

Biodiversity Assessment

Hampton Park Hill Development Plan

October 2022



Biodiversity Assessment

Hampton Park Hill Development Area

October 2022

Mark Shepherd
Ecological Consulting
shepherdecological.com.au



Prepared for:	City of Casey c/o Karen Borton Senior Biodiversity Officer kborton@casey.vic.gov.au	
Author(s):	Mark Shepherd Mobile: 0413 688 730 mark@shepherdecological.com.au shepherdecological.com.au	
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1. Introduction & background

Mark Shepherd Ecological Consulting was engaged by Casey City Council in July 2022 to undertake a biodiversity assessment of the Hampton Park Hill Development Plan area, Hampton Park, Victoria.

This report presents the results of a biodiversity assessment, including native vegetation mapping and a likelihood of occurrence assessment for significant species.

1.1 Objectives

The primary objectives of this report are to:

- Review background information,
- Present the findings of a biodiversity field assessment undertaken at the study area,
- Identify the potential for significant species and threatened ecological communities to occur, including matters listed under:
 - the *Flora and Fauna Guarantee Act 1988* (FFG Act),
 - the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

1.2 Site description

1.2.1 Location

The study area consists of the Hampton Park Hill Development Plan area (excluding existing residential areas within GRZ1 zoning) and comprises 16 property parcels (Figure 1). The study area excludes adjacent road reserves (Glasscocks Road, Hallam Road and South Gippsland Highway).

The combined study area is approximately 259 hectares and is located in the Gippsland Plain bioregion. Four properties within the eastern and southern sectors of the study area are located within the Hampton Park South Precinct Structure Plan area (Figure 1).

A series of site photographs are presented in Appendix 1.

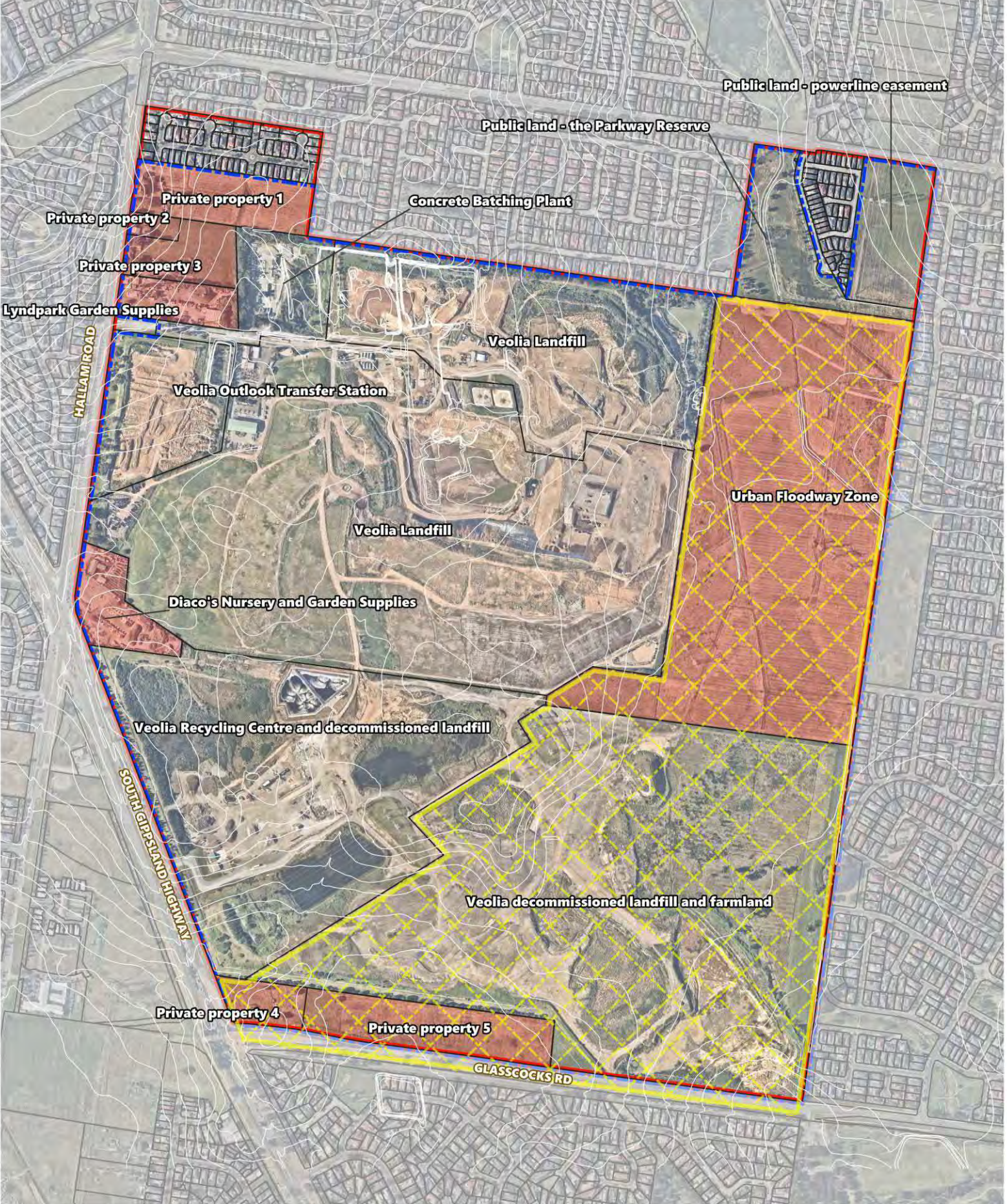


Figure 1: Study area
Hampton Park Development Plan Biodiversity Assessment



Mark Shepherd Ecological Consulting
Map Version: 02
Date: 17/09/2022
Aerial photography: www.nearmap.com
Aerial photography date: 23/12/2021
Scale: 1:10,000 @A4
Coordinate system: GDA94 MGA Zone 55



2. Methods

2.1 Database and literature review

Background information and documents were reviewed including:

- Department of Environment, Land, Water and Planning (DELWP) Nature Kit (DELWP 2022a),
- The Victorian Biodiversity Atlas (DELWP 2022b) – five kilometre buffer of the study area
- Ecological Vegetation Class Benchmarks (DELWP 2022c),
- The Commonwealth Department of the Environment *Protected Matters Search Tool* (PMST) – five kilometre buffer of the study area (DCCEEW 2022),
- *Flora and Fauna Guarantee Act 1988*: Threatened List (DELWP 2022),
- Current and historic aerial imagery for the local area.

2.2 Site assessment

A site assessment was undertaken by Mark Shepherd on the 9th, 16th and 19th of August 2022.

The biodiversity assessment at the study area comprised the following methods:

- categorisation of vegetation in accordance with Victoria's. *Guidelines for the removal, destruction or lopping of native vegetation* (hereafter *the Guidelines*) (DELWP 2017),
- categorisation of patches of native vegetation as either low, moderate or high comparative quality,
- categorisation of the conservation value of scattered trees as either low, moderate or high,
- determination of Ecological Vegetation Classes (EVC) of vegetation patches and scattered trees,
- the mapping of the extent of revegetation,
- A flora and fauna habitat assessment, including an assessment of the site's potential to support significant flora and fauna species,
- An incidental survey for flora and fauna species, with emphasis given to the recording of dominant or commonly encountered species.

A summary of methodology used in the categorisation of native vegetation in accordance with the Guidelines is provided in Appendix 2.

Permission to access a selection of private properties within the study area was not granted to Shepherd Ecological (Figure 1). City of Casey officers attempted to contact landholders to gain permission to access the properties in question, however, no response was received from landholders. Desktop assessment methodologies and over-the-fence inspections from adjacent properties were therefore carried out in an attempt to map the extent of native vegetation and habitat within these properties. Desktop assessment methodologies utilised high resolution NearMap aerial photography and aerial images captured by a remotely piloted aircraft (RPA) to map the extent of native vegetation.

2.3 Limitations

The site assessment was undertaken over three days in winter, which represents a lack of seasonal sampling. The study area is likely to be highly dynamic due to varying water availability, current land-uses and grazing impacts. Spring is considered the optimum season for vegetation assessments in south-east Australia. A proportion of flora species may not have been detected during the current assessment, due to a lack of flowering material or other attributes that aid in the detectability or identification of plants. Furthermore, a vegetation assessment that was undertaken in the absence of grazing or after recently disturbed areas are left for a period of time to re-colonise, would likely reveal additional flora species.

Targeted survey for threatened fauna species was not undertaken. Methodologies such as nocturnal call-playback surveys, bird census, motion sensor camera surveys, aquatic surveys utilising nets and electro-fishing, acoustic surveys for bats, trapping and other targeted survey methodologies deployed at the study area would provide greater certainty on the presence or absence of threatened fauna species at the site.

The results presented in this report are indicative of the environmental conditions at the time of assessment. Site conditions, including the presence or absence of significant species, and the type and quality of habitats have the potential to change over time, particularly in disturbed areas that are currently re-colonising following earth works.

The ecological data attributed to properties for which access was not granted is not necessarily accurate due to the limitations associated with desktop-based methodologies used to collect this data. Site access to the properties specified in Figure 1 is required to confirm the presence or absence of native vegetation and revegetation, significant species habitat, and threatened ecological communities.

3. Results

3.1 Site conditions

3.1.1 Topography, watercourses and wetlands

The topography of the study area generally comprises higher elevations and gentle slopes in the northern and western sectors, with lower elevations and flat land to gently sloping land in the eastern and southern sectors. Higher elevations generally consist of landfill capping or current landfill operations, while the lowest elevations in the eastern sector generally consist of farmland and parkland on floodplain geomorphology.

Constructed drainage ditches occur throughout the farmland in the eastern sector and drain in a northerly direction. Drainage ditches form the upper reaches of a tributary to the Hallam Main Drain, which joins the main watercourse approximately 3.5km to the north-west of the study area.

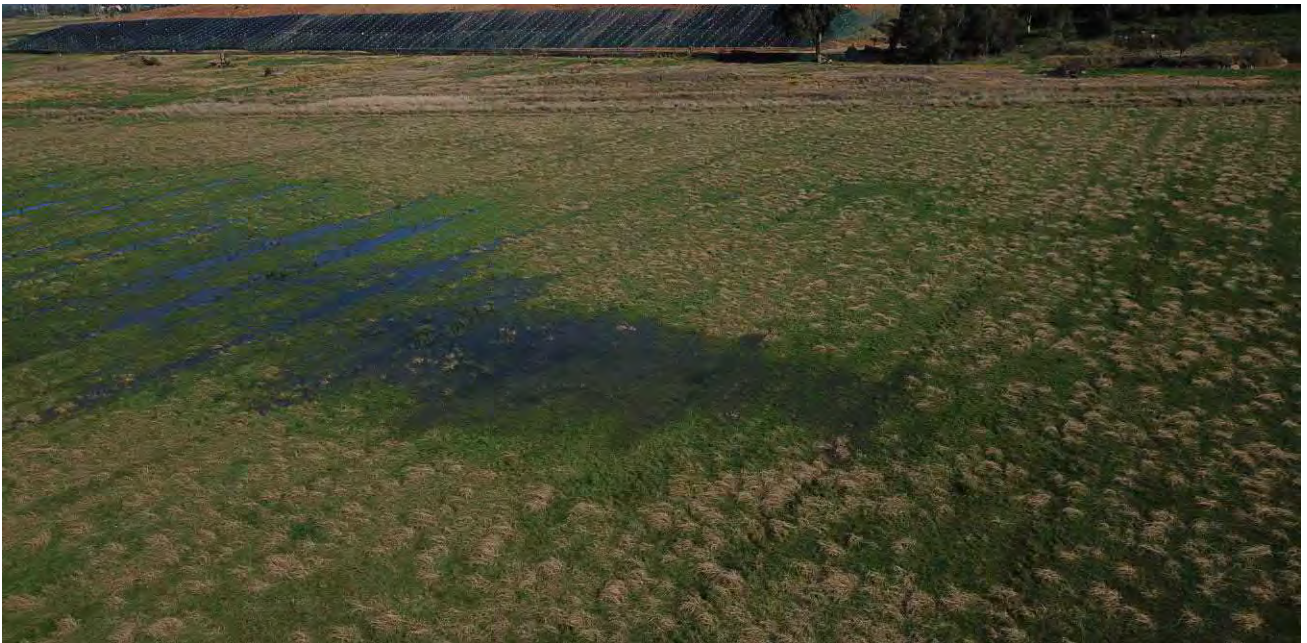


RPA aerial photograph 1. Drainage-lines within farmland and parkland in the north-eastern sector

A complex network of wetlands occur throughout the study area (Figure2; aerial photographs 2 & 3), including:

- constructed wetlands,
- leachate ponds,

- wetlands that have naturally formed within low-lying areas of previous sand extraction and landfill operations throughout the higher elevations, and
- extensive areas of flooded pasture and parkland in the eastern sector.



RPA aerial photograph 2. Flooded pasture in the eastern sector



RPA aerial photograph 3. Wetlands within the south-eastern sector

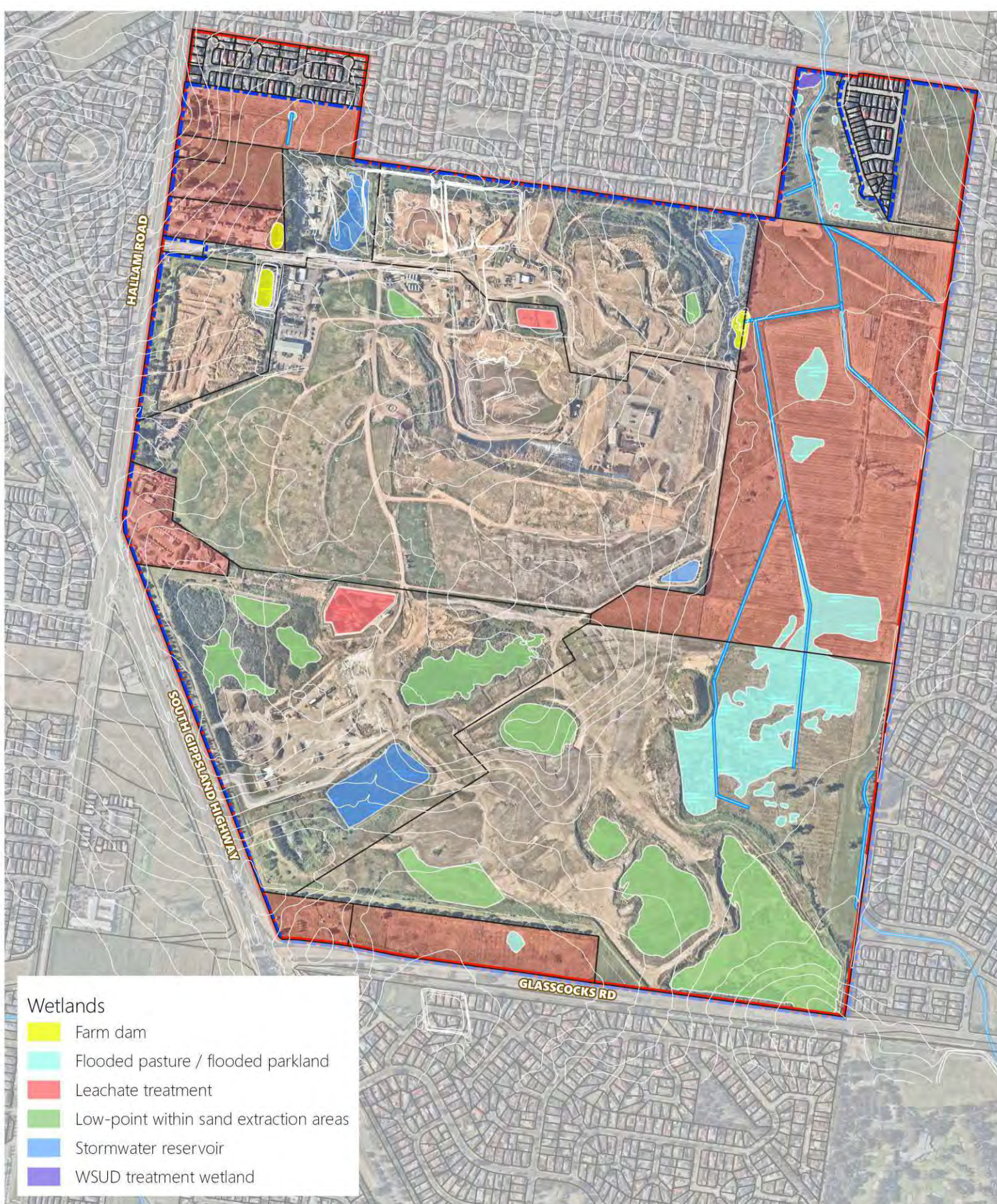
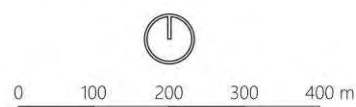


Figure 2: Wetlands

Hampton Park Development Plan Biodiversity Assessment

Mark Shepherd Ecological Consulting
 Map Version: 01
 Date: 21/08/2022
 Aerial photography: www.nearmap.com
 Aerial photography date: 23/12/2021
 Scale: 1:10,000 @A4
 Coordinate system: GDA94 MGA Zone 55



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3.1.2 Historic land-uses

The study area has been subject to sand extraction, landfill operations and agricultural uses for many decades, and is consequently highly modified compared to pre-European condition.

