vegetation patches within the assessment corridor;
- Walking and recording a GPS location of all scattered trees and any large size class trees within patches;
- Walking and recording a GPS location of any threatened or protected flora species;
- Walking and recording a GPS location of the extent of any threatened ecological communities; and
- Walking and recording a GPS location of any pest animal activity locations and any noxious weed infestations.

2.2.1 Vegetation Quality Assessment

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'*. DELWP's *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; or
- Any area with three of 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.

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 DGPS 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.*

All large size class trees within and immediately adjacent to the study area corridor and all scattered trees on site were identified to species level, DGPS mapped and had their Diameter at Breast Height (DBH) and any other relevant data recorded.

2.3 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 1999;
- **State** listed as critically endangered, endangered or vulnerable on the FFG Act Threatened List.

2.4 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.

2.5 Assessment of Native Vegetation Impacts and Quantification of Losses

2.5.1 Large Trees in Patches and Scattered Trees

Under the Guidelines (DELWP, 2017) large trees in patches are accounted for in the overall condition score of remnant patches and a count of the number of large trees within a patch marked as lost is provided to DELWP when processing offset requirements. Scattered trees are assigned a default area and condition score of 0.2 while an individual canopy tree deemed lost within a patch is assigned the quality score of the patch it is contained within.

2.5.2 Direct Impacts

Native patches or canopy trees contained within a construction footprint, i.e. roadway or building envelope, are assessed as lost.

2.5.3 Indirect Losses - Tree Protection Zone Impacts

The DELWP defines a Tree Protection Zone (TPZ) as '*an area around the trunk of the tree which has a radius of 12 × the diameter at breast height to a maximum of 15 metres but no less than 2 metres*'. Unless an arborist report indicates otherwise, a tree, or trees will be deemed lost if the encroachment from construction (i.e. compaction and excavation) into the TPZ is greater than 10%, or is inside the Structural Root Zone (SRZ) (DELWP, 2018).

2.5.4 Consequential Losses

The DELWP also requires that 'consequential losses' be considered when determining losses to native vegetation under a subdivision proposal scenario. The DELWP's *Assessors handbook- Applications to*

remove, destroy or lop native vegetation (DELWP, 2018) describes these considerations and the requirement to include:

- All native trees or patches within a newly created Lot less than 0.4 ha in size as lost;
- All native trees or patches contained within 2 metres either side of any newly established internal property boundaries as 'lost'.

2.5.5 Marking Native Vegetation Losses

The GIS program is used to mark native vegetation losses under the proposal:

- The full extent of a native patch, canopy tree or scattered tree that is assessed as lost and the outer extent of the canopy of any tree deemed lost is incorporated within the clearing extent;
- Where the construction footprint impacts on greater than 10% of an estimated TPZ of a tree located outside but adjacent to the construction footprint it is assessed as lost and:
  - A 10 meter buffer is applied to small size class trees;
  - A 15 meter buffer is applied to large size class trees;
  - Where a tree deemed lost is connected to an area of native patch deemed lost its canopy is traced and incorporated into that native patch loss extent; and
  - Where less than three trees are deemed lost that are not connected to an area of native patch deemed lost, the applicable buffer area is marked as a single circular polygon and labelled as ST (Scattered Trees) or Canopy Tree (CT) as appropriate.

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 significant impact guidelines;
- *Flora and Fauna Guarantee (Amendment) Act 2019* (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 Whittlesea 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;*
- *Environmental Effects Act 1987*.

2.7 Limitations

The assessment was undertaken in November 2022. It is 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.

The assessment of fauna presence did not involve a targeted fauna survey. Consequently, further species are likely to be recorded given further time and or the undertaking of more detailed survey.

The timing of the survey (Spring) and level of survey effort are considered satisfactory to assess the general habitat values of the study area and identify any threatened or protected perennial flora species or habitat, threatened ecological communities or habitat and assess the likelihood of occurrence of any threatened or protected fauna species.

3 Results

3.1 Database Review

3.1.1 Flora Species

Interrogation of the DELWP's *Victorian Biodiversity Atlas* (VBA) (DELWP, 2022c) identified 13 flora species within a 5 km radius of the site that are listed as threatened under Victoria's FFG Act or the EPBC Act (*Appendix 2*). The closest nearby threatened flora species records include:

- *Dianella amoena* (Matted Flax-lily) listed as Critically Endangered on the FFG Act Threatened List and Endangered under the EPBC Act. One record from 1999 located approximately 2.5 km east of the site near the Plenty River;
- *Eucalyptus sideroxylon subsp. sideroxylon* (Mugga) listed as Endangered on the FFG Act Threatened List. One record from 2017 located approximately 2 km southeast of the site;
- *Corymbia maculata* (Spotted Gum) and *Melaleuca armillaris* subsp *armillaris* (Giant Honey-myrtle) are commonly planted as amenity trees. Both are State listed flora species that are not locally indigenous to the area.

Interrogation of the EPBC Act *Protected Matters Search Tool* (DoEE, 2022) identified within a 5km search radius the potential presence of 19 significant flora species that are listed as threatened at the Federal level (*Appendix 3*).

3.1.2 Fauna Species

Interrogation of the DELWP's VBA (DELWP, 2022c) identified 43 fauna species within a 5 km radius of the study area that are listed as threatened under Victoria's FFG Act or the EPBC Act (*Appendix 4*). The closest nearby threatened fauna species recordings are all threatened bird species. Several threatened wetland or waterway associated bird species have all been recorded along Laurimar Creek, approximately 1.2 km northwest of the site, including:

- *Ardea alba modesta* (Eastern Great Egret), listed as Vulnerable on the FFG Act Threatened list, recorded most recently in 2019;
- *Aythya australis* (Hardhead), listed as Vulnerable on the FFG Act Threatened list, recorded most recently in 2019;
- *Biziura lobata* (Musk Duck), listed as Vulnerable on the FFG Act Threatened list, recorded in 2020;
- *Haliaeetus leucogaster* (White-bellied Sea-Eagle), listed as Endangered on the FFG Act Threatened list, recorded in 2018;
- *Spatula rhynchotis* (Australasian Shoveler), listed as Vulnerable on the FFG Act Threatened list, recorded most recently in 2019;
- *Stictonetta naevosa* (Freckled Duck), listed as Endangered on the FFG Act Threatened list, recorded most recently in 2019.

Hirundapus caudacutus (White-throated Needletail), listed as Vulnerable on the FFG Act Threatened list and under the EPBC Act, a largely aerial based species was also recorded nearby to Laurimar Creek in 2019.

Interrogation of the EPBC Act Protected Matters Search Tool (DEE, 2022) identified within a 5km search radius the potential presence of 34 significant fauna species that are listed as threatened at the Federal level (*Appendix 3*).

3.1.3 Threatened Ecological Communities

Interrogation of the EPBC Act Protected Matters Search Tool (DoEE, 2022), *Appendix 3*, identified the possible presence of four EPBC Act listed threatened ecological communities, within a 5km search radius of the site. These include:

- Grassy Eucalypt Woodland of the Victorian Volcanic Plain which is listed as Critically Endangered under the EPBC Act;
- *Natural Temperate Grassland of the Victorian Volcanic Plain* which is listed as Critically Endangered under the EPBC Act;
- *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains* which is listed as Critically Endangered under the EPBC Act; and
- *White Box-Yellow Box-Blakeley Red Gum Grassy Woodland and Associated Native Grassland* which is listed as Critically Endangered under the EPBC Act.

Any native patches assigned to an EVC that is synonymous with any of these communities are assessed against the relevant EPBC Act listing documents that define and describe these communities to determine if the community is present.

3.1.4 Wetlands of National Importance (Ramsar)

Interrogation of the EPBC Act Protected Matters Search Tool (DoEE, 2022), did not identify the potential presence of any Wetlands of National Importance (Ramsar Wetlands). No Wetlands of National Importance are present within or adjacent to the study area.

3.2 Vegetation

Appendix 5 lists the results of the flora survey and includes all flora species identified within native patches and other areas dominated by exotic vegetation as identified during the site inspection. A comprehensive species list of species within the domestic garden area surrounding the existing dwelling was not recorded.

The site has been largely cleared of its original native vegetation coverage, one large remnant *Eucalyptus camaldulensis* (River Red-Gum) tree remains in the southwest corner of the site and a strip of native ground cover persists within cleared pasture near the eastern boundary.

Plantings of various locally indigenous and Australian native trees and shrubs line the northern and western boundaries of the site and the entrance driveway, and a grove of fruit trees is also located in the northwest corner. Planted trees include some locally indigenous species such as *Eucalyptus leucoxylon* (Yellow Gum) and *Eucalyptus melliodora* (Yellow Box), as well as Australian native species such as *Eucalyptus botryoides* (Southern Bangalay).

A strip of tall Cypress trees, an exotic hedge, line the existing frontage of the site to Yan Yean Road.

The existing dwelling is surrounded by plantings of a variety of exotic and Australian native shrubs, scramblers, and other varieties, including various non locally native *Leptospermum, Grevillea* and *Acacia* species.

The dominant vegetation type over the site is cleared pasture mostly dominated by the exotic grasses species *Cenchrus clandestinus* (Kikuyu) and *Agrostis capillaris* (Brown-top Bent), with *Ehrharta erecta* (Panic Veldt-grass) more common along the damper northern boundary. The pasture areas had a low grass height at the time of the site visit having been recently slashed, while grazing by Goats also kept the grass height low in the fenced off north west corner.

Figure 2 shows the vegetation within the south east of the site and *Figure 3* shows the vegetation over the north of the site.

Figure 2: Vegetation within the southeast of the site showing large remnant canopy tree and planted trees and shrubs along driveway entrance

Figure 3: Vegetation over the north of the site showing planted trees and shrubs along northern boundary

3.2.1 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 site is located within the Highlands Southern Fall Bioregion. The DELWP's *NatureKit* interactive map models EVC 55: *Plains Grassy Woodland* over most of the site, with EVC 22: *Grassy Dry Forest* shown covering the southeast corner of the property. The modelling shows EVC 55: *Plains Grassy Woodland* extending across the relatively flat land north and east of the site and EVC 22: *Grassy Dry Forest* continues across the higher elevations south and west of the site (DELWP, 2022b).

The DELWP's mapping of extant EVC shows a section of EVC 55: *Plains Grassy Woodland* remaining present in the north east corner of the site but extant EVC are shown as largely absent within the site. Patches of extant EVC are shown within nearby small conservation reserves, along nearby roadsides and within nearby agricultural properties up to around 2 ha in size. Overall the coverage of extant EVC is low within a 1 km radius of the site and is mostly represented by small isolated fragments that likely correspond with individual or small clusters of remnant canopy trees (DELWP, 2022b).

The landform and presence of River Red-Gum within the south of the property and the adjoining properties is indicative of the presence of EVC 55: *Plains Grassy Woodland*. Overall, the site has undergone significant change from its pre-1750's condition and the assignment of EVC defers to the modelling by the DELWP, shown in *Figure 4*.

Table 1 provides the DELWP's Bioregional Conservational Status, description, and large tree size benchmarks for the two assigned EVC (DELWP, 2022e).

Table 1: DELWP Bioregional Conservation Status, Descriptions and Large Tree Size Benchmarks for Assigned Ecological Vegetation Classes-

Ecological Vegetation Class	Bioregional Conservation Status	The DELWP's Ecological Vegetation Classes Description	Large Tree Benchmark Size (Diameter at Breast Height)
EVC 22: Grassy Dry Forest	Least Concern	Occurs on a variety of gradients and altitudes and on a range of geologies. The overstorey is dominated by a low to medium height open forest of eucalypts to 20 m tall, sometimes resembling a woodland. The understorey usually consists of a sparse shrub layer of medium height. Grassy Dry Forest is characterised by a ground layer dominated by a high diversity of drought tolerant grasses and herbs, often including a suite of fern species.	60cm +
EVC 55: Plains Grassy Woodland	Endangered	An open, eucalypt woodland to 15 m tall occurring on a number of geologies and soil types. Occupies poorly drained, fertile soils on flat or gently undulating plains at low elevations. The understorey consists of a few sparse shrubs over a species-rich grassy and herbaceous ground layer.	80cm +

(DELWP, 2022e).

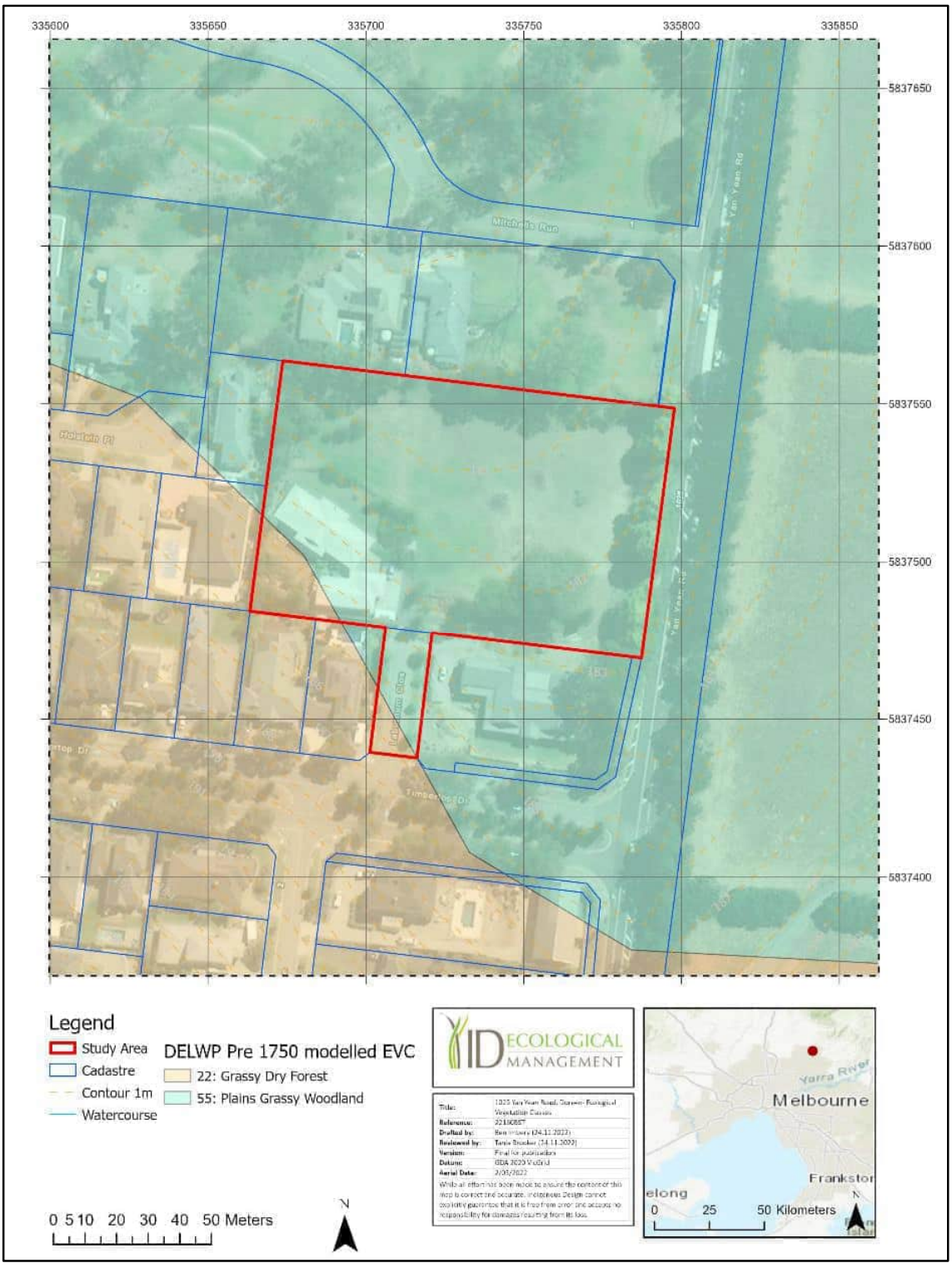


Figure 4: Distribution of the Department of Environment, Land, Water and Planning's assigned Ecological Vegetation Classes within the Study Area

3.2.2 Native Vegetation Quality Assessment

The site assessment identified one native patch on the site, with all remaining areas of the site dominated by exotic flora species or containing planted vegetation. The one native patch identified, comprising of native ground layer flora species, was located near the eastern boundary, and was labelled (*Plains Grassy Woodland*) Habitat Zone 1. The extent of Habitat Zone 1 is shown in *Map 1* and the results of the habitat hectare assessment are provided in *Table 2*. A description of Habitat Zone 1 is provided below, and the flora species recorded within the native patch are listed in *Appendix 5*.

