

## Offset Management Plan, Seaford Foreshore, Seaford



February 2015

## Offset Management Plan Seaford Foreshore Reserve, South of Keast Park, Seaford.

February 2015

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Version	Date	Reviewer:	Version notes
0.1	13/10/2014	Alice Ewing	Draft for client review
0.1	05/12/2014	Sarah Backholer and Ian Wheatland	Draft for client review
1.0	18/12/2014	James Kidman	Final version for approval
1.1	11/02/2015	Andrew Stephens	Approved final.

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# Contents

<b>1.</b>	<b>INTRODUCTION</b>	<b>5</b>
<b>1.1</b>	<b>Project Scope</b>	<b>5</b>
<b>1.2</b>	<b>Subject Site</b>	<b>5</b>
1.2.1	Site description	5
1.2.2	Adjacent land	5
1.2.3	Landscape	6
1.2.4	Land-use history	6
1.2.5	Zoning and Overlays	6
<b>2.</b>	<b>METHODS</b>	<b>7</b>
<b>2.1</b>	<b>Site assessment</b>	<b>7</b>
<b>2.2</b>	<b>Vegetation Categorisation, Classification and Quality</b>	<b>7</b>
2.2.1	Vegetation Categories	7
2.2.2	Ecological Vegetation Classes	8
2.2.3	Vegetation Quality Assessment	8
<b>2.3</b>	<b>DEPI biodiversity offset report</b>	<b>8</b>
<b>2.4</b>	<b>Flora</b>	<b>8</b>
2.4.1	Plant taxonomy	8
2.4.2	Existing information	8
2.4.3	Flora survey	9
2.4.4	Plant identification	9
2.4.5	Limitations of flora survey	9
<b>2.5</b>	<b>Fauna</b>	<b>9</b>
2.5.1	Fauna taxonomy	9
2.5.2	Existing information	9
2.5.3	New information	9
<b>2.6</b>	<b>Potentially occurring rare or threatened species</b>	<b>10</b>
<b>2.7</b>	<b>Mapping</b>	<b>11</b>
<b>3.</b>	<b>RESULTS</b>	<b>12</b>
<b>3.1</b>	<b>Vegetation Categorisation, Classification and Quality</b>	<b>12</b>
3.1.1	Habitat Zone 1 (HZ1), Habitat Zone 2 (HZ2) and Habitat Zone 3 (HZ3)	12
3.1.2	Habitat Zone 4 (HZ4)	13
3.1.3	Habitat Zone 5 (HZ5)	14
3.1.4	Habitat hectare assessment	15
<b>3.2</b>	<b>Flora</b>	<b>15</b>
3.2.1	State or nationally significant flora	16
<b>3.3</b>	<b>Fauna</b>	<b>16</b>
3.3.1	State or nationally significant fauna	17
3.3.2	Site eligibility	18
3.3.3	Landholder commitments to generate site gain	19
3.3.4	Determining site gain	19
<b>4.</b>	<b>OFFSET MANAGEMENT PLAN</b>	<b>22</b>
<b>4.1</b>	<b>Ongoing land-use commitments</b>	<b>22</b>
<b>4.2</b>	<b>Fencing and demarcation of zones</b>	<b>22</b>
<b>4.3</b>	<b>Weed management</b>	<b>23</b>
<b>4.4</b>	<b>Pest animals</b>	<b>29</b>
4.4.1	Rabbits	29
4.4.2	Foxes	29

<b>4.5</b>	<b>Revegetation and supplementary planting</b>	<b>30</b>
<b>4.6</b>	<b>Dune Erosion</b>	<b>31</b>
<b>4.7</b>	<b>Monitoring and reporting</b>	<b>31</b>
<b>4.8</b>	<b>Summary of works</b>	<b>32</b>
<b>5.</b>	<b>REFERENCES</b>	<b>37</b>

## APPENDICES

Appendix 1.	Flora recorded at study site.....	39
Appendix 2.	Potentially occurring significant flora species .....	41
Appendix 3.	Potentially occurring significant fauna species.....	43
Appendix 4.	Offset Site Report .....	53
Appendix 5.	Yearly site condition report.....	61
Appendix 6.	Maps .....	63

## TABLES

<b>Table 1.</b>	Criteria for potential occurrence of significant species .....	10
<b>Table 2.</b>	Extant EVCs at Study Site.....	12
<b>Table 3.</b>	Habitat hectare assessment.....	15
<b>Table 4.</b>	Summary of plant species recorded .....	15
<b>Table 5.</b>	Incidental fauna list recorded during site visit.....	16
<b>Table 6.</b>	Site eligibility criteria.....	18
<b>Table 7.</b>	Habitat gain scoring for restoration and rehabilitation of vegetation on-site.....	20
<b>Table 8.</b>	Summary of gains available on site as determined from DEPI's Native vegetation Support team.21	
<b>Table 9.</b>	Priority Weeds for Management .....	27
<b>Table 10.</b>	Revegetation planting guide for supplementary plantings associated with weed control works	30
<b>Table 11.</b>	Offset Management Plan Action Table .....	33

## FIGURES

<b>Figure 1.</b>	HZ1: CDS on edge of foreshore, looking south .....	13
<b>Figure 2.</b>	HZ2: CDS with higher cover of MS looking north-east.....	13
<b>Figure 3.</b>	HZ3: CDS with greater weed cover looking from top of dune to the east .....	13
<b>Figure 4.</b>	HZ3: CDS with greater weed cover looking west towards top of dune.....	13
<b>Figure 5.</b>	HZ4: Coastal Banksia Woodland looking south from within HZ3 .....	14
<b>Figure 6.</b>	HZ4: Coastal Banksia Woodland looking west from eastern boundary track .....	14
<b>Figure 7.</b>	HZ5a: Coastal Dune Scrub revegetation .....	14
<b>Figure 8.</b>	HZ5b: Coastal Dune Scrub revegetation .....	14
<b>Figure 9.</b>	Burrow observed within HZ2.....	17
<b>Figure 10.</b>	Existing signage along the western boundary of the site.....	23

## MAPS

Map 1.	Offset Management Plan .....	63
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# 1. INTRODUCTION

Practical Ecology Pty Ltd was commissioned by Sarah Backholer to prepare a Flora and Fauna Assessment, Gain Scoring Analysis and an Offset Management Plan for a portion of Seaford Foreshore Reserve, south of Keast Park, Seaford. This report was sought in order to provide offsets for vegetation removal associated with the Frankston Long Island boardwalk.

## 1.1 Project Scope

The scope of works includes:

- a description of the existing site conditions
- the compilation of a list of vascular plants observed across the study site
- a description of the existing and/or original Ecological Vegetation Classes found within the site and assessment based on the Habitat Hectares scoring method
- a review of relevant literature, flora and fauna records and habitat conditions on the site to determine the occurrence of significant flora and fauna
- an assessment of priority weeds with proposed directions for hygiene, control and ongoing management
- the development of a 10-year Offset Management Plan

## 1.2 Subject Site

### 1.2.1 Site description

The subject site is located on two lots, 1n and 10n Nepean Highway, Seaford (Map 1). 1n Nepean Highway is part of the northern section of the site and is approximately 2.6 ha in total. 10n Nepean Highway is part of the southern portion of the site, stretching from Seaford to Frankston along the foreshore, and comprising an area of over 60 ha. Both of these parcels contain remnant coastal vegetation and are located between the shoreline of Port Phillip Bay and the Nepean Highway.

The site itself is fenced on all sides, the western fence bordering along the beach is currently covered by sand. A walking track borders all sides except for the beachfront. Some signage, and a table and chairs are located toward the south-east corner of the site.

### 1.2.2 Adjacent land

The adjacent land to the west of the site is the Port Phillip Bay shoreline, to the east the Nepean Highway and beyond that are residential dwellings. To the north of the site is Keast Park; an open space recreational area

with a playground and a carpark. To the south of the site is a 100 m wide strip of remnant coastal vegetation, stretching between the shoreline and the Nepean Highway for over four kilometres.

### 1.2.3 Landscape

The study area falls within the Gippsland Plain Bioregion and the Port Phillip and Westernport Catchment Management Area (DEPI 2013a). The surrounding landscape is relatively flat, a consistent trait with the pre-European vegetation of swamplands and primary dunes.

### 1.2.4 Land-use history

Land-use within the site is for conservation purposes. No anthropogenic activities are known to be currently undertaken within the site. There does not appear to be evidence of any past land-use activities on site, however, some rubbish dumping was evident.

### 1.2.5 Zoning and Overlays

The northern portion of the site, Lot 1n, is zoned Public Park and Recreation Zone (PPRZ) whilst the southern portion of the site is zoned Public Conservation and Resource Zone (PCRZ). There are no planning overlays on Lot 1n, however, Lot 10n contains an ESO1 and a BMO.

## 2. METHODS

### 2.1 Site assessment

A site assessment was undertaken by James Kidman and Katherine Smedley on 28<sup>th</sup> August 2014, involving

- consideration and mapping of existing conditions
- mapping and assessing vegetation as per the Habitat Hectare methodology
- the compilation of a list of vascular plants observed across the study site
- consideration of the site's habitat values for threatened fauna and flora
- an assessment of weeds, erosion and other relevant land management issues across the site

### 2.2 Vegetation Categorisation, Classification and Quality

Vegetation was assessed for its categorisation according to *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (Department of Environment & Primary Industries 2013), then its Ecological Vegetation Class and finally, quality, as determined through a Habitat Hectare assessment.

#### 2.2.1 Vegetation Categories

Vegetation in the study area was surveyed for categorisation as per the definitions within *Permitted clearing of native vegetation – Biodiversity assessment guidelines* (Department of Environment & Primary Industries 2013):

- **Native Vegetation**

*Native Vegetation* as per the Victorian Planning Provisions (Clause 72): plants that are indigenous to Victoria, including trees shrubs, herbs and grasses.

- **Remnant Vegetation**

*Remnant patch* of native vegetation is either:

- an area of vegetation where at least 25% of the total perennial understorey plant cover is native
- any area with three or more native canopy trees where the canopy foliage cover is at least 20% of the area

- **Scattered tree:**

A *scattered tree* is a native canopy tree that does not form part of a remnant patch. A canopy tree is a mature tree that is greater than 3m in height and is normally found in the upper layer of a vegetation type.

## 2.2.2 Ecological Vegetation Classes

Ecological Vegetation Classes (EVCs) are a method of systematic organisation of plant communities into common types that occur in similar environmental conditions throughout Victoria. Each vegetation type is identified on the basis of its floristic composition (the plant species present), vegetation structure (woodland, grassland, saltmarsh), landform (gully, foothill, plain) and environmental characteristics (soil type, climate).

DEPI EVC mapping (DEPI 2014a) was accessed to assess the EVC likely to occur on the study area. EVCs were then identified in the field according to observable attributes including dominant and characteristic species consistent with the benchmark descriptions (DEPI 2014b).

## 2.2.3 Vegetation Quality Assessment

A habitat hectare assessment was undertaken to determine the condition of the vegetation and significance of areas of remnant vegetation. This methodology is outlined in *Vegetation Quality Assessment Manual-Guidelines for Applying the Habitat Hectares Scoring Method* (DSE 2004). The habitat hectare method involves making visual and quantitative assessments on various characteristics of native vegetation according to established criteria that are set against an optimum benchmark.

This process begins with the identification of the EVC. Each EVC has a benchmark of optimal values relating to the vegetation conditions. In addition the ecological landscape context is scored, this is assessable via the DEPI's Biodiversity Interactive Map (DEPI 2014a). If a site meets or exceeds all benchmark criteria it will receive a total score of 100 %.

## 2.3 DEPI biodiversity offset report

GIS data was sent to DEPI for assessment to confirm details required under *Permitted clearing of native vegetation - Biodiversity assessment guidelines* (Department of Environment & Primary Industries 2013):

- offsets achieved in the Offset Zone(s) provided on site.

## 2.4 Flora

### 2.4.1 Plant taxonomy

Plant taxonomy used in this report is in accordance with the Victorian Biodiversity Atlas (DEPI 2014c).

### 2.4.2 Existing information

Existing database records on the Victorian Biodiversity Atlas for a five kilometre radius around the study area was obtained (DEPI 2014c).



### 2.4.3 Flora survey

During the assessment, the study area was inspected on foot. A species list (or defined area list) for indigenous or naturalised flora (i.e. not including planted species) over the entire study site was compiled. No systematic surveys were undertaken during this study.

### 2.4.4 Plant identification

Species that could not be identified in the field were recorded to the nearest possible family or genera. These were then collected as per the protocols associated with Practical Ecology's *Flora and Fauna Guarantee (FFG) Act 1988* permit (No. 10006484) for the collection of plant material. In order to assist in the identification of some flora, major features of the specimens were collected where possible, including leaves, parts of branches, fruit and/or flowers.

### 2.4.5 Limitations of flora survey

The following considerations should be made regarding the limitations of the flora survey:

- it is expected that some additional species, particularly orchid, lily and other herbaceous species that can only be observed for a limited period of time may not have been recorded during the present assessment
- flora surveys were undertaken over a short period of time.

