



Ajax Road Industrial Subdivision, Altona,
Victoria (EPBC 2014/7208):
Preliminary Documentation

Final Draft Documentation

Prepared for Department of the Environment on behalf of Axxcel Management
Services Pty Ltd

12 May 2015

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1 Background Information

Relevant sections of Attachment A are identified in parenthesis at the end of a paragraph.

1.1 Project background

Biosis Pty Ltd was commissioned by Axxcel Management Services Pty Ltd to prepare the preliminary documentation prescribed by the Department of the Environment (DoE) relating to Referral EPBC 2014/7208. The request for additional information provide by DoE can be found on the section of DoE website relating to Public Notices (referrals).

The proposed industrial subdivision of Lot H, Ajax Road Altona, was identified as a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for its potential impact on a number of Matters of National Environmental Significance (MNES) including:

- Natural Temperate Grassland of the Victorian Volcanic Plain community (NTGVVP);
- Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens*;
- Golden Sun Moth *Synemon plana*; and
- Lathams Snipe *Gallinago hardwickii* (as a listed migratory species).

1.2 Project Context

The site is located approximately 15 km west south west of the Melbourne CBD in Altona, south of the Newport - Werribee rail line (Figure 1). It covers 73.66 ha and includes most of Lot H (78.05 ha) of the Elfield Industrial Estate. It is currently zoned Special Use Zone 4 (SUZ4) which is designated for industrial development. (1a)

While there are a number of smaller undeveloped industrial lots within this estate, the proposed development of Lot H will largely complete the development of this industrial estate. This development will be conducted in the context of and consistent with the broader Hobsons Bay Council Planning Scheme. (1a)

The proposed subdivision is not a part of or otherwise dependant on any other local development. It provides an infill development as part of an existing industrial subdivision (the Elfield Industrial Estate). (1c)

A significant proportion of the site was used to deposit contaminated soil (acid sulphate soils) excavated during the construction of Crown Casino approximately 20 years ago. This material is proposed to be used to construct a bund wall along the southern boundary of the subdivided portion of Lot H (Figure 2). This bund has been designed in consultation wit the Environment Protection Authority (EPA). (1b)

While the approvals process under State and Local Government requirements are in their early stages, the project has been excluded by the Victorian Minister for Planning from the need for assessment under the *Environment Effects Act 1978* (EES Referral 2013-09, decision made on 10 February 2014). This decision has been documented on the Department of Transport, Planning and Local Infrastructure web site (www.dtpli.vic.gov.au/environmental-assessment on the EES Referrals page). (1b)

However, approvals will be required under the *Planning & Environment Act 1988* (Hobsons Bay Council Planning Scheme) which will include an assessment under Victoria's Biodiversity Assessment Guidelines (DEPI 2013a). Relevant referral authorities with input into this approvals process will include the Department of Environment, Land, Water and Planning (DELWP) (formerly the Department of Environment and Primary Industries (DEPI)), the EPA and Melbourne Water. (1b)

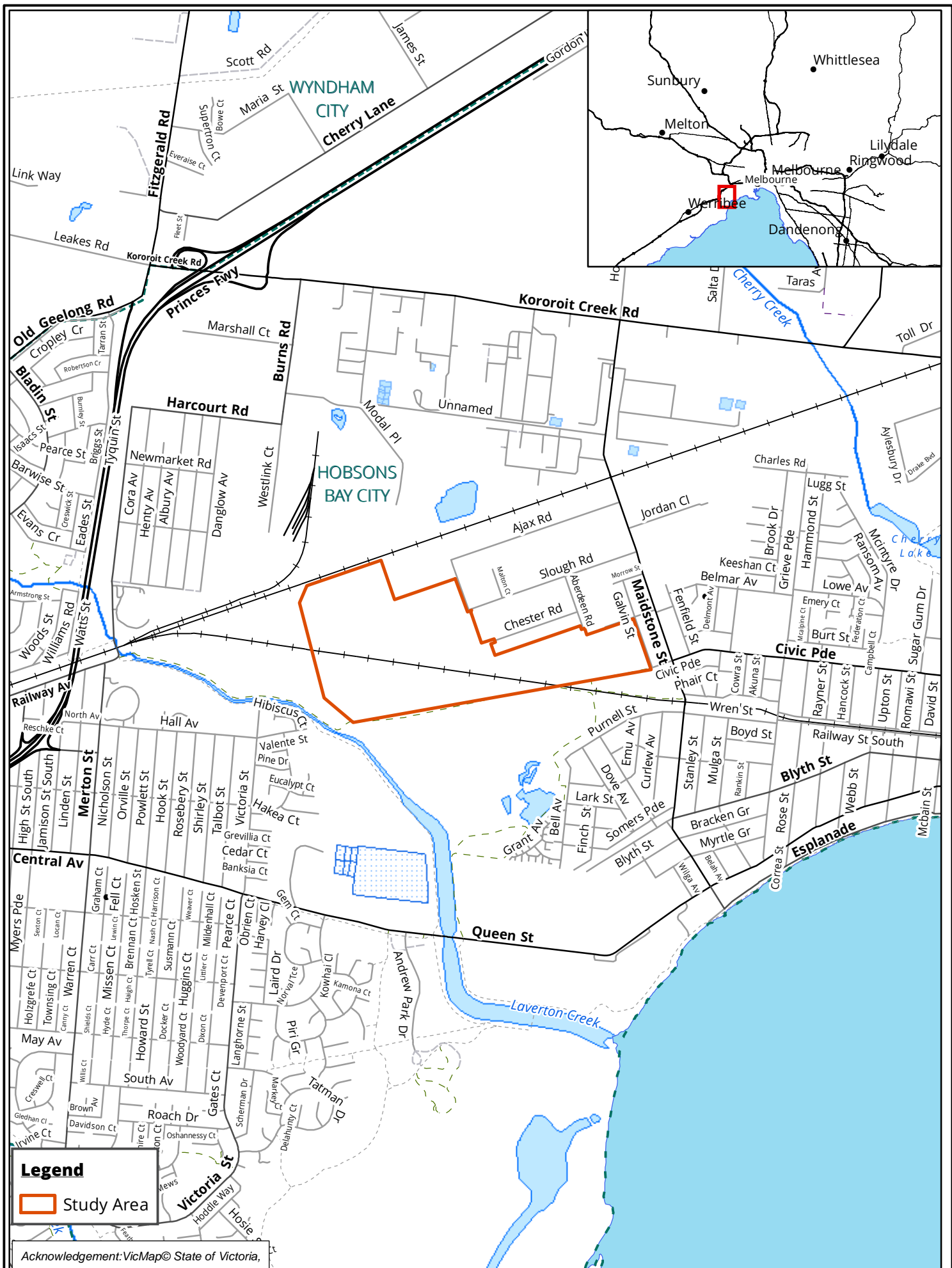
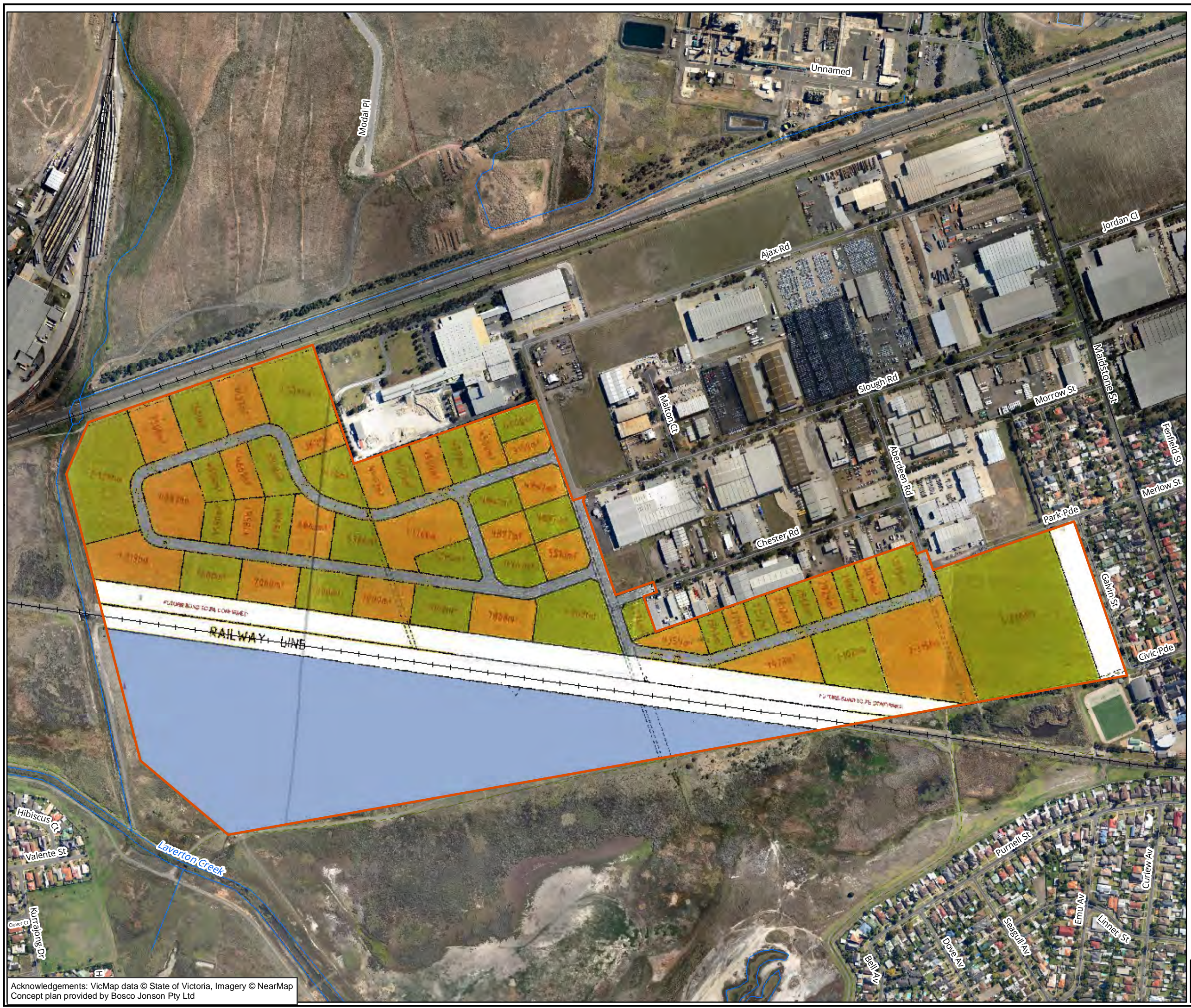


