

Attachment C

Flora and Fauna Assessment Report

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Melbourne Airport Jet Pipeline Project

Flora and Fauna Assessment Report

Viva Energy Australia

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Document prepared by:

Aurecon Australasia Pty Ltd

ABN 54 005 139 873

Aurecon Centre

Level 8, 850 Collins Street

Docklands, Melbourne VIC 3008

PO Box 23061

Docklands VIC 8012

Australia

T +61 3 9975 3000

F +61 3 9975 3444

E melbourne@aurecongroup.com

W aurecongroup.com

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Name	Colin Clay	Name	Josh Mahon
Title	Senior Ecologist	Title	Manager – Environment and Planning



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Executive summary

Aurecon was commissioned by Viva Energy Australia (Viva Energy) to undertake a flora and fauna assessment for the alignment route of a new jet fuel pipeline to service Melbourne Airport. Aurecon conducted this assessment to inform the ecological constraints and assess potential impacts of the project and potential mitigation measures.

The study area for the pipeline alignment comprised land from south of the intersection of the Western Ring Road and Airport Drive, northwards along Airport Drive to the existing joint user hydrant installation (JUHI) facility at Melbourne Airport. Roadway verges in the study area comprised mostly of introduced flora, with mixed amenity plantings common. Native vegetation was recorded in the study area, though was largely limited to small patches of riparian woodland within the floodplain of Steele Creek, as well as isolated patches of native grassland in both the north and south of the alignment. In total, 12 patches of native vegetation were identified in the study area, as well as 11 small scattered trees. No threatened flora listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were deemed to have a moderate or high likelihood of occurrence in the study area due to lack of suitable habitat.

Fauna habitat within the study area included open grassy habitats, planted vegetation and riparian habitat along Steele Creek. Three threatened fauna species listed under the EPBC Act were deemed to have a moderate likelihood of occurrence in the study area, namely the Grey-headed Flying-fox, Growling Grass Frog, Striped Legless Lizard and Golden Sun Moth. Though the pipeline is unlikely to have a significant impact on the Grey-headed Flying-fox, Striped Legless Lizard or Golden Sun Moth, any impacts to Steele Creek from the project could adversely impact on the Growling Grass Frog. Therefore, the project has committed to boring under Steele Creek, including a buffer of greater than 200 m from the waterway to avoid any potential impacts to the species. Hence, no further considerations under the EPBC Act are required.

No EPBC Act listed ecological communities occur in the study area.

One flora species listed as protected under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act), Black Wattle, was recorded in an area of public land along Steele Creek. As the area around Steele Creek will be avoided during construction, no impacts to this species are expected.

One fauna species listed as vulnerable under the FFG Act was confirmed within the project area (Tussock Skink) from surveys completed in 2020 and 2021 south of the Western Ring Road. Measures will be implemented prior to and during construction to minimise potential impacts to Tussock Skink.

Only small and disconnected areas of native vegetation were recorded in the study area. Due to the narrow footprint required for the pipeline it is considered that all native vegetation in the study area can be avoided by locating infrastructure and works outside these areas

1 Introduction

1.1 Project background

Viva Energy Australia (Viva Energy) is proposing to construct and operate a new jet fuel pipeline to support the growing fuel needs at Melbourne Airport.

As Australia's second largest airport, annual passenger numbers for Melbourne Airport are expected to almost double by 2042 – increasing from 37 million to more than 76 million per year¹. In line with this projected increase in passenger numbers, the requirement for jet fuel is expected to increase significantly and is expected to exceed the capacity of the existing fuel supply infrastructure. Notwithstanding future growth, jet fuel supplied via the existing pipeline system is already being supplemented by trucking operations from Geelong and Melbourne's inner-city suburbs. The development of the new pipeline will provide faster replenishment of fuel stocks, provide an alternative to current and escalating dangerous goods vehicle movements and provide a more robust fuel supply chain.

The proposed pipeline aims to:

- help meet the increasing demand for jet fuel and support future growth at Melbourne Airport
- increase the supply security of jet fuel which will contribute to the Victorian state economy
- reduce the reliance on road transport for jet fuel supply with fewer trucks required to deliver fuel to the airport.

Aurecon was commissioned by Viva Energy to undertake a flora and fauna assessment for the alignment route of the new pipeline. The proposed pipeline comprises approximately 6.7 km of buried jet fuel pipeline. The pipeline would commence at a section of the Altona to Somerton pipeline located south of the Western Ring Road (M80) (near the Airport Drive exit) and link into the existing Melbourne Airport JUHI facility (located at Marker Road, Tullamarine). Aurecon conducted this assessment to inform the ecological constraints and opportunities for the project and to provide input into technical design.

The purpose of this report was to provide an ecological assessment of the environment in which the proposed pipeline is to be located. This report presents a critical appraisal of the environmental values of the study area, including an assessment of the likely impacts to significant flora, fauna and ecological communities. This report also provides a summary of the environmental approvals that may be triggered under state and federal legislation by the proposed development.

1.2 Scope of assessment

The objectives of this investigation were to:

- describe the native vegetation, flora and vertebrate fauna that occur and are likely to occur within the study area
- map and classify all native vegetation and other significant habitat features
- undertake a vegetation quality assessment for all areas of native vegetation recorded
- review the implications of relevant biodiversity legislation and policy
- based on the findings of the assessment, identify potential implications of the pipeline and provide recommendations to assist with design development.

¹ Melbourne Airport Preliminary Draft Master Plan 2022

1.3 Location of study area

The study area for this assessment is shown in Appendix A and comprised the linear pipeline route from the proposed tie-in location at the Altona to Somerton pipeline located south of the Western Ring Road (M80), northwards along Airport Drive to an existing Melbourne Airport JUHI facility.

1.4 Limitations

The outcome of this report is limited to information supplied for the activities associated with the scope of works only. This report does not provide a complete assessment or an impact assessment of the environmental status of the site, and it is limited to the scope defined herein. Should further information become available regarding the conditions at the site, Aurecon reserves the right to review the report in the context of the additional information.

While ecological assessments can be undertaken throughout the year, seasonal variations can result in some flora and fauna not being detectable at certain times of year. Despite this seasonal limitation, the timing of the survey was considered suitable to ascertain the extent and condition of native vegetation and habitat that may support listed matters.

2 Methods

2.1 Desktop assessment

The desktop assessment comprised a review of current databases for information on native vegetation and threatened flora, fauna and ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or *Flora and Fauna Guarantee Act 1988* (FFG Act).

An analysis of the likelihood of occurrence was then undertaken for all threatened species and communities recorded or with potential to occur in the search area. Where a species or community that is determined to have a High or Moderate likelihood of occurrence is likely to be impacted by the development, a Significant Impact Assessment is required.

The methods adopted for the database search, likelihood of occurrence and impact assessment are outlined in the following sections.

2.1.1 Database search

Information on the occurrence of flora, fauna and ecological communities was obtained from a circular search area with a radius of ten kilometres centred on the middle of the pipeline alignment (coordinates: latitude 37° 41' 41" S and longitude 144° 52' 02" E). Records from the following databases were collated and reviewed from this search area:

- Protected Matters Search Tool (PMST) of the Australian Government Department of Agriculture, Water and the Environment (DAWE) for matters protected by the EPBC Act (DAWE 2022a)
- The Victorian Biodiversity Atlas (DELWP 2022a) for records of listed threatened flora and fauna species.

The following information was also reviewed for the study area as part of the desktop assessment:

- The Victorian Department of Environment, Land Water and Planning (DELWP) Native Vegetation Information Management System (NVIM) (DELWP 2022b)
- Literature review of previous ecological reports from the area
- NatureKit (DELWP 2022c)
- VicPlan (DELWP 2022d)
- Aerial imagery.

2.1.2 Likelihood of occurrence analysis for threatened flora and fauna

Threatened flora and fauna species listed under the EPBC Act and/or FFG Act as collated in the database search for the search area were assessed to determine their likelihood of occurrence within the study area, specifically to inform the proposed development. The likelihood of a species occurring within the study area was then classified as negligible, low, moderate or high based on consideration of previous records, the species known habitat requirements and the suitability of habitat in the study area. Details of the ranking criteria used for threatened flora and fauna is provided in Table 2-1 and Table 2-2 respectively.

Table 2-1 Likelihood of occurrence criteria for threatened flora species

Likelihood of Occurrence	Criteria
High	Recent reputable records of the species in the local vicinity (i.e. within the last 10 years)
	Known resident in the area based on site observations, database records or expert advice and/or the project area contains high quality habitat
Moderate	Previous reputable records of the species in the local vicinity and/or the project area contains moderate quality habitat
Low	Limited previous records of the species in the local vicinity; and/or, the project 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 project area falls outside the known species range

Table 2-2 Likelihood of occurrence criteria for threatened fauna species

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

2.1.3 Impact assessment

Listed threatened species and ecological communities determined as having a high or moderate likelihood of occurrence in the project area are considered further in regard to the level of likely impact on these values from the proposed development.

Any action that has, will have, or is likely to have, a significant impact on a matter of national environmental significance (MNES) requires referral to and possible approval from the Commonwealth Minister to the Department of Agriculture, Water and Environment (DAWE). Each MNES determined as having a High or Moderate likelihood of occurrence in the project area is assessed against the published Significant Impact Guidelines (1.1 and 1.2) criteria to determine whether the project/works may have a likely significant impact and whether a referral under the EPBC Act is required.

2.2 Field assessment

The flora and fauna field assessment was undertaken across multiple visits (due to access arrangements) on 2, 3, 8 and 21 April 2020, 15 June 2020 and 26 August 2022. For the most part, the survey was undertaken on foot. Parts of the site that were lacking in ecological value were assessed more rapidly based on observations from a vehicle. All sections of the study area were assessed in the field.

The field survey was undertaken by a suitably experienced ecologist with appropriate skills in the identification of Victoria's flora and fauna, and accreditation to undertake the assessment of native vegetation as listed on DELWP's Vegetation Quality Assessment Competency Register. Relevant permits under the Victorian *Wildlife Act 1975* (No. 10008909) and the FFG Act (No. 10008817) were in effect for this work.

The aim of the flora and fauna site assessment was to determine the type, extent and quality of native vegetation and habitats in the project area.

2.2.1 Flora survey

A vegetative description of the study area was recorded along with a list of flora species observed. The presence of any suitable habitat for threatened flora species was recorded and mapped, to inform the likelihood of occurrence analysis and inform the potential requirement for future targeted species surveys.

A Vegetation Quality Assessment (VQA) was undertaken for all patches of native vegetation identified in the study area. This assessment was consistent with DELWP's Habitat hectare method (DSE 2004) and the Victoria's Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017a).

2.2.2 Fauna survey

Fauna species were recorded through active searching, and general observations. The presence of any suitable habitat for threatened fauna species was recorded and mapped, to inform the likelihood of occurrence analysis and inform the potential requirement for future targeted species surveys.

3 Results

This section outlines the results of the field survey and includes a description of the survey conditions, the various habitats recorded, flora and fauna observed, and any significant species/communities recorded.

3.1 Desktop assessment

The database searches undertaken for this assessment, as per Section 2.1.1, provided a shortlist of the potential flora, fauna and ecological communities that may occur in the search area (up to 10 kilometres from centre point of the study area). Appendix B provides a list of the threatened flora and fauna species returned from the search. Appendix C and Appendix D provide the likelihood of occurrence assessments of threatened flora and fauna species returned from the search.

Threatened flora and fauna species returned from the database search were considered against the suitability of habitat, to determine their likelihood of occurrence in the study area. Species recorded in the study area as well as those determined to have a high to moderate likelihood of occurrence are summarised in Section 3.3 (threatened flora) and Section 3.4 (threatened fauna).

One fauna species listed as vulnerable under the FFG Act was confirmed within the project area (Tussock Skink) from surveys completed in 2020 and 2021 south of the Western Ring Road. A review of report completed for the Melbourne Airport Rail project titled *Melbourne Airport Rail State Land Terrestrial Ecology Impact Assessment* (AJMJV 2021) confirmed the presence of this species.

3.2 Survey conditions

The surveys were undertaken under cool, overcast conditions during early April 2020. Heavy rains in the days prior to the initial survey days resulted in high flows through Steele Creek. A survey over additional areas added to the project was undertaken on 26 August 2022 under cool, overcast conditions. Conditions were deemed to be appropriate for the purpose of the assessment.

3.3 Ecological assessment – flora

This section provides information on the flora and ecological communities recorded during the assessment and presents the results of the likelihood of occurrence analysis for threatened flora species in the study area.

3.3.1 Site description

Overall, the study area was highly disturbed, given its existing industrial and commercial use. Roadsides were dominated by introduced flora, with Chilean Needle-grass and Galenia being two of the dominant species recorded. Native plantings were common along main roadways, including either side of the Western Ring Road and Airport Drive south of Sharps Road. Native Yellow Box and Yellow Gum were among the most common planted trees in the study area.

Limited areas of native vegetation were recorded, including River Red-gum dominated riparian woodland within the floodplain of Steele Creek, as well as isolated patches of native grassland in both the north and south of the alignment.

The study area for the pipeline has been divided into the following sections, each of which are described separately as follows (from south to north):

- Albion to Jacana line rail reserve
 - This narrow area immediately to the north of the rail line was highly disturbed and comprised almost exclusively of unmanaged, introduced flora. Dominant species in this area included Toowoomba Canary-grass, Paspalum, Fennel, Ox-tongue, Twiggy Turnip and Artichoke Thistle. Scattered occurrences of native Silky Blue-grass were recorded in low cover in the western portion of this area. This portion of the study area is zoned PUZ4 - Public Use Zone – Transport.
- Land south of Western Ring Road and Westfield Drive
 - Large open area dominated by introduced grasses, predominantly Chilean Needle-grass, though **four isolated patches of native Plains Grassland comprising wallaby grasses and Windmill Grass were recorded** in the lower lying areas to the east. While the native grassland patches recorded met the definition of native vegetation as per the Guidelines (DELWP 2017), they did not meet the thresholds for listing as the EPBC Act listed ecological community, Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP) as the cover of weeds in these patches (60%) outweighed the cover of native grass genera (40%). Dense, shrubby amenity plantings occurred along the Western Ring Road, and sparse planted trees and shrubs were recorded further south. This portion of the study area is zoned Road Zone (RDZ1).
- South west of Airport Drive (Western Ring Road to Tullamarine Park Drive)
 - A large portion of this area comprised planted eucalypts in rows closest to the Western Ring Road interchange. Further west is a large dump site, which comprised an extensive area of fill and dumped waste. This area has since been colonised by introduced flora, namely Chilean Needle-grass and Twiggy Turnip. **Five patches of native vegetation in the form of Floodplain Riparian Woodland dominated by a healthy canopy of River Red-gums occurred either side of Steele Creek.** Despite a healthy tree canopy and presence of other smaller trees and shrubs (Blackwood, Lightwood, Sweet Bursaria and Tree Violet), the creek was otherwise disturbed and comprised of a dense cover of introduced grasses and other high threat weeds (African Box-thorn, Montpellier Broom) along its margins. Dumped rubbish was observed nearby to Steele Creek in this section. The area north west of Steele Creek comprised of dense native amenity plantings on a steep embankment adjoining Airport

Drive. Common planted flora in this area included Yellow Box, River Red-gum, Drooping Sheoak and Fragrant Saltbush. South west of the planted embankment, an access lane existed from Steele Creek to Tullamarine Park Drive. This area comprised introduced grasses, namely Chilean Needle-grass, as well as dumped building materials. This portion of the study area is zoned Road Zone (RDZ1).

