SUBURBAN RAIL LOOP EAST

SRL East Draft Structure Plan | Monash

Ecology and Arboriculture Technical Report

More Homes For Victorians

VICTORIA State Government

Suburban Rail Loop

PREPARED FOR SUBURBAN RAIL LOOP AUTHORITY

SRL EAST DRAFT STRUCTURE PLAN – ECOLOGY AND ARBORICULTURE TECHNICAL REPORT - MONASH

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Appendices

Glossary and abbreviations

TERM	DEFINITION
AJM-JV	Aurecon Jacobs Mott MacDonald Joint Venture
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
DEECA	Department of Energy, Environment and Climate Action (formerly DELWP)
DELWP	Department of Environment, Land, Water and Planning (DELWP) is a former government department in Victoria, Australia (now referred to as DEECA or DTP).
DTP	Department of Transport and Planning
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EPR	Environmental Performance Requirement
ESO	Environmental Significance Overlay
EVC	Ecological Vegetation Class
FFG Act	*Flora and Fauna Guarantee Act 1988* (Vic)
the Guidelines	*Guidelines for the removal, destruction of lopping of native vegetation* (DELWP, 2017)
ha	Hectare(s)
km	Kilometre(s)
LGA	Local Government Area
m	Metre(s)
MNES	Matters of National Environmental Significance
NVIM	Native Vegetation Information Management System
Plan Melbourne	*Plan Melbourne 2017-2050*
PMST	Protected Matters Search Tool
PPRZ	Public Park and Recreation Zone
Project Land	The Project Land describes the approval area which has been identified within the *Suburban Rail Loop East Incorporated Document (August 2022).* The Project Land includes the areas in which the Suburban Rail Loop East (the Project) components would be contained, including both permanent structures and temporary construction areas (both above and below ground).
SLO	Significant Landscape Overlay
SRL	Suburban Rail Loop
SRLA	Suburban Rail Loop Authority
SRL East (the Project)	Suburban Rail Loop East
VBA	Victorian Biodiversity Atlas
VPO	Vegetation Protection Overlay
WSUD	Water sensitive urban design

Executive Summary

As part of the Suburban Rail Loop (SRL) East, Draft Structure Plans (Structure Plans) are being prepared for land identified as being suitable for significant change surrounding the new underground stations at Cheltenham, Clayton, Monash, Glen Waverley, Burwood and Box Hill.

The Structure Plans will set a vision and framework to guide growth and change in each Structure Plan, while protecting and preserving the features that people love about them now.

This technical report will inform the development of the Draft Monash Structure Plan (Monash Structure Plan).

The report describes the existing ecology and arboricultural values in the Structure Plan Area.

It identifies issues and opportunities that should be considered when developing the Monash Structure Plan and makes recommendations to improve and enhance ecology and arboricultural values.

Existing Conditions

ECOLOGY

The Structure Plan Area is heavily modified and dominated by infrastructure, buildings, residential areas and scattered parklands. A significant portion is exclusively concrete and hard impervious surfaces with no native vegetation, as such there are limited opportunities for threatened flora and fauna.

Revegetated patches in Jock Marshall Reserve are considered to be native vegetation. It is considered that no other areas in the Structure Plan Area support native vegetation due to previous disturbance and urbanisation. The Structure Plan Area is unlikely to support listed *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Flora and Fauna Guarantee Act 1988* (FFG Act) threatened ecological communities.

No FFG Act or EPBC Act threatened flora or fauna are considered to have a moderate or high likelihood of occurring in the Structure Plan Area. However, five avifauna species (including Powerful Owl, Eastern Great Egret, Blue-billed Duck, Freckled Duck and Australian Shoveler) may still be observed using the isolated wetland and treed habitat at Jock Marshall Reserve for temporary foraging and/or refuge. While these species may occasionally occur within or fly over the Structure Plan Area, they are not considered to heavily depend or rely on revegetated areas and so future development would not significantly impact them.

The Structure Plan Area contains extensive areas of planted trees comprising a mix of native, non-indigenous and introduced flora. While it is unlikely these areas provide significant habitat or support permanent populations of fauna species, amenity trees still provide foraging and resting opportunities for fauna.

ARBORICULTURE

The Structure Plan Area supports 13.2 per cent tree canopy cover in the overall Monash Structure Plan Area. Residential properties and streetscapes support 13 per cent canopy cover in the Structure Plan Area and commercial and industrial land supports 6.6 per cent canopy cover.

A small portion in the east of the Structure Plan Area is protected under the Vegetation Protection Overlay (VPO1) for tree protection that applies as part of the Monash Planning Scheme.

There are mature trees on the Monash University campus including at Jock Marshall Reserve. The Matheson Tree, a 400 to 500 year old River Red Gum (Eucalyptus camaldulensis) is located in the south-east of the campus.

Issues and Opportunities

ECOLOGY

Challenges for increasing biodiversity and open spaces include the high proportion of developed areas and paved impervious surfaces, increasing population pressures and development, a heavy reliance on motor vehicles, limited biodiversity values in the existing open space network, the dominance of non-native and European street trees, and a lack of large mature trees. There is limited cover of understorey vegetation and connected habitat.

Opportunities to improve biodiversity include by planting climate change-resilient native trees and vegetation and understorey in the open space network to improve habitat and enhance habitat links and corridors. Activities to improve biodiversity should align with the Monash Urban Biodiversity Strategy. Biodiversity values at Jock Marshall Reserve on the Monash University campus could be enhanced.

ARBORICULTURE

Development has the potential to remove existing trees and reduce canopy cover, as well as reduce future opportunities to plant new trees. This can be caused by the rezoning of residential land to commercial and other uses. Rezoning residential land to other uses will also likely remove the VPO1 tree protection. More intense development on residential land also has potential to remove trees and reduce opportunity for planting trees. Infrastructure works such as road upgrades and providing vehicle access could impact arboricultural values. This will create challenges for achieving Monash's target of 30 per cent tree canopy cover by 2030.

Opportunities to protect and enhance tree canopy and the urban forest include considering green infrastructure, green roofs and canopy trees in private open space and Water Sensitive Urban Design to support new tree growth and biophilic design in new development. Initiatives to enhance growing conditions for trees on public land could be implemented, such as providing structured soils and incorporating Water Sensitive Urban Design features into new developments. Supporting the implementation of municipal street and public open space planting strategies could also help protect and add to the tree canopy.

Recommendations

1. Promote the concept of habitat corridors that link new and existing open spaces with known habitat corridors in the wider landscape, to support Plan Melbourne 2017-2050 Direction 6.5 and Policy 6.5.1. For example, connecting habitat between the Jock Marshall Reserve and surrounding linear parks in the urban environment, including streetscapes.
    a) As depicted in the Figure below, the proposed habitat corridors have been developed based on a logical path that incorporates areas of existing and proposed open spaces, remnant vegetation and habitat corridors in proximity to the Structure Plan Area.
    b) It is recommended that in the habitat corridors are enhanced for biodiversity through the planting of native trees, particularly flowering natives, and understorey that provides a diversity of flowering plants at a variety of heights.
2. As per Direction 6.4 of Plan Melbourne 2017-2050, to provide cooler and greener urban forests it is recommended that existing and proposed open spaces, including along roadsides and pedestrian walkways, are enhanced with native plantings (particularly flowering trees and nectivorous species). Revegetation of understorey habitat and providing a ground layer with flowering native shrub, herb and grass species will provide a cooler urban environment whilst promoting habitat and foraging opportunities for common native fauna currently using habitat in the Monash Structure Plan Area. Refer to the Table below that includes and summarises potential activities in new and existing open spaces.
    a) Native plant selection in these areas should consider and prioritise drought-tolerant, long-lived and flowering species for their biodiversity values.

3. Support the City of Monash Urban Biodiversity Strategy 2018 -2028 by reducing biodiversity threats, retaining all trees and fauna habitat in proposed and existing open spaces, particularly old hollow-bearing trees and protect remnant vegetation within the Structure Plan Area. For example the Matheson Tree, located at Monash University.
4. Support existing and new tree plantings to increase canopy cover in accordance with the Monash Urban Landscape and Canopy Vegetation Strategy and Living Melbourne, endorsed by the City of Monash. Ensure development includes integrated water management interventions that address green infrastructure assets, provides adequate irrigation for trees and other plantings, and optimises permeable surfaces to enhance tree growth. Examples of this outlined in the City of Monash Urban Biodiversity Strategy include wetlands, swales, litter traps, sediment traps and rain gardens to increase access to water and improve quality.
5. To support Objective 2 of the City of Monash Urban Biodiversity Strategy 2018 – 2028, it is recommended to enhance biodiversity through revegetation and protection of existing ecological values. This could be applied for Jock Marshall Reserve, the Matheson tree and surrounding degraded landscapes. Revegetation between these ecological values could create better connectivity and facilitate greater biodiversity outcomes in the Structure Plan Area.
6. Support municipal street and public open space planting strategies to meet canopy coverage targets and ensure a diversity of tree species that are resilient to climate change

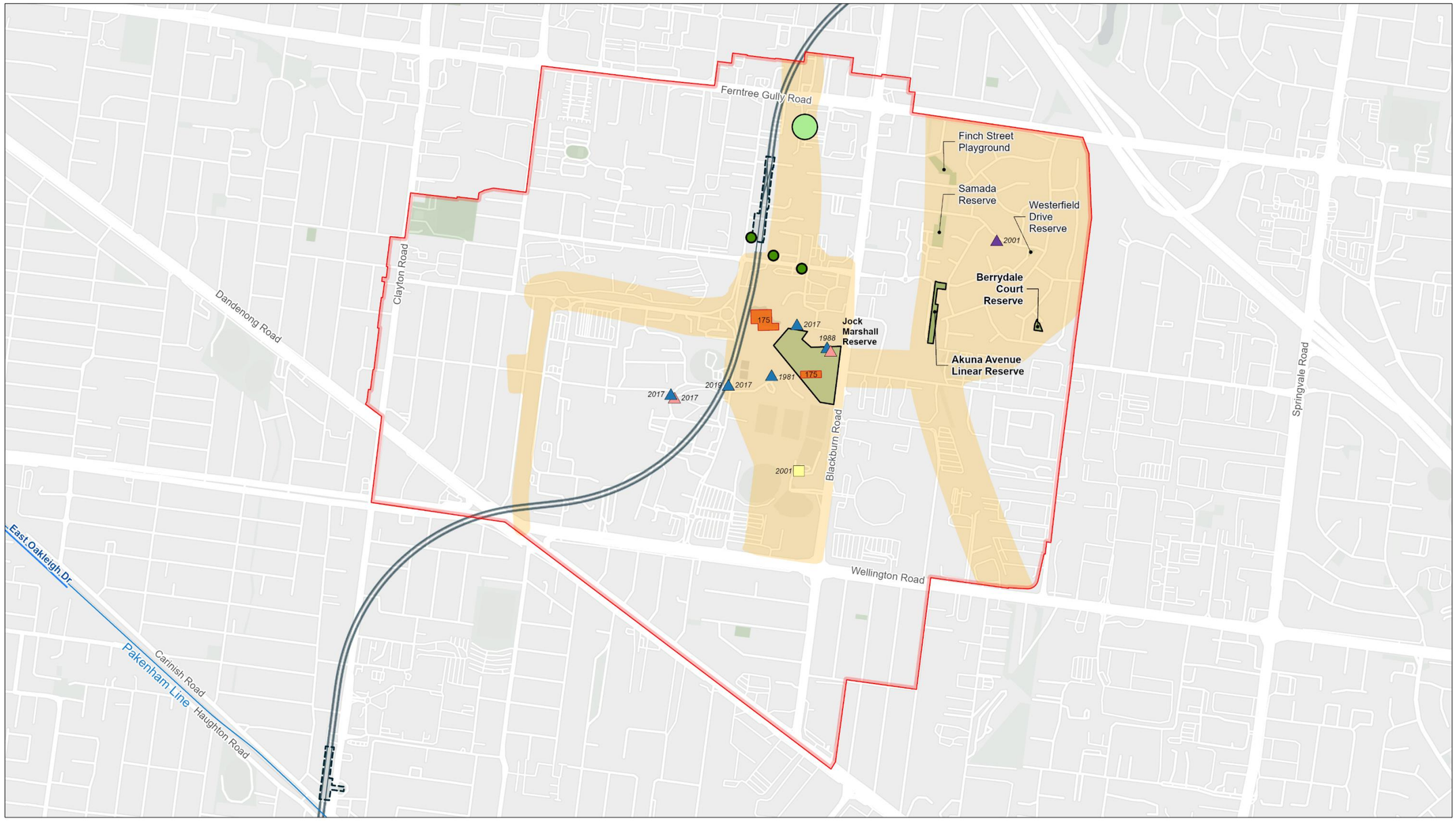
RECOMMENDATIONS FOR BIODIVERSITY IN PUBLIC OPEN SPACE

LOCATION	STATUS	PROPOSED CLASSIFICATION AND APPROX SIZE	RECOMMENDATION FOR BIODIVERSITY IMPROVEMENTS
Extension of new linear open space (green spine) from rail and infrastructure works to Ferntree Gully Road	New open space	Function: Linear Park Size: approx. 900 m2	• Retain trees along Howleys Road. • Plant more native trees that provide nectar resources and habitat for birds. • Connect the linear open space with Jock Marshall Reserve to facilitate biodiversity movement.
Potential new and enhanced linear open space around Henderson Road at the Mile Creek corridor drainage reserve	New open space	Function: Linear Park Size: approx. 2340 m2	• Reduce the extent of the concrete-lined channel and replace it with native vegetation to facilitate biodiversity. • Remove the extent of mown grasses along the drainage channel and replace with native vegetation and flowering understorey species.
Potential new open space north of Normanby Road	New open space	Function: Community park Size: approx.1000 m2	• Retain mature trees. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators.
Potential new open space (ideally street to street or corner site) around Beddoe Avenue / Stockdale Avenue / Marshall Avenue	New open space	Function: Community Park Size: 1000 m2	• Retain mature trees. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators.
Potential new open space around Ferntree Place	New open space	Function: Community park Size: approx.1000 m^2	• Reduce the extent of the concrete-lined channel and replace it with native vegetation to facilitate biodiversity. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators.
Potential new open space between Ferntree	New open space	Function: Community park	• Reduce the extent of the concrete-lined channel and replace it with native vegetation to facilitate biodiversity.

LOCATION	STATUS	PROPOSED CLASSIFICATION AND APPROX SIZE	RECOMMENDATION FOR BIODIVERSITY IMPROVEMENTS
Gully Road and Redwood Drive		Size: approx. 1000 m^2	• Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators.
Potential new open space around Nantilla Road and Duerdin Street, Clayton	New open space	Function: Linear park Size: approx. 7000 m^2	• Reduce the extent of the concrete-lined channel and replace it with native vegetation to facilitate biodiversity. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators.
Potential new open space between Ferntree Gully Road and rear of residences on Roslings Court and Westerfield Drive, Notting Hill	New open space	Function: Community park Size: approx. 2000 m^2	• Reduce the extent of the concrete-lined channel and replace it with native vegetation to facilitate biodiversity. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators.
Akuna Ave Linear Reserve	Enhanced open space	Function: Linear Park Size: 4340 m2	• Retain mature trees. • Provide fauna nest boxes. • Revegetate mown grassy areas with native flora that connects with the Mike Creek drainage reserve.
Arnott Street Reserve	Enhanced open space	Function: Community Park Size: 712 m2	• Retain mature trees. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators
Berrydale Court Reserve	Enhanced open space	Function: Landscape Park Size: 703 m2	• Retain mature trees. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators.
Monash University (Jock Marshall Reserve)	Enhanced open space	NA	• Retain mature trees and understorey habitat. • Provide fauna nest boxes.

Other opportunities

- Align the Structure Plan with the Monash Urban Biodiversity Strategy initiatives to improve open space, streetscapes and community areas – this includes investigating potential to expand areas of bushland regeneration, working with other authorities to improve biodiversity, and contributing to the development of a Biodiversity Corridor Plan.
- Support the implementation of actions aligning with the Monash Urban Biodiversity Strategy and related sustainability programs such as the Green Shoots Program and Gardens for Wildlife.
- Private landholders within the mapped corridor are to be encouraged and supported in contributing native trees and understorey plantings. It is considered that the Structure Plan Area wide habitat corridor will require local government and community support.



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INDICATIVE HABITAT CORRIDOR AT MONASH STRUCTURE PLAN AREA

1. Introduction

The Suburban Rail Loop (SRL) is a transformational project that will reshape Melbourne's growth in the decades ahead. It will better connect Victorians to jobs, retail, education, health services and each other – and help Melbourne evolve into a 'city of centres'.

SRL will deliver a 90-kilometre rail line linking every major train service from the Frankston Line to the Werribee Line via Melbourne Airport.

SRL East from Cheltenham to Box Hill will connect major employment, health, education and retail destinations in Melbourne's east and south east. Twin 26-kilometre tunnels will link priority growth suburbs in the municipalities of Bayside, Kingston, Monash and Whitehorse.

SRL East Structure Plan Areas will surround the six new underground stations at Cheltenham, Clayton, Monash, Glen Waverley, Burwood and Box Hill.

1.1 Purpose of this report

This technical report will inform the development of the Draft Monash Structure Plan (Monash Structure Plan(to guide land use planning and development in the Structure Plan Areas of SRL East.

The report describes the existing ecology and arboricultural values in the Monash Structure Plan Area and the surrounding area.

Issues and opportunities relating to ecology and arboriculture that impact planning for the development of the Structure Plan Area are identified.

Recommendations to consider when developing the Monash Structure Plan are made, with the objective to avoid, minimise or manage potential negative impacts of change, and to maximise potential for positive change.

1.2 Project context

Construction of the SRL East underground stations is underway at Cheltenham, Clayton, Monash, Glen Waverley, Burwood and Box Hill. This provides an opportunity to enhance the surrounding neighbourhoods. SRL East will support thriving and sustainable neighbourhoods and communities that offer diverse and affordable housing options, with easy access to jobs, transport networks, open space, and community facilities and services.

A Precinct Vision has been developed in consultation with the community and stakeholders for the Structure Plan Area and surrounds. The visions set out the long-term aspirations for these areas, ensuring they are ready to meet the needs of our growing population.

Figure 1.1 shows SRL East in the context of the entire SRL project and Melbourne's rail network.

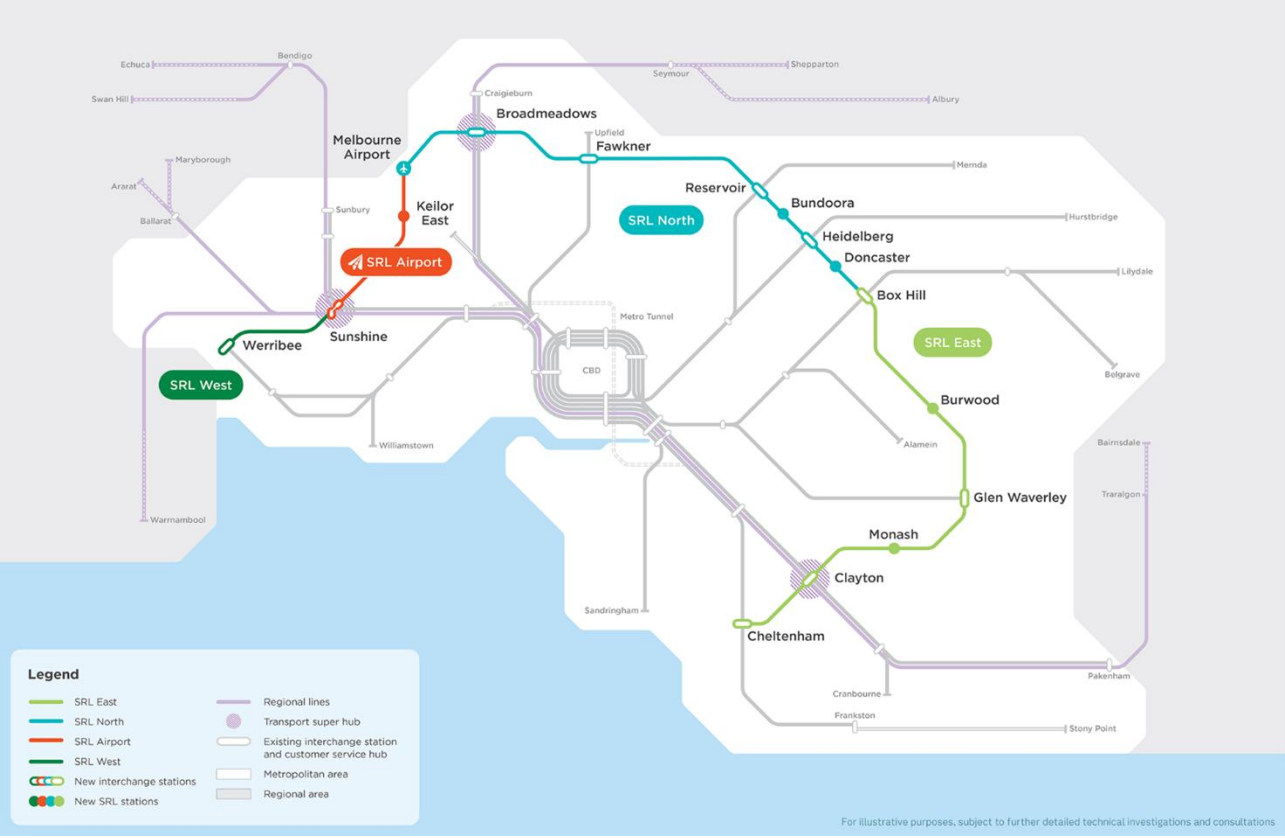

FIGURE 1.1 SRL EAST CONTEXT IN MELBOURNE'S RAIL NETWORK

1.3 Structure planning

Draft Structure Plans (Structure Plans) have been prepared for defined areas surrounding the new SRL East stations to help deliver the Precinct Vision developed for each SRL East neighbourhood.