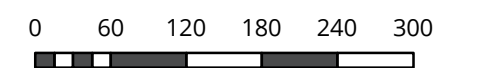
Figure 1: Location of the Study Area - Ajax Road, Altona, Victoria



Legend

- Study Area
- Conservation zone

Figure 2: A concept plan for the industrial subdivision of Lot H, Ajax Road, Altona, Victoria



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 Concept plan provided by Bosco Jonson Pty Ltd

The proposed subdivision is bounded to the north by the Newport - Werribee rail line and to the south by the Altona rail line. Both rail lines are currently a functional part of the greater Melbourne Metropolitan public transport system but also carry freight and regional rail services. (1d)

1.3 Description of the Action

A general concept plan for the proposed industrial subdivision of the relevant section of Lot H is provided in Figure 2. (2e, 5b)

Land to the south of the Altona rail line will be managed as a conservation reserve, providing offset values for the proposed losses to the north of this rail line. These offsets are proposed to satisfy, in part, both state and federal offset requirements associated with this project. This land is currently covered by a drainage easement (identified as E6 on Title) in favour of Melbourne Water (Figure 3). Under the existing offset requirements outlined by DEPI (2013b) land covered by an easement would not be accepted as part of a first party offset (i.e. a conservation offset provided within the same title as the proposed development) as an easement allows impacts to a site which could impact on existing conservation values. However Melbourne Water has agreed to remove this easement, save for a 20 m buffer on the existing drain. Kayes Drain on the western boundary of the title boundary already supports an adequate buffer outside of the property title. (2e)

The objectives of the project are to develop the site in line with its existing Special Use Zone designation while achieving consistency with other requirements for sustainable development through the use of water sensitive design and the protection and management of high conservation values identified to the south of the Altona rail line. The proposed conservation land will be transferred to either Hobsons Bay Council or another suitable public organisation to ensure permanent maintenance of its ecological values. This transfer of conservation land will include appropriate funds and management guidance provided by an offset management plan prepared to the satisfaction of DELWP and DoE. (2e)

The subdivision will establish 53 new industrial lots ranging in size from about 3000 to 50000 square metres over an area of 55.4 ha. The subdivision will support about 2.6 km of new roads covering about 5.2 ha, a bund wall with a footprint of about 5.6 ha, leaving about 44.6 ha for the actual subdivision. (2a, b & d)

The subdivision will link the existing access roads (Ajax Road and Slough Road) and establish additional links to Chester Road and Aberdeen Road. This will link all roads within the existing industrial subdivision, most of which are currently no through roads. The subdivision will also establish new loop roads to the west of Ajax Road, providing industrial lots backing onto the existing rail infrastructure and the existing LaFarge plaster board factory. (2a, b & d)

Existing fill placed on the site will be used to establish a low bund wall adjacent to the Altona rail line. This fill will be managed in line with the existing Acid Sulphate Environmental Management Plan (ASEMP) or subsequent revisions approved by the relevant authorities (GHD 2012). This configuration has been designed in consultation with the EPA. (2a, b & d)

While no internal traffic control signals are envisaged, VicRoads has indicated that the Ajax Road Maidstone Street intersection will need to be signalised as part of the subdivision. (2d)

Stormwater runoff from the site will be treated using a Biofilta System. The Biofilta System captures low flow stormwater and cycles it through a vegetated bioretention bed to remove pollutants and nutrients prior to discharging into Kayes Drain and to the south of Altona rail line. (2a)

High flow stormwater will be captured in detention basins and released to Kayes Drain at no more than the pre-developed flow rate and into the Truganina Swamp wetland at a rate that does not exceed the capacity of existing drainage infrastructure crossing the Altona rail line. (2a)

Key construction activities associated with the subdivision include reconfiguration of existing piles of fill to establish a bund wall adjacent to Altona rail line, roads and other infrastructure as per the subdivision plan, stormwater treatment and detention construction, and fill placement. (2a & b)

While the site is relatively flat, gentle undulations will require some levelling and fill placement across the site. Beyond this no outstanding works are required other than that associated with a normal industrial subdivision. (2a & b)

All subdivision works will be confined to the land bounded by the rail reserves to the north and the south. Some minor work outside Lot H will be required to link proposed stormwater treatment ponds to Kayes Drain and existing culverts under the Altona railway. The proposed Biofilta System will maintain the current water quality and volume for surface water flows moving from the proposed subdivision, south into the proposed conservation area and the associated wetlands. (2a, b & d)

No works will be conducted to the south of the Altona Railway. (2a, b & d)

The subdivisional works will result in the permanent removal of 15.62 ha of Plains Grassland (all equivalent to Natural Temperate Grassland of the Victorian Volcanic Plain community) and 0.2 ha of Plains Grassy Wetland (below the 0.5 ha threshold for Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains community). (2e)

Construction to establish the subdivision is anticipated to begin in late 2015 and last for approximately two years. Works within each lot will be dependant on the purchaser. (2c)

2 Environment and MNES

The following provides a general description of the environment of the development site and any areas which could otherwise be impacted by the proposed action in the short or long term.

2.1 Current Land Use

Currently the site is vacant land zoned as Special Use Zone 4 (SUZ4) under the Hobson's Bay Planning Scheme. The northern boundary of the site is formed by the Newport – Werribee rail line. (2a)

A significant proportion of the site was used to deposit contaminated soil (acid sulphate soils) excavated during the construction of Crown Casino approximately 20 years ago. Otherwise the site supports a mosaic of remnant native and exotic vegetation. (2a)

North of this land is either developed industrial land (Dow Chemical Australia Ltd, SCT transport) or otherwise approved for industrial development. (2a)

Kayes Drain provides the western boundary of the site. Further west are areas developed as public open space (A.B. Shaw reserve) and residential land. Land bounded by Kayes Drain, Laverton Creek and the railway line has previously been utilised as a landfill site. (2a)

To the east of the site is the balance of the Eifield industrial estate which has been fully developed with the exception of a portion of Lot H between Slough Road and Ajax Road (about 3.8 ha) and 9 lots on the northern side of Ajax Road (about 5.7 ha). (2a)

To the south of the site, land is owned by Melbourne Water and includes the floodplain of Laverton Creek. This area supports a substantial area of native wetland vegetation including Truganina Swamp and Mt. St. Joseph Wetlands. (2a)

2.2 Physical Features

The site is within the Victoria Volcanic Plain Bioregion. The basalt soils are relatively shallow and support numerous areas of surface rock. The site is relatively flat with altitudes ranging from 2 to 5 m and slopes of between 0.3 - 0.5%. Several culverts under the southern railway line allow water to drain southwards towards Laverton Creek. The Laverton Creek floodplain to the south of the proposed development area includes a broad area of remnant native wetland vegetation managed by Melbourne Water. (3b)

The western boundary of the site abuts Kayes Drain, while the eastern boundary includes an unnamed road linking Ajax Road and Slough Road, the southern end of Chester Road, and the western boundary of Galvin Street, Altona. The site occurs within a broader matrix of industrial and residential land and remnant native vegetation within an urbanised context. (3a & b)

The property includes areas identified as land subject to inundation adjacent to the boundary with the Altona rail line. These areas would be filled to support the subdivision and Stormwater managed under an approved Stormwater management plan. (3b)

2.3 MNES

The following details all relate to section 3c of Attachment A.

Existing records of all relevant MNES within 5 km of the study area are displayed in Figures 3 (Flora) and Figure 4 (fauna).

The study area includes a matrix of remnant native vegetation and disturbed industrial land dominated by exotic species. Disturbed areas were dominated by bare ground and exotic grasses and herbs such as Kikuyu *Cenchrus clandestinus*, Galenia *Galenia pubescens*, Bearded Oat *Avena barbata*, Chilean Needle-grass *Nassella neesiana*, Serrated Tussock *N. trichotoma*, Toowoomba Canary-grass *Phalaris aquatica*, Barley-grass *Hordeum leporinum* and Wimmera Rye-grass *Lolium rigidum*.

Remnant native grasslands were variously dominated by Kangaroo Grass *Themeda triandra*, spear-grasses *Austrostipa* spp. and wallaby-grasses *Rytidosperma* spp.

The study area supports three Ecological Vegetation Classes (Figure 5):

- Plains Grassland (EVC 132);
- Plains Grassy Wetland (EVC 125); and
- Brackish Wetland (EVC 656).

DELWP's existing and pre-1750 EVC mapping only identifies Plains Grassland and Coastal Saltmarsh (EVC 9) in this location but this mapping, at a scale of 1:100,000, is too coarse to identify these communities at the scale of this assessment.

All areas of Plains Grassland correspond to NTGVVP while the larger areas of Plains Grassy Wetland to the south of the Altona rail line correspond to the Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains community (SHWFTLP).

The condition of all areas of native vegetation was assessed using Victoria's habitat hectare assessment protocols (DSE 2004). The results of this assessment are presented in Table 1. The habitat hectare vegetation quality assessments were undertaken over four days on 12 October 2010, 5 January and 2 March 2011 and 12 March 2014.