- North east of Airport Drive (Western Ring Road to Tullamarine Park Drive)
 - **Two patches of native vegetation in the form of Floodplain Riparian Woodland dominated by a healthy canopy of River Red-gums occurred either side of Steele Creek in this area.** East of Steele Creek, the land is highly disturbed and comprised of overgrown introduced grasses, with scattered planted amenity trees. Excessive dumped rubbish was recorded in this area. North west of Steele Creek, dense native amenity plantings occurred on a steep embankment adjoining Airport Drive. This portion of the study area is zoned Road Zone (RDZ1).
- East side of Airport Drive (Tullamarine Park Drive to Sharps Road)
 - The area nearest to Tullamarine Park Drive comprised dense native amenity plantings on a steep embankment adjoining Airport Drive. Sparsely planted Yellow Box also occurred throughout this area, over a slashed ground layer of introduced grasses, namely Chilean Needle-grass. Closer to Sharps Road, the section of land is sealed with bitumen and is currently used as a truck turn out area. This portion of the study area is zoned Road Zone (RDZ1).
 - A large commercial carpark is located between approximately KP900 and KP1500. The area is mostly bitumen with a soil mound around the perimeter with weeds and planted *Eucalyptus spp* and *Callistemon spp* (Bottle brush) growing on the soil mound. This portion of the study area is zoned as Industrial (IN1Z).
- East side of Airport Drive (Sharps Road to Mercer Drive)
 - This long section of the alignment largely comprises a managed lawn made up of introduced grasses and Galenia. A recently established pedestrian path runs along the full length of this section of the alignment. The portion immediately south of Link Road was undergoing excavation and construction works at the time of the survey. Further north, the study area widens out to Mercer Drive, where it comprised a recently landscaped area of planted trees and graminoids. This portion of the study area is Commonwealth Land not controlled by the Victorian planning scheme.
 - The northeast corner of Sharps Road and Airport Drive (KP1550 to KP1600) is heavily disturbed land with exotic grasses including Rye, Clover, Galenia, *Brassica spp*, Mallow and planted introduced trees. This portion of the study area is Commonwealth Land and not controlled by the Victorian planning scheme.
 - On the eastern side of Airport Drive, between road and the shared user path (KP1750 to KP1900) there are planted Sheoak with Windmill Grass occupying 1-2% of the area. Chilean Needle Grass dominating with Great brome, Galenia, Serrated tussock, Fumitory, Ribwort, Artichoke thistle, Clustered Dock, Kikuyu and Strawberry clover. The area was wet under foot and located near the retarding basin. This portion of the study area is Commonwealth Land and not controlled by the Victorian planning scheme.
 - On the eastern side of Airport Drive between KP2150 and KP2300 m, DELWP have mapped part of this area as EVC 132 Plains Grassland, however it has been excavated for the retarding basin, which was constructed in 2014. Some native grasses are visible with Windmill Grass and Storks Bill present near the boundary fence. The area is dominated by Great Brome, with Chilean Needle Grass, Kikuyu, Soursob, Ribwort, Artichoke thistle, Clustered Dock, Serrated Tussock and Galenia. This portion of the study area is Commonwealth Land and not controlled by the Victorian planning scheme.
- North side of Mercer Drive (Airport Drive to Tullamarine Freeway)
 - Managed lawn comprised mostly by introduced grasses. Sections also contained crushed rock. This portion of the study area is Commonwealth Land not controlled by the Victorian planning scheme. A thrust bore will be undertaken at KP 4450 to avoid trenching through the driveway and preventing access to the Value car park.
- North side of Tullamarine Freeway (parallel with Western Avenue)

- Eastern section comprises overgrown area of introduced flora, including Twiggy Turnip, Rye Grass, Paterson’s Curse and Sowbane. **One small patch of native vegetation in the form of Plains Grassland comprising wallaby grass and spear grass was recorded in this area.** This patch did not meet the thresholds for listing as the EPBC Act listed ecological community NTGVVP, as the patch was too small for consideration as the community (<0.05 ha) and the cover of weeds in this patch (60%) outweighed the cover of native grass genera (40%). West of the Cleanaway entrance, the pipeline alignment runs along an existing gravel track, which forms the extension of Western Avenue. This area is heavily disturbed and comprised exclusively of introduced flora including Kikuyu, Artichoke Thistle, Twiggy Turnip and Galenia either side of the track. This portion of the study area is zoned as Farming Zone (FZ3) as well as small portions of Commonwealth Land not controlled by the Victorian planning scheme.
- The area between the Tullamarine Freeway and Western Avenue (approximately KP5100) is dominated by Chilean Needle Grass with Kikuyu, Couch grass, Onion grass, Ribwort, Strawberry clover, Galenia and Yorkshire Fog. Some native grasses are visible with Wallaby Grass and Spear Grass growing through the crushed rock. This portion of the study area is zoned as Farming Zone (FZ3).
- Land adjoining the existing Melbourne Airport JUHI Facility site (north of Western Avenue)
 - The northern limit of the pipeline alignment comprises heavily disturbed land. South of the existing JUHI Facility site, a gravel track connects Quarry Road in the north, with the extension of Western Avenue. This section of track is lined with mature planted Sugar Gums (non-indigenous). Immediately west of these planted trees is a large area of fill, which has been colonised with introduced flora, namely Twiggy Turnip. A grove of introduced Golden Wreath Wattle exists at the base of the fill. A lone Eastern Grey Kangaroo was observed on the area of fill during the June site visit. No native vegetation exists in this portion of the study area. This portion of the study area is zoned as Industrial (IN3Z) as well as small portions of Commonwealth Land not controlled by the Victorian planning scheme.
 - The entire study area for the pipeline alignment falls in the Victorian Volcanic Plain bioregion and the Port Philip and Western Port CMA. The pipeline crosses two local government areas (LGAs), namely the City of Brimbank south of Sharps Road, and the City of Hume north of Sharps Road. No overlays relevant to the current investigation cover the study area.

3.3.2 Flora species

During the field assessment 89 flora species were recorded, 54 (60%) of which were introduced species. The remaining 35 (40%) included the native species associated with Steele Creek, roadside amenity plantings and the small patches of native grassland recorded in the alignment. Table 3-1 provides a summary of the flora species recorded. A full list of the flora species recorded in the study area is provided in Appendix B.

Table 3-1 Summary of flora species recorded

Description	Number of species recorded
Flora species recorded during the current survey	89
Flora species listed as threatened under the EPBC Act recorded during the current survey	None
Flora species listed as threatened under the FFG Act recorded during the current survey	None
Flora species listed as protected under the FFG Act recorded on public land during the current survey	1 (Black Wattle)

Threatened flora species collated in the database search were subject to the likelihood of occurrence analysis in Appendix C. None of the threatened flora considered as part of this analysis were deemed to have a moderate or high likelihood of occurrence in the study area due to lack of suitable habitat.

3.3.3 Native vegetation

Types of native vegetation that may be present within the study area were ascertained through the database review (DELWP 2020b; DELWP 2020c). This review determined that the study area is located within the Victorian Volcanic Plain bioregion and noted the presence of two main pre-1750 modelled vegetation communities within and nearby to the study area, namely Plains Grassy Woodland (EVC 55) and Plains Grassland (EVC 132).

The site survey confirmed the presence of several small patches of *Low-rainfall* Plains Grassland (EVC 132_63), namely in the south of the study area. Several small patches of Floodplain Riparian Woodland (EVC 56) were also mapped either side of Steele Creek.

Areas of uniform quality for each EVC within patches are termed 'habitat zones' and are assessed separately. The condition score of the habitat zone is multiplied by the extent (hectares) of the zone to give a value in Habitat hectares. A total of 12 habitat zones were identified in the study area (See Appendix A). Descriptions of each habitat zone and a summary of the habitat hectare results are provided in Table 3-2. Full details from the habitat hectare assessment are provided in Appendix E.

In addition, 11 scattered trees (all small River Red-gums) were recorded in the study area, north east of Steele Creek (See Appendix A). Details of scattered trees recorded are provided in Appendix F.

Table 3-2 Descriptions of habitat zones (patches of native vegetation) in the study area

Habitat Zone ID	EVC	Area (ha)	Habitat score (Out of 100)	Description
A	132_63	0.036	24	Small, isolated patches of grassland comprised of 40% native foliage cover (mainly wallaby grass and Windmill Grass), with very few herbs observed. Weed cover was high (60%), mainly on account of Chilean Needle-grass.
B	132_63	0.075	24	
C	132_63	0.018	24	
D	132_63	0.035	24	
E	56	0.046	18	Patch comprising healthy River Red-gums on slope east of Steele Creek. Ground layer exclusively comprises introduced flora including Artichoke Thistle and African Box-thorn.
F	56	0.036	18	Patch comprising healthy River Red-gums and other shrubs (Lightwood, Sweet Bursaria) on west margin of Steele Creek. Ground layer mainly comprises introduced flora including Wandering Jew and African Box-thorn.
G	132_63	0.035	25	Small, isolated patch of grassland comprised of 40% native foliage cover (mainly wallaby grass and spear grass), with very few herbs observed. The small patch was surrounded by weeds.
H	56	0.226	21	Patch comprising healthy River Red-gums and other shrubs (Lightwood, Sweet Bursaria, Tree Violet) along Steele Creek. Ground layer mainly comprises introduced grasses.
I	56	0.023	19	Small patches comprising healthy River Red-gum canopy north east of Steele Creek.
J	56	0.027	18	
K	56	0.020	18	
L	56	0.005	13	Small patch of young River Red-gums on land sloping towards Steele Creek.

3.4 Ecological assessment – fauna

This section provides information on the fauna and associated fauna habitats recorded during the assessment and presents the results of the likelihood of occurrence analysis for threatened fauna species in the study area.

3.4.1 Fauna habitats

Fauna habitats within the study area included open grassy habitats, planted vegetation and riparian habitat along Steele Creek. These are discussed below.

Grassy habitat: Open grassed areas occurred throughout the study area, namely in the form of managed, narrow roadside reserves. These areas were largely comprised of introduced grasses and other weeds and provided minimal habitat for native fauna. The main area of this habitat type was south of the Western Ring Road where approximately 4.5 hectares of open grassed habitat occurred. While few small isolated patches of native grassland were recorded in the lower lying parts of the east of this area, vast majority of this area comprised a dense cover of Chilean Needle-grass, a high threat introduced grass species. The prevalence of this species in this area indicates a high level of disturbance, and suggests this habitat is of low quality for flora and fauna.

The one exception to this is Golden Sun Moth, which are known to occur in areas of introduced grasses such as Chilean Needle-grass as well as their preferred native grasslands. The extensive area of Chilean Needle-grass south of the Western Ring Road provides potential habitat for Golden Sun Moth, which is discussed further in the following section.

Planted vegetation: Several areas of planted vegetation occur along the pipeline alignment study area, including mixed plantings either side of the Western Ring Road/Airport Drive interchange, dense amenity plantings on the embankments either side of Airport Drive (north of Steele Creek) and sparse, mature planted Sugar Gums south of the Melbourne Airport JUHI Facility site. These areas of planted vegetation are likely to provide habitat for common native fauna including common birds and arboreal mammals such as Brush-tailed and Ring-tailed Possums. Various bird species were recorded using these areas during the survey, especially the dense, mixed plantings either side of Airport Drive, north of Steele Creek.

Riparian habitat: Steele Creek provides the only area of aquatic habitat in the study area. The waterway supported isolated patches of riparian woodland comprising a healthy canopy of River Red-gums and shrubs such as Blackwood, Lightwood and Tree Violet. Given the industrial setting, dumped rubbish was observed near this stretch of the creek. Weed cover was high with introduced grasses dominating the margins. Common Froglet was heard calling in the inundated grassy margins of the creek. The section of the creek in the study area comprised various habitat features including rocks, instream vegetation including Cumbungi and Rush, and flowing water which would provide habitat for additional frog species. The riparian habitat along Steele Creek is likely to support habitat for native fauna including birds, frogs, reptiles and arboreal mammals.

3.4.2 Fauna species

The study area is largely altered from its original state and lacked extensive areas of habitat to support a diversity of fauna species.

A total of 26 fauna species were recorded in the study area, six (23%) of which were introduced species. Most of the fauna recorded in the study area comprised common suburban bird species. Table 3-3 provides a summary of the fauna species recorded. A full list of the fauna species recorded in the study area is provided in Appendix B.

Table 3-3 Summary of fauna species recorded

Description	Number of species recorded
Fauna species recorded during the current survey	26 (6 of which were introduced)

Description	Number of species recorded
Fauna species listed as threatened under the EPBC Act recorded during the current survey	None
Fauna species listed as threatened under the FFG Act recorded during the current survey	None

All threatened fauna species in the database searches were subject to the likelihood of occurrence analysis in Appendix D. Those determined to have a high to moderate likelihood of occurrence are presented in Table 3-4 and discussed further below.

Table 3-4 Summary of EPBC Act and FFG Act listed fauna species with moderate to high likelihood of occurrence in the study area

Common Name	Scientific Name	EPBC Act	FFG Act	Likelihood of occurrence
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	VU	Vu	Moderate
Growling Grass Frog	<i>Litoria raniformis</i>	VU	Vu	High
Golden Sun Moth	<i>Synemon plana</i>	CR	Vu	Moderate
Tussock Skink	<i>Pseudemoia pagenstecheri</i>		En	Confirmed

Grey-headed Flying-fox

Grey-headed Flying-fox are listed as Vulnerable under the EPBC Act, however are commonly seen foraging at night around greater Melbourne given the presence of two large permanent Flying-fox camps in the region including at Yarra Bend and Doveton. While the primary natural food source is eucalypt blossom, the species also commonly feeds on fruit trees in urban areas and the Yarra Valley.

Potential foraging habitat for the Grey-headed Flying-fox exists in areas of Floodplain Riparian Woodland recorded along Steele Creek, as well as amongst planted eucalypts that occur throughout the study area.

Any removal of such habitats would result in a reduction in food resources for the species in the local area. However, Steele Creek is proposed to be crossed using horizontal direction drilling (HDD) with a 200 m buffer zone each side of Steele Creek and as such impacts to the creek and habitat are unlikely.

Growling Grass Frog

Growling Grass Frogs inhabit waterways and other aquatic habitats in south east Australia, including the greater Melbourne region. They are listed as Vulnerable under the EPBC Act. Key habitat features for the species includes submerged vegetation for egg-laying, rocks and logs for basking, permanent freshwater lagoons for breeding and cracks, as well as debris and dense vegetation for refuge.

Potential habitat for the Growling Grass Frog exists along Steele Creek despite the quality and diversity of habitats in the section of the creek that dissects the study area being low. A recent record of the species from late 2018 (AJMJV 2021) also exists from Steele Creek, less than 500m south west of the study area. This suggests that the species is present in the area and is likely to occasionally utilise the riparian habitat in the project site.

The study area dissects Steele Creek where it passes under Airport Drive. As such, this part of the creek is already exposed to a high degree of disturbance from shadowing, noise and disturbance. Additionally, this section of the creek has a high weed cover and rubbish has been dumped near to the margins, namely where vehicle access is available off Airport Drive and the end of Barrie Road. As such, the likelihood of the Growling Grass Frog dispersing beyond the margins of the creek in this location is extremely low.

Despite the disturbed nature of this waterway and the urban setting, any removal of riparian habitat along Steele Creek may result in a reduction of habitat for this species. Furthermore, any interruption of flows, may also impact on the potential for this species to move through this waterway. Steele Creek is proposed to be crossed using horizontal direction drilling (HDD) with a 200 m buffer zone each side of Steele Creek and as such impacts to the creek and habitat are unlikely.

Golden Sun Moth

Golden Sun Moth occur in grasslands in south east Australia and are listed as Critically Endangered under the EPBC Act. While most commonly known to occur in native grasslands dominated by wallaby grass, the species has also been recorded amongst introduced grasses such as Chilean Needle-grass.

Potential habitat exists for the Golden Sun Moth in the study area in the extensive area of Chilean Needle-grass south of the Western Ring Road. Targeted surveying for Golden Sun Moth that was recently undertaken in this area (AJMJV 2021). It is understood the targeted survey (which was undertaken under appropriate survey conditions and timing) did not record Golden Sun Moth in this area. Furthermore, the most recent records of this species in the search region are from Broadmeadows Valley Park, a commonly known resident site for the species, over six kilometres from the potential habitat identified in the study area.

For the reasons detailed above, it is considered unlikely that Golden Sun Moth regularly utilise the study area. Also, given the small area required for the establishment of the proposed pipeline, such impacts to low quality habitat are unlikely to be significant.

Tussock Skink

Tussock Skink are usually found around fallen timber or foraging in leaf litter in a variety of forest and grassland habitats and are listed under the FFG Act as endangered. It is found from the Grampians in the west through the basalt plains west of Melbourne to north-east Victoria. The Tussock Skink grows to 62mm in length, is a carnivore, and an opportunistic arthropod feeder including spiders, crickets, larvae and adult moths and beetles.

The Tussock Skink was recorded during surveys for the Striped Legless Lizard south of the Western Ring Road. The Tussock Skink is usually found in grassy treeless areas, and often in association with rocks on the volcanic plains. The most recent records of the Tussock Skink are from 2021 south of the Western Ring Road and east of the other population and another record at Taylor's Lakes in 2021.

While reasonably widespread in Victoria, the Tussock Skink occurs in two disjunct broad populations – one in the Grassland ecosystem habitats of the warm temperate zone in the western volcanic plains, and the other in the cold temperate zone using grassy areas of the Alpine ecosystem in the high country of Victoria.

It is considered unlikely that Tussock Skink will utilise the wider study area due to the extensive modifications and ground disturbance (roads, factories, planted and exotic vegetation, infrastructure, and developments) along the proposed pipeline route and surrounding area. Also, given the small area required for the establishment of the proposed pipeline, such impacts to potential habitat are unlikely to be significant. Measures will be implemented prior to and during construction to minimise any potential impacts to Tussock Skink.