A detailed investigation of historic land uses, including areas subject to mechanical disturbance has not been undertaken as part of this study. However, historic Google Earth aerial images from May 2005 and July 2012 demonstrate that the disturbance footprint resulting from sand extraction, landfill and agriculture to be similar to the current extent, albeit with a different arrangement of wetlands and other features.

A series of site photographs are presented in Appendix 1.



Figure 2. Historic Google Earth image: May 2005



Figure 3. Historic Google Earth image: July 2012

3.2 Modelled Ecological Vegetation Classes

DELWP's NatureKit (DELWP 2022a) models Ecological Vegetation Classes (EVCs) prior to the year 1750 as:

- Heathy Woodland in the northern sector,
- Swampy Riparian Woodland / Swamp Scrub Mosaic in the eastern sector, and
- Plains Grassland / Plains Grassy Woodland Mosaic in the southern sector.

All native vegetation has since been removed, with the exception of small and highly modified patches of native vegetation and scattered trees (as described in the following sections). DELWP's modelled EVCs therefore play an important role in the determination of the current extent of EVCs in the absence of clearly defined EVC characteristics (due to the re-colonising and highly modified status of the majority of the vegetation currently at the study area).

Figure 3 displays DELWP (2022a) pre-1750 modelled EVCs at the study area and surrounding areas.

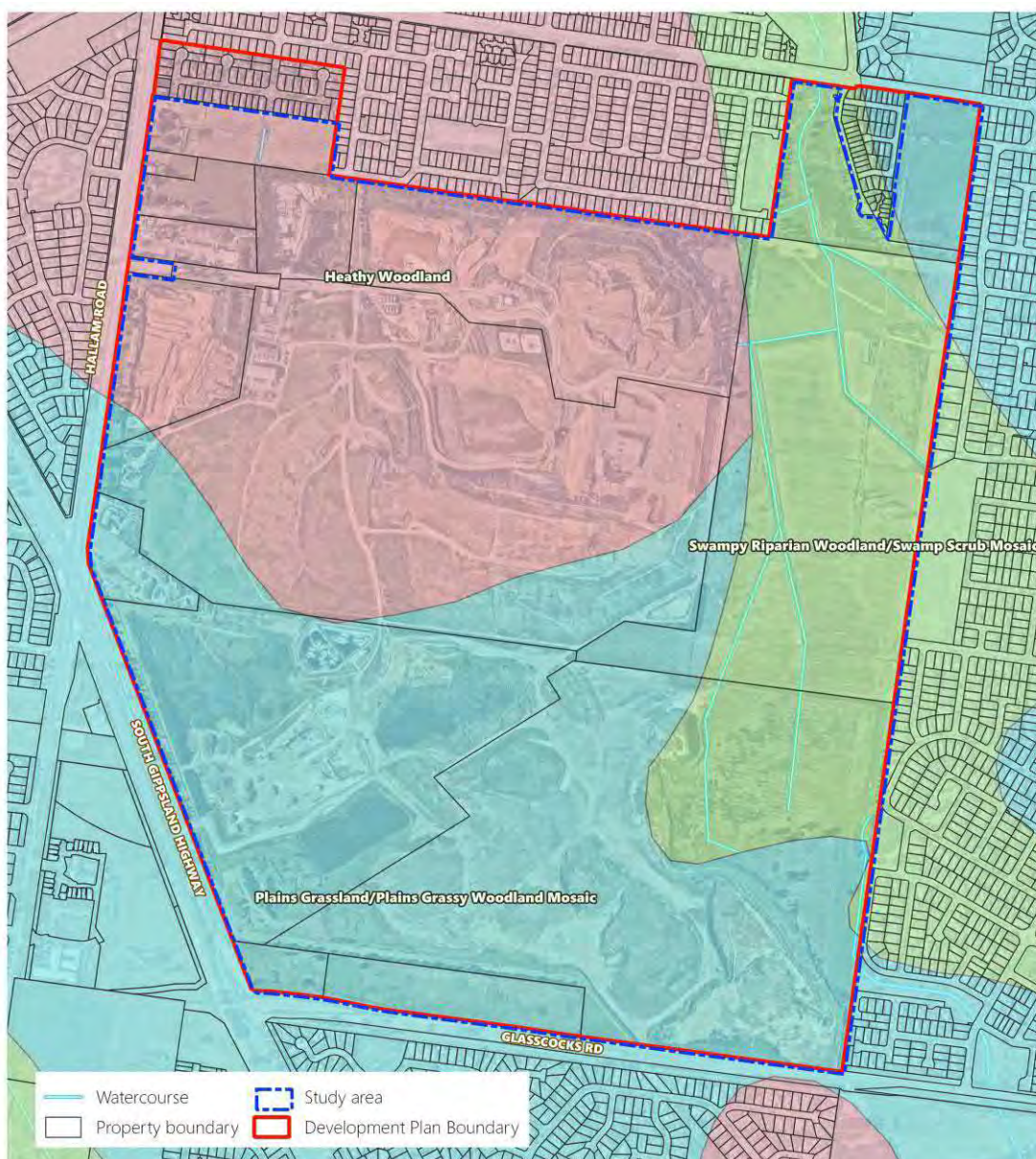


Figure 3. Pre-1750 EVC modelling

3.3 Current Ecological Vegetation Class type and extent

Seven Ecological Vegetation Classes (EVCs) were recorded at the study area (Table 1).

Table 1. EVCs recorded at the study area

Ecological Vegetation Class	EVC Code	Bioregional conservation status	No. of patches	Area (Ha)
Heathy Woodland	GipP048	Least Concern	10	0.741
Plains Grassy Wetland	GipP0125	Endangered	43	13.767
Plains Grassy Woodland	GipP0055	Endangered	20	0.836
Submerged Aquatic Herbland*	n/a	Assumed Endangered	3	2.382
Swamp Scrub	GipP0053	Endangered	1	0.022
Swampy Woodland	GipP 0937	Endangered	2	0.104
Tall Marsh^	821	Assumed Endangered	19	7.407
Totals			98	25.259

* denotes Index of Wetland Condition EVC (no bioregional conservation status provided)

^ DELWP does not provide a bioregional conservation status or benchmark for the Gippsland Plain bioregion

EVC determination was challenging due to the site's extensive history of earthworks, sand extraction and landfill operations (topsoils appear to be imported in some areas). As a result, the majority of native vegetation at the study area has since re-colonised and therefore did not clearly meet the description of any specific EVC. Rather, native vegetation at the study area was typically floristically poor, comprised a high weed cover, and was structurally simplistic, due primarily to the recent colonising status of the vegetation. EVCs were therefore assigned based in part on DELWP's modelled EVC layer, and partly on the characteristics of the vegetation present at the site.

EVCs recorded at the study area are described in Appendix 3. The extent of EVCs recorded at the study area are presented in Map Appendix 1.

3.4 Patches of native vegetation

Ninety-eight patches of native vegetation were recorded at the study area, using both on-ground and desktop assessment methodologies (desktop methodologies are described in Section 2.2) (Map Appendix 1).

Patches of native vegetation were scored as either low, moderate or high, based on a comparative assessment of vegetation quality within the study area (based primarily on the likely habitat score) (Appendix 4). A summary of native vegetation comparative quality is presented in Table 2. Native vegetation patches and associated information are presented in Appendix 4.

Table 2. Native vegetation patch comparative quality summary

Native vegetation quality class	No. of patches	Area (Ha)
High	6	4.173
Moderate	9	4.392
Low	83	16.694
	98	25.259

3.4.1 Scattered trees

Thirty-six scattered trees were recorded within the study area (Map Appendix 1; Appendix 5).

Twenty-three of the scattered trees recorded in the study area are located on floodplain geomorphology (lower elevations on flat land prone to flooding). Nine of these trees in the eastern sector of the Veolia property were very large and mature River Red-gums which Diameter at Breast Height (DBH) measurements ranged from between 120cm-192cm (Photograph 1). Furthermore, a large mature River Red-gum adjacent to Hallam Road within the Veolia Recycling Centre property in the western sector recorded a DBH of 182cm.

An arboricultural assessment would be required to determine the age of these mature trees, however, based on the authors experience with similar sized trees, the largest of the trees likely pre-date European settlement and may be several hundred years old (or more). The mature trees at the study area are of high local conservation significance.

Other less mature scattered trees are located at various other locations throughout the study area. Scattered Trees data is provided in Appendix 5.



Photograph 1. Scattered trees (River Red-gums) within the eastern sector

3.4.2 Exotic vegetation

Exotic species dominate the understorey of the majority of the vegetated parts of the study area. With the exception of Blackberry and other weed control in selected areas, weed species appear to have been predominately unmanaged.

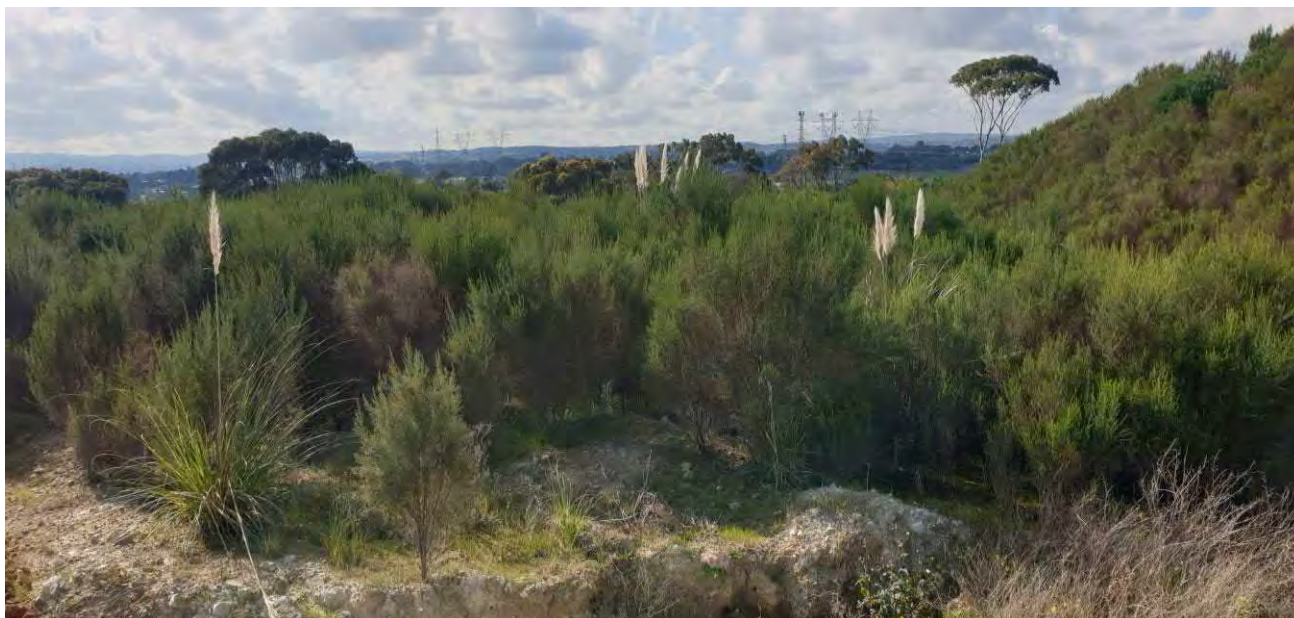
Species such as Flax-leaf Broom **Genista linifolia*, Tree Lucerne **Chamaecytisus palmensi* and Kikuyu **Cenchrus clandestinus* form dense thickets in some areas, particularly within the northern sector (Photograph 2). Furthermore, Pampas Grass **Cortaderia selloana* subsp. *selloana* forms extensive thickets within wetter areas subject to historic soil disturbance.



Photograph 2. Flax-leaf Broom thickets in the northern sector

3.4.3 Sifton Bush

Sifton Bush *Cassinia sifton* forms dense thickets over extensive areas within the northern sector (Photograph 3). Until recently, Sifton Bush was considered indigenous (although typically invasive). VicFlora (2022) now report that the origin of this species is uncertain and is likely to be native to NSW. The extent of Sifton Bush was mapped during the current assessment (and can be provided in electronic format upon request), however, Sifton Bush was not included within native vegetation patch mapping presented in this report, in accordance with the current VicFlora (2022) taxonomic status.

