

485 Cooper Street Epping

Matters of National Environmental Significance Assessment

Prepared for The GPT Group

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1. Executive summary

The GPT Group engaged Nature Advisory Pty Ltd to prepare an assessment of the impacts of a proposed commercial development (the proposed action) at Epping in Victoria on Matters of National Environmental Significance (MNES), being matters listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (the 'EPBC Act').

The proposed action will occur at 485 Cooper Street in Epping, Victoria.

The EPBC Act protects listed threatened species and ecological communities and migratory species that are defined as MNES. Any impacts on these matters considered significant requires the approval of the Australian Minister for the Environment. If there is a possibility of a significant impact on MNES, a Referral under the EPBC Act should be considered. The Minister will decide after 20 business days whether the project will be a 'Controlled Action' under the Act, in which case it cannot be undertaken without the approval of the Minister.

1.1. Relevant Matters of National Environmental Significance (MNES)

As a result of Nature Advisory's review, the Matters of National Environmental Significance (MNES) deemed relevant to the project area are summarised below in Table 1.

Table 1: Relevant MNES

MNES	VBA/Protected Matter Search Tool Results	Number considered to potentially occur or known to occur			
Threatened Flora	19	1			
Threatened Fauna	22	6			
Ecological Communities	6	2			

1.2. Significant impact assessment outcomes

Table 2 summarises the significant impact assessment outcomes.

Table 2: Conclusions about significant impacts on MNES

MNES	Significant Impact Conclusion
	The project area supports two threatened ecological communities:
	 Natural Temperate Grassland of the Victorian Volcanic Plains (NTGVVP) (EPBC: Critically Endangered).
Listed threatened	 Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP) (EPBC: Critically Endangered).
ecological communities	The project will result in the removal of 1.143 hectares of NTGVVP (all of Habitat Zones A, B, D, E & F) from the project area for the construction of warehouses. The impacted areas constitute 100% of the NTGVVP on site. The removal of NTGVVP from the project area is likely to constitute a significant impact.
	The project will result in the removal of 1.021 hectares of GEWVVP (all of Habitat Zone P) from the project area for the construction of warehouses. The impacted areas constitute 100% of the



MNES	Significant Impact Conclusion
	GEWVVP on site. The removal of GEWVVP from the project area is likely to constitute a significant impact.
Listed threatened	The following listed flora species was initially considered to have potential to occur in suitable habitat on the site, however no individuals were recorded during targeted surveys and as such the species is considered unlikely to occur:
flora species	 Matted Flax-lily (EPBC: Endangered).
	No listed threatened flora species are considered likely to occur on site.
	The following listed fauna species were initially considered to have potential to occur in suitable habitat on the site, however no individuals were recorded during targeted surveys and as such the species are considered unlikely to occur:
	 Golden Sun Moth (EPBC: Vulnerable); and
	 Growling Grass Frog (EPBC: Vulnerable).
Listed threatened	The following listed fauna species could potentially occur on the site and no targeted surveys have been conducted:
fauna species	 Grey-headed Flying-fox (EPBC: Vulnerable);
	 Latham's Snipe (EPBC: Migratory);
	 Swift Parrot (EPBC: Critically endangered); and
	 White-throated Needletail (EPBC: Vulnerable and Migratory).
	It is considered unlikely that the species above would be impacted by the project given the very limited extent, quality and/or potential use of suitable habitat on site.

Notes: EPBC = status under the EPBC Act.

This assessment found that the proposed action was likely to have a significant impact on MNES, specifically listed threatened ecological communities. As such, it is recommended that this action be Referred to the Australian Minister for the Environment seeking a determination that it is a "Controlled Action".



2. Introduction

The GPT Group engaged Nature Advisory Pty Ltd to prepare an assessment of the impacts of a proposed commercial development (the proposed action) at Epping in Victoria on Matters of National Environmental Significance (MNES), being matters listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (the 'EPBC Act').

The proposed action will occur at 485 Cooper Street in Epping, Victoria.

The EPBC Act protects listed threatened species and ecological communities and migratory species that are defined as MNES. Any impacts on these matters considered significant requires the approval of the Australian Minister for the Environment. If there is a possibility of a significant impact on MNES, a Referral under the EPBC Act should be considered. The Minister will decide after 20 business days whether the project will be a 'Controlled Action' under the Act, in which case it cannot be undertaken without the approval of the Minister.

Section 3 describes the existing information, including a description and the location of the proposed action, and the field surveys undertaken to date.

Section 4 presents the assessment results, including likelihood of occurrence of MNES.

Section 5 includes a significant impact assessment for those MNES considered likely to occur.

This assessment was undertaken by a team from Nature Advisory comprising Brett Macdonald (Senior Ecologist), Tessa Doherty (Botanist), Michael Sebastian (Zoologist), Nhung Nguyen (GIS Analyst) and Alan Brennan (Director).

The location of the proposed action is shown in Figure 1.

The location and extent of MNES within 485 Cooper Street, Epping (the study area) as well as the project footprint (the project area) is shown in Figure 2.







3. Existing information and methods

3.1. Overview of proposed action

The GPT Group is seeking to develop a commercial estate within a 35-hectare property at 485 Cooper Street in Epping, Victoria. The commercial estate will involve the construction of warehouses, offices, roads, parking and stormwater treatment infrastructure.

3.2. Location of proposed action

The project site (the study area) is located approximately 17 kilometres north-northeast of Melbourne's CBD (see Figure 1). It is bordered by private property to the north, Hume Freeway the east, the Merri Creek in the west and Merri Creek Park in the south. The study area includes the entirety of the land parcel at 485 Cooper Street in Epping.