4 Legislative context

4.1 Commonwealth legislation

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

The 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 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.

The results from the database search of the EPBC Act Protected Matters Search Tool identified multiple MNES potentially occurring within 10 kilometre radius search area. The MNES relevant to the project area are summarised in Table 4-1 and the detailed output from the PMST is provided in Appendix G.

The likelihood of occurrence of each MNES are summarised in the following sub sections.

Table 4-1 Summary of MNES relevant to the project area

Matters of National Environmental Significance	MNES relevant to the project search area
World Heritage Properties	None
National Heritage Places	None
Wetlands of International Importance	None
Great Barrier Reef Marine Park	None
Commonwealth Marine Area	None
Listed Threatened Ecological Communities	5
Listed Threatened Species	36
Listed Migratory Species	15

Listed threatened species

Threatened flora

No threatened flora listed under the EPBC Act were deemed to have a moderate or high likelihood of occurrence in the study area due to lack of suitable habitat. The pipeline is unlikely to have a significant impact on any threatened flora listed under the EPBC Act.

Threatened fauna

Three threatened fauna species listed under the EPBC Act were deemed to have a moderate likelihood of occurrence in the study area, namely the Grey-headed Flying-fox, Growling Grass Frog and Golden Sun Moth. While the proposed development is considered unlikely to have a significant impact on the Grey-headed Flying-fox or Golden Sun Moth. Significant Impacts to Steele Creek and Growling Grass Frog from the project are unlikely due to the proposed use of HDD to cross under the creek and implementing a 200 m buffer each side of the creek.

A significant impact assessment against the relevant EPBC Act criteria will not be required for the above three species.

Listed threatened ecological communities

The following five EPBC Act listed threatened ecological communities were listed in the PMST as potentially being present in the search area:

- Grassy Eucalypt Woodland of the Victorian Volcanic Plain (Critically Endangered)
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (Endangered)
- Natural Damp Grassland of the Victorian Coastal Plains (Critically Endangered)
- Natural Temperate Grassland of the Victorian Volcanic Plain (Critically Endangered)

- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Critically Endangered).

Based on the site inspection, and assessment of habitats in the study area it was determined that no EPBC Act listed ecological communities occur in the study area. While small patches of native grassland were recorded in the study area, these patches had a high percentage of weed cover, and hence did not meet the listing criteria for the listed Natural Temperate Grassland community. Vegetation types pertaining to the other four listed communities were not recorded in the study area.

Migratory and marine species

No migratory or marine species are likely to occur or regularly utilise the study area given the site is inland and due to the lack of suitable habitats.

4.2 Victorian legislation

4.2.1 Flora and Fauna Guarantee Act 1988

The FFG Act is the key piece of 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 DELWP to take threatened or protected flora and fauna species from public land.

One flora species listed as protected under the FFG Act was recorded in the study area. Black Wattle was recorded in the study area in Habitat Zone H (along Steele Creek).

One fauna species (Tussock Skink) was confirmed in the study area (AJMJV 2021).

Three threatening processes listed under the FFG Act could be applicable to the project if a Construction Environmental Management Plan is not developed and implemented to manage impacts. These include:

- Alteration to the natural flow regimes of rivers and streams
- Degradation of native riparian vegetation along Victorian rivers and stream
- Input of toxic substances into Victorian rivers and streams.

4.2.2 Wildlife Act 1975 and Wildlife Regulations 2002

The main legislation for protecting and managing fauna in Victoria is the *Wildlife Act 1975*. This covers indigenous vertebrate species (except declared pest species), invertebrate species listed under the FFG Act and some introduced game species.

A Management Authorization permit would be required under the Act if salvage and relocation of fauna are to be undertaken as part of any removal of habitat associated with the works. One fauna species (Tussock Skink) was confirmed in the study area in land south of the Western Ring Road (AJMJV 2021).

4.2.3 Catchment and Land Protection Act 1994

The *Catchment and Land Protection Act 1994* (CaLP Act) identifies and classifies certain species as noxious weeds or pest animals and provides a system of controls on noxious species.

The CaLP Act also provides a legislative framework for the management of private and public land and sets out the responsibilities of land managers, stating that they must take all reasonable steps to prevent the growth and spread of regionally controlled weeds and prevent the spread of, and as far as possible eradicate, established pest animals.

The study area contains the following noxious weeds listed as regionally controlled within the Port Phillip and Westernport Catchment Management Authority region:

- African Box-thorn

- Artichoke Thistle
- Montpellier Broom
- Paterson's Curse
- Serrated Tussock.

Appropriate weed control and hygiene measures should be outlined in the Construction and Operational Environmental Management Plans.

5 Summary and recommendations

5.1 Summary

Overall, the study area was highly disturbed. Roadsides were dominated by introduced flora, and mixed amenity plantings were common along main roadways. Native vegetation was recorded in the study area, though was largely limited to small patches of riparian woodland within the floodplain of Steele Creek, as well as isolated patches of native grassland in both the north and south of the alignment. In total, 12 patches of native vegetation were identified in the study area, as well as 11 small scattered trees. No threatened flora listed under the EPBC Act were deemed to have a moderate or high likelihood of occurrence in the study area due to lack of suitable habitat.

Fauna habitat within the study area included open grassy habitats, planted vegetation and riparian habitat along Steele Creek. Three threatened fauna species listed under the EPBC Act were deemed to have a moderate likelihood of occurrence in the study area, namely the Grey-headed Flying-fox, Growling Grass Frog and Golden Sun Moth. The pipeline is unlikely to have a significant impact on the Grey-headed Flying-fox or Golden Sun Moth, and significant impacts to Steele Creek and Growling Grass Frog from the project are unlikely, due to crossing of the creek with HDD and a 200 m buffer each side of the creek.

One fauna species under the FFG Act (Tussock Skink) was confirmed in the study area in land south of the Western Ring Road in targeted fauna surveys in 2019/2020 (AJMJV 2021). A fauna handler should be present during works to remove and relocate any individuals to habitat areas immediately adjacent to the works area in accordance with a management authorisation under the *Wildlife Act 1975*.

No EPBC Act listed ecological communities occur in the study area.

One species listed as protected under the FFG Act, Black Wattle, was recorded in the study area in an area of public land (along Steele Creek). As the area around Steele Creek will be avoided during construction, no impacts to this species are expected.

Given the small and disconnected areas of native vegetation recorded in the study area, and narrow footprint required for the pipeline, it is considered that all native vegetation in the study area should be able to be avoided by locating infrastructure and works outside these areas.

5.2 Recommendations

The following recommendations are provided to inform the project design and reduce impacts on native vegetation and fauna habitat:

- The design should aim to locate pipeline infrastructure to avoid areas of native vegetation and fauna habitat as much as practically possible:
 - As a priority, any removal of the Floodplain Riparian Woodland mapped along Steele Creek should be avoided as this would result in a detriment to this waterway and impact of potential habitat for Growling Grass Frog in the creek
 - Patches of Plains Grassland mapped in the east of the VicRoads reserve south of the Western Ring Road should be avoided. This should be easily achieved given the large space in this area which would provide for an alternative placement.

- Extensive areas of planted vegetation provide habitat for local fauna (including potential foraging habitat for the Grey-headed Flying-fox) and for this reason should also be avoided where possible, specifically the planted embankments either side of Airport Drive north of Steele Creek.
- Construction environmental management plans will be a requirement of any works proposed with the study area. The EMP should address the threatening processes listed under the FFG Act (Section 4.2.1) and noxious weeds listed under CaLP Act (Section 4.2.3) identified in the study area. Protection measures for native vegetation identified nearby to works should also be clearly outlined in the EMP. This should include the establishment of appropriate vegetation protection fencing and relevant no-go signage prior to works.
- A fauna spotter/catcher should be onsite for any tree removal works to ensure any displaced fauna are safely captured and translocated to similar habitats nearby.

5.2.1 Tussock Skink mitigation measures

The following mitigation measures are recommended to reduce potential impacts on Tussock Skink:

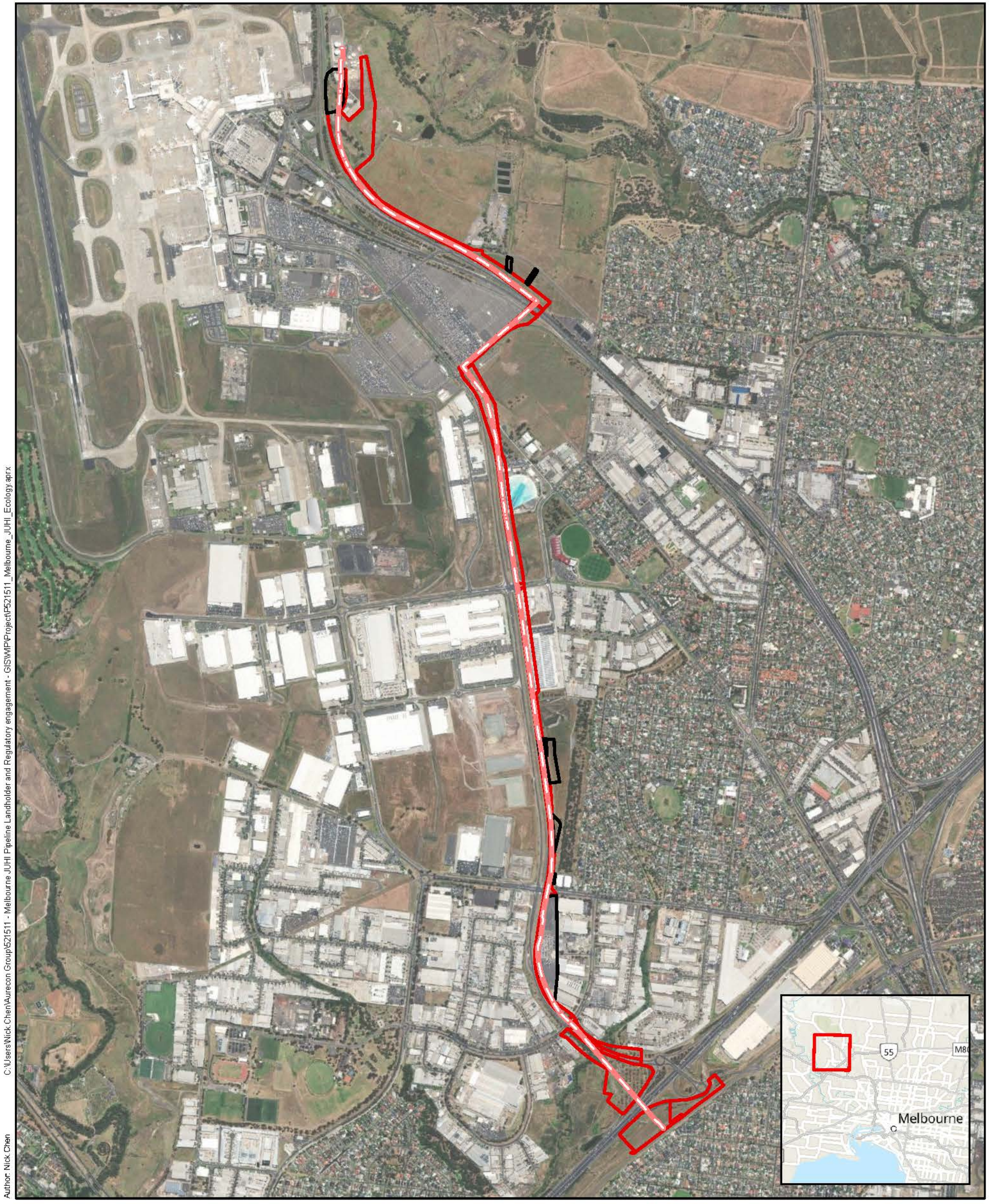
- Pre-construction Tussock Skink surveys will be undertaken in areas where Tussock Skink is known to be present, i.e. south of the Western Ring Road.
- The construction footprint within areas where Tussock Skink is known to be present will be minimised as much as practicable. Areas in this location outside the construction footprint will be No-go zones. All No-Go Zones are to be included on all site maps, including all Environmental Management Plans and related documentation (including the Construction Environment Management Plan).
- The No-Go Zones identified in this plan will be avoided by construction works, with no admittance to the areas by construction personnel, vehicles or machinery. The ecological value to be protected by the No-Go Zones will not be impacted.
- Foot access of personnel to No-Go Zones for the purpose of guiding bores will be accompanied by a qualified ecologist.
- All No-Go Zones will be fenced with high-visibility safety bunting or temporary construction fencing (including erosion fencing if necessary).
- The area is to be signed as a 'No-Go Zone'. Fencing will be erected in a way that still enables fauna to move through areas of habitat. The erection of the fencing surrounding No-Go Zones will be supervised or reviewed by a qualified and experienced ecologist to ensure that the values supported within that No-Go Zone are not impacted. The fencing will be maintained for the duration of the works.
- Where non-woody habitat is identified for removal, including grasslands or introduced tussock grasslands, a wildlife handler will supervise habitat clearance. Any fauna disturbed in the process will be safely relocated to adjacent habitat outside the construction footprint.

6 References

- Australian Museum 2020, Sydney NSW, < <https://australianmuseum.net.au>>, 2020
- Birdlife Australia 2020, Bird species profiles, <<http://www.birdlife.org.au/>>, 2020.
- DAWE 2020a, Department of Agriculture, Water and the Environment, EPBC Act Protected Matters Report. Department of Environment and Energy, Canberra, ACT, generated 25th March 2020, <http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf>.
- DAWE 2020b, Species Profile and Threats Database, Department of Agriculture, Water and the Environment, <<http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>>, viewed 23rd March 2020.
- DELWP 2017a. Guidelines for the removal, destruction or lopping of native vegetation, Government of Victoria, Department of Environment, Land Water and Planning, Melbourne.
- DELWP 2017b. Applicants Guide – Applications to remove, destroy or lop native vegetation, Government of Victoria, Department of Environment, Land Water and Planning, Melbourne
- DELWP 2017c. Exemptions from requiring a planning permit to remove, destroy or lop native vegetation, Government of Victoria, Department of Environment, Land Water and Planning, Melbourne
- DELWP 2020a, Victorian Biodiversity Atlas, Government of Victoria, Department of Environment, Land, Water and Planning, Victoria, Viewed 26th March 2020. <https://www.environment.vic.gov.au/biodiversity/victorian-biodiversity-atlas>
- DELWP 2020b, Native Vegetation Information Management System (NVIM), Government of Victoria, Department of Environment, Land Water and Planning, Victoria, Viewed 25th March 2020. <https://nvim.delwp.vic.gov.au/Biodiversity>
- DELWP 2020c, NatureKit, Government of Victoria, Department of Environment, Land, Water and Planning, Victoria, Viewed 25th March 2020, <https://www.environment.vic.gov.au/biodiversity/naturekithttp://maps.biodiversity.vic.gov.au/viewer/?viewer=NatureKit>.
- DELWP 2020d, VicPlan. Government of Victoria, Department of Environment, Land Water and Planning, Melbourne, Victoria, Viewed 25th March 2020, <https://mapshare.vic.gov.au/vicplan/>
- Department of Environment Energy and Science, NSW government, www.environment.nsw.gov.au/ 2020
- DoE 2013, Matters of National Environmental Significance - Significant Impact Guidelines 1.1. Department of the Environment (now DAWE), Canberra.
- DSE 2013, Advisory list of Threatened Vertebrate Fauna in Victoria 2013, Government of Victoria, Department of Sustainability and Environment (now DELWP), Melbourne.
- AJMJV 2021, Melbourne Airport Rail State Land Terrestrial Ecology Impact Assessment. MAR-AJM-PWD-PWD-REP-XEV-NAP-0001710. Revision C.
- VICFLORA 2020, Flora of Victoria, Royal Botanic Gardens Victoria, <<https://vicflora.rbg.vic.gov.au>> 2020

Appendix A Ecological mapping





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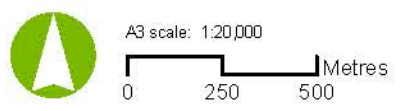
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- Survey Area - 2022
- MJP Pipeline