## 2.5 Fauna

### 2.5.1 Fauna taxonomy

Animal taxonomy used in this report is in accordance with the Victorian Biodiversity Atlas (DEPI 2014c).

### 2.5.2 Existing information

Existing database records on the Victorian Biodiversity Atlas for a five kilometre radius around the study area was obtained (DEPI 2014c).

### 2.5.3 New information

Only a brief incidental fauna survey was undertaken for this study. As this was undertaken in association with other tasks, it is highly likely many species on-site were not observed. The main focus in regards to fauna was to undertake a habitat assessment. The habitat assessment relies upon making judgements on the suitability of habitat present within the study site for any significant species recorded on existing databases.

Potential habitat values considered include:

- old hollow-bearing trees
- intact EVCs including the understorey strata
- connectivity to existing reserves and other remnant vegetation
- water bodies, wetlands or wet depressions
- dense vegetation.

## 2.6 Potentially occurring rare or threatened species

Database information was used to determine likelihood of occurrence of rare or threatened species that occur or are predicted to occur within five kilometres of the study area. In determining this ‘likelihood of occurrence’ and utilisation of the study area by national or state significant flora and fauna, the following factors were considered:

- the conservation status of the species and its distribution
- previous recordings of species in the local area
- date of last record
- the habitat requirements of individual species
- the physical attributes of the site, such as topography, geology, soils, aspect and other habitat features such as trees with hollows, the presence of rocks or boulders, logs on the ground
- the history of land use at the study site
- how fragmented and modified the environment surrounding the study site is.

A basic matrix that describes the justification for the likelihood of occurrence is presented below.

**Table 1.** Criteria for potential occurrence of significant species

Likelihood of occurrence	Criteria
Nil	Species known to be extinct in local area and/or absent from the site.
Low	Unsuitable habitat at study site; or habitat conditions intermediate and records very limited and dated; or if it were present, it is highly likely to have been observed on site.
Medium	Habitat conditions are intermediate, and/or optimal habitat conditions for species but local records limited or dated and/or if it were present, it is not likely to have been observed on site.
High	Optimal habitat conditions for species or species recorded at site, or intermediate habitat conditions but extensive local records and/or if it were present, it is not likely to have been observed on site.

## 2.7 Mapping

Geographical positioning data collection in the field for the purposes of map display was carried out using a combination of a handheld GPS device, aerial photography and existing site survey plans. Determination of vegetation boundaries was undertaken using a combination of GPS data and ground-truthing with aerial photography. Due to inaccuracy with GPS data the mapping should be considered approximate only.

## 3. RESULTS

### 3.1 Vegetation Categorisation, Classification and Quality

Remnant vegetation occurs in five Habitat Zones (HZ) across the site. Map 1 indicates the distribution of the five Habitat Zones across the site.

The Ecological Vegetation Classes on site are indicated in Table 2 below.

**Table 2.** Extant EVCs at Study Site.

EVC No.	EVC	Area (ha)
2	Coastal Banksia Woodland (CBW)	0.1
160	Coastal Dune Scrub (CDS)	0.8

#### 3.1.1 Habitat Zone 1 (HZ1), Habitat Zone 2 (HZ2) and Habitat Zone 3 (HZ3)

Habitat Zone 1 (Figure 1), HZ2 (Figure 2) and HZ3 (Figure 3 and Figure 4) consist of Coastal Dune Scrub with varying structural dominance of life-forms and weed cover. HZ1 contained species with lower structural complexity, compared with HZ2 and HZ3, due to the closer proximity to the primary dunes. HZ2 and HZ3 differed in species diversity and weed cover, with HZ3 containing a lower species diversity and higher weed cover.

These habitat zones consisted of a dominant shrub layer between 1–4 m tall with a cover of 10–40 % and an understorey of graminoids, including grasses and sedges.

Small and medium shrubs consisted of: Coast Wattle *Acacia longifolia subsp. sophorae*, Drooping Sheoak *Allocasuarina verticillata*, Coast Tea-tree *Leptospermum laevigatum*, Coast Beard-heath *Leucopogon parviflorus*, Common Boobialla *Myoporum insulare*, Coast Daisy-Bush *Olearia axillaris*, Sticky Daisy-bush *Olearia glutinosa* and Coast Banksia *Banksia integrifolia subsp. integrifolia*. Some remnant Coast Banksia stumps were observed in HZ3, which may have suggested that this area was once Coastal Banksia Woodland.

The indigenous ground layer consisted primarily of graminoids including: Prickly Spear-grass *Austrostipa stipoides*, Knobby Club-sedge *Ficinia nodosa*, Coast Sword-sedge *Lepidosperma gladiatum*, Spiny-headed Mat-rush *Lomandra longifolia* and Hairy Spinifex *Spinifex sericeus*.

There were many weeds observed across the site, with the highest cover occurring within HZ3 (and HZ4). Habitat Zone 1 and HZ2 had relatively low weed cover. African Box-thorn *\*Lycium ferocissimum* was present along a ridgeline that ran along the centre of the site, along the border between HZ2 and HZ3. Typical weed species included: African Box-thorn, Angled Onion *\*Allium triquetrum*, Marram Grass *\*Ammophila arenaria*, Bridal Creeper *\*Asparagus asparagoides*, Couch *\*Cynodon dactylon var. dactylon*, Panic Veldt-grass *\*Ehrharta erecta var. erecta*, Annual Veldt-grass *\*Ehrharta longiflora*, Freesia *\*Freesia spp.*, Galenia *\*Galenia pubescens var. pubescens*, Gazania *\*Gazania spp.* and Kikuyu *\*Pennisetum clandestinum*.



**Figure 1.** HZ1: CDS on edge of foreshore, looking south



**Figure 2.** HZ2: CDS with higher cover of MS looking north-east



**Figure 3.** HZ3: CDS with greater weed cover looking from top of dune to the east



**Figure 4.** HZ3: CDS with greater weed cover looking west towards top of dune

### 3.1.2 Habitat Zone 4 (HZ4)

This Habitat Zone was consistent with Coastal Banksia Woodland (EVC 2) (Figure 5 and Figure 6). This zone contained a Coastal Banksia canopy to 12 m and 15 % cover with an understorey of medium shrubs and a high cover of weeds. Understorey shrub species included: Coast Beard-heath, Seaberry Saltbush *Rhagodia candolleana* subsp. *candolleana* and Coast Tea-tree *Leptospermum laevigatum*. The groundstorey consisted of mainly exotic species, with dominant indigenous species limited to Coast Sword-sedge and Spiny-headed Mat-rush. Downy Dodder-laurel *Cassytha pubescens* s.s. and Small-leaved Clematis *Clematis microphylla* s.l. had high covers across this zone.

Exotic species were dominant within the understorey, contributing up to 70 % cover in some areas. Typical species included: Bridal Creeper, Couch, Panic Veldt-grass, Annual Veldt-grass, Freesia, African Box-thorn, Soursob \**Oxalis pes-caprae* and Kikuyu.



**Figure 5.** HZ4: Coastal Banksia Woodland looking south from within HZ3



**Figure 6.** HZ4: Coastal Banksia Woodland looking west from eastern boundary track

### 3.1.3 Habitat Zone 5 (HZ5)

This habitat zone consisted of Coastal Dune Scrub revegetation, comprising small and medium shrubs with a groundcover of mulch (Figure 7 and Figure 8). Typical species included: Coast Wattle, White Correa *Correa alba* var. *alba*, Coast Tea-tree, Coast Beard-heath, Common Boobialla and Prickly Spear-grass. There was less than 5 % weed cover across this zone.



**Figure 7.** HZ5a: Coastal Dune Scrub revegetation



**Figure 8.** HZ5b: Coastal Dune Scrub revegetation

### 3.1.4 Habitat hectare assessment

Table 3 below presents the results of the Habitat hectare assessment.

**Table 3.** Habitat hectare assessment

Habitat Zone		1	2	3	4	5	
Bioregion		GipP	GipP	GipP	GipP	GipP	
EVC Name (initials)		CDS	CDS	CDS	CBW	CDS	
EVC Number		160	160	160	2	160	
EVC Conservation Status		Depleted	Depleted	Depleted	Vulnerable	Depleted	
Size of Zone (ha)		0.209	0.296	0.288	0.112	0.031	
	Max Score	Score	Score	Score	Score	Score	
Site Condition	Large Old Trees	10	N/A	N/A	N/A	5	N/A
	Canopy Cover	5	N/A	N/A	N/A	4	N/A
	Understorey	25	15	4	15	15	5
	Lack of Weeds	15	7	15	0	0	11
	Recruitment	10	3	10	3	3	5
	Organic Litter	5	5	5	4	4	2
	Logs	5	N/A	N/A	N/A	4	N/A
	EVC Standardiser	n/a	1.36	1.36	1.36	1	1.36
	Standardised Score	75	40.8	46.24	29.92	35	31.28
Landscape value	Patch Size	10	5	5	5	5	5
	Neighbourhood	10					
	Distance to Core	5					
Habitat points		100	45.8	51.24	34.92	40	36.28
Habitat Score (habitat points/100)		0.##	0.46	0.51	0.35	0.40	0.36
No. of Large Old Trees			0	0	0	1	0

## 3.2 Flora

A total of 52 plant taxa were recorded in the study area during this survey of which 25 were indigenous (48 %) and 27 (52 %) were introduced or naturalised outside their natural range. Appendix 1 lists all flora recorded within the study site respectively. Table 4 below summarises plant taxa recorded in the study area during this survey.

**Table 4.** Summary of plant species recorded

Flora Status	Number of Taxa
Indigenous vascular species	25
Exotic species	27
Native species outside of natural range	0
<b>TOTAL</b>	<b>52</b>

### 3.2.1 State or nationally significant flora

No species of state or national significance were recorded on-site.

A search for state or nationally significant flora species recorded within 5 km of the site area in VBA (DEPI 2014c) revealed seven species. Only one of these species was considered to have a high likelihood of occurring on site; Dune Poa *Poa poiiformis* var. *ramifer*, due to the presence of suitable habitat and nearby recent records. This species is state-listed as rare. The site did not contain suitable habitat for the other significant species listed within 5 km of the site. Details of all significant flora species recorded within 5 km of the site are presented in Appendix 2.

## 3.3 Fauna

The results of the fauna survey are presented in Table 5 below.

**Table 5.** Incidental fauna list recorded during site visit

Lifeform	Common name	Scientific name	Record type
BIRD	Superb Fairy-wren	<i>Malurus cyaneus</i>	Observed
	Spotted Turtle-Dove	* <i>Spilopelia chinensis</i>	Observed
MAMMAL	European Rabbit	* <i>Oryctolagus cuniculus</i>	Den/scats
REPTILE	Garden Skink	<i>Lampropholis guichenoti</i>	Observed

The main focus with regards to fauna during the assessment was the consideration of the site's potential to provide fauna habitat. The habitat observed within the site included:

- leaf litter
- bare sandy soil
- tree canopies
- dense understorey vegetation
- grassy understorey vegetation.
- logs.

Vegetation on site provides good fauna habitat and is connected to areas of native vegetation to the south. Within the site, there is a variety of vegetation structures that may be suitable for a number of fauna species. Some larger canopy trees within the Coastal Banksia Woodland provide some nesting habitat for many bird species and possums. The midstorey vegetation is relatively thick due to small and medium shrubs, although this cover is patchy. This vegetation provides suitable shelter and nesting habitat for smaller birds. Most of the site contains leaf litter that is ideal habitat for smaller fauna species such as lizards, frogs and invertebrates. It also provides good foraging material for birds, lizards, frogs and small mammals. The sandy groundlayer provides ideal burrowing habitat for small mammals, one of which was observed within HZ2 (Figure 9), likely a Swamp Rat *Rattus lutreolus* or Black Rat \**Rattus rattus* burrow.





**Figure 9.** Burrow observed within HZ2

### 3.3.1 State or nationally significant fauna

No fauna of state or national significance was recorded during the site inspection.

A total of 34 state or nationally significant fauna species are recorded within a five-kilometre radius of the study area in the VBA (DEPI 2014c). Details of these species are given in Appendix 2. None of these species were determined to have a high likelihood of occurring on site.

### 3.3.2 Site eligibility

There are particular criteria that a site must comply with to be eligible as an offset (DEPI 2013b). A site that is not eligible cannot be used as an offset. The eligibility criteria are detailed and assessed in Table 6 below.