Plains Grassy Woodland – Habitat Zone 1

This patch is a highly modified remnant formed by the presence of a small number of native ground layer species that have persisted or colonised a section of the open pasture area in the east of the site. *Rytidosperma* sp. (Wallaby Grass) is the dominant native species with *Microlaena stipoides* var. *stipoides* (Weeping Grass) and two other native herb species also recorded.

Exotic grasses include *Dactylis glomerata* (Cocksfoot) and Panic Veldt-grass, and broadleaf weeds including *Arctotheca calendula* (Capeweed) and *Sonchus oleraceus* (Sow Thistle) form an overall low weed cover.

In the habitat hectare assessment the zone scored very poorly for most of its 'site condition' components, indicative of its highly modified state and limited native species diversity. It also scored very poorly for its 'landscape context' component, reflecting the lack of connectivity to surrounding native vegetation and the overall limited coverage of native vegetation within a 5km radius of the site.

Figure 5 provides an example of the vegetation typical to Habitat Zone 1.

Figure 5: Example of vegetation typical to Habitat Zone 1

Table 2: Results of Vegetation Quality Assessments for Native Patches

			Habitat Zone 1
Bioregion			**Highlands Southern Fall**
EVC Name (initials)			**PGW**
EVC Number			**55**
Bioregional Conservation Status			**Endangered**
		Max Score	**100**
Site Condition	Large Old Trees	10	0
	Canopy Cover	5	0
	Understorey	25	5
	Lack of Weeds	15	7
	Recruitment	10	0
	Organic Matter	5	3
	Logs	5	0
	Total Site Score	75	**15**
	Site score out of?	eg 55	75
	Adjusted Site Score		**15**
Landscape value	Patch Size	10	1
	Neighbourhood	10	0
	Distance to Core	5	1
Habitat points out of 100		**100**	**17**
Habitat Score (hab points/100)			**0.17**
Total area of the Zone (ha)			0.0204
Total HHA in the zone			**0.0035**
Catchment			**Port Phillip & Westernport**

3.2.3 Native Trees

Map 1 shows the location of all native trees which meet the definition of a 'scattered tree' (*Section 2.2.1*). No trees were recorded within the one native patch identified. *Table 3* lists the scattered and large size class trees recorded on site.

Other species that are locally indigenous to the area that are found in plantings along the site's boundaries include *Eucalyptus leucoxylon* (Yellow Gum) and *Eucalyptus melliodora* (Yellow Box). These species have been clearly planted and have not naturally established on the site and are not included in *Table 3*. Tree ID 9, a River Red Gum, is considered likely to have been planted given its location within a planted row of trees, but the possibility it may have naturally established cannot be discounted and it has been included in *Table 3*.

Table 3: Scattered and Large Size Class Native Trees Recorded

ID No. (corresponds with arborist report)	Botanical Name	Common Name	Origin	Diameter at Breast Height	Size Category	Type
5	Eucalyptus camaldulensis	River Red Gum	Locally Indigenous	153	Large	Scattered Tree
6	Eucalyptus camaldulensis	River Red Gum	Locally Indigenous	12	Small	Scattered Tree
9	Eucalyptus camaldulensis	River Red Gum	Locally Indigenous	60	Small	Scattered Tree
44	Eucalyptus sp.	Dead Eucalypt	Unknown	50	Small	Scattered Tree
45	Eucalyptus melliodora	Yellow Box	Locally Indigenous	50	Small	Scattered Tree
* Tree has been felled size estimated						

3.2.4 Significant Vegetation Communities

The site is close the edge of the Victorian Volcanic Plain but is not located within this Bioregion. The single highly modified native vegetation patch identified on the site does not fit the definitions of any threatened ecological communities listed under the EPBC Act.

Similarly, by not being located within the Western Basalt Plains the patch does not meet the definitions of any threatened ecological communities listed under the FFG Act.

3.3 Flora Species

3.3.1 Flora Species Recorded

A total of 61 vascular plants were found to occur on site during site assessments. Of these, 22 are considered to be taxa native to Victoria. *Appendix 5* provides the results of the flora survey.

3.3.2 Significant Flora Species

No state or nationally listed flora species were identified on site. From a regional perspective the one large remnant River Red Gum (Tree ID no. 5) tree located on the site is significant.

Assessment of the Likelihood of Presence of Significant Flora Species within the Study Area

As described in *Section 2.2.1* one relatively small patch of native understorey vegetation was identified. The patch held only a small number of native species that had persisted within or colonised an area of open pasture. The site overall has been significantly modified from its original vegetation condition and the potential for it to support any threatened flora species is negligible.

Appendix 6 provides a summary of the assessment of likelihood of presence for all threatened flora species found in both the EPBC Act Protected Matters Search Tool and the Victorian Biodiversity Atlas within five kilometres of the study area.

All threatened flora species were assessed to be unlikely to occur on the site.

3.4 Fauna Species

3.4.1 Fauna Species Recorded

A total of 16 fauna species, all birds, were recorded during the site visit. The fauna species recorded are listed in *Appendix 7* and include 12 native bird species and 4 introduced or exotic bird species.

3.4.2 Significant Fauna Species

Survey of the site did not identify any threatened fauna species on site.

Assessment of the Likelihood of Presence of Significant Fauna Species within the Study Area

Section 3.5 provides a description of the range of habitats found within the site that could potentially provide habitat for a threatened fauna species.

Appendix 8 provides a summary of the assessment of likelihood of presence for all threatened fauna species found in both the EPBC Act Protected Matters Search Tool and the Victorian Biodiversity Atlas within 5km of the study area. In summary, this likelihood assessment determined that two threatened species had a low likelihood of occurrence:

- *Callocephalon fimbriatum* (Gang-gang Cockatoo), listed as Endangered under the EPBC Act, is considered a possible occasional visitor to the site; and
- *Lathamus discolor* (Swift Parrot), listed as Critically Endangered on the FFG Act and under the EPBC Act, is considered a possible occasional visitor to the site.

3.5 Habitat Values

As described earlier in the report, most of the site has been significantly modified with cleared open pasture the dominant vegetation or habitat type across the site. The different types of habitats found within the site are described below.

Large Remnant Canopy Trees

This habitat type is represented by the single large River Red Gum tree found on the site (Tree ID No. 5). The tree does not have any visible trunk or branch hollows that would be used by native fauna species such as birds, possums or bats. It provides nesting structure for relatively common urban birds such as *Gymnorhina tibicen* (Australian Magpie) and *Corvus* coronoides (Australian Raven). Both species were recorded on the site and a nest likely to belong to one of these species was observed in the upper canopy (*Figure 6*).

The tree functions as a stopover point or 'stepping stone' for various native bird species and in particular parrots such as *Platycercus eximius* (Eastern Rosella) or *Psephotus haematonotus* (Red-rumped Parrot) as they move throughout the wider landscape. Similar sized large River Red Gum individuals are located on adjoining properties to the north and south of the site both with large tree hollows. The large River Red Gum on the property north of the site had large trunk hollows that were occupied by breeding *Trichoglossus moluccanus* (Rainbow Lorikeets).

Figure 6: Birds nest in large remnant canopy tree (Tree ID No. 5)

Planted Canopy Tree and Shrub Lines

Plantings of various locally indigenous and Australian native trees and tall shrubs line the northern and western boundaries of the site and along the driveway. Similar to the large remnant canopy tree, these lines of trees provide a 'stepping stone' of habitat for a variety of medium sized native bird species including parrots and wattle birds.

The upper canopy also provides protection and roosting habitat for larger native birds including *Eolophus roseicapilla* (Galah) and *Cacatua tenuirostris* (Long-billed Corella) that were both observed

during the site visit (*Figure 7*). There were no possum dreys observed in any of these trees, but they may be present in the dense exotic hedge that runs along the frontage of the site to Yan Yean Road.

Figure 7: Cacatua tenuirostris (Long-billed Corella) family in planted canopy trees located on northern boundary

Domestic Garden

The domestic garden area surrounding the existing dwelling has been planted with various Australian native shrubs and other exotic and ornamental plants. When flowering the Australian natives such as *Grevillea* sp. and *Callistemon* sp. provide a source of nectar for various native birds including *Anthochaera carunculate* (Red Wattlebird) and *Manorina melanocephala* (Noisy Miner).

The planted trees and shrubs also provide protection and foraging opportunities for small insectivorous birds as *Malurus cyaneus* (Superb Fairy-wren) who may stopover in their wider movements across the landscape. A small woodpile near the dwelling may provide a temporary refuge for small reptiles but overall, the site provides poor habitat for native ground dwelling fauna.

Open Pasture

This is the dominant vegetation type or habitat over the site and overall has minimal habitat value for any native fauna species. A drainage line crosses the centre of the site (*Figure 8*) that was saturated after recent heavy rainfall. Covered in exotic pasture grass the land feature has similar minimal habitat value for any native fauna species.

Figure 8: Drainage line near centre of site

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)

There are no MNES that warrant further consideration under the proposal. In summary:

- No threatened species or ecological communities were found to occur within the study area during the site inspection;
- All flora species identified in database searches, within a 5 km search radius, that are listed as threatened under the EPBC Act are considered unlikely to occur within the study area;
- *Callocephalon fimbriatum* (Gang-gang Cockatoo) and *Lathamus discolor* (Swift Parrot), both listed as threatened under the EPBC Act, are considered possible occasional visitors to the site. Both species were assigned a low likelihood of occurrence and neither is considered likely to be reliant on any habitat within the site; and
- All other fauna species identified in database searches, within a 5 km search radius, that are listed as threatened under the EPBC Act are considered unlikely to occur within the site.

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.

The *Flora and Fauna Guarantee (Amendment) Act 2019* (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.

The FFG Act also provides specific protection of fish passage by noting that the '*prevention of passage of aquatic biota as a result of the presence of instream structures*' is s potentially threatening process and that '*there should be no further preventable decline in the viability of any rare species'*.

4.2.1 Implications

As this proposal does not occur on public land, no further consideration regarding the FFG Act is required.

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

The open pasture areas of the site are well maintained and contain very few larger broadleaf weeds such as Thistles or Black Nightshade that are typically found on agricultural land. No weed species that are declared noxious under the Catchment and Land Protection Act 1994 (CaLP Act) were identified anywhere on the site (Agriculture Victoria, 2022).

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

There are no designated waterways located within or nearby to the site, therefore no further consideration regarding this Act is required.

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 – Planning and Environment Act 1987

Planning Zone

General Residential Zone – Schedule 1 (GRZ1)

The zone directs the nature of proposed developments such as this proposed subdivision. It incorporates various neighbourhood character objectives to ensure developments are appropriate and consider existing and future demands on infrastructure and services.

A permit is required to subdivide land under the zone and applications must meet various standards and requirements.

Planning Overlays

Development Contributions Plan Overlay – Schedule 5 (DCPO5) & Incorporated Plan Overlay – Schedule 1 (IPO1).

There are no direct implications under these overlays that relate to any vegetation or habitat proposed for removal under the project.

Development Plan Overlay – Schedule 5 (DPO5)

Under this overlay there is a requirement to undertake an environmental assessment of the flora, fauna and habitat significance of the land that includes recommended actions for the protection and enhancement of conservation and vegetation protection areas. This report addresses this requirement.

The DPO5 directs that environmental and assessment recommendations be guided by the *Mernda Strategy Plan* (City of Whittlesea, 2008). The site is located within the 'Precinct 1' Development Plan Area in the *Strategy*. The Precinct 1 Plan maps the property as residential land and shows the large River Red Gum tree (Tree ID No. 5) and the exotic hedge along the frontage with Yan Yean Road.

Amongst various other requirements the overlay also requests the integration and retention of individual and stands of mature trees, particularly River Red Gums, and requests that a 'Net Gain' assessment of native vegetation impacts be completed. *Section 5* of this report outlines the assessment of native vegetation impacts under the proposal against the current native vegetation policy requirements.

Vegetation Protection Overlay – Schedule 1 (VPO1)

The broad objective of this overlay centres on the protection of significant vegetation and trees and habitat, with the Schedule 1 focusing specifically on the protection of the significant River Red Gum Grassy Woodland vegetation community.

A permit is required under the overlay to remove, destroy or lop native vegetation but is not required to remove, destroy or lop non- native vegetation.

Native vegetation by definition includes several species found on the site that are native to Victoria such as *Eucalyptus botryoides* (Southern Mahogany) and *Melaleuca armillaris* (Giant Honey-myrtle). However, these species and several other locally indigenous species such as Yellow Gum and Yellow Box located in planted lines are exempt from permit requirements under the planted exemption. These permit exempt trees are identified in *Table 4*.

Clause 52.17 -Native Vegetation

Under *Clause 52.17* of the Whittlesea 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 summarised specifically within *Section 5* is considered to satisfy the information requirements of the Guidelines.

A planted exemption also exists under this overlay that applies to several Victorian native and locally indigenous planted trees and shrubs. These permit exempt trees are identified in *Table 4*.

5 Victoria's Native Vegetation Removal Regulations

The purpose of the Guidelines is to set out and describe the application of Victoria's statewide policy in relation to assessing and compensating for the removal of native vegetation. The Guidelines implement Clause 12.01-2S (Biodiversity) of the Planning Provisions objective 'To ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation (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 (and Significant Species or Communities)

The principles of avoidance and minimisation can be achieved in a Project 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).

5.1.1 Design

Appendix 1 provides the development plans; Subdivision Layout Plan, 1025 Yan Yean Road, Doreen. *Proposed Subdivision Plan, 1025 Yan Yean Road, Doreen. TP, 23/11/2022.*

The *Proposed Subdivision Plan* shows the building envelopes in Lots 10 and 11 have been configured to stay outside of the dripline of Tree ID number 5 which is the clearly most significant remnant tree on the site. As the tree is located within a lot less than 0.4 hectares the tree is deemed lost and is

required to be offset under Victoria's native vegetation policy. The client has advised they will be seeking to provide for the permanent protection of the tree by attaching a Section 173 Agreement to Lot 10 that secures its protection (Anand Ramakrishnan, pers. comm 15/12/2022).

It is worth noting that the one area of native patch that is impacted by the proposal is a highly modified native vegetation remnant with negligible habitat value. The patch was likely to have been classified as 'degraded treeless vegetation' under Victoria's earlier native vegetation regulations and would likely not have been required to be offset.