The Structure Plans cover defined SRL East Structure Plan Areas that can support the most growth and change. These areas cover a walkable catchment that extends from the SRL station entrances. Additional places are included within each defined area as required to make planning guidance more robust and effective, and to align with each community's aspirations and current and future needs.

A Structure Plan is a blueprint to guide how an area develops and changes over a period of time. Structure Plans describe how future growth within the area will be managed in an appropriate and sustainable way to achieve social, economic and environmental objectives. The plans cover a wide range of matters, such as transport connections and car parking, housing and commercial development, community infrastructure, urban design, open space, water and energy management, climate resilience and sustainability.

By tailoring planning decisions to reflect the needs of a defined area, Structure Plans give effect to the policies and objectives set for these areas and cater for changing community needs. They also provide certainty for residents, businesses and developers by identifying the preferred locations and timing of future land uses, development and infrastructure provision.

Structure Plans take a flexible and responsive approach that enables places to evolve over time.

A planning scheme amendment will be required to implement the Monash Structure Plan into the planning scheme of the city of Monash.

1.4 Structure of this report

- Section 1 provides the background and context of the technical assessment.
- Section 2 explains the methodology for the technical assessment.
- Section 3 defines the Structure Plan Area.
- Section 4 summarises legislation, policies and other documents relevant to the assessment.
- Section 5 describes the existing ecological and arboricultural conditions in the Structure Plan Area.
- Section 6 sets out the findings of the assessment. It identifies the issues, challenges and opportunities relating ecology and arboriculture that will impact land use planning and development in each Structure Plan Area.
- Section 7 sets out the recommendations to consider when developing the Structure Plan Area.

2. Methodology

The methodology for the ecology and arboriculture technical assessment involved:

- Study Areas for the technical assessment were identified. For this assessment the Study Areas are the same area as the Structure Plan Area (see Section 3.1).
- Legislation, policies and documents relevant to the assessment, and to land use planning and development in the Structure Plan Area was reviewed (see Section 4).
- The existing ecology and arboricultural values in the Structure Plan Area were identified (see Section 5). This included a desk top review of the Structure Plan Area and a radius of 5 kilometres from its boundary.
- Issues, challenges and opportunities relating to ecology and arboriculture and land use planning and development in the Structure Plan Area was identified (see Section 6).
- Based on the assessment, recommendations were developed to avoid, minimise or manage potential negative impacts of change relating to ecology and arboriculture, and to maximise potential for positive change in the Structure Plan Area (see Section 7).

2.1 Methodology for ecology existing conditions

The desktop study to assess existing ecology conditions in the Structure Plan Area involved:

- **Previous reports** prepared for SRLA relevant to ecology and arboriculture were reviewed
- **Database searches** to identify threatened flora, fauna and ecological communities protected under the *Environment Protection and Biodiversity Act 1999* (Cth) (EPBC Act) and the *Flora and Fauna Guarantee Act 1999* (Vic) (FFG Act)
- **A likelihood of occurrence analysis** of threatened flora, fauna and ecological communities in the Structure Plan Area.

More information on these activities is provided below.

2.1.1 PREVIOUS REPORTS

Previous reports prepared for SRLA reviewed for this assessment were:

- *SRL East Environment Effects Statement Technical Appendix G.1 Ecology Existing Conditions* (AJM-JV 2021a October 2021)
- *SRL East Environment Effects Statement Technical Appendix G.2 Ecology Impact Assessment* (AJM-JV 2021b October 2021)

Information in these reports relevant to this assessment is summarised in Section 5.1.3.

2.1.2 DATABASE SEARCHES

Database searches were undertaken on 4th October 2024 to understand the likely existing conditions of the Structure Plan Area. The database search area comprised the Structure Plan Area and a radius of 5 kilometres from its boundary. This is referred to as the 5-kilometre search area in this report. Database searches identified a shortlist of potential flora, fauna and ecological communities that may occur in the Structure Plan Area.

Database records reviewed for the 5-kilometre search area were:

- Protected Matters Search Tool (PMST) of the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) for matters protected by the EPBC Act (DCCEEW 2024a, See Appendix A)
- The Victorian Biodiversity Atlas (DEECA 2024a) for records of listed threatened flora and fauna species.

The following information was also reviewed:

- The Victorian Native Vegetation Information Management System (NVIM) (DEECA 2024b)
- NatureKit (DEECA 2024c)
- VicPlan (DTP 2024a)
- Publicly available aerial imagery (dated 2024).

2.1.3 LIKELIHOOD OF OCCURRENCE ANALYSIS

Each species identified in the database search was considered against the suitability, condition and extent of suitable habitat in the Structure Plan Area and broader landscape to determine their likelihood of occurrence in the Structure Plan Area. The likelihood of a species occurring in the Structure Plan Area was classified as 'Negligible', 'Low', 'Moderate' or 'High' based on consideration of the:

- Presence or absence of previous records in the 5-kilometre search area (as identified in the database search)
- Known habitat requirements and distribution of the species
- Suitability of habitat in the Structure Plan Area (based on the findings of the field assessment and previous reports).

The likelihood of ecological communities occurring in the Structure Plan Area was considered and is discussed in Section 5.

The criteria to rank the likelihood of threatened flora and fauna occurring in the Structure Plan Area is defined in Table 2.1 and Table 2.2 respectively. Species determined to have a high to moderate likelihood of occurring in the Structure Plan Area are discussed in Section 5.1.2.

TABLE 2.1 LIKELIHOOD OF OCCURRENCE CRITERIA FOR THREATENED FLORA SPECIES

LIKELIHOOD OF OCCURRENCE	CRITERIA
High	Recent records of the species in the local vicinity (in the last 10 years).
	Known in the area based on site observations, database records or expert advice and/or the Structure Plan Area contains high-quality habitat.
Moderate	Previous reputable records of the species in the local vicinity and/or the Structure Plan Area contains moderate quality habitat
Low	Limited previous records of the species in the local vicinity; and/or the Structure Plan Area contains poor or limited habitat. May also be considered low if other environmental factors are present such as fragmented or isolated habitat.
Negligible	No suitable habitat and/or the Structure Plan Area falls outside the known species range.

TABLE 2.2 LIKELIHOOD OF OCCURRENCE CRITERIA FOR THREATENED AND MIGRATORY FAUNA SPECIES

LIKELIHOOD OF OCCURRENCE	CRITERIA
High	Known resident in the area based on site observations, database records or expert advice.
	Recent reputable records (in 5 years) of the species in the local area.
	The Structure Plan Area contains the species' preferred habitat.
Moderate	The species is likely to visit the Structure Plan Area regularly (at least seasonally).
	Previous reputable records of the species in the local area.
	The Structure Plan Area contains some characteristics of the preferred habitat of the species.
Low	The species is likely to visit the Structure Plan Area occasionally or opportunistically while en-route to more suitable sites.
	There are only limited or historical records of the species in the local area (more than 20 years old).
	The Structure Plan Area contains few or no characteristics of the preferred habitat of the species.
Negligible	No previous records of the species in the local area.
	Previous records of the species exist in the local area (but records are more than 30 years old).
	The species may fly over the area when moving between areas of more suitable habitat.
	Out of the known range of the species.
	No suitable habitat in the Structure Plan Area.
	Species is known to be regionally extinct.

2.2 Methodology for arboriculture existing conditions

The arboriculture existing conditions assessment comprised a review of previous relevant reports prepared for SRLA as well as other relevant planning and strategy documents. Aerial imagery of the Structure Plan Area and surrounds was also reviewed.

2.2.1 PREVIOUS REPORTS

Previous reports prepared for SRLA reviewed for this assessment were:

- *SRL East – Arboriculture and Urban Forest Existing Conditions*. TA D.1 Arbor EC (AJM-JV 2021c Revision 01 October 2021)
- *SRL East – Arboriculture and Urban Forest Impact Assessment*. TA D.2 Arbor IA (AJM-JV 2021d October 2021)

Other relevant documents reviewed for the assessment were:

- Monash Planning Scheme – Schedule 1 to the Vegetation Protection Overlay
- *Monash Urban Landscape and Canopy Vegetation Strategy,* 2018
- Monash University – Gardens at Clayton, retrieved from www.monash.edu/about/our-locations/clayton-campus/gardens-at-clayton
- *Living Melbourne: our metropolitan urban forest* (The Nature Conservancy and Resilient Melbourne 2019)
- *Plan Melbourne 2017–2050 (*DELWP 2017b).

Information from these reports relevant to this assessment is summarised in Section 5.1.3.

2.3 Assumptions and limitations

The following assumptions and limitations apply to this assessment:

- The assessment was based on desktop research. No fieldwork, site assessments, consultation or engagement was undertaken.
- Assumptions and limitations specific to the ecology assessment are:
- Information from the desktop research is limited to the time the data was obtained (4th October 2024) and so should be considered as indicative only. No field assessment was completed to verify the results of the desktop assessment.
- Victorian Biodiversity Atlas (VBA) data relating to threatened species varies depending on the number of previous surveys undertaken and the ability to readily observe species. In the case of fauna, species move around the landscape and can be in hidden or cryptic locations, so while they potentially use a site, they may often not be observed during surveys. A lack of species records for a given search area may reflect a simple lack of survey effort at a location rather than demonstrating the absence of species. This is particularly true for aquatic species as survey efforts are typically less than for terrestrial areas.

Assumptions and limitations specific to the arboriculture assessment are:

- Existing tree canopy cover spatial data is sourced from Vicmap Vegetation Tree Extent (2020). The dataset defines tree cover as woody vegetation greater than 2 metres high, which is likely to over-state existing canopy cover, which is usually measured at 3 metres high or greater. Derived canopy polygons were not manually checked or corrected for the technical assessment.
- The arboriculture assessment is based on a desktop review and should not be considered an authoritative review, which would require fieldwork and an assessment of individual trees.

2.4 Interactions with other technical reports

2.4.1 URBAN DESIGN

In response to the SRL Urban Design Framework, AJM-JV prepared the *SRL East Draft Structure Plan - Urban Design Report - Monash* (AJM-JV 2025a), which outlines the recommended urban design strategies and initiatives for the Structure Plan Area.

In relation to ecology, this includes identifying how the Structure Plan Area aligns with the SRL Urban Design Objectives, including increasing tree canopy cover and other landscaping, and optimising green and blue infrastructure in existing and new streets and open spaces.

Recommendations this report makes consider the recommended initiatives of the Draft Urban Design Report (AJM-JV 2025a), in particular using existing and proposed open spaces and Green Streets identified in the Public Realm Framework. As defined in the SRL Urban Design Framework, Green Streets are a broad classification for a local street that may be enhanced to support a range of opportunities including pedestrian connectivity and access to recreation facilities, enhanced environmental and biodiversity outcomes, and the potential to accommodate cycle and bus routes. Green Streets provide a valuable opportunity to increase habitat and dispersal corridors for biodiversity.

More detail is provided in the *SRL East Draft Structure Plan - Urban Design Report: Monash* (AJM-JV, 2025a).

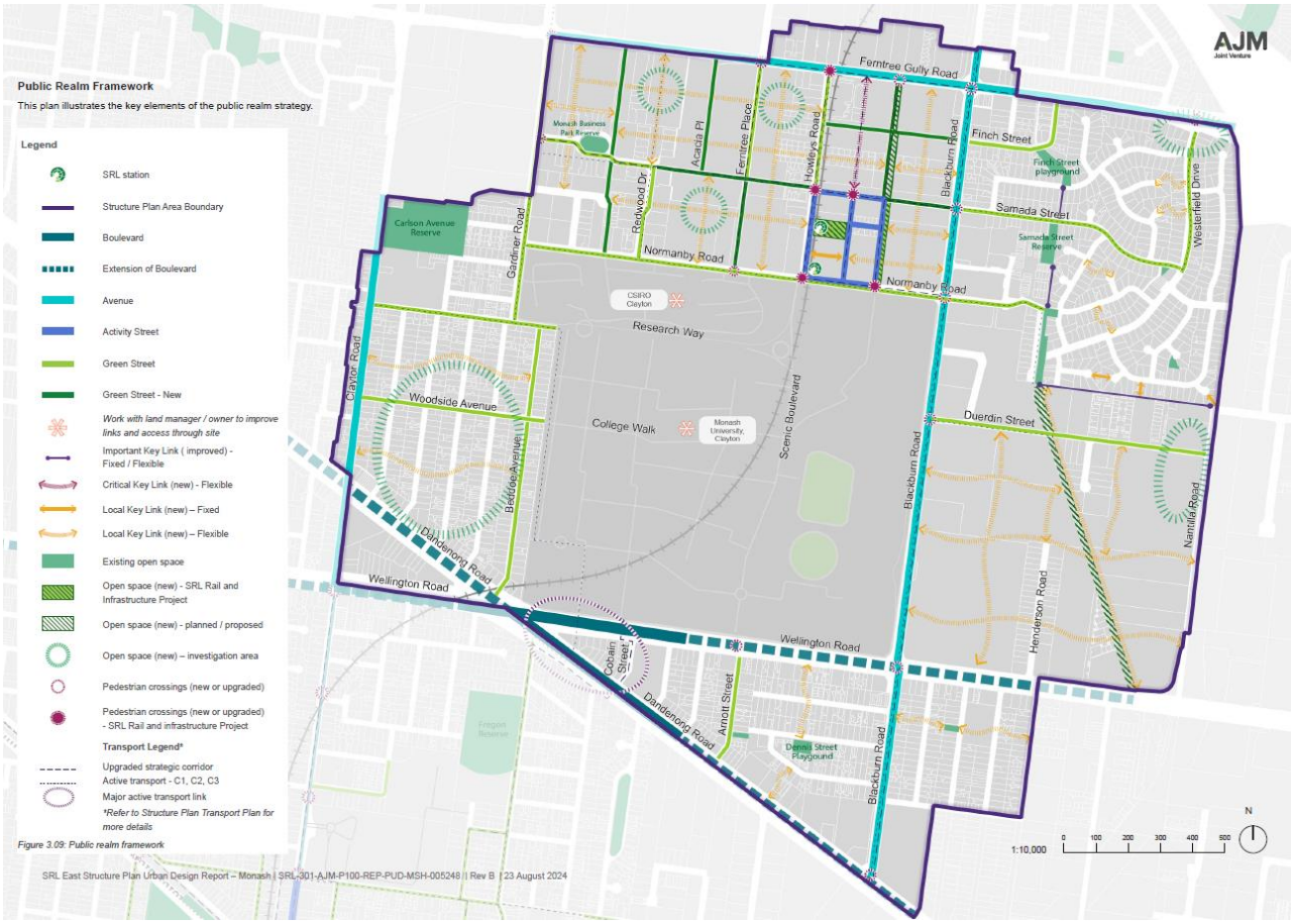

Figure 3.09: Public realm framework

SRL East Structure Plan Urban Design Report – Monash | SRL-301-AJM-P100-REP-PUD-MSH-005248 | Rev B | 23 August 2024

FIGURE 2.1 PUBLIC REALM FRAMEWORK DEPCTING OPEN SPACE AND GREEN STREETS (AJM-JV 2025b)

2.4.2 LANDSCAPE HERITAGE

Trees subject to protection under the Heritage Overlay, including sites included on the Victorian Heritage Register, are included in the *SRL East Draft Structure Plan – Historical Heritage Technical Report* (AJM-JV 2025b).

2.4.3 FLOODING AND WATER MANAGEMENT

Water sensitive urban design (WSUD) has a role to support new tree growth and biophilic design in new development and is further considered in greater detail in the *SRL East Draft Structure Plan – Integrated Water Management Strategy* (AJM-JV 2025c).

Specific WSUD opportunities relating to the Structure Plan Area are outlined in Section 6.2.2.

Recommendations for the implementation of Integrated Water Management as Structure Plan Objectives are outlined in *SRL East Draft Structure Plan - Climate Response Plan – Monash* (AJM-JV 2025d).

2.4.4 SUSTAINABILITY AND CLIMATE CHANGE

2.4.4.1 Precinct urban greening and green infrastructure for new developments

The *SRL East Structure Plan – Climate Response Plan* notes that Monash suffers from an incremental loss of canopy cover and vegetation, primarily due to the redevelopment of residential land. A key issue is the decrease in green and natural surfaces and an increase in urban built form which reduces the opportunities for achieving greening, particularly for additional large canopy trees.

The Monash Climate Response Plan provides detailed assessments and recommendations for tree canopy coverage targets and green infrastructure for new developments.

2.4.5 OPEN SPACE ASSESSMENT

There are eight public open space areas in the Structure Plan Area covering a combined area of 48,408m^2. These open space areas are listed in Table 2.3. These parks are primarily owned by Monash City Council. The largest is Carlson Reserve, a community sports park which serves the residential area in the western side of the Structure Plan Area. Open spaces outlined in this report consider the recommended initiatives of the *SRL East Draft Structure Plan - Open Space Assessment* (AJM-JV 2025e).

A significant portion of the Structure Plan Area is occupied by the Monash University campus and the CSIRO site. The Monash University campus contains a diverse range of spaces including pedestrian plazas, gardens and sporting grounds which have restricted use. Mile Creek West is the main watercourse, located along the south-eastern Structure Plan Area boundary, collecting runoff south towards a Melbourne Water retarding basin. The creek is a concrete-lined channel with grassed areas and is not publicly accessible.

Importantly, the majority of parks identified in Table 2.3 support community sports and recreation, are dominated by non-native or non-indigenous street trees and provide limited habitat opportunities to sustain wildlife populations.

Table 2.3 summarises the public open spaces in the Structure Plan Area by their primary function and catchment classifications.

TABLE 2.3 STRUCTURE PLAN AREA OPEN SPACE CLASSIFICATIONS

PUBLIC OPEN SPACE	CURRENT CONDITION AND PRESENT VALUES	AREA (M2)
Akuna Avenue Linear Reserve	Linear Park supporting several scattered planted trees over mown lawn.	4340
Arnott Street Reserve	Linear Park comprising exclusively of mown lawn.	712
Berrydale Court Reserve	Landscape Park supporting several scattered planted trees over mown lawn.	703
Cambro Road Reserve	Community park supporting two planted trees over mown lawn.	707
Carlson Reserve	Sports Park comprising mown lawn and plated amenity trees.	33,329
Dennis Street Reserve	Community Park supporting planted street trees, maintained amenity garden beds and mown lawn.	1920
Finch Street Playground	Community Park supporting scattered planted trees over mown lawn.	3635
Samada Reserve	Community Park supporting planted street trees, maintained amenity garden beds and mown lawn.	3433
Westerfield Drive Reserve	Community Park supporting scattered planted trees over mown lawn.	334
Total		53,252

As documented in the Open Space Assessment, in addition to retaining the current areas of new open space in the Structure Plan Area, seventeen sites comprising new and/or enhanced open spaces and pedestrian links have the potential to provide additional biodiversity benefits in the Structure Plan Area. These sites are summarised in the *SRL East Draft Structure Plan - Open Space Assessment* (AJM-JV 2025a).