**Table 6.** Site eligibility criteria

Eligibility criteria	Details	Proposed offset
<b>Current land use and future land use</b>	An area of native vegetation will be eligible to be an offset if there are no current and future land use(s) identified that are incompatible with managing native vegetation for conservation. Incompatible current and future land use include fuel reduction activities, horse-riding, cycling or motorised vehicle use off established tracks, infrastructure easements and other ongoing land uses that are likely to degrade vegetation condition or restrict improvement in vegetation condition.	As the offset is within a BMO and is located within 150m from existing dwellings it may not meet the eligibility criteria as defined in DEPI's 1 <sup>st</sup> party general offset kit (DEPI 2014). Due to the location of existing offsets in the vicinity of the proposed offset, it is considered that the creation of this offset is unlikely to contribute to an increase in bushfire risk within 150m of the site and to the dwellings to the east of the Nepean Highway in particular.
<b>Existing offsets or existing agreements</b>	An area of native vegetation is eligible to be an offset if it has not already been used to offset the clearance of native vegetation or species habitat required by Victorian regulations. An area of vegetation will be eligible if it is not subject to a current agreement under an incentive or grant program to undertake actions which are equivalent to the landowner commitments specified within the Gain Scoring Manual.	The proposed offset is not currently being used to offset vegetation loss elsewhere and is not under an incentive or grant program.
<b>Threats to native vegetation condition</b>	An area of native vegetation is eligible to be an offset if the landowner can control significant threats to the condition of the native vegetation. Such threats include those associated with: <ul style="list-style-type: none"> <li>• high levels of continued nutrient run off</li> <li>• secondary salinity with a high likelihood of the effect increasing</li> <li>• continuing significant erosion which is uncontrollable without affecting native vegetation</li> <li>• significant invasion from pest animals such as rabbits, deer, goats and pigs</li> <li>• extensive die-back or other plant diseases</li> <li>• planned disturbance regimes incompatible with native vegetation objectives such as fuel reduction burning or flooding.</li> </ul>	There are no significant threats to the condition of native vegetation present within the proposed Offset that are beyond the landowner's ability to manage.
<b>Security</b>	There are various standards of security required for different offset types. For an offset on public land it is likely to include an increase in the security arrangement of the offset site.	The current security agreement will remain the same. No security gains are available for the site.
<b>Minimum management requirements</b>	For an area of native vegetation to be eligible, the landowner must agree to the inclusion of minimum, ongoing commitments as detailed in a 10 year management plan.	Section 4 of this report provides this requirement.
<b>Revegetation</b>	Revegetation must be done in accordance with the minimum planting standard specified in Appendix 2 of the Native Vegetation Gain Scoring Manual. Revegetation sites must meet the following size requirements: <ul style="list-style-type: none"> <li>• be at least 1 hectare in size</li> <li>• have an average width of at least 20 metres</li> <li>• have a perimeter to area ratio of 1:20.</li> </ul>	No revegetation is proposed for the site. Revegetation Zones HZ5a and HZ5b are existing and qualify as a remnant patch under the BAG (Department of Environment & Primary Industries 2013).

### 3.3.3 Landholder commitments to generate site gain

The following commitments will form part of the security agreement that will be registered, with a 10-year management plan, on the land title with the Department of Environment and Primary Industries (DEPI).

Minimum commitments:

- protect remnant vegetation
- retaining all standing trees (dead or alive)
- ensuring that weed cover does not increase beyond the current level
- monitoring for any new and emerging weeds and eliminate them to < 1 % cover
- retention of leaf litter
- retention of logs and fallen timber
- the exclusion of stock
- the control of rabbits.

Additional commitments:

- eliminate all woody weeds to < 1 % cover.

Note that detailed information on the management of vegetation within the proposed Offset Zone is provided in the Land and Offset Management Plan within Section 4 of this report.

### 3.3.4 Determining site gain

The *Native Vegetation Gain Scoring Manual* (DEPI 2013c) details the methods for calculating how site gain will be achieved. Note, that as the offset actions are to include commitments beyond the minimal requirements, the gain calculator DEPI provides for first party general offsets cannot be used.

Table 7 below outlines the expected gains in Habitat Hectares over a 10 year period due to the landholder commitments detailed in Section 3.3.3 above, as determined by the *Native Vegetation Gain Scoring Manual* (DEPI 2013b). Although this manual does not contain gains available for offsets on public land, we have used the same gains that were available under the previous *Victoria's Native Vegetation Management - A Framework for Action* (DNRE 2002). Therefore, the only gains available for this site are improvement gains. These gains have been calculated using the existing Habitat Hectare scores as assessed during the site inspection and the applicable gains available, as presented within the *Native vegetation gain scoring manual* (DEPI 2013c). Table 7 presents the total gains available on-site.

**Table 7.** Habitat gain scoring for restoration and rehabilitation of vegetation on-site.

Habitat Zone		1			2			3			4			5			
Bioregion		GipP			GipP			GipP			GipP			GipP			
EVC Name (initials)		CDS			CDS			CDS			CBW			CDS			
EVC Number		160			160			160			2			160			
Security arrangement		Public land			Public land			Public land			Public land			Public land			
	Max	Current condition	Maintenance gain /ha	Improvement gain /ha	Current condition	Maintenance gain /ha	Improvement gain /ha	Current condition	Maintenance gain /ha	Improvement gain /ha	Current condition	Maintenance gain /ha	Improvement gain /ha	Current condition	Maintenance gain /ha	Improvement gain /ha	
Scores	Large Trees	10	N/A	n/a	N/A	n/a		N/A	n/a		5	n/a		N/A	n/a		
	Tree Canopy Cover	5	N/A	n/a	n/a	N/A	n/a	n/a	N/A	n/a	n/a	4	n/a	0.4	N/A	n/a	n/a
	Understorey	25	15	n/a	2.5	15	n/a	2.5	15	n/a	2.5	15	n/a	2.5	5	n/a	1.25
	Lack of Weeds	15	7		2	4		2	0		2	0		2	11		2
	Recruitment	10	3	n/a	2	10	n/a	0	3	n/a	2	3	n/a	2	5	n/a	2
	Organic Litter	5	5	n/a	0	5	n/a	0	4	n/a	2	4	n/a	2	2	n/a	2
	Logs	5	N/A	n/a	n/a	N/A	n/a	n/a	N/A	n/a	n/a	4	n/a	0	N/A	n/a	n/a
	EVC Standardiser		1.4			1.4			1.4			1			1.4		
	Standardised Site Condition	75	41			46			30			35			31		
	Landscape Context	25	5			5			5			5			5		
	HabHa Points	100	46			51			35			40			36		
Subtotal of gains			n/a	6.5		n/a	4.5		n/a	8.5		n/a	8.9		n/a	7.3	
Standardised Improvement Gain/Ha		8.84			6.12			11.56			8.90			9.86			
Total Gain HHa points/Ha		8.8			6.1			11.6			8.9			9.9			
Total Gain HHa score/Ha		0.09			0.06			0.12			0.09			0.10			
Size of offset zone (Ha)		0.209			0.296			0.288			0.112			0.031			
<b>TOTAL GAIN (HHa)</b>		<b>0.018</b>			<b>0.018</b>			<b>0.033</b>			<b>0.010</b>			<b>0.003</b>			

To determine the amount of gain available for a general offset, the site gain is multiplied by the site's strategic biodiversity score:

$$\text{Gain General biodiversity equivalence units} = \text{site gain} \times \text{strategic biodiversity score}$$

This is the theory behind the calculation of the site gain, however, in order to produce a formally accurate figure of the amount of gain available at the site, an Offset Report was sought from DEPI's Native Vegetation Support team. This report is presented in Appendix 4 and a brief summary of the gains available on site is presented in Table 8.

**Table 8.** Summary of gains available on site as determined from DEPI's Native vegetation Support team.

Offset Zone	
General Biodiversity Equivalence Units	0.012
Strategic biodiversity score	0.134
Vicinity	Port Phillip and Westernport CMA, Frankston City Council

## 4. OFFSET MANAGEMENT PLAN

The intention of this Offset Management Plan is to provide a framework that guides land management practices at the site to ensure environmental values are effectively managed and conforming to offset requirements over the required 10-year period. Due to the nature of the offset being located on public land, there is no opportunity to procure security or maintenance gains (as guided by the previous native vegetation clearing regulations (DSE 2006)). Therefore, the management commitments relate specifically to achieving improvement gains on the site.

### 4.1 Ongoing land-use commitments

As outlined in Section 3.3.3 of this report, certain land management activities need to take place within the Offset Zone. The following commitments will form part of the security agreement that will be registered, with a 10-year management plan, with DEPI.

Minimum commitments:

- protect remnant vegetation
- exclude stock, motorised vehicles, bikes, horses and other threats
- retain all standing trees (dead or alive)
- ensure that weed cover does not increase beyond the current level
- monitor for any new and emerging weeds and eliminate them to < 1 % cover
- retain logs and fallen timber
- retain organic litter
- control of rabbits.

Additional commitments:

- eliminate all woody weeds to < 1 % cover.

Frankston City Council will be required to undertake the above activities over the ten-year period and maintain the condition of the offset site to the level achieved at the conclusion of the ten-year management plan in perpetuity. Other additional commitments to generate site gain, including elimination of all 'Gain Scoring' target weeds (DEPI 2013c), were not available due to low site condition scores.

### 4.2 Fencing and demarcation of zones

To ensure successful future management requirements it is important that management zones are clearly identifiable on the ground. Fencing currently exists on the site, bordering the north, east and southern boundaries. The western edge of the offset zone is delineated by an existing fence, however, this has been engulfed by sand dune drift. Along this western edge of the site, existing signage aims to deter human trespassing into the site, as presented in Figure 10. It is expected that this signage and fencing would suffice as the boundary fencing for the site.

Therefore, the maintenance of this fencing and signage will be required in order to achieve the required gains as part of this offset management plan.



**Figure 10.** Existing signage along the western boundary of the site

In addition to the existing signage, additional signage could be posted in highly visible locations and contain phrases such as ‘This area is protected for the conservation of native flora and fauna. Pedestrians and domestic animals are not permitted. Help protect the environment by ensuring no unauthorised access.’ This should be undertaken as a further step if the offset area is observed to be subject to trespassing.

## 4.3 Weed management

### Offset Zone requirements

To meet offset requirements the proponents are to ensure that within the Offset Zone:

- any new and emerging weeds are eliminated (< 1 % cover)
- all woody weeds are eliminated (< 1 % cover)
- weed cover does not increase beyond the current level.

Gains for reducing Gain Scoring (GS) target weeds to < 1 % cover were not available due to the current weed scores. However, it is recommended that all High Threat (HT) weeds (Table 9) are controlled on site.

### General weed management guidelines

Weed management should be a well-planned process that combines ecological and horticultural theories and applies them to practical bushland restoration. Weed control should also be adaptive to site conditions and changes in response to the types of indigenous vegetation present around particular weed invasions, along with the responses of weeds to particular types of control implemented as observed by land managers.

Some guiding on-going principles regarding weed management are to:

- identify the highest quality areas and work outwards from these areas, using a systematic approach;
- consider fauna habitat and in particular habitat for significant species, before undertaking works (which may require staged weed removal in conjunction with replacement planting works);
- protect and increase regeneration through sensitive bush regeneration principles;
- consider the presence of indigenous flora species, particularly those of National or State significance;
- ensure that weed control is done in a manner that facilitates follow-up management of weeds where work has been started;
- treat weeds at the appropriate time in their life cycle to maximise effectiveness and to minimise off-target damage to indigenous species;
- follow-up all work with ongoing maintenance and resist starting on new projects until a high level of weed control has been achieved on current projects;
- ensure all green waste that contains weed seed is removed off-site and disposed of appropriately;
- use the most eco-sensitive approach to weed control, to avoid negative effects of herbicide on the natural environment, particularly near water-bodies and watercourses; and,
- where practical, weed control should be undertaken by alternative measures such as slashing, hand weeding, burning with a weed burner or weed dragon and other means, such as frill-and-fill, cut-and-paint or drill-and-fill, with minimal herbicide use.

Following-up on areas that have been subjected to weed control is of paramount importance. Weed management requires consistent work over the outlined ten-year management period. This is in order to interrupt the life cycles of the weeds and allow indigenous species to gain an ecological advantage. Any weed control should be done with minimal disturbance to soil and surrounding vegetation; soil disturbance can lead to further weed infestation and increase erosion. Weed control should aim to contain and control weeds first and then seek complete elimination. Elimination of some weed species requires a long-term approach, due to soil seed banks and reinfestation that may occur from outside the management area.

The principles of weed management outlined above are based on those in 'Bringing back the bush: The Bradley method of bush regeneration' (Bradley 1988). The 'Bradley Method', as it is commonly known, has three principles which guide the management of weeds in areas to be regenerated:

1. Always work from good to bad areas;
2. Disturb the soil as little as possible and restore it to its natural condition; and
3. Allow the rate of regeneration to dictate the rate of clearing. This is particularly important for removal of woody weeds and the weedy understorey within HZ3 and HZ4.

### **Weed Management within the Site**

Weed management within the site will require an ongoing effort, that extends beyond the ten-year duration of this plan. Eradication of all weeds is not a realistic outcome; the main focus should be on the removal and management of high-threat weeds, control weeds within higher quality areas of vegetation and systematically control and enhance vegetation in significant fauna habitat. Over the long-term this process will be facilitated



by the removal of weeds in poorer quality areas and replacement with indigenous vegetation, through regeneration and/or revegetation.

Removal of weeds has the potential to affect fauna species using these weeds for habitat. A staggered approach to woody weed control and revegetation of woody species should be adopted to maintain fauna habitat.