5.1.2 Construction

The following recommendations should be adhered to during construction to avoid damage to retained native vegetation:

- Trees and native vegetation to be retained outside the construction footprint are to be clearly marked and their tree protection zones (TPZ) fenced or clearly delineated;
- No excavation, trenching or soil removal may be undertaken within areas of native vegetation or the TPZ;
- No materials are to be stored within areas of native vegetation or the TPZ;
- No vehicles are to drive within areas of native vegetation or the TPZ;
- Excess soil produced by construction shall not be deposited on the native vegetation and is to be stockpiled outside of the TPZ;
- Trees on the periphery of the footprint should be monitored at regular intervals post-construction for any signs of deterioration in overall heath; and
- If any further vegetation to that indicated on the plans is lost due to works undertaken during construction, then appropriate measures must be undertaken to apply the Guidelines and calculate offsets.

5.2 Determination of Losses to Native Vegetation

Previous Clearing

Aerial photography from December 2021 shows a larger native canopy tree next to the immature Tree ID No. 6. *Figure 9* shows that the tree, a locally indigenous Yellow Box, had been recently felled. The trees location is shown in *Map 1* as tree ID No. 45, its size has been estimated as 50 cm DBH and it has been included as a tree that requires offsetting.

Figure 9: Recently felled Eucalyptus melliodora (Yellow Box)

Native Vegetation Impacts

Table 4 provides a breakdown of native vegetation that is deemed lost under the proposal and requires offsetting and *Map 2* displays the location and extent of all native vegetation deemed lost. *Table 4* also lists those native trees that are exempt from the requirement to obtain a permit for their removal.

Table 4: Breakdown of Native Vegetation Deemed Lost Under the Proposal

Loss Determination	Description	DELWP Native Vegetation Description
Consequential Loss- Within newly created Lot less than 0.4ha in size.	Habitat Zone 1	0.020 ha of native patch
	Tree ID numbers 5, 6 & 9	2 small and 1 large size class scattered trees
	Tree ID number 44 (dead tree with trunk diameter >40cm dbh)	1 small class tree
Past Removal	Tree ID number 45	1 small size class scattered tree
Locally Indigenous or Victorian Native Trees that are Exempt from permit requirements under Clause 52.17 and the Vegetation Protection Overlay- Schedule 1 as 'Planted Vegetation'.	Tree ID numbers 2, 3, 4, 7, 8, 14, 21, 22, 26, 29, 31, 33, 37, 42, 43	NA

5.1 Topographic & Land Information

Table 5 provides topography and land information (DELWP, 2017) specific to the native vegetation impacted under the proposal, as shown in the current proposed Subdivision Plan (*Appendix 1*).

Table 5: Topographic and Land Information

Loss Determination	Description
The role of native vegetation in protecting water quality and waterway and riparian ecosystems.	The site doesn't contain any waterways or riparian ecosystems.
Waterways, wetlands or special water supply catchments located within 30 metres of site.	There are no waterways, wetlands or special water supply catchments located within 30 metres of site.
Ridges, crests or hilltops or slopes greater than 20%. Areas of existing erosion.	From its highest point in the north west corner the site slopes gently down towards its northern boundary. The average slope gradient does not exceed 5%.
Low-lying areas, saline discharge areas or groundwater recharge areas.	The site does not hold any saline discharge or recharge areas. A drainage line crosses the centre of the site that becomes waterlogged after periods of heavy rainfall. There are no areas of active erosion visible on the site.
Landscape values	0.02 hectares of native patches, one large size class tree and 3 small size class trees are impacted under the proposal. The extent of remnant native vegetation and faunal habitat will be clearly reduced by the proposal at the local level but does not represent a significant reduction at the landscape scale.

5.2 Offset requirements- Native Vegetation Removal Report

The clearing shapefile was submitted to the DELWP's native vegetation support, who processed and provided a Native Vegetation Removal (NVR) report. The NVR is provided as *Appendix 9*, it identifies that the following offset requirements that apply to the proposal:

- The proposal falls under the 'Intermediate Assessment Pathway';
- Offset requirements amount to 0.038 General Habitat Units (GHUs) with a minimum strategic biodiversity score of 0.384 and 1 large trees; and
- Offsets must be located within the Port Phillip and Westernport Catchment Management Authority (CMA) boundary or within the City of Whittlesea Council municipality.

Offset Statement

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

A suitable statement includes evidence that the required offset:

- Is available to purchase from a third party; or
- Will be established as a new offset and has the agreement of the proposed offset provider; or
- Can be met by a first party offset.

The offset requirement of 0.038 'general' habitat units (GHUs) will be purchased through a third-party offset via an allocated credit register extract from a credit provider. *Appendix 10* provides evidence that native vegetation credits are freely available from several credit providers that meet all the requirements outlined on page 2 of *Appendix 9*.

6 Conclusion

Study Area- Ecological Values

The site is located within the Highlands Southern Fall Bioregion, with EVC 55: *Plains Grassy Woodland* the assigned EVC over most the site. The site assessment identified one small native patch and four scattered trees, which included one large size class tree, on the site. Overall, the site has been significantly modified from its original vegetation condition and all remaining areas of the site are dominated by exotic flora species or host planted vegetation.

The sites primary habitat function is in providing a 'stepping stone' of tree cover for various native and exotic bird species moving through the landscape, as well as providing nesting and foraging habitat for a variety of relatively common native bird species like wattlebirds and corvid species. The standout habitat feature on the site is the large remnant River Red Gum (Tree ID number 5), though no hollows were observed on the tree.

No threatened species or ecological communities were found to occur on site and the likelihood assessment found that no threatened flora species were likely to occur on the site. Two threatened bird species, *Callocephalon fimbriatum* (Gang-gang Cockatoo) and *Lathamus discolor* (Swift Parrot), are considered possible occasional visitors to the site, and were assigned a low likelihood of occurrence. All other threatened fauna species with potential to occur within the site were determined to be unlikely to occur within the site.

Legislation / Policy Considerations

EPBC Act- Matters of National Environmental Significance

No threatened flora or fauna species or communities, listed under the EPBC Act, were identified on site or were determined to be likely to occur. No further actions are recommended in relation to any Matters of National Environmental Significance (MNES).

Flora and Fauna Guarantee Act

As this proposal does not occur on public land, no further consideration regarding the FFG Act is required.

Catchment and Land Protection Act

No weed species that are declared noxious under the Catchment and Land Protection Act 1994 (CaLP Act) were identified anywhere on the site (Agriculture Victoria, 2022).

Avoid/Minimise Principles

The *Proposed Subdivision Plan* has been configured to avoid the dripline of Tree ID number 5 which is the clearly most significant remnant tree on the site. As the tree is located within a lot less than 0.4 hectares the tree is deemed lost and is required to be offset under Victoria's native vegetation policy. The client has advised they will be seeking to provide for the permanent protection of the tree by attaching a Section 173 Agreement to Lot 10 that secures its protection (Anand Ramakrishnan, pers. comm 15/12/2022).

It is worth noting that the one area of native patch that is impacted by the proposal is a highly modified native vegetation remnant with negligible habitat value. The patch was likely to have been classified as 'degraded treeless vegetation' under Victoria's earlier native vegetation regulations, giving an indication of its relatively poor quality.

Native Vegetation impacts

Victoria's native vegetation policy requires that all native vegetation within lot sizes less than 0.4 hectares be deemed lost at the point of subdivision. All the 12 proposed lots are below 0.4 hectares meaning all native vegetation identified on site is considered lost, which comprises of:

- 0.020 hectares of Plains Grassy Woodland patch vegetation;
- 1 large size class scattered trees; and
- 3 small size class scattered trees.

15 other individual trees that are locally indigenous or native to Victoria will be lost under the proposal. These trees are located in lines along the property boundaries or along the edge of the driveway and are exempt from permit requirements under Clause 52.17 as 'Planted Vegetation'.

Offset Requirements

The clearing shapefile outlining the extent of native vegetation deemed lost under the final design, was submitted to the DELWP's native vegetation support, who processed and provided a Native Vegetation Removal (NVR) report. The NVR identified the following offset requirements that apply to the proposal:

- 'Intermediate' assessment pathway;
- Offset requirements are 0.038 General Habitat Units (GHUs) with a minimum strategic biodiversity score of 0.384 and 1 large tree; and
- Offsets must be located within the port Phillip and Westernport Catchment Management Authority (CMA) boundary or within the Whittlesea City Council municipality.

References

Aboriginal Victoria. (2022). *Aboriginal Cultural Heritage Register and Information Systems (ACHRIS) Online Map Tool*. Retrieved November 24, 2022, from Aboriginal Victoria Heritage: https://achris.vic.gov.au/#/onlinemap

Agriculture Victoria. (2022). *Victoria's consolidated lists of declared noxious weeds and pest animals.* Retrieved November 22, 2022, from Agriculture Victoria: http://agriculture.vic.gov.au/__data/assets/pdf_file/0009/365094/Victorian-noxious-weeds-list-by-common-name-20-July-2017.pdf

City of Whittlesea. (2008). *Mernda Strategy Plan.* Retrieved November 22, 2022, from City of Whittlesea: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.whittlesea.vic.gov.au/media/1878/mernda-strategy-plan.pdf

DEE. (2022). *Protected Matters Search Tool: Interactive Map*. Retrieved November 22, 2022, from Australian Government Department of the Environment and Energy: http://www.environment.gov.au/epbc/protected-matters-search-tool

DELWP. (2017). *Guidelines for the removal, destruction or lopping of native vegetatoion.* State of Victoris Department of Environment, Land, Water and Planning.

DELWP. (2018). *Assesssors Handbook Applications to remove, lop or destroy native vegetation V1.1 October 2018.* State of Victoria, Department of Land, Water and Planning.

DELWP. (2022a). *Planning rReport.* Retrieved November 24, 2022, from Plannig: https://www.planning.vic.gov.au/schemes-and-amendments/planning-report

DELWP. (2022b). *NatureKit Victoria*. Retrieved November 22, 2022, from NatureKit Victoria: http://maps.biodiversity.vic.gov.au/viewer/?viewer=NatureKit

DELWP. (2022c). *Victorian Biodiversity Atlas*. Retrieved November 22, 2022, from Victorian Government Department of Sustainability and Environment: https://vba.dse.vic.gov.au/vba

DELWP. (2022d). *The Department of Environment, Land, Water and Planning*. Retrieved November 22, 2022, from Native Vegetation Information Management system: https://nvim.delwp.vic.gov.au/

DELWP. (2022e). Retrieved November 22, 2022, from https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks

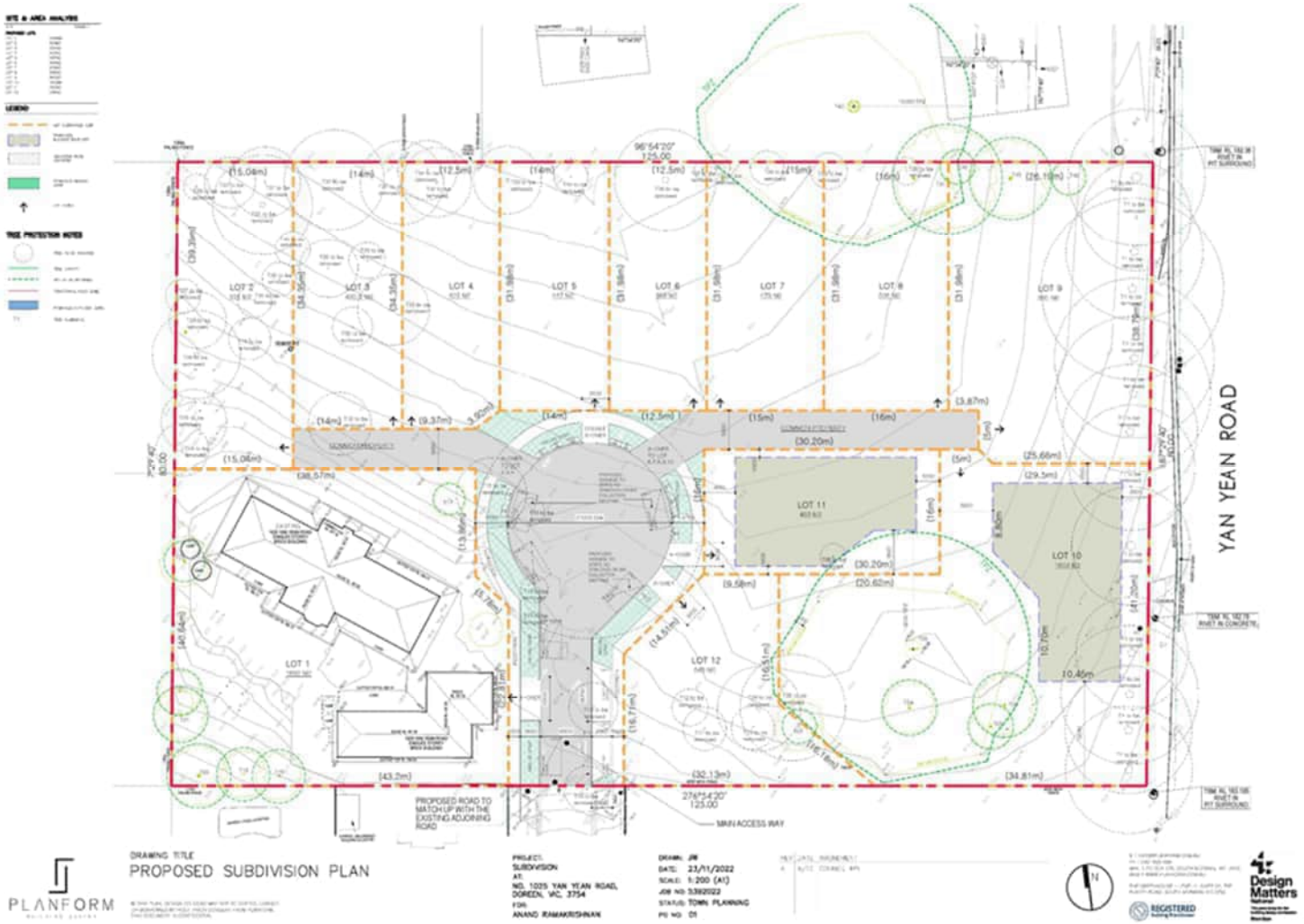
DoEE. (2022). *Protected Matters Search Tool: Interactive Map*. Retrieved November 22, 2022, from http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf

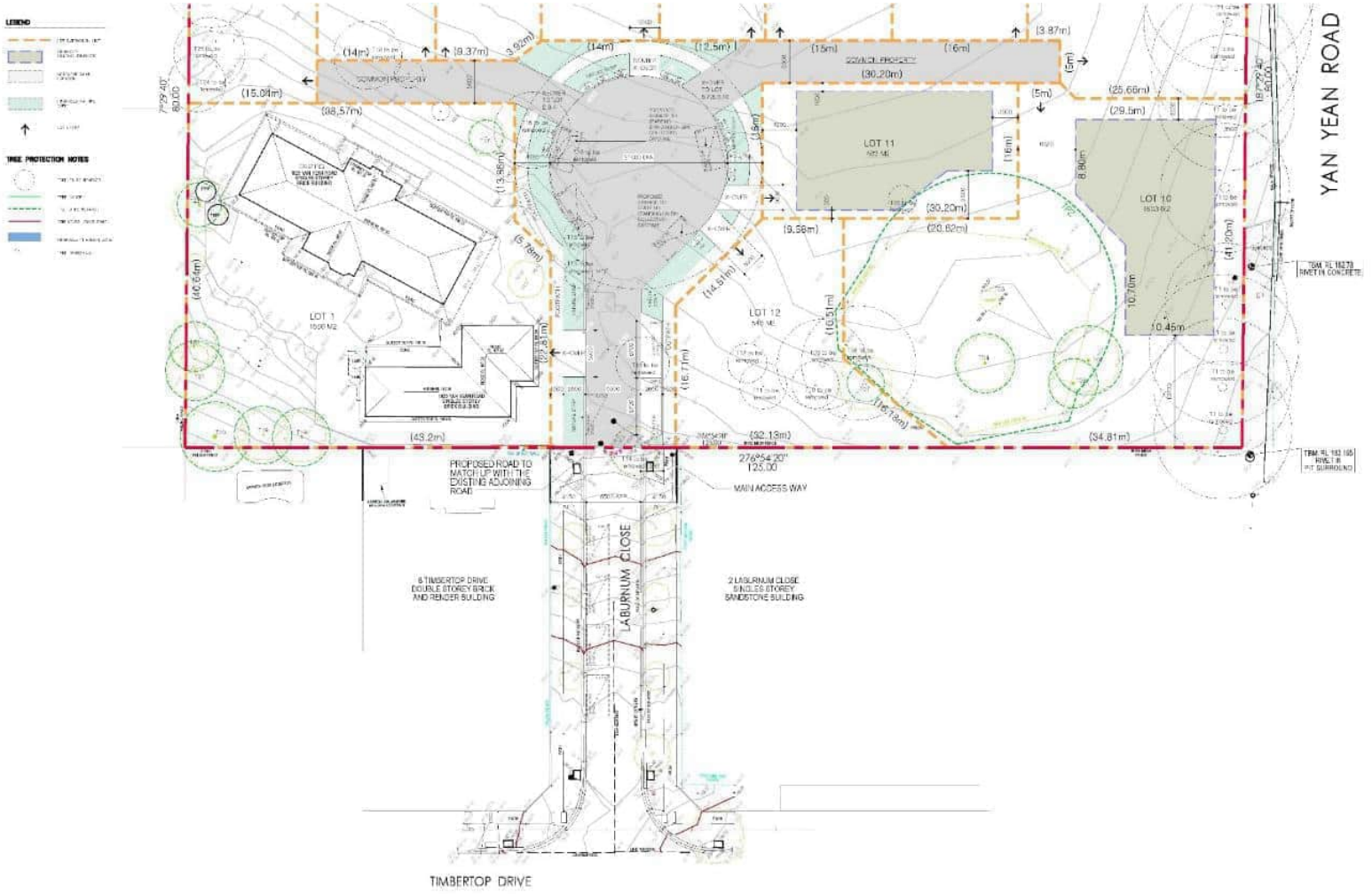
DSE. (2004). *Vegetation Quality Assessment Manual – Guidelines for applying the habitat hectares scoring method - Version 1.3. October 2004.* Melbourne: Victorian Government Department of Sustainability and Environment.

Appendices

Appendices commence on the next page.

Appendix 1: Proposed Subdivision Plan





DRAWING TITLE
PROPOSED SUBDIVISION PLAN CONT.

PROJECT: SUBDIVISION
AT: NO. 1025 YAN YEAN ROAD, DOREEN, VIC, 3754
FOR: ANAND RAMAKRISHNAN

DRAWN: JW
DATE: 23/11/2022
SCALE: 1:200 (A1)
JOB NO. 5392022
STATUS: TOWN PLANNING
PG NO: 02

PLANFORM

Appendix 2: Results of Victorian Biodiversity Atlas 5 kilometre radius search for flora species

Scientific Name	Common Name	Conservation Status / Origin	Count of Sightings	Last Record
Acacia howittii	Sticky Wattle	vu #	1	20/08/2015
Amphibromus fluitans	River Swamp Wallaby-grass	VU	7	15/12/2020
Billardiera scandens s.s.	Velvet Apple-berry	en	5	24/10/2005
Caladenia oenochila	Wine-lipped Spider-orchid	cr	3	27/07/2018
Cladium procerum	Leafy Twig-sedge	en	3	12/02/1996
Coronidium gunnianum	Pale Swamp Everlasting	cr	3	15/12/2020
Dianella amoena	Matted Flax-lily	EN cr	54	30/10/2020
Eucalyptus sideroxylon subsp. sideroxylon	Mugga	en	1	9/11/2017
Eucalyptus yarraensis	Yarra Gum	cr	10	15/12/2020
Geranium sp. 3	Pale-flower Crane's-bill	en	5	24/09/2020
Melaleuca armillaris subsp. armillaris	Giant Honey-myrtle	en #	2	5/09/2016
Prasophyllum suaveolens	Fragrant Leek-orchid	EN cr	1	20/10/2001
Tripogonella loliiformis	Rye Beetle-grass	en	2	14/02/1996

Key to Conservation Status and Origin

Taxon Origin	
#	Native species that may be considered alien in some circumstances
*	Exotic species
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
Victorian FFG Act 1988 Listing (DELWP 2022)	
x	Presumed Extinct in Victoria
cr	Listed as Critically Endangered in Victoria
en	Listed as Endangered in Victoria
vu	Listed as Vulnerable in Victoria

Appendix 3: Results of EPBC Act Protected Matters 5 kilometre radius search

Australian Government
Department of Climate Change, Energy, the Environment and Water

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. Please see the caveat for interpretation of information provided here.

Report created: 22-Nov-2022

Summary

Matters of National Environment 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.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	43
Listed Migratory Species:	14

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 https://www.dcceew.gov.au/parks-heritage/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.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	21
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	12
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

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.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Critically Endangered	Community known to occur within area	In feature area
Natural Temperate Grassland of the Victorian Volcanic Plain	Critically Endangered	Community likely to occur within area	In feature area
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Critically Endangered	Community likely to occur within area	In buffer area only
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			
Galaxiella pusilla Eastern Dwarf Galaxias, Dwarf Galaxias [56790]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Nannoperca obscura Yarra Pygmy Perch [26177]	Vulnerable	Species or species habitat may occur within area	In feature area
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area	In feature area
FROG			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat known to occur within area	In feature area
INSECT			
Paralucia pyrodiscus lucida Eltham Copper Butterfly [66766]	Endangered	Species or species habitat known to occur within area	In feature area
Synemon plana Golden Sun Moth [25234]	Vulnerable	Species or species habitat known to occur within area	In feature area
MAMMAL			
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area	In feature area
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat may occur within area	In buffer area only
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
Amphibromus fluitans River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat known to occur within area	In feature area
Caladenia amoena Charming Spider-orchid [64502]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Caladenia concolor Crimson Spider-orchid, Maroon Spider-orchid [5505]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caladenia rosella Rosella Spider-orchid, Little Pink Spider-orchid [5086]	Endangered	Species or species habitat may occur within area	In buffer area only
Dianella amoena Matted Flax-lily [64886]	Endangered	Species or species habitat known to occur within area	In feature area
Diuris fragrantissima Sunshine Diuris, Fragrant Doubletail, White Diuris [21243]	Endangered	Species or species habitat may occur within area	In feature area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Lachnagrostis adamsonii Adamson's Blown-grass, Adamson's Blowngrass [76211]	Endangered	Species or species habitat may occur within area	In buffer area only
Lepidium aschersonii Spiny Pepper-cress [10976]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat may occur within area	In buffer area only
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat may occur within area	In feature area
Pimelea spinescens subsp. spinescens Plains Rice-flower, Spiny Rice-flower, Prickly Pimelea [21980]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Pomaderris vacciniifolia Round-leaf Pomaderris [4256]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rutidosis leptorhynchoides Button Wrinklewort [67251]	Endangered	Species or species habitat may occur within area	In buffer area only
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In feature area
Senecio psilocarpus Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Tympanocryptis pinguicolla Victorian Grassland Earless Dragon [66727]	Endangered	Species or species habitat may occur within area	In buffer area only

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding known to occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat known to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Mernda SS.R.	Natural Features Reserve	VIC	In buffer area only
Yan Yean (south)	Reference Area	VIC	In buffer area only

Regional Forest Agreements		[Resource Information]
Note that all areas with completed RFAs have been included.		
RFA Name	State	Buffer Status
Central Highlands RFA	Victoria	In feature area

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Mernda Rail Extension Project, Vic	2016/7674	Controlled Action	Post-Approval	In buffer area only
Yan Yean Road Stage 2 Upgrade, Vic	2018/8371	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Greensborough Bypass Upgrade - Metropolitan Ring Road to Diamond Creek Road	2004/1337	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Lakefield residential housing development and infrastructure including removal o	2006/2777	Not Controlled Action	Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Mernda North Sewerage Strategy, Mernda-Doreen	2004/1350	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Mont Park Residential Development	2001/240	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Somerton Natural Gas Pipeline	2001/275	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Upgrade of Cooper Street, Epping	2001/292	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
All actions taken in response to the current severe bushfires in Victoria.	2009/4787	Referral Decision	Completed	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and 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

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

Where little information is available for a 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 detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-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
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-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
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-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.

Key to Likely Occurrence

Likelihood	Comments
Present	Species has been confirmed as present on site during field work
High	Suitable habitat present on site
	Likely to be a resident population/s in the local area*
	Previously recorded on site
	Numerous records within the local area within the past 5 years
Moderate	Aspects of habitat present but may be modified
	Species may be resident in the local area or it forms part of the species' range
	May seasonally or opportunistically use resources within the local area
	Less than 10 year old records within local area
Low	Limited aspects of habitat present or habitat highly modified
	Species may occur rarely or as an opportunistic visitor in the area
	Few records within the local area within the past 25 years
Unlikely	No suitable habitat present
	Site is located outside of species natural range
	Considered locally extinct
	No records of the species within the local area in the last 25 years

* Local area = within a 5km range of the site.

Conservation Status Key

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
Victorian FFG Act 1988 Listing (DELWP 2022)	
x	Presumed Extinct in Victoria
cr	Listed as Critically Endangered in Victoria
en	Listed as Endangered in Victoria
vu	Listed as Vulnerable in Victoria

Appendix 4: Results of Victorian Biodiversity Atlas 5 kilometre radius search for fauna species

Scientific Name	Common Name	Conservation Status / Origin	Count of Sightings	Last Record
Accipiter novaehollandiae	Grey Goshawk	en	5	16/09/2017
Actitis hypoleucos	Common Sandpiper	vu	18	12/03/2019
Anthochaera phrygia	Regent Honeyeater	CR cr	15	30/08/1990
Ardea alba modesta	Eastern Great Egret	vu	49	25/06/2019
Ardea intermedia plumifera	Plumed Egret	cr	4	9/11/2019
Aythya australis	Hardhead	vu	337	8/05/2021
Biziura lobata	Musk Duck	vu	172	5/04/2020
Callocephalon fimbriatum	Gang-gang Cockatoo	EN	55	11/03/2021
Dasyurus viverrinus	Eastern Quoll	EN en-x	1	1/01/1930
Egretta garzetta	Little Egret	en	4	21/01/2006
Emydura macquarii	Murray River Turtle	cr	1	3/01/2007
Falco subniger	Black Falcon	cr	1	7/07/1978
Geopelia cuneata	Diamond Dove	vu	1	21/01/1975
Haliaeetus leucogaster	White-bellied Sea-Eagle	en	28	24/06/2019
Hieraaetus morphnoides	Little Eagle	vu	26	18/07/2019
Hirundapus caudacutus	White-throated Needletail	VU vu	10	18/01/2019
Hydroprogne caspia	Caspian Tern	vu	5	10/07/2019
Ixobrychus dubius	Australian Little Bittern	en	1	1/01/1986
Lathamus discolor	Swift Parrot	CR cr	8	30/05/2019
Lewinia pectoralis	Lewin's Rail	vu	2	29/09/1988
Litoria raniformis	Growling Grass Frog	VU vu	26	3/01/2007
Maccullochella peelii	Murray Cod	VU en	4	01/01/1867
Macquaria australasica	Macquarie Perch	EN en	1	1/01/1912
Melanodryas cucullata	Hooded Robin	vu	4	20/08/2015
Miniopterus orianae oceanensis	Eastern Bent-winged Bat	cr	4	24/02/2005
Ninox connivens	Barking Owl	cr	2	20/08/2015
Ninox strenua	Powerful Owl	vu	2	3/04/2018
Ornithorhynchus anatinus	Platypus	vu	8	1/01/1997
Oxyura australis	Blue-billed Duck	vu	160	8/05/2021
Paralucia pyrodiscus lucida	Eltham Copper Butterfly	EN cr	1	20/12/1993
Phascogale tapoatafa	Brush-tailed Phascogale	vu	7	4/05/2021
Pseudemoia pagenstecheri	Tussock Skink	en	4	19/02/2021
Pseudemoia rawlinsoni	Glossy Grass Skink	en	8	25/02/2014
Pseudophryne bibronii	Brown Toadlet	en	6	2/06/1990
Pseudophryne semimarmorata	Southern Toadlet	en	92	18/05/1989
Pteropus poliocephalus	Grey-headed Flying-fox	VU vu	1	15/12/2000
Pyrrholaemus sagittatus	Speckled Warbler	en	16	23/11/1991
Rostratula australis	Australian Painted-snipe	EN cr	1	1/01/1977
Sminthopsis murina murina	Common Dunnart	vu	2	9/02/1987
Spatula rhynchotis	Australasian Shoveler	vu	142	30/05/2020
Stagonopleura guttata	Diamond Firetail	vu	3	30/05/1988

Scientific Name	Common Name	Conservation Status / Origin	Count of Sightings	Last Record
Stictonetta naevosa	Freckled Duck	en	68	8/02/2020
Tyto novaehollandiae	Masked Owl	cr	1	1/05/1990

Conservation Status Key

Origin	
*	Exotic species
#	Native but some stands may be alien
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
Victorian FFG Act 1988 Listing (DELWP 2022)	
x	Presumed Extinct in Victoria
cr	Listed as Critically Endangered in Victoria
en	Listed as Endangered in Victoria
vu	Listed as Vulnerable in Victoria
cd	Conservation Dependant in Victoria

Appendix 5: Flora survey results

Scientific Name	Common Name	Origin	FFG Act Status	EPBC Act Status	Native Patches	Degraded / Non- Native Vegetation Areas
Acacia floribunda	White Sallow-wattle	#				+
Acacia melanoxylon	Blackwood					+
Acetosella vulgaris	Sheep Sorrel	*				+
Agonis flexuosa	Willow Myrtle	*				+
Agrostis capillaris	Brown-top Bent	*			+	+
Allocasuarina littoralis	Black Sheoak					+
Allocasuarina torulosa	Forest Oak	*				+
Anthoxanthum odoratum	Sweet Vernal-grass	*				+
Arctotheca calendula	Cape Weed	*			+	+
Bromus catharticus	Prairie Grass	*				+
Bromus hordeaceus	Soft Brome	*				+
Callistemon spp.	Bottlebrush					+
Callistemon viminalis	Weeping Bottlebrush	*				+
Carpobrotus spp.	Pigface	#				+
Cenchrus clandestinus	Kikuyu	*				+
Cerastium glomeratum s.l.	Common Mouse-ear Chickweed	*			+	+
Corymbia maculata	Spotted Gum	#	Vulnerable			+
Cynodon dactylon	Couch	*				+
Cyperus eragrostis	Drain Flat-sedge	*				+
Dactylis glomerata	Cocksfoot	*			+	+
Dysphania pumilio	Clammy Goosefoot	#				+
Ehrharta erecta	Panic Veldt-grass	*			+	+
Ehrharta longiflora	Annual Veldt-grass	*				+
Einadia nutans	Nodding Saltbush					+
Epilobium billardierianum	Variable Willow-herb				+	+
Eucalyptus botryoides	Southern Mahogany	#				+