3. SRL East Structure Plan Areas

This section defines the Structure Plan Area in the Monash SRL East neighbourhood.

3.1 Monash Structure Plan Area

The Monash Structure Plan Area surrounds the SRL station at Monash in the City of Monash.

It is generally bordered by Wellington Road and Princess Highway to the south, Gardiner Road and residential properties between Clayton Road and Dover Street to the west, land north of Ferntree Gully Road to the north and a reservation for a future road, which forms a natural barrier to properties to the east.

Monash University Clayton campus is located in the Structure Plan Area.

The Structure Plan Area is shown in Figure 3.1.

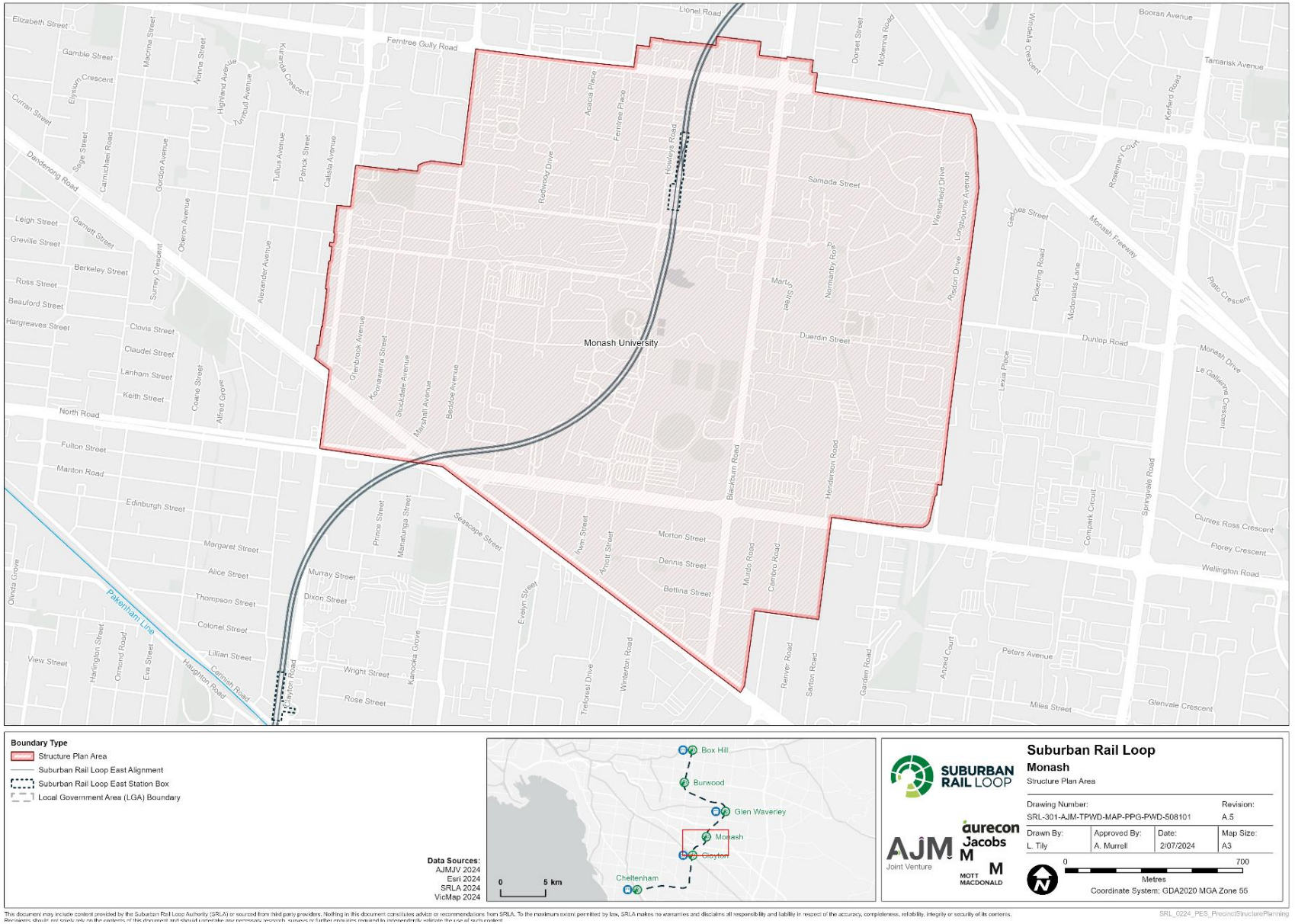

FIGURE 3.1 MONASH STRUCTURE PLAN AREA

4. Legislative and Policy Context

This section summarises legislation, policies and other documents relevant to the ecology and arboricultural assessment.

4.1 National

4.1.1 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) is Commonwealth legislation that provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, termed Matters of National Environmental Significance (MNES).

Under the EPBC Act, an action that has, will have, or is likely to have, a significant impact on a MNES must be referred to the Commonwealth Minister for the Environment. The Minister will then determine whether the proposed action requires formal assessment and approval under the EPBC Act.

4.2 State

4.2.1 FLORA AND FAUNA GUARANTEE ACT 1988

The *Flora and Fauna Guarantee Act 1988* (Vic) (FFG Act) is the key Victorian legislation for the conservation of threatened species and communities and for the management of potentially threatening processes. Under the FFG Act a permit is required from the Department of Energy, Environment and Climate Action (DEECA) to take (kill, injure, disturb or collect) threatened or protected flora species from public land.

4.2.2 PLANNING AND ENVIRONMENT ACT 1987 (VIC)

The *Planning and Environment Act 1987* establishes a framework for planning the use, development and protection of land in Victoria. It sets out procedures for preparing and amending the Victoria Planning Provisions and planning schemes. Each municipality is required to have a planning scheme which includes the Planning Policy Framework (which sets out state and regional policies) and the Local Planning Policy Framework (that is specific to each municipality), zones, overlays and particular and general provisions.

4.3 Local

4.3.1 MONASH PLANNING SCHEME

4.3.1.1 Relevant state and local policies

Clause 12.01-1S (Protection of Biodiversity) seeks to protect and enhance Victoria's biodiversity. Of relevance to the Structure Plan Area is the need to support land use and development that contributes to protection and enhancing habitat for indigenous plants and animals in urban areas.

Clause 12.01-2S (Native vegetation management) aims to ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation.

Under Clause 21.01 (Municipal Profile of the Local Planning Policy Framework) the 'garden city character', including well vegetated private gardens, high canopy trees and wide streets with street trees, is identified as an integral aspect of the City and a key determinant of the character of the residential areas of the city.

Clause 21.04 (Residential Development) seeks the need to maintain and enhance the city's garden city character with the following objective:

- To recognise the need to conserve treed environments and revegetate new residential developments to maintain and enhance the garden city character of the municipality.

This objective is reinforced with a strategy that seeks a high level of amenity provided for new residential development, including canopy tree cover (among other matters), which is implemented by:

- Clause 22.05 (Tree Conservation Policy), which applies to all land.
- Applying the Vegetation Protection Overlay to areas which possess a special leafy character, valued by the community.

The relevant objectives of Clause 22.05 (Tree Conservation Policy) are to:

- To maintain, enhance and extend the Garden City Character throughout Monash by ensuring that new development and redevelopment is consistent with and contributes to the Garden City Character as set out in the Municipal Strategic Statement.
- To promote the retention of mature trees and encourage the planting of new canopy trees with spreading crowns throughout Monash.

4.3.1.2 Relevant planning zones

The typical planning zone that affects public open space/reserves in the Structure Plan Area is the Public Park and Recreation Zone (PPRZ). The open space associated with Monash University is located in the Public Use Zone (PUZ).

PUBLIC PARK AND RECREATION ZONE

The primary purposes of the PPRZ are to

- To recognise areas for public recreation and open space.
- To protect and conserve areas of significance where appropriate.
- To provide for commercial uses where appropriate

No vegetation removal permit triggers are within zones. The occurrences of most threatened flora and fauna species mapped for the Structure Plan Area are located within reserves in the PPRZ. Any planning permit for buildings and works on PPRZ land must be accompanied by written consent from the public land management.

PUBLIC USE ZONE

The primary purposes of the PUZ are to:

- To recognise public land use for public utility and community services and facilities.
- To provide for associated uses that are consistent with the intent of the public land reservation or purpose.

No vegetation removal permit triggers are within zones. Similar to the PPRZ, a planning permit for buildings and works on PPRZ land must be accompanied by written consent from the public land manager.

4.3.1.3 Relevant planning overlays

Overlays in planning schemes are the primary instrument for the protection of non-native vegetation within a municipal planning scheme.

Within the City of Monash these are primarily implemented through the Vegetation Protection Overlay (VPO). Trees subject to tree controls in the schedule to the Heritage Overlay are considered in the Historical Heritage Technical Report.

VEGETATION PROTECTION OVERLAY

Schedule 1 to the Vegetation Protection Overlay (VPO1) is the sole environmental and landscape overlay that applies as part of the Monash planning scheme. VPO1 defines tree protection areas and is aimed to conserve significant treed environments and ensure that new development complements the Garden City Character of the neighbourhood.

In this instance, the VPO is applied to several stands of trees , rather than individually significant trees or broader areas of significant vegetation (VPP Practice Note PPN07 *Vegetation protection in urban areas* (PPN07)). The VPO does not include buildings and works or subdivision requirements. It is, therefore, the appropriate tool for identifying and protecting vegetation where buildings and works or subdivision are not important considerations.

Under the provisions of VPO1 a permit is required to remove or destroy any vegetation that:

- Has a trunk circumference greater than 500 millimetres (160 millimetres diameter) at 1200 millimetres above ground level and
- Is higher than 10 metres.
- This does not apply to dead vegetation or to the following species:
  - » all willow trees
  - » radiata or monterey pines
  - » evergreen alders
  - » sweet pittosporums
  - » desert ashes.

4.3.1.4 Relevant Particular Provisions

CLAUSE 52.17 NATIVE VEGETATION

Clause 52.17 (Native Vegetation) requires that the removal of native vegetation results in no net loss in the contribution made by native vegetation to Victoria's biodiversity, and that this is achieved by applying the three-step approach outlined in the Victorian *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP 2017a):

- **Avoid** the removal, destruction or lopping of native vegetation.
- **Minimise** impacts from the removal, destruction or lopping of native vegetation that cannot be avoided.
- Provide an **offset** to compensate for the biodiversity impact if a permit is granted to remove, destroy or lop native vegetation.

4.3.2 MONASH URBAN LANDSCAPE AND CANOPY VEGETATION STRATEGY

The *Monash Urban Landscape and Canopy Vegetation Strategy*, through a series of strategic objectives, seeks to protect and enhance Monash's preferred future landscape character and tree canopy cover, including responding to recognised urban character, climate change, biodiversity, public health and wellbeing and provide a cohesive vision for landscape character across public and private land that can be implemented as updates to regulatory controls and the planning scheme.

The strategy provides a municipal-wide analysis of landscape character and tree cover, identifies issues for both residential and non-residential land and provides further analysis on a Structure Plan Area basis.

The strategy provides guidelines that respond to stated objectives including detailed recommendations for reinforcing existing canopy character, tree retention and replanting, including increasing canopy tree cover across public and private land from 22% to 30% by 2040 to create a more liveable, sustainable and resilient city.

4.3.3 MONASH URBAN BIODIVERSITY STRATEGY 2018–2028

The *Monash Urban Biodiversity Strategy* details programs to improve biodiversity quality and habitat connectivity in the urban environment. The Strategy sets out biodiversity management directions for the next 10 years and is supported by an implementation plan. The vision for biodiversity in Monash is:

- Thriving indigenous vegetation communities
- Stable and sustainable refuges for native bird and other fauna
- Resilient ecosystems that can adapt to environmental changes
- An active and engaged community that participates in ongoing biodiversity protection.

Objectives in the Strategy to achieve the vision are:

- Increase community understanding, active engagement and appreciation of biodiversity
- Enhance biodiversity through revegetation and protection of remnant vegetation
- Collaborate with other public land managers to create broad-scale biodiversity gain
- Proactively reduce biodiversity threats
- Identify ecological baseline and indicators to monitor and assess environmental conditions
- Strengthen Biodiversity Policy and Legislation.

4.3.4 MONASH TREE MANAGEMENT POLICY

The *Tree Management Policy* provides guidance and direction to promote the planting of new trees in the City of Monash to achieve a greener city. The Policy also provides guidance on continued maintenance, management and protection of trees located on Council-managed land.

The Tree Management Policy guides decision-making on the management of trees, with a particular vision to protect and conserve the environment while balancing amenity and environmental goals and managing risks that trees can pose to people and property.

4.3.5 PLAN MELBOURNE 2017–2050

Plan Melbourne is the Victorian Government's long-term metropolitan planning strategy. Of particular relevance to the urban forest is Outcome 6 *Melbourne is a sustainable and resilient city*.

Direction 6.4 *Make Melbourne cooler and greener* seeks to create urban forests throughout the metropolitan area by:

- Assembling and disseminating spatial data on the green space network, existing tree cover and surfaces. This data will be the baseline for modelling future greening strategies and their impacts on amenity of our urban areas including cooling effects
- Working with local government to establish greening targets for each of the metropolitan regions
- Liaising with water corporations to identify opportunities for use of alternative water supply to support greening strategies

- Supporting development of municipal urban forest strategies using a coordinated approach with Department of Transport, private road operators and other public land owners and managers
- Preparing greening strategies for state-owned public land, including schools, parkland, road, rail and utility corridors, achieving an appropriate balance between asset protection and urban greening
- Investigating a targeted grants program to support innovation and actions for greening neighbourhoods
- Investigating demonstration projects including green roofs, green walls and landscapes
- Preparing new guidelines and regulations that support greening new subdivisions and developments via landscaping, green walls, green roofs and increase the percentage of permeable site areas in developments.

This requires a 'whole-of-government approach to cooling and greening Melbourne'.

Direction 6.5 *Protect and restore natural habitats* recognises that as Melbourne grows there is the potential for habitat loss and waterway degradation that can impact native flora and fauna.

Policy 6.5.1 *Create a network of green spaces that support biodiversity conservation and opportunities to connect with nature* recognises the importance of protecting existing green spaces and that new green spaces need to be created to improve landscape connectivity and resilience. By mapping the network of green spaces there is opportunity to identify where the network could be improved and support the development of the metropolitan urban forest strategy as identified above.

4.3.6 LIVING MELBOURNE

The *Living Melbourne: our metropolitan urban forest* policy was developed by Resilient Melbourne, hosted by the City of Melbourne as part of the Global Cities Resilience Network. Living Melbourne is a strategy for a greener, more liveable Melbourne to respond to urban challenges with nature.

The vision of Living Melbourne is that our urban forest protects human health, nurtures abundant nature, and strengthens natural infrastructure.

Victorian Government departments and local governments have endorsed the Living Melbourne policy, including the City of Monash.

4.3.7 PROTECTING VICTORIA'S ENVIRONMENT – BIODIVERSITY 2037

Protecting Victoria's Environment – Biodiversity 2037 is the Victorian Government's plan to stop the decline of native biodiversity and improve the natural environment.

Priorities and initiatives relevant to this assessment are:

- Increase opportunities for all Victorians to have daily connections with nature:
  - » Promote additional greening in established urban areas through broadening standards for public open-space.
- Increase opportunities for all Victorians to act to protect biodiversity:
  - » Promote programs to raise awareness to protect and care for biodiversity
  - » Implement and promote programs to increase engagement with community groups that protect biodiversity
  - » Link opportunities to connect with nature with on-the ground biodiversity management needs.
- Help to create more liveable and climate adapted communities:
  - » Implementation of Plan Melbourne.
- Deliver excellent in management of all land and waters:

- Better understand and respond to key threats and opportunities for biodiversity conservation (control of weeds and pest animals, fore regimes, disease, apex predators and climate change)
- Reduce degradation of environments through practical threat management action, informed by science
- Develop partnerships with public land managers and Traditional Owners in managing biodiversity.

5. Existing conditions

This section describes the existing conditions relevant to ecology and arboriculture in the Structure Plan Area.

5.1 Ecology

The Structure Plan Area encompasses approximately 375 hectares of high-density urban space. It is heavily modified from its natural state, with the Monash University Clayton campus occupying a large portion, as well as highways, commercial areas and residential housing.

Extensive development, particularly of the university infrastructure and facilities, means the Structure Plan Area is cleared of almost all remnant vegetation. It predominantly comprises planted indigenous and non-indigenous species throughout and surrounding the Structure Plan Area.

There is a minor occurrence of remnant vegetation at Jock Marshall Reserve in the university grounds (east of the Structure Plan Area and shown in Appendix A). This reserve comprises an isolated wooded area, providing potential native fauna habitat, including two isolated small wetlands (purposed for stormwater retention). Previous records for threatened species and current modelled distributed of native vegetation in the 5-kilometre search area are mapped in Figure 5.1 and discussed below.

5.1.1 NATIVE VEGETATION

The desktop review (DEECA 2024) identified four pre-1750 Ecological Vegetation Classes (EVCs) in and surrounding the Structure Plan Area: Grassy Woodland (EVC 175) as the dominant EVC, with Valley Heathy Forest (EVC 127); Swampy Woodland (EVC 937); and Grassy Forest (EVC 128).

The current (2005) modelled vegetation layer for the Structure Plan Area showed the site is almost exclusively cleared of remnant native vegetation (DEECA 2024) as shown in Figure 5.2. This is supported by a review of aerial imagery of the site which confirmed the majority of the Structure Plan Area is heavily modified from development and urbanisation. Based on current suburban and commercial land use of the Structure Plan Area, it is considered much of the vegetation identified in aerial reviews consists of indigenous and non-indigenous amenity plantings throughout Monash University and surrounding commercial streets and residential areas.

The only remnant patch vegetation comprising Grassy Woodland (EVC 175) is likely to occur at Jock Marshall Reserve on the Monash University campus, as shown in Figure 5.2. Although based on an aerial view of the site and surrounding land use, it is considered that Jock Marshall Reserve was likely revegetated for conservation and biodiversity purposes.