3.3. Sources of information

Relevant information has been obtained from the following:

- Victorian Biodiversity Atlas administered by the Department of Environment, Land, Water and Planning (DELWP 2022b);
- NatureKit (DELWP 2022c);
- The Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Protected Matters Search Tool (DAWE 2022); and
- DELWP's Native Vegetation Information Management system (NVIM) (DELWP 2022d).

Existing flora and fauna species records and information about the potential occurrence of listed matters was obtained from an area termed the 'search region', defined here as an area with a radius of ten kilometres from the boundary of the study area.

A list of the flora and fauna species recorded in the search region was obtained from the *Victorian Biodiversity Atlas* (VBA), a database administered by DELWP (2021d).

The online EPBC Act *Protected Matters Search Tool* (DAWE 2022) was consulted to determine whether nationally listed species or communities potentially occurred in the search region based on habitat modelling.

3.4. Field methods

The field assessment was conducted on the 8th August 2022 and on the 1st December 2022. Targeted surveys were also undertaken for one listed flora species and two listed fauna species that were initially considered to potentially occur on site:

- Matted Flax-lily 1st December 2022;
- Golden Sun Moth April 2022; and
- Growling Grass Frog February 2023.

During these assessments, the study area was surveyed was inspected in detail on foot.

Sites in the study area found to support native vegetation and/or fauna habitat or with potential to support listed matters were mapped through a combination of aerial photograph interpretation and



ground-truthing using a hand-held GPS (accurate to approximately five metres). Species and ecological communities listed as threatened under the EPBC Act were also mapped using the same method.

The findings of Nature Advisory's field assessments, for the purposes of informing a planning permit application, are documented in:

485 Cooper Street Epping: Flora & Fauna Assessment - Report No. 22076 (2.3) (Nature Advisory 2023).

3.5. Site description

3.5.1. Native vegetation and fauna habitat

The study area supported heavy basaltic soils on an undulating landscape and the western third of the site steadily slopes downward to Merri Creek which forms the western boundary of the property. A large quarry void is situated in the north of the study area and another smaller one in the north-west. Steep, rocky escarpments line the southern portion of the creek.

It is understood that the study area was formerly part of a golf course, although little evidence of this former use remains. It is also understood that the site has not been managed ever since, apart from wildfire mitigation slashing in areas.

The majority of vegetation in the study area is treeless open grassland, heavily dominated by introduced pasture grasses and broad-leaf weeds, particularly Toowoomba Canary-grass, Kikuyu, Cocksfoot and Chilean Needle-grass. Interspersed throughout the study area were various sized patches of native grassland vegetation dominated by indigenous Kangaroo Grass, spear and wallaby grasses and various indigenous forbs. The highest quality native grassland vegetation was in the south-east of the study area.

Other areas of native vegetation included scattered patches of degraded escarpment shrubland associated with the walls of the two quarry voids. These were generally dominated by indigenous Lightwood, Sweet Bursaria and Tree Violet, occasional emergent River Red-gum trees and introduced weeds in the ground layers.

Vegetation along Merri Creek comprised indigenous Common Reed, other native aquatics and the noxious weed Spiny Rush, with indigenous and introduced shrubs scattered along its banks (e.g. River Bottle-brush, Woolly Tea-tree and Gorse). Escarpments along the creek supported mostly indigenous and introduced trees and shrubs (e.g. River Red-gum, Tree Violet, Sweet Bursaria, Lightwood and African Boxthorn).

Native wetland vegetation also occurred in a drainage trench and the bottoms of the two quarry voids, although it was generally small and of low quality and variously dominated by Bulrush, Common Reed, Common Spike-sedge and introduced weeds.

Planted indigenous and non-indigenous eucalypts (namely River Red-gum and Sugar Gum) were scattered throughout the study area, but were generally concentrated in the south-east.

The western quarter of the study area (sloping down to Merri Creek) was heavily dominated by the highly invasive introduced shrub Gorse, although patches of native grassland vegetation were scattered throughout in clearings in the Gorse.

Three patches of woodland dominated by River Red-gum occurred mostly in the north of the study area. Cover of native grasses varied across these areas but all had moderate diversity of native herbs.

Fauna habitat within the study area comprised vast areas of grassland, treed vegetation, rocky escarpments and aquatic habitat.



The study area lies within the Victorian Volcanic Plain bioregion and falls within Melbourne Water catchment management area and Whittlesea local government area. It is currently zoned Industrial 1 Zone (IN1Z) and Urban Floodway Zone (UFZ) in the Whittlesea Planning Scheme.

3.5.2. Patches of native vegetation

Evidence on site, including floristic composition and soil characteristics, suggested that Heavier-soils Plains Grassland (EVC 132_61), Escarpment Shrubland (EVC 895), Plains Grassy Woodland (EVC 55_61), Tall Marsh (EVC 821), Plains Grassy Wetland (EVC 125) and Riparian Woodland (EVC 641) were present throughout the study area (Figure 3). Some 27 largely disjunct areas of native vegetation ('sites') comprising the abovementioned EVCs were identified in the study area (Table 3). This totalled an area of 6.853 hectares of native vegetation in patches.