Scientific Name	Common Name	Origin	FFG Act Status	EPBC Act Status	Native Patches	Degraded / Non- Native Vegetation Areas
Eucalyptus camaldulensis	River Red-gum					+
Eucalyptus leucoxylon	Yellow Gum	#				+
Eucalyptus melliodora	Yellow Box					+
Eucalyptus sp.	Eucalypt					+
Euphorbia peplus	Petty Spurge	*				+
Galenia pubescens var. pubescens	Galenia	*				+
Grevillea robusta	Silky Oak	*				+
Hakea laurina	Pincushion Hakea	*				+
Helminthotheca echioides	Ox-tongue	*				+
Hesperocyparis macrocarpa	Monterey Cypress	*				+
Hypochaeris radicata	Flatweed	*			+	+
Juncus bufonius	Toad Rush					+
Kunzea leptospermoides	Yarra Burgan					+
Leptospermum petersonii	Lemon-scented Tea-tree	*				+
Lolium rigidum	Wimmera Rye-grass	*				+
Lythrum hyssopifolia	Small Loosestrife					+
Malva parviflora	Small-flower Mallow	*				+
Medicago polymorpha	Burr Medic	*				+
Melaleuca armillaris subsp. armillaris	Giant Honey-myrtle	#	Endangered			+
Microlaena stipoides var. stipoides	Weeping Grass				+	+
Oxalis exilis	Shade Wood-sorrel				+	+
Paspalum dilatatum	Paspalum	*				+
Platanus sp.	Plane	*				+
Poa annua s.l.	Annual Meadow-grass	*				+
Polycarpon tetraphyllum	Four-leaved Allseed	*				+
Polygonum aviculare s.l.	Prostrate Knotweed	*				+
Quercus palustris	Pin Oak	*				+
Rumex obtusifolius subsp. obtusifolius	Broad-leaf Dock	*				+

Scientific Name	Common Name	Origin	FFG Act Status	EPBC Act Status	Native Patches	Degraded / Non- Native Vegetation Areas
Rytidosperma spp.	Wallaby Grass				+	+
Solanum nigrum s.l.	Black Nightshade	*				+
Sonchus oleraceus	Common Sow-thistle	*			+	+
Taxandria marginata	Willow Myrtle	*				+
Trifolium repens var. repens	White Clover	*				+
Veronica arvensis	Wall Speedwell	*				+
Vulpia bromoides	Squirrel-tail Fescue	*			+	+

Origin and Conservation Status Key

Origin	
*	Exotic species
#	Native but some stands may be alien
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
Victorian FFG Act 1988 Listing (DELWP 2022)	
x	Presumed Extinct in Victoria
cr	Listed as Critically Endangered in Victoria
en	Listed as Endangered in Victoria
vu	Listed as Vulnerable in Victoria

Appendix 6: Summary of the assessment of likelihood of presence for threatened flora species identified within 5km database searches.

Taxon Name	Taxon Common Name	Taxon Origin	Conservation Status	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
Listed Threatened Ecological Communities									
Grassy Eucalypt Woodland of the Victorian Volcanic Plain			Critically Endangered			Community known to occur within area	PMST	Not Present	
Natural Temperate Grassland of the Victorian Volcanic Plain			Critically Endangered			Community likely to occur within area	PMST	Not Present	
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains			Critically Endangered			Community likely to occur within area	PMST	Not Present	
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland			Critically Endangered			Community likely to occur within area	PMST	Not Present	
Flora									
Acacia howittii	Sticky Wattle	#	vu		20/08/2015	In its natural habitat this plant is restricted to a portion of the southern Gippsland Hills , between Yarram and Tarra Valley in Victoria. It appears to be very hardy in a wide range of soils. (ANBG 2022)	VBA	Not applicable.	Outside of species natural range.
Amphibromus fluitans	River Swamp Wallaby-grass		VU		15/12/2020	Natural and man-made water-bodies, including swamps, lagoons, billabongs and dams (DSEWPC 2022).	PMST / VBA	Unlikely	No suitable habitat.
Billardiera scandens s.s.	Velvet Apple-berry		en		24/10/2005	Naturally occurring plants in dry, shaded or cool positions often develop sparse foliage. (ANBG 2022a)	VBA	Unlikely	No suitable habitat.
Caladenia amoena	Charming Spider-orchid		EN			Grassy Dry Forest; Box Ironbark Forest. Ridges and sheltered slopes in open forests on sandy loams derived from sandstone and mudstone. (DEE 2022)	PMST	Unlikely	No suitable habitat.

Taxon Name	Taxon Common Name	Taxon Origin	Conservation Status	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
Caladenia concolor	Crimson Spider-orchid		VU			Recorded from near Portland, Casterton, Edenhope, Upper Beaconsfield and in Brisbane Ranges, but probably overlooked or mis-identified elsewhere. Grows in coastal scrub and heathy forest on well-drained sandy loams (RBG 2022).	PMST	Unlikely	No suitable habitat.
Caladenia oenochila	Wine-lipped Spider-orchid		cr	35	27/07/2018	Heathy Woodland; Damp Sands Herb-rich Woodland; Heathy Herb-rich Woodland on Tertiary siliceous sand deposits (DEE 2022a).	VBA	Unlikely	No suitable habitat.
Caladenia rosella	Little Pink Spider-orchid		EN			Most species occur within severely fragmented ecosystems that are subject to a range of potentially threatening processes typical of such environments. These include weed invasions, grazing by native and introduced herbivores, inappropriate fire regimes and damage to populations by recreators. (DEE 2022b)	PMST	Unlikely	No suitable habitat.
Cladium procerum	Leafy Twig-sedge		en		12/02/1996	Occasional in swampy areas and margins of streams and lakes near the coast, tolerating low to moderate levels of salinity. (RBG 2022a)	VBA	Unlikely	No suitable habitat.
Coronidium gunnianum	Pale Swamp Everlasting		cr	1	15/12/2020	Widespead throughout the state except for the north-west and the alpine and adjacent mountainous areas and usually at low elevations	VBA	Unlikely	No suitable habitat.

Taxon Name	Taxon Common Name	Taxon Origin	Conservation Status	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						where mostly in grasslands and riverine Eucalyptus camaldulensis woodland on soils that are prone to inundation (RBG 2022b)			
Corymbia maculata	Spotted Gum	#	vu		9/11/2017	Only known in Victoria from the Mottle Range, south of Buchan (RBG 2022c)	VBA	Not applicable.	Outside of species natural range.
Dianella amoena	Matted Flax-lily		EN cr	1	30/10/2020	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 (DSE 2022).	PMST / VBA	Unlikely	Potential habitat is highly modified. Not recorded during site visit.
Diuris fragrantissima	Sunshine Diuris		EN			The habitat Sunshine Diuris is *Themeda triandra* dominated grasslands with a high level of native herbs on heavy clay loam soils, or basalt soils often with embedded basalt boulders. The orchid grows in the intertussock spaces. (DSEWPC 2022a)	PMST	Unlikely	No suitable habitat.
Eucalyptus sideroxylon subsp. sideroxylon	Mugga		en		9/11/2017	In Victoria confined to the Chiltern area, northern Warby Range and south of Winton (RBG 2022d)	VBA	Unlikely	No suitable habitat.
Eucalyptus yarraensis	Yarra Gum		cr	1	15/12/2020	Heavy clay soils on river flats and flood plains, tolerates some inundation. Frost resistant. Full sun or partial shade (SoYR 2022).	VBA	Unlikely	No suitable habitat.

Taxon Name	Taxon Common Name	Taxon Origin	Conservation Status	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
Geranium sp. 3	Pale-flower Crane's-bill		en	1	24/09/2016	Grassy areas in Escarpment Shrubland, Grassy Dry Forest, Grassy Woodlands, Plains Grassland, Rocky Chenopod Woodland, Valley Grassy Forest (FOM 2022)	VBA	Unlikely	No suitable habitat.
Glycine latrobeana	Clover Glycine		VU			Grassland and grassy woodland habitats, less often in dry forests, and only rarely in heathland. Populations occur from sea level to c. 1,200 m altitude 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 2022a).	PMST	Unlikely	No suitable habitat.
Lachnagrostis adamsonii	Adamson's Blown-grass		EN			confined to slow moving creeks, swamps, flats, depressions or drainage lines (such as along roadsides) that area seasonally inundated or waterlogged and usually moderately to highly saline. (DEE 2022c)	PMST	Unlikely	No suitable habitat.
Lepidium aschersonii	Spiny Peppercress		VU			Mostly on heavy clay soil near salt lakes on volcanic plain, but with outlying records from near Lake Omeo (in 1940 &1981) and the Grampians (in 1893). (RBG 2022e)	PMST	Unlikely	No suitable habitat.
Lepidium hyssopifolium ss	Basalt Peppercress		EN			Generally, the Basalt Pepper-cress is known to establish on open, bare ground with limited competition from	PMST	Unlikely	No suitable habitat.

Taxon Name	Taxon Common Name	Taxon Origin	Conservation Status	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						other plants. The Basalt Pepper-cress was previously recorded from Eucalypt woodland with a grassy ground cover, low open Casuarina woodland with a grassy ground cover and tussock grassland (DSEWPC 2022b)			
Leucochrysum albicans var. tricolor	Hoary Sunray		EN			Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. Plants can be found in natural or semi-natural vegetation and grazed or ungrazed habitat. (DSEWPC 2022c)	PMST	Unlikely	No suitable habitat.
Melaleuca armillaris subsp. armillaris	Giant Honey-myrtle	#	en		9/11/2017	Mainly confined to near-coastal sandy heaths, scrubs slightly raised above saltmarsh, riparian scrubs, rocky coastlines and foothill outcrops eastwards from about Marlo. Occurrences to the west are naturalized from cultivated stock. (RBG 2022f)	VBA	Unlikely	No suitable habitat.
Pimelea spinescens subsp. Spinescens	Plains Rice-flower		CR			Occurs in grassland or open shrubland on basalt-derived soils, usually comprising black or grey clays (DSE 2022b)	PMST	Unlikely	No suitable habitat.
Pomaderris vacciniifolia	Round-leaf Pomaderris		CR			Disjunct occurrences on the northern outskirts of the La Trobe Valley between Tyers and the Toongabbie-Cowwarr district (DSEWPC 2022d).	PMST	Unlikely	No suitable habitat.
Prasophyllum suaveolens	Fragrant Leek-orchid		EN cr		20/10/2001	Endemic to the basalt plains of south-western Victoria where	VBA	Unlikely	No suitable habitat.

Taxon Name	Taxon Common Name	Taxon Origin	Conservation Status	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						it grows in grassland and grassy woodland on brown water-retentive clay loams. (RBG 2022f)			
Pterostylis chlorogramma	Green-striped Greenhood		VU			Grows in moist areas of heathy and shrubby forest on well-drained soils (RBG 2022g)	PMST	Unlikely	No suitable habitat.
Rutidosis leptorhynchoides	Button Wrinklewort		EN			In Victoria Button Wrinklewort is restricted to open stands of plains grassland and grassy woodlands, on fertile clays to clay loams, usually in areas where the grass cover is more open (DEE 2022d)	PMST	Unlikely	No suitable habitat.
Senecio macrocarpus	Large-fruit Fireweed		VU			In Victoria largely confined to remnant Themeda grasslands on loamy clay soils derived from basalt from near Melbourne west to Skipton area. Also known from auriferous ground near Stawell (RBG 2022h)	PMST	Unlikely	No suitable habitat.
Senecio psilocarpus	Swamp Fireweed		VU			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 overstory species in a woodland formation. (DEE 2022e)	PMST	Unlikely	No suitable habitat.
Thesium australe	Austral Toadflax		VU			Austral Toadflax is semi-parasitic on roots of a range of grass species notably Kangaroo Grass	PMST	Unlikely	No suitable habitat.

Taxon Name	Taxon Common Name	Taxon Origin	Conservation Status	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						(Themeda triandra). It occurs in subtropical, temperate and subalpine climates over a wide range of altitudes. It occurs in shrubland, grassland or woodland, often on damp sites (DEE 2022f)			
Tripogonella loliiformis	Rye Beetle-grass		en		14/02/1996	An uncommon grass of scattered occurrence through drier areas of the state (e.g. Mt Arapiles, basalt plains just west of Melbourne, Strathbogie Ranges, Killawarra Forest near Wangaratta, Beechworth, Suggan Buggan). Usually occurring on shallow soils overlying rock. (RBG 2022i)	VBA	Unlikely	No suitable habitat.
Xerochrysum palustre	Swamp Everlasting		VU			Swamp Everlasting grows in wetlands including sedge-swamps and shallow freshwater marshes, often on heavy black clay soils. (DEE 2022g)	PMST	Unlikely	No suitable habitat.

References

SPECIES	TAG	Title	Detail
Acacia howittii	ANBG 2022	Acacia Howittii	http://www.anbg.gov.au/gnp/gnp10/acacia-howittii.html
Amphibromus fluitans	DSEWPC 2022	Amphibromus fluitans- River Swamp Wallaby-grass	http://www.environment.gov.au/biodiversity/threatened/species/pubs/19215-conservation-advice.pdf
Billardiera scandens s.s.	ANBG 2022a	Billardiera scandens s.s.	http://www.anbg.gov.au/gnp/interns-2002/billardiera-scandens.html
Caladenia amoena	DEE 2022	Charming Spider-orchid	https://www.environment.gov.au/resource/national-recovery-plan-twelve-threatened-spider-orchid-caladenia-r-br-taxa-victoria-and
Caladenia concolor	DEE 2022a	Crimson Spider-orchid	https://www.environment.gov.au/resource/national-recovery-plan-twelve-threatened-spider-orchid-caladenia-r-br-taxa-victoria-and
Caladenia oenochila	DEE 2022b	Wine-lipped Spider-orchid	https://www.environment.gov.au/resource/national-recovery-plan-twelve-threatened-spider-orchid-caladenia-r-br-taxa-victoria-and
Caladenia rosella	DEE 2022c	Little Pink Spider-orchid	https://www.environment.gov.au/resource/national-recovery-plan-twelve-threatened-spider-orchid-caladenia-r-br-taxa-victoria-and
Cladium procerum	RBG 2022	Leafy Twig-sedge	https://vicflora.rbg.vic.gov.au/flora/taxon/6df147dc-33a5-47b5-8639-8c84c05699fc
Coronidium gunnianum	RBG 2022a	Pale Swamp Everlasting	https://vicflora.rbg.vic.gov.au/flora/taxon/a0c78fff-3328-4c1b-931a-fc4a62be41b0
Corymbia maculata	RBG 2022b	Spotted Gum	https://vicflora.rbg.vic.gov.au/flora/taxon/a80bb5c8-e18f-4db0-b36e-36344cc3ffb5
Dianella amoena	DSE 2022	National Recovery Plan for the Matted Flax-lily Dianella amoena	Oberon Carter
Diuris fragrantissima	DSEWPC 2022a	Sunshine Diuris	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=21243
Eucalyptus sideroxylon subsp. sideroxylon	RBG 2022c	Mugga	https://vicflora.rbg.vic.gov.au/flora/taxon/018f3a83-d75d-42da-8047-faf278a3cbbe
Eucalyptus yarraensis	SoYR 2022	Eucalyptus yarraensis	http://fe.yarraranges.vic.gov.au/Residents/Trees_Vegetation/Yarra_Ranges_Plant_Directory/Yarra_Ranges_Local_Plant_Directory/Upper_Storey/Trees_5m/Eucalyptus_yarraensis
Geranium sp. 3	FOM 2022	Pale-flower Crane's-bill	Marilyn Bull
Glycine latrobeana	DSE 2022a	National Recovery Plan for the Clover Glycine Glycine latrobeana	Oberon Carter and Geoff Sutter
Lachnagrostis adamsonii	DEE 2022d	Adamsons Blown-grass	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=76211
Lepidium aschersonii	RBG 2022d	Spiny Peppercress	https://vicflora.rbg.vic.gov.au/flora/taxon/184f30b5-c450-4edd-8c2c-acc3d0e781da
Lepidium hyssopifolium ss	DSEWPC 2022b	Basalt Pepper-cress	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=16542
Leucochrysum albicans var. tricolor	DSEWPC 2022c	Hoary Sunray	https://www.environment.gov.au/resource/national-recovery-plan-hoary-sunray-leucochrysum-albicans-var-tricolor
Melaleuca armillaris subsp. armillaris	RBG 2022e	Giant Honey-myrtle	https://vicflora.rbg.vic.gov.au/flora/taxon/aee04d1d-f4a0-4714-9ece-08e5b6401e33