The Monash University campus includes the Matheson Tree, a 400 to 500 year old Eucalypt located in the south-eastern corner of the campus (Monash University 2024). This is considered a significant tree for the community and environment. Given the species and location of the tree could not be verified for the desktop assessment, the Matheson Tree is not mapped in this report. Verification of the location of the Matheson Tree in addition to the type, extent and quality of potential vegetation in this area would require a field-based ecological assessment. While the species of eucalypt may require verification, the tree is likely native and subject to Clause 52.17 (Native vegetation) of the Monash Planning Scheme

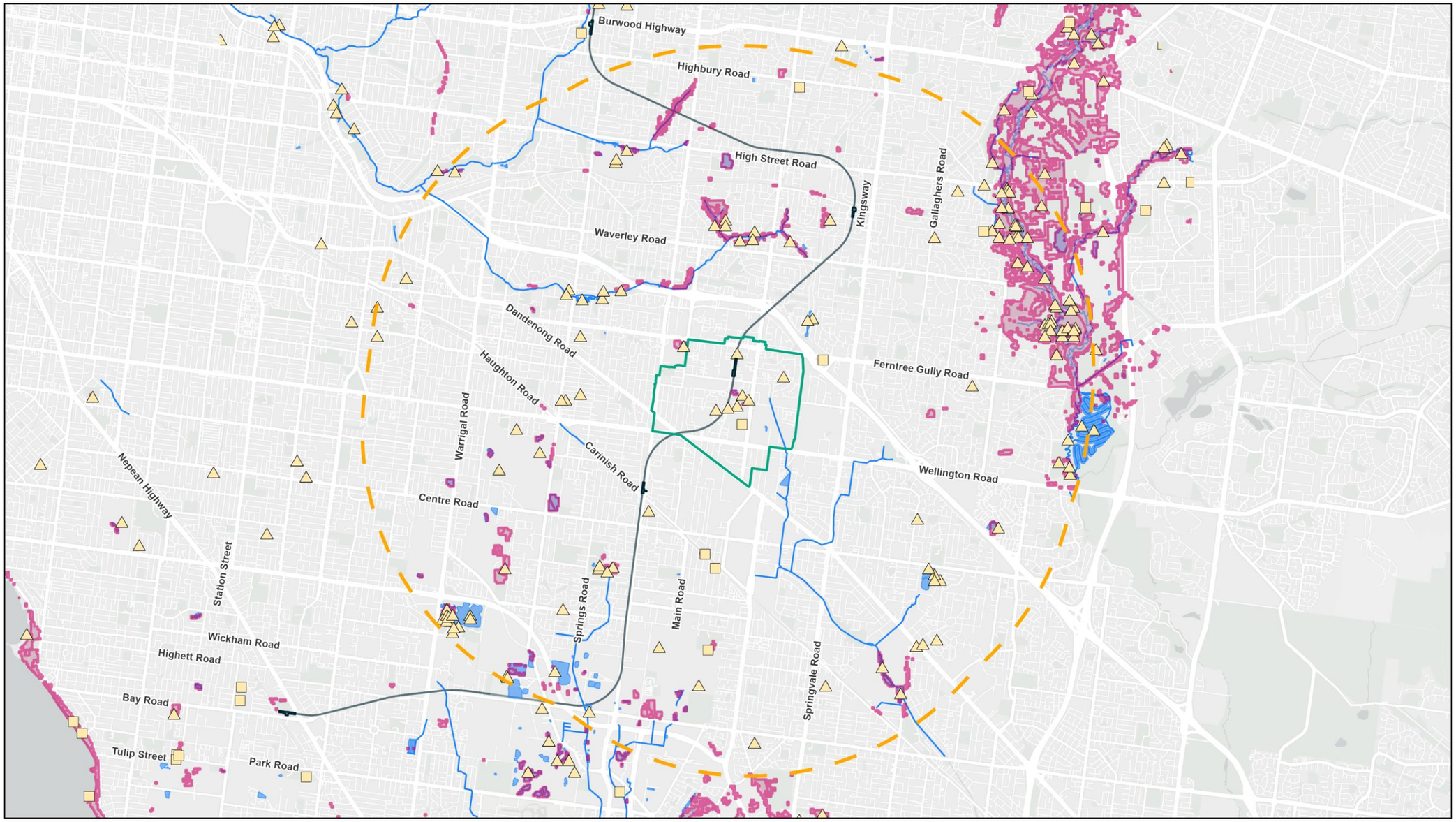

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FIGURE 5.1 SUMMARY OF ECOLOGICAL VALUES (NATIVE VEGETATION AND LISTED THREATNED SPECIES) IN THE 5-KM SEARCH AREA FROM THE STRCTURE PLAN AREA

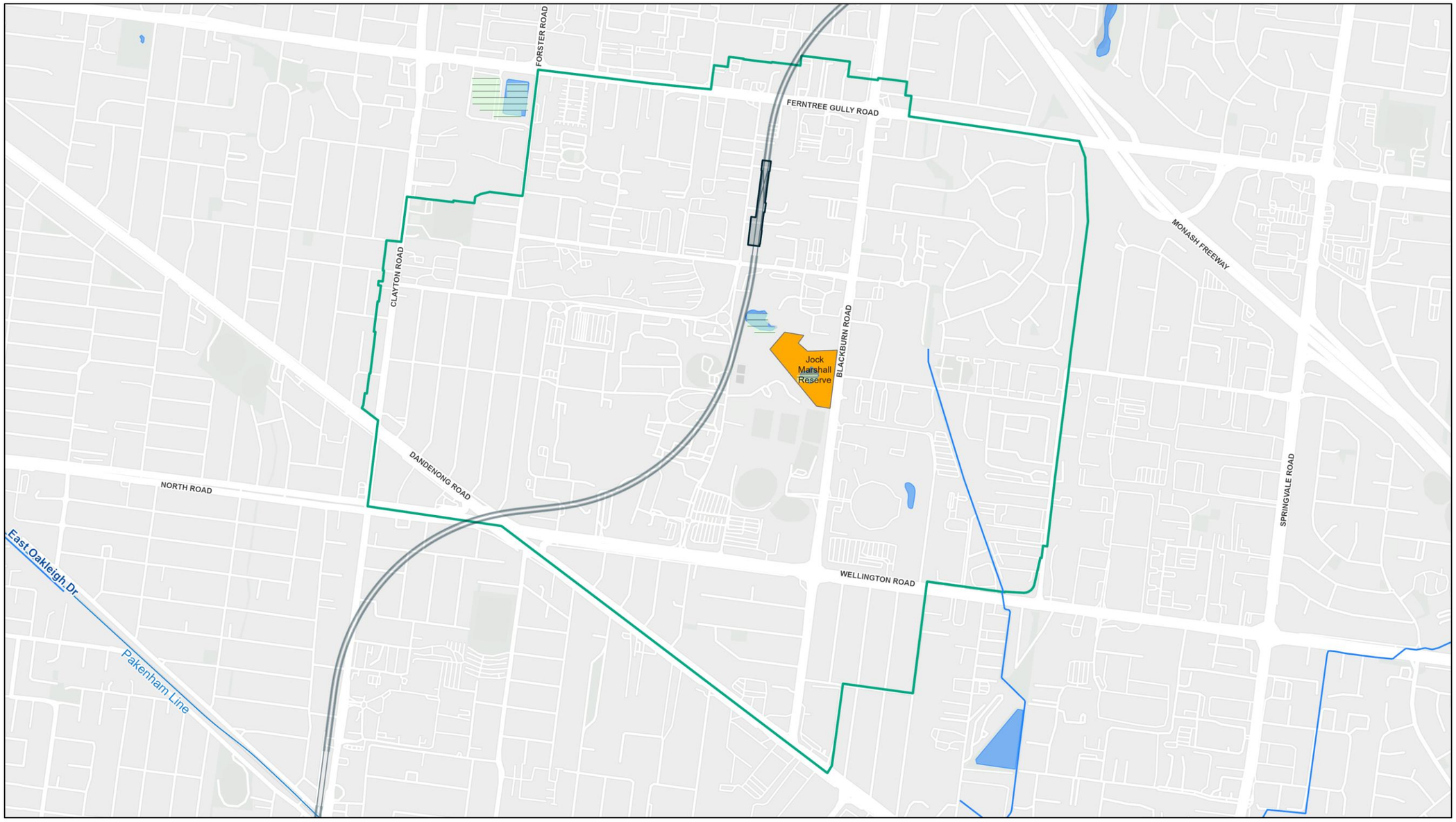


FIGURE 5.2 MODELLED NATIVE VEGETATION IN STRUCTURE PLAN AREA

5.1.2 THREATENED SPECIES AND COMMUNITIES

5.1.2.1 Threatened flora

The review of the relevant databases (PMST and VBA) identified 37 listed threatened flora species, 19 of which have previously been recorded in the 5-kilometre search area. Details of each habitat requirements of each species and an analysis of the likelihood of their occurrence in the Structure Plan Area is provided in Appendix B.

The database search identified three FFG-listed threatened flora species as recorded in the last 5 years and in the 5-kilometre search area. These species were Spotted Gum (*Corymbia maculata*), Giant Honey Myrtle (*Melaleuca armillaris subsp. armillaris*) and Snowy River Wattle (*Acacia boormanii*). Despite the recent species records, it is considered that all three threatened flora species are likely amenity planted trees given the location of the records outside the natural distribution of the species and position in a developed landscape in the Structure Plan Area.

Threatened flora previously recorded in the Structure Plan Area is mapped in Figure 5.3.

No EPBC Act or FFG Act threatened flora species are considered to have a moderate or high likelihood of occurrence in the Structure Plan Area due to the highly disturbed and development environment and the lack of suitable habitat features.

5.1.2.2 Threatened fauna

The review of the relevant database (PMST and VBA) identified 79 threatened and/or migratory fauna species in the 5-kilometre search area including two amphibians, 57 birds, three fish, two invertebrates, one crustacean, 10 mammals and four reptiles. Details of the habitat requirements of each species and an analysis of their likelihood of occurrence in the Structure Plan Area is provided in Appendix B. Of the 79 threatened fauna species, 50 have previously been recorded in the 5-kilometre search area.

Threatened flora previously recorded in the Structure Plan Area is mapped in Figure 5.3.

Based on the assessment provided in Appendix B, no EPBC Act and/or FFG Act-listed fauna species have a high or moderate likelihood of occurring in the Structure Plan Area due to a highly disturbed and developed urban landscape and lack of suitable habitat.

There are five avifauna with a low likelihood of occurring but they may still be observed overflying or potentially using the isolated wetland habitats at Jock Marshall Reserve for temporary foraging and/or refuge. These avifauna species are listed in Table 5.1. While a small patch of Grassy Woodland is modelled to occur in the Monash University campus and may provide temporary resting habitat for Powerful Owl as the species moves through the environment, it is not considered the species would regularly occur in the Structure Plan Area. Given the location of the small patch within a heavily modified and fragmented environment, it is considered the Jock Marshall Reserve is not used by Powerful Owl for breeding or foraging.

The desktop assessment identified the potential presence of numerous birds in the 5-kilometre search area. Most of the species records occur outside the Structure Plan Area and in higher quality and intact woodland habitat including Jells Park, Shepards Bush or Bushy Park Wetlands north and east of the Structure Plan Area. The two isolated wetlands at Jock Marshall Reserve are not considered suitable habitat for these threatened species.

TABLE 5.1 LISTED THREATENED FAUNA SPECIES WITH A LOW LIKELIHOOD OF OCCURRENCE IN THE STRUCTURE PLAN AREA

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS		HABITAT PREFERENCE	LIKELIHOOD OF OCCURRENCE
		EPBC ACT	FFG ACT		
Ninox strenua	Powerful Owl		vu	Pairs occupy a large, probably permanent, home range in mountain forests, gullies and forest margins, sparser hilly woodlands, coastal forests, woodlands, scrubs, exotic pine plantations, large trees in private/public gardens, some in cities (Pizzey and Knight 2012).	Low. Abundant recent records, however most records are in large intact woodlands north of the Structure Plan Area at Shepards Bush. The Structure Plan Area does not provide suitable habitat for the species.
Ardea alba modesta	Eastern Great Egret	Migratory	vu	Shallows of rivers, estuaries, tidal mudflats, freshwater wetlands; sewage ponds, irrigation areas, larger dams etc (Pizzey and Knight 2012).	Low. Abundant and recent records, most in wetlands at Jells Park and Bushy Park Wetlands, north-east of the Structure Plan Area. The species is unlikely to occur or rely on isolated wetlands in the Structure Plan Area for significant foraging or refuge habitat.
Oxyura australis	Blue-billed Duck		vu	Found on temperate, fresh to saline, terrestrial wetlands including sewerage ponds, rivers, salt lakes and saltpans. Preferring deep, permanent open water within or near dense vegetation (Pizzey and Knight 2012).	Low. Abundant and recent records, the species is unlikely to rely on isolated wetlands in the Structure Plan Area for significant foraging or refuge habitat. Most records are located in the large intact wetland and wooded area at Jells Park, east of the Structure Plan Area.
Stictonetta naevosa	Freckled Duck		en	Large, well vegetated swamps; in dry periods moves to open lakes (Pizzey and Knight 2012).	Low. Abundant and recent records, most records are in the large intact wetland and wooded area at Jells Park, east of the Structure Plan Area. The species is unlikely to occur or rely on isolated wetlands in the Structure Plan Area for significant foraging or refuge habitat.
Spatula rhynchotis	Australasian Shoveler		vu	Larger waters, fresh and saline lakes, well-vegetated freshwater wetlands, coastal inlets, sewage ponds, floodwaters (Pizzey and Knight 2012).	Low. Abundant and recent records, most in the large intact wetland and wooded area at Jells Park, east of the Structure Plan Area. The species is unlikely to occur or rely on isolated wetlands in the Structure Plan Area for significant foraging or refuge habitat.

Legend: CR = critically endangered, EN = endangered, VU = vulnerable

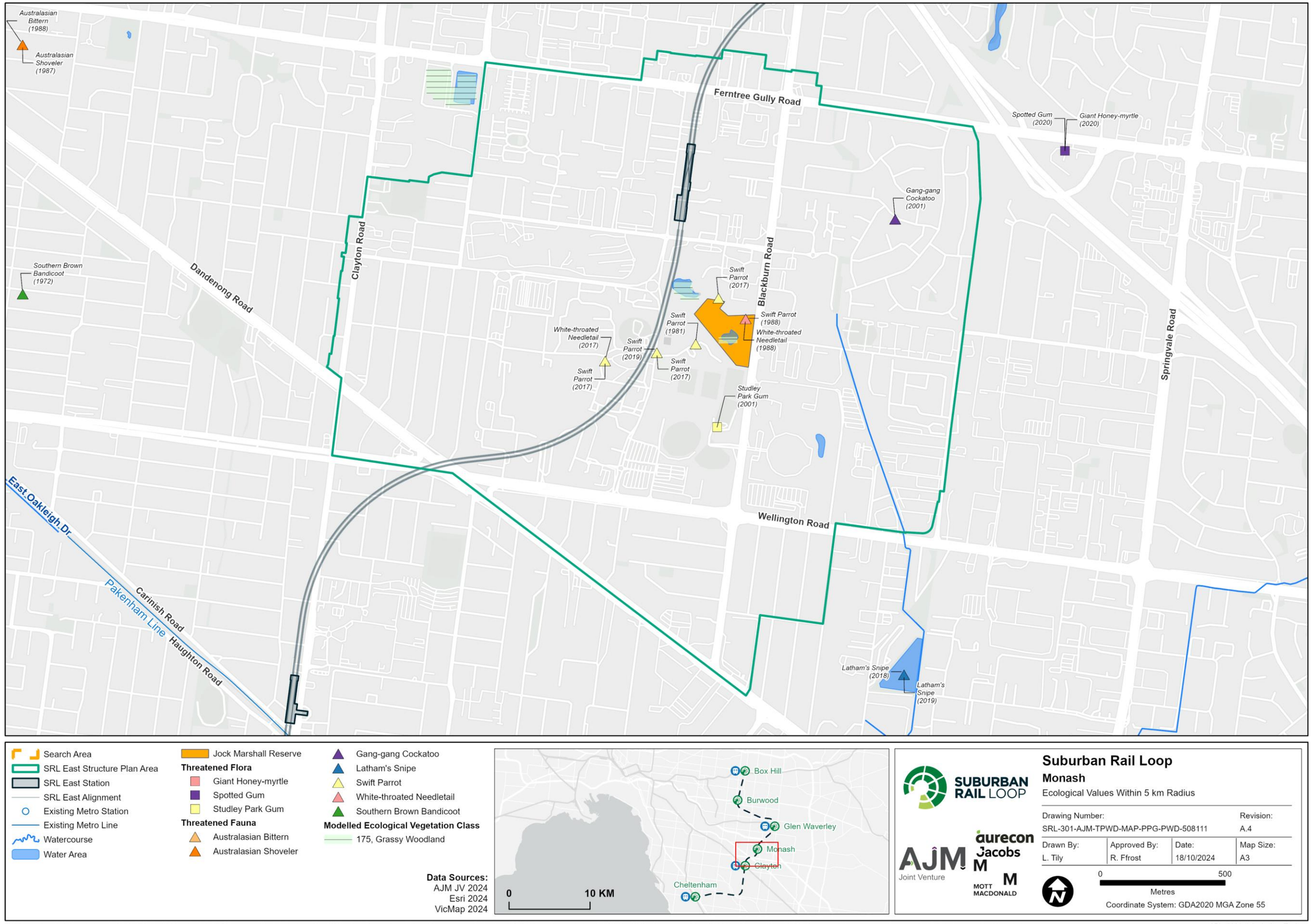


FIGURE 5.3 THREATENED FLORA AND FAUNA RECORDS IN STRUCTURE PLAN AREA

5.1.2.3 Threatened ecological communities

EPBC Act-listed ecological communities

Two EPBC Act-listed threatened ecological communities were listed in the PMST as known or likely to occur in the 5-kilometre search area (DCCEEW 2024a). This included Natural Damp Grassland of the Victorian Volcanic Coastal Plains; and White Box-Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland. An assessment against the listing criteria for each EPBC Act-listed threatened ecological community is provided in Table 5.2.

TABLE 5.2 ASSESSMENT OF LIKELIHOOD OF OCCURRENCE OF EPBC ACT-LISTED THREATENED ECOLOGICAL COMMUNITIES IN THE STRUCTURE PLAN AREA

EPBC ACT LISTED ECOLOGICAL COMMUNITY	LIKELIHOOD OF OCCURRENCE IN THE STRUCTURE PLAN AREA
Natural Damp Grassland of the Victorian Volcanic Coastal Plains – listed as Critically Endangered	This community is characterised by a native grassland ranging to an open grassy woodland on seasonally damp waterlogged soils. This community is dominated by a ground layer comprising native tussock species and herbaceous flora, with a sparse presence of trees and shrubs (TSSC 2015). The desktop and aerial review of the Structure Plan Area suggests the site does not support any areas of remnant native grassland as much of the ground layer has been entirely cleared of native vegetation and has been replaced by infrastructure. Areas where vegetation exists is primarily comprised of revegetated areas at Jock Marshall Reserve, that is unlikely to be characteristic of remnant grasslands and likely dominated by introduced grasses. As no suitable habitat features or diagnostic characteristics were noted during the desktop assessment, it is considered this community is unlikely to occur in the Structure Plan Area.
White Box-Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland – listed as Critically Endangered	This community is characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs, and dominance of White Box, Yellow Box or Blakely's Red Gum trees (TSSC 2006). Due to various factors including the highly disturbed and developed environment, the lack of suitable modelled vegetation and likelihood for remnant native vegetation, it is considered this community is unlikely to occur in the Structure Plan Area.

FFG Act-listed ecological communities

Based on the heavily modified site condition and lack of modelled native vegetation within and surrounding Monash, it is considered unlikely that any FFG Act-listed ecological communities occur in the Structure Plan Area.

5.1.3 PREVIOUS REPORTS

The following reports were reviewed and key findings of ecological field assessments limited to discrete locations in the Structure Plan Area were summarised:

- SRL East - EES Existing Conditions Report {AJM-JV, 2021 #1558}
- Stage 1 Reference Design – Initial Works Ecology Impact Assessment (AJM-JV 2021).

The Structure Plan Area comprises a highly developed and urbanised landscape, with Monash University as the key infrastructure with roadways and car park spaces surrounding it. The Structure Plan Area is exclusively covered by hard impervious surfaces including concrete waking paths and asphalt, with the exception of scattered garden beds and planted trees throughout and around the perimeter of the university. It is generally a highly built-up environment that comprises a variety of mature planted trees including indigenous and non-indigenous species as well as non-native species. Commonly planted species include Maple (*Acer* sp.), Water

Gum (*Tristaniopsis laurina*), Willow Bottlebrush (*Callistemon viminalis*) and Lemon-scented Gums (*Corymbia citriodora*).

No patches of native vegetation assessable under the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP 2017a) (the Guidelines) were recorded in the Structure Plan Area, although there may be some native patch vegetation around Jock Marshall Reserve on the Monash University campus that will need to be confirmed with on-site ecological surveys. One large River Red Gum (*Eucalyptus camaldulensis*) and one large Manna Gum (*Eucalyptus viminalis*) have been mapped that meet the definition of a scattered tree under the Guidelines (DELWP 2017a). It is known there are remnant River Red Gums on the Monash University campus, and these scattered trees are unlikely to be considered amenity plantings.

No subterranean groundwater dependent ecosystem (GDEs) have been identified in the Structure Plan Area. The GDEs are likely terrestrial GDEs as detailed below in Table 5.3.

TABLE 5.3 POTENTIAL GDES FOR ASSESSMENT RELEVANT TO THE STRUCTURE PLAN AREA (BOM 2017)

SITE AND LOCATION	DISTANCE/ DIRECTION	GDE TYPE	GDE ATLAS	EST. DEPTH TO WATER TABLE (M)	ECOLOGICAL VALUE	LIKELY DEPENDENCE ON GROUNDWATER
Aboriginal Gardens and Jock Marshall Reserve, Monash University Scenic Boulevard, Clayton	200 to 500 m south of SRL station at Monash	Park vegetation	Not listed as potential terrestrial GDE	< 5 m	Comprises revegetation and provides habitat for a range of native fauna.	These ponds were constructed for stormwater retention. The silty substance at the bottom of the wetland are considered unlikely to be groundwater dependent.