Table 3: Description of habitat zones in the study area

Habitat Zone	EVC	Description
AA	Riparian Woodland (EVC 641)	Associated with the Merri Creek channel. Comprised indigenous Common Reed, other native aquatics and the noxious weed Spiny Rush, but also indigenous and introduced shrubs scattered along its banks (e.g. River Bottle-brush, Woolly Teatree and Gorse). Moderate quality due to weedy understorey.
K, O, Q, R, S, X, Y & Z	Escarpment Shrubland (EVC 895)	Associated with Merri Creek banks escarpments and scattered patches associated with the walls of the two quarry voids. Supported mostly indigenous and introduced trees and shrubs (e.g. River Red-gum, Tree Violet, Sweet Bursaria, Hedge Wattle, Lightwood and African Box-thorn) with many introduced weeds in the ground layers. Patches S and Y are moderate quality, while the rest are low quality due to high weed cover.
L, P & V	Plains Grassy Woodland (EVC 55_61)	Zones L and P supported a few small River Red-gum trees, and both supported ground layers heavily dominated by native grasses, particularly Common Tussock-grass and Kangaroo Grass. Both zones supported a moderate diversity, though low cover, of indigenous forbs. Zone P was found to constitute the EPBC Act-listed community <i>Grassy Eucalypt Woodland of the Victorian Volcanic Plains</i> (GEWVVP). Zone V was a very small patch of River Red-gums (two mature, mostly recruits) and various grassy weeds. Low quality native vegetation due to high weed cover and lack of native species diversity.
A, B, C, D, E, F, H, I, T & U	Heavier-soils Plains Grassland (EVC 132_61)	Numerous scattered patches of moderate to high quality native grassland, dominated by by indigenous Kangaroo Grass, spear and wallaby grasses and various indigenous forbs including Pink Bindweed and Blue Devil. Introduced weed cover moderate to high. The highest quality native grassland vegetation was patches A, C and I, while the rest of the patches were moderate due to high weed cover. Patches A, B, D, E and F were found to constitute the EPBC listed community <i>Natural Temperate Grasslands of the Victorian Volcanic Plains</i> (NTGVVP).
G & J	Tall Marsh (EVC 821)	Deeper semi-permanent wetlands. Low quality native vegetation dominated by indigenous Bulrush, Common Reed and various introduced weeds. Patch J contained mostly Bulrush, whereas Patch G was dominated by both Bulrush and Common Reed.



Habitat Zone	EVC	Description
M & W	Plains Grassy Wetland (EVC 125)	Small ephemeral wetlands associated with the bottom of the quarries and shallow depressions. Variously dominated by indigenous Common Spike-sedge, Rush and various introduced weeds. Low quality due to high weed cover.

Notes: Grey shading indicates EPBC Act-listed vegetation.





4. Assessment results and likelihood of occurrence

The following section addresses the likelihood of occurrence of MNES within the study area.

4.1. Listed flora species

4.1.1. Likelihood of occurrence

The EPBC Protected Matters Search Tool (DAWE 2022) indicated that within the search region there were records of, or there occurred potential suitable habitat for 19 flora species listed under the Commonwealth EPBC Act. No flora species listed under the EPBC Act were recorded during the field survey.

The likelihood of occurrence in the study area of species listed under the EPBC Act is addressed in Table 4. Species considered 'likely to occur' are those that have a very high chance of being in the study area based on numerous records in the search region and suitable habitat in the study area. Species considered to have the 'potential to occur' are those for which suitable habitat exists, but recent records are scarce.

This analysis indicates that no EPBC Act-listed flora species are considered likely to occur.

Note that the following species was initially considered to potentially occur on site, however no individuals were recorded during targeted surveys and as such the species is considered unlikely to occur:

Matted Flax-lily (EPBC Act: Endangered).



Table 4: Listed flora species and the likelihood of their occurrence in the study area