There were a number of weeds observed across the site, with the highest cover occurring within HZ3 and HZ4. Woody weeds were present across these zones and should be targeted for management. Of these, African Box-thorn posed the highest threat and should be targeted for control as soon as this plan is adopted. The aim of woody weed control is to cut-and-paint or drill-and-fill with herbicide all mature plants and hand pull juveniles in Year 1. Plants should be left *in situ* where there is the potential to provide suitable habitat. There should be ongoing follow up and treatment where any seedlings or plants have been treated to ensure eradication of the species.

It is recommended that for box-thorn control, where there is no suitable fauna habitat directly adjacent, that large box-thorn shrubs be killed using the drill-and-fill method. Then cut (and remove from the site) the lowest branches (to one metre above the ground), which will allow retention of some suitable habitat for small birds in the midstorey while also eliminating lower shrub cover and thus, shelter for pest animals such as rabbits, foxes and cats. This temporary measure will allow for habitat to remain until suitable replacement shrubs (with similar features, i.e. midstorey, prickly shrubs) reach maturity.

Grassy weed cover was high within HZ3 and HZ4 and consisted primarily of Veldt-grass species and Kikuyu. These species will require an ongoing effort to control. Any large patches that are controlled should be planted out with indigenous species to prevent further weed invasion.

The few herbaceous weeds will also requiring ongoing effort, and will include a variety of methods as outlined below. While a number of control methods have been outlined, the type of method used will depend on the location at which the weed occurs and the impact the control method may have on the surrounding vegetation.

The following guidelines should be applied to weed control within the offset site:

- preference should be given to hand-weeding techniques near area of indigenous vegetation;
- works should first be focussed on high threat weeds such as: Angled Onion, Bridal Creeper, New Zealand Mirror Bush *Coprosma repens*, Couch, Perennial Veldt-grass, Panic Veldt-grass, Freesia, Galenia, Gazania, African Box-thorn, Soursob and Kikuyu, see Table 9.
- large areas cleared as a result of weed control should be revegetated with the appropriate species from revegetation lists provided in Table 10 and that are consistent with the HZ EVC;
- all woody weeds on slopes should be controlled using the cut-and-paint method to reduce soil erosion;
- woody weeds with a stem diameter of less than four (4) cm at the base should be cut-and-painted with 1:3 or half strength Glyphosate (360 g/L);
- larger specimens of woody weeds, with a stem diameter of greater than four (4) cm at the base should be frilled-and-filled with 1:3 or half strength Glyphosate (360 g/L) and left in-situ;

- burning, steaming, slashing and hand removal of particular weeds, such as members of the Iridaceae family and introduced grasses and herbs, should be used as an alternative to herbicide application when practical;
- annual grasses and herbs should be controlled where possible at the two leaf/seedling stage with a weed burner, with such work undertaken early in the morning when wet with dew or after rain;
- any works involving spraying of herbicide (e.g. spot-spraying) should only be undertaken by skilled bushland contractors to avoid the risk of off-target damage;
- herbicide application on *Gazania* should include surfactants to ensure a good kill rate and prevent excessive follow-up treatment;
- with regards to the disposal of cut plant material derived from weed control works:
  - any material removed from areas that contain fruit-bearing material, should be removed off-site;
  - material from woody weeds (without seed) that is removed from other areas of the Site should be left on-site to decompose naturally. This material however should be hung off retained vegetation in a manner that does not allow for re-sprouting and still facilitates access for follow-up weed control;
  - material from grassy and herbaceous weeds that are removed by hand-weeding and slashing, should be taken off-site;
- control woody vegetation and leave in situ until understorey revegetation replaces habitat.

As there may be different contractors working within different zones across the site, in particular the existing revegetation area, liaison with other land managers should be undertaken to ensure no duplication of works. Currently, separate contractors are managing the recent revegetation area and therefore any additional works should liaise with the responsible land manager before undertaking works within this zone.

Table 9, below, presents a weed management calendar for the implementation of weed control works at the site. It lists high threat weed species identified at the site and the ideal months during which they should be the targets for weed control works and the applicable treatment methods for each weed.

**Table 9.** Priority Weeds for Management

Origin	Botanical Name	Common Name	J	F	M	A	M	J	J	A	S	O	N	D	General Treatment	High treat	woody	CaLP listed
*	<i>Allium triquetrum</i>	Angled Onion													D, S	HT		CaLP
*	<i>Ammophila arenaria</i>	Marram Grass													S			
*	<i>Arctotheca calendula</i>	Cape Weed													H, S			
*	<i>Asparagus asparagoides</i>	Bridal Creeper													S, CP	HT		CaLP
*	<i>Briza maxima</i>	Large Quaking-grass													S, B, Br			
*	<i>Briza minor</i>	Lesser Quaking-grass													H, B, S, Br			
*	<i>Cerastium glomeratum s.l.</i>	Common Mouse-ear Chickweed													H, B, S			
*	<i>Coprosma repens</i>	New Zealand Mirror Bush													CP	HT	W	
*	<i>Cynodon dactylon var. dactylon</i>	Couch													S	HT		
*	<i>Ehrharta calycina</i>	Perennial Veldt Grass													H, S, B, Br	HT		
*	<i>Ehrharta erecta</i>	Panic Veldt Grass													H, S, B, Br	HT		
*	<i>Freesia sp.</i>	Freesia													D, S	HT		
*	<i>Fumaria muralis subsp. muralis</i>	Wall Fumitory													H, B, S			
*	<i>Galenia pubescens var. pubescens</i>	Galenia													S, H	HT		
*	<i>Gazania spp.</i>	Gazania													D, S	HT		
*	<i>Holcus lanatus</i>	Yorkshire Fog													H, S, Br			
*	<i>Hypochoeris radicata</i>	Cat's Ear													S			
*	<i>Lagurus ovatus</i>	Hare's-tail Grass													S, B, Br			
*	<i>Lycium ferocissimum</i>	African Box-thorn													CP, S, H	HT	W	CaLP
*	<i>Oxalis pes-caprae</i>	Soursob													H, B, S	HT		CaLP
*	<i>Pennisetum clandestinum</i>	Kikuyu													S	HT		
*	<i>Romulea rosea</i>	Onion Grass													H, S			
*	<i>Solanum nigrum</i>	Black Nightshade													H, S			
*	<i>Sonchus oleraceus</i>	Common Sow-thistle													H, S			
*	<i>Tamarix spp.</i>	Tamarisk													CP, H	HT	W	CaLP
*	<i>Trifolium repens</i>	White Clover													H, B, S			

Control Method	Application	Description
B: Burning	Grasses and other herbaceous plants without tubers	Use a hand-held torch connected to a LPG cylinder, or pressurised kerosene 'blow-torch' to scorch plants. Needs to be undertaken at appropriate time of year depending upon the plant's ecology.
Br: Brush-cut	Plants before seed maturation	Use brush-cutter to remove seeds from plants before seed maturation
C: Cut-and-paint	Small and mid-sized woody weeds	Cut the stem or trunk of the plant completely and as near to the ground as possible then immediately paint an appropriate herbicide on the freshly cut surface. Initial cut and paint 'sweep' should be followed annually on newly emergent individuals.
D: Dig out	Plants with tubers, bulbs and large root systems	Use shovel or mattock or even remove mechanically depending on size of plant. Ensure whole of root system is removed and annually follow up on newly emergent individuals.
FF:	Large Woody Plants	Frill or drill into the bark of the plant and inject herbicide into the fresh mark/hole. Leave plant in-situ as habitat.
H: Hand weeding	Suitable for herbaceous plants and seedlings of woody weeds.	Ensure that the whole plant (including roots) is removed; knife, chisel, mattock are useful.
S: Spot Spray	Herbaceous plants	Spray target weed species with an appropriate herbicide avoiding damage to non-target species; this can be facilitated by use of a dye and a low pressure; don't spray when plants are stressed (i.e. too hot or cold). Should be undertaken every 3-4 months within first year then twice yearly in Autumn and Spring afterwards

## 4.4 Pest animals

Although there is evidence of rabbits on the site current impacts do not appear to be significant. It is likely that Black Rats, cats and foxes are utilising the site for cover and, to a more limited extent, feeding opportunities. While little can be done to manage these animals on such a small holding, land-managers should be aware of the potential threats these animals pose.

Management should extend to the sensitive destruction of any identified fox dens or rabbit warrens, and ongoing monitoring of pest animals, primarily rabbits and Black Rats (which spread weed seeds), should be undertaken to gauge if additional measures are warranted.

Any future pest animal management regime should be undertaken in co-operation with landowners and authorities managing adjacent areas. The following is a general guide for the management of rabbit and fox populations.

### 4.4.1 Rabbits

Rabbit monitoring is recommended, and if control is considered necessary, it is best done in cooperation with neighbouring properties as part of an ongoing integrated plan. Information on initiating and implementing community rabbit control programs is available from DEPI (follow the links to 'Pest Plants and Animals' at [www.depi.vic.gov.au](http://www.depi.vic.gov.au)).

The following are some basic actions which should be undertaken:

- ongoing monitoring of the rabbit activity: scats, diggings, grazing, sightings, etc.
- remove surface harbour such as woody weeds and man-made materials
- hand collapsing warrens (with or without fumigation)
- if monitoring indicates numbers are increasing implement baiting program in consultation with DEPI or professional operator.

### 4.4.2 Foxes

Foxes have a significant impact on native wildlife. Easy targets include most ground-dwelling mammals, while birds, reptiles, possums, lizards, beetles and other insects are often consumed. Foxes are also known carriers and spreaders of weed seeds.

Like rabbits, control of foxes required an integrated approach coordinated with landowners in the surrounding area. The major methods of fox control include shooting, soft-jaw trapping and baiting by a licensed pest controller; of which both are unsuitable at the site. All control methods need to be undertaken by appropriately skilled and qualified personnel. They must have appropriate training and certification regarding baiting in particular. They also need to use their skills and experience to choose the most appropriate control methods

Thus, the best future management actions the owners can undertake is monitoring, sensitive den destruction of verified dens and if possible engage a suitably qualified contractor to undertake a management program in-conjunction with adjacent landholders.

## 4.5 Revegetation and supplementary planting

In some instances there is the option of undertaking supplementary planting to achieve site gains. The current conditions on site did not allow for supplementary planting gains since the understorey scores were all greater than '5', except for the area of existing revegetation. Therefore, the undertaking of supplementary planting was not considered to be a necessary requirement of this offset plan.

Since HZ3 and HZ4 contained high weed covers, supplementary planting could be a useful tool to regain a competitive advantage over dominant weeds after the application of herbicide. A summary of suitable species for the site is given in Table 10. The land manager should choose appropriate locations for the installation of these plants post weed control. Thought should be given to the appropriate life-form, the substitutive role, the habitat and soil requirements and the effect of follow-up weed control on the species.

**Table 10.** Revegetation planting guide for supplementary plantings associated with weed control works

Life-form	Species	Common name	Coastal Dune Scrub	Coastal Banksia Woodland
T	<i>Allocasuarina verticillata</i>	Drooping Sheoak		☑
T	<i>Banksia integrifolia subsp. integrifolia</i>	Coast Banksia		☑
MS	<i>Acacia longifolia subsp. sophorae</i>	Coast Wattle	☑	☑
MS	<i>Atriplex cinerea</i>	Coast Saltbush	☑	
MS	<i>Correa alba var. alba</i>	White Correa	☑	☑
MS	<i>Leucopogon parviflorus</i>	Coast Beard-heath	☑	☑
MS	<i>Myoporum insulare</i>	Common Boobialla	☑	☑
MS	<i>Olearia axillaris</i>	Coast Daisy-Bush	☑	
MS	<i>Olearia glutinosa</i>	Sticky Daisy-bush	☑	
MS	<i>Olearia ramulosa var. ramulosa</i>	Twiggy Daisy-bush	☑	
SS	<i>Rhagodia candolleana subsp. candolleana</i>	Seaberry Saltbush		☑
LTG	<i>Lomandra longifolia</i>	Spiny-headed Mat-rush		☑
MTG	<i>Austrostipa stipoides</i>	Prickly Spear-grass	☑	
MNG	<i>Ficinia nodosa</i>	Knobby Club-sedge	☑	
MNG	<i>Lepidosperma gladiatum</i>	Coast Sword-sedge	☑	☑
MNG	<i>Spinifex sericeus</i>	Hairy Spinifex	☑	
MH	<i>Carpobrotus rossii</i>	Karkalla	☑	
SC	<i>Clematis microphylla s.l.</i>	Small-leaved Clematis		☑
SC	<i>Muehlenbeckia australis</i>	Climbing Lignum	☑	
SC	<i>Tetragonia implexicoma</i>	Bower Spinach	☑	☑

T-tree, MS - medium shrub, SS - Small shrub, LTG - Large tufted graminoid, MNG - Medium non-tufted graminoid, MH - Medium herb, SC - Scrambler climber

## 4.6 Dune Erosion

During the site inspection there was some evidence of dune erosion to the west of the offset site along the primary dunes either side of the concrete construction. Although it was not within the offset site it is possible that over the 10 year period of this plan areas of the offset zone may be impacted. However, an existing fenceline that has been established in this area is almost completely covered by sand and vegetation is colonising (Figure 1). This would suggest that the dune level has been lower in the past and that dunes in this location may be stabilising. In-effect the fence may have acted as a dune-forming fence; reducing wind velocity and causing drift sand to be deposited in the vicinity of the fence. Monitoring of the erosion of these dunes should be undertaken during annual monitoring, and if it is found that the dunes are subject to erosion that threatens the offset site then dune-forming fences should be installed.