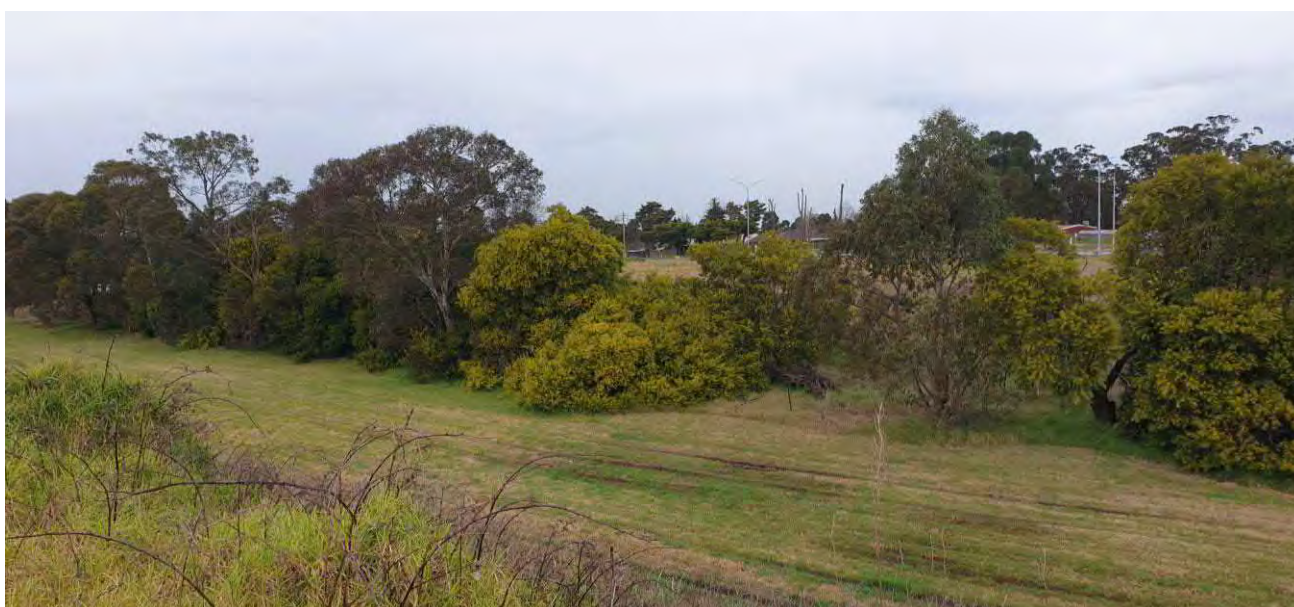


Photograph 3. Sifton Bush colonising former sand extraction / landfill sites in the northern sector

3.5 Revegetation

Revegetation occupies approximately 7.41 hectares at the study area (Photograph 4). Revegetation consists of a combination of site indigenous species, species that are native to Victoria (but not indigenous to the site), and species native to Australia.

Revegetation at the study area is generally species poor and dominated by a suite of weeds in the understorey. However, revegetation provides habitat for a range of native species, including a range of woodland birds. It appears that revegetation has been planted primarily for amenity or visual screening purposes, however, the revegetation provides biodiversity enhancements regardless.



Photograph 4. Revegetation in Veolia land in the southern sector

3.6 Flora

3.6.1 Flora species

One-hundred and twenty-three flora species were recorded within the study area. Of the 123 species recorded, 43 species are indigenous, 73 species are exotic and seven species are non-indigenous natives occurring outside of their natural range.

Flora species recorded at the study area are presented in Appendix 6.

3.6.2 Significant flora species

One significant flora species; Studley Park Gum *Eucalyptus x studleyensis* was recorded on the fence line between the Daico's Nursery and Garden Supplies property and the Veolia Landfill property, in the south-western sector (Map Appendix 1; Photographs 5, 6, 7 and 8). A VBA record from 2017 for Studley Park Gum exists nearby at the intersection of Hallam Road and South Gippsland Highway (DELWP 2022b).



Photograph 5. Studley Park Gum



Photograph 6. Studley Park Gum



Photograph 7. Studley Park Gum buds



Photograph 8. Studley Park Gum fruit

No other significant flora species were recorded at the study area, however, flora survey conducted during the current assessment was limited to incidental records of dominant or commonly encountered species (detailed flora survey was not undertaken).

Twenty-two significant flora species have been recorded within five kilometres of the study area since 1992 on the Victorian Biodiversity Atlas (DELWP 2022b) or are predicted to occur by the Protected Matters Search Tool (DCCEE 2022b). Nine of these species have been recorded within five kilometres on the VBA since 1992 (Appendix 7).

No significant flora species are considered highly likely to occur within the study area (apart from Studley Park Gum, which was recorded), due to the highly modified condition of the surrounding native vegetation. One species; River Swamp Wallaby-grass *Amphibromus fluitans* is a colonising species that could potentially colonise habitat created by sand extraction works or within flooded pasture and has therefore conservatively been assigned a moderate likelihood of occurrence.

A list of significant flora species recorded within five kilometres, along with a likelihood of occurrence rating and likelihood reasoning is presented in Appendix 7.

3.7 Fauna

3.7.1 Fauna species

Fifty fauna species were recorded incidentally during the current assessment. Of the 50 species recorded, 40 species are native species while 10 species are introduced.

Fauna species recorded at the study area are presented in Appendix 8.

3.7.2 Significant fauna species

Targeted survey for significant fauna species was not undertaken (as detailed in Section 2.3). However, one significant fauna species; Eastern Great Egret *Ardea alba modesta*, was recorded incidentally during the current assessment. Eastern Great Egret is listed as vulnerable under *the Flora and Fauna Guarantee act 1988* (FFG Act).

A single Eastern Great Egret was observed within an area of standing shallow water in the Veolia landfill property in the northern sector (Map Appendix 1).

3.7.3 Significant fauna species database records

Seventy fauna species of state and/or national significance have been recorded within five kilometres since 1993 on the Victorian Biodiversity Atlas (VBA) (DELWP 2022b) or are predicted to occur by the Protected Matters Search Tool (DCCEEW 2022) (Appendix 7).

Seventeen of these threatened species have been assigned a high likelihood of occurrence, while a further 13 species have been assigned a moderate likelihood of occurrence. The remaining 39 threatened species have been assigned a low likelihood of occurrence.

Appendix 7 provides a habitat description and likelihood of occurrence rating and justification for each significant species recorded within five kilometres or predicted to occur. Recommendations to address the possible implications of significant species are provided in Section 4.

3.7.4 Potential habitat for significant fauna species

Shallow wetlands

Shallow wetlands at the study area provide potential habitat for a range of migratory wading birds (Photograph 9; Appendix 7). The comparatively large cumulative area of wetlands at the study area, combined with the existence of mudflats, flooded pasture and the relatively close proximity to core habitat in the region (7km to the Eastern Treatment Plant and 11km to the Seaford Wetlands) result in the possibility that migratory waders could utilise wetlands at the study area. One non-migratory wading bird; Black-fronted Dotterel *Elseya melanops* was observed at two locations within the study area, which indicates the potential suitability of the site for migratory waders, based on the authors observations of this non-

migratory wading species co-occurring with migratory waders at other wetland sites in the region. The wetland complex in the south-eastern sector provides the largest area of potentially suitable habitat for migratory waders (including threatened species).



Photograph 9. Shallow wetlands within flooded farmland in the eastern sector

Deep water wetlands

Deep water wetlands, including stormwater retention wetlands within the Veolia land provide potential habitat for threatened duck species, such as Blue-billed Duck *Oxyura australis*, Australasian Shoveler *Spatula rhynchotis* and other duck species listed in Appendix 7 (Photograph 10).



Photograph 10. Deep water wetland with fringing Tall Marsh in the central sector

Drainage-lines

Drainage-lines within farmland in the eastern sector provides potential habitat for Dwarf Galaxias *Galaxiella pusilla*, which occurs within the Hallam Main Drain catchment. The habitat may not be optimal because it is shallow, lacking shade, and may dry out in summer (Photograph 11). However, drainage-lines in the eastern sector are directly connected to optimal habitat within the Hallam Main Drain and its tributaries several kilometres downstream of the study area. Further advice from an aquatic ecologist is recommended to gain greater certainty of the likelihood of occurrence of Dwarf Galaxias.



Photograph 11. Drainage-line within public land; north-eastern sector.

4. Hampton Park Hill Development Plan

4.1 Development Planning opportunities

City of Casey are undertaking a review of the Hampton Park Development Plan (CoC, 2019) in light of a new strategy and policy release by the State Government which identifies the area as a State significant hub, required for ongoing waste and resource recovery land uses. The revised draft Hampton Park Hill Development Plan (CoC 2022) represents a complete refresh of outdated planning policy for the southern part of Hampton Park suburb. The revised development plan is now titled *Hampton Park Hill*, to differentiate between the southern area of Hampton Park from the remainder of the suburb.

The draft Hampton Park Hill Development Plan (CoC 2022) does not set out any requirements for biodiversity apart from a native plant species requirement for landscaping in streets and public open spaces. The information presented in this study presents an opportunity to consider biodiversity management and conservation for incorporation into the development plan.

The layout of native vegetation in relation to the Hampton Park Hill Development Plan is presented in Figure 4. Certain areas of native vegetation mapped by Shepherd Ecological during the current assessment coincides within areas designated for possible future development. Further analysis of the planning approval pathway implications, including possible Planning Scheme exemptions, EPBC Act and FFG Act implications, and an exploration of measures to avoid and minimise native vegetation impacts will therefore be required for any proposal to impact native vegetation and threatened species habitat.

The Hampton Park Hill Development Plan area comprises areas of native vegetation and habitat that are worthy of protection. The Development Plan does not include any land designations with biodiversity conservation as the primary objective. It is therefore recommended that the Development Plan include reference to the protection of all existing remnant trees in the eastern sector within the *Existing Floodway* and *Low Impact Agriculture* designations given that these uses are generally compatible with the conservation and protection of remnant trees. Furthermore, it is recommended that the Studley Park Gum (Tree 5) and a large mature tree (Tree 2) in the western sector are also protected under the Development Plan. Note that many (but not all) of the mature trees in the eastern sector have an existing Environmental Significance Overlay (ESO7) applied regardless.

4.2 Conclusion and recommendations

The following recommendations are made in the context of the future development of the Hampton Park Hill Development Plan area:

- Undertake mapping of flora and fauna values within properties for which access was not granted during the current assessment (Figures 1 and 3), and update the ecological data contained within this report accordingly,
- Undertake targeted assessments for threatened species which have at least a moderate likelihood of occurrence,

- Appropriately manage remnant mature River Red-gums within the Existing Floodway zone, and the Veolia landfill property, and facilitate natural River Red-gum recruitment around these trees (through fencing to exclude stock),
- Liaise with Daico's Nursery and Garden Supplies to ensure the protection of the Studley Park Gum located inside the nursery's fence (on the nursery's northern boundary),
- Explore opportunities to retain native vegetation and habitat within areas designated for development, including stormwater storage dams, and wetland habitats that have naturally formed within former sand extraction areas, in the context of requirements under relevant biodiversity related policy and legislation,
- Facilitate the natural regeneration of wetlands within public open space through stock exclusion, weed control, supplementary planting and other management actions (to be guided by a management plan and hydrological study), and designate this land management objective in the Development Plan,
- Incorporate locally indigenous species (sourced from local provenance stock) into a Landscape Plan for the development area,
- Investigate opportunities to enhance drainage-lines in the north-eastern sector to optimise potential habitat for Dwarf Galaxias, in consultation with an aquatic ecologist.

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APPENDIX 1. Site photographs



Photograph 1. Northern sector, Veolia landfill



Photograph 2. Northeast sector Veolia landfill



Photograph 3. Northern sector Veolia landfill



Photograph 4. Farm Dam, eastern boundary of Veolia landfill property



Photograph 5. Eastern sector, Veolia landfill



Photograph 6. Northeast sector Veolia landfill



Photograph 7. Farm dam near Veolia Transfer Station



Photograph 8. Stormwater reservoir; south-eastern sector of Veolia landfill property



Photograph 9. The Parkway reserve; north-eastern sector



Photograph 10. Wetland within decommissioned landfill: Veolia property



Photograph 11. Scattered River Red-gums; Floodway Zone (eastern sector)



Photograph 12. Colonising wetland vegetation: Floodway Zone (eastern sector)



Photograph 13. Flooded access track (boundary between Floodway Zone and Veolia farmland)



Photograph 14. Veolia farmland (eastern sector)



Photograph 15. Wetland within sand extraction area (south-eastern sector)



Photograph 16. Tall Marsh EVC; south-eastern sector



Photograph 17. Wetland within Concrete Batching Plant



Photograph 18. Plains Grassy Woodland, western sector

APPENDIX 2. Methodology for categorising native vegetation

Field validation of the DELWP (2021c) EVC mapping was undertaken to determine the site-specific classification of vegetation at the study area.

Vegetation was classified into one of three categories based on the *Guidelines for the removal, destruction or lopping of native vegetation* (hereafter *the Guidelines*) DELWP (2017) definitions.

Patch

A patch of native vegetation is:

- an area of vegetation where at least 25 per cent of the total perennial understorey plant cover¹ is native, or
- any area with three or more native canopy trees², where the drip line³ of each tree touches the drip line of at least one other tree, forming a continuous canopy, or
- any mapped wetland included in the *Current Wetlands* map, available in DELWP systems and tools.

Scattered Tree

A scattered tree is:

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

Native vegetation that is neither a patch nor a scattered tree:

- areas where native vegetation has largely been replaced by exotic species (for example pasture grasses) or planted vegetation for amenity purposes.

The locations of scattered trees and patches were recorded in the field using a GLONASS/GPS enabled computer tablet running Quantum GIS (QGIS) software, and ground-truthed to aerial imagery and to a tree location survey that was completed for the site. The location of trees and vegetation was also referenced to the proposed construction footprint that was pegged out on-site.

¹ Plant cover is the proportion of the ground that is shaded by vegetation foliage when lit from directly above.

² A native canopy tree is a mature tree (it is able to flower), that is greater than 3 metres in height and is normally found in the upper layer of the relevant vegetation type.

³ The drip line is the outermost boundary of a tree canopy (leaves and/or branches) where the water drips on to the ground.

APPENDIX 3. Ecological Vegetation Classes

Ecological Vegetation Classes recorded at the study area are described on the following page.