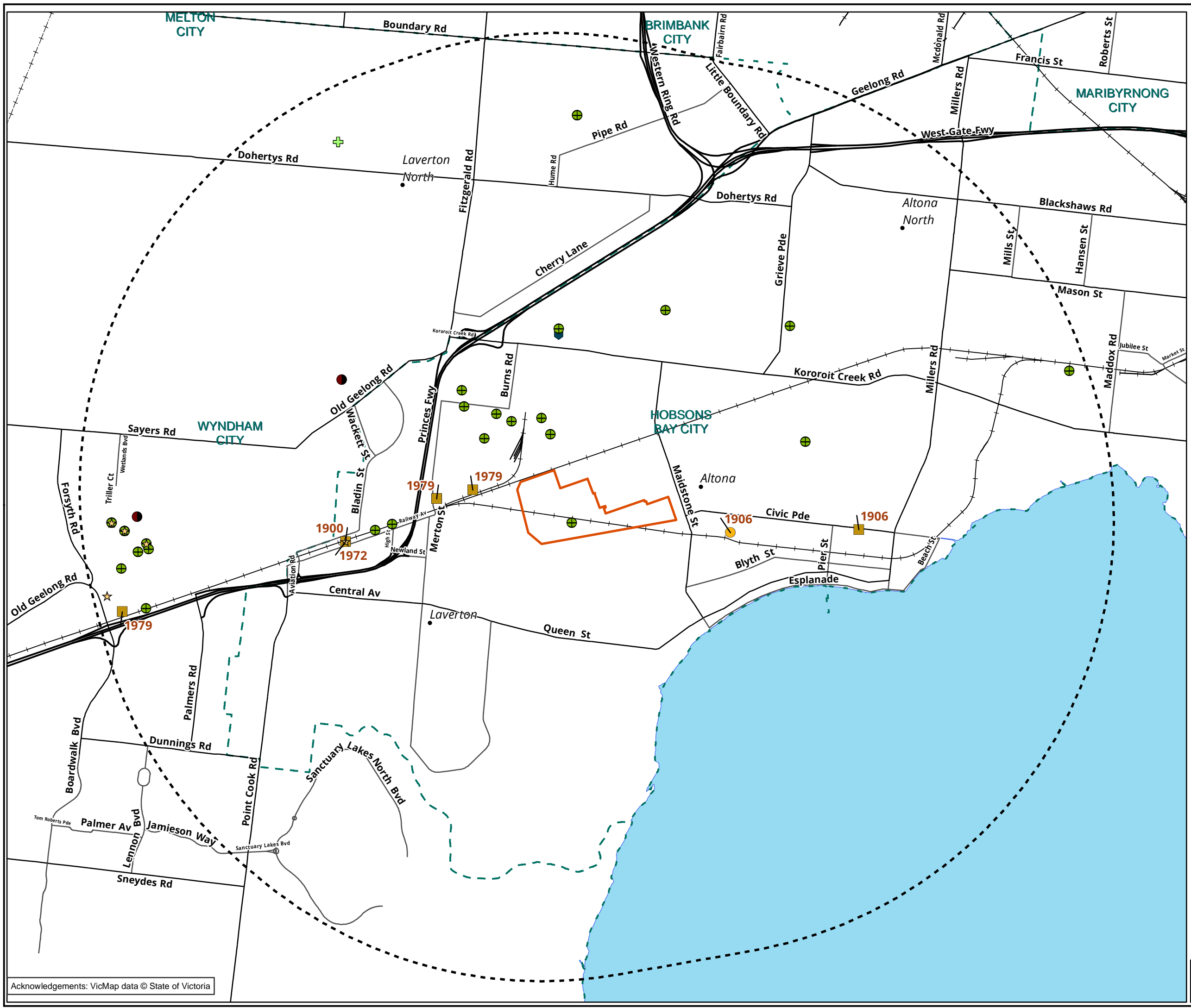
2.3.1 NTGVVP

All areas mapped as Plains Grassland by Biosis (2014) (Figure 3) correspond to NTGVVP in that they are greater than 0.05 ha in extent and support more than a 50% cover of indigenous perennial tussock grasses including members of the genera *Themeda*, *Poa*, *Rytidosperma* and *Austrostipa*. While there are no formal assessment methods defined under the EPBC Act to assess the quality of areas of NTGVVP, Victoria's habitat hectare assessment protocols have previously provided an acceptable method for allocating an overall condition score for NTGVVP expressed as a score between zero (not native vegetation) and one (very high quality native vegetation in an undisturbed landscape). The habitat scores identified for patches of Plains Grassland (Table 1), have therefore been used to define the condition of NTGVVP proposed for clearing.

The vegetation proposed for clearing is dominated by dense swards of Kangaroo Grass. Other common native grasses include wallaby-grasses *Rytidosperma* spp., spear grasses *Austrostipa* spp., Common Wheat-grass *Anthosachne scabra*, Grey Tussock-grass *Poa sieberiana* and Rigid Panic *Walwhalleya proluta*. It contains scattered herbs and other graminoids including Lemon Beauty-heads *Calocephalus citreus*, bindweeds *Convolvulus* spp., Small St John's Wort *Hypericum gramineum*, Grassland Wood-sorrel *Oxalis perennans*, Cotton Fireweed *Senecio quadridentatus*, Small-flower Mat-rush *Lomandra micrantha*, Small-flower Flax-lily *Dianella brevicaulis* and Yellow Rush-lily *Tricoryne elatior*.

An unusual form of Plains Grassland dominated by Coast Tussock-grass and including Australian Salt-grass dominated portions of land south of the Altona railway line. The composition of this grassland appears to be influenced by elevated levels of soil salinity and seasonally wet soil conditions.

Many of the 6 habitat zones of Plains Grassland (all of which equate to NTGVVP) identified (Figure 3) also support a population of Spiny Rice-flower.



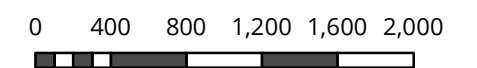
Legend

- Study Area
- 5km buffer

Threatened flora

- Austral Toad-flax (1906)
- Button Wrinklewort
- ▲ Fragrant Leek-orchid (1900)
- ★ Large-headed Fireweed
- + River Swamp Wallaby-grass
- Small Golden Moths
- ⊕ Spiny Rice-flower
- Sunshine Diuris

Figure 4: Existing records of threatened flora species (MNES) within 5 km of the study area



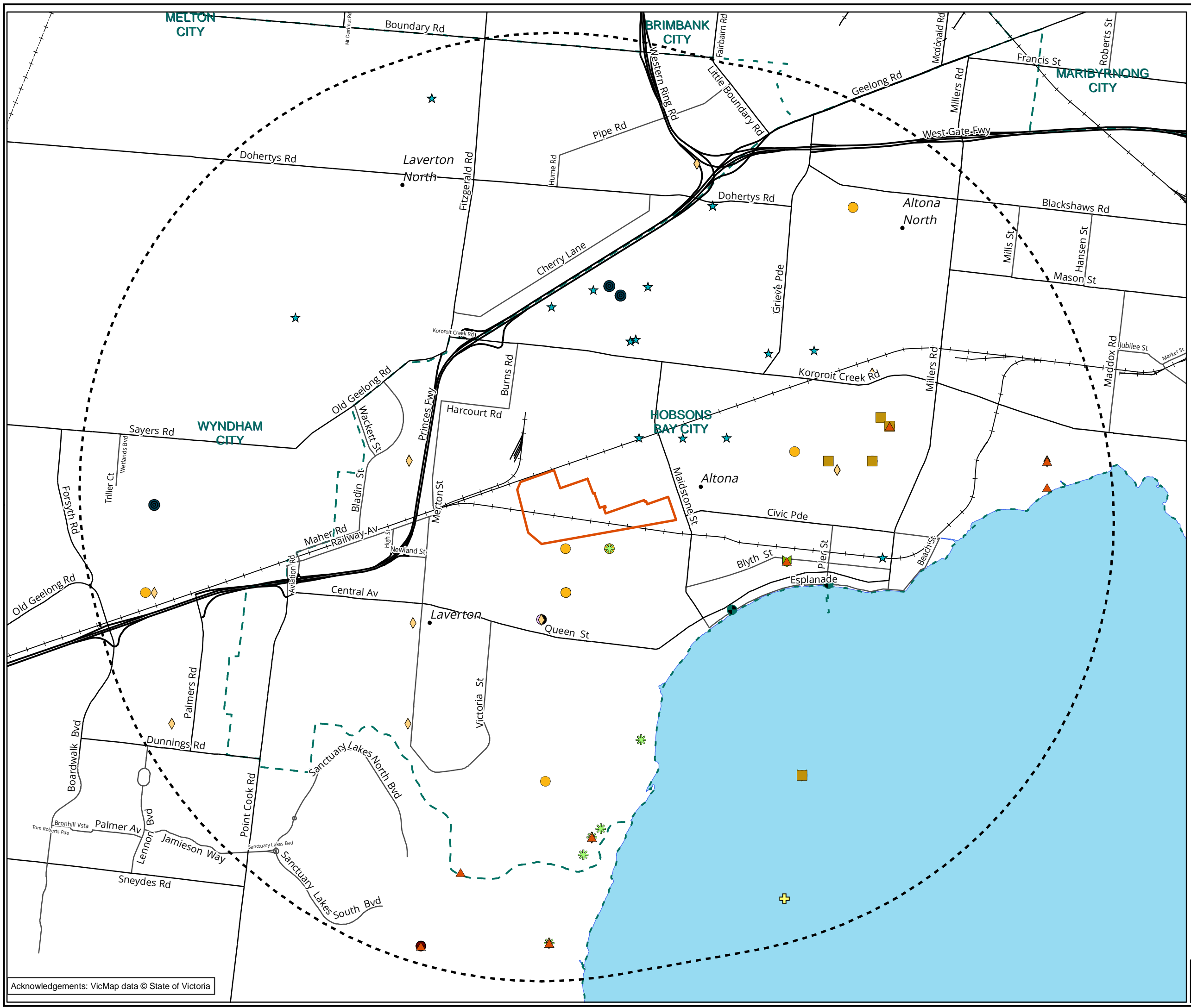
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Legend

- Study Area
- 5km buffer

Threatened fauna

- Australasian Bittern
- Australian Painted Snipe
- ▲ Fairy Tern
- ★ Golden Sun Moth
- ◆ Growling Grass Frog
- + Humpback Whale
- ✱ Orange-bellied Parrot
- Plains-wanderer
- Regent Honeyeater
- Shy Albatross
- Striped Legless Lizard
- Subantarctic Fur Seal

Figure 5: Existing records of threatened fauna species (MNES) within 5 km of the study area