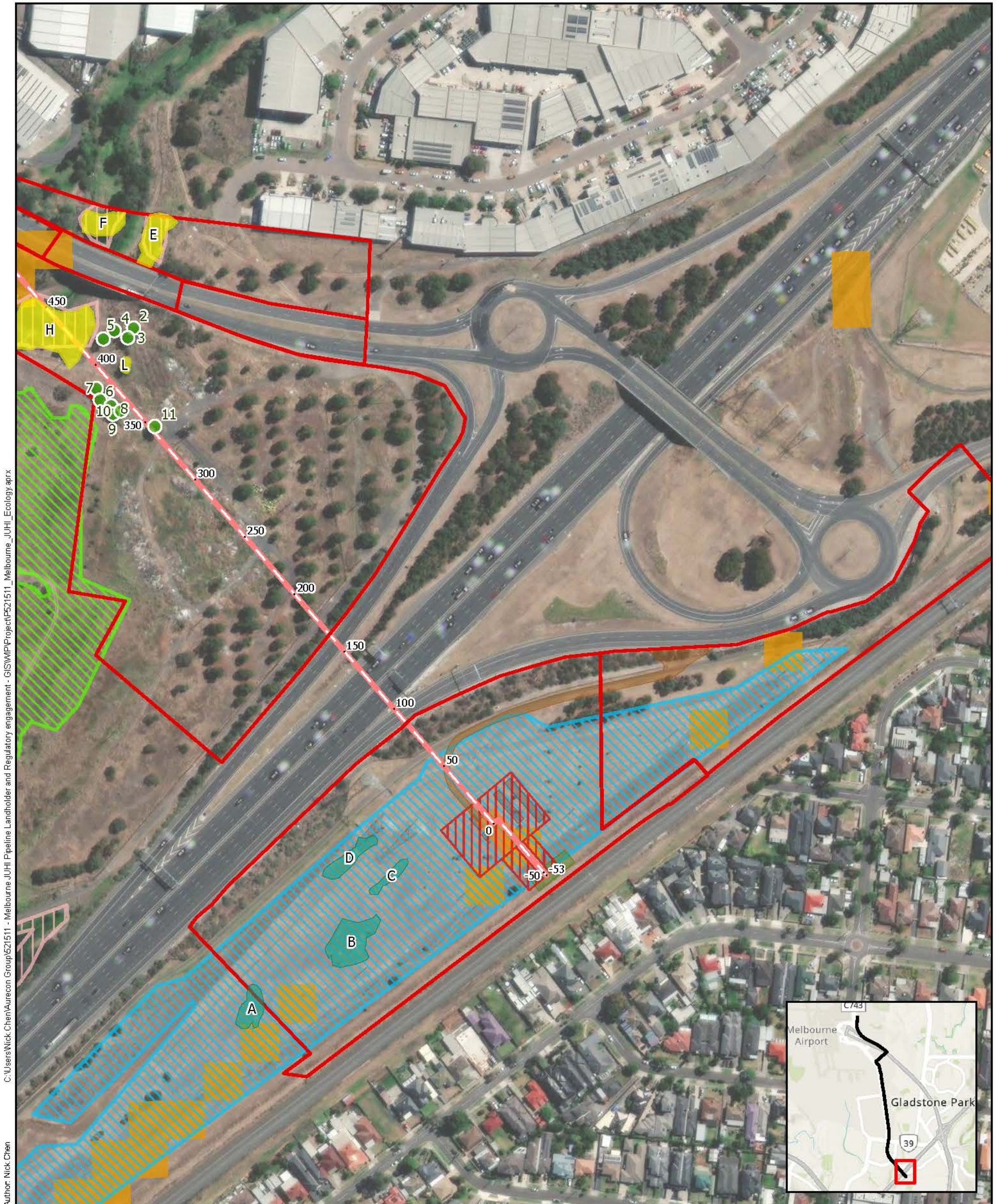
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Version: 1



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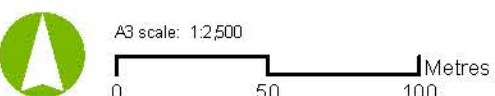
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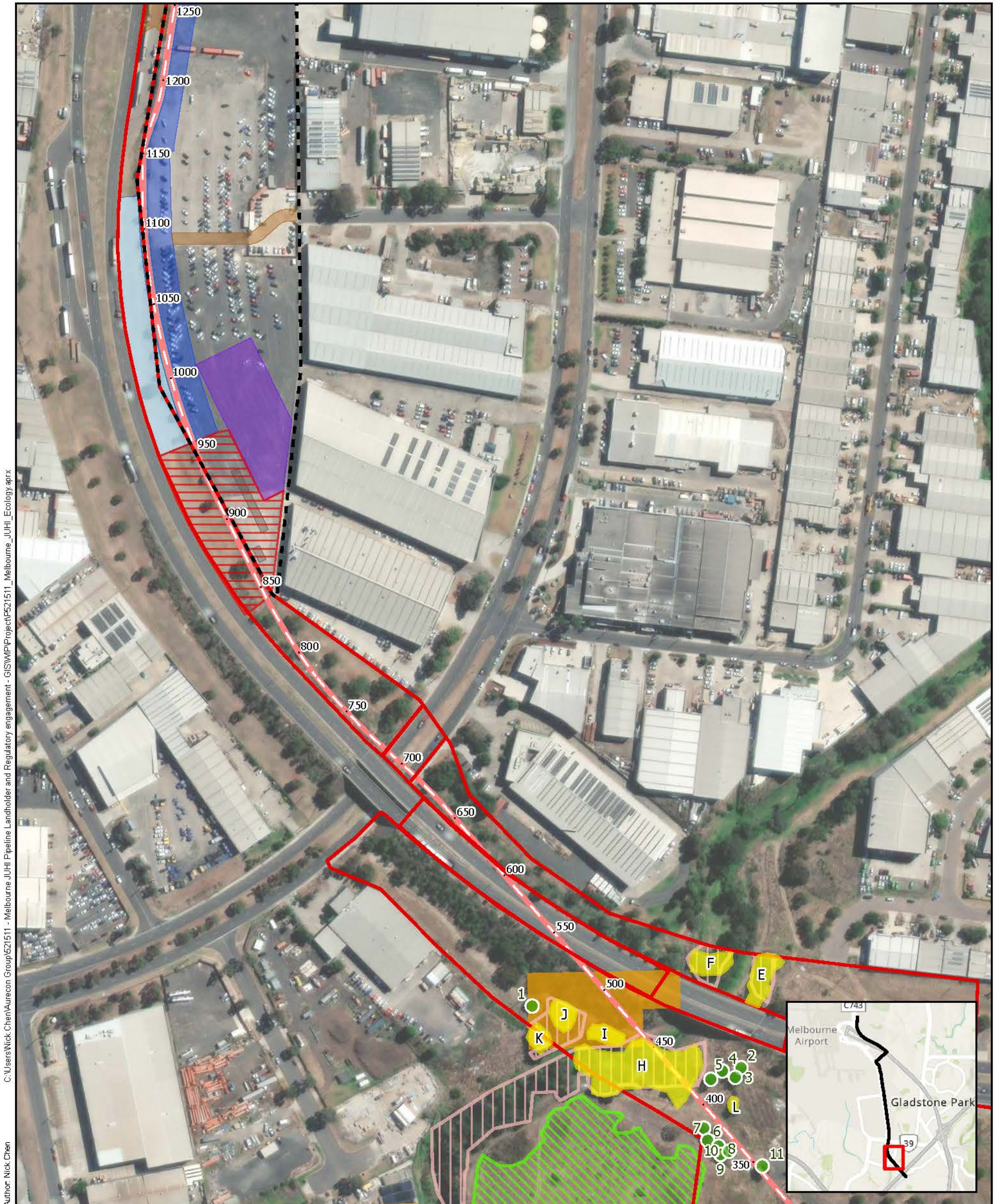
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|--------------------------------|--|-----------------------------|
| Study Area - 2019 | Native Vegetation | HDD Entry Pit Work Area |
| Striped Legless Lizard Habitat | Floodplain Riparian Woodland (EVC 56) | Inlet Station |
| Growing Grass Frog Habitat | Low-rainfall Plains Grassland (EVC 132_63) | Tie In Pit Fenced Work Area |
| Tussock Skink records | Alignment Design | Pipeline Corridor |
| Small Scattered Tree | MJP Pipeline | HDD Equipment |
| Modelled EVC 2005 | Temporary Access Track | |
| 132, Plains Grassland | Thrust Bore Work Area | |

Source:
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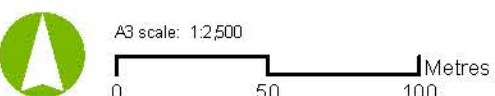
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 Author: Nick Chen

Legend

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|--------------------------------|---------------------------------------|-----------------------|
| Study Area - 2019 | Native Vegetation | Additional Work Space |
| Survey Area - 2022 | Floodplain Riparian Woodland (EVC 56) | Pipe Storage Area |
| Striped Legless Lizard Habitat | Alignment Design | Pipeline Corridor |
| Growing Grass Frog Habitat | MJP Pipeline | HDD Equipment |
| Small Scattered Tree | Temporary Access Track | Work Zone |
| Modelled EVC 2005 | Thrust Bore Work Area | |
| 132, Plains Grassland | HDD Exit Pit Work Area | |

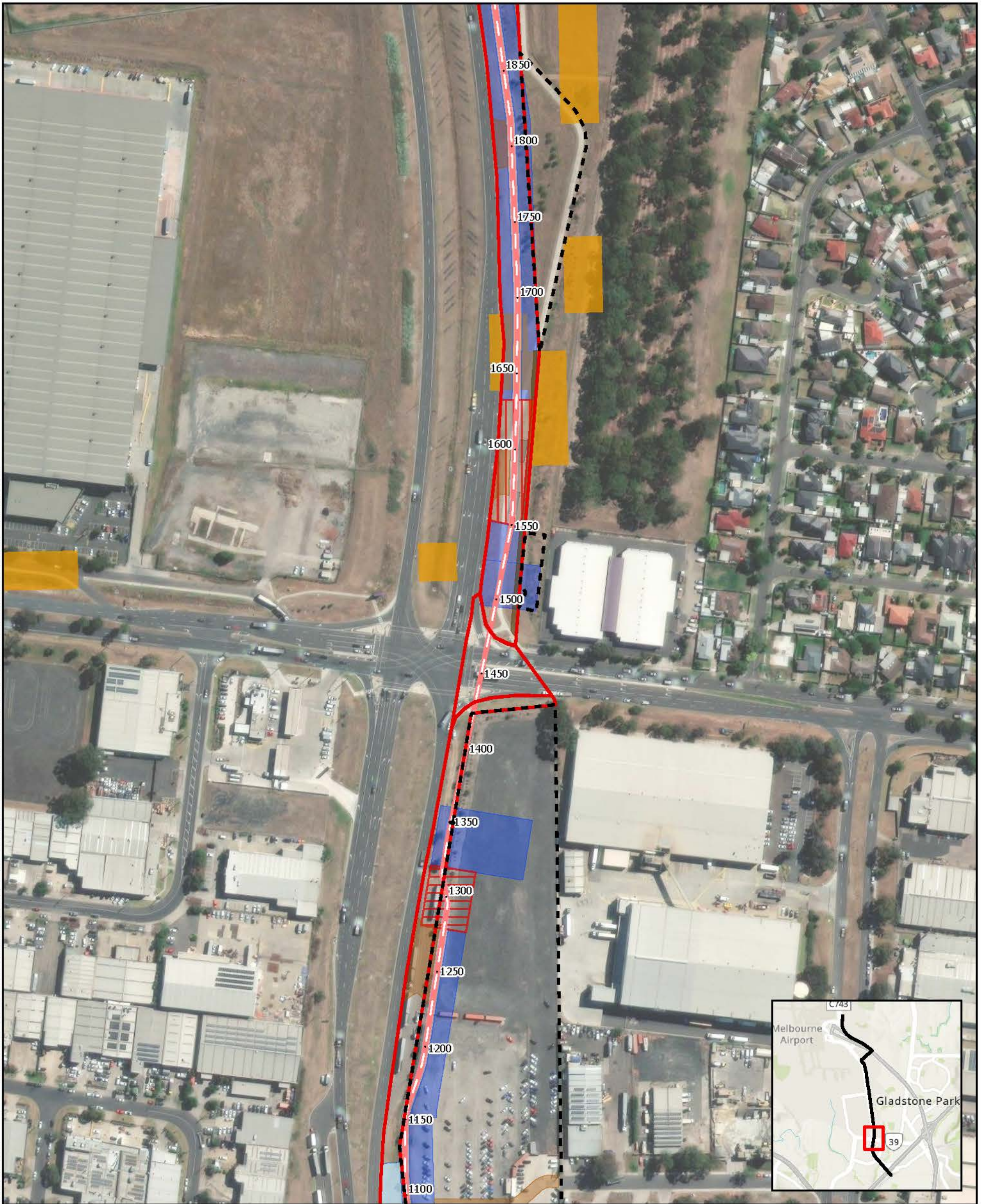
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| Study Area - 2019 | Temporary Access Track | Additional Work Space |
| Survey Area - 2022 | Thrust Bore Work Area | Pipeline Corridor |
| Modelled EVC 2005 | HDD Exit Pit Work Area | HDD Equipment |
| 132, Plains Grassland | HDD Entry Pit Work Area | Work Zone |
| Alignment Design | Temporary Path | |
| MJP Pipeline | | |

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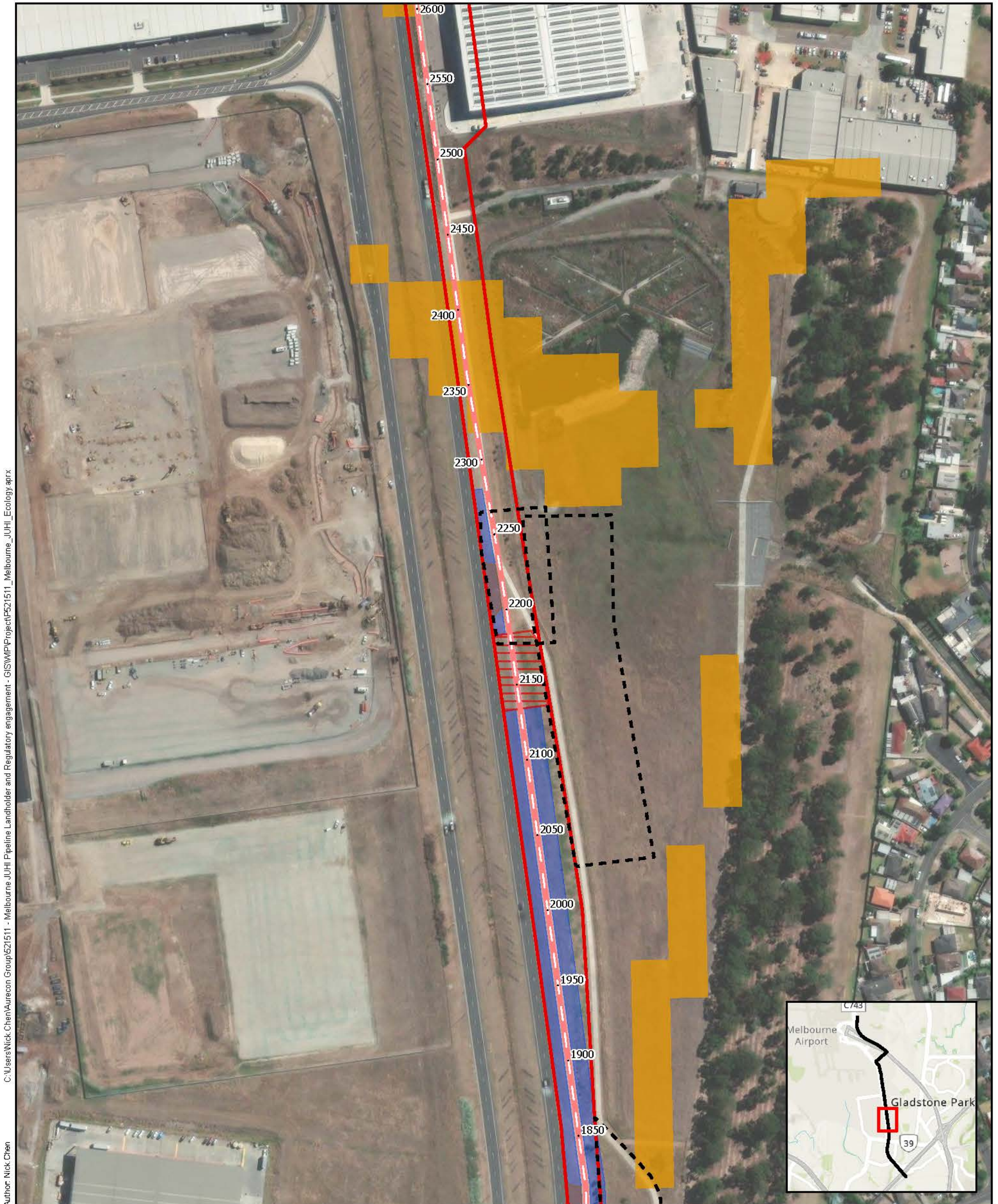
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|--------------------------|-------------------------|------------------------|
| Study Area - 2019 | Alignment Design | HDD Exit Pit Work Area |
| Survey Area - 2022 | MJP Pipeline | Additional Work Space |
| Modelled EVC 2005 | Temporary Access Track | Pipeline Corridor |
| 132, Plains Grassland | Thrust Bore Work Area | |