Ecological Vegetation Class	EVC Code	Bioregional conservation status	No. of patches	Area (Ha)	Published EVC description (Oates & Taranto 2001; DSE 2012)	Site description
Heathy Woodland	GipP048	Least Concern	10	0.741	Occurs on low hills and rises, plains and slopes in areas of low to moderate rainfall, generally associated with deep, uniform-textured nutrient-poor sands. Eucalypt-dominated low woodland over narrow-leaved shrubs except where frequent fire has reduced the understorey structure to a dense cover of bracken.	The majority of Heathy Woodland at the study area consists of recolonising vegetation that doesn't resemble any particular EVC and was assigned Heathy Woodland based on Pre-1750 EVC modelling and site floristics. Coast Manna-gum <i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i> was typically dominating the overstorey when overstorey was present. Habitat Zones 6 and 71 in the north-western sector are possibly partially remnant (based on one mature Eucalypt). Most other zones consist of colonising Black Wattle <i>Acacia mearnsii</i> .
Plains Grassy Wetland	GipP0125	Endangered	43	13.767	Occurs on the margins of shallow freshwater lakes and in swampy drainage lines and seasonally waterlogged wet depressions typically surrounded by Plains Grassy Woodland or Plains Wetland. Occurs on swamp deposits within basalt and Quaternary and Tertiary sediments on heavy black clays. This EVC is usually treeless, but in some instances can include sparse River Red Gum <i>Eucalyptus camaldulensis</i> or Swamp Gum <i>Eucalyptus ovata</i> . A sparse shrub component may also be present. The characteristic ground cover is dominated by grasses and small sedges and herbs. The vegetation is typically species-rich on the outer verges but is usually species-poor in the wetter central areas.	Plains Grassy Wetland was assigned as an approximate EVC to colonising wetland vegetation that occurred on plains in the eastern sector, and to colonising wetland vegetation within former sand quarry areas that comprised a grassy component. Plains in the eastern sector were dominated by Common Spike-sedge <i>Eleocharis acuta</i> with occasional Rush <i>Juncus</i> sp., Flat-sedge <i>Carex</i> sp., and occasional grasses such as <i>Amphibromus nervosus</i> . Former sand quarry areas comprised a more diverse assemblage of herbaceous weeds and indigneous grasses and sedges, including <i>Lachnagrostis filiformis</i> .
Plains Grassy Woodland	GipP0055	Endangered	20	0.836	An open, grassy eucalypt woodland in low (mostly <700mm per annum) rainfall areas occurring on fertile soils on flats and gently undulating plains at low elevations. The understorey consists of a few sparse shrubs over a diverse grassy, herb-rich ground layer. Widespread and extensive in the past but has now been largely cleared for agriculture, and more recently for urban development resulting in few relatively intact remnants remaining in the Port Phillip/Westernport area.	Plains Grassy Woodland consists of scattered trees within floodplain geomorphology at various sectors, and in particular as a group of very large and mature River Red Gums within farmland in the eastern sector. Other areas of colonising vegetation such as Black Wattle and recruiting River Red Gums were assigned Plains Grassy Woodland by virtue of the pre-1750 mapping delineation, however this vegetation does not clearly resemble any specific EVC.
Submerged Aquatic Herbland*	n/a	Assumed Endangered	3	2.382	Submerged Aquatic Herbland EVC has no terrestrial benchmark (DELWP 2022c),but is defined under the Index of Wetland Condition EVC framework (DSE 2012). By strict definition, Submerged Aquatic Herbland is confined to riverine plains in the north-west of Victoria where Eel Grass <i>Vallisneria australis</i> occurs in deep ponds. However, the name has been widely applied more broadly to a range of situations where submerged aquatic flora species occur in deep water throughout Victoria.	Submerged Aquatic Herbland occurred as submerged <i>Potamogeton crispus</i> and <i>Stuckenia pectinata</i> within deep wetlands. The EVC was mono-specific in each of three locations where recorded.
Swamp Scrub	GipP0053	Endangered	1	0.022	Closed scrub at low elevations on alluvial deposits along streams or on poorly drained sites with higher nutrient availability. The vegetation characteristically lacks a eucalypt overstorey and is dominated by Swamp Paperbark <i>Melaleuca ericifolia</i> (or sometimes Woolly Tea-tree <i>Leptospermum lanigerum</i>) which often forms a dense thicket out-competing other species. Where light penetrates to ground level, a moss/lichen/liverwort or herbaceous ground cover is often present. Dry variants have a grassy/herbaceous ground layer.	Swamp Scrub at the study area consisted of a monospecific Swamp Paperbark thicket within a drainage ditch adjacent to Hallam South Rd. Swamp Scrub at the study area consisted entirely of re-colonising vegetation and did not include the suite of understorey species described by the Swamp Scrub EVC benchmark.

Swampy Woodland	GipP 0937	Endangered	2	0.104	Swampy Woodland occurs in low gradient habitat on seasonally waterlogged soils. This waterlogging is caused by seepage or surface run-off but not inundation from active floodplains. It has a large component of damp site species but overall lacks the obligate wetland flora.	Swampy Woodland at the study area consisted of two small patches of Swamp Gums <i>Eucalyptus ovata</i> , one of which was a group of immature trees, while the other comprised mature Swamp Gums with a highly modified and revegetated understorey. No Swampy Woodland at the study area met the EVC description with regards to understorey species structure and composition.
Tall Marsh^	821	Assumed Endangered	19	7.407	Wetland dominated by tall emergent graminoids, typically in thickspecies-poor swards. Rushland, sedgeland or reedbed – locally closed or in association or fine-scale mosaic with Aquatic Herbland (e.g. along floodway lagoons). The vegetation is typically treeless, but sparse Eucalyptus camaldulensis (or in higher rainfall areas, E. ovata) are dispersed through some sites where sufficient dry periods occur to allow their survival. Scattered across lowland Victoria.	Tall Marsh occurred as dense stands of Cumbungi or Tall Reed within constructed stormwater wetlands, or within wetlands that have formed in low-lying areas of former sand extraction areas. Tall Marsh generally occurred as mono-specific swards of the afore mentioned species, or in slightly drier areas with a Pampas Grass component.
		Totals	98	25.259		

* denotes Index of Wetland Condition EVC (no bioregional conservation status provided)

^ DELWP does not provide a bioregional conservation status

APPENDIX 4. Native vegetation patches

Habitat Zone ID	Ecological Vegetation Class	Area	Quality	Assessment methodology	Comment
HZ1	Tall Marsh	0.112	Low	Ground-truthed	borderline native veg
HZ2	Tall Marsh	0.054	Low	Ground-truthed	
HZ3	Plains Grassy Woodland	0.012	Low	Ground-truthed	acacia mearnsii
HZ4	Swamp Scrub	0.022	Low	Ground-truthed	low
HZ5	Plains Grassy Woodland	0.086	Moderate	Ground-truthed	colonising drainage ditch. mixture of swamp paperbark, euca vimi, euca cama
HZ6	Heathy Woodland	0.489	Moderate	Ground-truthed	dam
HZ7	Tall Marsh	0.032	Low	Ground-truthed	
HZ8	Heathy Woodland	0.081	Low	Ground-truthed	
HZ9	Swampy Woodland	0.026	Low	Ground-truthed	colonising swamp gums
HZ10	Plains Grassy Wetland	0.016	Low	Ground-truthed	wetland veg
HZ11	Plains Grassy Woodland	0.024	Low	Ground-truthed	colonising black wattle more than 10y
HZ12	Plains Grassy Woodland	0.018	Low	Ground-truthed	colonising blackwood
HZ13	Plains Grassy Woodland	0.025	Low	Ground-truthed	blackwood
HZ14	Plains Grassy Woodland	0.011	Low	Ground-truthed	blackwood
HZ15	Plains Grassy Woodland	0.057	Low	Ground-truthed	suckering blackwoods
HZ16	Plains Grassy Wetland	0.172	High	Ground-truthed	constructed wetland
HZ17	Plains Grassy Wetland	0.029	Low	Ground-truthed	mown wetland veg
HZ18	Tall Marsh	0.425	Moderate	Ground-truthed	phrag, typha, frogs
HZ19	Tall Marsh	1.178	High	Ground-truthed	
HZ20	Tall Marsh	0.106	Moderate	Ground-truthed	tall marsh
HZ21	Tall Marsh	1.278	Low	Ground-truthed	
HZ22	Tall Marsh	0.048	Low	Ground-truthed	
HZ23	Plains Grassy Wetland	0.035	Low	Ground-truthed	
HZ24	Plains Grassy Woodland	0.011	Low	Ground-truthed	immature red gums
HZ25	Plains Grassy Woodland	0.337	Moderate	Ground-truthed	planted and colonising red gums, drain with wetland veg
HZ26	Plains Grassy Woodland	0.007	Low	Ground-truthed	colonising red gums
HZ27	Plains Grassy Woodland	0.051	Low	Ground-truthed	colonising blackwoods
HZ28	Plains Grassy Woodland	0.017	Low	Ground-truthed	black wattle
HZ29	Plains Grassy Woodland	0.012	Low	Ground-truthed	black wattle
HZ30	Submerged Aquatic Herbland	0.074	Low	Ground-truthed	stuc pect
HZ31	Tall Marsh	0.178	Low	Ground-truthed	
HZ32	Plains Grassy Wetland	0.017	Low	Ground-truthed	
HZ33	Plains Grassy Woodland	0.044	Low	Ground-truthed	blackwood black watt'e
HZ34	Plains Grassy Woodland	0.014	Low	Ground-truthed	black wattle
HZ35	Plains Grassy Woodland	0.008	Low	Ground-truthed	black wattle
HZ36	Plains Grassy Woodland	0.004	Low	Ground-truthed	acacia prov
HZ37	Plains Grassy Woodland	0.02	Low	Recorded from adjacent property	recruiting red gums
HZ38	Plains Grassy Woodland	0.011	Low	Recorded from adjacent property	recruiting camas
HZ39	Plains Grassy Wetland	0.105	Low	Mapped from aerial photography	possible wetland veg
HZ40	Plains Grassy Wetland	5.976	Low	Ground-truthed	carex
HZ41	Plains Grassy Wetland	0.082	Low	Ground-truthed	
HZ42	Plains Grassy Wetland	0.013	Low	Ground-truthed	
HZ43	Plains Grassy Wetland	0.021	Low	Ground-truthed	
HZ44	Plains Grassy Wetland	0.026	Low	Ground-truthed	
HZ45	Plains Grassy Wetland	0.11	Low	Mapped from aerial photography	Plains Grassy Wetland possible 20220812_110923
HZ46	Plains Grassy Wetland	0.853	Low	Ground-truthed	
HZ47	Submerged Aquatic Herbland	0.62	Low	Full extent of SAH uncertain	
HZ48	Submerged Aquatic Herbland	1.688	Low	Full extent of SAH uncertain	
HZ49	Plains Grassy Woodland	0.067	Low	Ground-truthed	acac prov
HZ50	Plains Grassy Wetland	0.138	Low	Mapped from aerial photography	
HZ51	Plains Grassy Wetland	0.364	Low	Mapped from aerial photography	
HZ52	Plains Grassy Wetland	0.093	Low	Mapped from aerial photography	
HZ53	Plains Grassy Wetland	0.106	Low	Mapped from aerial photography	
HZ54	Plains Grassy Wetland	0.082	Low	Mapped from aerial photography	
HZ55	Plains Grassy Wetland	1.771	Low	Mapped from aerial photography	Plains Grassy Wetland 20220812_110923
HZ56	Plains Grassy Wetland	0.232	Low	Mapped from aerial photography	
HZ57	Plains Grassy Wetland	0.229	Low	Mapped from aerial photography	
HZ58	Tall Marsh	0.104	Moderate	Ground-truthed	bolb cald dominated
HZ59	Tall Marsh	0.003	Low	Ground-truthed	
HZ60	Tall Marsh	0.004	Low	Ground-truthed	
HZ61	Tall Marsh	2.68	Moderate	Ground-truthed	phra aust pampass grass
HZ62	Plains Grassy Wetland	0.026	Low	Mapped from aerial photography	
HZ63	Tall Marsh	0.026	Low	Ground-truthed	
HZ64	Tall Marsh	0.043	Low	Ground-truthed	
HZ65	Plains Grassy Wetland	0.228	High	Ground-truthed	
HZ66	Tall Marsh	0.176	High	Ground-truthed	
HZ67	Plains Grassy Wetland	1.894	High	Ground-truthed	
HZ68	Tall Marsh	0.525	High	Ground-truthed	
HZ69	Tall Marsh	0.352	Low	Ground-truthed	

Habitat Zone ID	Ecological Vegetation Class	Area	Quality	Assessment methodology	Comment
HZ70	Swampy Woodland	0.078	Moderate	Ground-truthed	remnant LOT swamp gums
HZ71	Heathy Woodland	0.087	Moderate	Ground-truthed	remnant vimis on original soil
HZ72	Heathy Woodland	0.002	Low	Ground-truthed	black wattle
HZ73	Heathy Woodland	0.005	Low	Ground-truthed	black wattle
HZ74	Heathy Woodland	0.051	Low	Ground-truthed	black wattle
HZ75	Heathy Woodland	0.008	Low	Ground-truthed	black wattle
HZ76	Heathy Woodland	0.013	Low	Ground-truthed	black wattles
HZ77	Heathy Woodland	0.004	Low	Ground-truthed	black wattle
HZ78	Heathy Woodland	0.001	Low	Ground-truthed	lightwood tree
HZ79	Tall Marsh	0.083	Low	Ground-truthed	
HZ80	Plains Grassy Wetland	0.066	Low	Mapped from aerial photography	
HZ81	Plains Grassy Wetland	0.031	Low	Mapped from aerial photography	
HZ82	Plains Grassy Wetland	0.03	Low	Mapped from aerial photography	
HZ83	Plains Grassy Wetland	0.003	Low	Mapped from aerial photography	
HZ84	Plains Grassy Wetland	0.008	Low	Mapped from aerial photography	
HZ85	Plains Grassy Wetland	0.005	Low	Mapped from aerial photography	
HZ86	Plains Grassy Wetland	0.013	Low	Mapped from aerial photography	
HZ87	Plains Grassy Wetland	0.039	Low	Mapped from aerial photography	
HZ88	Plains Grassy Wetland	0.017	Low	Mapped from aerial photography	
HZ89	Plains Grassy Wetland	0.006	Low	Mapped from aerial photography	
HZ90	Plains Grassy Wetland	0.005	Low	Mapped from aerial photography	
HZ91	Plains Grassy Wetland	0.007	Low	Mapped from aerial photography	
HZ92	Plains Grassy Wetland	0.005	Low	Mapped from aerial photography	
HZ93	Plains Grassy Wetland	0.008	Low	Mapped from aerial photography	
HZ94	Plains Grassy Wetland	0.004	Low	Mapped from aerial photography	
HZ95	Plains Grassy Wetland	0.384	Low	Mapped from aerial photography	
HZ96	Plains Grassy Wetland	0.004	Low	Mapped from aerial photography	
HZ97	Plains Grassy Wetland	0.017	Low	Mapped from aerial photography	
HZ98	Plains Grassy Wetland	0.497	Low	Mapped from aerial photography	