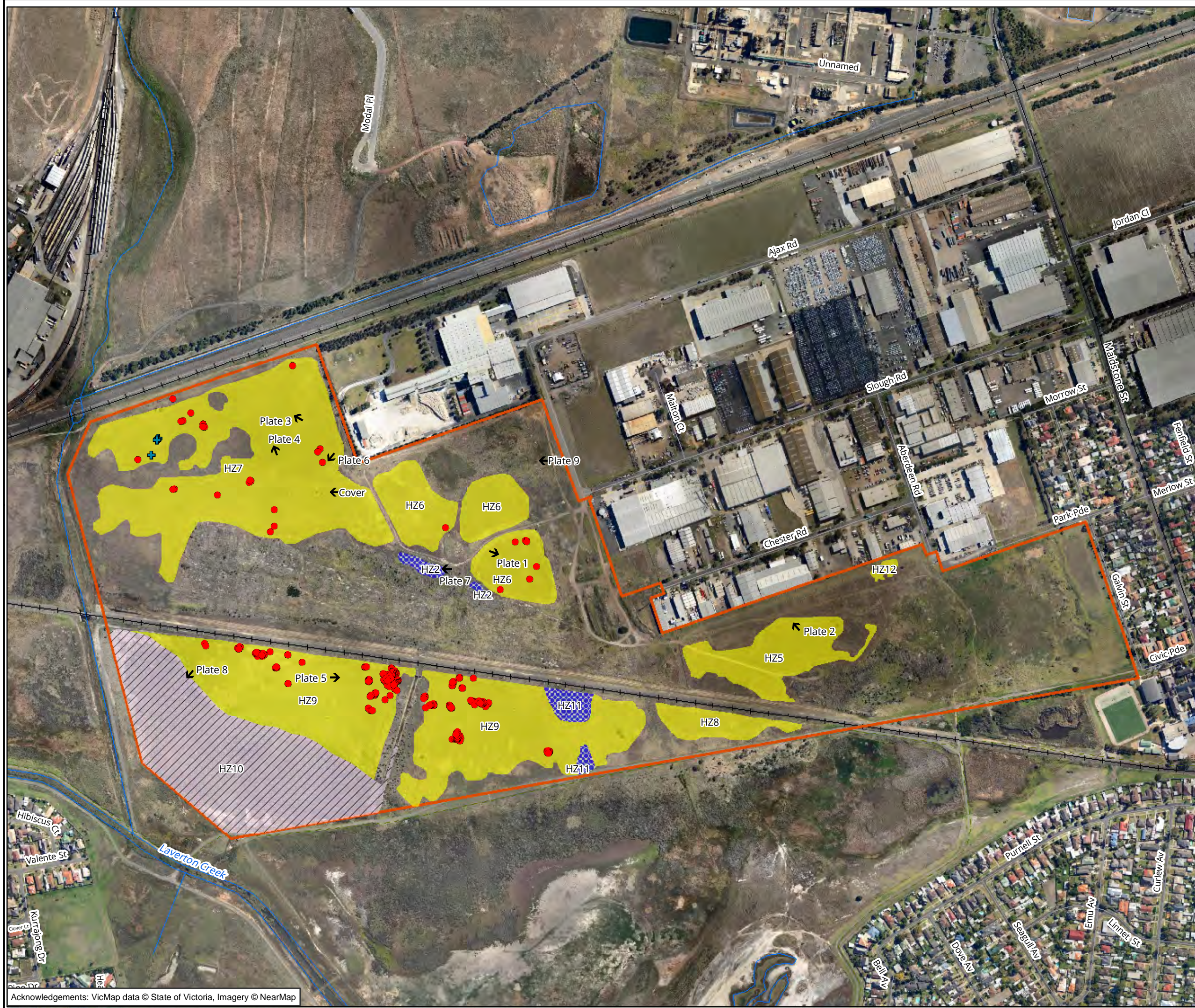
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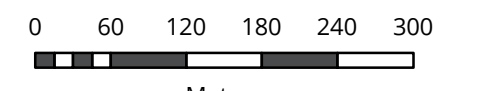
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Legend

- Study Area
- Significant flora record**
 - + Arching Flax-lily
 - Spiny Rice-flower
- Ecological Vegetation Class**
 - Brackish Wetland
 - Plains Grassy Wetland
 - Plains Grassland
- ↑ Photo point, arrow indicating view direction

Figure 6: The ecological features of Lot H, Ajax road Altona



Scale: 1:6,000 @ A3
 Coordinate System: GDA 1994 MGA Zone 55



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Table 1: Habitat hectares of native vegetation within the study area

Habitat Zone		2	5	6	7	8	9	10	11	12	TOTAL
Bioregion		Victorian Volcanic Plain									
EVC Name & Number		PGWet 125	PG 132	PG 132	PG 132	PG 132	PG 132	BW 656	PGWet 125	PG 132	
	Max Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	
Site Condition	Large Old Trees	10	na	na	na	na	na	na	na	na	na
	Canopy Cover	5	na	na	na	na	na	na	na	na	na
	Lack of Weeds	15	13	2	6	7	4	9	7	7	2
	Understorey	25	10	15	15	15	15	15	25	10	15
	Recruitment	10	3	6	6	6	6	6	6	3	6
	Organic Matter	5	4	3	5	2	5	5	5	5	3
	Logs	5	na	na	na	na	na	na	na	na	na
	Total Site Score		30	26	32	30	30	35	43	25	26
Standardised Site Score (x75/55)		40.91	35.45	43.63	40.91	40.91	47.73	58.64	34.1	35.45	
Landscape Value	Patch Size	10	1	2	1	4	1	6	6	4	1
	Neighbourhood	10	2	2	4	3	2	4	4	4	0
	Distance to Core	5	3	3	3	3	3	3	3	3	3
	Total Landscape Score		6	7	8	10	6	13	13	11	4
HABITAT SCORE	100	47	42	52	51	47	61	72	45	39	
Habitat points = #/100	1	0.47	0.42	0.52	0.51	0.47	0.61	0.72	0.45	0.39	
Habitat Zone area (ha)		0.20	2.202	3.640	9.673	0.900	10.225*	7.338*	0.461	0.105	34.897
Habitat Hectares (Hha)		0.094	0.925	1.893	4.933	0.423	6.237	5.283	0.207	0.041	20.146
Clear or offset		Clear	Clear	Clear	Clear	Offset Area	Offset area	Offset Area	Offset Area	Clear	
Number of Spiny Rice-flower present		0	0	11	28	0	456	0	0	0	495

* this area excludes native vegetation covered by drainage easement E6

2.3.2 SHWFTLP

This vegetation is dominated by Brown-back Wallaby-grass *Rytidosperma duttonianum*, Common Blown-grass *Lachnagrostis filiformis*, Common Woodruff *Asperula conferta*, Flat Spike-sedge *Eleocharis pallens*, Prickfoot *Eryngium vesiculosum* and Raspwort *Haloragis heterophylla*.

This community is relatively disturbed and when dry is typically dominated by exotic grasses and other herbs such as Ribwort *Plantago lanceolata*, Wimmera Rye-grass, Squirrel-tail Fescue *Vulpia bromoides* and Hairy Hawkbit *Leontodon taraxacoides* subsp. *taraxacoides*.

Four areas of Plains Grassy Wetland were identified within the study area (Figure 3). Of these, two patches (both identified as Habitat Zone 11) satisfy the definition of SHWFTLP.

2.3.3 Spiny Rice-flower

The study area supports a significant population of Spiny Rice-flower. The broad extent and location of this population was identified during the habitat hectare assessment process conducted by two botanists over three days (12 October 2010, 5 January and 2 March 2011). The population was then subject to a census by a high intensity targeted search (9 person days). This survey identified 495 plants. Of this total, 39 plants were recorded from the area proposed for development and 456 from land proposed to be retained and managed for conservation (Figure 2, Table 1).

All areas of Plains Grassland identified (Figure 5) provide potential habitat for this species although it was only recorded from three habitat zones (Table 1).

2.3.4 Golden Sun Moth

Golden Sun Moth was recorded (by Biosis) immediately adjacent to Ajax Road in late 2007 and there are many more additional records of the species from the surrounding area. Known populations of GSM within 5 km of the site include Maidstone Street (South of the Werribee rail line and east of Maidstone Street), Horsburgh Road Grassland Reserve (just north of the intersection of Maidstone Street and Kororoit Creek Road), Laverton North Grassland Reserve, vacant industrial land around the intersection of Grieve Parade and Kororoit Creek Road (recently approved for development under Referral 2012/6420) and the Williams Landing Grassland Reserves.

No Golden Sun Moths were recorded during the targeted surveys for this species during both the 2010/11 and 2014/15 flight seasons (Biosis 2011 and 2015a) despite the surveys being undertaken in accordance with accepted protocols to maximise detection. This included targeted surveys on four occasions conducted by two observers between 30 December 2010 and 25 January 2011 and again between 19 November and 21 December 2014.

No Golden Sun Moth have been recorded within the proposed Ajax Road development site over the period of two separate flight seasons, despite the species being readily recorded within known reference sites before the commencement of each survey. Therefore it is considered that there is a very low likelihood that a population of Golden Sun Moth occurs within the site. Much of the habitat structure within the site is dominated by a dense cover of Kangaroo Grass *Themeda triandra*. Kangaroo Grass is not known to be a food plant for Golden Sun Moth and its dominance within the study area probably contributes to the unsuitability of this site as habitat for the species.

The area where Golden Sun Moth was recorded in 2007 is a section of the Eifield industrial estate which is regularly mown. This produces a more open grassland structure preferred by this species. This area is outside of this proposed industrial development.

2.3.5 Lathams Snipe

Wetland habitats within the site include a small areas of plains grassy wetland either side of the Altona Railway and an area of brackish wetland in the south-west corner of Lot H that is associated with the Laverton Creek estuary (Figure 2). The areas of plains grassy wetland were dry at the time of assessment, but are prone to inundation during periods of high rainfall. When wet, these areas may provide potential habitat for common bird species such as Masked Lapwing *Vanellus miles* as well as state significant waterbirds such as Eastern Great Egret *Ardea modesta*. The brackish wetland includes a small fringe of saltmarsh vegetation but is otherwise dominated by Chaffy Saw-sedge. The area is contiguous with Truganina Swamp to the south-east, which is listed as a Biosite of State Significance (Biosiste 4623). The brackish wetland provides habitat for waterbirds that prefer dense vegetation, such as Baillon's Crake *Porzana pusilla* and Australasian Bittern *Botaurus poiciloptilus*. Chaffy Saw-sedge also provides a food source for the larvae of the state significant Altona Skipper, which is likely to be present within the site.

The brackish wetland in the south-west of Lot H is densely vegetated and does not contain optimal habitat for any listed migratory species except for Latham's Snipe. It also provides potential habitat for Australasian Bittern *Botaurus poiciloptilus*.

Plains Grassy Wetland habitat in the study area also provides smaller areas of habitat for Latham's Snipe. While less than ten individuals were observed north of the Altona rail line, no targeted surveys have been conducted for this species.

However, given the extent of habitat within the proposed development area and the areas of habitat proposed to be retained to the south of the Altona rail line, it is considered unlikely that the proposed development would have a significant impact on the utilisation of the broader area by this species.