SPECIES	TAG	Title	Detail
Pimelea spinescens subsp. Spinescens	DSE 2022b	National Recovery Plan for the Plains Rice Flower	https://www.environment.gov.au/system/files/resources/05b081c7-f962-46b9-a33f-4aa1af9613b9/files/p-spinescens.pdf
Pomaderris vacciniifolia	DSEWPC 2022d	Species Profile and Threats Database; Pomaderris vacciniifolia (Round-leaf Pomaderris)	http://www.environment.gov.au/biodiversity/threatened/species/pubs/4256-conservation-advice.pdf
Prasophyllum suaveolens	RBG 2022f	Fragrant Leek-orchid	https://vicflora.rbg.vic.gov.au/flora/taxon/84b01a0c-7564-4a0e-ab90-b14d52029488
Pterostylis chlorogramma	RBG 2022g	Green-striped Greenhood	https://vicflora.rbg.vic.gov.au/flora/taxon/c78519e2-4099-4eb7-8007-35dde25e13e6
Rutidosis leptorhynchoides	DEE 2022e	Button Wrinklewort	http://www.environment.gov.au/resource/national-recovery-plan-button-wrinklewort-rutidosis%C2%A0leptorrhynchoides
Senecio macrocarpus	RBG 2022h	Large-fruit Fireweed	https://vicflora.rbg.vic.gov.au/flora/taxon/08d8c8b5-5723-4d2b-9d60-5a81c0398a43
Senecio psilocarpus	DEE 2022f	Swamp Fireweed	http://www.environment.gov.au/biodiversity/threatened/species/pubs/64976-conservation-advice.pdf
Thesium austral	DEE 2022g	Austral Toadflax	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=15202
Tripogonella loliiformis	RBG 2022i	Rye Beetle-grass	https://vicflora.rbg.vic.gov.au/flora/taxon/c1fcce25-80f9-46d2-a1a4-f88164b422ed
Xerochrysum palustre	DEE 2022h	Swamp Everlasting	https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=76215

Key to Likely Occurrence

Likelihood	Comments
Present	Species has been confirmed as present on site during field work
High	Suitable habitat present on site
	Likely to be a resident population/s in the local area*
	Previously recorded on site
	Numerous records within the local area within the past 5 years
Moderate	Aspects of habitat present but may be modified
	Species may be resident in the local area or it forms part of the species' range
	May seasonally or opportunistically use resources within the local area
	Less than 10 year old records within local area
Low	Limited aspects of habitat present or habitat highly modified
	Species may occur rarely or as an opportunistic visitor in the area
	Few records within the local area within the past 25 years
Unlikely	No suitable habitat present
	Site is located outside of species natural range
	Considered locally extinct
	No records of the species within the local area in the last 25 years

* Local area = within a 5km range of the site.

Conservation Status Key

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
Victorian FFG Act 1988 Listing (DELWP 2022)	
x	Presumed Extinct in Victoria
cr	Listed as Critically Endangered in Victoria
en	Listed as Endangered in Victoria
vu	Listed as Vulnerable in Victoria
cd	Conservation Dependant in Victoria
Bilateral migratory bird agreements	
JAMBA	Japan-Australia Migratory Bird Agreement (JAMBA)
CAMBA	China-Australia Migratory Bird Agreement (CAMBA)
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)
BONN	Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)
RAMSAR	Ramsar Convention on Wetlands
ACAP	Agreement on the Conservation of Albatrosses and Petrels (ACAP)

Appendix 7: Fauna survey results

Scientific Name	Common Name	Origin	Treaties	FFG Act Status	EPBC Act Status
Acridotheres tristis	Common Myna	*			
Anas superciliosa	Pacific Black Duck				
Anthochaera carunculata	Red Wattlebird				
Anthochaera chrysoptera	Little Wattlebird				
Cacatua galerita	Sulphur-crested Cockatoo				
Cacatua tenuirostris	Long-billed Corella				
Calyptorhynchus funereus	Yellow-tailed Black-Cockatoo				
Corvus mellori	Little Raven				
Eolophus roseicapilla	Galah				
Manorina melanocephala	Noisy Miner				
Ocyphaps lophotes	Crested Pigeon	*			
Platycercus eximius	Eastern Rosella				
Spilopelia chinensis	Spotted Dove	*			
Sturnus vulgaris	Common Starling	*			
Trichoglossus moluccanus	Rainbow Lorikeet				
Vanellus miles	Masked Lapwing				

Origin and Conservation Status Key

Origin	
*	Exotic species
#	Native but some stands may be alien
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
Victorian FFG Act 1988 Listing (DELWP 2022)	
x	Presumed Extinct in Victoria
cr	Listed as Critically Endangered in Victoria
en	Listed as Endangered in Victoria
vu	Listed as Vulnerable in Victoria
cd	Conservation Dependant in Victoria
Treaties- Bilateral migratory bird agreements	
JAMBA	Japan-Australia Migratory Bird Agreement (JAMBA)
CAMBA	China-Australia Migratory Bird Agreement (CAMBA)
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)
BONN	Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)
RAMSAR	Ramsar Convention on Wetlands
ACAP	Agreement on the Conservation of Albatrosses and Petrels (ACAP)

Appendix 8: Summary of the assessment of likelihood of presence for threatened fauna species identified within 5km database searches.

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
Birds									
Accipiter novaehollandiae	Grey Goshawk	en		1	16/09/2017	Found in most forest types, especially tall closed forests (Day and Simpson 2010).	VBA	Unlikely	No suitable habitat present
Actitis hypoleucos	Common Sandpiper	CR vu	Listed migratory CAMBA JAMBA ROKAMBA BONN	1	12/03/2019	Found in coastal or inland wetlands, both saline or fresh. It is found mainly on muddy edges or rocky shores (Day and Simpson 2010).	PMST / VBA	Unlikely	No suitable habitat present
Anthochaera phrygia	Regent Honeyeater	CR cr		2	30/08/1990	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 2022).	PMST / VBA	Unlikely	No suitable habitat present
Apus pacificus	Fork-tailed Swift		Listed migratory			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	PMST	Unlikely	Largely aerial species, may very occasionally fly over site.

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						and inland and coastal sand-dunes (DEE 2022)			
Ardea modesta	Eastern Great Egret	vu	CAMBA JAMBA	1	25/06/2019	Prefer shallow water, particularly when flowing, but may be seen on any watered area, including damp grasslands (DSE 2022).	VBA	Unlikely	No suitable habitat present
Ardea plumifera	Plumed Egret	cr		1	9/11/2019	Found mostly in freshwater wetlands, shallows of rivers, swamps with short or tall vegetation (HBW 2022)	VBA	Unlikely	No suitable habitat present
Aythya australis	Hardhead	vu		2	8/05/2021	Found in freshwater swamps and wetlands and occasionally in sheltered estuaries. They prefer deep, fresh open water and densely vegetated wetlands for breeding (Day and Simpson 2010).	VBA	Unlikely	No suitable habitat present
Biziura lobata	Musk Duck	vu		3	5/04/2020	Found in deep freshwater lagoons, with dense reed beds (Birdlife 2022).	VBA	Unlikely	No suitable habitat present
Botaurus poiciloptilus	Australasian Bittern	EN				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	PMST	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						reeds in water or a swamp (SA-MDB 2022).			
Calidris acuminata	Sharp-tailed Sandpiper		Listed migratory			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, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms (DEE 2022a)	PMST	Unlikely	No suitable habitat present
Calidris ferruginea	Curlew Sandpiper	CR	Listed migratory			intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams and floodwaters (Day and Simpson 2010)	PMST	Unlikely	No suitable habitat present
Calidris melanotos	Pectoral Sandpiper		Listed migratory BONN JAMBA 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	PMST	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						as grass or samphire (DEE 2022b)			
Callocephalon fimbriatum	Gang-gang Cockatoo	EN		2	11/03/2021	Gang-gang Cockatoos primarily occur within the temperate eucalypt forests and woodlands of mainland south-east Australia (Menkhorst et al. 2017). The species is an altitudinal migrant. (DAWE 2022)	PMST / VBA	**Low**	Possible occasional visitor to site.
Egretta garzetta	Little Egret	en			21/01/2006	Frequents tidal mudflats, saltwater and freshwater wetlands, and mangroves (Day and Simpson 2010).	VBA	Unlikely	No suitable habitat present
Falco hypoleucos	Grey Falcon	VU				Found in shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey (NSW- OoEHb).	PMST	Unlikely	Unlikely to be more than a n occasional visitor to site
Falco subniger	Black Falcon	cr			7/07/1978	Found along tree-lined watercourses and in isolated woodlands, mainly in arid and semi-arid areas. It roosts in trees at night and often	VBA	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						on power poles by day (Day and Simpson 2010).			
Gallinago hardwickii	Latham's Snipe		Listed migratory CAMBA JAMBA ROKAMBA 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 (Day and Simpson 2010).	PMST	Unlikely	No suitable habitat present
Geopelia cuneata	Diamond Dove	vu			21/01/1975	Diamond Doves gather in small parties or flocks in dry open savanna in mulga areas often among spinifex or grasses. They are also often in open riparian woodland (beside waterways) (Day and Simpson 2010).	VBA	Unlikely	No suitable habitat present
Grantiella picta	Painted Honeyeater	VU				Found in dry open forests and woodlands, and is strongly associated with mistletoe. It may also be found along rivers, on plains with scattered	PMST	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						trees and on farmland with remnant vegetation. It has been seen in urban parks and gardens where large eucalypts are available (Day and Simpson 2010).			
Haliaeetus leucogaster	White-bellied Sea-Eagle	en	CAMBA	1	24/06/2019	Usually seen high in a tree, or soaring over waterways and adjacent land. The nest can be located in a tree up to 30m above the ground, but may also be placed on the ground or on rocks (Day and Simpson 2010).	VBA	Unlikely	No suitable habitat present
Hieraaetus morphnoides	Little Eagle	vu		1	18/07/2019	Found in most open forest, woodland and scrub types and open agricultural country (Day and Simpson 2010)	VBA	Unlikely	No suitable habitat present
Hirundapus caudacutus	White-throated Needletail	VU vu	Listed migratory CAMBA JAMBA ROKAMBA	6	18/01/2019	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 (Coventry 1989; Tarburton 1993; Watson 1955). Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable (Cramp 1985), but there are,	PMST / VBA	Unlikely	Largely aerial species, may very occasionally fly over site.

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						nevertheless, certain preferences exhibited by the species. 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). (DSEWPC 2022a).			
Hydroprogne caspia	Caspian Tern	vu	CAMBA JAMBA	1	10/07/2019	Usually found near the coast, in extensive wetlands, on coastal and interior beaches and sheltered estuaries. Lives equally well in fresh water and saline environments (Day and Simpson 2010).	VBA	Unlikely	No suitable habitat present
Ixobrychus minutus	Little Bittern	en			1/01/1986	Requires dense riparian vegetation. Forested rivers, inlets and estuarine wetlands (Day and Simpson 2010).	VBA	Unlikely	No suitable habitat present
Lathamus discolor	Swift Parrot	CR cr		1	30/05/2019	Found in dry sclerophyll forests and woodlands, suburban parks and gardens and flowering	PMST / VBA	**Low**	Possible occasional visitor to site.