## 4.7 Monitoring and reporting

This project represents a valuable opportunity to monitor and evaluate ecological restoration over a 10 year or greater period. Monitoring is also required to track the habitat improvements of the site to ensure management meets the legal obligations of an offset site.

### Monitoring and reporting requirements at an offset site

The following are the reporting obligations at offset site:

- A yearly site condition report for each of the ten year management plan and thereafter at the reasonable request of the statutory authority.
- Reports are to be submitted prior to the anniversary date of the execution of the agreement.

The following must be included in the yearly site condition report:

- site identifier
- reporting year (1–10)
- date report is submitted
- who completed the report
- condition of site against each management commitment
- actions taken during the year to achieve the management commitment
- photographs which clearly depict management actions undertaken for the previous year.

A reporting template that fulfils these requirements is provided in Appendix 5.

### Responsibilities for reporting and monitoring

Frankston City Council will be responsible to ensure that the required reporting and monitoring is provided. At the completion of years five and ten this is to be undertaken by a qualified ecologist. In other years of the plan there are no conditions as to who provides the report.

## 4.8 Summary of works

The table below sets out the land-use activities that will need to be implemented over the 10-year period, in order to achieve the required gains across the site. The land use and management commitments proposed are essentially in the order in which they are to take place. Referral must be made to the sections above for specific instructions and regulating guidelines.



**Table 11. Offset Management Plan Action Table**

Year #	Action #	Management action	Description of action	Method	Timing	Responsibility	Legal Standard	Completed (Yes/No)	Month and Year Completed
1	1.1	Woody Weed control	Initial control of all woody weeds across the site	Refer to Table 11. Where possible, use hand removal and cut and paint method over spraying to reduce off-target damage and use selective herbicides where possible.	Initial control of all woody weeds  Refer to Table 11. For individual species	Frankston City Council	Removal of all high threat woody weeds to achieve a cover of no more than 1 %		
1	1.2	Herbaceous and Grassy Weed Control	Initial spraying, digging and hand removal of herbaceous and grassy weeds	Refer to Table 11. Where possible, use hand removal and cut and paint method over spraying to reduce off target damage and use selective herbicides where possible.	At least eight weed control inspections and treatment per year; in autumn, early spring and early summer.  Refer to Table 11. For individual species	Frankston City Council	Prevent weed cover from increasing and control all new weed threats. Removal of all high threat herbaceous and grassy weeds to achieve a cover of no more than 20 % is desirable, but not a legal requirement to achieve gains		
1	1.3	Pest animal monitoring	Monitoring of site to determine rabbit numbers as required	Monitor rabbit populations by counting scats or direct observations	Monitor twice yearly: early autumn and late spring	Frankston City Council	Extent and density of pest animal populations known on site		
1	1.4	Annual Monitoring	Monitor works undertaken and changes observed	Once a year monitor and record on revegetation, weed control undertaken and changes in weed cover, pest animal densities and native vegetation recovery.	End of year 1	Frankston City Council	Annual monitoring program designed and implemented		
1	1.5	Reporting to DEPI	Provide DEPI with offset monitoring report presented in Appendix 5.	Report to DEPI on gain scoring activities including: weed control, changes in weed cover, pest animal densities and native vegetation recovery.	Provide a report to DEPI at end of year 1	Frankston City Council	Provide one report to DEPI on an annual basis		

Offset Management Plan Seaford Foreshore Reserve, South of Keast Park, Seaford

Year #	Action #	Management action	Description of action	Method	Timing	Responsibility	Legal Standard	Completed (Yes/No)	Month and Year Completed
2	2.1	Maintain fencing and signage	Monitoring and maintenance of fencing and signage	Inspect fencing and signage and make repairs as required	Every six months	Frankston City Council	Prevent entry of stock, motorised vehicles, bikes, horses and other threats		
2	2.2	Woody Weed control	Follow-up control of all woody weeds across the site	Refer to Table 11. Where possible, use hand removal and cut and paint method over spraying to reduce off target damage and use selective herbicides where possible. Control any emergent or re-sprouting plants	Follow-up control of all woody weeds  Refer to Table 11. for individual species	Frankston City Council	Control all high threat woody weeds to achieve a cover of no more than 1 %		
2	2.3	Herbaceous and Grassy Weed Control	Follow up control of herbaceous and grassy weeds	Refer to Table 11. Where possible, use hand removal and cut and paint method over spraying to reduce off target damage and use selective herbicides where possible.	At least eight weed control inspections and treatment per year; in autumn, early spring and early summer.  Refer to Table 11. for individual species	Frankston City Council	Prevent weed cover from increasing and control all new weed threats. Removal of all high threat herbaceous and grassy weeds to achieve a cover of no more than 10 % is desirable but not a legal requirement to achieve gains		
2	2.4	Pest animal monitoring	Monitoring of site to determine rabbit numbers as required	Monitor rabbit populations by counting scats or direct observations	Monitor twice yearly: early autumn and late spring	Frankston City Council	Extent and density of pest animal populations known on site		
2	2.5	Annual Monitoring	Monitor works undertaken and changes observed	Once a year monitor and record on revegetation, weed control undertaken and changes in weed cover, pest animal densities and native vegetation recovery.	End of year 2	Frankston City Council	Annual monitoring program designed and implemented		
2	2.6	Reporting to DEPI	Provide DEPI with offset monitoring report presented in Appendix 5.	Report to DEPI on gain scoring activities including: weed control, changes in weed cover, pest animal densities and native vegetation recovery.	Provide a report to DEPI at end of year 2	Frankston City Council	Provide one report to DEPI on an annual basis		

Offset Management Plan Seaford Foreshore Reserve, South of Keast Park, Seaford

Year #	Action #	Management action	Description of action	Method	Timing	Responsibility	Legal Standard	Completed (Yes/No)	Month and Year Completed
3 to 5	3.1 to 5.1	Maintain fencing and signage	Monitoring and maintenance of fencing and signage	Inspect fencing and signage and make repairs as required	Every six months	Frankston City Council	Prevent entry of stock, motorised vehicles, bikes, horses and other threats		
3 to 5	3.2 to 5.2	Woody Weed control	Follow-up control of all woody weeds across the site	Refer to Table 11. Where possible, use hand removal and cut and paint method over spraying to reduce off target damage and use selective herbicides where possible. Control any emergent or re-sprouting plants	Follow-up control of all woody weeds  Refer to Table 11. for individual species	Frankston City Council	Control all high threat woody weeds to achieve a cover of no more than 1 %		
3 to 5	3.3 to 5.3	Herbaceous and Grassy Weed Control	Follow up control of herbaceous and grassy weeds	Refer to Table 11. Where possible, use hand removal and cut and paint method over spraying to reduce off target damage and use selective herbicides where possible.	At least eight weed control inspections and treatment per year; in autumn, early spring and early summer.  Refer to Table 11. for individual species	Frankston City Council	Prevent weed cover from increasing and control all new weed threats. Removal of all high threat herbaceous and grassy weeds to achieve a cover of no more than 5 % is desirable but not a legal requirement to achieve gains		
3 to 5	3.4 to 5.4	Pest animal monitoring	Monitoring of site to determine rabbit numbers as required	Monitor rabbit populations by counting scats or direct observations	Monitor twice yearly: early autumn and late spring	Frankston City Council	Extent and density of pest animal populations known on site		
3 to 5	3.5 to 5.5	Annual Monitoring	Monitor works undertaken and changes observed	Once a year monitor and record on revegetation, weed control undertaken and changes in weed cover, pest animal densities and native vegetation recovery.	End of each year	Frankston City Council	Annual monitoring program designed and implemented		
3 to 4	3.6 to 4.6	Reporting to DEPI	Provide DEPI with offset monitoring report presented in Appendix 5.	Report to DEPI on gain scoring activities including: weed control, changes in weed cover, pest animal densities and native vegetation recovery.	Provide a report to DEPI at end of each year	Frankston City Council	Provide one report to DEPI on an annual basis		
5	5.7	Ecologist to monitor and report	Assessment and reporting by qualified ecologist to Provide DEPI with offset monitoring report.	Qualified ecologist to assess site and works completed to ensure that targets are achieved.	End of year	Frankston City Council	Provide one report to DEPI on an annual basis		

Offset Management Plan Seaford Foreshore Reserve, South of Keast Park, Seaford

Year #	Action #	Management action	Description of action	Method	Timing	Responsibility	Legal Standard	Completed (Yes/No)	Month and Year Completed
6 to 10	6.1 to 10.1	Maintain fencing and signage	Monitoring and maintenance of fencing and signage	Inspect fencing and signage and make repairs as required	Every six months	Frankston City Council	Prevent entry of stock, motorised vehicles, bikes, horses and other threats		
6 to 10	6.2 to 10.2	Woody Weed control	Follow-up control of all woody weeds across the site	Refer to Table 11. Where possible, use hand removal and cut and paint method over spraying to reduce off target damage and use selective herbicides where possible. Control any emergent or re-sprouting plants	Follow-up control of all woody weeds  Refer to Table 11. for individual species	Frankston City Council	Control all high threat woody weeds to achieve a cover of no more than 1%		
6 to 10	6.3 to 10.3	Herbaceous and Grassy Weed Control	Follow up control of herbaceous and grassy weeds	Refer to Table 11. Where possible, use hand removal and cut and paint method over spraying to reduce off target damage and use selective herbicides where possible.	At least eight weed control inspections and treatment per year; in autumn, early spring and early summer.  Refer to Table 11. for individual species	Frankston City Council	Prevent weed cover from increasing and control all new weed threats. Removal of all high threat herbaceous and grassy weeds to achieve a cover of no more than 1% is desirable but not a legal requirement to achieve gains		
6 to 10	6.4 to 10.4	Pest animal monitoring	Monitoring of site to determine rabbit numbers as required	Monitor rabbit populations by counting scats or direct observations	Monitor twice yearly: early autumn and late spring	Frankston City Council	Extent and density of pest animal populations known on site		
6 to 9	6.5 to 9.5	Annual Monitoring	Monitor works undertaken and changes observed	Once a year monitor and record on revegetation, weed control undertaken and changes in weed cover, pest animal densities and native vegetation recovery.	End of each year	Frankston City Council	Annual monitoring program designed and implemented		
6 to 9	6.6 to 9.6	Reporting to DEPI	Provide DEPI with offset monitoring report presented in Appendix 5.	Report to DEPI on gain scoring activities including: weed control, changes in weed cover, pest animal densities and native vegetation recovery.	Provide a report to DEPI at end of each year	Frankston City Council	Provide one report to DEPI on an annual basis		
10	10.7	Ecologist to monitor and report	Assessment and reporting by qualified ecologist to Provide DEPI with offset monitoring report.	Qualified ecologist to assess site and works completed to ensure that targets are achieved.	End of year	Frankston City Council	Provide one report to DEPI on an annual basis		

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## Appendix 1. Flora recorded at study site

Flora species recorded in the study area during fieldwork.