The summary of ecological assessments of the reports determined that minor occurrences of remnant native vegetation and scattered trees occur in the Structure Plan Area, although no EPBC Act MNES occur in the Structure Plan Area or surrounds or are considered likely to be present or impacted by SRL East.

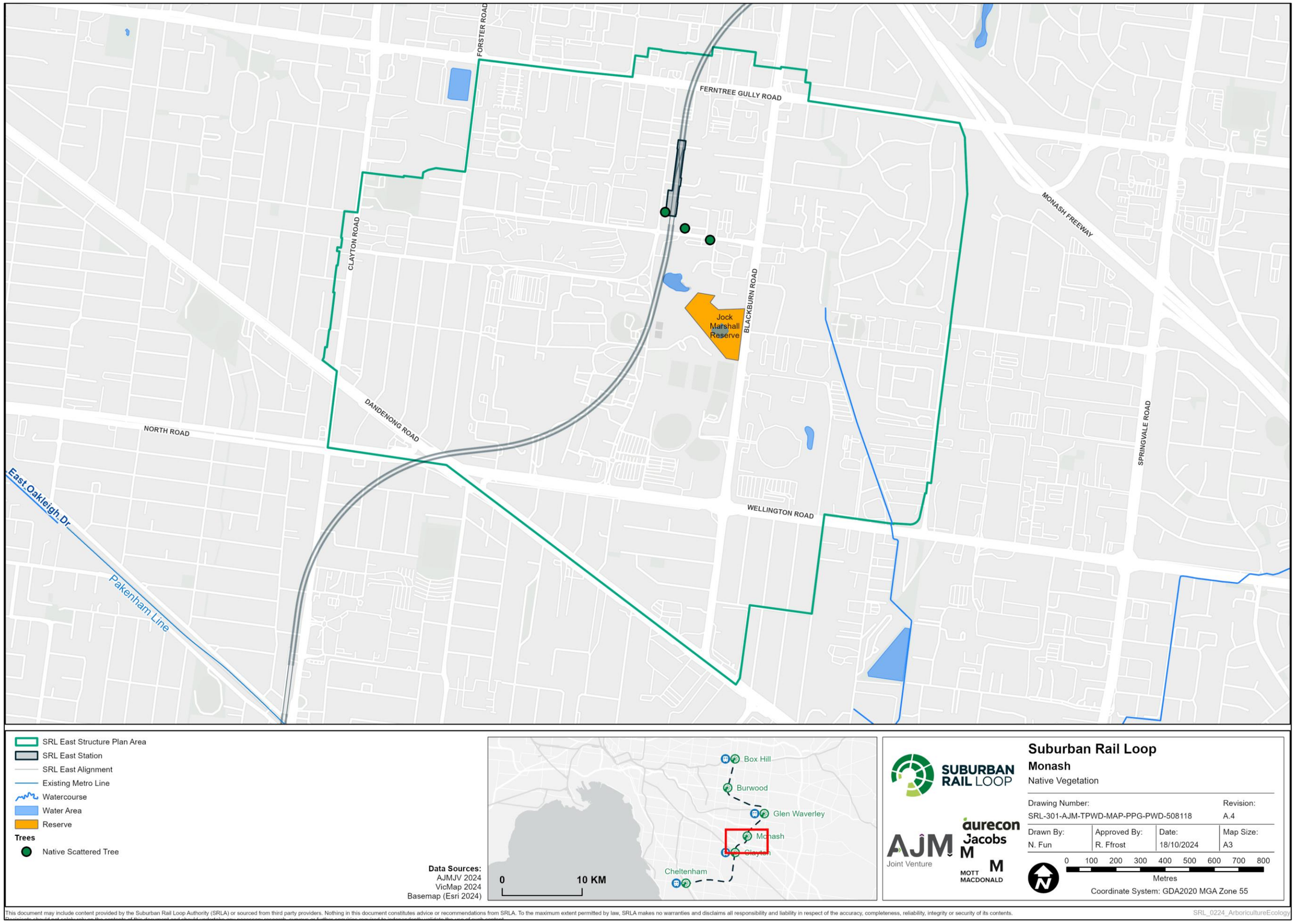


FIGURE 5.4 NATIVE VEGETATION PREVIOUSLY RECORDED IN STRUCTURE PLAN AREA

5.1.4 PLANNING ZONES AND OVERLAYS

A review of the database records identified in Figure 5.2 and Figure 5.3 against planning scheme zones and overlays was completed to determine whether previously recorded ecological values are protected by local planning controls. This review is separate from the likelihood of occurrence assessment of threatened species and communities in Section 5.1.2.

Table 5.4 identifies the planning scheme zone and overlays that affect the land containing modelled native vegetation and threatened species and communities in the Structure Plan Area and 5-kilometre search area.

TABLE 5.4 PLANNING ZONE AND OVERLAYS FOR LAND WITH MODELLED NATIVE VEGETATION AND THREATENED SPECIES AND COMMUNITIES IN THE STRUCTURE PLAN AREA AND 5-KM SEARCH AREA

MODELLED NATIVE VEGETATION AND THREATENED SPECIES AND COMMUNITIES	ADDRESS / NAME / OWNERSHIP	PLANNING ZONE	ENVIRONMENT AND LANDSCAPE PLANNING OVERLAYS
In Structure Plan Area			
Grassy woodland (EVC 175) native vegetation	1 to 131 Wellington Road, Clayton 3168	Public Use Zone (Schedule 2)	N/A
Studley Park Gum	1 to 131 Wellington Road, Clayton 3168	Public Use Zone (Schedule 2)	N/A
Swift Parrot	1 to 131 Wellington Road, Clayton 3168	Public Use Zone (Schedule 2)	N/A
White-throated Needletail	1 to 131 Wellington Road, Clayton 3168	Public Use Zone (Schedule 2)	N/A
5-km search area			
Gang Gang Cockatoo	46 Samada Street, Notting Hill 3168	General Residential Zone (Schedule 3 - Garden City Suburbs)	N/A

Table 5.4 confirms the modelled native vegetation area and threatened species and communities are not affected by environment or landscape planning overlays that could otherwise afford vegetation and tree removal protection. It is not uncommon for land located in a Public Use Zone to not be affected by such overlays due to the 'public' purpose of the zone. As outlined in Section 4.3.1.4, Clause 52.17 is also a planning tool for protection of native vegetation.

Land ownership details are not known at the time of this assessment.

5.2 Arboriculture

The Structure Plan Area comprises a number of distinctive precincts with varying treed characteristics.

The eastern and western sections are residential, with canopy cover evident on private property as well as on road reserves in the public realm. Commercial precincts, primarily to the north and east, contain limited canopy cover and where it does occur, it is predominantly located on road reserves.

Monash University and related research facilities occupy a significant portion of the Structure Plan Area, with notable canopy cover evident between buildings, along the internal road network and in the north-east of the campus.

5.2.1 CANOPY COVER

The Structure Plan Area supports 600,145 m^2 of tree canopy, which equates to 13.2 per cent tree canopy cover in the overall Structure Plan Area compared to 22 per cent canopy cover for the municipality overall (cited in the

Monash Urban Landscape and Canopy Vegetation Strategy). The existing tree canopy in the Structure Plan Area is shown in Figure 5.5.

Comparing all land in the Structure Plan Area broadly zoned for residential use to commercial and industrial zoned land illustrates the generally well treed residential land supports a significantly greater proportion of tree canopy compared to commercial land. Residential land provides 13 per cent tree canopy cover in the Structure Plan Area compared to 6.6 per cent on commercial and industrial land. This does not consider tree canopy cover on the Monash University campus, Commonwealth land (CSIRO), schools, nor the road zone, which support 19.4 per cent canopy cover.

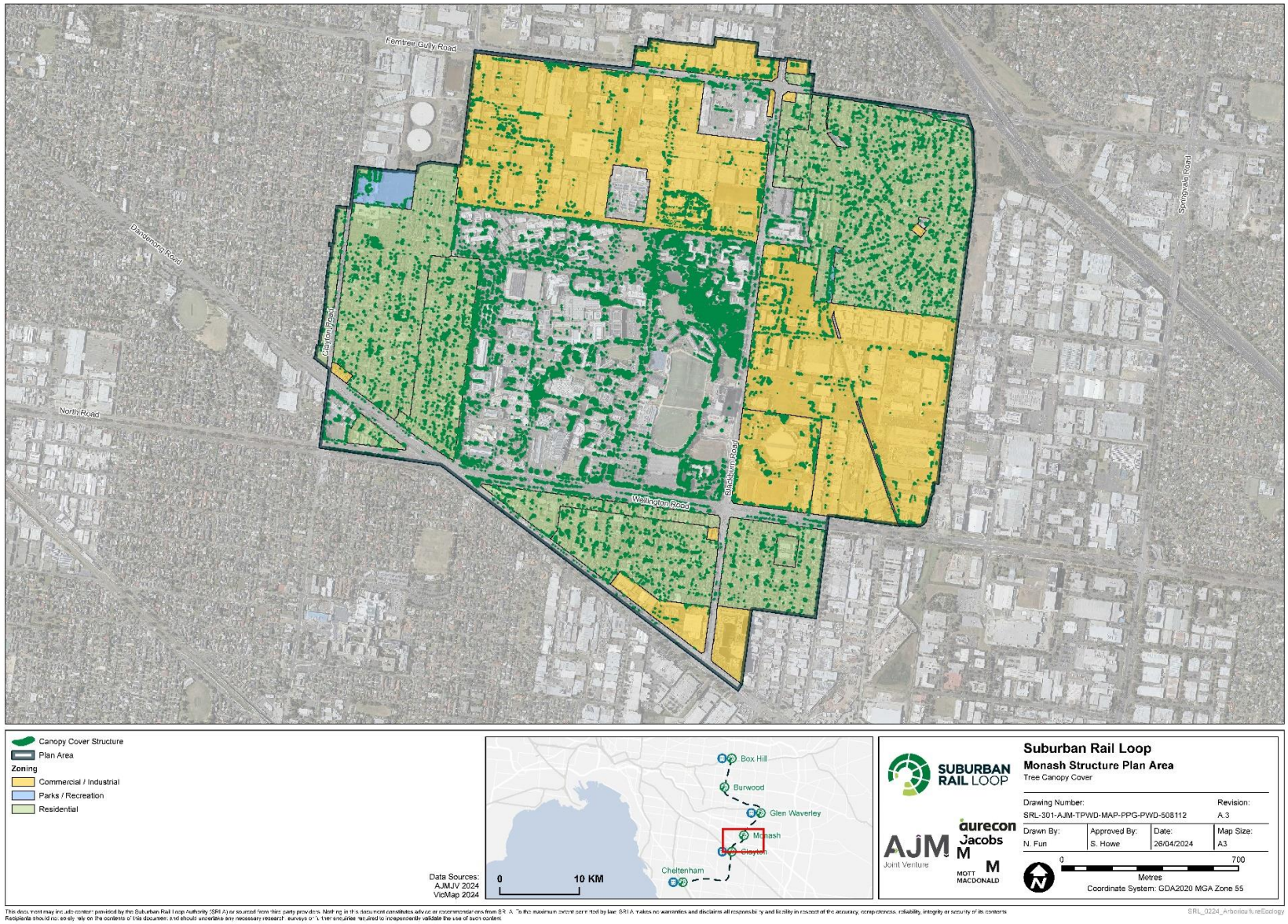


FIGURE 5.5 TREE CANOPY COVER IN STRUCTURE PLAN AREA

5.2.2 IDENTIFICATION OF SIGNIFICANT TREES

The City of Monash does not maintain a specific significant tree register with protection under the planning scheme nor a tree protection local law.

A number of trees or tree groups in the municipality are listed in the schedule to the Heritage Overlay that applies as part of the Monash Planning Scheme, as well as other heritage sites included in the heritage overlay where tree controls apply (see Section 2.4.2).

5.2.3 TREE PROTECTION AREA

Only a small portion in the east of the Structure Plan Area is subject to protection under VPO1 that applies as part of the Monash Planning Scheme. The extent of VPO1 is shown in Figure 5.6.

VPO1 seeks to conserve significant treed environments and ensure that new development complements the Garden City Character of the neighbourhood by placing protection on trees over certain size thresholds and encouraging their retention as part of new development.

5.2.4 OTHER NOTABLE AVENUE PLANTATIONS/PARKS AND GARDENS

In addition to trees within VPO1 land, notably large and mature tree plantings are evident mainly on the Monash University campus, including Jock Marshall Reserve and the Matheson Tree, a 400 to 500-year-old River Red Gum (*Eucalyptus camaldulensis*) in the south-east of the campus.

The campus contains a range of teaching and ornamental gardens and large tree canopies are visible on aerial imagery. These all indicate additional, notable plantings in the Structure Plan Area.

Tree surveys undertaken as part of the SRL East Environment Effects Statement (EES) and for early works outside the EES boundary revealed limited tree growth in the commercially zoned areas north of Monash University.

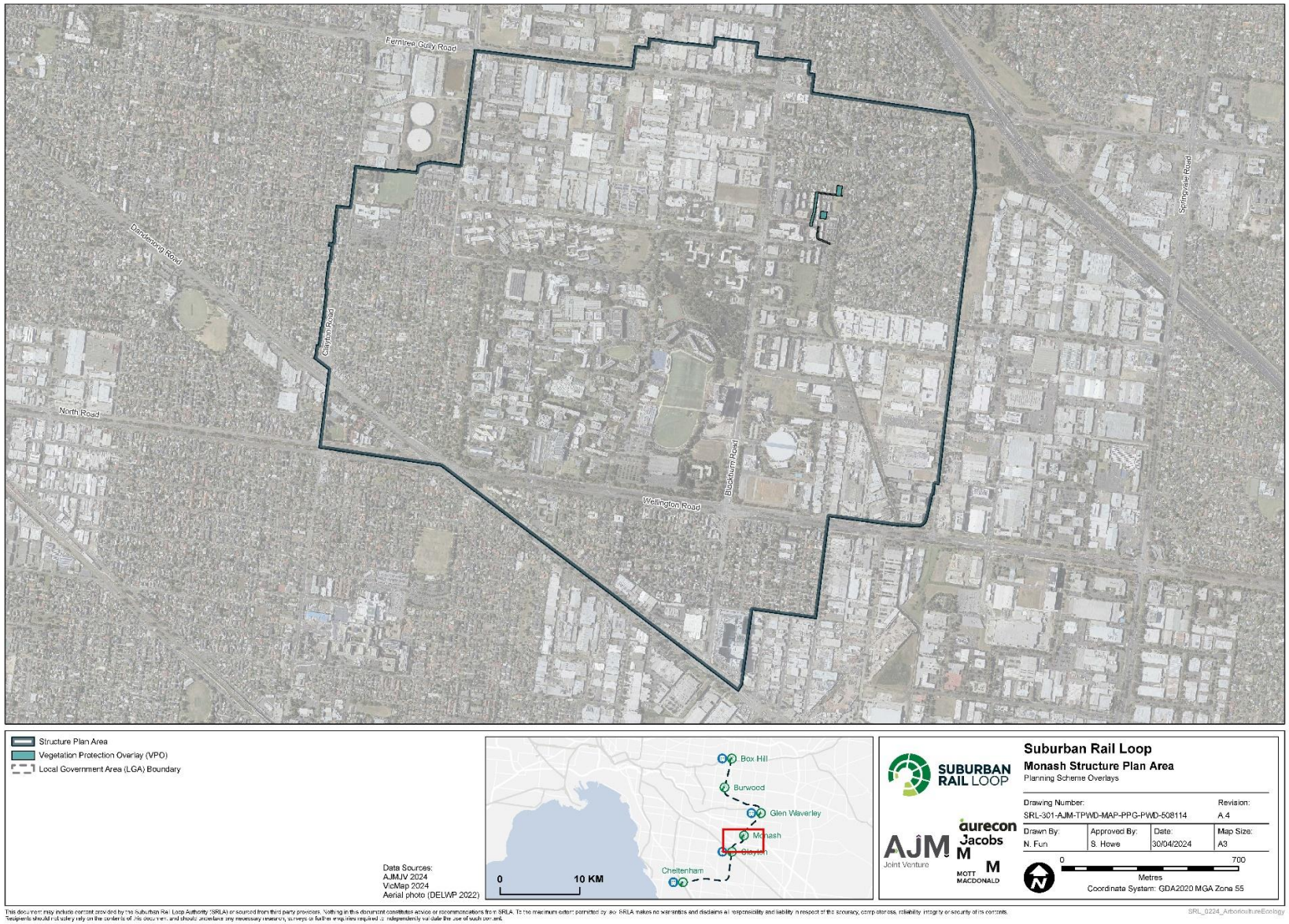


FIGURE 5.6 LAND SUBJECT TO VPO1 IN STRUCTURE PLAN AREA

5.3 Committed projects

Initial and early works underway that were subject to SRL East approved rail scope have removed trees, and further tree removals will occur as main works commence.

Environmental Performance Requirements (EPRs) developed for SRL East include provisions for the protection of trees proposed to be retained (EPR AR3), as well as implementation of a Tree Canopy Replacement Plan to mitigate against the loss of canopy cover (EPR AR4).

In recognition that SRL East will require some tree removal and subsequent loss of canopy cover, EPR AR4 requires that double the amount of tree canopy cover (m^2) removed in each local government area is replaced by 2050. The Tree Canopy Replacement Plan has been developed in consultation with municipal and other land managers and prioritises tree planting on Project land to provide canopy cover for pedestrian and hard paved areas.

6. Findings

This section sets out the results relating to ecology and arboriculture that impact land use planning and development in each Structure Plan Area.

- A summary of the issues for improving ecology and potential opportunities are listed in Section 6.1.
- A summary of the issues for arboriculture and potential opportunities are listed in Section 6.2.

6.1 Ecology

The Structure Plan Area comprises a highly modified and developed environment, exclusively dominated by Monash University, commercial and residential areas. The current extent of existing open space and green areas available is limited, with the majority of open space comprising sports grounds.

There are highly limited ecological values and existing open spaces and the overall Structure Plan Area is unlikely to contain or support areas of significant habitat for EPBC Act and FFG Act-listed threatened species or threatened ecological communities.

The Structure Plan Area includes the Matheson Tree and Jock Marshall Reserve at Monash University that comprises a minor amount of remnant native vegetation and exists as an isolated reserve in the broader developed landscape. Although the reserve provides potential localised habitat for foraging and refuge for native fauna, the overall Structure Plan Area does not contain significant habitat corridors or linked habitat from adjacent landscapes to encourage the movement and dispersal of threatened native avifauna.

While development in the Structure Plan Area would present a low risk of impacts to listed ecological matters, there are also very limited opportunities to enhance ecological values and biodiversity in existing and new open spaces.

6.1.1 ISSUES

Significant urban pressures present several challenges for biodiversity occurrence and use in the Monash Structure Plan Area. These issues include:

- High proportion of developed areas (buildings, houses and other structures) with low existing cover of native vegetation or habitat
- Limited spaces for existing natural environments with large spaces prioritised for community and recreation uses and not considered to cater for biodiversity. Increased population pressures and development of the Structure Plan Area will further reduce the availability and quality of open space for biodiversity over the long term and impact council objectives and policies that aim to retain and enhance existing biodiversity values.
- Limited tree canopy cover connectivity, very limited or no understorey habitat and significant separation between current open spaces and limited habitat corridors in the Structure Plan Area that connects to remnant vegetation across the landscape.
- Further loss of trees, green spaces and biodiversity through rezoning residential land to commercial or industrial land may negatively impact council goals and objectives to increase biodiversity and native tree canopy cover and state government objectives to enhance and connect green and open spaces in urban areas.
- Heavy reliance on motor vehicles increasing the risk of road kill and injury to wildlife and limiting opportunities for wildlife corridors
- Dominance of non-native and/or European street trees that do not provide adequate foraging resources for Australian native wildlife including pollinators

- Lack of large mature trees for breeding, habitat and refuge that are decreasing over time due to public safety risk and increased development from rezoning of the Structure Plan Area, which may impact on local council policies to protect existing tree canopy cover and biodiversity and impact the ability to further increase biodiversity and create habitat corridors.
- Ground cover primarily paved with impervious surfaces, comprising non-native plantings and/or extensive areas supporting mown grass that provides no ecological value for biodiversity

6.1.2 OPPORTUNITIES

Opportunities to enhance biodiversity value and habitat corridors in the Structure Plan Area are:

- Existing open public spaces provide opportunities to meet Monash and State Government policy to increase biodiversity and the communities connection with nature through increasing the cover of native vegetation, including native canopy trees and native understorey to provide habitat for biodiversity.
- Proposed new open spaces recommended for the Structure Plan Area provide an opportunity to increase the cover and abundance of native trees and understorey.
- Align with *Monash Urban Biodiversity Strategy* to link new and potential open spaces through habitat corridors within the Structure Plan Area. This should include private properties that occur between open spaces, which aligns with State Government policy to increase interaction with nature.
- Create additional habitat links and revegetate the area surrounding the Matheson tree to promote biodiversity use.