APPENDIX 5. Scattered Trees

Tree ID	Common name	Species name	DBH (cm)	TPZ (m)	EVC	Size class	Method	ConsValue	Comment
1	River Red-gum	<i>Eucalyptus camaldulensis</i>	100	12	Plains Grassy Woodland	Large	Estimated	High	
2	River Red-gum	<i>Eucalyptus camaldulensis</i>	182	15	Plains Grassy Woodland	Large	Measured	High	
3	Swamp Gum	<i>Eucalyptus ovata</i>	78	9.36	Plains Grassy Woodland	Small	Measured	Moderate	
4	Swamp Gum	<i>Eucalyptus ovata</i>	50	6	Plains Grassy Woodland	Small	Estimated	Moderate	
5	Studley Park Gum	<i>Eucalyptus X studleyensis</i>	60	7.2	Plains Grassy Woodland	Small	Estimated	High	
6	River Red-gum	<i>Eucalyptus camaldulensis</i>	12	2	Plains Grassy Woodland	Small	Estimated	Low	recruiting from planted trees (not exempt)
7	Swamp Gum	<i>Eucalyptus ovata</i>	50	6	Heathy Woodland	Large	Estimated	High	
8	Unknown	Dead	50	6	Heathy Woodland	Large	Estimated	High	
9	River Red-gum	<i>Eucalyptus camaldulensis</i>	40	4.8	Plains Grassy Woodland	Small	Estimated	Moderate	
10	River Red-gum	<i>Eucalyptus camaldulensis</i>	30	3.6	Plains Grassy Woodland	Small	Estimated	Moderate	
11	River Red-gum	<i>Eucalyptus camaldulensis</i>	152	15	Plains Grassy Woodland	Large	Measured	High	
12	River Red-gum	<i>Eucalyptus camaldulensis</i>	192	15	Plains Grassy Woodland	Large	Measured	High	
13	River Red-gum	<i>Eucalyptus camaldulensis</i>	150	15	Plains Grassy Woodland	Large	Estimated	High	bees prevented measurement
14	River Red-gum	<i>Eucalyptus camaldulensis</i>	146	15	Plains Grassy Woodland	Large	Measured	High	
15	River Red-gum	<i>Eucalyptus camaldulensis</i>	131	15	Plains Grassy Woodland	Large	Measured	High	
16	River Red-gum	<i>Eucalyptus camaldulensis</i>	160	15	Plains Grassy Woodland	Large	Measured	High	
17	River Red-gum	<i>Eucalyptus camaldulensis</i>	120	14.4	Plains Grassy Woodland	Large	Measured	High	
18	River Red-gum	<i>Eucalyptus camaldulensis</i>	99	11.88	Plains Grassy Woodland	Large	Measured	High	large mature tree leaning pver
19	River Red-gum	<i>Eucalyptus camaldulensis</i>	50	6	Plains Grassy Woodland	Small	Estimated	Moderate	mature tree leaning over
20	River Red-gum	<i>Eucalyptus camaldulensis</i>	60	7.2	Plains Grassy Woodland	Small	Estimated	Moderate	
21	River Red-gum	<i>Eucalyptus camaldulensis</i>	60	7.2	Plains Grassy Woodland	Small	Estimated	Moderate	
22	River Red-gum	<i>Eucalyptus camaldulensis</i>	187	15	Plains Grassy Woodland	Large	Measured	High	bifurcated at 170cm
23	River Red-gum	<i>Eucalyptus camaldulensis</i>	182	15	Plains Grassy Woodland	Large	Measured	High	
24	River Red-gum	<i>Eucalyptus camaldulensis</i>	10	2	Plains Grassy Woodland	Small	Estimated	Low	small
25	Unknown	Unknown	80	9.6	Plains Grassy Woodland	Large	Not measured (mapped from aerial photo)	High	
26	Coast Manna-gum	<i>Eucalyptus viminalis subsp. pryoriana</i>	50	6	Heathy Woodland	Large	Estimated	High	
27	Coast Manna-gum	<i>Eucalyptus viminalis subsp. pryoriana</i>	40	4.8	Heathy Woodland	Small	Estimated	Moderate	
28	River Red-gum	<i>Eucalyptus camaldulensis</i>	90	10.8	Plains Grassy Woodland	Large	Estimated	High	
29	Coast Manna-gum	<i>Eucalyptus viminalis subsp. pryoriana</i>	60	7.2	Heathy Woodland	Large	Estimated	High	steep embankment couldnt access
30	Coast Manna-gum	<i>Eucalyptus viminalis subsp. pryoriana</i>	45	5.4	Heathy Woodland	Small	Estimated	Moderate	
31	Unknown	Dead	50	6	Heathy Woodland	Large	Estimated (mapped from over-the-fence)	High	
32	Unknown	Dead	100	12	Plains Grassy Woodland	Large	Not measured (mapped from aerial photo)	High	
33	Unknown	Unknown	80	9.6	Plains Grassy Woodland	Large	Not measured (mapped from aerial photo)	High	
34	Unknown	Unknown	80	9.6	Plains Grassy Woodland	Large	Not measured (mapped from aerial photo)	High	
35	Unknown	Unknown	80	9.6	Plains Grassy Woodland	Large	Not measured (mapped from aerial photo)	High	
36	Unknown	Dead	60	7.2	Plains Grassy Woodland	Small	Not measured (mapped from aerial photo)	Moderate	

APPENDIX 6. Flora species recorded at the study area

Origin	Scientific Name	Common Name	FFG Status
*	<i>Acacia baileyana</i>	Cootamundra Wattle	
	<i>Acacia implexa</i>	Lightwood	
#	<i>Acacia longifolia</i>	Sallow Wattle	
	<i>Acacia mearnsii</i>	Black Wattle	
	<i>Acacia melanoxylon</i>	Blackwood	
*	<i>Acanthus mollis</i>	Bear's Breach	
*	<i>Agapanthus praecox subsp. orientalis</i>	Agapanthus	
*	<i>Agrostis capillaris</i> var. <i>capillaris</i>	Brown-top Bent	
	<i>Alisma plantago-aquatica</i>	Water Plantain	
	<i>Allocasuarina verticillata</i>	Drooping Sheoak (planted)	
	<i>Amphibromus nervosus</i>	Common Swamp Wallaby-grass	
*	<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	
*	<i>Aphanes arvensis</i>	Parsley Piert	
*	<i>Arctotheca calendula</i>	Cape Weed	
	<i>Austrostipa</i> spp.	Spear Grass	
*	<i>Avena fatua</i>	Wild Oat	
	<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	Coast Banksia (planted)	
	<i>Berula erecta</i>	Water Parsnip	
	<i>Bolboschoenus caldwellii</i>	Salt Club-sedge	
*	<i>Brassicaceae</i> spp.	Brassica	
*	<i>Briza maxima</i>	Large Quaking-grass	
*	<i>Bromus catharticus</i>	Prairie Grass	
*	<i>Callitriche brutia</i> subsp. <i>brutia</i>	Thread Water-starwort	
*	<i>Callitriche stagnalis</i>	Common Water-starwort	
*	<i>Cardamine hirsuta</i> s.l.	Common Bitter-cress	
	<i>Carex appressa</i>	Tall Sedge	
	<i>Carex breviculmis</i>	Common Grass-sedge	
	<i>Carex</i> spp.	Sedge	
#	<i>Cassinia sifton</i>	Drooping Cassinia	
*	<i>Casuarina glauca</i>	Swamp Oak	
*	<i>Cenchrus clandestinus</i>	Kikuyu	
*	<i>Centaureum erythraea</i>	Common Centaury	
	<i>Centrolepis strigosa</i> subsp. <i>strigosa</i>	Hairy Centrolepis	
*	<i>Chamaecytisus palmensis</i>	Tree Lucerne	
*	<i>Chenopodium album</i>	Fat Hen	
*	<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	African Boneseed	
*	<i>Cirsium vulgare</i>	Spear Thistle	
*	<i>Coprosma repens</i>	Mirror Bush	
*	<i>Cordyline australis</i>	New Zealand Cabbage-tree	
*	<i>Cortaderia selloana</i> subsp. <i>selloana</i>	Pampas Grass	
*	<i>Cotula coronopifolia</i>	Water Buttons	
	<i>Crassula decumbens</i> var. <i>decumbens</i>	Spreading Crassula	
	<i>Cynogeton procerum</i> s.s.	Common Water-ribbons	
*	<i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch	
*	<i>Cyperus eragrostis</i>	Drain Flat-sedge	
*	<i>Dactylis glomerata</i>	Cocksfoot	
*	<i>Echium</i> spp.	Bugloss (garden escape)	

Origin	Scientific Name	Common Name	FFG Status
*	<i>Ehrharta erecta</i>	Panic Veldt-grass	
*	<i>Ehrharta longiflora</i>	Annual Veldt-grass	
	<i>Eleocharis acuta</i>	Common Spike-sedge	
	<i>Epilobium billardioreanum</i> subsp. <i>billardioreanum</i>	Smooth Willow-herb	
*	<i>Erigeron bonariensis</i>	Flaxleaf Fleabane	
	<i>Eucalyptus camaldulensis</i>	River Red-gum	
cr #	<i>Eucalyptus leucoxylon</i> subsp. <i>megalocarpa</i>	Large-fruit Yellow-gum (planted)	Critically Endangered
	<i>Eucalyptus melliodora</i>	Yellow Box (planted)	
	<i>Eucalyptus ovata</i>	Swamp Gum (planted and naturalising)	
	<i>Eucalyptus viminalis</i> subsp. <i>pyroriana</i>	Coast Manna-gum (planted)	
cr	<i>Eucalyptus X studleyensis</i>	Studley Park Gum	Critically Endangered
	<i>Exocarpos cupressiformis</i>	Cherry Ballart	
*	<i>Fraxinus</i> spp.	Ash	
*	<i>Fumaria bastardii</i> var. <i>bastardii</i>	Bastard's Fumitory	
	<i>Gahnia radula</i>	Thatch Saw-sedge	
*	<i>Galium aparine</i>	Cleavers	
*	<i>Gamochaeta americana</i>	Spiked Cudweed	
*	<i>Genista linifolia</i>	Flax-leaf Broom	
*	<i>Genista monspessulana</i>	Montpellier Broom	
*	<i>Geranium dissectum</i>	Cut-leaf Crane's-bill	
*	<i>Geranium molle</i>	Dove's Foot	
*	<i>Gladiolus</i> spp.	Gladiolus	
*	<i>Helminthotheca echioides</i>	Ox-tongue	
*	<i>Holcus lanatus</i>	Yorkshire Fog	
*	<i>Hypericum perforatum</i> subsp. <i>veronense</i>	St John's Wort	
*	<i>Hypochaeris radicata</i>	Flatweed	
	<i>Juncus amabilis</i>	Hollow Rush	
	<i>Juncus pallidus</i>	Pale Rush	
	<i>Juncus</i> spp.	Rush	
*	<i>Lathyrus</i> spp.	Pea	
*	<i>Lepidium africanum</i>	Common Peppergrass	
	<i>Lepidosperma gunnii</i>	Slender Sword-sedge	
*	<i>Lolium</i> spp.	Rye Grass	
	<i>Lomandra longifolia</i> subsp. <i>longifolia</i>	Spiny-headed Mat-rush (planted and naturalising)	
*	<i>Lotus</i> spp. (naturalised)	Trefoil	
*	<i>Lycium ferocissimum</i>	African Box-thorn	
*	<i>Lysimachia arvensis</i> var. <i>arvensis</i>	Scarlet Pimpernel	
*	<i>Malva</i> spp.	Mallow	
*	<i>Medicago</i> spp.	Medic	
en #	<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	Giant Honey-myrtle (planted and naturalising)	Endangered
	<i>Melaleuca ericifolia</i>	Swamp Paperbark	
	<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Grass	
*	<i>Modiola caroliniana</i>	Red-flower Mallow	
	<i>Montia australasica</i>	White Purslane	
	<i>Myriophyllum crispatum</i>	Upright Water-milfoil	
*	<i>Nasturtium officinale</i>	Watercress	
*	<i>Opuntia</i> spp.	Prickly Pear	
*	<i>Oxalis corniculata</i>	Creeping Wood-sorrel	
*	<i>Oxalis pes-caprae</i>	Sour sob	
	<i>Ozothamnus ferrugineus</i>	Tree Everlasting (planted and naturalising)	
*	<i>Paspalum dilatatum</i>	Paspalum	

Origin	Scientific Name	Common Name	FFG Status
*	<i>Passiflora spp.</i>	Passion Flower	
	<i>Persicaria decipiens</i>	Slender Knotweed	
*	<i>Phalaris aquatica</i>	Toowoomba Canary-grass	
*	<i>Phleum pratense</i>	Timothy Grass	
*	<i>Pinus radiata</i>	Radiata Pine	
#	<i>Pittosporum undulatum</i>	Sweet Pittosporum	
*	<i>Plantago lanceolata</i>	Ribwort	
*	<i>Polygonum aviculare</i>	Prostrate Knotweed	
	<i>Potamogeton crispus</i>	Curly Pondweed	
	<i>Pteridium esculentum subsp. esculentum</i>	Austral Bracken	
*	<i>Romulea rosea</i>	Onion Grass	
*	<i>Rubus anglocandicans</i>	Common Blackberry	
*	<i>Rumex crispus</i>	Curled Dock	
	<i>Senecio quadridentatus</i>	Cotton Fireweed	
	<i>Solanum aviculare</i>	Kangaroo Apple	
*	<i>Solanum nigrum</i>	Black Nightshade	
*	<i>Sonchus oleraceus</i>	Common Sow-thistle	
*	<i>Sporobolus africanus</i>	Rat-tail Grass	
	<i>Stuckenia pectinata</i>	Fennel Pondweed	
*	<i>Taraxacum officinale spp. agg.</i>	Garden Dandelion	
	<i>Themeda triandra</i>	Kangaroo Grass	
*	<i>Trifolium repens var. repens</i>	White Clover	
*	<i>Trifolium spp.</i>	Clover	
	<i>Typha spp.</i>	Bulrush	
*	<i>Vicia sativa</i>	Common Vetch	
*	<i>Vicia sativa subsp. nigra</i>	Narrow-leaf Vetch	
*	<i>Watsonia spp.</i>	Watsonia	

APPENDIX 7. Threatened species likelihood of occurrence

Discipline	Common Name	Scientific Name	Conservation Status	Count of Sightings	Date of last Record	Database	Habitat requirements	Likelihood of occurrence	Reasoning
Aquatic fauna	Australian Grayling	<i>Prototroctes maraena</i>	VU en			PMST	Spends part of its lifecycle in freshwater and at least part of the larval and/or juvenile stages in coastal seas. Inhabits cool, clear, freshwater streams with gravel substrate and areas alternating between pools and riffle zones.	Low	Not recorded within five km in the last 30 years. Presumed locally extinct.
Aquatic fauna	Dwarf Galaxias	<i>Galaxiella pusilla</i>	VU en	106	2/12/2021	VBA/PMST	Slow flowing and still, shallow, permanent and temporary freshwater habitats, often containing dense aquatic macrophytes and emergent plants	Moderate	Dwarf Galaxias important population exists downstream within the Hallam Main Drain. The species could migrate upstream to the site when water levels permit. However, habitat not optimal.
Aquatic fauna	Growling Grass Frog,	<i>Litoria raniformis</i>	VU vu			PMST	Wetland habitats including creeks, dams and freshwater wetlands. Prefers sites with a good cover of floating and submerged vegetation.	Low	Not recorded within five km in the last 30 years. Presumed locally extinct.
Aquatic fauna	Yarra Pygmy Perch	<i>Nannoperca obscura</i>	VU vu			PMST	Found in slow moving creeks and coastal lagoons, preferring areas with ample semi-aquatic vegetation for cover.	Low	Not recorded within five km in the last 30 years. Presumed locally extinct.
Flora	Grey Billy-buttons	<i>Craspedia canens</i>	cr	7	20/11/1993	VBA	Known in Victoria only from grassland (often bordering swamps) at low altitude between c. Cranbourne and Traralgon.	Low	
Flora	Pale Swamp Everlasting	<i>Coronidium gunnianum</i>	cr	4	16/12/1993	VBA	Seasonally water-logged sites in grassland, grassy woodland and occasionally along colluvial terraces of creeks.	Low	No suitable remnant wetland habitat present at the site.
Flora	Plains Yam-daisy	<i>Microseris scapigera s.s.</i>	cr	1	23/09/1993	VBA	Moist depressions on the basalt plains of western Victoria,	Low	No suitable remnant wetland/grassland habitat present at the site.
Flora	Studley Park Gum	<i>Eucalyptus X studleyensis</i>	cr	9	7/10/2019	VBA	Potentially occurring wherever the two parent species (Swamp Gum and Red Gum) overlap, where this species forms a hybrid swarm, usually within grassy woodland.	Present	Studley Park Gum was recorded at the study area
Flora	Yarra Gum	<i>Eucalyptus yarraensis</i>	cr	1	18/09/2015	VBA	Found in grassy woodland and along swampy drainage-lines.	Low	No suitable habitat present at the study area
Flora	Purple Blown-grass	<i>Lachnagrostis semibarbata var. filifolia</i>	en	5	7/12/1998	VBA	Primarily in grassland, occasionally woodland communities in slightly saline depressions of the volcanic plain, but also known from seasonal, slightly brackish swampy sites east of Melbourne.	Low	No suitable remnant bushland/wetland/grassland habitat present at the site.
Flora	Riverina Bitter-cress	<i>Cardamine moirensis</i>	en	2	7/10/1998	VBA	Seasonally wet areas	Low	No suitable remnant wetland habitat present at the site.