\* denotes exotic species

# denotes native species extended beyond natural range

Origin	Common Name	Scientific Name
	Coast Wattle	<i>Acacia longifolia subsp. sophorae</i>
	Drooping Sheoak	<i>Allocasuarina verticillata</i>
	Coast Saltbush	<i>Atriplex cinerea</i>
	Prickly Spear-grass	<i>Austrostipa stipoides</i>
	Coast Banksia	<i>Banksia integrifolia subsp. integrifolia</i>
	Karkalla	<i>Carpobrotus rossii</i>
	Downy Dodder-laurel	<i>Cassytha pubescens s.s.</i>
	Small-leaved Clematis	<i>Clematis microphylla s.l.</i>
	White Correa	<i>Correa alba var. alba</i>
	Sieber Crassula	<i>Crassula sieberiana s.l.</i>
	Knobby Club-sedge	<i>Ficinia nodosa</i>
	Coast Sword-sedge	<i>Lepidosperma gladiatum</i>
	Sword Sedge	<i>Lepidosperma spp.</i>
	Coast Tea-tree	<i>Leptospermum laevigatum</i>
	Coast Beard-heath	<i>Leucopogon parviflorus</i>
	Spiny-headed Mat-rush	<i>Lomandra longifolia</i>
	Moonah	<i>Melaleuca lanceolata subsp. lanceolata</i>
	Climbing Lignum	<i>Muehlenbeckia australis</i>
	Common Boobialla	<i>Myoporum insulare</i>
	Coast Daisy-Bush	<i>Olearia axillaris</i>
	Sticky Daisy-bush	<i>Olearia glutinosa</i>
	Twiggy Daisy-bush	<i>Olearia ramulosa var. ramulosa</i>
	Seaberry Saltbush	<i>Rhagodia candolleana subsp. candolleana</i>
	Hairy Spinifex	<i>Spinifex sericeus</i>
	Bower Spinach	<i>Tetragonia implexicoma</i>
*	Angled Onion	<i>Allium triquetrum</i>
*	Marram Grass	<i>Ammophila arenaria</i>
*	Cape weed	<i>Arctotheca calendula</i>
*	Bridal Creeper	<i>Asparagus asparagoides</i>
*	Large Quaking-grass	<i>Briza maxima</i>
*	Lesser Quaking-grass	<i>Briza minor</i>
*	Common Mouse-ear Chickweed	<i>Cerastium glomeratum s.l.</i>
*	Mirror Bush	<i>Coprosma repens</i>
*	Couch	<i>Cynodon dactylon var. dactylon</i>
*	Panic Veldt-grass	<i>Ehrharta erecta var. erecta</i>
*	Annual Veldt-grass	<i>Ehrharta longiflora</i>
*	Freesia	<i>Freesia spp.</i>
*	Bastard's Fumitory	<i>Fumaria bastardii</i>
*	Galenia	<i>Galenia pubescens var. pubescens</i>
*	Cleavers	<i>Galium aparine</i>
*	Gazania	<i>Gazania spp.</i>
*	Yorkshire Fog	<i>Holcus lanatus</i>
*	Flatweed	<i>Hypochaeris radicata</i>
*	Hare's-tail Grass	<i>Lagurus ovatus</i>

*	African Box-thorn	<i>Lycium ferocissimum</i>
*	Soursob	<i>Oxalis pes-caprae</i>
*	Kikuyu	<i>Pennisetum clandestinum</i>
*	Annual Meadow-grass	<i>Poa annua</i>
*	Onion Grass	<i>Romulea rosea</i>
*	Black Nightshade	<i>Solanum nigrum sensu Willis -1972</i>
*	Tamarisk	<i>Tamarix spp.</i>
*	White Clover	<i>Trifolium repens var. repens</i>



## Appendix 2. Potentially occurring significant flora species

### Status Code

#### Victorian Rare or Threatened Species (VROTS) (DEPI 2013)

EX: Extinct, RX: Regionally Extinct, WX: Extinct in the Wild,  
CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near  
Threatened, DD: Data Deficient

#### EPBC Act 1999 conservation status

EX: Extinct, CR: Critically endangered, EN: Endangered, VU:  
Vulnerable and CD: Conservation dependant.

#### FFG Act 1988 status

L: Listed, N: Nominated, I: Invalid or ineligible and D: Delisted

EPBC FFG VROTS Origin	Scientific name	Common name	No. records	Date last record	Likelihood of occurrence	Habitat/species notes	Likelihood Reasoning
V	<i>Amphibromus fluitans</i>	River Swamp Wallaby-grass	1	1993	Low	Moist soils, usually confined to permanent swamps, and tolerates inundation. Mainly distributed along Murray River, it is rarer in southern Victoria (Australian Plants Society Maroondah 2001, p. 449; Walsh and Entwisle 1994). Largely restricted in greater Melbourne to seasonal wetlands and mudflats of River Red Gum swamps of the Lower Yarra and Plenty/Merri volcanic plains north of Melbourne (Cam Beardsell pers. comm.)	No suitable habitat on site. Requires wet conditions
r	<i>Burnettia cuneata</i>	Lizard Orchid	1	1902	Low	Widespread but rare across southern Victoria, extending inland to the Grampians. Confined almost entirely to the margins of swamps and water courses under Scented Paperbark ( <i>Melaleuca squarrosa</i> ), the sites often under water during winter but usually damp rather than wet during flowering season. It spends most of its life underground as a dormant tuber. Flowering occurs primarily in a season following a hot summer fire and reproduction is entirely from seed. Some flowering may occur in subsequent seasons but generally does not flower again until after another fire (Jeanes and Backhouse 2006).	No suitable habitat on site, no recent records

Offset Management Plan Seaford Foreshore Reserve, South of Keast Park, Seaford

EPBC FFG VROTS Origin	Scientific name	Common name	No. records	Date last record	Likelihood of occurrence	Habitat/species notes	Likelihood Reasoning
E f e	<i>Caladenia robinsonii</i>	Frankston Spider-orchid	1	1986	Low	Rare, with extremely limited distribution, near Rosebud on the Mornington Peninsula, grows in well-drained deep sandy soil in coastal heathy woodland, or in red sandy loam in grassy woodland (Australian Plants Society Maroondah 2001; Jeanes and Backhouse 2006; Walsh and Entwisle 1994, pp. 781–82).	No suitable habitat on site
v	<i>Coronidium scorpioides</i> 'aff. <i>rutidolepis</i> (Lowland Swamp	Pale Swamp Everlasting	1	2001	Low	Moist well drained sites in open grassy forest or woodland. Frequent, widespread populations across much of Victoria, excluding the north-west (Walsh and Entwisle 1999).	No suitable habitat on site
f r	<i>Lachnagrostis punicea</i> subsp. <i>filifolia</i>	Purple Blown-grass	4	2001	Low	Previously names <i>Agrostis billardierei</i> var. <i>Filifolia</i> . Found on Victorian Volcanic Plain and known from very few collections in Victoria. The type specimen was collected was collected from Hawkesdale between Warrnambool and Peshurst (1901). Specimens have been collected from Buckleys Swamp near Hamilton (Walsh and Entwisle 1994, p. 474).	No suitable habitat on site. Requires damp-wet soils
r	<i>Poa poiformis</i> var. <i>ramifer</i>	Dune Poa	1	2009	High	This grass is generally found along coastlines, on the shore and on offshore islands, within both sand dunes and in rocky habitats (DPIPWE 2012, accessed online at: <a href="http://www.dpipwe.tas.gov.au/inter.nsf/Attachments/SSKA-76H7LG/\$FILE/Poa%20poiformis%20var.%20ramifer.pdf">http://www.dpipwe.tas.gov.au/inter.nsf/Attachments/SSKA-76H7LG/\$FILE/Poa%20poiformis%20var.%20ramifer.pdf</a> ).	Suitable habitat on site. One recent record within 5km
r	<i>Ranunculus amplus</i>	Lacey River Buttercup	2	2002	Low	Largely confined to south-western Victoria, from the southern Grampians to near Portland, with an outlying occurrence 40 km NE of Melbourne. Flowers October – November (Australian National Botanical Gardens 2012).	No suitable habitat on site

## Appendix 3. Potentially occurring significant fauna species

### Status Code

#### International Treaty

JAMBA / CAMBA, ROKAMBA and/or Bonn Convention Listed Species

#### Migratory/Marine (EPBC Act)

M1: Migratory Listed Species under the EPBC Act;

M2: Marine Listed Species under the EPBC Act.

#### EPBC Act 1999 conservation status

EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and

CD: Conservation dependant.

#### FFG Act 1988 status

L: Listed, N: Nominated, I: Invalid or ineligible and D: Delisted

#### Victorian Rare or Threatened Species (VROTS) (DSE 2013)

EX: Extinct, RX: Regionally Extinct, WX: Extinct in the Wild,

CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near

Threatened, DD: Data Deficient

Int Treaty	Mig/Mar	EPBC	FFG	DEPI	Scientific name	Common name	No. local records	Date last record	Likelihood of occurrence	Habitat	Likelihood Reasoning
			L	VU	<i>Accipiter novaehollandiae</i>	Grey Goshawk	1	1977	Low	The Grey Goshawk has a stronghold in Victoria, particularly the white form, in the Otway Ranges, where wet forests and gullies containing Mountain Grey Gum adjoin partly cleared farmlands. They occur in lower densities in similar habitats in the Strzelecki Ranges, Gippsland Plains and Otway Plains. Elsewhere in the State they are occasionally seen in woodlands, dry forests, suburban parks and wooded farmlands (Marchant and Higgins 1993).	Limited suitable habitat on site, no recent records
B, C, J, R	M1, M2			VU	<i>Actitis hypoleucos</i>	Common Sandpiper	34	2008	Low	Regular, widespread but mostly uncommon summer migrant to Australia (Aug–May) (Pizzey and Knight 2007). Wide range of coastal or inland wetlands, with varying levels of salinity. Mainly muddy margins of rocky shores of wetlands; often around estuaries and deltas of streams; also lakes, pools, billabongs, reservoirs, dams and claypans; associated with mangroves. Large coastal mudflats are not favoured (Higgins and Davies 1996).	Many local recent records within 5km, however, no suitable wetland habitat

Offset Management Plan Seaford Foreshore Reserve, South of Keast Park, Seaford

Int Treaty	Mig/Mar	EPBC	FFG	DEPI	Scientific name	Common name	No. local records	Date last record	Likelihood of occurrence	Habitat	Likelihood Reasoning
				VU	<i>Anas rhynchos</i>	Australasian Shoveler	71	2010	Low	The Australasian Shoveler occurs mainly on large well vegetated wetlands and lakes, occasionally including areas with saline waters. Populations are found in higher numbers on permanent, well-vegetated freshwater swamps with areas of open water. This species nests in grass nests on the ground, usually in dense cover and near water (Marchant and Higgins 1990; Pizzey and Knight 2007).	Many local recent records within 5km, however, no suitable wetland habitat
			L	EN	<i>Ardea intermedia</i>	Intermediate Egret	5	2001	Low	The Intermediate Egret occurs in the shallows of mainly grassy inland wetlands, flooded pastures or grasslands. They only occasionally visit coastal wetlands and are generally rare in Victoria. They are sometimes seen foraging in pastures with grazing cattle. This species builds platform nests which are built in trees in riverine forest, swamp woodland and mangroves (Pizzey and Knight 2007).	Few local recent records within 5km, however, no suitable wetland habitat
C, J	M1, M2		L	VU	<i>Ardea modesta</i>	Eastern Great Egret	54	2010	Low	Eastern Great Egret is widespread in Australia and has been observed in a wide range of wetland habitats including swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pastures or agricultural lands; reservoirs; sewage treatment ponds; drainage channels; salt pans and salt lakes; salt marshes; estuarine mudflats, tidal streams; mangrove swamps; coastal lagoons; and offshore reefs (DEWHA 2010).	Many local recent records within 5km, however, no suitable wetland habitat
				VU	<i>Arenaria interpres</i>	Ruddy Turnstone	1	1982	Low	Breeds high Arctic; migrates to all s. continents. Regular summer migrant (Aug-April) to coastal Australia and Tas.; some inland. May overwinter. Habitat: tidal reefs and pools; weed-covered rocks, pebbly, shelly and sandy shores with stranded seaweed; mudflats; occasionally inland on shallow waters, sewage ponds, commercial saltfields, open or ploughed ground. (Pizzey and Knight 2007, p. 184)	No suitable habitat

Int Treaty	Mig/Mar	EPBC	FFG	DEPI	Scientific name	Common name	No. local records	Date last record	Likelihood of occurrence	Habitat	Likelihood Reasoning
				VU	<i>Aythya australis</i>	Hardhead	61	2010	Low	Hardheads inhabit deep to shallow wetlands with open water and fringing emergent vegetation (Pizzey and Knight 2007). The species feeds by diving in deep water and occasionally by dabbling just under the water surface (Rogers 1990). Nests are built in thick vegetation (e.g. reeds, lignum, cumbungi), usually over water (Halse <i>et al.</i> 2005; Rogers 1990). These birds are most common in the wetland systems of inland Australia (Halse <i>et al.</i> 2005). Birds do visit Victoria from these areas in spring and summer, returning as the northern wetlands is replenished by rain (Halse <i>et al.</i> 2005). However, some birds are present in Victoria all year round depending on the suitability of the wetland (Pizzey and Knight 2007).	Many local recent records within 5km, however, no suitable wetland habitat
				VU	<i>Biziura lobata</i>	Musk Duck	42	2006	Low	Usually seen in small numbers on the deep waters of well vegetated fresh to saline lakes, swamps and occasionally shallow inlets and bays. Nests formed in low vegetation in areas sheltered by surrounding vegetation (Marchant and Higgins 1990; Pizzey and Knight 2007).	Many local recent records within 5km, however, no suitable wetland habitat
		EN	L	EN	<i>Botaurus poiciloptilus</i>	Australasian Bittern	30	2006	Low	This species is part nocturnal and forages over water in dense cover, sometimes from platforms in wetland vegetation. Habitat is usually tall reedbeds, sedges, rushes, cumbungi or lignum. Also occurs on rice fields, drains in tussocky paddocks and occasionally on saltmarshes and brackish wetlands. Nests are shallow saucers on trampled water plants (Pizzey and Knight 2007).	Many local recent records within 5km, however, no suitable wetland habitat
B, C, J, R	M1, M2			EN	<i>Calidris ferruginea</i>	Curlew Sandpiper	34	2006	Low	Summer migrants to Victoria from Arctic breeding grounds (Aug–April). This species is found in a range of wetland habitats; tidal mudflats, saltmarsh, saltfields, fresh to saline wetlands, both coastal (most) and inland. Also visits sewage ponds (Pizzey and Knight 2007).	No suitable habitat