Source:
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 Vicmap (2023)
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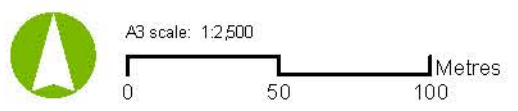
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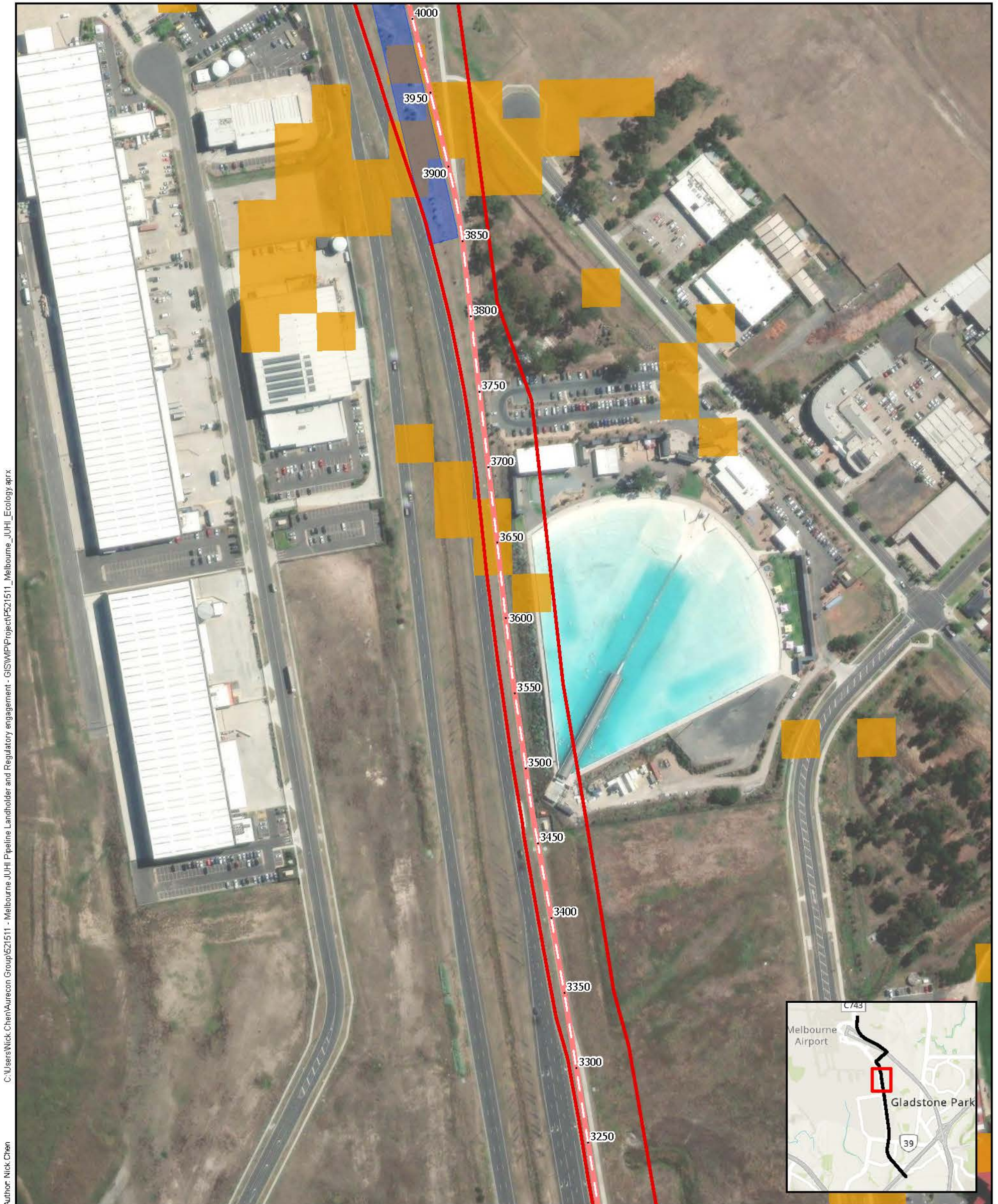
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| 132, Plains Grassland | Temporary Access Track |
| | Thrust Bore Work Area |

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Job No: 521511
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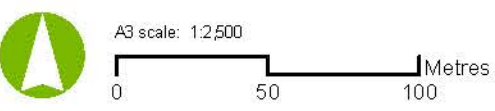
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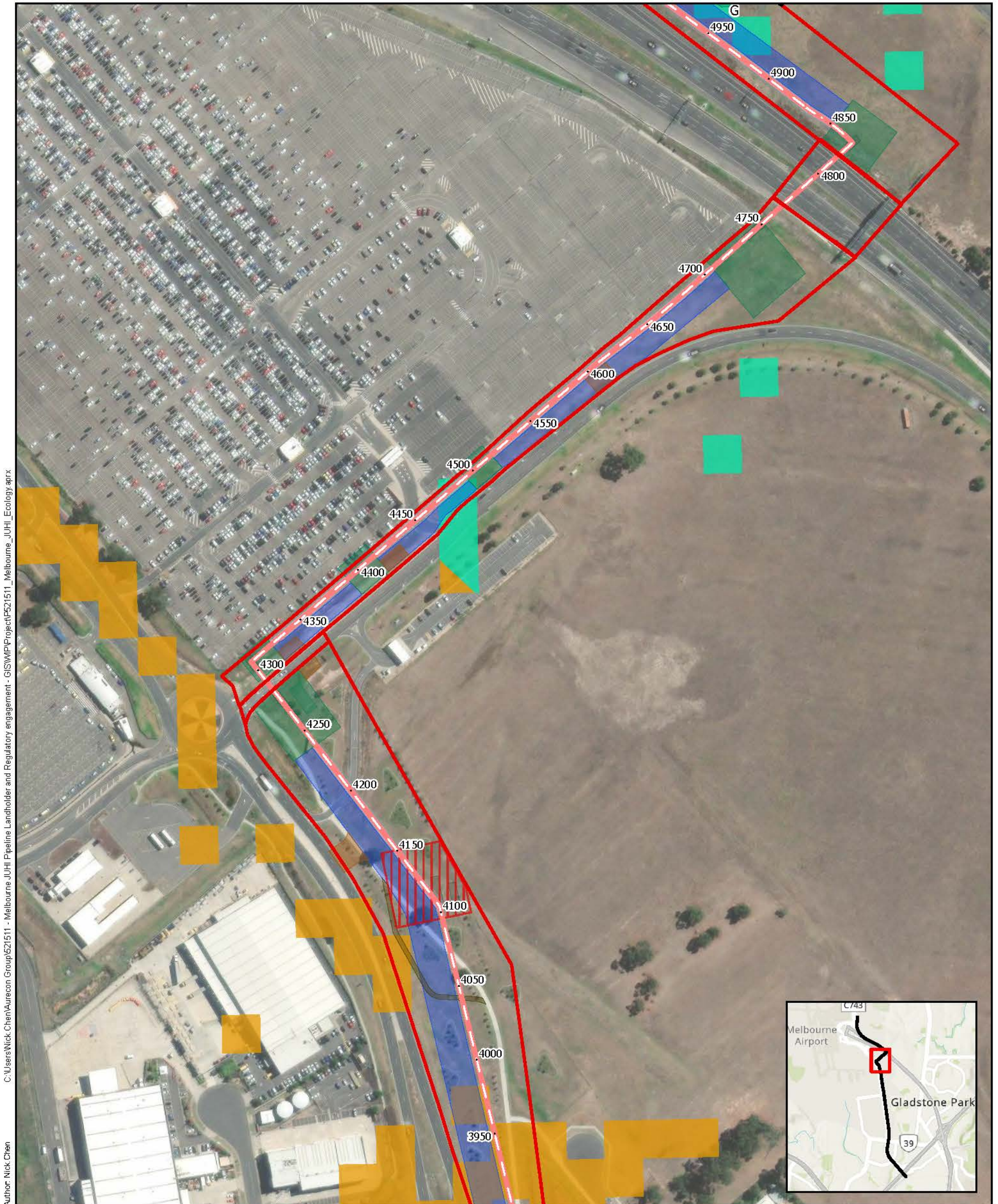
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- 132, Plains Grassland
- MJP Pipeline
- Temporary Access Track
- Thrust Bore Work Area
- Additional Work Space

Source:
 ESRI (2023)
 Vicmap (2023)
 Aurecon (2023)
 AJMJV (2021)

Date: 21/03/2023
Version: 1



Job No: 521511
 Coordinate System: GDA1994 MGA Zone 55



Author: Nick Chen
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Legend

- | | | |
|--------------------------|--|-------------------------|
| Study Area - 2019 | Native Vegetation | HDD Entry Pit Work Area |
| Survey Area - 2022 | Low-rainfall Plains Grassland (EVC 132_83) | Temporary Path |
| Modelled EVC 2005 | Alignment Design | Additional Work Space |
| 53, Swamp Scrub | MJP Pipeline | Pipeline Corridor |
| 132, Plains Grassland | Temporary Access Track | Thrust Bore Equipment |
| | Thrust Bore Work Area | HDD Equipment |

Source:
 ESRI (2023)
 Vicmap (2023)
 Aurecon (2023)
 AJMV (2021)

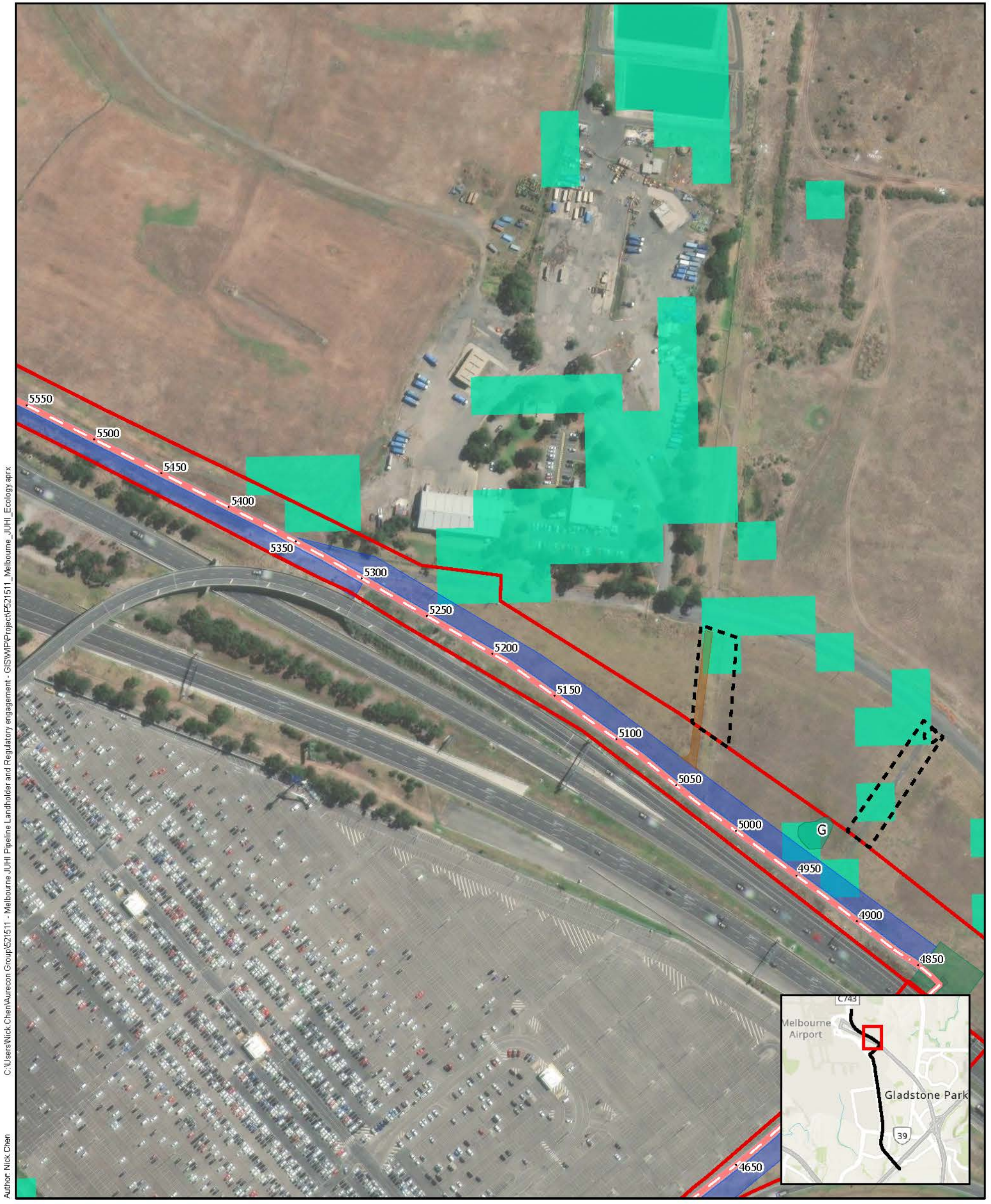
Date: 21/03/2023

Version: 1



A3 scale: 1:2,500
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Job No: 521511
 Coordinate System: GDA1994 MGA Zone 55



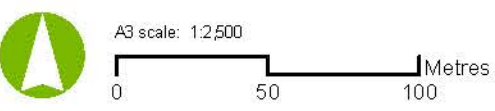
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 Author: Nick Chen

Legend

- | | |
|--|-------------------------|
| Study Area - 2019 | Alignment Design |
| Survey Area - 2022 | MJP Pipeline |
| Modelled EVC 2005 | Temporary Access Track |
| 53, Swamp Scrub | Thrust Bore Work Area |
| Native Vegetation | Additional Work Space |
| Low-rainfall Plains Grassland (EVC 132_63) | Pipeline Corridor |
| | Thrust Bore Equipment |

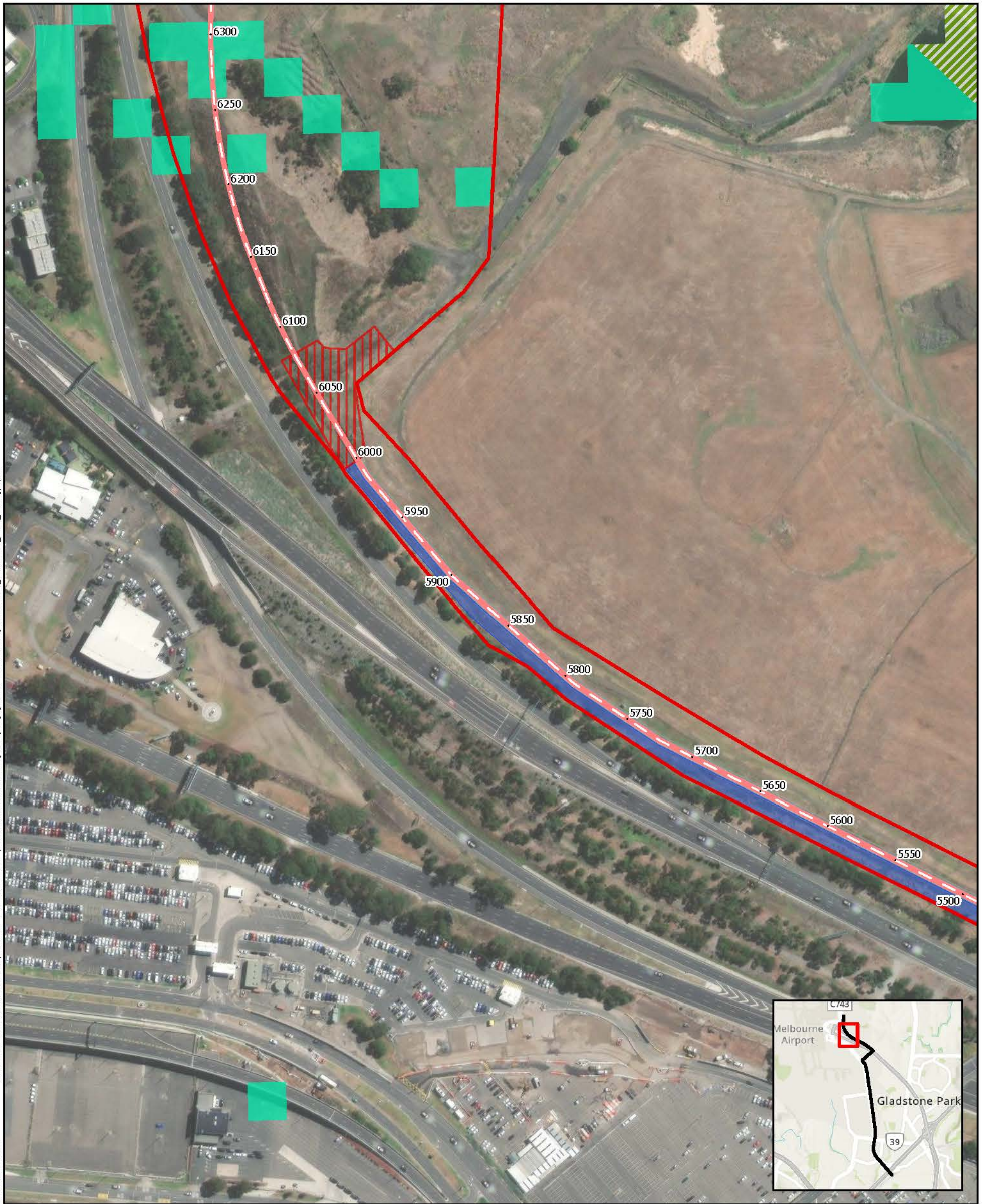
Source:
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Date: 21/03/2023 Version: 1