Discipline	Common Name	Scientific Name	Conservation Status	Count of Sightings	Date of last Record	Database	Habitat requirements	Likelihood of occurrence	Reasoning
Flora	Round-leaf Pomaderris	<i>Pomaderris vacciniifolia</i>	CR cr			PMST	Largely confined to moist forest and scrubs in the upper catchment of the Yarra, Plenty and Yea Rivers	Low	Not recorded within five km in the last 30 years. No suitable remnant bushland habitat present at the site.
Flora	Matted Flax-lily	<i>Dianella amoena</i>	EN cr			PMST	Largely confined to drier grassy woodland and grassland communities south of the Dividing Range	Low	Not recorded within five km in the last 30 years. No suitable remnant bushland habitat present at the site.
Flora	Eastern Spider Orchid	<i>Caladenia orientalis</i>	EN en			PMST	Found in coastal heathland and heath-woodland, generally on deep sands. Individuals may have many years between flowering events and periodic fire is required to stimulate flowering and seed production.	Low	Not recorded within five km in the last 30 years. No suitable remnant bushland habitat present at the site.
Flora	Metallic Sun-orchid	<i>Thelymitra epipactoides</i>	EN en			PMST	Mostly in coastal heathland, grassland and woodland. Substrates may be moist or dry sandy soils.	Low	Not recorded within five km in the last 30 years. No suitable remnant bushland habitat present at the site.
Flora	Maroon Leek-orchid	<i>Prasophyllum frenchii</i>	EN en			PMST	Widespread across southern Victoria, but rare. Occurs in grassland, heathland and open forest on well-drained or water-retentive sand or clay loams	Low	Not recorded within five km in the last 30 years. No suitable remnant bushland habitat present at the site.
Flora	Spiny Pepper-cress	<i>Lepidium aschersonii</i>	VU			PMST	Mostly on heavy clay soil near salt lakes on volcanic plain, but with outlying records from near Lake Omeo nd the Grampians.	Low	Species or species habitat may occur within area
Flora	River Swamp Wallaby-grass	<i>Amphibromus fluitans</i>	VU	4	12/12/1998	VBA/PMST	Seasonally water-logged sites in grassland and grassy woodland.	Moderate	Amphibromus nervosus recorded within flooded pasture. A. fluitans could therefore occur.
Flora	Swamp Fireweed, Smooth-fruited Groundsel	<i>Senecio psilocarpus</i>	VU v			PMST	Restricted herb-rich winter-wet swamps, growing on volcanic clays or peaty soils.	Low	Not recorded within five km in the last 30 years. No suitable remnant wetland habitat present at the site.
Flora	Dense Leek-orchid	<i>Prasophyllum spicatum</i>	VU cr			PMST	Localised across southern Victoria in coastal heathland and near-coastal heathy forest on sandy soils.	Low	Not recorded within five km in the last 30 years. No suitable remnant bushland habitat present at the site.
Flora	Large-fruit Fireweed, Large-fruit Groundsel	<i>Senecio macrocarpus</i>	VU cr			PMST	Volcanic grassland	Low	Not recorded within five km in the last 30 years. No suitable remnant wetland habitat present at the site.
Flora	Strzelecki Gum	<i>Eucalyptus strzeleckii</i>	VU cr			PMST	Largely restricted to the western section of the Strzelecki Range, from Neerim South in the north, south to Foster, and with a few isolated records from the Otway ranges. Favours ridges, slopes and streambanks and deep fertile soils.	Low	No suitable habitat present at the study area
Flora	Swamp Everlasting	<i>Xerochrysum palustre</i>	VU cr	7	18/04/2017	VBA/PMST	Occurs in lowland wetlands, usually on black cracking clay soils	Low	No suitable remnant wetland habitat present at the site.

Discipline	Common Name	Scientific Name	Conservation Status	Count of Sightings	Date of last Record	Database	Habitat requirements	Likelihood of occurrence	Reasoning
Flora	Green-striped Greenhood	<i>Pterostylis chlorogramma</i>	VU en			PMST	Moist areas of heathy and shrubby forest, on well-drained soils	Low	Not recorded within five km in the last 30 years. No suitable remnant bushland habitat present at the site.
Flora	Leafy Greenhood	<i>Pterostylis cucullata</i>	VU en			PMST	Coastal areas, sometimes near inland watercourses.	Low	Not recorded within five km in the last 30 years. No suitable remnant bushland habitat present at the site.
Flora	Clover Glycine, Purple Clover	<i>Glycine latrobeana</i>	VU vu			PMST	Typically grows in grasslands and grassy woodlands.	Low	Not recorded within five km in the last 30 years. No suitable remnant bushland habitat present at the site.
Terrestrial fauna	Black Falcon	<i>Falco subniger</i>	cr	1	11/08/2007	VBA	Prefers open grassland and grassy woodlands, resident populations are occasionally supplemented by irruptions from further inland during droughts.	Low	Few records within City of Casey. Predominately an arid species
Terrestrial fauna	Plumed Egret	<i>Ardea intermedia plumifera</i>	cr	4	11/01/2019	VBA	Wetland habitats, including freshwater and coastal wetlands.	High	Suitable wetland habitats present at the study area. Numerous recent records.
Terrestrial fauna	Australian Gull-billed Tern	<i>Gelochelidon macrotarsa</i>	en	1	28/09/2017	VBA	Freshwater swamps, brackish and salt lakes, beaches and estuarine mudflats, floodwaters, sewage farms, irrigated croplands and grasslands (only rarely found over the ocean).	Moderate	Few records south-east of Melbourne but suitable habitat present at the study area
Terrestrial fauna	Freckled Duck	<i>Stictonetta naevosa</i>	en	2	24/11/2019	VBA	Coastal and subcoastal wetlands, usually swamps where there is much fallen timber.	Moderate	Large stormwater dam and other wetlands potentially suitable. Two recent records.
Terrestrial fauna	Little Egret	<i>Egretta garzetta</i>	en	14	12/02/2019	VBA	Wetland habitats, including freshwater and coastal wetlands.	High	Suitable wetland habitats present at the study area. Numerous recent records.
Terrestrial fauna	Southern Toadlet	<i>Pseudophryne semimarmorata</i>	en	2	24/06/2014	VBA	Generally found at lower elevations in damp areas, not necessarily near permanent water. Usually under leaf litter, logs or rocks. Southern Toadlet can occur in forests, woodlands, heaths and grasslands (SWIFFT 2018).	Low	No suitable remnant bushland habitat present at the study area
Terrestrial fauna	White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	en	4	10/06/2018	VBA	Primarily coastal, but also far inland on river systems and terrestrial wetlands.	High	Could potentially occasionally hunt over the study area as part of the Hallam Main Drain corridor
Terrestrial fauna	Australasian Shoveler	<i>Spatula rhynchotis</i>	vu	52	19/12/2019		larger, well vegetated wetlands, fresh and saline lakes, coastal inlets, sewerage ponds, floodwaters.	High	Larger well-vegetated wetlands present at the study area. Numerous recent records within 5km.
Terrestrial fauna	Blue-billed Duck	<i>Oxyura australis</i>	vu	23	20/08/2009	VBA	Spends most of its time on the water, preferring deeper lakes, wetland and lagoons where sufficient aquatic prey are available. Nests on a reed/sedge platform on the water.	High	Large stormwater dam and other wetlands within the study area potentially suitable. Many recent records within 5km.

Discipline	Common Name	Scientific Name	Conservation Status	Count of Sightings	Date of last Record	Database	Habitat requirements	Likelihood of occurrence	Reasoning
Terrestrial fauna	Caspian Tern	<i>Hydroprogne caspia</i>	vu	9	19/12/2018	VBA	Open wetland habitats, prefers to feed over larger bodies of water.	High	Large stormwater dam and other wetlands within the study area potentially suitable. Many recent records within 5km.
Terrestrial fauna	Eastern Great Egret	<i>Ardea alba modesta</i>	vu	60	31/07/2019	VBA	Inhabits a range of wetland habitats, including permanent or ephemeral, natural or artificial	Present	Recorded on-site during the current assessment and many records within 5km
Terrestrial fauna	Hardhead	<i>Aythya australis</i>	vu	77	19/12/2019	VBA	Prefers open wetland habitats, particularly lakes and lagoons.	High	Large stormwater dam and other wetlands within the study area potentially suitable. Many recent records within 5km.
Terrestrial fauna	Lewin's Rail	<i>Lewinia pectoralis</i>	vu	2	27/01/2019	VBA	A range of wetland habitats including swamps, swampy woodlands, rushes and reeds in wetlands, wet heath, and saltmarsh (Pizzey & Knight).	High	Potentially suitable and diverse range of wetlands with good vegetative cover at the study area.
Terrestrial fauna	Little Eagle	<i>Hieraaetus morphnoides</i>	vu	5	15/07/2009	VBA	Flying over woodland, forest and open country, extending into the arid zone. It tends to avoid rainforest and heavy forest	High	Could potentially occasionally hunt over the study area as part of the Hallam Main Drain corridor
Terrestrial fauna	Musk Duck	<i>Biziura lobata</i>	vu	13	9/09/2010	VBA	Prefers open wetlands such as lakes and lagoons.	High	Large stormwater dam and other wetlands within the study area potentially suitable. Many recent records within 5km.
Terrestrial fauna	Swift Parrot	<i>Lathamus discolor</i>	CR cr	3	19/04/2018	VBA/PMST	Migrates from Tasmania to the mainland between autumn and spring. Recorded widely in a range of habitats wherever nectar-rich food plants occur, including Yellow Gum and Ironbark forest and woodland, eucalypt plantations and urban gardens.	Moderate	Could occasionally feed on flowering Eucalypts at the study area.
Terrestrial fauna	Eastern Curlew	<i>Numenius madagascariensis</i>	CR cr Migratory, Marine			PMST	Intertidal mud-flats, coastal areas, such as estuaries, bays, inlets and lagoons. Also sewerage farms and ephemeral lakes, dams, usually with bare muddy banks.	Low	Few recent records within City of Casey. Not likely to occur within highly modified wetlands such as at the study area.
Terrestrial fauna	Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	EN	2	18/04/2006	VBA/PMST	During summer, Gang-gangs are found in tall mountain forests and woodlands, with dense shrubby understoreys. In winter, Gang-gangs will move to lower altitudes into drier, more open forests and woodlands.	High	Highly mobile species that could potentially forage at the study area.
Terrestrial fauna	Australasian Bittern	<i>Botaurus poiciloptilus</i>	EN cr	21	28/06/2018	VBA/PMST	Wetland habitats, preferring areas with dense cover such as reedbeds and tall marsh.	Moderate	Relatively large areas of Tall Marsh with ample frogs (food source) present. Many recent records, large areas of suitable habitat nearby.

Discipline	Common Name	Scientific Name	Conservation Status	Count of Sightings	Date of last Record	Database	Habitat requirements	Likelihood of occurrence	Reasoning
Terrestrial fauna	Smoky Mouse, Konoom	<i>Pseudomys fumeus</i>	EN en			PMST	Heath and dry sclerophyll forest, especially along ridgetops with a heath understorey, and occasionally adjacent wetter habitats such as fern gullies. Typically with a floristically diverse shrub layer with members of the plant families Epacridaceae, Fabaceae and Mimosaceae.	Low	Not recorded within five km in the last 30 years. No suitable remnant habitat present at the site.
Terrestrial fauna	Spot-tailed Quoll	<i>Dasyurus maculatus maculatus (SE mainland population)</i>	EN en			PMST	Has been recorded in a wide range of forest and woodland habitats but has a preference for mature wet forest habitat, particularly long undisturbed.	Low	Not recorded within five km in the last 30 years. No suitable remnant forest or woodland habitats present at the site.
Terrestrial fauna	Red Knot, Knot	<i>Calidris canutus</i>	EN en Migratory			PMST	Intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours	Low	Few recent records within City of Casey. Not likely to occur within highly modified wetlands such as at the study area.
Terrestrial fauna	Southern Greater Glider	<i>Petauroides volans</i>	EN vu			PMST	Typically found in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species.	Low	Not recorded within five km in the last 30 years. No suitable remnant tall forest habitat present at the site.
Terrestrial fauna	Common Greenshank	<i>Tringa nebularia</i>	Migratory en			PMST	Widespread in coastal regions in a variety of wetland habitats, mainly between Gippsland Lakes and Port Phillip Bay. Prefers coastal mudflats and associated habitats.	Moderate	Could occasionally forage on mud-flats at the study area (depending on the extent of mud-flat habitat over the warmer months)
Terrestrial fauna	Common Sandpiper	<i>Actitis hypoleucos</i>	Migratory Marine vu			PMST	Migrant from Asia, arriving in late winter and leaving around early autumn. Prefers coastal habitats and near coastal wetlands.	Moderate	Could occasionally forage on mud-flats at the study area (depending on the extent of mud-flat habitat over the warmer months)
Terrestrial fauna	Black-faced Monarch	<i>Monarcha melanopsis</i>	Migratory, Marine			PMST	Chiefly occurs in rainforest ecosystems on east coast of Australia, but known as a vagrant in other areas.	Low	Uncommon vagrant, especially within urban areas. No records within 5km
Terrestrial fauna	Fork-tailed Swift	<i>Apus pacificus</i>	Migratory, Marine	1	14/10/2010	PMST/VBA	Aerial species that rarely lands.	High	Likely flies over the study area but unlikely to land or make regular use of the site.
Terrestrial fauna	Latham's Snipe	<i>Gallinago hardwickii</i>	Migratory, Marine	113	20/02/2020	PMST/VBA	Wetland habitats sewerage farms and ephemeral lakes, dams, usually with areas of vegetated muflats and with dense low vegetation.	High	Large areas of suitable habitat present. Many local records.
Terrestrial fauna	Pectoral Sandpiper	<i>Calidris melanotos</i>	Migratory, Marine			PMST	Intertidal mud-flats, coastal areas, such as estuaries, bays, inlets and lagoons. Also sewerage farms and ephemeral lakes, dams, usually with bare muddy banks.	Moderate	Could occasionally forage on mud-flats at the study area (depending on the extent of mud-flat habitat over the warmer months)