Common Name	Name Scientific name EPBC Habitat		Number of records	Date of last record	
River Swamp Wallaby-grass	Amphibromus fluitans	Vulnerable	River Swamp Wallaby-grass grows mostly in permanent swamps and also lagoons, billabongs, dams and roadside ditches. The species requires moderately fertile soils with some bare ground; conditions that are caused by seasonally-fluctuating water levels (DAWE 2020).		28/10/2020
Charming Spider- orchid	Caladenia amoena	Endangered	bically found in grassy dry forest; Eucalyptus melliodora (Box Ironbark) on sandy loams rived from sandstone and mudstone. Known from two localities, one at Plenty and the ner at Wattle Glen (Todd 2000).		22/08/1996
Matted Flax-lily	Dianella amoena	Endangered	wland grassland and grassy woodlands on well-drained to seasonally waterlogged fertile ndy loams to heavy cracking soils derived from sedimentary or volcanic Geology. It is widely stributed from eastern to south-western Victoria (DAWE 2020).		8/10/2020
Small Golden Moths	MothsDiuris basalticaEndangeredGrows in herb-rich native grasslands, dominated by Kangaroo Grass (Themeda triandra) on heavy basaltic soils, often embedded with basalt boulders. All locations that the species is known to occur form part of the 'Natural Temperate Grassland of the Victorian Volcanic Plain' (DAWE 2020).		None	N/A	
Sunshine Diuris	Diuris fragrantissima	Endangered	Vative grasslands dominated by Kangaroo Grass, on heavy basalt soils, often with embedded basalt boulders. The sole remaining natural population at Sunshine occurs in a small (0.1 ha) remnant of Western (Basalt) Plains Grassland (DAWE 2020).		N/A
Trailing Hop-bush	Dodonaea procumbens	Vulnerable	Grows in low lying, often winter wet areas in woodland, low open-forest heathland and grasslands on sands and clays. Largely confined to SW of Victoria (DAWE 2020).		N/A
Clover Glycine	Glycine latrobeana	Vulnerable	Found across south-eastern Australia in native grasslands, dry sclerophyll forests, woodlands and low open woodlands with a grassy ground layer. In Victoria, populations occur in lowland grasslands, grassy woodlands and sometimes in grassy heath (DAWE 2020).		2/10/2015
Adamson's Blown- grass	Lachnagrostis adamsonii	Endangered	Confined to slow moving creeks, swamps, flats, depressions or drainage lines that are seasonally inundated or waterlogged and usually moderately to highly saline. Appear to favour sites that have some shelter from the wind (DAWE 2020).		1/01/1990
Spiny Peppercress	Lepidium aschersonii	Vulnerable	The Spiny Peppercress occurs in periodically wet sites such as gilgai depressions and the margins of freshwater and saline marshes and shallow lakes, usually on heavy clay soil. Almost all sites receive some degree of soil waterlogging or seasonal flooding (Carter 2010).		N/A
Basalt Peppercress	Lepidium hyssopifolium s.s.	Endangered	Known to establish on open, bare ground with limited competition from other plants. Previously recorded from Eucalypt woodland with a grassy ground cover, low open Casuarina woodland with a grassy ground cover and tussock grassland. Now generally found amongst exotic pasture grasses and beneath exotic trees (DAWE 2020).		21/05/2018
White Sunray	Leucochrysum albicans subsp. tricolor	Sum albicans subsp. Endangered Dccurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. Plants can be found in natural or semi-natural vegetation and grazed or ungrazed habitat. Bare ground is required for germination. The unpalatability of this species is likely to protect it in heavily grazed areas where patches of bare ground are likely to develop, favouring recruitment (DAWE 2020).		1	24/11/2016
Spiny Rice-flower	Pimelea spinescens subsp. spinescens	Critically Endangered	Occurs in grassland or open shrubland on basalt derived soils, usually comprising black or grey clays. Plants from more northerly populations occur on red clay complexes, while plants from southern populations occur on heavy grey-black clay loams. Topography is generally flat		N/A



Likelihood of occurrence

No suitable habitat in study area. Unlikely to occur.

No suitable habitat in study area. No recent records nearby. **Unlikely to occur.**

Although, suitable habitat present in the study area and many recent records nearby, no individuals were recorded during targeted surveys undertaken for this investigation. **Unlikely to occur.**

Suitable habitat in study area but it is marginal and no recent records nearby. **Unlikely to occur.**

Suitable habitat in study area but it is marginal. Only known from one population near Sunshine. No recent records nearby. **Unlikely to occur.**

Suitable habitat in study area but it is marginal and no recent records nearby. **Unlikely to occur.**

Suitable habitat in study area but it is marginal and few recent records nearby. **Unlikely to occur.**

No suitable habitat in study area. Lack of recent records. **Unlikely to occur.**

Suitable habitat in study area but it is marginal. No recent records nearby. **Unlikely to occur.**

No suitable habitat in study area. Few recent records. **Unlikely to occur.**

No suitable habitat in study area. Only one recent nearby record. **Unlikely to occur.**

Suitable habitat in study area but it is marginal and no recent records nearby. **Unlikely to occur.**

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Common Name Scientific name		ЕРВС	Habitat		Date of last record
			but populations may occur on slight rises or in slightly wettish depressions (Carter & Walsh 2006).		
Round-leaf Pomaderris	Pomaderris vacciniifolia	Critically Endangered	ccurs in damp forest and herb-rich foothill forest north-east of Melbourne in the upper atchments of the Yarra, Plenty and Yea rivers (DAWE 2020).		N/A
Green-striped Greenhood	Pterostylis chlorogramma	Vulnerable	Occurs in mixed Box-Stringybark forest with a shrubby understorey, often with Pteridium esculentum as a major component on sandy or clay loam soils (Duncan et al. 2009).	None	N/A
Leafy Greenhood	Pterostylis cucullata	Vulnerable	ea-tree scrubs on tall sandy and calcareous dunes, in moist, open or even deep shaded calcareous dunes (Jones 1994).		N/A
Button Wrinklewort	Rutidosis leptorhynchoides	Endangered	In Victoria restricted to open stands of plains grassland and grassy woodlands, on fertile clays to clay loams, usually in areas where the grass cover is more open, either as a result of recurrent fires or grazing by native macropods or stock. It also occurs on low rises with shallow, stony soils at less than 100 m above sea level (NSW OEH 2012).		N/A
Large-headed Fireweed	Senecio macrocarpus	Vulnerable	In Victoria, Large-fruit Fireweed occurs most commonly in grasslands on red-brown earth soils. It may also occur in grassy woodlands and open woodlands predominantly in the Western (Basalt) Plains grassland on red brown earth soils found on recent Quaternary (basalt) deposits (DAWE 2020).		N/A
Swamp Fireweed	Senecio psilocarpus	Vulnerable	Herb-rich winter-wet swamps on volcanic clays or peaty soils (Walsh 1999). Known from approximately 10 sites between Wallan, about 45 km north of Melbourne, and Honans Scrub in south-eastern South Australia (TSSC 2008).	None	N/A
Swamp Everlasting	Xerochrysum palustre	Vulnerable	Grows in wetlands including sedge-swamps and shallow freshwater marshes, often on heavy black clay soils. Commonly associated genera include <i>Amphibromus, Baumea, Carex,</i> <i>Chorizandra, Craspedia, Eleocharis, Isolepis, Lachnagrostis, Lepidosperma, Myriophyllum,</i> <i>Phragmites australis, Themea triandra</i> and <i>Villarsia</i> (DAWE 2020).		29/11/2005

Notes: EPBC = threatened species status under EPBC Act (CR = critically endangered; EN = endangered; VU = vulnerable). Grey shading indicates species that have potential to occur or are likely to occur.