6.2 Arboriculture

The Structure Plan Area comprises a mix of residential areas to the east and west, Monash University occupying much of the central, southern portion of the Structure Plan Area, with commercial and industrial land in the north. Overall tree canopy cover is at 14 per cent in the overall Structure Plan Area compared to 22 per cent canopy cover in Monash overall.

The Monash VPO1 which defines tree protection areas to conserve significant treed environments and ensure that new development complements the Garden City Character of the neighbourhood is only applied to small pockets of land in the north-east, with most residential areas free of tree controls.

Trees on Council-managed land including parks and gardens and public roads are managed in accordance with the *Monash Tree Management Policy* which provides guidelines for the management of Council trees.

6.2.1 ISSUES

Potential impacts to trees and the urban forest from development in the Structure Plan Area are:

- Loss of urban tree canopy cover from re-zoning residential land to commercial or industrial uses, and intensification of land use and change in building typology for residential land (such as multi-unit developments replacing multiple single dwelling lots and the loss of trees)
- Impacts to street trees and loss of canopy cover due to reconfigured road networks, infrastructure upgrades, parcel access as a consequence of loss of tree canopy cover.

The risk of tree and canopy loss is greatest on private land, especially where rezoning from residential to commercial or other intensive development may occur. The applicability of the Monash VPO1 which seeks to protect treed environments and ensure that new development complements the Garden City Character of the neighbourhood would likely be redundant.

While development will unlikely change public parks and other land uses such as schools that support higher canopy cover, Council-managed trees in streetscapes are at direct risk from works such as changes to road functional layouts and vehicle crossings, and indirectly from construction activities on private land.

The potential overall loss of trees in the private and public realms will place additional challenges for achieving Monash's target of 30 per cent tree canopy cover by 2030.

6.2.2 OPPORTUNITIES

Opportunities to protect and enhance the tree canopy and urban forest in the Structure Plan Area are:

- Consider green infrastructure, green roofs and canopy trees in private open space (where possible) and Water Sensitive Urban Design (WSUD) to support new tree growth and biophilic design in new development
- Provide for enhanced growing conditions (such as structured soils and WSUD Water) for trees on public land to be implemented as part of new development
- Support implementation of municipal street and public open space planting strategies that seek to:
  - » Increase urban tree canopy cover to improve overall amenity and environmental values
  - » Increase species diversity in tree and plant selection to improve resilience, especially in consideration of climate change.

With the loss of trees on private property, especially on residential land in the east and west of the Structure Plan Area where the building typology may change from single dwelling to multi-unit development, there will be an increased reliance on trees in the public realm to support urban canopy tree targets. Contributions to public tree planting conditions, in addition to planting more trees in the public realm, will assist in compensating for loss of canopy cover from private land.

The ability to accommodate new tree plantings on private land will depend on the nature of future zoning implemented as part of the Structure Plan, with intensive, high density residential and commercial development anticipated to provide limited opportunities for significant tree plantings. However, change within existing commercial and industrial zoned land, especially north of Monash University where tree cover is low, provides an opportunity to require innovative, or at least improved approaches to greening within land uses that were previously largely devoid of trees and vegetation.

7. Recommendations

Recommendations for enhancing ecology and arboricultural values when developing the Monash Structure Plan are set out below, followed by broader recommendations to enhance these values.

7.1 Structure planning

1. Promote the concept of habitat corridors that link new and existing open spaces with known habitat corridors in the wider landscape, to support Plan Melbourne 2017-2050 *Direction 6.5 and Policy 6.5.1.* For example, connecting habitat between the Jock Marshall Reserve and surrounding linear parks in the urban environment, including streetscapes.

    a. As depicted in Figure 7.1 below, the proposed habitat corridors have been developed based on a logical path that incorporates areas of existing and proposed open spaces, remnant vegetation and habitat corridors in proximity to the Structure Plan Area.

    b. It is recommended that in the habitat corridors are enhanced for biodiversity through the planting of native trees, particularly flowering natives, and understorey that provides a diversity of flowering plants at a variety of heights.

2. As per *Direction 6.4* of Plan Melbourne 2017-2050, to provide cooler and greener urban forests it is recommended that existing and proposed open spaces, including along roadsides and pedestrian walkways, are enhanced with native plantings (particularly flowering trees and nectivorous species). Revegetation of understorey habitat and providing a ground layer with flowering native shrub, herb and grass species will provide a cooler urban environment whilst promoting habitat and foraging opportunities for common native fauna currently using habitat in the Monash Structure Plan Area. Refer to Table 7.1 that includes and summarises potential activities in new and existing open spaces.

    a. Native plant selection in these areas should consider and prioritise drought-tolerant, long-lived and flowering species for their biodiversity values.

3. Support the City of Monash Urban Biodiversity Strategy 2018 -2028 by reducing biodiversity threats, retaining all trees and fauna habitat in proposed and existing open spaces, particularly old hollow-bearing trees and protect remnant vegetation within the Structure Plan Area. For example the Matheson Tree, located at Monash University.

4. Support existing and new tree plantings to increase canopy cover in accordance with the *Monash Urban Landscape and Canopy Vegetation Strategy* and *Living Melbourne,* endorsed by the City of Monash. Ensure development includes integrated water management interventions that address green infrastructure assets, provides adequate irrigation for trees and other plantings, and optimises permeable surfaces to enhance tree growth. Examples of this outlined in the *City of Monash Urban Biodiversity Strategy* include wetlands, swales, litter traps, sediment traps and rain gardens to increase access to water and improve quality.

5. To support Objective 2 of the City of Monash Urban Biodiversity Strategy 2018 – 2028, it is recommended to enhance biodiversity through revegetation and protection of existing ecological values. This could be applied for Jock Marshall Reserve, the Matheson tree and surrounding degraded landscapes. Revegetation between these ecological values could create better connectivity and facilitate greater biodiversity outcomes in the Structure Plan Area.

6. Support municipal street and public open space planting strategies to meet canopy coverage targets and ensure a diversity of tree species that are resilient to climate change.

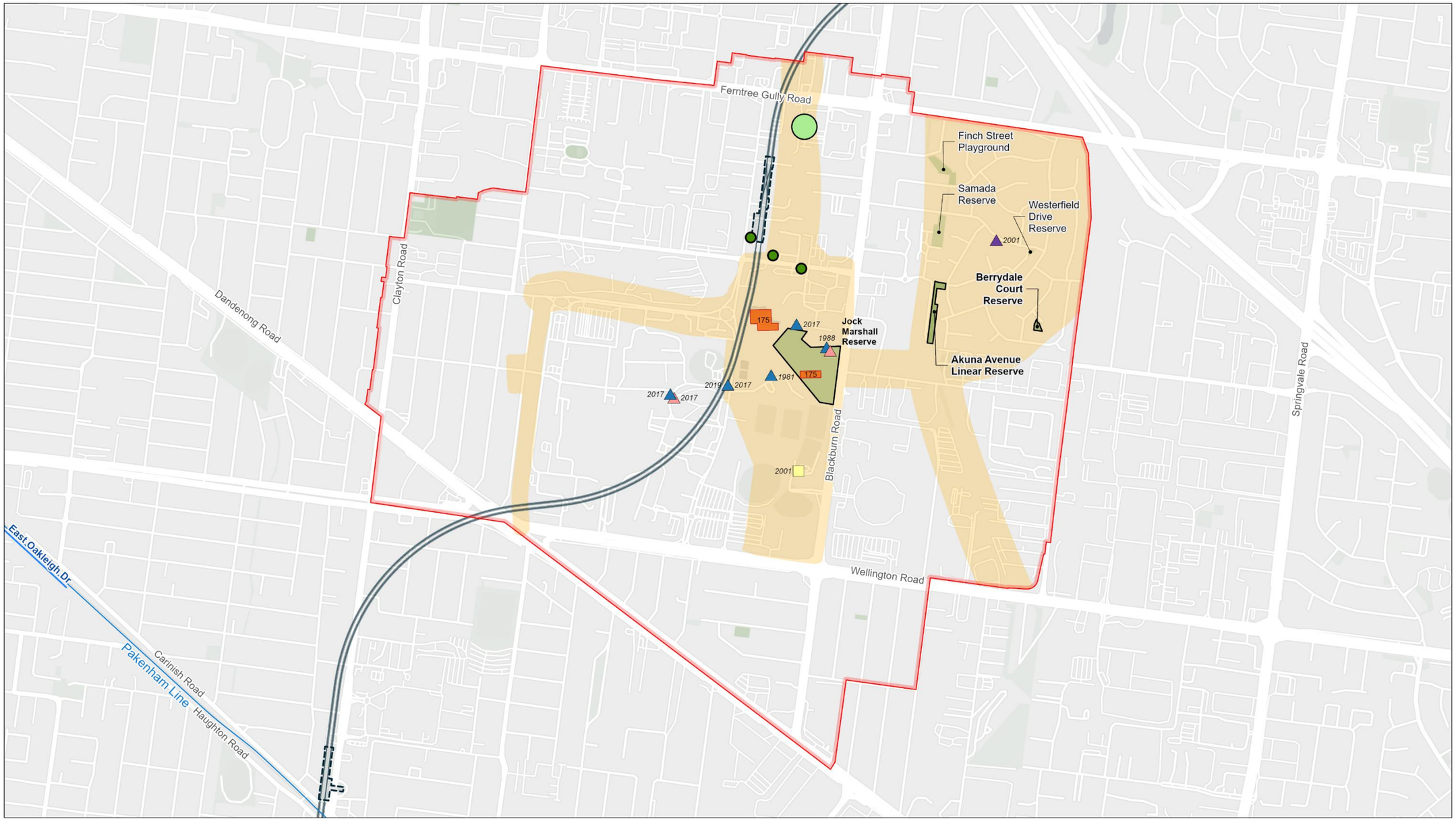
TABLE 7.1 RECOMMENDATIONS FOR BIODIVERSITY FOR PUBLIC OPEN SPACE

LOCATION	STATUS	PROPOSED CLASSIFICATION AND APPROX SIZE	RECOMMENDATION FOR BIODIVERSITY IMPROVEMENTS
Extension of new linear open space (green spine) from rail and infrastructure works to Ferntree Gully Road	New open space	Function: Linear Park Size: approx. 900 m2	• Retain trees along Howleys Road. • Plant more native trees that provide nectar resources and habitat for birds. • Connect the linear open space with Jock Marshall Reserve to facilitate biodiversity movement.
Potential new and enhanced linear open space around Henderson Road at the Mile Creek corridor drainage reserve	New open space	Function: Linear Park Size: approx. 2340 m2	• Reduce the extent of the concrete-lined channel and replace it with native vegetation to facilitate biodiversity. • Remove the extent of mown grasses along the drainage channel and replace with native vegetation and flowering understorey species.
Potential new open space north of Normanby Road	New open space	Function: Community park Size: approx.1000 m2	• Retain mature trees. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators.
Potential new open space (ideally street to street or corner site) around Beddoe Avenue / Stockdale Avenue / Marshall Avenue	New open space	Function: Community Park Size: 1000 m2	• Retain mature trees. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators.
Potential new open space around Ferntree Place	New open space	Function: Community park Size: approx.1000 m^2	• Reduce the extent of the concrete-lined channel and replace it with native vegetation to facilitate biodiversity. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators.
Potential new open space between Ferntree Gully Road and Redwood Drive	New open space	Function: Community park Size: approx. 1000 m^2	• Reduce the extent of the concrete-lined channel and replace it with native vegetation to facilitate biodiversity. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators.
Potential new open space around Nantilla Road and Duerdin Street, Clayton	New open space	Function: Linear park Size: approx. 7000 m^2	• Reduce the extent of the concrete-lined channel and replace it with native vegetation to facilitate biodiversity. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators.
Potential new open space between Ferntree Gully Road and rear of residences on Roslings Court and Westerfield Drive, Notting Hill	New open space	Function: Community park Size: approx. 2000 m^2	• Reduce the extent of the concrete-lined channel and replace it with native vegetation to facilitate biodiversity. • Plant more native trees that provide nectar resources for birds.

LOCATION	STATUS	PROPOSED CLASSIFICATION AND APPROX SIZE	RECOMMENDATION FOR BIODIVERSITY IMPROVEMENTS
			• Revegetate understorey flowering vegetation for pollinators.
Akuna Ave Linear Reserve	Enhanced open space	Function: Linear Park Size: 4340 m2	• Retain mature trees. • Provide fauna nest boxes. • Revegetate mown grassy areas with native flora that connects with the Mike Creek drainage reserve.
Arnott Street Reserve	Enhanced open space	Function: Community Park Size: 712 m2	• Retain mature trees. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators
Berrydale Court Reserve	Enhanced open space	Function: Landscape Park Size: 703 m2	• Retain mature trees. • Plant more native trees that provide nectar resources for birds. • Revegetate understorey flowering vegetation for pollinators.
Monash University (Jock Marshall Reserve)	Enhanced open space	NA	• Retain mature trees and understorey habitat. • Provide fauna nest boxes.

7.2 Other Opportunities

- Align with Monash Urban Biodiversity Strategy initiatives to improve open space, streetscapes and community areas – this includes investigating potential to expand areas of bushland regeneration, working with other authorities to improve biodiversity, and contributing to the development of a Biodiversity Corridor Plan.
- Support the implementation of actions aligning with the Monash Urban Biodiversity Strategy and related sustainability programs such as the Green Shoots Program and Gardens for Wildlife.
- Private landholders within the mapped corridor are to be encouraged and supported in contributing native trees and understorey plantings. It is considered that the Structure Plan Area wide habitat corridor will require local government and community support.



SRL_0224_ArboricultureEcology

FIGURE 7.1 INDICATIVE HABITAT CORRIDORS IN THE STRUCTURE PLAN AREA

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Appendix A

Protected Matters Search Tool

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: 01-Oct-2024

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:	1
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	78
Listed Migratory Species:	41

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:	4
Commonwealth Heritage Places:	None
Listed Marine Species:	52
Whales and Other Cetaceans:	8
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:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	10
Key Ecological Features (Marine):	None
Biologically Important Areas:	4
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status	Buffer Status
Historic			
HMVS Cerberus	VIC	Listed place	In buffer area only

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

Ramsar Site Name	Proximity	Buffer Status
Edithvale-seaford wetlands	Within 10km of Ramsar site	In feature area

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
Natural Damp Grassland of the Victorian Coastal Plains	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 may occur within area	In buffer area only

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	Breeding known to occur within area	In feature area
Aphelocephala leucopsis			
Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	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
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known 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 feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat likely to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	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
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In buffer area only
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Thinornis cucullatus cucullatus Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Nannoperca obscura Yarra Pygmy Perch [26177]	Endangered	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
Seriolella brama Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In buffer area only
FROG			
Litoria raniformis Southern Bell Frog,, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area	In feature area
INSECT			
Synemon plana Golden Sun Moth [25234]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
Antechinus minimus maritimus Swamp Antechinus (mainland) [83086]	Vulnerable	Species or species habitat may occur within area	In feature area
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
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In buffer area only
Isoodon obesulus obesulus Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may 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
Dianella amoena Matted Flax-lily [64886]	Endangered	Species or species habitat likely to 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 Peppercress [10976]	Vulnerable	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
Prasophyllum spicatum Dense Leek-orchid [55146]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pterostylis chlorogramma Green-striped Greenhood [56510]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterostylis cucullata Leafy Greenhood [15459]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 feature area
Thelymitra epipactoides Metallic Sun-orchid [11896]	Endangered	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			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Lissolepis coventryi Swamp Skink, Eastern Mourning Skink [84053]	Endangered	Species or species habitat likely to occur within area	In feature area
SHARK			
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to 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
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area	In buffer area only
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Migratory Marine Species			
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area	In feature area
Migratory Wetlands Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	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
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		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
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Defence		
Defence - Airport Builidng [21422]	VIC	In buffer area only
Defence - MOORABBIN AERO RESEARCH [20014]	VIC	In buffer area only
Defence - SANDRINGHAM TRAINING DEPOT [20990]	VIC	In buffer area only
Defence - SANDRINGHAM TRAINING DEPOT [20989]	VIC	In buffer area only

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
Ardenna carneipes as Puffinus carneipes			
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea as Puffinus griseus			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine 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 likely to occur within area overfly marine area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	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
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 feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within 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 may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	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
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	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
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
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis			
Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Mammal			
Arctocephalus forsteri			
Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In buffer area only
Arctocephalus pusillus			
Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In buffer area only
Reptile			
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only

Whales and Other Cetaceans		[Resource Information]	
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Caperea marginata			
Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only
Delphinus delphis			
Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only
Eubalaena australis			
Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area	In buffer area only
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Ricketts Point	Marine Sanctuary	VIC	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Residential Development	2003/1278	Controlled Action	Completed	In feature area
Not controlled action				
Dingley Route Freeway Construction	2001/256	Not Controlled Action	Completed	In feature area
High Street Road Upgrade	2001/268	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

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Port Phillip Channel Deepening Project - Trial Dredge Program	2005/2164	Not Controlled Action	Completed	In buffer area only
Redevelopment of Royal Melbourne Yacht Squadron Jetty	2006/2619	Not Controlled Action	Completed	In buffer area only
Suburban Rail Loop East	2021/9101	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
extension of a sporting facility and upgrading of associated infrastructure	2004/1325	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Known to occur	In buffer area only
Pelagodroma marina White-faced Storm-petrel [1016]	Foraging	Known to occur	In buffer area only
Pelecanoides urinatrix Common Diving-petrel [1018]	Foraging	Known to occur	In buffer area only
Thalassarche cauta cauta Shy Albatross [82345]	Foraging likely	Likely to occur	In buffer area only

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.

Please feel free to provide feedback via the Contact us page.