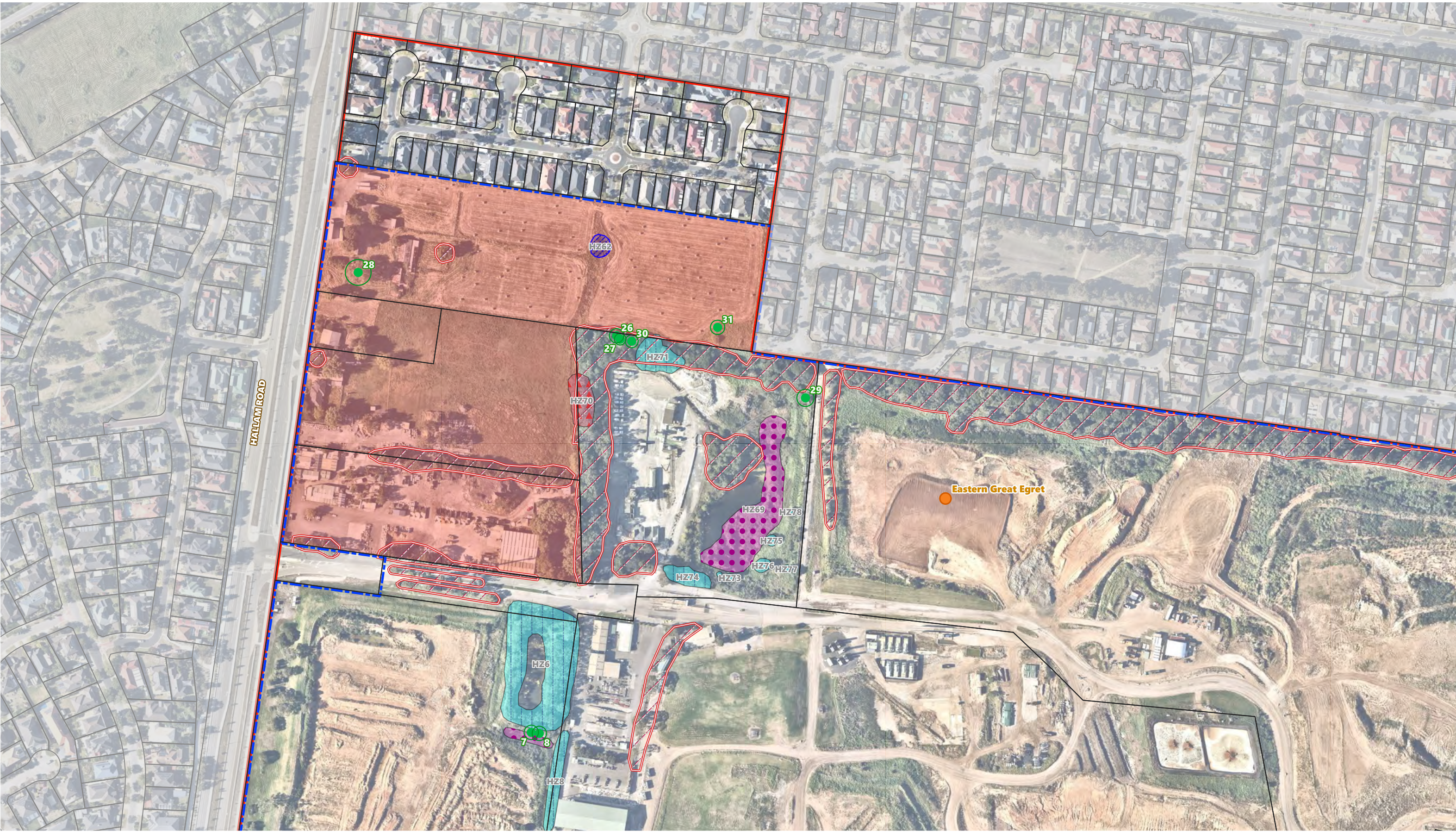
Discipline	Common Name	Scientific Name	Conservation Status	Count of Sightings	Date of last Record	Database	Habitat requirements	Likelihood of occurrence	Reasoning
Terrestrial fauna	Rufous Fantail	<i>Rhipidura rufifrons</i>	Migratory, Marine			PMST	Mainly inhabits wet sclerophyll forests, often in gullies, with dense shrubby understorey, but also various habitat types.	High	Could occasionally visit the study area on migration.
Terrestrial fauna	Satin Flycatcher	<i>Myiagra cyanoleuca</i>	Migratory, Marine	3	5/02/2008	PMST/VBA	Heavily vegetated gullies in eucalypt-dominated forests and taller woodlands. Can occur in coastal forests, woodlands, mangroves and drier woodlands and open forest on migation	High	Could occasionally visit the study area on migration. Several records within 5km.
Terrestrial fauna	Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	Migratory, Marine	8	20/01/2009	PMST/VBA	Intertidal mud-flats, coastal areas, such as estuaries, bays, inlets and lagoons. Also sewerage farms and ephemeral lakes, dams, usually with bare muddy banks.	Moderate	Could occasionally forage on mud-flats at the study area (depending on the extent of mud-flat habitat over the warmer months)
Terrestrial fauna	Yellow Wagtail	<i>Motacilla flava</i>	Migratory, Marine			PMST	Short grass, bare ground, wetlands, coastal environments, mown grass.	Low	Very rare species with few if any recent records in Victoria.
Terrestrial fauna	Australian Fairy Tern	<i>Sternula nereis nereis</i>	VU			PMST	Coastal waters, bays, inlets, saline or brackish lakes, salt fields, sewerage ponds near lakes.	Low	Very few records in Victoria. Most records for the species are on or near to the coast.
Terrestrial fauna	Yellow-bellied Glider (south-eastern)	<i>Petaurus australis australis</i>	VU			PMST	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils	Low	Not recorded within five km in the last 30 years. No suitable remnant tall forest habitat present at the site.
Terrestrial fauna	Pilotbird	<i>Pycnoptilus floccosus</i>	VU			PMST	Rainforest and other wet forest habitats from the tops of the ranges to the coast. In some coastal locations they also occur along the moist margins of creeks extending out into heathland.	Low	Not recorded within five km in the last 30 years. No suitable remnant wet forest / rainforest habitats present at the site.
Terrestrial fauna	Grey Falcon	<i>Falco hypoleucos</i>	VU vu			PMST	Typically shrubland, grassland and wooded watercourses of arid and semi-arid regions. Occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey.	Low	Not recorded within five km in the last 30 years. Typically occurs in arid areas.
Terrestrial fauna	Swamp Antechinus (mainland)	<i>Antechinus minimus maritimus</i>	VU vu			PMST	Mainly occurs in damp areas, particularly at sites with dense vegetation at about 1–2 m above ground level. Its habitat includes dense wet heathlands, tussock grasslands, sedgeland, damp gullies, swamps and some shrubby woodlands.	Low	Not recorded within five km in the last 30 years. No suitable remnant habitats present at the site.
Terrestrial fauna	Broad-toothed Rat	<i>Mastacomys fuscus mordicus</i>	VU vu			PMST	Generally higher elevation sites but also foothil areas. Requires high annual rainfall comprising heathlands, grassland adjacent to boulder outcrops, swamps, shrubby dunes, and sometimes forests with grassy understoreys.	Low	Not recorded within five km in the last 30 years. No suitable remnant habitat present at the site.
Terrestrial fauna	Golden Sun Moth	<i>Synemon plana</i>	VU vu	1	01/01/1760	VBA/PMST	Typically grassland habitats, primarily on the volcanic plains, including exotic grassland dominated by Nasella spp.	Low	Not recorded within five km in the last 30 years. No suitable remnant habitat present at the site.

Discipline	Common Name	Scientific Name	Conservation Status	Count of Sightings	Date of last Record	Database	Habitat requirements	Likelihood of occurrence	Reasoning
Terrestrial fauna	Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	VU vu	1	29/11/2011	VBA/PMST	Wide-ranging species that typically seeks food resources in urban areas, including gardens and orchards. Also feeds on flowering Eucalypts in woodlands and forests.	Moderate	Could occasionally feed on flowering Eucalypts at the study area.
Terrestrial fauna	White-throated Needletail	<i>Hirundapus caudacutus</i>	VU vu	23	24/02/2006	VBA/PMST	Aerial species that rarely lands.	High	Species or species habitat known to occur within area
Terrestrial fauna	Greater Sand Plover, Large Sand Plover	<i>Charadrius leschenaultii</i>	VU vu Migratory Marine			PMST	Tidal mudflats, sandy ocean and bay shores, estuaries, shallow saline and freshwater wetlands (Pizzey & Knight).	Moderate	Could occasionally forage on mud-flats at the study area (depending on the extent of mud-flat habitat over the warmer months)
Vertebrate animals	Curlew Sandpiper	<i>Calidris ferruginea</i>	Migratory Marine CR cr			PMST	Intertidal mud-flats, coastal areas, such as estuaries, bays, inlets and lagoons. Also sewerage farms and ephemeral lakes, dams, usually with bare muddy banks.	Moderate	Could occasionally forage on mud-flats at the study area (depending on the extent of mud-flat habitat over the warmer months)

APPENDIX 8. Fauna species recorded at the study area

Origin	Common Name	Scientific Name	Conservation Status
	Australasian Grebe	<i>Tachybaptus novaehollandiae</i>	
	Australasian Pipit	<i>Anthus novaeseelandiae</i>	
	Australian Magpie	<i>Cracticus tibicen</i>	
	Australian Pelican	<i>Pelecanus conspicillatus</i>	
	Australian White Ibis	<i>Threskiornis molucca</i>	
	Australian Wood Duck	<i>Chenonetta jubata</i>	
	Black Swan	<i>Cygnus atratus</i>	
	Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	
	Black-fronted Dotterel	<i>Elseya melanops</i>	
	Black-shouldered Kite	<i>Elanus axillaris</i>	
	Brown Falcon	<i>Falco berigora</i>	
*	Common Blackbird	<i>Turdus merula</i>	
	Common Froglet	<i>Crinia signifera</i>	
*	Common Myna	<i>Acridotheres tristis</i>	
*	Common Starling	<i>Sturnus vulgaris</i>	
*	Dog	<i>Canis lupus familiaris</i>	
	Dusky Moorhen	<i>Gallinula tenebrosa</i>	
	Eastern Great Egret	<i>Ardea modesta</i>	FFG Act Vulnerable
*	European Greenfinch	<i>Chloris chloris</i>	
*	European Hare	<i>Lepus europeus</i>	
*	European Rabbit	<i>Oryctolagus cuniculus</i>	
*	European Skylark	<i>Alauda arvensis</i>	
	Golden-headed Cisticola	<i>Cisticola exilis</i>	
	Pacific Gull	<i>Larus pacificus</i>	
	Little Grassbird	<i>Megalurus gramineus</i>	
	Little Raven	<i>Corvus mellori</i>	
	Magpie-lark	<i>Grallina cyanoleuca</i>	
	Masked Lapwing	<i>Vanellus miles</i>	
	New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>	
	Noisy Miner	<i>Manorina melanocephala</i>	
	Pacific Black Duck	<i>Anas superciliosa</i>	
	Purple Swampphen	<i>Porphyrio porphyrio</i>	
	Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	
*	Red Fox	<i>Vulpes vulpes</i>	
	Red Wattlebird	<i>Anthochaera carunculata</i>	
	Red-browed Finch	<i>Neochmia temporalis</i>	
	Royal Spoonbill	<i>Platalea regia</i>	
	Silver Gull	<i>Chroicocephalus novaehollandiae</i>	
	Silvereye	<i>Zosterops lateralis</i>	
	Spotted Marsh Frog	<i>Limnodynastes tasmaniensis</i>	
*	Spotted Turtle-Dove	<i>Streptopelia chinensis</i>	
	Straw-necked Ibis	<i>Threskiornis spinicollis</i>	
	Striped Marsh Frog	<i>Limnodynastes peronii</i>	
	Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	
	Superb Fairy-wren	<i>Malurus cyaneus</i>	
	Welcome Swallow	<i>Hirundo neoxena</i>	
	White-browed Scrubwren	<i>Sericornis frontalis</i>	
	White-faced Heron	<i>Egretta novaehollandiae</i>	
	White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>	
	Willie Wagtail	<i>Rhipidura leucophrys</i>	

* denotes introduced species

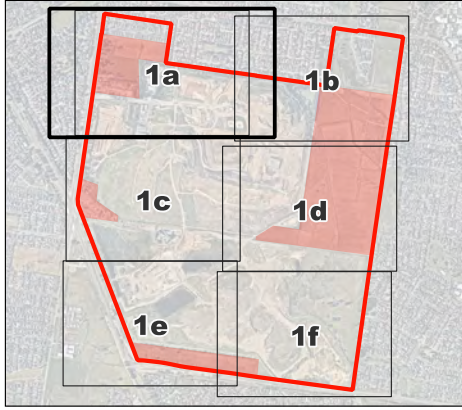


Map Appendix 1a: Ecological features

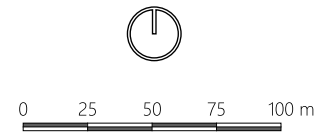
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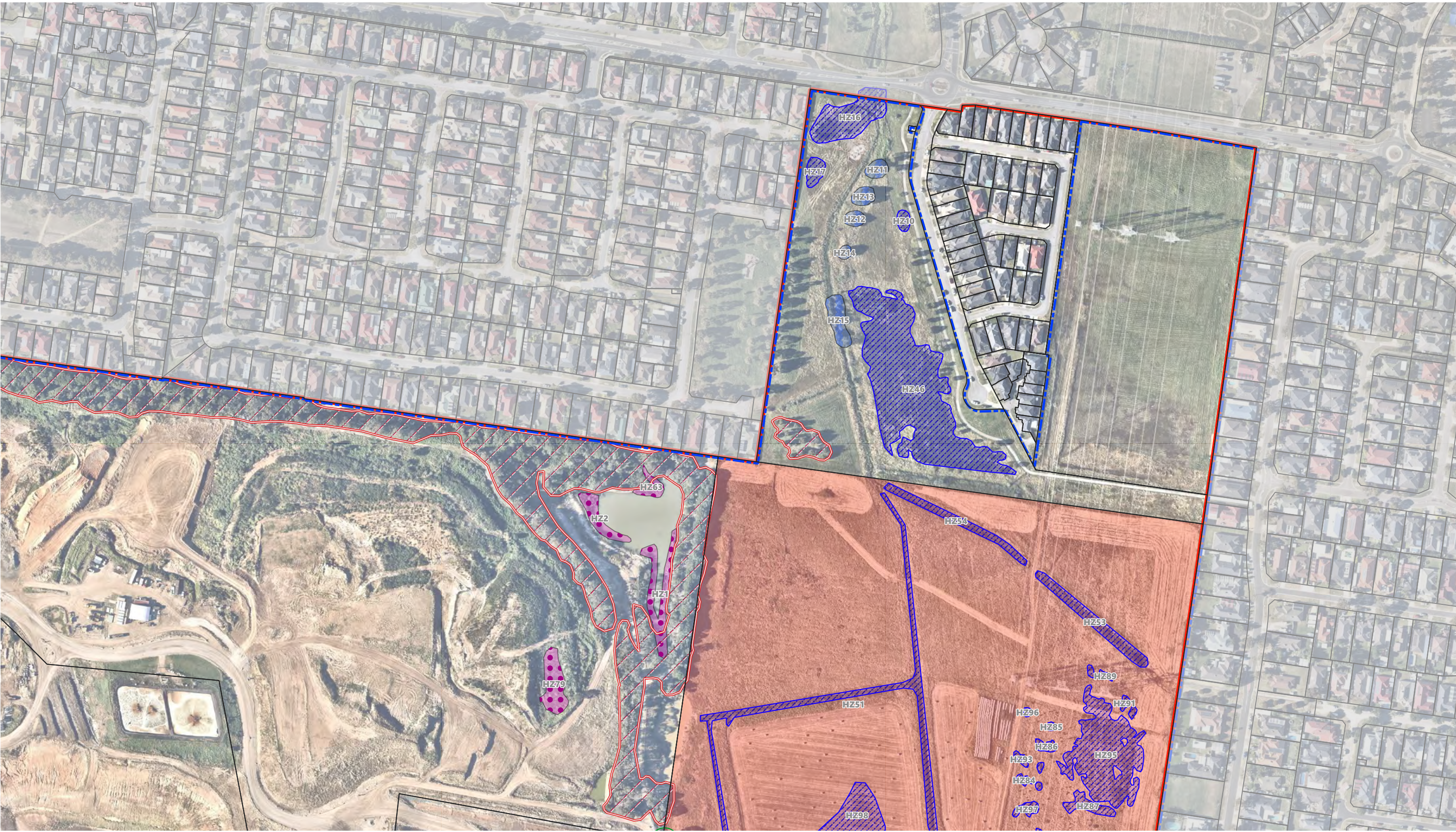
Property access
 Access not granted
 (access required to confirm extent
 of native vegetation)