Job No: 521511
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Author: Nick Chen



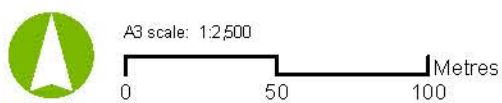
Legend

- | | | |
|-------------------------------|-------------------------|-------------------------|
| Study Area - 2019 | Alignment Design | HDD Entry Pit Work Area |
| Modelled EVC 2005 | MJP Pipeline | Additional Work Space |
| 53, Swamp Scrub | Temporary Access Track | Pipeline Corridor |
| 68, Creekline Grassy Woodland | Thrust Bore Work Area | HDD Equipment |

Source:
ESRI (2023)
Vicmap (2023)
Aurecon (2023)
AJMJV (2021)

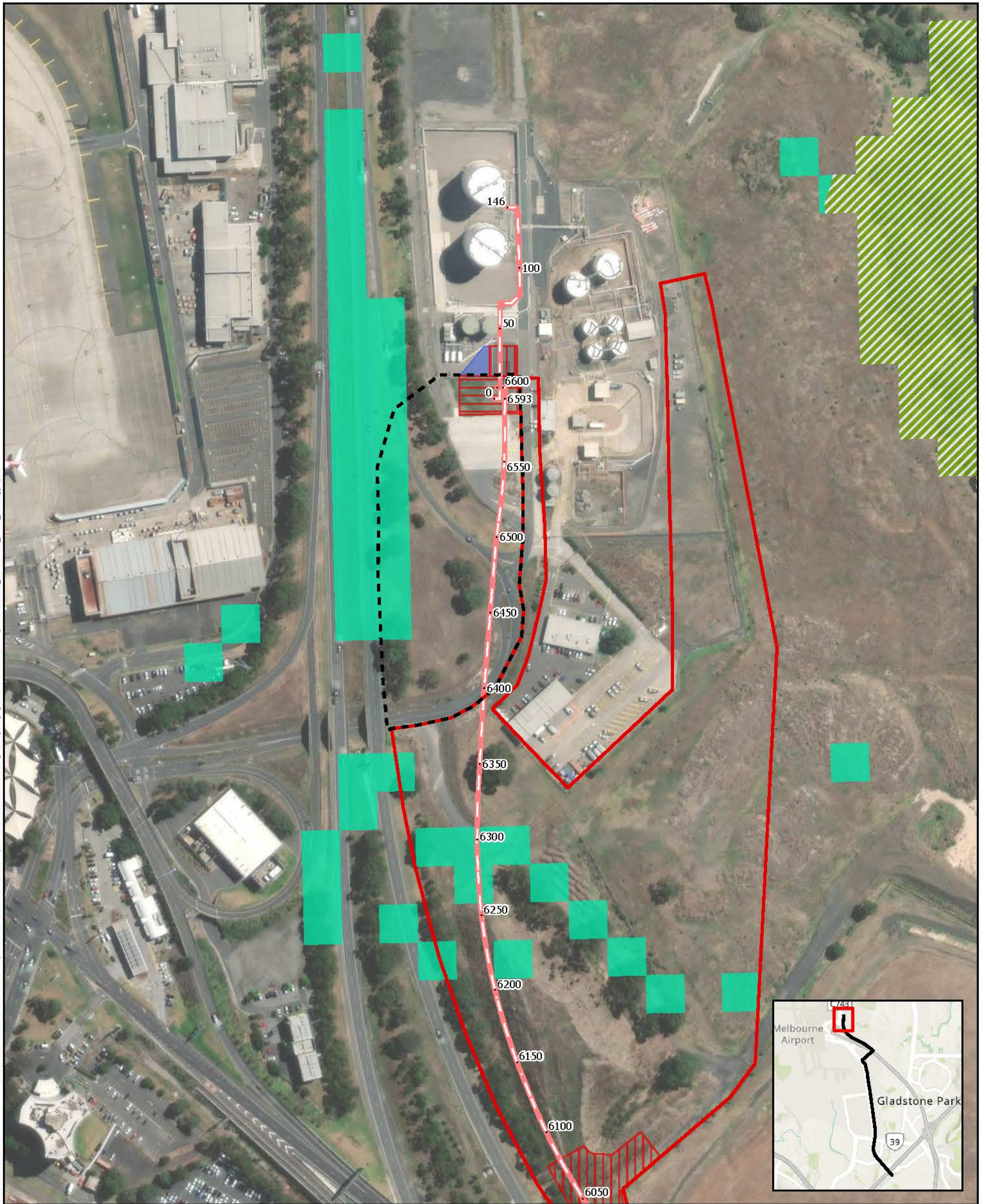
Date: 21/03/2023

Version: 1



Job No: 521511
Coordinate System: GDA1994 MGA Zone 55

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Author: Nick Chen



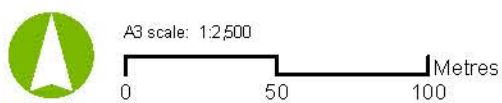
Legend

- | | | |
|-------------------------------|-------------------------|-------------------------|
| Study Area - 2019 | Alignment Design | HDD Entry Pit Work Area |
| Survey Area - 2022 | MJP Pipeline | Additional Work Space |
| Modelled EVC 2005 | Temporary Access Track | HDD Equipment |
| 53, Swamp Scrub | Thrust Bore Work Area | |
| 68, Creekline Grassy Woodland | HDD Exit Pit Work Area | |

Source:
ESRI (2023)
Vicmap (2023)
Aurecon (2023)
AJMV (2021)

Date: 21/03/2023

Version: 1



Job No: 521511
Coordinate System: GDA1994 MGA Zone 55

Appendix B Flora and fauna species recorded in the study area

Origin	Common Name	Scientific Name	Recorded
Flora recorded in study area			
*	African Box-thorn	<i>Lycium ferocissimum</i>	X
*	Artichoke Thistle	<i>Cynara cardunculus subsp. flavescens</i>	X
	Berry Saltbush	<i>Atriplex semibaccata</i>	X
*	Big Heron's-bill	<i>Erodium botrys</i>	X
*	Black Nightshade	<i>Solanum nigrum s.l.</i>	X
	Black Wattle	<i>Acacia mearnsii</i>	X
	Blackwood	<i>Acacia melanoxylon</i>	X
	Bottle Brush	<i>Callistemon spp</i>	X
*	Brassica spp		X
*	Buck's-horn Plantain	<i>Plantago coronopus</i>	X
*	Castor Oil Plant	<i>Ricinus communis</i>	X
*	Chilean Needle-grass	<i>Nassella neesiana</i>	X
*	Clover	<i>Trifolium spp.</i>	X
*	Cocksfoot	<i>Dactylis glomerata</i>	X
	Common Blown-grass	<i>Lachnagrostis filiformis s.l.</i>	X
*	Common Peppercross	<i>Lepidium africanum</i>	X
	Common Purslane	<i>Portulaca oleracea</i>	X
*	Common Sow-thistle	<i>Sonchus oleraceus</i>	X
	Common Spike-sedge	<i>Eleocharis acuta</i>	X
	Common Tussock-grass	<i>Poa labillardierei</i>	X
*	Common Vetch	<i>Vicia sativa</i>	X
	Common Wallaby-grass	<i>Rytidosperma caespitosum</i>	X
	Common Woodruff	<i>Asperula conferta</i>	X
*	Couch	<i>Cynodon dactylon var. dactylon</i>	X
*	Curled Dock	<i>Rumex crispus</i>	X
*	Clustered Dock	<i>Rumex conglomeratus</i>	X
*	Desert Ash	<i>Fraxinus angustifolia</i>	X
*	Dove's Foot	<i>Geranium molle</i>	X
*	Drain Flat-sedge	<i>Cyperus eragrostis</i>	X
P	Drooping Sheoak	<i>Allocasuarina verticillata</i>	X
*	Fat Hen	<i>Chenopodium album</i>	X
*	Fennel	<i>Foeniculum vulgare</i>	X
*	Flat Spurge	<i>Euphorbia drummondii s.l.</i>	X
*	Flatweed	<i>Hypochaeris radicata</i>	X
*	Flaxleaf Fleabane	<i>Erigeron bonariensis</i>	X
P	Fragrant Saltbush	<i>Rhagodia parabolica</i>	X
*	Fumitory	<i>Fumaria muralis subsp. muralis</i>	X
*	Galenia	<i>Galenia pubescens var. pubescens</i>	X
*	Giant Mustard	<i>Rapistrum rugosum</i>	X
P	Gold-dust Wattle	<i>Acacia acinacea s.l.</i>	X
*	Golden Wreath Wattle	<i>Acacia saligna</i>	X
	Grassland Wood-sorrel	<i>Oxalis perennans</i>	X
*	Greater Plantain	<i>Plantago major</i>	X
*	Great Brome	<i>Bromus diandrus</i>	

Origin	Common Name	Scientific Name	Recorded
P	Hedge Wattle	<i>Acacia paradoxa</i>	X
*	Kikuyu	<i>Cenchrus clandestinus</i>	X
	Knobby Club-sedge	<i>Ficinia nodosa</i>	X
	Lightwood	<i>Acacia implexa</i>	X
*	Montpellier Broom	<i>Genista monspessulana</i>	X
	Narrow-leaf Cumbungi	<i>Typha domingensis</i>	X
	Native Flax	<i>Linum marginale</i>	X
	Nodding Saltbush	<i>Einadia nutans</i>	X
*	Ox-tongue	<i>Helminthotheca echioides</i>	X
*	Panic Veldt-grass	<i>Ehrharta erecta</i>	X
*	Paspalum	<i>Paspalum dilatatum</i>	X
*	Paterson's Curse	<i>Echium plantagineum</i>	X
	Pink Bindweed	<i>Convolvulus erubescens s.l.</i>	X
*	Prairie Grass	<i>Bromus catharticus</i>	X
*	Prickly Lettuce	<i>Lactuca serriola</i>	X
*	Prickly Pear	<i>Opuntia spp.</i>	X
*	Prostrate Knotweed	<i>Polygonum aviculare s.l.</i>	X
*	Purple-top Verbena	<i>Verbena bonariensis s.l.</i>	X
*	Rat-tail Grass	<i>Sporobolus africanus</i>	X
*	Red-flower Mallow	<i>Modiola caroliniana</i>	X
	Red-leg Grass	<i>Bothriochloa macra</i>	X
*	Ribwort	<i>Plantago lanceolata</i>	X
	Rigid Panic	<i>Walwhalleya proluta</i>	X
	River Red-gum	<i>Eucalyptus camaldulensis</i>	X
	Rough Spear-grass	<i>Austrostipa scabra</i>	X
	Rush	<i>Juncus spp.</i>	X
*	Rye Grass	<i>Lolium spp.</i>	X
*	Serrated Tussock	<i>Nassella trichotoma</i>	X
	Sheoak	<i>Allocasuarina littoralis</i>	X
	Silky Blue-grass	<i>Dichanthium sericeum subsp. sericeum</i>	X
*	Soursob	<i>Oxalis pes-caprae</i>	X
*	Sowbane	<i>Chenopodium murale</i>	X
	Spear Grass	<i>Austrostipa spp.</i>	X
*	Sugar Gum	<i>Eucalyptus cladocalyx</i>	X
*	Sweet Briar	<i>Rosa rubiginosa</i>	X
	Sweet Bursaria	<i>Bursaria spinosa subsp. spinosa</i>	X
*	Toowoomba Canary-grass	<i>Phalaris aquatica</i>	X
	Tree Violet	<i>Melicytus dentatus s.l.</i>	X
*	Twiggy Turnip	<i>Brassica fruticulosa</i>	X
	Wallaby Grass	<i>Rytidosperma spp.</i>	X
*	Wandering Jew	<i>Tradescantia fluminensis</i>	X
P	White Correa	<i>Correa alba</i>	X
*	Wild Oat	<i>Avena fatua</i>	X
	Windmill Grass	<i>Chloris truncata</i>	X
P	Yellow Box	<i>Eucalyptus melliodora</i>	X
P	Yellow Gum	<i>Eucalyptus leucoxylo</i>	X
Fauna recorded in study area			
	Australian Magpie	<i>Gymnorhina tibicen</i>	X

Origin	Common Name	Scientific Name	Recorded
	Australian Pipit	<i>Anthus australis</i>	X
*	Common Blackbird	<i>Turdus merula</i>	X
	Common Froglet	<i>Crinia signifera</i>	X
*	Common Myna	<i>Acridotheres tristis</i>	X
*	Common Starling	<i>Sturnus vulgaris</i>	X
	Crested Pigeon	<i>Ocyphaps lophotes</i>	X
*	Domestic Pigeon	<i>Columba livia</i>	X
	Eastern Grey Kangaroo	<i>Macropus giganteus</i>	X
*	House Sparrow	<i>Passer domesticus</i>	X
	Little Raven	<i>Corvus mellori</i>	X
	Magpie-lark	<i>Grallina cyanoleuca</i>	X
	Masked Lapwing	<i>Vanellus miles</i>	X
	Nankeen Kestrel	<i>Falco cenchroides</i>	X
	New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>	X
	Pobblebonk Frog	<i>Limnodynastes dumerilii dumerilii</i>	X
	Rainbow Lorikeet	<i>Trichoglossus molucannus</i>	X
	Red-rump Parrot	<i>Psephotus haematonotus</i>	X
	Red Wattlebird	<i>Anthochaera carunculata</i>	X
*	Spotted Dove	<i>Spilopelia chinensis</i>	X
	Straw-necked Ibis	<i>Threskiornis spinicollis</i>	X
	Superb Fairy-wren	<i>Malurus cyaneus</i>	X
	Welcome Swallow	<i>Hirundo neoxena</i>	X
	White-faced Heron	<i>Egretta novaehollandiae</i>	X
	White-plumed Honeyeater	<i>Ptilotula penicillata</i>	X
	Willie Wagtail	<i>Rhipidura leucophrys</i>	X

* introduced, P = planted, X = recorded in study area during survey



Appendix C Likelihood of occurrence of threatened flora in the database search area