2.3.6 Other significant flora and fauna

The DoE protected matters search tool and Victorian Biodiversity Atlas identify a number of other EPBC Act listed flora and fauna which could potentially occur within the study area. These species are listed in Table 2 which outlines the potential for these species to occur within the study area.

While the main objective of the targeted threatened flora searches was to document the population of Spiny Rice-flower, all other threatened species were also targeted by these searches. Only one other State listed threatened species, Arching Flax-lily *Dianella* sp. aff. *longifolia* (Benambra), was recorded during these searches. Other assessments documenting the condition of native vegetation within the study area conducted by two botanists on 12 October 2010, 5 January and 2 March 2011 and 12 March 2014. (i.e. 8 person days) also failed to detect any other threatened flora species.

It is considered unlikely that any of these MNES would be impacted by the proposed development. While species such as Australian Painted Snipe may utilise the area of Brackish Wetland in the south western corner of the study area, this area is not within the proposed development footprint and would be buffered from the development by the existing Altona rail line, the proposed soil bund and the constructed stormwater management wetlands.

Table 2: Significant flora and fauna species recorded, or predicted to occur, within 5 km of the study area and their potential to occur within the study area (3c, 4a)

Scientific name	Common name	EPBC	DSE	FFG	Most recent record (within 5 km)	Likelihood of occurrence in study area	Broad habitat requirements / likely occurrence notes
<i>Dianella amoena</i>	Matted Flax-lily	EN	en	L	None. Only identified by PMST	Negligible	Matted Flax-lily is a rhizomatous plant which forms loose mats to 5 m wide. It is found in lowland grassland and grassy woodland habitats north of Melbourne, on well drained to seasonally waterlogged fertile sandy loam to heavy cracking clays. There are no local records of this species and it considered unlikely that this species naturally occurs in the Altona area.
<i>Diuris basaltica</i>	Small Golden Moths	EN	vu	L	1996/PMST	Low	This orchid is endemic to Melbourne's west where it occurs in Plains Grassland dominated by tussock-forming perennial grasses (including Kangaroo Grass); often with embedded surface basalt. Like most other terrestrial orchid species in Victoria, this species is summer deciduous. Its underground tuberoids may persist for several seasons but not produce leaves or flowers in the absence of suitable conditions. The largest known population occurs on private land at Rockbank. The species has been recorded from Burns Road, about 1 km north of this site. However this site was developed and species has not been recorded in surrounding grassland since 1996. Suitable habitat does occur within the study area but the condition and long term management of this habitat suggest it is unlikely to persist in the area proposed for development.
<i>Glycine latrobeana</i>	Clover Glycine	VU	vu	L	PMST	Negligible	Clover Glycine is a small herb which occupies grassland and grassy woodland habitats throughout western Victoria as well as a number of other vegetation types elsewhere. Higher quality grassland within the study area may be regarded as suitable habitat for this species although it has never been recorded near the study area. The nearest record for this species is from Werribee in 1899.
<i>Prasophyllum frenchii</i>	Maroon Leek-orchid	EN	en	L	None. Only identified by PMST	Negligible	This orchid occurs in a variety of grassland and grassy woodland environments throughout southern Victoria. The nearest record of this species is from west of Meredith on the other side of the Brisbane Ranges while it appears to be otherwise more common in eastern Victoria. The long unburnt nature of the grasslands within the study area and the general lack of any orchid species suggests it is highly unlikely that this species would persist in this environment.
<i>Rutidosia leptorhynchoides</i>	Button Wrinklewort	EN	en	L	2009/PMST	Negligible	Button Wrinklewort occupies higher quality Plains Grassland and Grassy Woodland in Western Victoria and is quite scarce in the Melbourne region. Some Plains Grassland within the study area appears to be structurally suitable for this species but lacks the appropriate biomass management which is likely to be required for broader scale maintenance of this species' habitat requirements. The species was recorded from three locations along the Werribee Rail line near Laverton in 1979 but the species is known to be extinct from the rail reserve. The record from Altona dates from 1906 and is also extinct. As a perennial species it is considered most likely that the targeted threatened species searches conducted on site would have detected any remnant population of this species.
<i>Senecio macrocarpus</i>	Large-headed Fireweed	VU	en	L	2009/PMST	Negligible	This species grows on heavy soils in grassland, shrubland and woodland habitats but is typically associated with grasslands in western Melbourne. It has been previously recorded from Manor Lakes (just west of Werribee) and Rockbank. There are areas of grassland within the study area that may be regarded as suitable habitat for this species although it is a large conspicuous species that was not observed during the current assessment. The species has been recorded from a grassland reserve in Laverton about 4 km to the west. As a perennial species it is considered most likely that the targeted threatened species searches conducted on site would have detected any remnant population of this species.
<i>Galaxiella pusilla</i>	Dwarf Galaxias	VU	vu	L	None. Only identified by PMST	Negligible	Occurs in still or slow flowing, usually ephemeral water bodies (streams, wetlands, drains) that in many instances partially dry up over summer. The species usually occurs in relatively shallow water bodies and typically requires abundant aquatic vegetation. No suitable habitat for this species occurs within the proposed development footprint.
<i>Rostratula australis</i>	Australian Painted Snipe	VU	cr	L	1977	Medium	Occurs in shallow terrestrial freshwater wetlands, including lakes and swamps, waterlogged grassland or saltmarsh. Also uses modified habitats such as pasture, sewage farms, dams and irrigations schemes. They roost and loaf on the ground under clumps of lignum or dense ground cover. The large shallow wetland area located within the western section of the offset area south of the Altona rail line supports potential habitat for this species. No direct or indirect impacts to this environment associated with the proposed subdivision are likely to impact on this species.

Note to Table: CR = Critically Endangered, EN = Endangered, VU = Vulnerable, PMST = Protected Matters Search Tool

3 Relevant Impacts

The proposed industrial subdivision of Lot H, Ajax Road Altona will have a direct impact on two MNES: NTGVVP and Spiny Rice-flower. Both of these MNES are listed as critically endangered. This impact would result in the irreversible loss of all ecological values within the proposed development footprint. (4a)

Potential impacts associated with the proposed development footprint are strongly isolated from surrounding environments by existing developments including existing railway lines to the north and south, Kayes Drain to the west and the developed areas of the Elfield Industrial Estate to the east. All of these features provide significant barriers which constrain development to the proposed development footprint. (4a & b, 5b)

Therefore while other areas of NTGVVP occur within sections of Lot H not proposed for development (i.e. within 10 metres of the proposed development), existing infrastructure, including roads and railways, would protect these areas from both direct and indirect impacts. Beyond any illegal actions, no potential impacts to these external areas of NTGVVP are considered to be unknown, unpredictable or irreversible. (4c)

The proposed development would be in close proximity to the area of Brackish Wetland which provides habitat for wetland birds including MNES (i.e. Australasian Bittern). This has some potential to produce additional noise and disturbance associated with increased levels of activity within this area. However, the site is already subject to regular disturbance and noise associated with the suburban railway. Any changes in noise or disturbance levels associated with the development of the site are therefore expected to be temporary or negligible. (4a, b & c)

There is potential for the development to change the local hydrology and impact on Kayes Drain and other wetlands to the south of the Altona Rail Line. However the proposed Biofilta System will manage the local stormwater to remove pollutants and nutrients prior to discharging into Kayes Drain and to the south of Altona rail line. Discharge to the smaller wetlands receiving water through culverts under the Altona Rail Line will be maintained at current levels of volume and quality. Potential changes to the local hydrology are considered to be well understood, predictable and manageable. (4c)

All ecological assessments associated with this site known to the consultant have been included in the referral. These surveys are considered adequate to detect the presence of all relevant species. (4e)

3.1 NTGVVP

3.1.1 Local Context

Western Melbourne supports numerous small remnants of NTGVVP. Most of these remnants occur on private property, very little of which is managed for its ecological values. As a result threatening processes such as weed invasion, inadvertent and approved clearing continue to result in the local and regional decline in the extent of this critically endangered community.

Typically approved developments result in the permanent protection and management of smaller areas of NTGVVP retained as part of the development approvals process. Local examples of this include:

- the establishment of three reserves at Williams Landing (the former RAAF Williams airfield) (4 to 5 km west of the study area);
- a 4 to 5 ha grassland reserve on Horsburgh Road Altona North established to protect Golden Sun Moth (about 2 km north of the study area);

- Two roughly 1 ha reserves established in association with the development of industrial land at Jordan Close Altona (within 1 km east of the study area); and
- the roughly 5 ha Altona North Nature Conservation Reserve (Harcourt Road Altona) established as part of the industrial subdivision in this area (about 1 km north of the study area).

The protection of external offset areas for approved clearing is also a typical part of this approval process. However, such external offsets are generally remote from Melbourne. (4f)

3.1.2 Impacts in the Study Area

The proposed removal of native vegetation is assessed in accordance with the concept design provided (Figure 2). It is proposed to remove **15.82 ha** or 7.886 habitat hectares as shown in Table 1. This includes **15.62 ha** or 7.792 habitat hectares of NTGVVP. (4a)

Additional areas of NTGVVP proposed to be retained as part of this project also occur on the southern side of the Altona rail line. The rail line forms a rigid and effective barrier for any construction works and it is considered unlikely that any vegetation south of the Altona rail line would be directly or indirectly impacted by the proposed works, given compliance with the relevant stormwater management plan and normal, effective sediment control works applied during construction. (4a & b)

A combination of the proposed bund wall and the width of the rail easement are expected to protect the native vegetation to the south of the rail reserve from any significant shading from buildings constructed on the northern side of the railway. With the width of the bund and the rail reserve as at least 50 m wide, any building on the northern side of the railway would need to be at least 65 m tall to cast a significant shadow on the grassland proposed for retention. (4a & b)

3.2 Spiny Rice-flower

3.2.1 Local Context

Altona supports a number of local populations of Spiny Rice-flower including populations protected within conservation reserves and others within private property. Populations within private property are vulnerable to local extinction as they remain unmanaged and subject to numerous threatening processes. (3c, 4f)

Known populations, outside of the Ajax Road study area, include:

- Williams Landing (up to 500 plants)
- Altona North Nature Conservation Reserve (10s of plants)
- Laverton North Grasslands (10s of plants)
- Burns Road Grassland (private property) (about 100 plants)
- Jordan Close and adjacent Maidstone Street Grasslands (10s of plants)
- Ajax Road Grassland (private property) (84 plants)
- S.J. Clements Reserve Newport (about 15 plants)
- Southern end of Greive Parade (Toyota) (10s of plants)