Likelihood of occurrence

No suitable habitat in study area. No recent records. **Unlikely to occur.**

No suitable habitat in study area. No recent records. **Unlikely to occur.**

No suitable habitat in study area. No recent nearby records. **Unlikely to occur.**

Suitable habitat in study area but it is marginal and no recent records nearby. **Unlikely to occur.**

Suitable habitat in study area but it is marginal and no recent records nearby. **Unlikely to occur.**

Suitable habitat in study area but it is highly degraded. No recent records nearby. **Unlikely to occur.**

Suitable habitat in study area but it is highly degraded. Only one recent record nearby. **Unlikely** to occur.

4.2. Listed fauna species

4.2.1. Likelihood of occurrence

The EPBC Protected Matters Search Tool (DAWE 2022) indicated that within the search region there were records of, or there occurred potential suitable habitat for 22 fauna species, including 7 migratory species listed under the EPBC Act.

Nature Advisory undertook an assessment of the likelihood of occurrence of the listed Fauna Species as detailed in Table 5.

This analysis of potential occurrence of listed fauna species excludes:

- Marine fauna given the study area is inland; and
- Migratory oceanic bird species (such as albatrosses and petrels) given the study area is inland.

Species considered 'likely to occur' are those that have a very high chance of being in the study area given the existence of numerous records in the search region and suitable habitat in the study area. Using the precautionary approach, species considered to have the 'potential to occur' are those where suitable habitat exists, but recent records are scarce.

Four species were found to be likely to occur or have the potential to occur:

- Grey-headed Flying-fox (EPBC Act: Vulnerable);
- Latham's Snipe (EPBC Act: Migratory);
- Swift Parrot (EPBC Act: Critically Endangered); and
- White-throated Needletail (EPBC Act: Vulnerable & Migratory).

Note that the following two species were initially considered to potentially occur on site, however no individuals were recorded during targeted surveys and as such the species are considered unlikely to occur:

- Golden Sun Moth (EPBC Act: Vulnerable); and
- Growling Grass Frog (EPBC Act: Vulnerable).



Table 5: Listed fauna species and the likelihood of their occurrence in the study area

Common Name	Scientific name	EPBC-T	EPBC-M	Habitat		Date of last record	Likelihood of occurrence
Australasian Bittern	Botaurus poiciloptilus	EN		Terrestrial wetlands, including a range of wetland types but prefers permanent water bodies with tall dense vegetation, particularly those dominated by sedges, rush, reeds or cutting grass (Marchant & Higgins 1990).	3	20/12/1986	Marginal habitat in study area and no recent records – unlikely to occur
Double-banded Plover	Charadrius bicinctus		M (Bonn A2H)	Inhabits wide range of coastal or inland wetlands with varying levels of salinity; mainly muddy margins or rocky shores of wetlands (Marchant & Higgins 1993).	1	10/04/2004	No suitable habitat in study area – unlikely to occur
Eastern Barred Bandicoot	Perameles gunnii	VU		The habitat of the Eastern Barred Bandicoot (mainland) is perennial tussock grassland and eucalypt woodland with a grassy ground layer (Dufty 1994b; Seebeck 1995a, 2001). Drainage lines and areas of high vegetative cover have been identified as prime habitat. The key determining factor for persistence of this species appears to be high structural complexity and heterogeneity within the environment, reflected in its absence from agricultural areas but persistence in rubbish dumps and other variable habitats.	2	5/06/2003	Long extinct in the Port Phillip region – very unlikely to occur
Eastern Quoll	Dasyurus viverrinus	EN		Probably extinct in mainland Australia. Inhabits a range of of open forest, scrubland and heath (Menkhorst 1995).	4	1/01/1910	Long extinct in the Port Phillip region – very unlikely to occur
Eltham Copper Butterfly	Paralucia pyrodiscus lucida	EN		Its occurrence is dependent upon a close association between a dwarfed form of the Sweet Bursaria and colonies of a Notoncus sp. of ant, with the species unable to survive without the presence of the Notoncus ant (SWIFFT 2019). In the Eltham area of its range, this Butterfly appears to require well-drained gentle slopes, with a north to west aspect. Its known habitat is sparse dry woodland (Webster 2003).	1	1/01/1922	No suitable habitat in study area – unlikely to occur
Fork-tailed Swift	Apus pacificus		M (CAMBA, ROKAMBA, JAMBA)	The species can occur in wet sclerophyll forest but mainly prefers open forest or plains. It is almost exclusively aerial and feeds up to hundreds on metres above the ground, but can feed among open forest canopy. The species breeds internationally and seldom roosts in trees (Higgins 1999).	3	22/12/2006	No suitable habitat in study area – unlikely to occur
Glossy Ibis	Plegadis falcinellus		M (Bonn A2S)	Prefer freshwater inland wetlands, in particular, permanent or ephemeral water bodies and swamps with abundant vegetation (Marchant & Higgins 1990).	4	28/12/2006	Marginal habitat in study area – unlikely to occur
Golden Sun Moth	Synemon plana	VU		Areas that are, or have been native grasslands or grassy woodlands. It is known to inhabit degraded grasslands with introduced grasses being dominant, with a preference for the native wallaby grass being present (DEWHA 2009). Also known to be closely associated with exotic grass species, with populations found in grassland almost entirely composed of Chilean needlegrass (Richter et al. 2013).	3968	20/12/2019	Although, suitable grassland habitat exists in the study area and numerous recent records were found within the search region, no individuals were detected during targeted surveys – unlikely to occur
Grassland Earless Dragon	Tympanocryptis pinguicolla	EN		The species is confined to native tussock grassland on basalt plains north and west of Melbourne, with no confirmed sightings in Victoria since the 1960's (Robertson & Cooper 2000).	None	N/A	No records – unlikely to occur
Grey-headed Flying-fox	Pteropus poliocephalus	VU		Brisbane, Newcastle, Sydney and Melbourne are occupied continuously. Elsewhere, during spring, they are uncommon south of Nowra and widespread in other areas of their range. Roosts in aggregations of various sizes on exposed branches. Roost sites are typically located near water, such as lakes, rivers or the coast. Roost vegetation includes rainforest patches, stands of Melaleuca, mangroves and riparian vegetation, but colonies also use highly modified vegetation in urban and suburban areas (DAWE 2020).	18	18/02/2020	May occasionally forage in eucalypts in study area – potential to occur