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat preference	Last record in the search region	Likelihood of occurrence within the study area
Adamson's Blown-grass	<i>Lachnagrostis adamsonii</i>	EN	En	Occurs in and around saline depressions on the Volcanic Plain where recorded from Portarlington west almost to the South Australian border.	None	Negligible - No suitable habitat, no records.
Austral Moonwort	<i>Botrychium australe</i>		Cr	Rare, in lowland forest to subalpine grassland in eastern Victoria, formerly known from near Melbourne.	1/10/1983	Negligible - No suitable habitat, no recent records.
Button Wrinklewort	<i>Rutidosia leptorhynchoides</i>	EN	En	Confined to basaltic grasslands between Rokewood and Melbourne where endangered due to loss of habitat.	12/03/2015	Low - grassland habitat limited to small, weedy, isolated patches.
Clover Glycine	<i>Glycine latrobeana</i>	VU	Vu	Widespread but of sporadic occurrence and rarely encountered. Grows mainly in grasslands and grassy woodlands.	None	Low - Very limited suitable habitat, no records.
Hoary Sunray	<i>Leucochrysum albicans</i> var. <i>tricolor</i>	EN	En	Heavy soils in native grasslands and grassy woodlands.	None	Low - Very limited suitable habitat, no records.
Large-flower Crane's-bill	<i>Geranium</i> sp. 1		Cr	Apparently endemic in Victoria. Known only from basaltic grassland (now generally weedy) in the Glenroy-Broadmeadows area, Riddells Creek and Malmsbury.	13/10/2016	Low - grassland habitat limited to small, weedy, isolated patches.
Large-fruit Yellow-gum	<i>Eucalyptus leucoxyloides</i> subsp. <i>megalocarpa</i>		Cr	The Victorian occurrence, near Nelson, is the easternmost part of the mainly South Australian coastal distribution, south of Mt Gambier.	1/02/2017	Negligible - No suitable habitat. Planted occurrences of Yellow Gum in study area do not represent the listed taxa.
Large-headed Fireweed	<i>Senecio macrocarpus</i>	VU	Cr	In Victoria largely confined to remnant Kangaroo Grass grasslands on loamy clay soils derived from basalt from near Melbourne west to Skipton area. Also known from auriferous ground near Stawell.	12/03/2015	Low - grassland habitat limited to small, weedy, isolated patches.
Leafy Greenhood	<i>Pterostylis cucullata</i>	VU	En	Widely distributed but disjunct, mostly occurring in small groups in coastal areas, sometimes near inland watercourses.	None	Negligible - No suitable habitat. No records in search area.
Maroon Leek-orchid	<i>Prasophyllum frenchii</i>	EN	En	Widespread across southern Victoria, but rare. Occurs in grassland, heathland and open forest on well-drained or water-retentive sand or clay loams.	None	Low - grassland habitat limited to small, weedy, isolated patches.
Matted Flax-lily	<i>Dianella amoena</i>	EN	Cr	Largely confined to drier grassy woodland and grassland communities south of the Dividing Range and now much depleted through its range.	13/10/2016	Low - grassland habitat limited to small, weedy, isolated patches.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat preference	Last record in the search region	Likelihood of occurrence within the study area
Plump Swamp Wallaby-grass	<i>Amphibromus pithogastrus</i>		Cr	A rare species of shallow, seasonally inundated depressions (e.g. gilgais) on water-retentive clay soils supporting grasslands and grassy woodlands. Known from near Mansfield and scattered occurrences to the south and west.	16/11/1989	Low - grassland habitat limited to small, weedy, isolated patches.
River Swamp Wallaby-grass	<i>Amphibromus fluitans</i>	VU		Permanent swamps, lagoons, billabongs and dams.	None	Low - No suitable habitat. No records in search area.
Small Milkwort	<i>Comesperma polygaloides</i>		Cr	Occasional on heavier soils (clays, alluvium) supporting grassland and grassy woodland communities in central and south-western areas.	2/12/2000	Low - grassland habitat limited to small, weedy, isolated patches.
Spiny Rice-flower	<i>Pimelea spinescens subsp. spinescens</i>	CR	Cr	Endemic in Victoria. Grows in grassland, open shrubland and occasionally woodland, often on basalt-derived soils. Mostly west of Melbourne (to near Horsham) but extending as far north as Echuca.	12/03/2015	Low - grassland habitat limited to small, weedy, isolated patches.
Sunshine Diuris	<i>Diuris fragrantissima</i>	EN	Cr	Exceedingly rare, restricted to remnant dry grassland on the basalt plains near Sunshine west of Melbourne.	None	Low - grassland habitat limited to small, weedy, isolated patches.
Swamp Everlasting	<i>Xerochrysum palustre</i>	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.	None	Negligible - No suitable habitat. No records in search area.
Swamp Fireweed	<i>Senecio psilocarpus</i>	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.	None	Negligible - No suitable habitat. No records in search area.
Tough Scurf-pea	<i>Cullen tenax</i>		En	Widespread in Victoria but now much depleted from its former range and seldom collected. Generally, grows in drier parts of the state in grassland and grassy woodland on heavy soils.	20/02/2010	Low - grassland habitat limited to small, weedy, isolated patches.
Trailing Hop-bush	<i>Dodonaea procumbens</i>	VU		Grows in low-lying, often winter-wet areas in woodland, low open-forest and grasslands on sands and clays.	None	Negligible - No suitable habitat. No records in search area.
Bacchus Marsh Wattle	<i>Acacia rostriformis</i>		Vu	Endemic in Vic. where it is confined to a small area around Bacchus Marsh. Grows in low hilly country on brown clay in eucalypt woodland.	06/04/2020	Negligible - No suitable habitat. No records in search area.
Basalt Podolepis	<i>Podolepis linearifolia</i>		En	Heavy clay soils in grasslands. Found on basalt plains north and west of Melbourne but possibly also SA.	13/10/2016	Low - grassland habitat limited to small, weedy, isolated patches.
Fragrant Saltbush	<i>Rhagodia parabolica</i>		Vu	In Victoria occurs on a few steep rocky slopes and broad ridges between Sunbury and Geelong	01/02/2014	High - Was recorded in the project area in 2021

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat preference	Last record in the search region	Likelihood of occurrence within the study area
Giant Honey-myrtle	<i>Melaleuca armillaris subsp. armillaris</i>		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	31/03/2011	Low - No suitable habitat. No records in search area.
Glaucous Flax-lily	<i>Dianella longifolia var. grandis s.l.</i>		Cr	Occurs in lowland plains grassland and grassy woodlands (e.g. Volcanic Plain and Riverina).	08/06/2000	Low - No suitable habitat. No records in search area.
Leafy Twig-sedge	<i>Cladium procerum</i>		En	Occasional in swampy areas and margins of streams and lakes near the coast, tolerating low to moderate levels of salinity.	19/02/2018	Low - No suitable habitat. No records in search area.
Melbourne Yellow-gum	<i>Eucalyptus leucoxylon subsp. connata</i>		En	It grows on skeletal soils between the Brisbane Ranges and Bacchus Marsh and Geelong. Also grows on skeletal soils at Long Forest between Bacchus Marsh and Melton, Studley Park at Kew (in Melbourne) and at Greensborough (in Melbourne), where it grows on soil derived from Silurian sandstone.	01/02/2014	Low -No records in search area.
Mugga	<i>Eucalyptus sideroxylon subsp. sideroxylon</i>		En	In Victoria confined to the Chiltern area, northern Warby Range and south of Winton	06/04/2020	Low -No records in search area
Pale-flower Crane's-bill	<i>Geranium sp. 3</i>		En	In Victoria, currently known only from Stawell, Yan Yean, Eltham, and Bonegilla areas. Found in open, grassy areas of dry woodland to forest.	21/11/2001	Negligible - No suitable habitat. No records in search area.
Rough-grain Love-grass	<i>Eragrostis trachycarpa</i>		En	Distribution is mostly on the coast and tablelands from just N of the Qld/N.S.W. border S to near Melbourne, Vic.	03/02/1994	Negligible - No suitable habitat. No records in search area.
Rye Beetle-grass	<i>Tripogonella loliiformis</i>		En	Usually occurring on shallow soils overlying rock.	11/11/1994	Negligible - No suitable habitat. No records in search area.
Snowy Mint-bush	<i>Prostanthera nivea var. nivea</i>		Vu	Largely confined to shrubland and open woodland associated with granite outcrops	01/02/2014	Negligible - No suitable habitat. No records in search area.
Southern Blue gum	<i>Eucalyptus globulus subsp. globulus</i>		En	It is a forest tree species that is widespread in the ranges and subcoastal forests of eastern New South Wales as far north as the Carrai Plateau, eastern, southern and central Victoria, and Tasmania	23/04/2018	Negligible - No suitable habitat. No records in search area.
Spotted Emu-bush	<i>Eremophila maculata subsp. maculata</i>		Cr	In Victoria confined to the north-west, mainly in <i>Eucalyptus largiflorens</i> forests or woodlands on heavy clay soils.	19/10/2021	Negligible - No suitable habitat. No records in search area.
Spotted Gum	<i>Corymbia maculata</i>		Vu	Open forest from south-east Queensland to southern New South Wales and an isolated population in east Gippsland, Victoria	1/10/1983	Negligible - No suitable habitat. No records in search area.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat preference	Last record in the search region	Likelihood of occurrence within the study area
Sticky Wattle	<i>Acacia howittii</i>		Vu	Endemic to Victoria. 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.	19/01/2016	Moderate – One record at International Drive
Western Golden-tip	<i>Goodia medicaginea</i>		En	Grows in woodland and open forest.	23/04/2015	Negligible - No suitable habitat. No records in search area.

Legend: EPBC Act: CR = critically endangered, EN = endangered, VU = vulnerable; FFG Act: Cr = critically endangered, En = endangered, Vu = vulnerable



Appendix D Likelihood of occurrence of threatened fauna in the database search area

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat preference	Last record in the search region	Likelihood of occurrence within the study area
Birds						
Australasian Bittern	<i>Botaurus poiciloptilus</i>	EN	Cr	Frequents reedbeds, and other vegetation in water such as cumbungi, lignum and sedges.	None	Low - Disturbed riparian habitats along Steele Creek. No records in search region.
Australian Little Bittern	<i>Ixobrychus dubius</i>		En	Favours reedbeds, dense freshwater swamps and well-fringed watercourses, including thick reedbeds	1/01/1980	Low - Disturbed riparian habitats along Steele Creek. No records in search region.
Australian Painted-snipe	<i>Rostratula australis</i>	EN	Cr	Inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. Also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains.	None	Low - No suitable habitat, no records in search region.
Black-faced Monarch	<i>Monarcha melanopsis</i>	M		Rainforest ecosystems, including tropical, subtropical and cool temperate rainforest	None	Negligible - No suitable habitat, no records in search region.
Common Greenshank	<i>Tringa nebularia</i>	M		Found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity, typically with large mudflats and saltmarsh, mangroves or seagrass.	None	Negligible - No suitable habitat, no records in search region.
Common Sandpiper	<i>Actitis hypoleucos</i>	M		Utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats.	None	Negligible - No suitable habitat, no records in search region.
Curlew Sandpiper	<i>Calidris ferruginea</i>	CR, M	Cr	Intertidal mudflats in sheltered coastal areas. Non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms.	None	Negligible - No suitable habitat, no records in search region.
Eastern Curlew	<i>Numenius madagascariensis</i>	CR, M	Cr	Largest shorebird in Australia. Breeds in Russia and north-eastern China, arrives back to Australia in August to feed on crabs and molluscs in intertidal mudflats on the coast.	None	Negligible - No suitable habitat, no records in search region.
Fairy Tern	<i>Sternula nereis</i>	VU	Cr	Nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation.	None	Negligible - No suitable habitat, no records in search region.
Fork-tailed Swift	<i>Apus pacificus</i>	M		Almost exclusively aerial. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas	None	Negligible - No suitable habitat, no records in search region.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat preference	Last record in the search region	Likelihood of occurrence within the study area
Great Egret	<i>Ardea alba</i>	M		Occurs in a wide range of wetland habitats including swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pastures or agricultural lands; reservoirs; sewage treatment ponds; drainage channels; salt marshes and mudflats.	17/05/1991	Low - No suitable habitat.
Hooded Plover	<i>Thinornis rubricollis rubricollis</i>	VU	Vu	Widely dispersed on or near sandy beaches in south-eastern Australia.	None	Negligible - No suitable habitat, no records in search region.
Latham's Snipe	<i>Gallinago hardwickii</i>	M		Occurs in a range of permanent and ephemeral wetlands including freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies).	None	Low - Disturbed riparian habitats along Steele Creek. No records in search region.
Osprey	<i>Pandion haliaetus</i>	M		Occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. Found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia.	None	Negligible - No suitable habitat, no records in search region.
Painted Honeyeater	<i>Grantiella picta</i>	VU	Vu	Found in dry open forests and woodlands and is strongly associated with mistletoe.	None	Negligible - No suitable habitat, no records in search region.
Pectoral Sandpiper	<i>Calidris melanotos</i>	M		Prefers shallow fresh to saline wetlands and is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	None	Negligible - No suitable habitat, no records in search region.
Plains-wanderer	<i>Pedionomus torquatus</i>	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.	None	Low - grassland habitat limited to small, weedy, isolated patches. Species now known to be largely limited to northern Vic.
Red Knot	<i>Calidris canutus</i>	EN, M		Intertidal mudflats, sandflats and sandy beaches of sheltered coasts	None	Negligible - No suitable habitat, no records in search region.
Regent Honeyeater	<i>Anthochaera phrygia</i>	CR	Cr	Primarily occurs in box-ironbark woodland, but also occurs in other forest types. Mainly feeds on nectar from eucalypts and mistletoes with movements governed by the flowering of select eucalypt species.	None	Negligible - No suitable habitat, no records in search region.
Rufous Fantail	<i>Rhipidura rufifrons</i>	M		Inhabits wet sclerophyll forests, often in gullies dominated by tall eucalypts, usually with a dense shrubby understorey and ferns.	None	Negligible - No suitable habitat, no records in search region.
Satin Flycatcher	<i>Myiagra cyanoleuca</i>	M		Inhabits heavily vegetated gullies in eucalypt-dominated forests and taller woodlands	None	Negligible - No suitable habitat, no records in search region.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat preference	Last record in the search region	Likelihood of occurrence within the study area
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	M		Prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation.	None	Negligible - No suitable habitat, no records in search region.
Speckled Warbler	<i>Pyrrholaemus sagittatus</i>		En	Lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies.	16/01/1990	Negligible - No suitable habitat, no records in search region.
Swift Parrot	<i>Lathamus discolor</i>	CR	Cr	Breeds in Tasmania and overwinters in Victoria. Found in dry sclerophyll forests and woodlands, suburban parks and gardens where it feeds on the nectar of flowering eucalypts, namely Grey, Red Ironbark, Mugga Ironbark, Yellow Gum and White Box. Also feed on lerp psyllids amongst Red Gum.	None	Low - Species may occasionally visit River Red-gums along Steele Creek, though such foraging habitat for the species is limited. No records in the search region.
White-throated Needletail	<i>Hirundapus caudacutus</i>	VU	Vu	Almost exclusively aerial, over a wide variety of habitats.	16/01/1990	Low - the species may occasionally fly over the study area but is unlikely to regularly utilise or rely on habitats within the site.
Yellow Wagtail	<i>Motacilla flava</i>	M		Regular non-breeding visitor in northern Australia mainly spring-summer, vagrant to the south. Wide range of habitats, including areas with low vegetation, often recorded near water.	None	Negligible - No suitable habitat, no records in search region.
Grey Goshawk	<i>Accipiter novaehollandiae</i>		En	The Grey Goshawk is found in most forest types, especially tall, closed forests, including rainforest	14/03/2018	Negligible - No suitable habitat, no records in search region.
Magpie Goose	<i>Anseranas semipalmata</i>		Vu	The Magpie Goose is seen in floodplains and wet grasslands. Some individuals, mostly younger birds, may be seen at quite long distances inland.	2016	Negligible - No records in search region
Eastern Great Egret	<i>Ardea alba modesta</i>		Vu	A range of wetland habitats and damp or flooded grasslands, pastures and agricultural lands, salt pans and lakes.	10/03/2017	Negligible - No records in search region.
Hardhead	<i>Aythya australis</i>		Vu	Hardheads are found in freshwater swamps and wetlands and occasionally in sheltered estuaries. They are rarely seen on land and tend to roost on low branches and stumps near the water. They prefer deep, fresh open water and densely vegetated wetlands for breeding.	17/03/1991	Negligible - No suitable habitat.
Musk Duck	<i>Biziura lobata</i>		Vu	Australian musk ducks are endemic to deep-water wetlands, river systems, and coastal waters of temperate Australia.	21/02/2000	Negligible - No suitable habitat.
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	EN		The Gang-gang Cockatoo can be found in eucalypt woodland forests of south-eastern Australia	05/08/2002	Low - Species may occasionally visit River Red-gums along Moonee Ponds Creek, though such foraging habitat for the species is limited. No records in the search region.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat preference	Last record in the search region	Likelihood of occurrence within the study area
Little Egret	<i>Egretta garzetta</i>		En	The Little Egret frequents tidal mudflats, saltwater and freshwater wetlands, and mangroves.	18/03/2019	Negligible - No suitable habitat.
Black Falcon	<i>Falco subniger</i>		Cr	The Black Falcon is found along tree-lined watercourses and in isolated woodlands, mainly in arid and semi-arid areas. It roosts in trees at night and often on power poles by day.	01/04/2018	Negligible - No suitable habitat.
Little Eagle	<i>Hieraaetus morphnoides</i>		Vu	The Little Eagle is seen over woodland and forested lands and open country, extending into the arid zone. It tends to avoid rainforest and heavy forest.	14/06/1996	Low - Species may occasionally visit trees in Woodlands Park or along Moonee Ponds Creek, though such foraging habitat for the species is limited. No records in the search region.
Caspian Tern	<i>Hydroprogne caspia</i>		Vu	The Caspian Tern usually forages in open wetlands, including lakes and rivers. They often prefer sheltered shallow water near the margins but can also be found in open coastal waters. In coastal inlets they may prefer to forage in tidal channels, or over submerged mudbanks	19/10/1986	Negligible - No suitable habitat.
Blue-billed Duck	<i>Oxyura australis</i>		Vu	The Blue-billed Duck is almost wholly aquatic and is seldom seen on land. Non-breeding flocks, often with several hundred individuals, congregate on large, deep open freshwater dams and lakes in autumn.	21/02/2000	Negligible - No suitable habitat.
Australasian Shoveler	<i>Spatula rhynchotis</i>		Vu	The Australasian Shoveler is found in all kinds of wetlands, preferring large undisturbed heavily vegetated freshwater swamps. It is also found on open waters and occasionally along the coast.	03/03/2017	Negligible - No suitable habitat.
Diamond Firetail	<i>Stagonopleura guttata</i>		Vu	Diamond Firetails are found in open grassy woodland, heath and farmland or grassland with scattered trees	18/01/1990	Negligible - No records in search region.
Marsh Sandpiper	<i>Tringa stagnatilis</i>		En	Marsh Sandpipers are commonly seen singly, or in small to large flocks in fresh or brackish (slightly salty) wetlands such as rivers, water meadows, sewage farms, drains, lagoons and swamps.		Negligible - No suitable habitat.
Mammals						
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>		Vu	Prefers dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter	29/03/2017	Negligible - No suitable habitat.
Eastern Barred Bandicoot	<i>Perameles gunnii</i>	VU	En	Occurs in Tasmania in open habitats including woodlands and open forests with a grassy understorey.	5/06/2003	Negligible - No suitable habitat.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat preference	Last record in the search region	Likelihood of occurrence within the study area
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	VU	Vu	Requires foraging resources and roosting sites. The primary food source is blossom from Eucalyptus and related genera but commonly forages on fruit trees in urban areas. Two permanent known Flying Fox camps occur in the greater Melbourne region including one at Yarra Bend and one at Doveton.	16/08/2007	Moderate - Potential foraging habitat exists in areas of Floodplain Riparian Woodland along Steele Creek, as well amongst planted eucalypts throughout the study area.
Spot-tailed Quoll	<i>Dasyurus maculatus maculatus</i>	EN	En	Temperate and subtropical rainforests in mountain areas wet sclerophyll forest lowland forests open and closed eucalypt woodlands.	None	Negligible - No suitable habitat, no records in search region.
Platypus	<i>Ornithorhynchus anatinus</i>		Vu	Platypuses can live in a range of freshwater bodies. They are mostly found where the banks are suitable for building stable burrows and where the water is shallow enough for them to dive down and feed on bottom dwelling creatures. They also prefer areas where there are trees, shrubs and grassy banks.	01/01/1997	Negligible - No suitable habitat.
Frogs						
Brown Toadlet	<i>Pseudophryne bibronii</i>		En	Lives in forests, heathlands and grasslands where it can be heard calling throughout the year	31/03/1994	Low - No preferred habitat.
Growling Grass Frog	<i>Litoria raniformis</i>	VU	Vu	Persists in waterways and other aquatic habitats in the greater Melbourne region. Key habitat features for the species includes submerged vegetation for egg-laying, rocks and logs for basking, permanent freshwater lagoons for breeding and cracks, as well as debris and dense vegetation for refuge.	18/12/2018	Moderate - Potential habitat exists along Steele Creek, albeit low quality and lacking diversity of habitat features for the species. Recent nearby record.
Reptiles						
Grassland Earless Dragon	<i>Tympanocryptis pinguicollis</i>	EN	Cr	Native grassland specialist inhabiting natural temperate grasslands. Now thought to be extinct in Victoria.	None	Negligible - grassland habitat limited to small, weedy, isolated patches. Species thought to be extinct in Vic.
Murray River Turtle	<i>Emydura macquarii</i>		Cr	The Murray River Turtle occurs primarily in rivers and waterbodies associated with rivers such as backwaters, oxbows, anabranch's and deep, permanent waterholes on the floodplains. This species appears to avoid shallow water.	2017	Low - No preferred habitat.
Striped Legless Lizard	<i>Delma impar</i>	VU	En	Inhabits intact grassland habitats where it shelters in grass tussocks, under rocks and in cracks in the soil	1/09/2014	Low - grassland habitat limited to small, weedy, isolated patches. Patches lack connectivity and other key habitat features needed.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat preference	Last record in the search region	Likelihood of occurrence within the study area
Tussock Skink	<i>Pseudemoia pagenstecheri</i>		En	Found from the Grampians in the west through the basalt plains west of Melbourne to north-east Victoria.	2020	High – Recorded south of the Western Ring Road between the Western Ring Road and Albion Jacana railway line.
Fish						
Australian Grayling	<i>Prototroctes maraena</i>	VU	En	Occurs in streams and rivers on the eastern and southern flanks of the Great Dividing Range, from Sydney, southwards to the Otway Ranges of Victoria and in Tasmania. The species is found in fresh and brackish waters of coastal lagoons.	5/03/2015	Low - Disturbed riparian habitats along Steele Creek.
Dwarf Galaxias	<i>Galaxiella pusilla</i>	VU	En	Slow flowing, still shallow permanent and temporary freshwater habitats.	None	Low - Disturbed riparian habitats along Steele Creek. No records in search region.
Murray Cod	<i>Maccullochella peelii</i>	VU	En	Distributed throughout the Murray-Darling Basin.	20/06/2012	Low - Disturbed riparian habitats along Steele Creek.
Silver Perch	<i>Bidyanus bidyanus</i>	CR	En	Distributed throughout the Murray-Darling Basin. Silver perch are found in similar habitats to Murray cod and Golden perch, i.e. lowland, turbid and slow-flowing rivers.	1981	Low - No preferred habitat.
Invertebrates						
Golden Sun Moth	<i>Synemon plana</i>	CR	Vu	Occurs in grassy areas in the greater Melbourne region, mainly in areas dominated by native grasses such as wallaby grass and spear grass, but also in areas of introduced grasses such as Chilean Needle-grass.	9/01/2017	Moderate - Extensive area of Chilean Needle-grass south of Western Ring Road has the potential to provide habitat for this species.