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						fruit trees (Day and Simpson 2010).			
Lewinia pectoralis pectoralis	Lewin's Rail	vu		1	29/09/1988	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 2022).	VBA	Unlikely	No suitable habitat present
Melanodryas cucullata	Hooded Robin	vu			20/08/2015	Home range 10 ha. Found in lightly timbered woodland, mainly dominated by acacia and/or eucalypts. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses (Day and Simpson 2010).	VBA	Unlikely	No suitable habitat present
Monarcha melanopsis	Black-faced Monarch		Listed migratory			Mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest, subtropical (notophyll) rainforest, mesophyll	PMST	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						(broadleaf) thicket/shrubland, warm temperate rainforest (DEE 2022c)			
Motacilla flava	Yellow Wagtail		Listed migratory			Occurs in mainly salt works, paddocks, marshes, grassy wetlands (Day and Simpson 2010)	PMST	Unlikely	No suitable habitat present
Myiagra cyanoleuca	Satin Flycatcher		Listed migratory			Wetter, denser forest, often at high elevations (Day and Simpson 2010)	PMST	Unlikely	No suitable habitat present
Ninox connivens	Barking Owl	cr			20/08/2015	Occur in savannah woodland, although they also inhabit well-forested hill and riverine woodlands. Inhabits eucalypt woodland, open forest, swamp woodlands and, especially in inland areas, timber along watercourses. Denser vegetation is used occasionally for roosting. More often heard than seen (Day and Simpson 2010).	VBA	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
Ninox strenua	Powerful Owl	vu		1	3/04/2018	Home range of 400-1450 ha. Found in open forests and woodlands, as well as along sheltered gullies in wet forests with dense understoreys, especially along watercourses. Will sometimes be found in open areas near forests such as farmland, parks and suburban areas, as well as in remnant bushland patches. Needs old growth trees to nest (Day and Simpson 2010).	VBA	Unlikely	No suitable habitat present
Numenius madagascariensis	Eastern Curlew	CR	Listed migratory CAMBA JAMBA ROKAMBA BONN			Found on intertidal mudflats and sandflats, often with beds of seagrass, on sheltered coasts, especially estuaries, mangrove swamps, bays, harbours and lagoons (Day and Simpson 2010).	PMST	Unlikely	No suitable habitat present
Oxyura australis	Blue-billed Duck	vu		4	8/05/2021	Found mainly in deep freshwater marshes with dense vegetation. More open water in non-breeding season (Day and Simpson 2010)	VBA	Unlikely	No suitable habitat present
Pandion haliaetus	Osprey	CR	Listed migratory			Mainly occurs in mangroves, rivers and estuaries, inshore seas,	PMST	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						coastal islands (Day and Simpson 2010)			
Pedionomus torquatus	Plains-wanderer	CR				Found in the low-land native grasslands in the Riverina region, in Northern Victoria (Day and Simpson 2010).	PMST	Unlikely	No suitable habitat present
Pycnoptilus floccosus	Pilot Bird	VU				Pilotbirds are strictly terrestrial, living on the ground in dense forests with heavy undergrowth (Higgins & Peter 2002). Largely sedentary, they are typically seen hopping briskly over the forest floor and foraging on damp ground or among leaf-litter (DAWE 2022a)	PMST	Unlikely	No suitable habitat present
Pyrrholaemus sagittatus	Speckled Warbler	en		3	23/11/1991	The Speckled Warbler lives in dry sclerophyll forests and woodlands (woodlands have fewer trees than forests) dominated by eucalypts. It is mostly seen on the grassy ground layer, when it is foraging (BL 2022a)	VBA	Unlikely	No suitable habitat present
Rhipidura rufifrons	Rufous Fantail		Listed migratory BONN			Mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts, usually with a dense shrubby understorey often	PMST	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						including ferns. (DEE 2022d)			
Rostratula australis	Australian Painted Snipe	EN cr	CAMBA	1	1/01/1977	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 2022b).	PMST / VBA	Unlikely	No suitable habitat present
Spatula rhynchotis	Australasian Shoveler	vu		1	30/05/2020	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 2022b).	VBA	Unlikely	No suitable habitat present
Stagonopleura guttata	Diamond Firetail	vu		2	30/05/1988	Found in open grassy woodland, heath and farmland or grassland with scattered trees (Day and Simpson 2010).	VBA	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
Stictonetta naevosa	Freckled Duck	en		4	8/02/2020	Prefers permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds (AM 2022).	VBA	Unlikely	No suitable habitat present
Tringa nebularia	Common Greenshank		Listed migratory CAMBA JAMBA ROKAMBA BONN			The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass. The edges of the wetlands used are generally of mud or clay, occasionally of sand, and may be bare or with emergent or fringing vegetation, including short sedges and saltmarsh, mangroves, thickets of rushes, and dead or live trees. (DSEWPC 2022c)	PMST	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
Tyto novaehollandiae	Masked Owl	cr		2	1/05/1990	Inhabits forests, woodlands, timbered waterways and open country on the fringe of these areas. The main requirements are tall trees with suitable hollows for nesting and roosting and adjacent areas for foraging (Day and Simpson 2010).	VBA	Unlikely	No suitable habitat present
Amphibians and Reptiles									
Delma impar	Striped Legless Lizard	VU				Inhabits woodlands as well as grasslands (Jenkins & Bartell 1980), recent surveys indicate that it is generally found in perennial lowland tussock grasslands with year-round cover (DEPI 2022)	PMST	Unlikely	No suitable habitat present
Emydura macquarii	Murray River Turtle	cr		1	3/01/2007	Inhabits larger rivers like the Murray and Macquarie rivers as well as permanent lakes within the basin (OROF 2022)	VBA	Unlikely	No suitable habitat present
Litoria raniformis	Growling Grass Frog	VU vu		2	3/01/2007	Need still or slow moving water with emergent vegetation around the edges and mats of floating and submerged plants (DSE 2022a).	PMST / VBA	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
Pseudemoia pagenstecheri	Tussock Skink	en		1	19/02/2021	State; River Red Gum (Eucalyptus camaldulensis) forests and associated Black Box (Eucalyptus largiflorens woodlands along the major watercourses; and rocky hills, often within woodlands of Blakely's Red Gum (Eucalyptus blakelyi) (DSEWPC 2022)	VBA	Unlikely	No suitable habitat present
Pseudemoia rawlinsoni	Glossy Grass Skink	en		17	25/02/2014	Lives amongst dense vegetation, usually close to water. Also found where dry sclerophyll forest meets wet heathland subject to frequent flooding. Shelters in dense vegetation and in rotting logs (ParksTas 2022).	VBA	Unlikely	No suitable habitat present
Pseudophryne bibronii	Brown Toadlet	en			2/06/1990	Dry forests, woodland, shrubland, grassland, coastal swamps, heathland, and sub-alpine areas. They live in areas that are likely to be inundated after rain. They shelter in damp areas under leaf litter, logs, or other forms of cover (SWIFFT 2022).	VBA	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
Pseudophryne semimarmorata	Southern Toadlet	en		1	18/05/1989	Frequent dry forest, woodland, shrubland, grassland, and heaths. They shelter under leaf litter and other debris in moist soaks and depressions (SWIFFT 2022a).	VBA	Unlikely	No suitable habitat present
Tympanocryptis pinguicolla	Grassland Earless Dragon	EN				The grassland earless dragon is a native grassland specialist inhabiting natural temperate grasslands Burrows of the wolf spider (Lycosa spp.) and wood cricket (Cooraboorama canberrae), embedded surface rocks and tussocks are habitat components critical to this species survival (DSEWPC 2022d)	PMST	Unlikely	No suitable habitat present
Mammals									
Dasyurus maculatus maculatus	Spot-tailed Quoll	EN				Home range 100 to 200 ha. Trees with hollows, hollow logs on the ground, rocky outcrops, caves or rock crevices (Menkhorst, Knight 2010).	PMST	Unlikely	No suitable habitat present
Dasyurus viverrinus	Eastern Quoll	EN en-x			1/01/1930	It is commonly associated with dry grasslands and forest mosaics which are	VBA	Unlikely	No suitable habitat present

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						bounded by agricultural land, particularly where pasture grubs are common (DEE 2022e)			
Miniopterus orianae oceanensis	Eastern Bent-winged Bat	cr		1	24/02/2005	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	No suitable habitat present
Ornithorhynchus anatinus	Platypus	vu			30/11/2021	They feed in both slow-moving and rapid (riffle) parts of streams, but show preference to coarser bottom substrates, particularly cobbles and gravel. When not foraging, the Platypus spends most of the time in its burrow in the bank of the river, creek or a pond. At times, the individuals use rocky crevices and stream debris as shelters, or they burrow under the roots of vegetation near the stream. Hence, the ideal habitat for the species includes a river or a	VBA	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						stream with earth banks and native vegetation that provides shading of the stream and cover near the bank (AM 2022a)			
Petauroides volans	Greater Glider	EN				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 (Kehl & Borsboom 1984; Kavanagh & Lambert 1990; van der Ree et al., 2004). It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows (Andrews et al., 1994; Smith et al., 1994, 1995; Kavanagh 2000; Eyre 2004; van der Ree et al., 2004; Vanderduys et al., 2012). The distribution may be patchy even in suitable habitat	PMST	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						(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).			
Petaurus australis australis	Yellow-bellied Glider	VU				The yellow-bellied glider (south-eastern) occurs in eucalypt-dominated woodlands and forests, including both wet and dry sclerophyll forests (Kavanagh et al. 1995; Rees et al. 2007). Abundance is highly dependent on habitat suitability, which is in turn determined by forest age and floristics (DAWE 2022b)	PMST	Unlikely	No suitable habitat present
Phascogale tapoatafa	Brush-tailed Phascogale	vu		1	4/05/2021	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 suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
Pteropus poliocephalus	Grey-headed Flying-fox	VU vu		6	15/12/2000	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).	PMST / VBA	Unlikely	No suitable habitat present
Sminthopsis murina murina	Common Dunnart	vu		1	9/02/1987	Dry sclerophyll forests and mallee heath land. (Menkhorst, Knight 2010)	VBA	Unlikely	No suitable habitat present
Fish									
Galaxiella pusilla	Dwarf Galaxias	VU				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 (Cadwallader & Backhouse 1983; McDowall 1996; Hammer 2002a). In larger pools, the species is usually found amongst	PMST	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						marginal vegetation. Some wetlands where it occurs may partially or completely dry up during summer (Humphries 1986) and such wetlands rely on seasonal flooding plus linkages to other sites where the species occurs, for recolonisation (Backhouse & Vanner 1978). 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 2022e)			
Maccullochella peelii	Murray Cod	VU en			01/01/1867	Utilises a diverse range of habitats from clear rocky streams, such as those found in the upper western slopes of NSW (including the ACT), to slow-flowing, turbid lowland rivers and billabongs. Frequently	VBA	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						found in the main channels of rivers and larger tributaries (DEE 2022f)			
Macquaria australasica	Macquarie Perch	EN en		100	1/01/1912	It prefers clear water and deep, rocky holes with lots of cover. As well as aquatic vegetation, additional cover may comprise of large boulders, debris and overhanging banks (DEE 2022g)	VBA	Unlikely	No suitable habitat present
Nannoperca obscura	Yarra Pygmy Perch	VU				The Yarra Pygmy Perch typically occurs in lakes, ponds and slow-flowing rivers, but prefers small-medium sized, relatively shallow (1-2 m) freshwater streams with moderate to high flow (DSEWPC 20122f)	PMST	Unlikely	No suitable habitat present
Prototroctes maraena	Australian Grayling	VU				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 2022g)	PMST	Unlikely	No suitable habitat present
Insects									
Acrodipsas brisbanensis	Large Ant Blue Butterfly	en			17/01/2017	Confined to remnants of open forest and woodland in central	VBA		

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						Victoria including Braodford and Mansfield. (DSE 2022b)			
Paralucia pyrodiscus lucida	Eltham Copper Butterfly	EN cr		22	20/12/1993	Require a well-drained gentle slope, with a north to west aspect. Its known habitat is sparse dry woodland consisting mainly of Red Stringybark (Eucalyptus macrorhyncha), Red Box (E. polyanthemos), Long-leaved Box (E. goniocalyx) and Late Black Wattle (Acacia mearnsii) (DEPI 2022a)	PMST / VBA	Unlikely	No suitable habitat present
Synemon plana	Golden Sun Moth	VU				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	PMST	Unlikely	No suitable habitat present

Scientific Name	Common Name	Conservation Status	EPBC Act Listed Migratory Species / Treaty	Count of Sightings	Date of Last Record	Preferred Habitat Notes	Database Source	Likelihood of occurrence	Comments
						Needlegrass (DEE 2022h)			

References

SPECIES	TAG	Title	Detail
Birds			
Accipiter novaehollandiae	Day and Simpson 2010	Field Guide to the Birds of Australia	
Actitis hypoleucos	Day and Simpson 2010	Field Guide to the Birds of Australia	
Anthochaera phrygia	DSEWPC 2022	Regent Honeyeater	https://www.environment.gov.au/biodiversity/threatened/publications/factsheet-regent-honeyeater-xanthomyza-phrygia
Apus pacificus	DEE 2022	Fork-tailed Swift	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=678
Ardea modesta	DSE 2022	Action Statement No 120	http://www.depi.vic.gov.au/__data/assets/pdf_file/0004/251185/Great_Egret_Ardea-alba.pdf
Ardea plumifera	HBW 2022	Plumed Egret	https://www.hbw.com/species/plumed-egret-ardea-plumifera
Aythya australis	Day and Simpson 2010	Field Guide to the Birds of Australia	
Biziura lobata	Birdlife 2022	Musk Duck	http://www.birdlife.org/datazone/speciesfactsheet.php?id=363
Botaurus poiciloptilus	SA-MDB 2022	Australasian Bittern	http://root.ala.org.au/bdrs-core/mdnrm/fieldguide/taxon.htm?id=29026
Calidris acuminata	DEE 2022a	Sharp-tailed Sandpiper	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=874
Calidris ferruginea	Day and Simpson 2010	Field Guide to the Birds of Australia	
Calidris melanotos	DEE 2022b	Pectoral Sandpiper	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=858
Callocephalon fimbriatum	DAWE 2022	Gang-gang Cockatoo	http://www.environment.gov.au/biodiversity/threatened/species/pubs/768-conservation-advice-02032022.pdf
Egretta garzetta	Day and Simpson 2010	Field Guide to the Birds of Australia	

SPECIES	TAG	Title	Detail
Falco hypoleucos	NSW- OoEH	Grey Falcon	http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10330
Falco subniger	Day and Simpson 2010	Sanderling	
Gallinago hardwickii	Day and Simpson 2010	Field Guide to the Birds of Australia	
Geopelia cuneata	Day and Simpson 2010	Field Guide to the Birds of Australia	
Grantiella picta	Day and Simpson 2010	Field Guide to the Birds of Australia	
Haliaeetus leucogaster	Day and Simpson 2010	Field Guide to the Birds of Australia	
Hieraaetus morphnoides	Day and Simpson 2010	Little Eagle	
Hirundapus caudacutus	DSEWPC 2022a	White-throated Needletail	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=682
Hydroprogne caspia	Day and Simpson 2010	Field Guide to the Birds of Australia	
Ixobrychus minutus	Day and Simpson 2010	Field Guide to the Birds of Australia	
Lathamus discolor	Day and Simpson 2010	Field Guide to the Birds of Australia	
Lewinia pectoralis pectoralis	SA-DEH 2022	Lewinia pectoralis pectoralis	Threatened Species Profile- South Australia- Department for Environment and Heritage
Melanodryas cucullata	Day and Simpson 2010	Field Guide to the Birds of Australia	
Monarcha melanopsis	DEE 2022c	Black-faced Monarch	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=609
Motacilla flava	Day and Simpson 2010	Field Guide to the Birds of Australia	
Ninox connivens	Day and Simpson 2010	Field Guide to the Birds of Australia	
Ninox strenua	Day and Simpson 2010	Field Guide to the Birds of Australia	
Numenius madagascariensis	Day and Simpson 2010	Field Guide to the Birds of Australia	
Oxyura australis	Day and Simpson 2010	Field Guide to the Birds of Australia	
Pandion haliaetus	Day and Simpson 2010	Field Guide to the Birds of Australia	
Pedionomus torquatus	Day and Simpson 2010	Field Guide to the Birds of Australia	
Pycnoptilus floccosus	DAWE 2022a	Pilotbird	http://www.environment.gov.au/biodiversity/threatened/species/pubs/525-conservation-advice-02032022.pdf
Pyrrholaemus sagittatus	Birdlife 2022a	Speckled Warbler	https://www.birdlife.org.au/bird-profile/speckled-warbler
Rhipidura rufifrons	DEE 2022d	Rufous Fantail	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=592
Rostratula australis	DSEWPC 2022b	Australian Painted Snipe	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=77037
Spatula rhynchotis	Birdlife 2022b	Australasian Shoveler	http://datazone.birdlife.org/species/factsheet/22680243
Stagonopleura guttata	Day and Simpson 2010	Field Guide to the Birds of Australia	
Stictonetta naevosa	AM 2022	Freckled Duck	http://australianmuseum.net.au/freckled-duck

SPECIES	TAG	Title	Detail
Tringa nebularia	DSEWPC 2022c	Common Greenshank	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=832
Tyto novaehollandiae	Day and Simpson 2010	Field Guide to the Birds of Australia	
Amphibians & Reptiles			
Delma impar	DEPI 2022	Striped Legless Lizard	http://www.depi.vic.gov.au/__data/assets/pdf_file/0005/247046/Striped_Legless_Lizard_Delma_impar.pdf
Emydura macquarii	OROF 2022	Fact Sheet - Murray River Turtle	http://ourriverourfuture.org/wp-content/uploads/2012/05/3fact-sheet_Murray-River-TurtleP3.pdf
Litoria raniformis	DSE 2022a	Growling Grass Frog	http://www.dse.vic.gov.au/__data/assets/pdf_file/0016/103408/GGF_fact_sheet.pdf
Pseudemoia pagenstecheri	AOLA 2022	Tussock Skink	https://bie.ala.org.au/species/urn:lsid:biodiversity.org.au:afd.taxon:969b50b3-87b6-4aec-8f9b-26dacfa54af1
Pseudemoia rawlinsoni	ParksTas 2022	Glossy Grass Skink	http://www.parks.tas.gov.au/indeX.aspX?base=5471
Pseudophryne bibronii	SWIFFT 2022	Brown Toadlet	http://www.swifft.net.au/cb_pages/brown_toadlet.php
Pseudophryne semimarmorata	SWIFFT 2022a	Southern Toadlet	http://www.swifft.net.au/cb_pages/southern_toadlet.php
Tympanocryptis pinguicolla	DSEWPC 2022d	Grassland Earless Dragon	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=66727
Mammals			
Dasyurus maculatus maculatus	Menkhorst, Knight 2010	A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press.	
Dasyurus viverrinus	DEE 2022e	Eastern Quoll	http://www.environment.gov.au/biodiversity/threatened/species/pubs/333-conservation-advice-2015123.pdf
Miniopterus orianae oceanensis	Menkhorst, Knight 2010	A field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press.	
Ornithorhynchus anatinus	AM 2022a	Platypus	https://australian.museum/learn/animals/mammals/platypus/
Petauroides volans	Menkhorst, Knight 2010	A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press.	
Petaurus australis australis	DAWE 2022b	Yellow-bellied Glider	https://www.environment.gov.au/biodiversity/threatened/species/pubs/87600-conservation-advice-02032022.pdf
Phascogale tapoatafa	Menkhorst, Knight 2010	A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press.	
Pteropus poliocephalus	Menkhorst, Knight 2010	A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press.	
Sminthopsis murina	Menkhorst, Knight 2010	A Field Guide to the Mammals of Australia, Third Edition, 2010. Oxford University Press.	
Fish			

SPECIES	TAG	Title	Detail
Galaxiella pusilla	DSEWPC 2022e	Dwarf Galaxias	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=56790
Maccullochella peelii	DEE 2022f	Murray Cod	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=66633
Macquaria australasica	DEE 2022g	Macquarie Perch	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=66632
Nannoperca obscura	DSEWPC 2022f	Yarra Pygmy Perch	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=26177
Prototroctes maraena	DSEWPC 2022g	Australian Grayling	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=26179
Insects			
Acrodipsas brisbanensis	DSE 2022b	Large Ant-blue Butterfly	http://delwp.vic.gov.au/__data/assets/pdf_file/0019/250075/Large_Ant-blue_Butterfly_Acrodipsas_brisbanensis.pdf
Paralucia pyrodiscus lucida	DEPI 2022a	Eltham Copper Butterfly	http://www.depi.vic.gov.au/__data/assets/pdf_file/0018/250065/Eltham_Copper_Butterfly_Paralucia_pyrodiscus-lucida.pdf
Synemon plana	DEE 2022h	Golden Sun Moth	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=25234

Key to Likely Occurrence

Likelihood	Comments
Present	Species has been confirmed as present on site during field work
High	Suitable habitat present on site
	Likely to be a resident population/s in the local area*
	Previously recorded on site
	Numerous records within the local area within the past 5 years
Moderate	Aspects of habitat present but may be modified
	Species may be resident in the local area or it forms part of the species' range
	May seasonally or opportunistically use resources within the local area
	Less than 10 year old records within local area
Low	Limited aspects of habitat present or habitat highly modified
	Species may occur rarely or as an opportunistic visitor in the area
	Few records within the local area within the past 25 years
Unlikely	No suitable habitat present
	Site is located outside of species natural range
	Considered locally extinct
	No records of the species within the local area in the last 25 years

* Local area = within a 5km range of the site.