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AJM
Joint Venture

Appendix B

Threatened Species Likelihood of Occurrence

TABLE B.1 LIKELIHOOD OF OCCURRENCE ANALYSIS FOR THREATENED FLORA IN THE 5 KM SEARCH AREA FOR MONASH

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS		HABITAT PREFERENCE	PMST	NUMBER OF RECORDS	LAST RECORD	LIKELIHOOD OF OCCURRENCE
		EPBC ACT	FFG ACT					
Acacia boormanii	Snowy River Wattle		en	Restricted mostly to open-forest on rocky slopes and along banks of the Snowy River and its tributaries, with outlying populations at Mt Typo and Gapsted in the Myrtleford area. Occasionally sparingly established on roadside plantings, for example between Bungal and Mt Egerton. Plants previously regarded as a slow-growing dwarf variant of this species from the upper catchment of Little River near Wulgulmerang are now regarded to be a distinct species, A. infecunda (RBGV 2019).		1	2019	Low. Structure Plan Area is outside of natural geographic area for species.
Acacia howittii	Sticky Wattle		vu	Confined to eastern Victoria from the upper Macalister River area near Mt Howitt south to near Yarram and east to near Tabberabbera. Grows in moist forest. Widely cultivated and naturalising in some areas (e.g. Daylesford, Greater Melbourne, Dandenong Ranges etc.) (RBGV 2018).		3	2015	Low. Structure Plan Area is outside of natural geographic area for species.
Amphibromus fluitans	River Swamp Wallaby-grass	VU		Largely confined to permanent swamps, principally along the Murray River between Wodonga and Echuca, uncommon to rare in the south (e.g. Casterton, Moe, Yarram), probably due to historic drainage of wetlands (RBGV 2016). Largely restricted in greater Melbourne to seasonal wetlands and mudflats of River Red Gum swamps of the Lower Yarra and Plenty/Merri volcanic plains north of Melbourne (Cam Beardsell pers. comm.).	Y	0		Low. No previous records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Billardiera scandens s.s.	Velvet Apple-berry		en	Apparently uncommon in Victoria, occurring chiefly in dry open-forests and woodlands in the north-east (Beechworth, Whitfield etc.), with isolated occurrences near Mt Macedon, Eltham-Hurstbridge area, Eildon and Orbost (RBGV 2019). Database records of this taxon apparently confounded due to difficulty separating from B. mutabilis.		3	1989	Low. Historic records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Burnettia cuneata	Lizard Orchid		en	Occurs in dense, wet heathy vegetation in near-coastal areas from near Portland in the west to Mallacoota area in the east with a disjunct inland occurrence in the Grampians. Formerly more widespread but now rare due to destruction of habitat. Seldom or never flowering except in the season following Summer fires (RBGV 2014).		1	1887	Low. Historic record, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Caladenia oenochila	Wine-lipped Spider-orchid		cr	Endemic to Victoria where mostly known from the foothills immediately east of Melbourne, but sporadically distributed from Yarram through to Ararat. Relatively common in moist, often grassy forest or woodland, often in shaded habitats (RBGV 2018).		2	1916	Low. Historic records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Caladenia robinsonii	Frankston Spider-orchid	EN	cr	Endemic to Victoria where currently known from one small extant population near Rosebud on the Mornington Peninsula in heathy near-coastal woodland on sandy soil (RBGV 2015).		1	1911	Low. Historic record, and Structure Plan Area is highly developed and disturbed and does not

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS		HABITAT PREFERENCE	PMST	NUMBER OF RECORDS	LAST RECORD	LIKELIHOOD OF OCCURRENCE
		EPBC ACT	FFG ACT					
								provide suitable habitat for this species.
Caladenia venusta	Large White Spider-orchid		en	In woodlands and heathy woodland west of Port Phillip Bay, usually coastal or subcoastal but also in the Grampians, on well-drained or moisture-retentive soils (RBGV 2018)..		5	1941	Low. Historic records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Callitriche umbonata	Winged Water-starwort		en	Scattered and uncommon. Mainly in inland parts of Victoria in damp and swampy places. Flowers Aug-Dec (Walsh and Entwisle 1999).		1	1910	Low. Historic record, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Corunastylis pumila	Green Midge-orchid		en	Of disjunct occurrence in southern near-coastal districts including lower Gellibrand River, Ocean Grove and South Oakleigh (where now probably extinct), French Is., Wilsons Promontory and Mallacoota-Wingan River area, usually growing in wet heathland and grass-tree plains (RBGV 2017).		1	1892	Low. Historic record, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Corybas fimbriatus	Fringed Helmet-orchid		en	Colony forming, found on moist, shaded sandy soil near the coast and generally east of Westernport, but with isolated occurrences near Gembrook (Walsh and Entwisle 1994).		1	1900	Low. Historic record, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Corymbia maculata	Spotted Gum		vu	Grows naturally only in far east Gippsland within Victoria - Commonly planted street tree. Flowers Jul.–Sep (RBGV 2018).		6	2020	Moderate. Species is commonly planted amenity tree, unlikely to be naturally occurring in the Structure Plan Area.
Craspedia canens	Grey Billy-buttons		cr	From grassland often bordering swamps at low altitude between Cranbourne and Traralgon (Walsh and Entwisle 1999).		2	1991	Low. Historic records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Deschampsia cespitosa	Tufted Hair-grass		en	In Victoria, an uncommon grass of damp to wet alpine or subalpine grasslands with disjunct occurrences near Woodend, Colac and Dartmoor in the far south-west (RBGV 2017).		1	1998	Low. Historic record, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS		HABITAT PREFERENCE	PMST	NUMBER OF RECORDS	LAST RECORD	LIKELIHOOD OF OCCURRENCE
		EPBC ACT	FFG ACT					
Dianella amoena	Matted Flax-lily	EN	cr	Largely confined to drier grassy woodland and grassland communities south of the Dividing Range and now much depleted through its range (RBGV 2017).	Y	0		Low. No previous records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Diuris behrii	Golden Cowslips		en	Locally common in grassland and open woodland mostly in western Victoria; Flowers Sep.–Nov. (RBGV 2018).		1	1916	Low. Historic record, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Eucalyptus bosistoana	Coast Grey-box		en	Occurs on loamy soils east from Woodside around the Gippsland Lakes and near the coast. Extending inland further east along the Cann and Genoa River valleys. Flowers Nov-Mar (Walsh and Entwisle 1996).		1	2013	Low. Structure Plan Area is outside of natural geographic area for species.
Eucalyptus leucoxylon subsp. connata	Melbourne Yellow-gum		en	The main concentration of E. leucoxylon subsp. connata is in the Brisbane Ranges between Bacchus March and Geelong, where it grows on skeletal soils. Also grows on skeletal soils at Long Forest between Bacchus Marsh and Melton, and at Studley Park at Kew (in Melbourne) where it grows on soil derived from Silurian sandstone (RBGV 2018).		1	2007	Low. Species is commonly planted amenity tree, unlikely to be naturally occurring in the Structure Plan Area.
Eucalyptus leucoxylon subsp. megalocarpa	Large-fruit Yellow-gum		cr	Coastal, from Robe to south of Mt. Gambier. Flowers May-Dec (RBGV 2018).		1	2013	Low. Species is commonly planted amenity tree, unlikely to be naturally occurring in the Structure Plan Area.
Eucalyptus phenax subsp. phenax	Green-leaf Mallee		en	In Victoria, in mallee scrubs north from the Little Desert (RBGV 2019).		1	2001	Low. Structure Plan Area is outside of natural geographic area for species and unlikely to be naturally occurring in the Structure Plan Area.
Eucalyptus X studleyensis	Studley Park Gum		cr	A naturally occurring hybrid found in Studley Park/Yarra Bend and along the Yarra Valley (Walsh and Entwisle 1994).		1	2001	Low. Structure Plan Area is outside of natural geographic area for species and unlikely to be naturally occurring in the Structure Plan Area.
Eucalyptus yarraensis	Yarra Gum		cr	Extending west from Glengarry (near Traralgon) to Melbourne and north-west to Daylesford and Ararat. Collections of small-budded and -fruited swamp gums from east of Cavendish may be this taxon. Very small-fruited forms of the species occur in remnant stands in outer southeastern to northeastern Melbourne suburbs (e.g. Scoresby, Wantirna, Yan Yean).		7	2007	Low. Structure Plan Area is outside of natural geographic area for species and unlikely to be naturally occurring in the Structure Plan Area.

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS		HABITAT PREFERENCE	PMST	NUMBER OF RECORDS	LAST RECORD	LIKELIHOOD OF OCCURRENCE
		EPBC ACT	FFG ACT					
Glycine latrobeana	Clover Glycine	VU	vu	Widespread but of sporadic occurrence and rarely encountered. Grows mainly in grasslands and grassy woodlands (Walsh and Entwisle 1996).	Y	0		Low. No previous records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Isolepis gaudichaudiana	Benambra Club-sedge		vu	Apparently uncommon, known from a few scattered records from the coast to subalps, where occurring in moist open situations. (Walsh and Entwisle 1994)		1	1991	Low. Historic record, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Thelymitra orientalis	Hoary Sun-orchid	CR	cr	Grows in damp heathy flats and seepage areas usually in peaty white sands	Y	0		Low. No previous records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Lepidium aschersonii	Spiny Peppercress	VU	en	Sprouts annually from perennial, relatively short-lived underground rootstock at periodically wet sites such as gilgai depressions and the margins of freshwater and saline marshes and shallow lakes, usually on heavy clay soils. Its population numbers can fluctuate greatly from year to year (and may be absent for several seasons following flooding), presumably due to the amount of bare soil available for seed germination. Flowering occurs from spring to autumn (Carter 2010). In Victoria, mostly occurs on the volcanic plain, but with outlying populations from near Lake Omeo and the Barwon River floodplain in Geelong and pre-1900 records from the Grampians, Port Fairy and Williamstown (AVH 2020).	Y	0		Low. No previous records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Melaleuca armillaris subsp. armillaris	Giant Honey-myrtle		en	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. Commonly grown for ornament across Victoria, as a windbreak or street tree and sometimes giving rise to seedlings, particularly after fire (RBGV 2019).		8	2020	Moderate. Species is commonly planted amenity tree, unlikely to be naturally occurring in the Structure Plan Area.
Prasophyllum colemaniarum	Lilac Leek-orchid	VU		Known with certainty only by the type collection (1922) from grassy woodland near Bayswater, probably now extinct (Walsh and Entwisle 1994).	Y	0		Low. No previous records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS		HABITAT PREFERENCE	PMST	NUMBER OF RECORDS	LAST RECORD	LIKELIHOOD OF OCCURRENCE
		EPBC ACT	FFG ACT					
Prasophyllum spicatum	Dense Leek-orchid	VU	cr	Localised across southern Victoria in coastal heathland and near-coastal heathy forest on sandy soils (RBGV 2015).	Y	0		Low. No previous records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Pterostylis chlorogramma	Green-striped Greenhood	VU	en	Apparently localized in Victoria, but exact range uncertain due to confusion with closely allied species. Grows in moist areas of heathy and shrubby forest, on well-drained soils (RBGV 2018).	Y	0		Low. No previous records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Pterostylis cucullata	Leafy Greenhood	VU		Widely distributed but disjunct, mostly occurring in small groups in coastal areas, sometimes near inland watercourses. Two subspecies have been assigned: subsp. culcutta is scattered in near coastal scrub, often on sand dunes and subsp. sylvicola is known from East Gippsland where it occurs along water courses among shrubs in tall forests, on rich loamy soils (RBGV 2019).	Y	0		Low. No previous records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Pterostylis pedoglossa	Prawn Greenhood		en	Mostly near coast across Eastern Vic, in heath/heathy woodland. Colonies can be quite large. Flowers Apr.-Jul (Jeanes and Backhouse 2006).		7	1931	Low. Historic records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Senecio macrocarpus	Large-headed Fireweed	VU	cr	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. Formerly recorded from near Horsham and Casterton, but apparently long extinct from these areas (Walsh and Entwisle 1999).	Y	0		Low. No previous records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Senecio psilocarpus	Swamp Fireweed	VU		Rare, restricted in Victoria to a few herb-rich winter-wet swamps throughout the south of the state, west from Sale, growing on volcanic clays or peaty soils (RBGV 2017).	Y	0		Low. No previous records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Thelymitra epipactoides	Metallic Sun-orchid	EN	en	Grows mostly in coastal heathland, grassland and woodland, but extending further inland into similar habitats in the western part of its range. Substrates may be moist or dry sandy soils. Flowers open freely on warm days Sep.–Nov (RBGV 2014).	Y	0		Low. No previous records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.
Thesium australe	Austral Toad-flax	VU	en	Although once widespread, only currently known from highland areas where associated with grasslands (Walsh and Entwisle 1999).	Y	1	1913	Low. Historic record, and Structure Plan Area is highly developed and disturbed and does not

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS		HABITAT PREFERENCE	PMST	NUMBER OF RECORDS	LAST RECORD	LIKELIHOOD OF OCCURRENCE
		EPBC ACT	FFG ACT					
								provide suitable habitat for this species.
Xerochrysum palustre	Swamp Everlasting	VU	cr	Occurs in lowland swamps, usually on black cracking clay soils, scattered from near the South Australian border north-west of Portland to Bairnsdale district, but rare due to habitat depletion (RBGV 2018).	Y	0		Low. No previous records, and Structure Plan Area is highly developed and disturbed and does not provide suitable habitat for this species.

TABLE B.2 LIKELIHOOOD OF OCCURRENCE ANALYSIS FOR THRETENED FAUNA IN THE 5 KM SEARCH AREA FOR MONASH

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS		HABITAT PREFERENCE	PMST	LAST RECORD	NUMBER OF RECORDS	LIKELIHOOD OF OCCURRENCE
		EPBC ACT	FFG ACT					
FISH								
Galaxiella pusilla	Dwarf Galaxias	VU	en	In streams, burrow in moist soil, in yabby burrows, ground water and underground streams (Hawking et al. 2009).	Y	2009	3	Negligible. Structure Plan Area does not provide suitable waterways habitat for species, or connectivity to surrounding waterways. Previous records included one from private property dam and two from Jells Park Lake.
Nannoperca obscura	Yarra Pygmy Perch	VU	vu	Recorded from 42 locations, extending from Dandenong Creek in Victoria west through to Lake Alexandrina near the mouth of the Murray River in South Australia. The Yarra Pygmy Perch prefers slow-moving or still waters, such as pools in rivers and streams or in lakes in fresh and brackish water. They prefer sites which have abundant submerged and emergent aquatic vegetation, sometimes with wood debris. These characteristics are essential in providing shelter, protection, feeding and breeding habitat (SWIFFT 2020).	Y	0		Negligible. No previous records, and Structure Plan Area does not provide suitable waterways habitat for species, or connectivity to surrounding waterways.
Prototroctes maraena	Australian Grayling	VU	en	Predominately a freshwater fish but is considered diadromous because the fry have a marine phase. The majority of its life is spent in freshwater, inhabiting rivers and streams, usually in cool (5-26°C), clear waters with a gravel substrate and alternating pool and riffle zones but it has also been recorded to occur in turbid water with muddy-bottomed, heavily silted	Y	0		Negligible. No previous records, and Structure Plan Area does not provide suitable waterways habitat for

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS		HABITAT PREFERENCE	PMST	LAST RECORD	NUMBER OF RECORDS	LIKELIHOOD OF OCCURRENCE
		EPBC ACT	FFG ACT					
				habitat as well. Grayling can penetrate well inland, and have been reported over 100 km upstream from the sea, provided there are no barriers to movement (SWIFFT 2020).				species, or connectivity to surrounding waterways.
FROGS								
Litoria raniformis	Growling Grass Frog	VU	vu	A largely aquatic species found among vegetation within or at the edges of permanent water – streams, swamps, lagoons, farm dams and ornamental ponds. Often found under debris on low, often flooded river flats. Frequently active by day (Cogger 2014).	Y	1999	1	Low. Individual previous record >20 years, and study does not provide suitable wetland habitat for species and/or habitat connectivity for movement.
Pseudophryne semimarmorata	Southern Toadlet		en	In Victoria, the Southern Toadlet is mainly found on and south of the Great Dividing Range although there are records as far north as the Little Desert. is generally found at lower elevations in damp areas usually under leaf litter, logs or rocks. It is recorded from forests, woodlands, heaths and grasslands in a variety of damp situations, but not necessarily near permanent water. It shelters under leaf litter, logs and rocks and lives in small tunnels that fill with water during the breeding season (March-May). It can live for at least 10 years and has a very small home range of about 5 metres from the breeding site (Cogger 2014, SWIFFT 2020).		1988	2	Low. Numerous historic records, and Structure Plan Area does not provide suitable wetland or damp woodland habitat for species, or connectivity to surrounding landscapes.
INVERTEBRATES AND CRUSTACEAN								
Acrodipsas brisbanensis	Large Ant Blue Butterfly		en	The caterpillars of Large Ant Blue Butterfly appear to spend their lives entirely in the nest of a species of small black ants (Coconut Ants *Papyrius nitidus*) through myrmecophily. Therefore the association of this species depends on specific habitat preferences of the Coconut Ant. The Coconut Ants have a varied diet, but Acacia species are thought to be crucial for arboreal foraging (Beardsell 1994). The predominance of Acacia species in temperate sclerophyll forest communities is related to wildfire frequency. Ants also forage on young regenerating eucalypts when honeydew is present.		1907	4	Low. Few historic records. Structure Plan Area does not provide suitable habitat for species (or symbiotic species - Coconut Ant).
Engaeus victoriensis	Foothill Burrowing Crayfish		en	*Engaeus spp*. inhabit a variety of permanent and ephemeral lotic and lentic waters including creeks, streams, rivers, small tributaries, drainage channels, roadside gutters and seepages, swamps, pools, lagoons, ponds and billabongs (Hawking et al. 2009).		2020	1	Low. Study does not provide suitable wetland or waterway habitat for species.
Synemon plana	Golden Sun Moth	VU	vu	Native temperate grassland and open grassy woodlands, may also be found in degraded grasslands dominated by exotic Chilean Needlegrass (DAWE 2020).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable tussock

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS		HABITAT PREFERENCE	PMST	LAST RECORD	NUMBER OF RECORDS	LIKELIHOOD OF OCCURRENCE
		EPBC ACT	FFG ACT					
								grassland habitat for species.
MAMMALS								
Antechinus minimus maritimus	Swamp Antechinus	VU	vu	Dense wet heathlands, tussock grasslands, sedgelands, damp gullies, swamps and some shrubby woodlands (DAWE 2020).	Y	0		Low. No previous records and Structure Plan Area is highly disturbed and does not provide suitable habitat for species.
Dasyurus maculatus maculatus	Spot-tailed Quoll	EN	en	Has a wide range of habitats, including rainforest, open forest, woodland, coastal heathland and inland riparian forest (Van Dyck and Strahan 2008).	Y	1886	1	Low. Historic individual record of the species, and Structure Plan Area does not provide suitable habitat for the species.
Dasyurus viverrinus	Eastern Quoll	EN	ex	A range of open forests, woodlands and grasslands, where they would build a den amongst fallen logs or rock piles (Van Dyck and Strahan 2008).		1880	1	Low. Historic individual record of the species, and Structure Plan Area does not provide suitable habitat for the species.
Isoodon obesulus obesulus	Southern Brown Bandicoot	EN	en	Prefers sandy soil with scrubby vegetation and / or areas with low ground cover that are burnt out from time to time (Van Dyck and Strahan 2008).	Y	1990	24	Low. Structure Plan Area is highly disturbed and does not provide suitable habitat for the species.
Ornithorhynchus anatinus	Platypus		vu	Creeks and rivers along Australia's eastern seaboard. Formerly at various locations along the Murray River. Burrows in banks of waterways, with an identifiably horizontally oval cross-section. Generally breeds in September.		2021	1	Low. One recent eDNA record in Dandenong Creek. Structure Plan Area does not provide suitable waterways habitat for species, or connectivity to surrounding waterways.
Petauroides volans	Southern Greater Glider	EN	en	A variety of eucalnpt-dominated habitats, ranging from low, open forests on the coast to tall forests on in the ranges and low woodland westward of the Dividing Range	Y	0		Low. No previous records and Structure Plan Area does not provide suitable habitat for species.
Petaurus australis	Yellow-bellied Glider	VU	vu	"In Victoria extending from the east coast to Melbourne. Occurs in eucalypt-dominated woodlands and forests, including both wet and dry sclerophyll forests (Kavanagh 1995)."	Y	0		Low. No previous records and Structure Plan Area does not provide suitable habitat for species.
Pseudomys novaehollandiae	New Holland Mouse	VU	en	Found in dry heath and open forest localities in coastal locations. It has a marked preference for soft substrates (Van Dyck and Strahan 2008).	Y	0		Low. No previous records and Structure Plan Area does not

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								provide suitable habitat for species.
Pteropus poliocephalus	Grey-headed Flying-fox	VU	vu	Camps of this species are found in gullies, typically not far from water and usually in vegetation with a dense canopy (Van Dyck and Strahan 2008).	Y	2014	11	Low. Few recent records, Structure Plan Area does not provide suitable habitat for species. Majority of records at Springvale Necropolis. Species may overfly the area and utilise surrounding intact wooded landscapes for foraging.
Saccolaimus flaviventris	Yellow-bellied Sheathtail Bat		vu	Widespread through Aus, yet fast, high flight path makes it harder to detect. Feeds above canopy, or lower to ground in mallee or open country. Roosts in tree-hollows, building walls, abandoned sugar-glider nests. Migrates north over winter (Van Dyck and Strahan 2008).		1965	1	Low. One historic record, however the Structure Plan Area does not provide suitable habitat for species.
MIGRATORY BIRDS								
Actitis hypoleucos	Common Sandpiper		vu	Shallow, pebbly, muddy or sandy edges of rivers and streams, coastal to far inland; dams, lakes, sewage ponds; margins of tidal rivers; waterways in mangroves or saltmarsh; mudflats; rocky or sandy beaches; causeways, riverside lawns, drains, street gutters (Pizzey and Knight 2012).		1977	2	Low. Few historic records, Structure Plan Area does not provide suitable habitat for the species, however species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Apus pacificus	Fork-tailed Swift			Aerial, over open country, from semi deserts to coasts, islands, sometimes over forests or cities (Pizzey and Knight 2012).	Y	0		Negligible. Species is a migratory marine bird, no previous records and Structure Plan Area does not provide suitable habitat for species. However species may still overfly the Structure Plan Area.
Ardea alba modesta	Eastern Great Egret		vu	Shallows of rivers, estuaries, tidal mudflats, freshwater wetlands; sewage ponds, irrigation areas, larger dams etc (Pizzey and Knight 2012).		2019	357	Low. Abundant and recent records, majority within wetlands at Jells Park and Bushy Park Wetlands, northeast of

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								the Structure Plan Area. Species is unlikely to occur or rely on isolated wetlands in the Structure Plan Area for significant foraging or refuge habitat
Calidris acuminata	Sharp-tailed Sandpiper	M		Tidal mudflats, saltmarshes, mangroves; shallow fresh, brackish or saline inland wetlands; floodwaters, irrigated pasture and crops; sewage ponds and saltfields (Pizzey and Knight 2012).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable wetland habitat for species. However species may still overfly the Structure Plan Area.
Calidris canutus	Red Knot	EN	en	Tidal mudflats, sandflats, beaches, saltmarshes, flooded pastures, ploughed lands (Pizzey and Knight 2012).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable wetland habitat for species. However, species may still overfly the Structure Plan Area.
Calidris ferruginea	Curlew Sandpiper	CR	cr	Tidal mudlfats; saltmarsh, saltfields; fresh, brackish or saline wetlands; sewage ponds (Pizzey and Knight 2012).	Y	2018	1	Low. Isolated wetlands in the Structure Plan Area are unlikely to provide suitable habitat. However, species may overfly the Structure Plan Area.
Calidris melanotos	Pectoral Sandpiper	M		Prefers shallow fresh waters, often with low grass or other herbage; swamp margins, flooded pastures, sewerage ponds; occasionally tidal areas, saltmarshes (Pizzey and Knight 2012).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable wetland habitat for species. However, species may still overfly the Structure Plan Area.
Charadrius leschenaultii	Greater Sand Plover	VU	vu	Wide, sandy or shelly beaches; sandpits, tidal mudflats, reefs, sand-clays, mangroves, saltmarsh, dune wilderness, bare paddocks; seldom far inland (Pizzey and Knight 2012).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable wetland habitat for species. However, species may still overfly the Structure Plan Area.