Legend: EPBC Act: CR = critically endangered, EN = endangered, VU = vulnerable, M = migratory; FFG Act: Cr = critically endangered, En = endangered, Vu = vulnerable

Appendix E Habitat hectare results

Habitat Hectare Criteria		Max score	A	B	C	D	E	F	G	H	I	J	K	L
Site Condition	Bioregion		VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
	EVC		132_63	132_63	132_63	132_63	56	56	132_63	56	56	56	56	56
	Large Old Trees	10	NA	NA	NA	NA	0	0	NA	0	0	0	0	0
	Canopy Cover	5	NA	NA	NA	NA	5	5	NA	5	5	5	5	0
	Lack of Weeds	15	4	4	4	4	0	0	4	0	0	0	0	0
	Understorey	25	5	5	5	5	5	5	5	5	5	5	5	5
	Recruitment	10	6	6	6	6	5	5	6	5	5	5	5	5
	Organic Matter	5	2	2	2	2	2	2	2	5	3	2	2	2
	Logs	5	NA	NA	NA	NA	0	0	NA	0	0	0	0	0
	Total Site Score		17	17	17	17	17	17	17	20	18	17	17	12
	Standardiser		1.36	1.36	1.36	1.36	1	1	1.36	1	1	1	1	1
Standardised Score		23	23	23	23	17	17	23	20	18	17	17	12	
Landscape Value	Patch Size	10	1	1	1	1	1	1	1	1	1	1	1	1
	Neighbourhood	10	0	0	0	0	0	0	0	0	0	0	0	0
	Distance to Core	5	0	0	0	0	0	0	1	0	0	0	0	0
	Total Landscape Score		1	1	1	1	1	1	2	1	1	1	1	1
Final score	Habitat Score (out of 100)	100	24	24	24	24	18	18	25	21	19	18	18	13
	Condition Score (out of 1)	1	0.24	0.24	0.24	0.24	0.18	0.18	0.25	0.21	0.19	0.18	0.18	0.13



Appendix F Scattered trees recorded

Scattered Tree Number	Common Name	Scientific name	Size Class	DBH (cm)
1	River Red-gum	<i>Eucalyptus camaldulensis</i>	Small	72
2	River Red-gum	<i>Eucalyptus camaldulensis</i>	Small	35
3	River Red-gum	<i>Eucalyptus camaldulensis</i>	Small	36
4	River Red-gum	<i>Eucalyptus camaldulensis</i>	Small	29
5	River Red-gum	<i>Eucalyptus camaldulensis</i>	Small	38
6	River Red-gum	<i>Eucalyptus camaldulensis</i>	Small	23
7	River Red-gum	<i>Eucalyptus camaldulensis</i>	Small	28
8	River Red-gum	<i>Eucalyptus camaldulensis</i>	Small	20
9	River Red-gum	<i>Eucalyptus camaldulensis</i>	Small	26
10	River Red-gum	<i>Eucalyptus camaldulensis</i>	Small	11
11	River Red-gum	<i>Eucalyptus camaldulensis</i>	Small	30



Appendix G EPBC Act Protected Matters Search Tool Report





EPBC Act Protected Matters Report

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

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

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

Report created: 25/03/20 14:47:42

[Summary](#)

[Details](#)

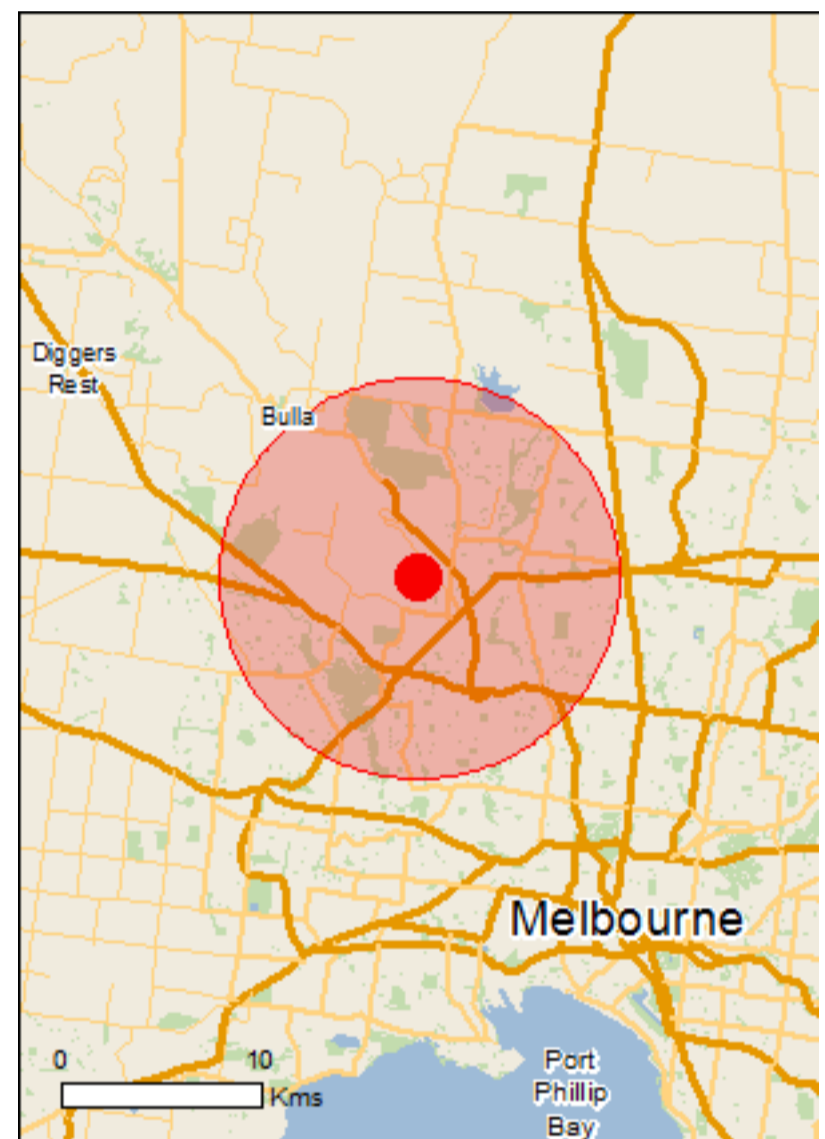
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

[Buffer: 10.0Km](#)



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	36
Listed Migratory Species:	15

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	6
Commonwealth Heritage Places:	2
Listed Marine Species:	23
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	1
Invasive Species:	47
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[\[Resource Information \]](#)

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

Name	Status	Type of Presence
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Critically Endangered	Community known to occur within area
Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community may occur within area
Natural Damp Grassland of the Victorian Coastal Plains	Critically Endangered	Community may occur within area
Natural Temperate Grassland of the Victorian Volcanic Plain	Critically Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species

[\[Resource Information \]](#)

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species

Name	Status	Type of Presence
Rostratula australis Australian Painted Snipe [77037]	Endangered	habitat known to occur within area Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]	Vulnerable	Species or species habitat may occur within area
Fish		
Galaxiella pusilla Eastern Dwarf Galaxias, Dwarf Galaxias [56790]	Vulnerable	Species or species habitat likely to occur within area
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat may occur within area
Frogs		
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat known to occur within area
Insects		
Synemon plana Golden Sun Moth [25234]	Critically Endangered	Species or species habitat known to occur within area
Mammals		
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
Perameles gunnii Victorian subspecies Eastern Barred Bandicoot (Mainland) [88020]	Endangered	Translocated population known to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Plants		
Amphibromus fluitans River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat likely to occur within area
Dianella amoena Matted Flax-lily [64886]	Endangered	Species or species habitat known to occur within area
Diuris fragrantissima Sunshine Diuris, Fragrant Doubletail, White Diuris [21243]	Endangered	Species or species habitat likely to occur within area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat may occur within area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Lachnagrostis adamsonii Adamson's Blown-grass, Adamson's Blowngrass [76211]	Endangered	Species or species habitat likely to occur within area
Leucochrysum albicans var. tricolor Hoary Sunray, Grassland Paper-daisy [56204]	Endangered	Species or species habitat likely to occur within area
Pimelea spinescens subsp. spinescens Plains Rice-flower, Spiny Rice-flower, Prickly Pimelea [21980]	Critically Endangered	Species or species habitat known to occur within area
Prasophyllum frenchii Maroon Leek-orchid, Slaty Leek-orchid, Stout Leek-orchid, French's Leek-orchid, Swamp Leek-orchid [9704]	Endangered	Species or species habitat likely to occur within area
Pterostylis cucullata Leafy Greenhood [15459]	Vulnerable	Species or species habitat may occur within area
Rutidosis leptorrhynchoides Button Wrinklewort [7384]	Endangered	Species or species habitat known to occur within area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat likely to occur within area
Senecio psilocarpus Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat likely to occur within area
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat likely to occur within area

Reptiles

Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat known to occur within area
Tympanocryptis pinguicolla Grassland Earless Dragon [66727]	Endangered	Species or species habitat known to occur within area

Listed Migratory Species

[[Resource Information](#)]

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

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

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.

Name
Commonwealth Land - Defence - DSTO MARIBYRNONG Defence - LOGISTIC FACILITY(Maygar Barracks) - BROADMEADOWS Defence - MARIBYRNONG COMPLEX Defence - MENIN BARRACKS - MOONEE PONDS Defence - RANAD SOMERTON

Commonwealth Heritage Places [\[Resource Information \]](#)

Name	State	Status
Historic		
Defence Explosive Factory Maribyrnong	VIC	Listed place
Essendon Airport Air Traffic Control Tower	VIC	Listed place

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

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

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur

Name	Threatened	Type of Presence within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Organ Pipes	VIC

Regional Forest Agreements [\[Resource Information \]](#)

Note that all areas with completed RFAs have been included.

Name	State
West Victoria RFA	Victoria

Invasive Species [\[Resource Information \]](#)

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

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Carduelis chloris European Greenfinch [404]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Turdus philomelos Song Thrush [597]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Carrichtera annua Ward's Weed [9511]		Species or species

Name	Status	Type of Presence
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		habitat may occur within area Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
<p>Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]</p>		<p>Species or species habitat likely to occur within area</p>
<p>Ulex europaeus Gorse, Furze [7693]</p>		<p>Species or species habitat likely to occur within area</p>

Caveat

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

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-37.69472 144.86722

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.

Document prepared by

Aurecon Australasia Pty Ltd

ABN 54 005 139 873

Aurecon Centre

Level 8, 850 Collins Street

Docklands, Melbourne VIC 3008

PO Box 23061

Docklands VIC 8012

Australia

T +61 3 9975 3000

F +61 3 9975 3444

E melbourne@aurecongroup.com

W aurecongroup.com