3.2.2 Impacts in the Study Area

The proposed industrial subdivision would result in the loss of 39 individuals of Spiny Rice-flower found within Habitat Zones 6 and 7. These two areas of grassland habitat occupy 13.313 ha. Both Habitat Zones are

considered to be in above average condition for native grassland with Habitat Scores of 0.56 and 0.44 respectively (Table 1). (4a)

These individuals are dispersed within the development footprint (Figure 2 and 6) and protection of these individuals within the context of a development would be impractical both ecologically and economically. (5a)

3.2.3 Other Mitigation Measures

Other mitigation measures for this species include the translocation of individual plants within the proposed development footprint. This translocation will be consistent with the translocation guidelines provided by the *Pimelea spinescens* Recovery Team and the translocation plan (Biosis 2012) would be submitted to the recovery team for their approval. (5e, 6)

Translocation would involve the salvage of individuals within the development footprint using a tractor mounted tree-spade. Salvaged plants would then be replanted at a location approved by DELWP and the Recovery Team. (6)

Plants to be salvaged will be recovered from the site prior to the start of any site works. (5e)

Experience suggests that about half of the individuals subject to physical translocation would survive at least five years after the translocation. The land where salvaged plants are planted will be managed for the conservation of this species in perpetuity. (5e, 6)

3.3 SHWFTLP

No areas of native vegetation which satisfy the definition of this community would be lost in association with the proposed development. Areas of this community are located in land proposed to be retained as a conservation reserve (Figures 2 and 6). (5a)

3.4 Golden Sun Moth

3.4.1 Local Context

Golden Sun Moth has been recorded from a number of locations in the Altona area including:

- Laverton North Grasslands (Low numbers)
- Horsburgh Road Altona North (historically high numbers but more recently low numbers)
- Citiwest Industrial Park (Greive Parade Altona) (Low numbers) which has been recently approved for development;
- Altona North Nature Conservation Reserve (moderate numbers)
- Williams Landing (unknown numbers)
- Various vacant land parcels in Altona North (moderate to high numbers)
- Fowles Auction Group land adjacent to Laverton North Grassland (high numbers)
- Jordan Close and adjacent Maidstone Street Grasslands (moderate numbers)
- Southern end of Greive Parade (Toyota) (moderate numbers)

(3c, 4f)

3.4.2 Impacts in the Study Area

No Golden Sun Moth have been recorded from the proposed development footprint and the habitat present is considered too degraded or of too poor quality (due to the density of grass cover) for the site to support a significant population of this species. (4a)

Golden Sun Moth has been recorded from land on the northern side of Ajax Road to the east of the existing LaFarge Plasterboard factory (Figure 4). This area will not be impacted, either directly or indirectly, by the proposed development. (4a)

3.5 Other significant flora and fauna

No significant impacts are expected for other threatened flora species as no existing populations are known from the study area. This includes Matted Flax-lily, Small Golden Moths, Clover Glycine, Maroon Leek-orchid, Button Wrinklewort and Large-headed Fireweed. (3c, 4a)

The site was subject to a number of botanical assessments including general and intensive surveys targeting threatened flora. In that context it is considered that an adequate level of survey has been conducted within the study area to provide a high level of confidence in the results of those surveys. (4d)

No significant impacts are expected for any threatened or migratory fauna species. The proposed impact area has a relatively small impact on migratory and wetland dependant species (i.e. Australian Painted Snipe and Latham's Snipe), with the main area of habitat for such species (Habitat Zone 10 in Figure 5) being excluded from the development. (4a)

Latham's Snipe were recorded around a small wetland on the northern side of Ajax Road (outside the proposed development footprint. Their presence in the local area indicates that they would utilise the wetland habitats present within the study area. (3c)

The extent of the wetland habitats present is considered to be a sound measure of the value of that habitat for this migratory species and other wetland dependant species such as Australian Painted Snipe. While additional surveys for these wetland species may identify more individuals (most likely for Latham's Snipe and less likely for Australian Painted Snipe), such data would not alter these conclusions. (4d)

3.6 Contingency Measures

Construction works have a relatively low likelihood for chemical spills which could impact on surrounding wetlands and waterways. The site is relatively flat and the heavy clay soils impede the rapid dispersal of liquids. Any fuel storage on site will be conducted in a legal manner and be remote from existing waterways. This will offer significant protection for the nearby waterways and wetlands from accidental spills. (5d)

The potential for chemical spills from industry that establish on site will depend on what industries purchase land at this location. However, these will be controlled by existing regulations controlling such industries. In addition the bund wall (Figure 2), existing infrastructure (i.e. the rail lines) and proposed stormwater management system will provide a high level of protection for surrounding areas. (5d)

4 Proposed Offsets

This section provides an assessment of the project in relation to key biodiversity legislation and government policy.

Where available, links to further information are provided. This section does not describe the legislation and policy in detail and guidance provided here does not constitute legal advice.

4.1 Avoidance of Impacts

The main avoidance of impacts to MNES associated with the proposed development of Lot H is the establishment of a conservation reserve comprised of all of Lot H on the southern side of the Altona Rail Line (Figure 2). This proposed reserve has a total area of **21.123 ha** including 7.338 ha of Brackish Wetland, **11.125 ha of Plains Grassland (NTGVVP)**, 0.461 ha of Plains Grassy Wetland (SHWFTLP) and 2.199 ha dominated by exotic species. Management of this reserve will be required to comply with the Offset Management Plan (Biosis 2015b) prepared for this location. (5a & 6)

This conservation area will be legally protected in perpetuity under a Trust for Nature Covenant and would be transferred to the City of Hobsons Bay as a conservation reserve during the development process. Reserve management would begin at the start of the development process with legal protection established within one year of project commencement. The conservation reserve would be transferred to the City of Hobsons Bay before project completion. It is expected that this transfer would be a condition of project compliance for a permit issued by Council. (5a & 6)

Protection of this area will result in the conservation of a significant population of Spiny Rice-flower (456 plants) and effective ecological management of **11.125 ha** of NTGVVP, 0.461 ha of Plains Grassy Wetland (equivalent to SHWFTLP) and 7.338 ha of Brackish Wetland (which provides habitat for fauna MNES). (5a & 6) (note this excludes areas of vegetation covered by a drainage easement that occurs within the reserve)

The conservation reserve will be separated from the development area by the Altona Railway. This railway will exclude any construction activities or vehicle movements from the offset area as it provides an effective physical barrier between the two sites. (5b)

Development of the site will be conducted in a manner consistent with all relevant local and State requirements. This will provide relevant safeguards to control any indirect impacts to surrounding environments including potential impacts associated with dust and noise. Given the physical isolation of the proposed development area from surrounding environments the only other perceived influence on external environments is from alterations to the local hydrology and changes to potential flows into local waterways and wetland. This will be controlled by the establishment of the proposed Biofilta System. This system will manage the local stormwater flowing from the development site to remove pollutants and nutrients prior to discharging into Kayes Drain and to the south of Altona rail line. Discharge to the smaller wetlands receiving water through culverts under the Altona Rail Line will be maintained at current levels of volume and quality. Potential changes to the local hydrology are considered to be well understood, predictable and manageable (Cardno 2013). (5c)

4.2 Offsets

The following all relates to Section 6 of Attachment A.

Offsets for impacts to MNES (Spiny Rice-flower and NTGVVP) would be provided in a manner consistent with the requirements of the EPBC Act Environmental Offsets Policy (DSEWPaC 2012).

No specific offsets are proposed for Golden Sun Moth or other potentially impacted MNES as the development is not considered to have a measurable impact to these.

4.2.1 Spiny Rice-flower

The 39 Spiny Rice-flower plants within the proposed development footprint (Figure 2) cannot be avoided by the proposed development. These plants are widely scattered within the site and protection of every individual within a reasonable area of habitat would render the site undevelopable.

The output of the DoE Offset Assessment Guide for Spiny Rice-flower is provided in Appendix 1. Based on the assumptions outlined in that spreadsheet, an offset protecting 190 Spiny Rice-flower plants would satisfy the current policy requirements. This number of individuals is present within the proposed conservation reserve which includes all of Habitat Zone 9 (Figure 5). This Habitat Zone supports 456 individuals of Spiny Rice-flower. Protection of this population of Spiny Rice-flower (i.e. all 456 individuals) within the proposed conservation reserve provides over and above the requirements identified by the EPBC Act offset calculator (i.e. nearly 250% of the prescribed offset).

This offset will be established before the development proceeds and protected under a Trust for Nature Covenant within one year of project commencement. Ecological management of the offset area (Biosis 2015b) will commence upon project approval.

4.2.2 NTGVVP

The output of the DoE Offset Assessment Guide for each habitat zone of NTGVVP is provided in Appendix 2. This assessment uses the habitat scores for each habitat zone rounded to the nearest equivalent quality value required by the DoE Offset Assessment Guide under the "Area of Community" component. It also utilises the example of the onsite offset area where the current condition of the vegetation (based on the lowest habitat score of 0.47) could be improved from 5 to 6 over the prescribed offset management period of ten years.