Offset Management Plan Seaford Foreshore Reserve, South of Keast Park, Seaford

Int Treaty	Mig/Mar	EPBC	FFG	DEPI	Scientific name	Common name	No. local records	Date last record	Likelihood of occurrence	Habitat	Likelihood Reasoning
			L	EN	<i>Egretta garzetta nigripes</i>	Little Egret	8	2008	Low	Inhabits terrestrial wetlands and shallow margins of tidal estuaries and inland lakes and rivers. Feed in shallow water and nest colonially, often with other waterbirds. Stick-nests are usually built in trees over water, although occasionally in reedbeds (Marchant and Higgins 1990).	Many local recent records within 5km, however, no suitable wetland habitat
				VU	<i>Falco subniger</i>	Black Falcon	3	2008	Low	The Black Falcon has a stronghold in inland Australia. Most Victorian records come from the lowlands and only occasionally from the foothills. It occurs mainly over croplands, grasslands and wooded farmlands. To catch flushed prey, they sweep low over croplands and grasslands and are often attracted by smoke from grassfires and late-summer burning off. This species nests in trees in old stick-nests of other birds (Marchant and Higgins 1993; Pizzey and Knight 2007).	Some foraging habitat is present on site
C	M1, M2		L	VU	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	4	2008	Low	Occurs along the coast, especially the forested coasts of the East Gippsland Plains, on coastal islands, round coastal lakes and along some inland rivers and lakes. Catch prey on, or near, the water's surface and also takes refuse from fishing boats. On land they feed from the ground on carrion or occasionally catch live prey. Builds stick-nests in tall eucalypts, particularly River Red Gum, Forest Red Gum and Southern Mahogany. Clearing of forests and woodlands along the coast, near coastal lakes, and along the Murray River, threatens this species. In the Gippsland Lakes region more than half of the known nest sites are on private lands (DSE 2003). Occurs across a range of forests and woodlands throughout Victoria (DSE 2003).	Some roosting habitat is present on site, but unlikely to make significant use of area
				VU	<i>Halobaena caerulea</i>	Blue Petrel	1	1890	Low	Breeds on sub-Antarctic islands, huge circumpolar dispersal, regular winter-spring visitor to offshore waters of southern Australia in mostly July-Nov (Pizzey and Knight 2007).	No suitable habitat

Int Treaty	Mig/Mar	EPBC	FFG	DEPI	Scientific name	Common name	No. local records	Date last record	Likelihood of occurrence	Habitat	Likelihood Reasoning
C, J, R	M1, M2			VU	<i>Hirundapus caudacutus</i>	White-throated Needletail	14	1994	Low	In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable. In Australia, White-throated Needletails almost always forage aerially, at heights up to 'cloud level', above a wide variety of habitats ranging from heavily treed forests to open habitats, such as farmland, heathland or mudflats (Higgins 1999).	May utilise aerial habitat, however, not likely to utilise habitat on site
		EN	L	NT	<i>Isoodon obesulus obesulus</i>	Southern Brown Bandicoot	1	1918	Low	The Southern Brown Bandicoot is both active during the day and night. It is found in forest, heath and shrub communities. It shelters in a nest of vegetation beneath dense cover, it eats fungi, tubers and arthropods (Menkhorst and Knight 2001; Paull 2008).	Suitable habitat on site. Only one very old local record. Limited connectivity to the site
		EN	L	EN	<i>Lathamus discolor</i>	Swift Parrot	3	1984	Low	The Swift Parrot is a winter migrant to Victoria (Swift Parrot Recovery Team 2001). Arriving from their breeding areas in Tasmania, however small numbers of non-breeding birds may remain here during summer (Higgins 1999; Swift Parrot Recovery Team 2001). They are nomadic, and follow the flowering of trees and psyllid infestations. In Victoria their distribution is centred on box-ironbark forests, but they are often seen in town parks and occur sporadically elsewhere in dry forests, dry woodlands and wooded farmlands but are seldom seen in treeless areas, rainforests or wet forests (Higgins 1999; Pizzey and Knight 2007). Feed mainly in winter-flowering plants, especially Red Ironbarks and ornamental trees and shrubs (Higgins 1999; Swift Parrot Recovery Team 2001).	Prefers box-ironbark forests although some suitable woodland habitat present on site, would only occasionally occur while on passage

Int Treaty	Mig/Mar	EPBC	FFG	DEPI	Scientific name	Common name	No. local records	Date last record	Likelihood of occurrence	Habitat	Likelihood Reasoning
			L	VU	<i>Lewinia pectoralis pectoralis</i>	Lewin's Rail	2	2007	Low	Inhabits densely vegetated, fresh, brackish or saline wetlands, usually with areas of standing water. Use long tussocky grass, reeds, rushes, sedges or bracken and are occasionally found amongst tangled clumps of weeds such as Blackberries and Lantana (Marchant and Higgins 1993).	No suitable habitat
B, C, J, R	M1, M2			VU	<i>Limosa limosa</i>	Black-tailed Godwit	4	1985	Low	Summer migrant to Australia (Sept–May) but scarce in Southern Australia. Use tidal mudflats, estuaries, sandpits, shallow river margins, sewage ponds; inland on large shallow fresh or brackish waters (Pizzey and Knight 2007).	No suitable habitat
		VU	L	EN	<i>Litoria raniformis</i>	Growling Grass Frog	3	1990	Low	The species often inhabits water bodies with a diverse assemblage of aquatic vegetation, including emergent species such as sedges ( <i>Gahnia</i> spp.), submergent species such as curly pondweed ( <i>Potamogeton</i> spp.), floating species such as water ribbon ( <i>Triglochin</i> spp.) and filamentous algae (Hamer and Organ 2006; Heard <i>et al.</i> 2004). The aquatic vegetation provides sites for male frogs to call from, sites for eggs to be deposited and relatively safe development, and food and shelter for tadpoles. Dense submergent vegetation is especially important to protect eggs and tadpoles from predation (Heard <i>et al.</i> 2004). However, it is also known to occur in ditches, dams and swamps or sheltering under discarded debris near those sites (Tyler and Knight 2009, pp. 38–39).	No suitable habitat present on site



Int Treaty	Mig/Mar	EPBC	FFG	DEPI	Scientific name	Common name	No. local records	Date last record	Likelihood of occurrence	Habitat	Likelihood Reasoning
B	M1, M2	VU	L	NT	<i>Macronectes halli</i>	Northern Giant-Petrel	2	2006	Low	The Northern Giant-Petrel is predominantly a pelagic species of marine subantarctic and Antarctic waters. Its range extends into subtropical waters in winter-spring. During the first year this species is likely to remain on continental shelves of Australian coast before becoming more pelagic in later years. Attracted to land at sewage outfalls and scavenge at colonies of penguins and seals (Marchant and Higgins 1990).	No suitable habitat on site
J	M1, M2	CR	L	CR	<i>Neophema chrysogaster</i>	Orange-bellied Parrot	2	1986	Low	Breeds in south west Tasmania and are winter migrants to Victoria where they are usually present from late March to early Nov, inhabiting coastal habitats such as bays and estuaries in saltmarshes, herbland or low shrublands (Higgins 1999). Much of their winter habitat have been altered and saltmarshes in low rainfall areas have been developed for uses such as salt extraction. Illegal trapping has also reduced numbers.	Suitable habitat on site, low number of records within 5km, closest and most recent record was within 500 m. Species population is very small and is unlikely to make significant use of the site (prefers saltmarsh habitat in Victoria)
B, C, J, R	M1, M2			VU	<i>Numenius madagascariensis</i>	Eastern Curlew	5	2001	Low	Common summer migrant to Australia (Aug-May) (Pizzey and Knight 2007). Sheltered coasts, especially estuaries, embayments, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats. Mainly forages on soft sheltered intertidal sandflats or mudflats, open and without vegetation; also on saltflats and in saltmarsh (Higgins and Davies 1996).	No suitable habitat on site

Offset Management Plan Seaford Foreshore Reserve, South of Keast Park, Seaford

Int Treaty	Mig/Mar	EPBC	FFG	DEPI	Scientific name	Common name	No. local records	Date last record	Likelihood of occurrence	Habitat	Likelihood Reasoning
			L	EN	<i>Oxyura australis</i>	Blue-billed Duck	59	2007	Low	This species inhabits deep, permanent, well-vegetated swamps, but at times (especially in winter) may occur in large numbers on large open wetlands. The Blue-billed Duck catches food while diving or occasionally by feeding from the water surface. Their nests are built on trampled swamp vegetation around the base of established stands of reeds/rushes, often over water or on small islands (Marchant and Higgins 1990; Pizzey and Knight 2007).	Many local recent records within 5km, likely from Seaford Swamp. However, no suitable wetland habitat
		VU		VU	<i>Pachyptila turtur</i>	Fairy Prion	1	1979	Low	The Fairy Prion is a pelagic species of subtropic and subantarctic seas. It is abundant in south-eastern Australian waters, and is commonly seen offshore over the continental shelf. This species has a few, small breeding colonies on Australian shores, near Portland, Wilson's Promontory, and on some Bass Strait islands (Marchant and Higgins 1990).	No suitable habitat
B, C, J, R	M1, M2			VU	<i>Pluvialis fulva</i>	Pacific Golden Plover	9	2005	low	Sandy, muddy or rocky shores, estuaries and lagoons, reefs, saltmarsh, and short grass in paddocks and crops. Usually coastal, including offshore islands and rarely found inland. Roosts near feeding areas on sandy beaches and spits, rocky points, islets and exposed reefs; sometimes under vegetation (Marchant and Higgins 1993).	No suitable habitat
			L	VU	<i>Porzana pusilla palustris</i>	Baillon's Crake	14	2007	Low	This species returns to northern Victoria in spring, but few details on migration. It inhabits freshwater wetlands and floodwaters usually containing floating plants or tall emergent vegetation. The Baillon's Crake feeds in shallow water, mud and emergent aquatic plants. It has been found to nest in clumps or tussocks of vegetation surrounded by water (Marchant and Higgins 1993; Pizzey and Knight 2007).	Many local recent records within 5km, however, no suitable wetland habitat

Int Treaty	Mig/Mar	EPBC	FFG	DEPI	Scientific name	Common name	No. local records	Date last record	Likelihood of occurrence	Habitat	Likelihood Reasoning
		VU	L	VU	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	2	1940	Low	Eastern coastal Australia from Gladstone in Qld to South Gippsland and Melbourne in Vic, rare influxes further west and south. Rarely more than 200km inland. In warmer months gathers in very large camps, usually in dense forest in gullies; population more dispersed in winter. Size of camps fluctuates in response to local food supplies; in south numbers fluctuate in regular pattern, being highest in late summer-autumn and lowest in winter (Menkhorst and Knight 2001).	Limited suitable habitat on site, no recent records
C	M1, M2	VU	L	CR	<i>Rostratula australis</i>	Australian Painted Snipe	4	2000	Low	Generally uncommon in Australia and scattered records in Victoria. Uses terrestrial shallow freshwater (occasionally brackish) wetlands; ephemeral and permanent: lakes, swamps, claypans, inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps lignum, canegrass or tea-tree (Marchant and Higgins 1993).	No suitable habitat on site
			L	EN	<i>Stictonetta naevosa</i>	Freckled Duck	10	2008	Low	Terrestrial wetlands with shallow productive waters or soft mud at wetland edges. In breeding range (Lake Eyre and Murray-Darling Basin) densely vegetated waters, particularly flood water swamps and creeks vegetated with lignum. In coastal regions, prefer swamps and lakes with dense thickets of Melaleuca, Casuarina or Leptospermum (Marchant and Higgins 1990).	Few local recent records within 5km, however, no suitable wetland habitat
		VU	L	VU	<i>Thalassarche cauta</i>	Shy Albatross	2	1994	Low	The Shy Albatross, with breeding colonies in Tasmania is the only albatross species that breeds in Australia, has a circumpolar subtropical and subantarctic distribution. This species utilises a broad habitat ranging from pelagic waters to over continental shelves, and occasionally enters bays and harbours (Marchant and Higgins 1990; Pizzey and Knight 2007).	No suitable habitat on site

Int Treaty	Mig/Mar	EPBC	FFG	DEPI	Scientific name	Common name	No. local records	Date last record	Likelihood of occurrence	Habitat	Likelihood Reasoning
		VU		VU	<i>Thalassarche melanophris melanophris</i>	Black-browed Albatross	2	1994	Low	The Black-browed Albatross has a very broad distribution, mainly in subantarctic and Antarctic waters during summer, and during autumn and spring it ranges further north into subtropical waters. This pelagic species is a shelf-water specialist, and is commonly found foraging; in coastal shelf waters of continents, around islands, and above submarine banks. It also favours areas of upwellings and boundaries of currents. This species is a common migrant to offshore southern Australian shelf waters during autumn-spring, with most sightings in Vic. and Tas. during March-June (Marchant and Higgins 1990; Pizzey and Knight 2007).	No suitable habitat on site
B, C, J, R	M1, M2			VU	<i>Tringa glareola</i>	Wood Sandpiper	25	2006	Low	Summer migrants to Aust from their breeding grounds in northern Asia. In Vic they are scarce visitors to shallow freshwater swamps, large farm dams, sewage farms and receding floodwaters, with a concentration of records from the Mid Murray Valley. The records from Port Phillip Bay refer to a few individuals at Seaford Swamp, on lakes near Geelong and on well-vegetated shallow lagoons at Werribee Sewage Farm. These sandpipers usually occur along or in groups of up to five birds, sometimes among other waders such as Sharp-tailed Sandpipers. Wood Sandpipers feed from mud among scattered vegetation, in shallow water or along shores (Higgins and Davies 1996).	Many local recent records within 5km, likely from Seaford Swamp. No suitable wetland habitat
B, C, J, R	M1, M2			VU	<i>Tringa stagnatilis</i>	Marsh Sandpiper	14	2005	Low	Salt, brackish, or freshwater wetlands, sewage ponds, commercial saltfields, bore drains, mangroves, tidal mudflats, estuaries, regular summer migrant (aug - may), mostly to coastal Aust, widespread but very scattered throughout inland (Pizzey and Knight 2007).	Many local recent records within 5km, however, no suitable wetland habitat

## Appendix 4. Offset Site Report

### Offset site report

This report provides information about native vegetation offset sites in accordance with the *Permitted clearing of native vegetation – Biodiversity assessment guidelines*. The information in this report is based on spatial information and site gain in habitat hectares, provided by the offset provider (or their representative), about the offset site to DEPI. Any changes to this input information will change the amount of offsets available at the offset site and will require this report to be reissued.