Key

Treaties- Bilateral migratory bird agreements	
JAMBA	Japan-Australia Migratory Bird Agreement (JAMBA)
CAMBA	China-Australia Migratory Bird Agreement (CAMBA)
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)
BONN	Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)
RAMSAR	Ramsar Convention on Wetlands
ACAP	Agreement on the Conservation of Albatrosses and Petrels (ACAP)

Appendix 9: Native Vegetation Removal 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: 19/12/2022
Time of issue: 12:34 pm

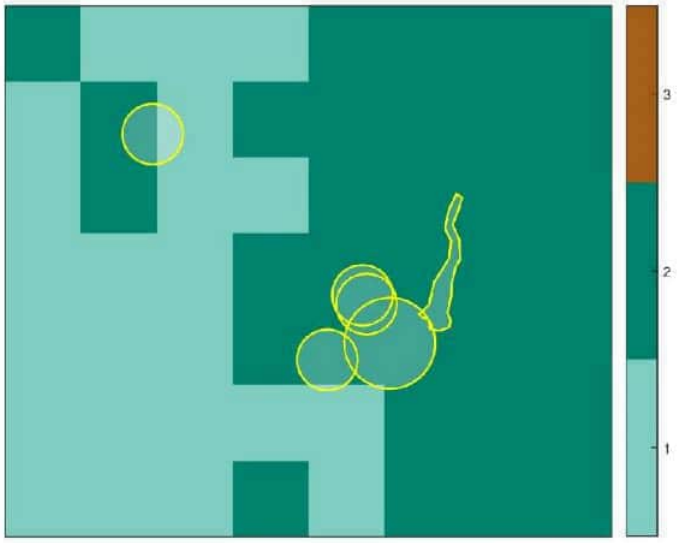
Report ID: GEN_2022_275

Project ID	22180BST_Clearing_20221216

Assessment pathway

Assessment pathway	**Intermediate Assessment Pathway**
Extent including past and proposed	0.174 ha
Extent of past removal	0.000 ha
Extent of proposed removal	0.174 ha
No. Large trees proposed to be removed	1
Location category of proposed removal	Location 2 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



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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:

General offset amount[1]	0.038 general habitat units
Vicinity	Port Phillip and Westernport Catchment Management Authority (CMA) or Whittlesea City Council
Minimum strategic biodiversity value score[2]	0.384
Large trees	1 large tree

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

1 The general offset amount required is the sum of all general habitat units in Appendix 1.

2 Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

Next steps

Any proposal to remove native vegetation must meet the application requirements of the Intermediate Assessment Pathway and it will be assessed under the Intermediate 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 (met unless you wish to include a site assessment)
- Maps showing the native vegetation and property
- 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 defendable space statement as applicable
- A statement about the Native Vegetation Precinct Plan as applicable
- An offset statement that explains that an offset has been identified and how it will be secured.

Appendix 1: Description of native vegetation to be removed

All zones require a general offset, the general habitat units each zone is calculated by the following equation in accordance with the Guidelines:

General habitat units = extent x condition x general landscape factor x 1.5, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)

The general offset amount required is the sum of all general habitat units per zone.

Native vegetation to be removed

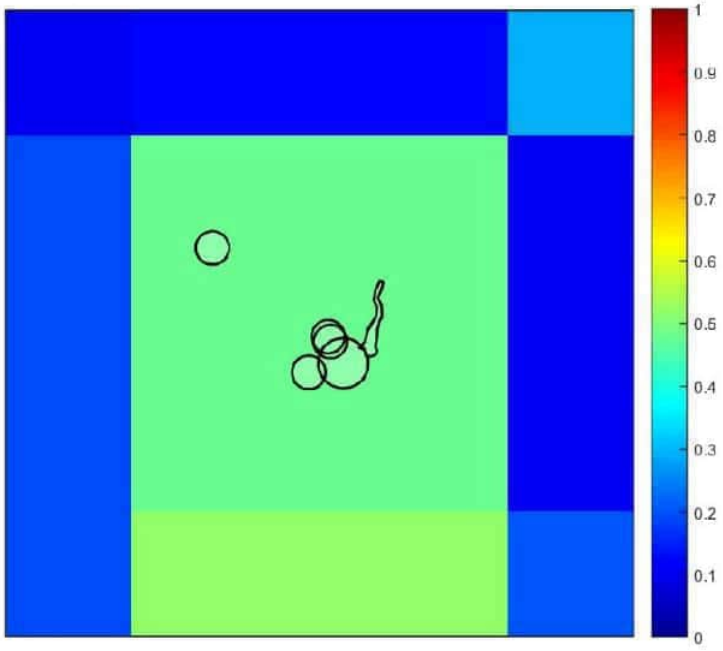
Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-A	Patch	hsf_0055	Endangered	0	no	0.170	0.020	0.020	0.480		0.004	General
2-A	Scattered Tree	hsf_0055	Endangered	1	no	0.200	0.070	0.070	0.480		0.016	General
3-A	Scattered Tree	hsf_0055	Endangered	0	no	0.200	0.031	0.006	0.480		0.001	General
3-B	Scattered Tree	hsf_0055	Endangered	0	no	0.200	0.031	0.028	0.480		0.006	General
3-C	Scattered Tree	hsf_0055	Endangered	0	no	0.200	0.031	0.031	0.480		0.007	General
3-A	Scattered Tree	hsf_0055	Endangered	0	no	0.200	0.031	0.019	0.480		0.004	General

Appendix 2: Information about impacts to rare or threatened species' habitats on site

This is not applicable in the Intermediate Assessment Pathway.

Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation

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4. Map of the property in context

Yellow boundaries denote areas of proposed native vegetation removal.

Appendix 10: Offset Evidence- Results of Search of the Offset Credit Register

Report of available native vegetation credits

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

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

Date and time: 22/12/2022 07:48 **Report ID: 17194**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.038	0.384	1	CMA	Port Phillip and Westernport
			or LGA	Whittlesea City

Details of available native vegetation credits on 22 December 2022 07:48

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-0277	6.426	454	Port Phillip and Westernport	Mornington Peninsula Shire	No	Yes	No	Abezco, Ethos, VegLink
BBA-0670	1.710	70	Port Phillip and Westernport	Cardinia Shire	No	Yes	No	Bio Offsets
BBA-0670	18.072	148	Port Phillip and Westernport	Cardinia Shire	No	Yes	No	Abezco, VegLink
BBA-0677	16.368	1491	Port Phillip and Westernport	Whittlesea City	No	Yes	No	Abezco, VegLink
BBA-0678	45.520	2623	Port Phillip and Westernport	Nillumbik Shire	No	Yes	No	VegLink
BBA-0678_2	0.388	59	Port Phillip and Westernport	Nillumbik Shire	No	Yes	No	VegLink
BBA-2789	1.317	14	Port Phillip and Westernport	Baw Baw Shire	Yes	Yes	No	Contact NVOR
BBA-2790	2.911	116	Port Phillip and Westernport	Baw Baw Shire	Yes	Yes	No	Contact NVOR
BBA-2870	2.544	431	Port Phillip and Westernport	Yarra Ranges Shire	Yes	Yes	No	VegLink
BBA-2871	16.335	1668	Port Phillip and Westernport	Yarra Ranges Shire	Yes	Yes	No	VegLink
TFN-C1636	0.941	130	Port Phillip and Westernport	Yarra Ranges Shire	No	Yes	No	Yarra Ranges SC
TFN-C1650	0.098	20	Port Phillip and Westernport	Yarra Ranges Shire	Yes	Yes	Yes	Yarra Ranges SC
TFN-C1663	0.102	27	Port Phillip and Westernport	Yarra Ranges Shire	Yes	Yes	Yes	Yarra Ranges SC

TFN-C1962	0.098	9	Goulburn Broken, Port Phillip and Westernport	Macedon Ranges Shire	No	Yes	No	Contact NVOR
VC_CFL-0838_01	0.209	697	Port Phillip And Westernport	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3084_01	0.295	120	Port Phillip And Westernport	Cardinia Shire	Yes	Yes	No	VegLink
VC_CFL-3084_02	0.038	38	Port Phillip And Westernport	Cardinia Shire	Yes	Yes	No	VegLink
VC_CFL-3687_01	0.341	64	Port Phillip And Westernport	Baw Baw Shire	Yes	Yes	No	Baw Baw SC
VC_CFL-3708_01	0.198	507	Port Phillip And Westernport	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3709_01	0.139	395	Port Phillip And Westernport	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3710_01	7.606	322	Port Phillip And Westernport	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3740_01	1.190	96	Port Phillip And Westernport	Cardinia Shire, Yarra Ranges Shire	Yes	Yes	No	Bio Offsets
VC_CFL-3740_01	0.318	16	Port Phillip And Westernport	Yarra Ranges Shire	Yes	Yes	No	Bio Offsets
VC_CFL-3744_01	2.428	377	Port Phillip And Westernport	Macedon Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3758_01	0.466	12	Port Phillip And Westernport	Melton City	Yes	Yes	No	VegLink
VC_CFL-3762_01	0.324	102	Port Phillip And Westernport	Moorabool Shire	Yes	Yes	No	VegLink
VC_CFL-3764_01	8.011	51	Port Phillip And Westernport	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3769_01	2.617	77	Port Phillip And Westernport	Nillumbik Shire	Yes	Yes	No	VegLink

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

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no sites listed in the Native Vegetation Credit Register that meet your offset requirements when applying the alternative arrangements as listed in section 11.2 of the Guidelines for the removal, destruction or lopping of native vegetation.

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

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
VC_CFL-3746_01	4.962	563	Port Phillip And Westernport	Macedon Ranges Shire	Yes	Yes	No	VegLink

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

Next steps

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

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

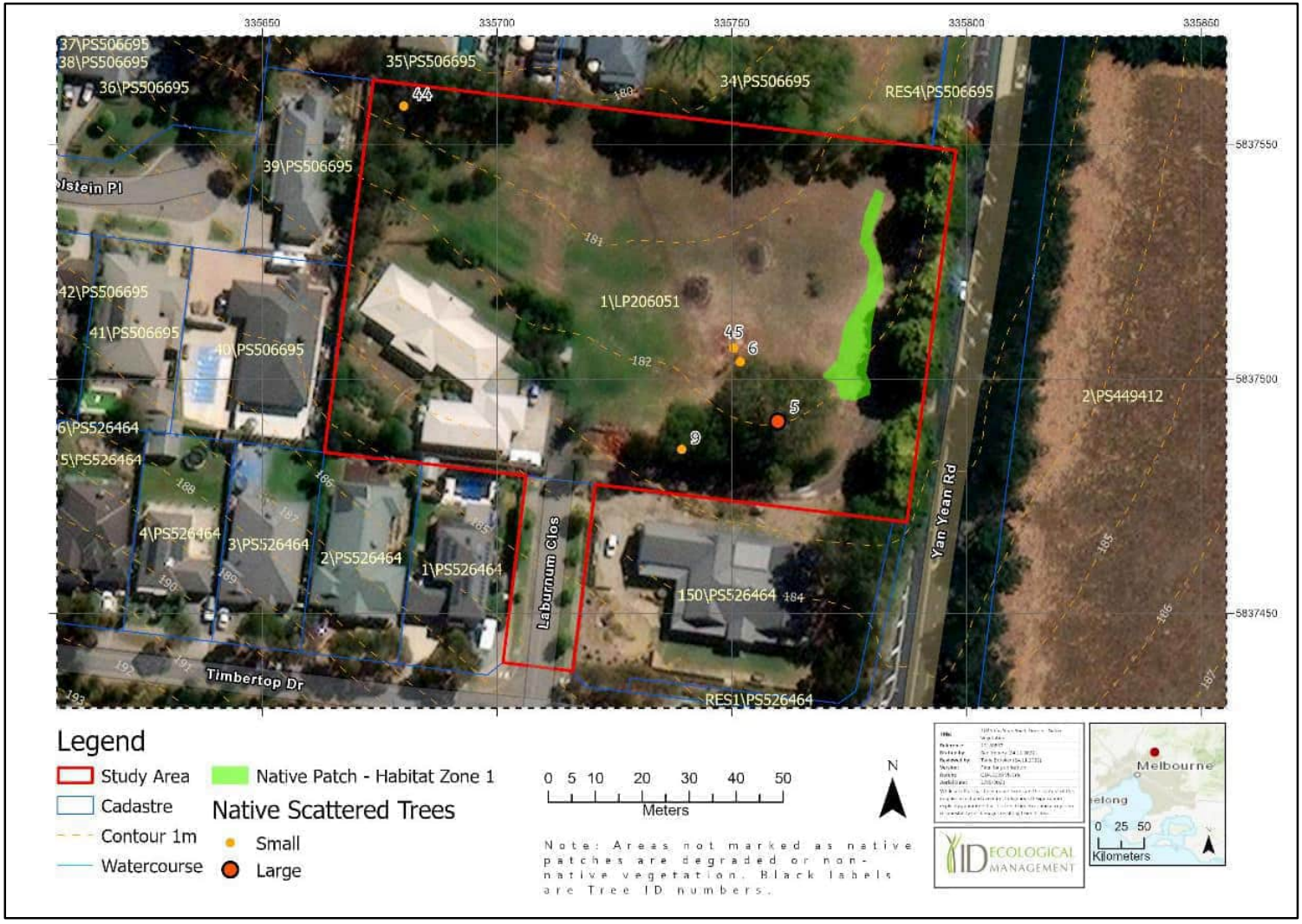
Broker contact details

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

Maps

Maps commence on the next page.

Map 1– Native vegetation extent



Map 2– Native vegetation impacts under the proposal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