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Gallinago hardwickii	Latham's Snipe	M		Freshwater or brackish wetlands, preferring to be close to protective vegetation cover (Pizzey and Knight 2012).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable wetland habitat for species. However, species may still overfly the Structure Plan Area.
Haliaeetus leucogaster	White-bellied Sea-Eagle		en	Coasts, islands, estuaries, inlets, large rivers, inland lakes, reservoirs (Pizzey and Knight 2012).		2021	28	Low. numerous recent records, majority of records at Jells Park. Structure Plan Area does not provide suitable habitat for the species, however species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Hirundapus caudacutus	White-throated Needletail	VU	vu	Airspace over forests, woodlands, farmlands, plains, lakes, coasts, towns, feeding companies frequency patrol back and forward along favoured hilltops and timbered ranges (Pizzey and Knight 2012).	Y	2019	43	Low. Species is a migratory terrestrial species and likely to overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Hydroprogne caspia	Caspian Tern		vu	Coastal, offshore waters, beaches, mudflats, estuaries, larger rivers, reservoirs and lakes (Pizzey and Knight 2012).		2018	8	Low. Few recent records, Structure Plan Area does not provide suitable habitat for the species, however species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Monarcha melanopsis	Black-faced Monarch	M		Black-faced Monarch is found in rainforests, eucalypt woodlands, coastal scrub and damp gullies. It may be found in more open woodland when migrating (DAWE 2020).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable habitat for species. However species may still overfly the Structure Plan Area.

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Motacilla tschutschensis	Eastern Yellow Wagtail	M		This species occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steep and grassy tundra. In the north of its range it is also found in large forest clearings. It breeds from April to August, although this varies with latitude. Does not breed in Australia (IUCN 2018).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable habitat for species. However, species may still overfly the Structure Plan Area.
Myiagra cyanoleuca	Satin Flycatcher	M		Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests (DAWE 2020).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable habitat for species. However, species may still overfly the Structure Plan Area.
Numenius madagascariensis	Eastern Curlew	CR		Estuaries, tidal mudflats, sandspits, saltmarshes, mangroves; occasionally fresh or brackish lakes; bare grasslands near water (Pizzey and Knight 2012).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable wetland habitat for species. However, species may still overfly the Structure Plan Area.
Pandion cristatus	Eastern Osprey	M		Occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands (DAWE 2020).	Y	0		Negligible. Species is a migratory marine bird, no previous records and Structure Plan Area does not provide suitable habitat for species. However, species may still overfly the Structure Plan Area.
Pluvialis squatarola	Grey Plover		vu	Mudflats, saltmarsh, tidal reefs, estuaries, rarely inland.		2020	1	Low. One recent record nearby Clarinda. Structure Plan Area does not provide suitable wetland habitat for species.
Rhipidura rufifrons	Rufous Fantail	M		In east and south-east Australia mainly inhabits wet sclerophyll forests, often in gullies with a dense shrubby understorey and often including ferns (DAWE 2020).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable habitat for species. However, species may still overfly the Structure Plan Area.

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Rostratula australis	Australian Painted-snipe	EN	cr	Well-vegetated shallows and margins of wetlands, dams, sewage ponds; wet pastures, marshy areas, irrigation systems, lignum, tea-tree scrub, open timber (Pizzey and Knight 2012).	Y	1979	1	Low. One historic record, however the Structure Plan Area does not provide suitable habitat for species. Species may utilise the Structure Plan Area for temporary foraging or overfly the Structure Plan Area.
Tringa glareola	Wood Sandpiper		en	Muddy margins of wetlands; tidal mangroves; margins of tidal mudflats; saltmarshes, sewerage ponds (Pizzey and Knight 2012).		2018	1	Low. One historic record, however the Structure Plan Area does not provide wetland suitable habitat for species.
Tringa nebularia	Common Greenshank		vu	Mudflats, estuaries, saltmarshes, margins of lakes; wetlands, claypans, fresh and saline; commercial saltfields and sewage ponds (Pizzey and Knight 2012).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable wetland habitat for species. However, species may still overfly the Structure Plan Area.
BIRDS								
Accipiter novaehollandiae	Grey Goshawk		en	Rainforests, forests; forest gullies and valleys; taller woodlands, timber on watercourses, open country in Autumn dispersal (Pizzey and Knight 2012).		2019	29	Low. Numerous recent records. Structure Plan Area does not provide suitable habitat for the species, however species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Anseranas semipalmata	Magpie Goose		vu	Large seasonal wetlands and well-vegetated dams with rushes and sedges, wet grasslands, floodplains (Pizzey and Knight 2012).		2019	3	Low. Few recent records, Structure Plan Area does not provide suitable habitat for the species, however species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.

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Anthochaera phrygia	Regent Honeyeater	CR	cr	Dry open forest, woodlands, or red ironbark, yellow box, white and yellow gum, mistletoe on river she-oaks, trees in farmlands, streets, gardens (Pizzey and Knight 2012).	Y	1972	4	Low. Few historic records, Structure Plan Area does not provide suitable habitat for the species, however species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Aphelocephala leucopsis	Southern Whiteface	VU		Live in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs. These areas are usually in habitats dominated by acacias or eucalypts on ranges, foothills and lowlands, and plains. Forage almost exclusively on the ground, favouring habitat with low tree densities and an herbaceous understorey and litter cover. Generally sedentary but may move to wetter areas during drought years. Nest in hollows, crevices and sometimes bushes (DCCEEW 2023).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable habitat for species. However species may still overfly the Structure Plan Area.
Ardea intermedia plumifera	Plumed Egret		cr	Freshwater wetlands, pastures and croplands, tidal mudflats, floodplains (Pizzey and Knight 2012).		2020	6	Low. Few recent records, Structure Plan Area does not provide suitable habitat for the species, however species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Ardeotis australis	Australian Bustard		cr	Grasslands, spinifex, open scrublands, grassy woodlands, sandhills, pastoral lands, burned ground, occasionally crops and airfields (Pizzey and Knight 2012).		1843	1	Low. Historic individual record of the species, and Structure Plan Area does not provide suitable habitat for the species.
Biziura lobata	Musk Duck		vu	Well-vegetated swamps, wetlands, both brackish and fresh, lakes, reservoirs, shallow bays, inlets; occasionally at sea (Pizzey and Knight 2012).		2020	42	Low. Numerous recent records, majority of records are located at large intact wetland and wooded area at Jells Park, east of Structure Plan Area. Species is unlikely to occur or rely on isolated wetlands in the Structure Plan Area

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								for significant foraging or refuge habitat
Botaurus poiciloptilus	Australasian Bittern	EN	cr	Narrow habitat preferences, preferring shallow, vegetated freshwater or brackish swamps (Pizzey and Knight 2012).	Y	1988	2	Low. Structure Plan Area does not provide suitable habitat for the species; however species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Callocephalon fimbriatum	Gang-gang Cockatoo	EN	en	During summer months, Gang-gang Cockatoos primarily inhabit mature, wet sclerophyll forests, but also may occur across a broad range of forests and woodlands. During winter months, Gang-gang Cockatoos tend to range beyond montane forests to inhabit open eucalypt assemblages at lower, drier altitudes, including suburban areas of cities and coastal heathlands and thickets, including ornamental trees, shrubs, and hedges. Breeding requires stands of suitable hollow-bearing trees (DAWE 2022).	Y	2020	60	Low. Structure Plan Area does not provide suitable habitat for the species; however species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Climacteris picumnus	Brown Treecreeper	VU		Drier forests/woodlands/scrubs, with fallen branches; particularly River Red Gum lined water courses (Pizzey and Knight 2012).		2018	1	Low. Historic individual record of the species, and Structure Plan Area does not provide suitable habitat for the species.
Egretta garzetta	Little Egret		en	Tidal mudflats, saltmarshes, mangroves, freshwater wetlands, sewage ponds (Pizzey and Knight 2012).		2019	8	Low. Few recent records, the Structure Plan Area contains two isolated wetlands with a highly disturbed landscape. Species may utilise these for temporary foraging.
Falco hypoleucos	Grey Falcon	VU	vu	Lightly treed inland plains, gibber deserts, sandridges, pastoral lands, timber watercourses; seldom in driest deserts (Pizzey and Knight 2012).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable habitat for species. However, species may still overfly the Structure Plan Area.
Falco subniger	Black Falcon		cr	Plains, grasslands, foothills, timbered watercourses, wetland environs; crops; occasionally over towns and cities (Pizzey and Knight 2012).		1978	1	Low. Historic individual record of the species, and Structure Plan Area does not provide suitable habitat for the species.

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								Species may overfly the Structure Plan Area.
Grantiella picta	Painted Honeyeater	VU	vu	Mistletoes in eucalypt forests/woodlands; black box on watercourses; box-ironbark-yellow gum woodlands; paperbarks, Casuarinas; mulga, other acacias; trees on farmland; gardens (Pizzey and Knight 2012).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable contiguous habitat for the species. However, species may still utilise the Structure Plan Area for temporary foraging or overfly the Structure Plan Area.
Hieraaetus morphnoides	Little Eagle		vu	Plains, foothills, open forests, woodlands and scrublands; river red gums on watercourses and lakes (Pizzey and Knight 2012).		2020	9	Low. Few recent records, the Structure Plan Area does not provide suitable contiguous habitat for the species, however the species may utilise these for temporary foraging.
Ixobrychus dubius	Australian Little Bittern		en	Dense reedbeds in freshwater swamps, lakes and rivers; tussocks in wetland areas (Pizzey and Knight 2012).		2014	3	Low. Few recent records, Structure Plan Area does not provide suitable habitat for the species, however species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Lathamus discolor	Swift Parrot	CR	cr	Open grassy woodland, with dead trees, near permanent water and forested hills, coastal heaths, pastures with exotic grasses, weeds, roadsides, orchards (Pizzey and Knight 2012).	Y	2019	46	Low. Structure Plan Area does not provide suitable habitat for the species, however species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Lewinia pectoralis	Lewin's Rail		vu	Swamp woodlands, rushes, reeds, rank grass in swamps, creeks, paddocks; wet heaths (Pizzey and Knight 2012).		1982	2	Low. Few historic records, Structure Plan Area does not provide suitable habitat for the species, however species may overfly the Structure Plan Area

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								and/or utilise the Structure Plan Area for temporary foraging habitat.
Lophochroa leadbeateri	Major Mitchell's Cockatoo	EN	cr	Near water on timbered water courses, surrounding grasslands, gibber, saltbush, mulga and other acacias, stands of native cypress, casuarinas, larger mallee eucalypts with suitable nest hollows and mallee associated with riverine woodlands (Pizzey and Knight 2012).		2018	2	Low. The Structure Plan Area provides limited suitable habitat for this species. However species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Melanodryas cucullata	Hooded Robin	EN	vu	Drier Eucalypt forests, woodlands, scrubs with fallen logs, debris, mallee, Casuarina, cypress pine, mulga, cleared paddocks, Banksia dominated coastal scrubs (Pizzey and Knight 2012).	Y	2018	3	Low. Few recent records, Structure Plan Area does not provide suitable habitat for the species, however species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Neophema chrysostoma	Blue-winged Parrot	VU		The Blue-winged Parrot inhabits a range of habitats from coastal, sub-coastal and inland areas, right through to semi-arid zones. Throughout their range they favour grasslands and grassy woodlands. They are often found near wetlands both near the coast and in semi-arid zones. Blue-winged Parrots can also be seen in altered environments such as airfields, golf-courses and paddocks (BirdLife Australia 2021).	Y	2018	6	Low. The Structure Plan Area does not provide suitable habitat for the species, however species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Ninox strenua	Powerful Owl		vu	Pairs occupy a large, probably permanent, home range in mountain forests, gullies and forest margins, sparser hilly woodlands, coastal forests, woodlands, scrubs, exotic pine plantations, large trees in private/public gardens, some in cities (Pizzey and Knight 2012).		2021	498	Low. Abundant recent records, however majority of species records are within large intact woodlands north of the Structure Plan Area at Shepards Bush. Structure Plan Area does not provide suitable habitat for the species
Oreoica gutturalis	Crested Bellbird		en	In Victoria inhabit Slender Cypress Pine-Belah woodlands and Dumosa Mallee scrubs (particularly in the Sunset Country) in		2018	1	Low. One recent record nearby Clarinda.

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				the north-west of state and Red Ironbark and Grey Box forests in the northern Goldfields (Bendigo and Maryborough regions). There may be small outlying populations elsewhere (DELWP 2021).				Structure Plan Area does not provide suitable woodland habitat for species.
Oxyura australis	Blue-billed Duck		vu	Found on temperate, fresh to saline, terrestrial wetlands including sewerage ponds, rivers, salt lakes and saltpans. Preferring deep, permanent open water within or near dense vegetation (Pizzey and Knight 2012).		2021	203	Low. Abundant and recent records, species is unlikely to rely on isolated wetlands in the Structure Plan Area for significant foraging or refuge habitat. Majority of records are located at large intact wetland and wooded area at Jells Park, east of Structure Plan Area.
Pedionomus torquatus	Plains-wanderer	CR	cr	Inhabit sparse native grasslands and are often absent from areas where grass becomes too dense or too sparse. They nest amongst native grasses and herbs, or sometimes amongst crops.	Y	0		Negligible. No previous species records. The Structure Plan Area does not support suitable habitat to support the species.
Polytelis swainsonii	Superb Parrot	VU	en	River red gums, black box, yellow box, river oak, mostly near rivers; mallee, stubbles, pastures, gardens (Pizzey and Knight 2012).		2000	1	Low. The Structure Plan Area provides limited suitable habitat for this species. However species may overfly the Structure Plan Area and/or utilise the Structure Plan Area for temporary foraging habitat.
Pomatostomus temporalis	Grey-crowned Babbler		vu	Live in open forest and woodland, acacia shrubland and adjoining farmland (Pizzey and Knight 2012).		1983	13	Low. Numerous historic records, Structure Plan Area does not provide suitable habitat for the species.
Pycnoptilus floccosus	Pilotbird	VU	vu	The pilotbird is found from the Wollemi National Park and Blue Mountains National Park in New South Wales through to the Dandenong Ranges, near Melbourne in Victoria. Its natural habitat is temperate wet sclerophyll forests and occasionally temperate rainforest, where there is dense undergrowth with abundant debris It is sedentary and common. (ALA 2022)	Y	0		Low. No previous records and Structure Plan Area does not provide suitable habitat for species.
Pyrrholaemus sagittatus	Speckled Warbler		en	Drier woodlands with tussocks, branches and rocks (Pizzey and Knight 2012).		1886	2	Low. One historic record, Structure Plan Area does

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								not provide suitable habitat for the species.
Spatula rhynchotis	Australasian Shoveler		vu	Larger waters, fresh and saline lakes, well-vegetated freshwater wetlands, coastal inlets, sewage ponds, floodwaters (Pizzey and Knight 2012).		2021	74	Low. Abundant and recent records, majority of records are located at large intact wetland and wooded area at Jells Park, east of Structure Plan Area. Species is unlikely to occur or rely on isolated wetlands in the Structure Plan Area for significant foraging or refuge habitat
Stagonopleura guttata	Diamond Firetail	VU	vu	Open Eucalypt forests/woodlands; River Red Gum, Mallee, Buloke, Cypress Pine (Pizzey and Knight 2012).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable habitat for species.
Sternula nereis	Fairy Tern	VU	cr	Coastal waters, bays, inlets, saline or brackish lakes, saltfields, sewerage ponds near coast. Breeds Sept-Jan in single pairs to large colonies on beaches, islands, rock platforms from north of Broome to eastern Victoria/NSW border; much lesser numbers in south (Pizzey and Knight 2012).	Y	2018	1	Low. Limited recent record, however, species may utilise the Structure Plan Area for temporary foraging or overfly the Structure Plan Area.
Stictonetta naevosa	Freckled Duck		en	Large, well vegetated swamps; in dry periods moves to open lakes (Pizzey and Knight 2012).		2019	145	Low. Abundant and recent records, majority of records are located at large intact wetland and wooded area at Jells Park, east of Structure Plan Area. Species is unlikely to occur or rely on isolated wetlands in the Structure Plan Area for significant foraging or refuge habitat
Stipiturus mallee	Mallee Emu-wren	EN	en	Spinifex, with mallee gums, native cypress, on sandhill swales and slopes. Also tall heathland with tea-tree, broom, fringe-myrtle, spinifex (Pizzey and Knight 2012).		2018	1	Low. Limited recent record. The Structure Plan Area provides no suitable mallee gym or heathland habitat for this species. However, species may overfly the Structure Plan Area.

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Tyto tenebricosa	Sooty Owl		en	Tall, wet forests in sheltered east and south east facing mountain gullies with dense understorey layer (Pizzey and Knight 2012).		2008	1	Low. One recent record near Wheelers Hill. Structure Plan Area does not provide suitable habitat for the species
REPTILES								
Aprasia parapulchella	Pink-tailed Worm-lizard	VU		Habitat includes rocky outcrops or scattered partly buried rocks in grassland and woodland in south-east Australia.	Y	0		Low. No previous records and Structure Plan Area does not provide suitable habitat for species.
Delma impar	Striped Legless Lizard	VU		Inhabits intact grassland habitats where it shelters in grass tussocks, under rocks and in cracks in the soil	Y	0		Low. No previous records and Structure Plan Area does not provide suitable habitat for species.
Emydura macquarii	Murray River Turtle		cr	Restricted to larger rivers and associated large waterholes on the floodplains (Cogger 2014).		2	2014	Negligible. Structure Plan Area does not provide suitable waterways habitat for species, or connectivity to surrounding waterways.
Lissolepis coventryi	Swamp Skink	EN	en	Low lying marshes and lagoon margins, in paperbark swamps, sedges and Melaleuca thickets (Cogger 2014).	Y	0		Low. No previous records and Structure Plan Area does not provide suitable habitat for species.

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