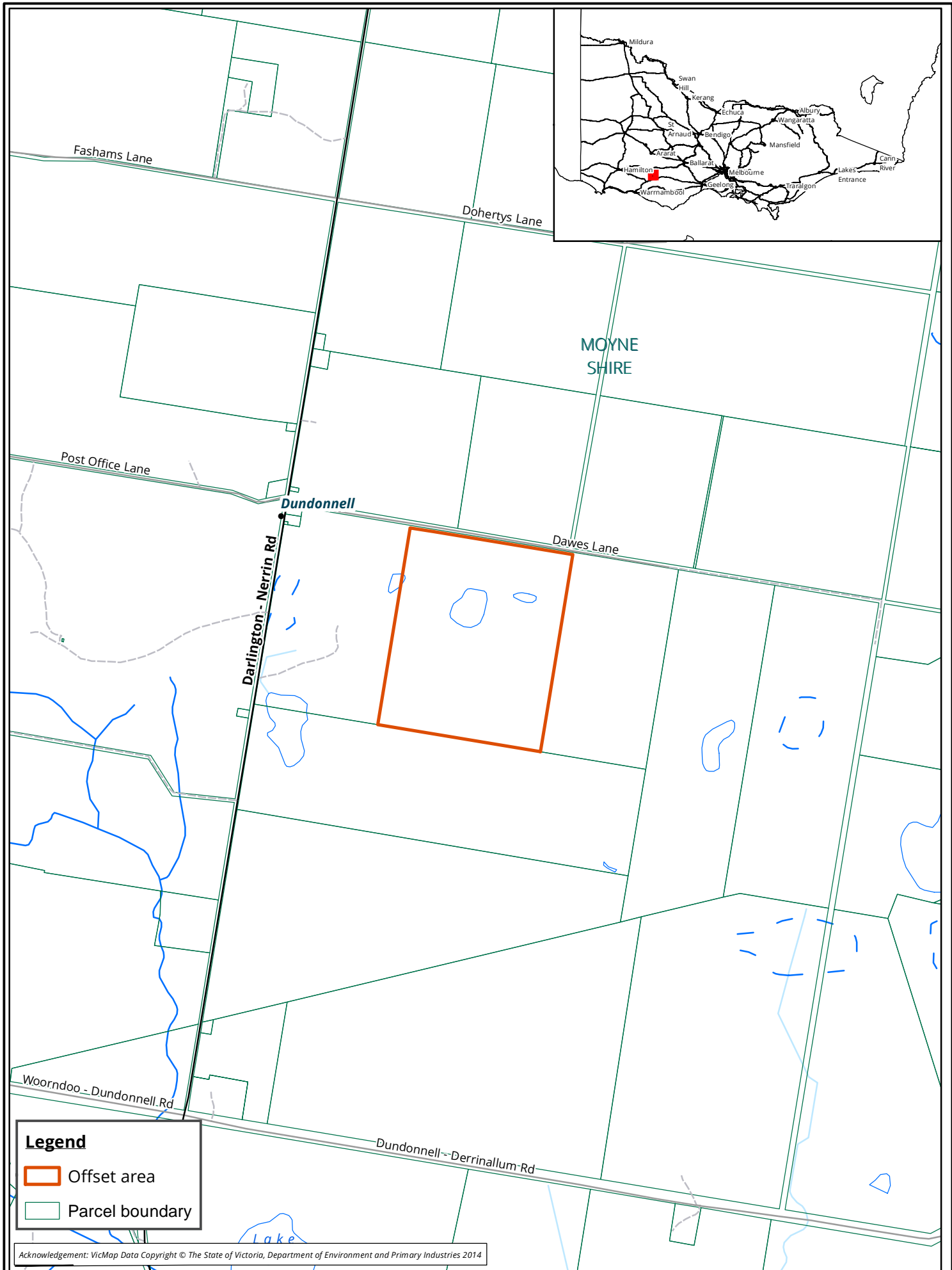
Based on the assumptions outlined in these spreadsheets an offset protecting 58.25 ha of NTGVVP would satisfy the current policy requirements for the loss of the 15.62 ha of NTGVVP contained in Habitat Zones 5, 6, 7 and 12.

The prescribed offset of 58.25 ha of NTGVVP can in part be provided on site through the protection of the sections of Habitat Zones 8 and 9 excluding the areas of these habitat zones covered by a drainage easement (total area of 11.125 ha). The remaining offset of **47.125 ha** would need to be sourced offsite.

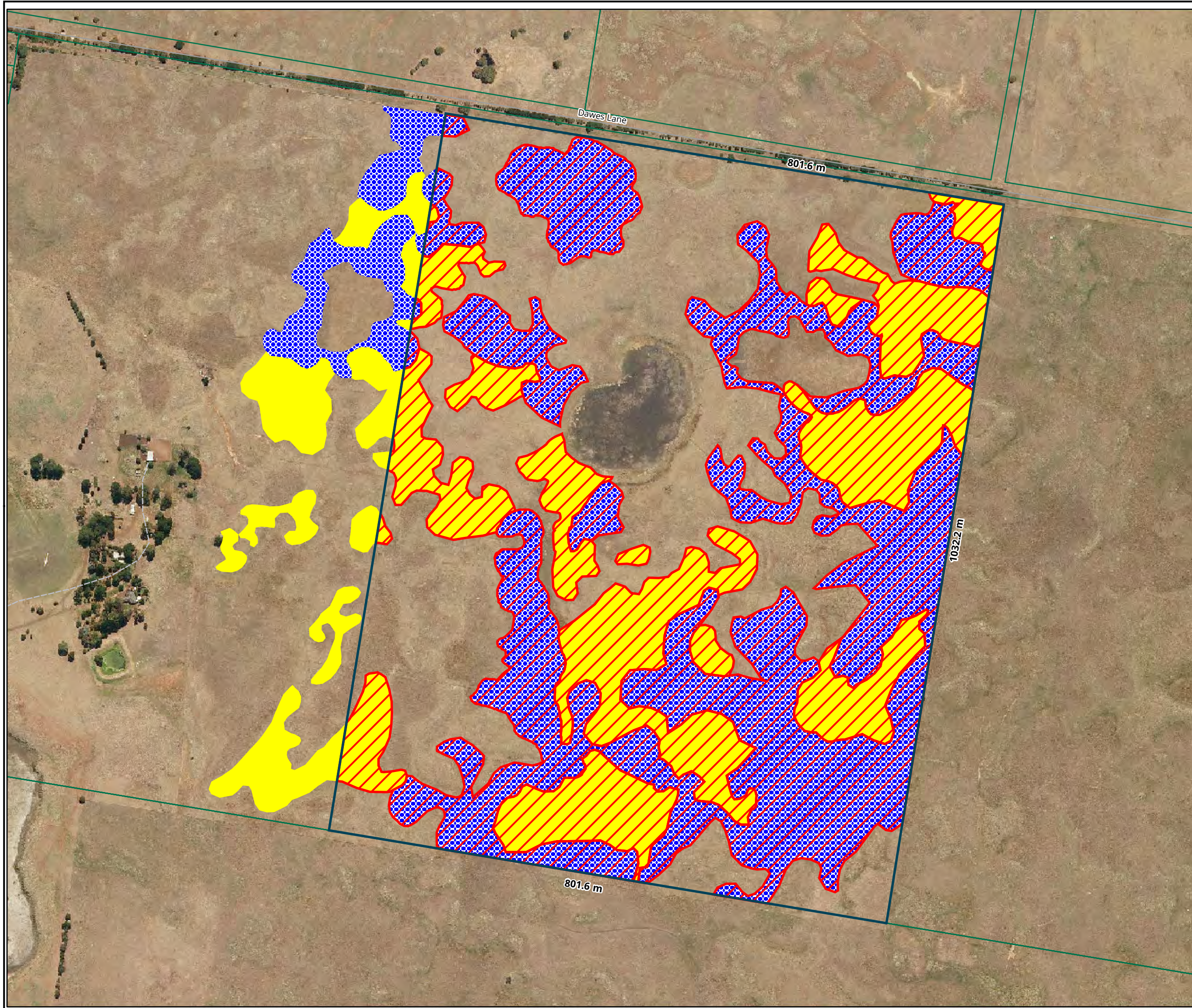
An external offset site has been identified at a property in western Victoria known as Tiverton (Figure 7, Biosis 2015c). The proposed offset area supports a mosaic of native vegetation including two ecological vegetation classes (EVCs) which satisfy the definition of NTGVVP as well as a series of native wetlands and areas otherwise dominated by introduced species (Figure 8). Areas of Plains Grassland (EVC 132) are dominated by perennial wallaby grasses *Rytidosperma* spp. and spear grasses *Austrostipa* spp. while areas of Plains Grassy Wetland (EVC 125) are dominated by Common Tussock-grass *Poa labillardierei*. The offset area identified in Figure 8 supports 27.672 ha of Plains Grassy Wetland and 19.454 ha of Plains Grassland.

Other wetlands within the offset area (not mapped) have been previously assessed (Biosis 2013) and were variously classified as areas of Plains Grassy Wetland, Aquatic Herbland (EVC 653) and Plains Sedgy Wetland (EVC 647). All of these wetlands were identified as areas of high quality native vegetation although they do not meet the requirements to be defined as NTGVVP.

Both onsite and offsite offsets for NTGVVP will be established before the development proceeds and protected under a Trust for Nature Covenant within one year of project commencement. Ecological management of all offset areas (Biosis 2015b for the onsite offset and Biosis 2015c for the external offset) will commence upon project approval.



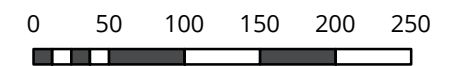
Acknowledgement: VicMap Data Copyright © The State of Victoria, Department of Environment and Primary Industries 2014



Legend

- Natural Temperate Grassland of the Victorian Volcanic Plain
- Ecological Vegetation Class
- 125 Plains Grassy Wetland
- 132 Plains Grassland
- Offset area

Figure 8: The extent of NTGVVP within the proposed offset area, Tiverton, Dundonnell, Victoria



Metres
 Scale: 1:5,000 @ A3
 Coordinate System: GDA 1994 MGA Zone 54



Ballarat, Brisbane, Canberra, Melbourne, Sydney, Wangaratta & Wollongong

Matter: 19051,
 Date: 12 February 2015,
 Checked by: MDD, Drawn by: SKM, Last edited by: smitchell
 Location: P:\16300s\16344\Mapping\16344_F8_Offsets

5 Social and Economic Matters

Development of the site would provide local and regional economic benefits in the form of construction jobs and longer term jobs for the businesses which establish on this site.

The net developable area of the site has a current value estimated at approximately \$50 million with an estimated equivalent value of economic activity involved in establishing the businesses which would purchase these properties.

The proposed conservation reserve would also require an estimated \$600,000 worth of management and monitoring works over the first ten years after its establishment. The conservation reserve will provide passive public open space to augment the existing Melbourne Water wetland reserve to the south.

6 Other Approvals and Conditions

6.1 State assessment and offset requirements

Approval for the proposed industrial subdivision of Lot H, Ajax Road Altona will also require a planning permit from the City of Hobsons Bay. This permit will contain conditions provided by the Department of Environment, Land, Water and Planning (DELWP) relating to compliance with the State's Biodiversity Assessment Guidelines (the Guidelines) (DEPI 2013a).

Under these Guidelines the proposed development will be assessed under the High Risk-based Pathway as the proposed development impacts native vegetation within Location C. The ecological assessment requirements under this process have been completed and are reported by Biosis (2014).

The offset prescription provided by the guidelines is outlined by Biosis (2014). These offsets amount to the provision of:

- 11.369 Specific Biodiversity Equivalence Units (SBEU) for Salt Lawrenca *Lawrenca spicata*; and
- 1.369 SBEU for Creeping Rush *Juncus revolutus*.