Common Name	Scientific name	EPBC-T	EPBC-M	Habitat	Number of records	Date of last record	Likelihood of occurrence
Growling Grass Frog	Litoria raniformis	VU		Permanent, still or slow flowing water with fringing and emergent vegetation in streams, swamps, lagoons and artificial wetlands such as farm dams and abandoned quarries (Clemann & Gillespie 2004).	277	31/12/2019	Although, suitable wetland habitat exists in the study area and numerous recent records were found within the search region, no individuals were detected during targeted surveys – unlikely to occur
Latham's Snipe	Gallinago hardwickii		M (Bonn A2H, ROKAMBA, JAMBA, CAMBA)	Occurs in wide variety of permanent and ephemeral wetlands; it prefers open freshwater wetlands with dense cover nearby, such as the edges of rivers and creeks, bogs, swamps, waterholes. The species is wide spread in southeast Australia and most of its population occurs in Victoria, except in the northwest of the state (Naarding 1983; Higgins & Davies 1996).	90	28/02/2019	Suitable wetland habitat in study area and numerous recent records – likely to occur
Painted Honeyeater	Grantiella picta	VU		Inhabits box-ironbark forests and woodlands and mainly feeds on the fruits of mistletoe. Strongly associated with mistletoe around the margins of open forests and woodlands. Can also be found in farmland containing remnant treed vegetation. Occurs at few localities. Uncommon breeding migrant from further north, arriving in October and leaving in February (Higgins et al. 2001; Tzaros 2005).	1	21/12/1990	No suitable habitat in study area – unlikely to occur
Plains-wanderer	Pedionomus torquatus	CR		This species is highly sensitive to changes in grassland cover and density. Typically inhabits treeless native grasslands with sparse cover, with a preference for grasslands composed of wallaby grass and spear grass (Marchant & Higgins 1993). Habitat becomes unsuitable when grassland becomes dense (CA 2016). Evidence suggests it avoids areas of tree cover, with no records of the species within 300m of trees (>10m high) in their strongholds in New South Wales or Victoria (CA 2016).	8	23/09/1991	No suitable habitat in study area – unlikely to occur
Regent Honeyeater	Anthochaera phrygia	CR		Inhabits dry box-ironbark eucalypt forests near rivers and creeks on inland slopes of the Great Dividing Range. Can also occur in small remnant patches or in mature trees in farmland or partly cleared agricultural land (Higgins et al. 2001).	9	16/01/2001	No suitable habitat in study area – unlikely to occur
Rufous Fantail	Rhipidura rufifrons		M (Bonn A2H)	In east and south-east Australia, mainly inhabits tall wet sclerophyll forests, often in gullies. When on passage in warmer months, they are sometimes recorded in drier sclerophyll forests and woodlands, as well as parks and gardens (Higgins et al. 2006). Virtually absent from south-eastern Australia during winter (Higgins et al. 2006).	5	27/03/2008	No suitable habitat in study area – unlikely to occur
Satin Flycatcher	Myiagra cyanoleuca		M (Bonn A2H)	Mostly found in eucalypt forest, particularly tall wet forests and woodland within gullies (Higgins et al. 2006). Also inhabits eucalypt woodland comprising an open understorey and a grassy ground layer (Higgins et al. 2006). Generally absent from rainforest (Higgins et al. 2006).	3	17/01/1989	No suitable habitat in study area – unlikely to occur
Spot-tailed Quoll	Dasyurus maculatus maculatus	EN		Rainforest, wet and dry forest, coastal heath and scrub and River Red-gum woodlands along inland rivers (Menkhorst 1995).	2	1/01/1910	No suitable habitat in study area – unlikely to occur