- | | | | | | | | |
|---------------------------|------------|---------------------|-------------|-------------------------|-----------------------|------------------------|----------------------------|
| Development Plan Boundary | Study area | Property boundaries | Watercourse | Scattered Trees | Tree Protection Zone | Revegetation | Significant species record |
| | | | | Native vegetation patch | | | |
| | | | | Heathy Woodland | Plains Grassy Wetland | Plains Grassy Woodland | Submerged Aquatic Herbland |
| | | | | Swamp Scrub | Swampy Woodland | Tall Marsh | |



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 Aerial photography date: 12/12/2021
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 Coordinate system: GDA94 MGA Zone 55





















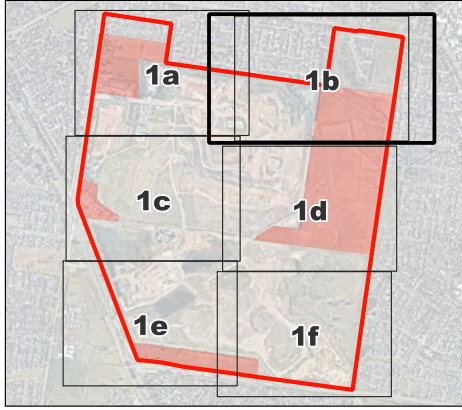
Map Appendix 1b: Ecological features

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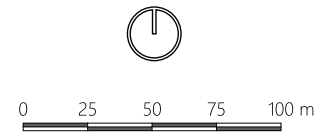
Property access

Access not granted
(access required to confirm extent
of native vegetation)

- | | |
|--|--|
|  Development Plan Boundary |  Native vegetation patch |
|  Study area |  Heathy Woodland |
|  Property boundaries |  Plains Grassy Wetland |
|  Watercourse |  Plains Grassy Woodland |
|  Scattered Trees |  Submerged Aquatic Herbland |
|  Tree Protection Zone |  Swamp Scrub |
|  Revegetation |  Swampy Woodland |
|  Significant species record |  Tall Marsh |



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Aerial photography date: 12/12/2021
Scale: 1:2,933 @A3
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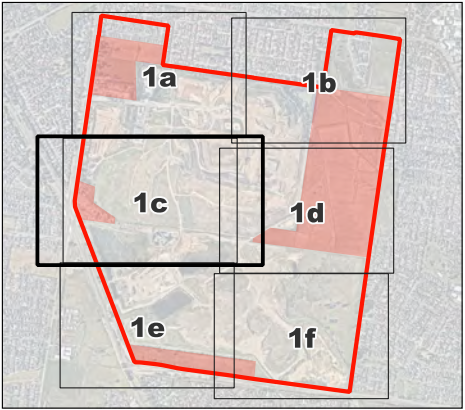
Map Appendix 1c: Ecological features

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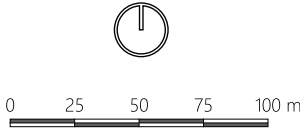
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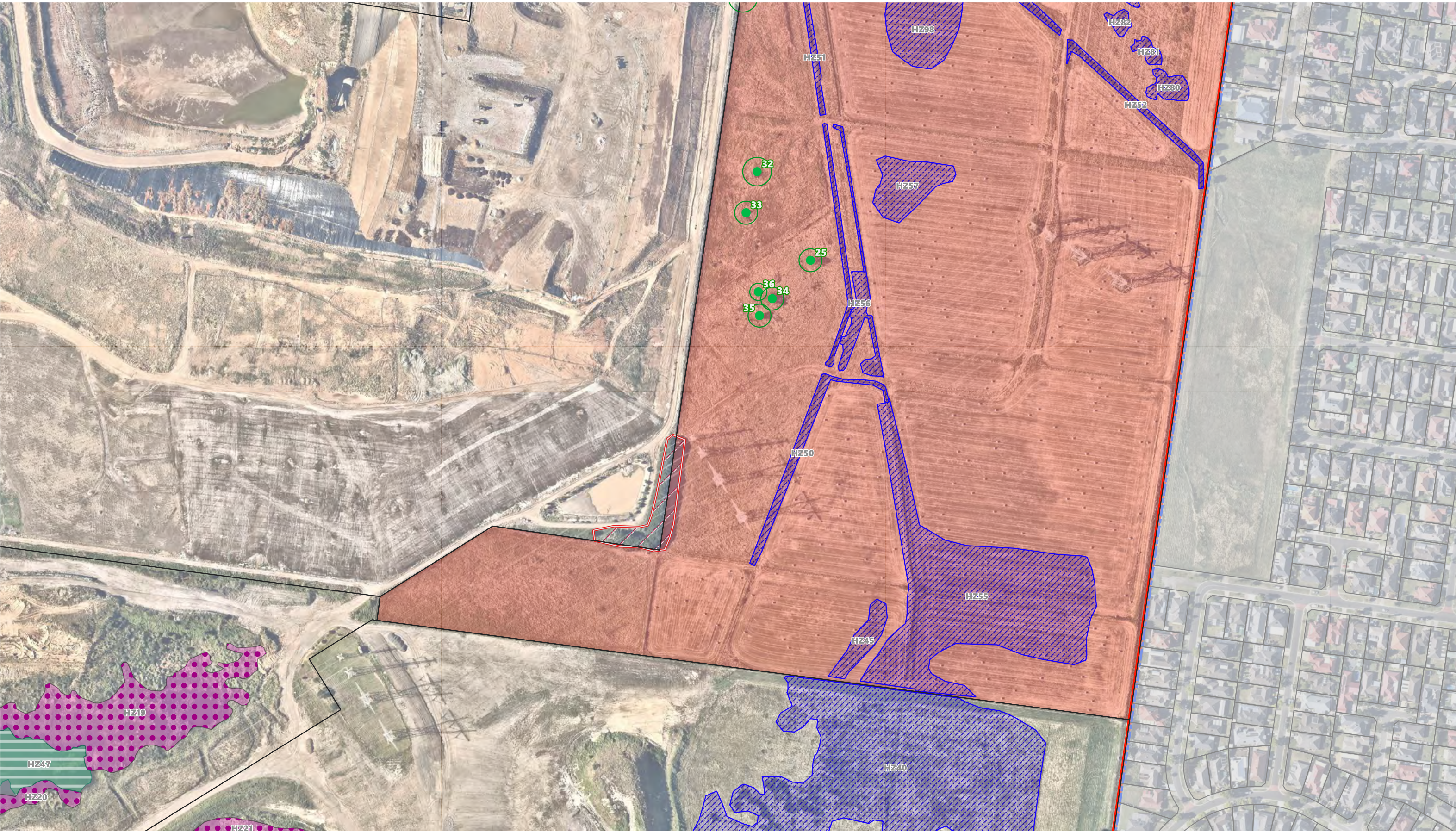
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- Study area
- Property boundaries
- Watercourse
- Scattered Trees
- Tree Protection Zone
- Revegetation
- Significant species record

- Native vegetation patch
- Heathy Woodland
 - Plains Grassy Wetland
 - Plains Grassy Woodland
 - Submerged Aquatic Herbland
 - Swamp Scrub
 - Swampy Woodland
 - Tall Marsh



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Aerial photography date: 12/12/2021
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Map Appendix 1d: Ecological features

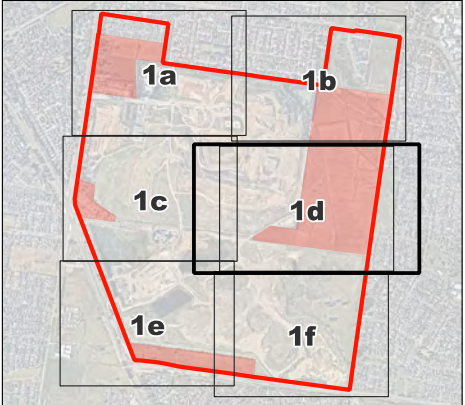
Hampton Park Development Plan

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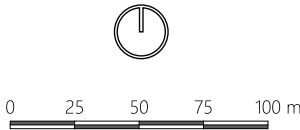
Access not granted
(access required to confirm extent
of native vegetation)

- Development Plan Boundary
- Study area
- Property boundaries
- Watercourse
- Scattered Trees
- Tree Protection Zone
- Revegetation
- Significant species record

- Native vegetation patch
- Heathy Woodland
 - Plains Grassy Wetland
 - Plains Grassy Woodland
 - Submerged Aquatic Herbland
 - Swamp Scrub
 - Swampy Woodland
 - Tall Marsh



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Aerial photography: NearMap
Aerial photography date: 12/12/2021
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Map Appendix 1e: Ecological features

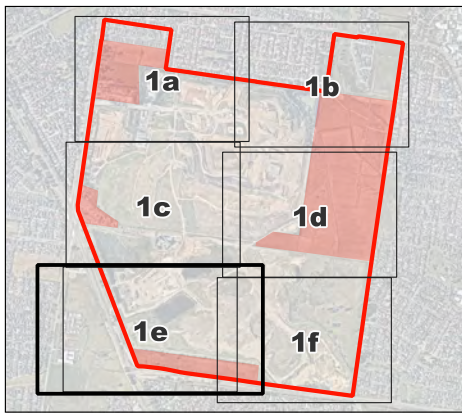
Hampton Park Development Plan

Property access

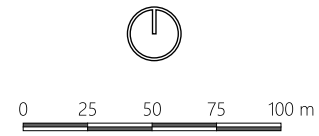
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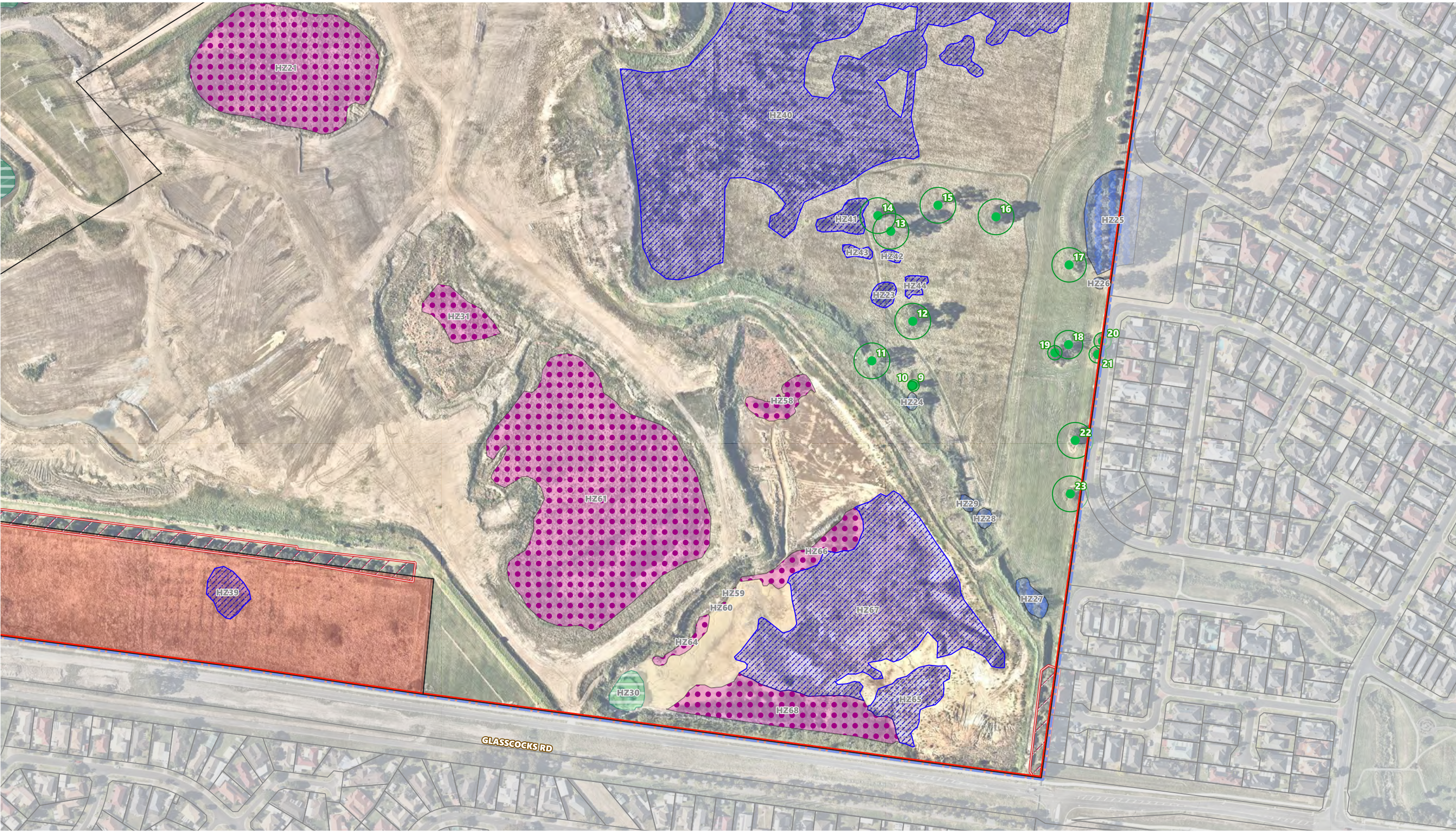
- Development Plan Boundary
- Study area
- Property boundaries
- Watercourse
- Scattered Trees
- Tree Protection Zone
- Revegetation
- Significant species record

- Native vegetation patch
- Heathy Woodland
 - Plains Grassy Wetland
 - Plains Grassy Woodland
 - Submerged Aquatic Herbland
 - Swamp Scrub
 - Swampy Woodland
 - Tall Marsh



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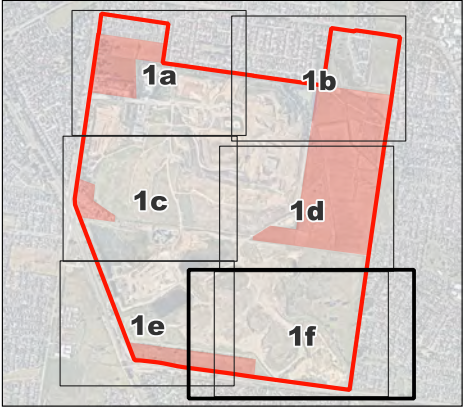
Map Appendix 1f: Ecological features

Hampton Park Development Plan

Property access
Access not granted
(access required to confirm extent
of native vegetation)

- Development Plan Boundary
- Study area
- Property boundaries
- Watercourse
- Scattered Trees
- Tree Protection Zone
- Revegetation
- Significant species record

- Native vegetation patch
- Heathy Woodland
 - Plains Grassy Wetland
 - Plains Grassy Woodland
 - Submerged Aquatic Herbland
 - Swamp Scrub
 - Swampy Woodland
 - Tall Marsh



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