Both of these species are listed as rare in Victoria (DSE 2005).

The proposed conservation reserve to the south of the Altona Railway has the potential to generate 1.904 SBEU for Salt Lawrenca and 0.200 SBEU for Creeping Rush. The site also has the potential to generate 4.058 General Biodiversity Equivalence Units (GBEU).

This site may or may not be utilised to provide part of the state prescribed offsets associated with this project. This depends on the economic value of sourcing the SBEU from other sites and the value of the GBEU to other developments.

These offsets are required to be confirmed before the project commences any site works. Note that the State prescribed offsets cannot be provided concurrently with any external offsets prescribed under the EPBC Act. This will provide a significant additional cost to the development than would have occurred under Victoria's previous offset requirements defined under the Vegetation Management Framework (DNRE 2002).

6.2 Other Planning Scheme and Policy Details

6.2.1 Planning and Environment Act 1987 (incl. Planning Schemes)

The proposed development area is existing vacant land zoned as Special Use Zone 4 (SUZ4) under the Hobson's Bay Planning Scheme (<http://planningschemes.dpcd.vic.gov.au/>).

The objectives of the project are to develop the site in line with its existing Special Use Zone designation while achieving consistency with other requirements for sustainable development through the use of water sensitive design and the protection and management of high conservation values identified to the south of the Altona rail line.

The proposed Conservation land will be transferred to either Hobsons Bay Council or another suitable public organisation to ensure permanent maintenance of its ecological values. This transfer of conservation land will include appropriate funds and management guidance.

6.2.2 Environment Effects Act 1978

The proposed development of Ajax Road exceeds some of the thresholds set under the guidelines for assessment under the *Environment Effects Act 1978* (DSE 2006). As a result the project was the subject of a referral to the Victorian Minister for Planning to determine if the preparation of an Environmental Effects Statement (EES) was required.

On 10 February 2014 the Minister determined that the preparation of an EES was not required.

6.3 Planning Revisions

In order for the project to proceed an existing drainage easement E6 (Figure 3) will need to be modified so that it would be withdrawn from land north of the Altona Railway and contracted to 10 metre either side of the existing drain to the south of the railway (Figure 4) and 30 m either side from the top bank of Kayes Drain (Figure 9).

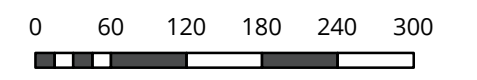
Melbourne Water have provided in principle agreement with this easement configuration with the understanding that the proposed conservation area is established and requires no specific development of this area (Appendix 3).



Legend

- Study Area
- New drainage easement

Figure 9: New drainage easements required by Melbourne Water within the study area



Metres
 Scale: 1:6,000 @ A3
 Coordinate System: GDA 1994 MGA Zone 55



Ballarat, Brisbane, Canberra, Melbourne, Sydney, Wangaratta & Wollongong

Matter: 16344,
 Date: 12 February 2015,
 Checked by: SGM, Drawn by: SKM, Last edited by: smitchell
 Location: P:\16300s\16344\Mapping\16344_F9_DrainageEasements_20140807

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Appendices

Appendix 1: EPBC Act Offsets Assessment Guide for Spiny Rice-flower

Offsets Assessment Guide

For use in determining offsets under the Environment Protection and Biodiversity Conservation Act 1999
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Spiny Rice-flower
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	6.8%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator					
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact	Units	Information source
<i>Ecological communities</i>					
Area of community	No		Area		
			Quality		
			Total quantum of impact	0.00	
<i>Threatened species habitat</i>					
Area of habitat	No		Area		
			Quality		
			Total quantum of impact	0.00	
<i>Threatened species</i>					
<i>Threatened species</i>					
Birth rate e.g. Change in nest success	No				
Mortality rate e.g. Change in number of road kills per year	No				
Number of individuals e.g. Individual plants/animals	Yes	39	39	Count	site survey and census

Offset calculator																	
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)	Start area and quality	Future area and quality without offset	Future area and quality with offset	Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source	
<i>Ecological Communities</i>																	
Area of community	No				Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) with offset	0.0								
							Future area without offset (adjusted hectares)	Future area with offset (adjusted hectares)									
							Time until ecological benefit	Start quality (scale of 0-10)									Future quality without offset (scale of 0-10)
<i>Threatened species habitat</i>																	
Area of habitat	No				Time over which loss is averted (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) with offset	0.0								
							Future area without offset (adjusted hectares)	Future area with offset (adjusted hectares)									
							Time until ecological benefit	Start quality (scale of 0-10)									Future quality without offset (scale of 0-10)
<i>Threatened species</i>																	
<i>Threatened species</i>																	
Birth rate e.g. Change in nest success	No																
Mortality rate e.g. Change in number of road kills per year	No																
Number of individuals e.g. Individual plants/animals	Yes	39	Count	456	20	456	230	680	450	80%	360.00	96.58	247.64%	Yes	\$100,000.00	similar site	

Summary							
Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost (\$)		
					Direct offset (\$)	Other compensatory measures (\$)	Total (\$)
					Birth rate	0	
Mortality rate	0			Yes	\$0.00		\$0.00
Number of individuals	39	96.58	247.64%	Yes	\$100,000.00	N/A	\$100,000.00
Number of features	0			Yes	\$0.00		\$0.00
Condition of habitat	0			Yes	\$0.00		\$0.00
Area of habitat	0			Yes	\$0.00		\$0.00
Area of community	0			Yes	\$0.00		\$0.00
					\$100,000.00	\$0.00	\$100,000.00

Appendix 2: EPBC Act Offsets Assessment Guide for NTGVVP

Offsets Assessment Guide

For use in determining offsets under the Environment Protection and Biodiversity Conservation Act 1999
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Natural Temperate Grassland
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	6.8%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator						
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
<i>Ecological communities</i>						
Area of community	Yes	four habitat zones	Area	0.105	Hectares	report HZ 12
			Quality	4	Scale 0-10	
			Total quantum of impact	0.04	Adjusted hectares	
<i>Threatened species habitat</i>						
Area of habitat	No		Area			
			Quality			
			Total quantum of impact	0.00		
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
<i>Threatened species</i>						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g. Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator																					
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)	Start area and quality	Future area and quality without offset	Future area and quality with offset	Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source					
<i>Ecological Communities</i>																					
Area of community	Yes	FALSE	Adjusted hectares	0.35	Risk-related time horizon (max. 20 years)	20	Start area (hectares)	0.35	Risk of loss (%) without offset	50%	Risk of loss (%) with offset	5%									
					Future area without offset (adjusted hectares)	0.2	Future area with offset (adjusted hectares)	0.3													
					Time until ecological benefit	10	Start quality (scale of 0-10)	5	Future quality without offset (scale of 0-10)	3	Future quality with offset (scale of 0-10)	6	Raw gain	3.00	Confidence in result (%)	80%	Adjusted gain	2.40	Net present value	1.24	
<i>Threatened species habitat</i>																					
Area of habitat	No				Time over which loss is averted (max. 20 years)		Start area (hectares)		Risk of loss (%) without offset		Risk of loss (%) with offset										
					Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0													
					Time until ecological benefit		Start quality (scale of 0-10)		Future quality without offset (scale of 0-10)		Future quality with offset (scale of 0-10)										
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)	Start value	Future value without offset	Future value with offset	Raw gain	Confidence in result (%)	Adjusted gain	Net present value	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source					
Number of features e.g. Nest hollows, habitat trees	No																				
Condition of habitat Change in habitat condition, but no change in extent	No																				
<i>Threatened species</i>																					
Birth rate e.g. Change in nest success	No																				
Mortality rate e.g. Change in number of road kills per year	No																				
Number of individuals e.g. Individual plants/animals	No																				

Summary							
Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost (\$)		
					Direct offset (\$)	Other compensatory measures (\$)	Total (\$)
Birth rate	0				\$0.00		\$0.00
Mortality rate	0				\$0.00		\$0.00
Number of individuals	0				\$0.00		\$0.00
Number of features	0				\$0.00		\$0.00
Condition of habitat	0				\$0.00		\$0.00
Area of habitat	0				\$0.00		\$0.00
Area of community	0.042	0.04	100.08%	Yes	\$0.00	N/A	\$0.00
					\$0.00	\$0.00	\$0.00

Appendix 3: Correspondance from Melbourne Water about E6

20 June 2014

Mr Steve Mueck
P O Box 489
Port Melbourne, VIC 3207

Dear Mr Steve Mueck

Proposal: Adjustment of the drainage easement over Lot H, Ajax Road Altona

Property: Stage 1A Elfield Industrial - Ajax Road Altona
Melb Water Ref: 82074

Thank you for your letter of 20 May 2014 regarding the possibility of adjusting existing easements on land located at Ajax Road Altona as part of the Elfield Industrial Estate.

You have advised that as part of the development of Lot H a conservation reserve will be created. The proposed reserve would be managed to improve its conservation values and no commercial development of any type would be permitted within this area.

Melbourne Water has no objection to the proposed development, subject to the following conditions:

- A setback of 30 metres from the top of bank of Kayes Drain is identified on future development plans.
- Prior to construction detailed design is provided of the connection from the western Biofilta system to the creek.
- Locally indigenous plant species are used in the Biofilta and central stormwater treatment pond.
- Formal agreement is provided indicating that council will assume maintenance of stormwater treatment after the development is completed

Melbourne Water has no objection to the proposed removal of the E6 easement in order to meet DEPI requirements to enable the land to be used as an offset area subject to the following conditions:

- An easement of 20 metres width is retained over the drainage line
- Written advice from DEPI that subject to removal of the easement the land will be used as a conservation reserve for offsets.

Recommendations

- The proposed bunds parallel to the railway line should also be landscaped with locally indigenous species to complement to conservation habitat and reduce the risk of future weed contamination.
- The boundaries of the offset area and Kayes Drain boundary of the proposed offset should be marked out prior to construction in consultation with the Melbourne Water River Health Officer, to aid efforts (by Melbourne Water, council and others) to plan and perform complementary weed control, planting and other works.

If you have any enquiries, please contact me on telephone 9679 6753 or e-mail christine.naylor@melbournewater.com.au.

Yours sincerely

A handwritten signature in black ink, appearing to read 'CNaylor', with a stylized flourish at the end.

Christine Naylor
Land Development