Common Name	Scientific name	EPBC-T	EPBC-M	Habitat	Number of records	Date of last record	Likelihood of occurrence
Striped Legless Lizard	Delma impar	VU		Grassland specialist. Known to occur in some areas dominated by introduced species such as Harding Grass Phalaris aquatica, Serated Tussock Nasella trichotoma and Flatweed Hypocharis radicata and at sites with a history of grazing and pasture improvement. shelter in grass tussocks, thick ground cover, soil cracks, under rocks, spider burrows, and under ground debris such as timber. The majority of sites in Victoria and NSW occur on cracking clay soils with some surface rock which provide shelter for the species (DAWE 2020).	3	4/03/1990	Suitable habitat for the species occurs on site, particularly in the southeast and the far north. However, records in the search area are more than 30 years old and from the Craigieburn Grassland Reserve, which is not connected to this site - Unlikely to occur
Superb Parrot	Polytelis swainsonii	VU		Occurs in eucalypt dominated forests and woodlands, namely comprised of River Red-gum, Yellow Box and Grey Box, with seasonal occurrences in box-pine and Boree woodland (Baker-Gabb 2011). The species range extends along major riverine systems and the inland slopes of the Great Divide, stretching from central Victoria to north of Tamworth in NSW. Breeds in hollow branch or trunk of tall eucalypts within 9 km of feeding areas. Mostly feeds in box woodlands and wooded farmlands; less often in riparian forests (Higgins 1999).	1	1/01/1930	No suitable habitat in study area – unlikely to occur
Swift Parrot	Lathamus discolor	CR		Prefers a select range of eucalypts in Victoria, including Yellow Gum, Grey Box, White Box, Red Ironbark and Yellow Box, as well as River Red-gum when this species supports abundant 'lerp' (Saunders & Tzaros 2011). The species is also known to forage within planted stands of Spotted Gum and Sugar Gum (Nature Advisory; unpublished data). Breeds in Tasmania and migrates to the mainland of Australia for the autumn, winter and early spring months. It lives mostly north of the Great Dividing Range, passing through two areas of Victoria on migration: the Port Phillip district and Gippsland (Emison et al. 1987; Higgins 1999; Kennedy & Tzaros 2005). Though it is also not uncommonly sighted in urban areas (Nature Advisory; unpublished data). Occurrence of this species on the mainland can substantially change from year to year depending on food availability, giving potential for this species to occur almost anywhere throughout its range (Emison et al. 1987).	72	7/04/2019	May occasionally forage in eucalypts in study area – potential to occur
White-throated Needletail	Hirundapus caudacutus	VU	M (CAMBA, ROKAMBA, JAMBA)	Aerial, over all habitats, but probably more over wooded areas, including open forest and rainforest. Often over heathland and less often above treeless areas such as grassland and swamps or farmland (Higgins 1999).	11	25/01/2019	Highly mobile aerial species that can occur over most habitats – potential to occur as a flyover

Notes: EPBC-T = threatened species status under EPBC Act; **EPBC-M**: migratory status under the EPBC Act (M = listed migratory taxa; Bonn Convention (A2H) - Convention on the Conservation of Migratory Species of Wild Animals – listed as a member of a family; Bonn Convention (A2S) - Convention on the Conservation of Migratory Species of Wild Animals - species listed explicitly; CAMBA - China- Australia Migratory Birds Agreement; JAMBA - Japan-Australia Migratory Birds Agreement; ROKAMBA - Republic of Korea Australia Migratory Birds Agreement; Grey shading indicates species that have potential to occur or are likely to occur.



4.2.2. Susceptibility of listed fauna to impacts

Of the following four species determined to potentially occur, all were considered unlikely to be impacted by the project in the study area:

- Grey-headed Flying-fox;
- Latham's Snipe;
- Swift Parrot; and
- White-throated Needletail.

Grey-headed Flying-foxes may fly into the study area as they forage for nectar-bearing flowers and fruit and may feed from the planted and non-planted eucalypts there when they flower. However, there are only a limited number of such eucalypts in the study area, so the species is unlikely to use the study area heavily and is therefore unlikely to be significantly impacted by future development of the site (Nature Advisory 2022).

Latham's Snipe forages on heavily vegetated fringes of wetlands and drainage lines, so this migratory species may seasonally use such aquatic habitat in the study area. However, such habitat is limited in occurrence within the study area and is of varying quality for this species. Therefore, development of the site is unlikely to significantly impact this species (Nature Advisory 2022).

Swift Parrots may occasionally forage on planted Sugar Gums and River Red-gums in the study area during their winter migrations through southeast Australia. However, these are not preferred food tree species, and would only serve as short foraging stops along the way from their breeding grounds in Tasmania to the box-ironbark woodlands of central Victoria and the Spotted Gum forests of southeast NSW. Therefore, it is unlikely that development of the site would significantly impact this species (Nature Advisory 2022).

White-throated Needletails are aerial specialists who may forage above the study area occasionally but would not make direct use of the habitat there. They are therefore very unlikely to be impacted by any future development of the study area (Nature Advisory 2022).

4.3. Listed ecological communities

The EPBC Protected Matters Search Tool (DAWE 2022) indicated that six ecological communities listed under the EPBC Act had the potential to occur in the search region (



Table 6). Their occurrence in the study area was determined based on an assessment of the native vegetation present against published descriptions and condition thresholds for these communities.



Ecological Community	EPBC Status	Occurrence in the study area
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	CR	Occurs in the study area as Habitat Zone P.
Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	EN	Does not occur in the study area.
Natural Damp Grassland of the Victorian Coastal Plains	CR	Does not occur in the study area.
Natural Temperate Grassland of the Victorian Volcanic Plain	CR	Occurs in the study area as habitat zones A, B, D, E & F.
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	CR	Does not occur in the study area.
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	CR	Does not occur in the study area.

Table 6: EPBC Act listed ecological communities and likelihood of occurrence in the study area

Notes: EPBC = status under the EPBC Act (CR = Critically Endangered; EN = Endangered). Grey shading indicates ecological communities that were confirmed as occurring within the study area.

Habitat zones A, B, D, E & F were found to meet all of the qualifying criteria for the *Natural Temperate Grassland of the Victorian Volcanic Plain* community and Habitat Zone P was found to meet the all of the qualifying criteria for the treeless variant of the *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* community.



5. Significant impact assessment

The project will impact most habitat zones within the study area which will result in the removal of 3.891 hectares of native vegetation.

This will result in the removal of 1.143 hectares the listed ecological community NTGVVP and 1.021 hectares of GEWVVP.

5.1. Listed flora species

The analysis of likelihood of occurrence of listed flora species identified that no listed flora species were likely to occur in the study area and would be impacted by the project.

5.2. Listed fauna species

The analysis of susceptibility of listed fauna species to impacts identified that no listed fauna species with potential to occur would be impacted by the project.

5.3. Ecological communities

5.3.1. NTGVVP

Impacts to the threatened ecological community *Natural Temperate Grassland of the Victorian Volcanic Plain* (NTGVVP) are assessed against the relevant EPBC Act significant impact criteria, below in Table 7.

Fable 7: Assessment of the impact or	NTGVVP against the EPBC	Act significant impact crite	ria (DEWHA 2013).
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Significant impact criteria	Response
Reduce the extent of an ecological community	NTGVVP occurs within the proposed project footprint, within many Plains Grassland Habitat Zones. A total of 1.143 hectares of NTGVVP will be removed from the project area, 100% of that recorded on site. It is therefore considered that the extent of the community will be significantly reduced.
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	As the NTGVVP within the project area will be removed entirely, it cannot be considered to be fragmented. The loss of this NTGVVP may mean patches of NTGVVP in the broader landscape are further apart.
Adversely affect habitat critical to the survival of an ecological community	Impacts of the project will adversely affect habitat critical to the survival of NTGVVP, as the habitat for NTGVVP on site within the development footprint will be removed entirely.
Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	Abiotic factors necessary for the community's survival (i.e. in areas away from the project area) will not be impacted by the project, as construction mitigation measures (such as sediment fencing, stormwater management and dust suppression) will be put in place to protect abiotic factors beyond the study area.



Significant impact criteria	Response
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	There will be no loss of species from remaining areas of the community as a consequence of the proposed works, as there will be no such remaining areas of this community on site.
 Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: assisting invasive species, that are harmful to the listed ecological community, to become established; or causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community 	Construction mitigation measures will be put in place to ensure project does not facilitate the spread of invasive species or pollutants, including undertaking weed monitoring and control and sediment fencing. Furthermore, there will be no remaining areas of NTGVVP on site under the current development proposal for a reduction in quality or integrity to occur in.
Interfere with the recovery of an ecological community	The areas of NTGVVP where the works are proposed are likely to be important in the recovery of the community given they are the only areas of NTGVVP within the site. Therefore, the project is likely to interfere with the recovery of NTGVVP in the remaining Plains Grassland areas on site.

5.3.2. GEWVVP

Impacts to the threatened ecological community *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* (GEWVVP) are assessed against the relevant EPBC Act significant impact criteria, below in Table 8.

Table 8: Assessment of the impact on GEWVVP against the EPBC Act significant impact criteria (DEWHA 2013).

Significant impact criteria	Response
Reduce the extent of an ecological community	GEWVVP occurs within the proposed project footprint, within the Plains Grassy Woodland Habitat Zone. A total of 1.021 hectares of GEWVVP will be removed from the project area, 100% of that recorded on site. It is therefore considered that the extent of the community will be significantly reduced.
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	As the GEWVVP within the project area will be removed entirely, it cannot be considered to be fragmented. The loss of this GEWVVP may mean patches of GEWVVP in the broader landscape are further apart.
Adversely affect habitat critical to the survival of an ecological community	Impacts of the project will adversely affect habitat critical to the survival of GEWVVP, as the habitat for GEWVVP on site within the development footprint will be removed entirely.



Significant impact criteria	Response
Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	Abiotic factors necessary for the community's survival (i.e. in areas away from the project area) will not be impacted by the project, as construction mitigation measures (such as sediment fencing, stormwater management and dust suppression) will be put in place to protect abiotic factors beyond the study area.
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	There will be no loss of species from remaining areas of the community as a consequence of the proposed works, as there will be no such remaining areas of this community on site.
 Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: assisting invasive species, that are harmful to the listed ecological community, to become established; or causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community 	Construction mitigation measures will be put in place to ensure project does not facilitate the spread of invasive species or pollutants, including undertaking weed monitoring and control and sediment fencing. Furthermore, there will be no remaining areas of GEWVVP on site under the current development proposal for a reduction in quality or integrity to occur in.
Interfere with the recovery of an ecological community	The areas of GEWVVP where the works are proposed are likely to be important in the recovery of the community given they are the only areas of GEWVVP within the site Furthermore, under the current proposal, there will be no Plains Grassy Woodland left intact on site, meaning recovery of GEWVVP is unlikely. Therefore, the project is likely to interfere with the recovery of GEWVVP on site.

5.4. Implications under the EPBC Act

The assessment determined that it is likely that the project will result in a significant impact on MNES – NTGVVP & GEWVVP.

As such, it is recommended that this action be Referred to the Australian Minister for the Environment seeking a determination that it is a "Controlled Action".



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