This report should be read in conjunction with the *Native vegetation offset market fact sheet* that provides information on how offsets are measured and categorised, and how they can be used to satisfy conditions on permits to remove native vegetation and traded as credits in the offset market.

**Date of issue:** 8/10/2014  
**Time of issue:** 10:10 AM

**DEPI ref:** PRE\_0015

<b>Project ID</b>	Seaford_foreshore
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### Summary of offset site

<b>Total extent</b>	0.937 ha
Remnant patches	0.937 ha
Revegetation	0 ha
<b>Number of biodiversity class areas (BCAs)</b>	1
<b>Catchment Management Authority and Municipal district</b>	Port Phillip and Westernport CMA, Frankston City Council

### Summary of biodiversity equivalence units available at offset site

The offset site has the following general and specific biodiversity equivalence units.

<b>General biodiversity equivalence units</b>	0.012 general units*
---	----------------------

\*Note that some biodiversity equivalence units may be alternates. The use of any biodiversity equivalence units of one type within a BCA will result in a proportional reduction in biodiversity equivalence units of other types within that BCA.

NB: Values presented in tables throughout this document may not add to totals due to rounding.



## Offset site details

### Biodiversity equivalence units available and attributes by BCA

The biodiversity equivalence units and attributes for each BCA are as follows:

BCA	Offset type	Biodiversity equivalence units	Offset attributes
1	General	0.012 general units	0.134 strategic biodiversity score Port Phillip and Westernport CMA or the local municipal district of the offset site

### Site gain in habitat hectares

Site gain in habitat hectares is calculated for each biodiversity class area (BCA) in the offset site using the extent and site gain per hectare scores in the GIS data provided.

BCA	Site gain per hectare*	Extent (ha)	Site gain in habitat hectares
1	0.090	0.937	0.084
<b>TOTAL</b>			<b>0.084</b>

\* This value has been calculated using the site gain per hectare values for each habitat zone as provided with the GIS file of the offset site. The site gain per hectare value for a BCA is calculated from the weighted average of site gain per hectare values for all habitat zones that intersect with the BCA.

### Offset site biodiversity equivalence unit calculations by biodiversity class area

The general biodiversity equivalence units for the biodiversity class area are calculated by multiplying the site gain in habitat hectares by the strategic biodiversity score.

Where a BCA has specific units for one or more rare or threatened species, the specific biodiversity equivalence units for each BCA is calculated by multiplying the site gain in habitat hectares by the habitat importance score for each of these species.

BCA	Site gain in habitat hectares	Offset type	General offset attributes	Specific offset attributes		Biodiversity equivalence units*
			Strategic biodiversity score	Species number, Species common name, Species scientific name	Habitat importance score	
1	0.084	General	0.134			0.012 general units

\*Note that biodiversity equivalence units within a BCA are alternates. The use of any biodiversity equivalence units of one type within a BCA will result in a proportional reduction in biodiversity equivalence units of other types within that BCA.

### Next steps

Offset sites must meet eligibility criteria as outlined in the *Native vegetation gain scoring manual, version 1* available on the DEPI website and any other relevant requirements. Eligible offset sites that are intended to be banked or sold as credits must be registered on the native vegetation credit register. A habitat hectare assessment is required to be undertaken before any offset can be registered on the credit register.

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## Appendix 1 – Images of marked native vegetation

Image 1. Aerial photograph showing marked native vegetation

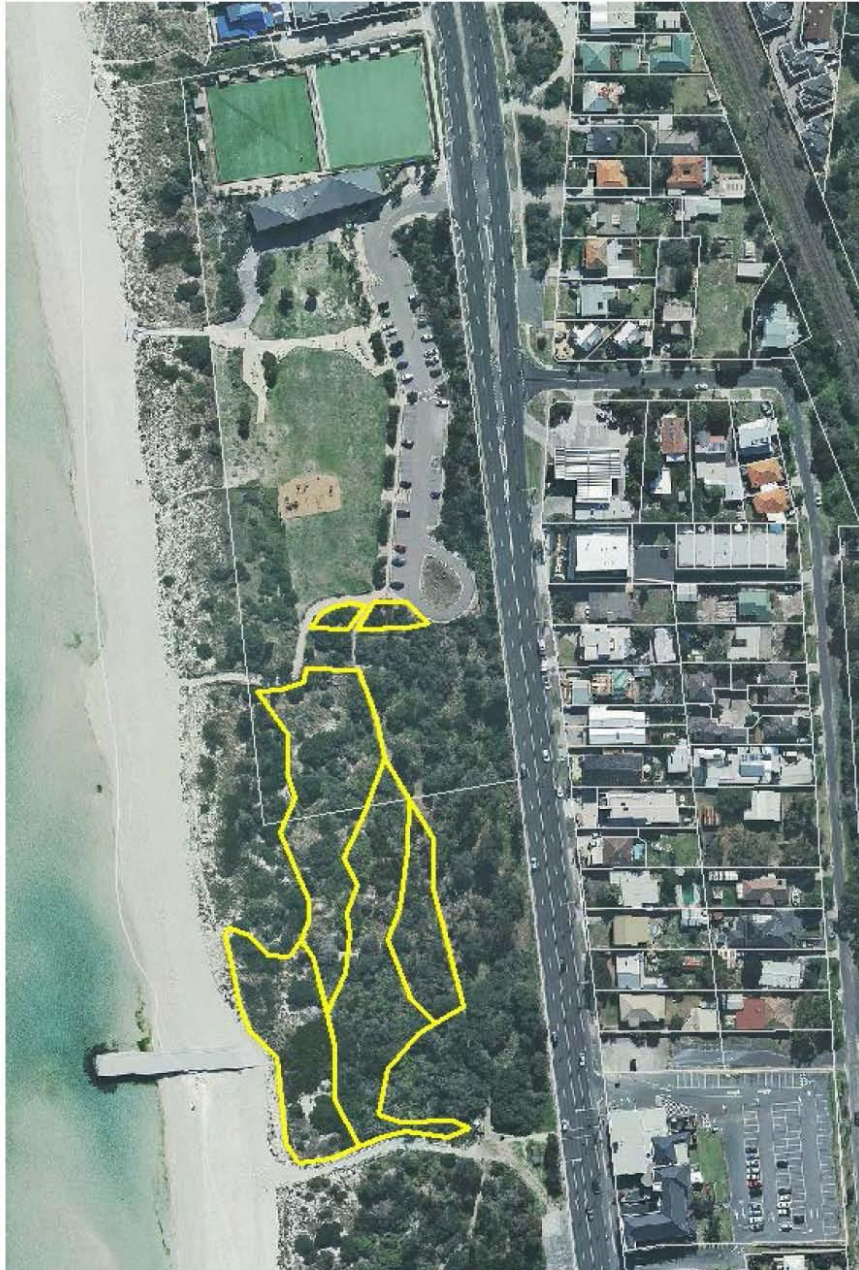
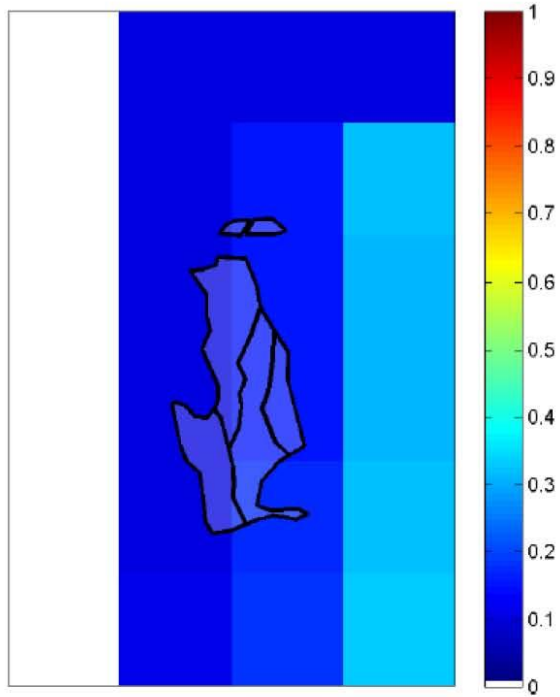






Image 2. Strategic biodiversity score map





**Glossary**

<b>Alternate offset types</b>	Offset types within a biodiversity class area (BCA) are alternates. The use of one offset type will result in the proportional reduction of all other offset types within the BCA. For example, in a BCA that has 1 general unit and 2 specific units for a particular rare or threatened species, if all of the general units are used (100 per cent) there will be no specific units remaining, as these specific units will also reduce by 100 per cent. Alternatively, if in this same BCA only half the general units were used (50 per cent) then there will be 0.5 general units and 1 specific units remaining, half the original values.
<b>Biodiversity Class Area (BCA)</b>	The BCA is the organisational unit of an offset site. BCAs are determined by the unique combination of general and specific biodiversity equivalence units calculated across the offset site.
<b>Condition score</b>	This is the site-assessed condition score for the native vegetation. Each habitat zone in the offset site is assigned a condition score according to the habitat hectare assessment method. This information has been provided by or on behalf of the applicant in the GIS file submitted for processing.
<b>General biodiversity equivalence units (general units)</b>	<p>The general biodiversity equivalence units (general units) quantify the relative overall contribution that the protection and management of native vegetation at the offset site makes to Victoria’s biodiversity. The general biodiversity equivalence units is calculated as follows:</p> $\text{General biodiversity equivalence units} = \text{site gain in habitat hectares} \times \text{strategic biodiversity score}$
<b>General offset attributes</b>	The attributes of a general offset site must match those in an offset requirement that is a condition on a permit to remove native vegetation, in order for that offset site to be used to satisfy the permit condition. General offsets must be located in the same Catchment Management Authority boundary or Municipal District (local council) as the clearing site. They must also have a strategic biodiversity score that is at least 80 per cent of the clearing site. The strategic biodiversity score of a general offset is determined by the biodiversity class area the units are sold from.
<b>Habitat importance score</b>	The habitat importance score is a measure of the relative importance of the habitat located on a site for a particular rare or threatened species, compared to all other habitat for that species. The habitat importance score for a species is a weighted average value calculated from the habitat importance map for that species. The habitat importance score is calculated for each biodiversity class area where the habitat importance map indicates that species habitat occurs and where the protection of habitat across the offset agreement is greater than the threshold test.
<b>Habitat zone</b>	<p>Habitat zone is a discrete contiguous area of native vegetation that:</p> <ul style="list-style-type: none"> <li>• is of a single Ecological Vegetation Class</li> <li>• has the same measured condition.</li> </ul>
<b>Offset type</b>	There are two types of offsets, general offset and specific offsets. All offset sites can be general offsets. Sites that are mapped as habitat for specific rare or threatened species can be specific offsets for those species habitat.



**Site gain in habitat hectares** Site gain in habitat hectares is a site-based measure that combines extent and site gain per hectare of native vegetation at an offset site. The site gain in habitat hectares measures both the current status of native vegetation at a site and the potential site gain from the protection and management of the native vegetation at that site. The condition of a site, or the gain in condition due to protection and management actions are multiplied by the extent (area in hectares) of native vegetation to calculate the site gain in habitat hectares value. For a biodiversity class area the site gain in habitat hectares is determined using the following formula:

$$\text{Site gain in habitat hectares} = \text{total extent (hectares)} \times \text{site gain per hectare}$$

**Site gain per hectare** This is the site-assessed gain per hectare for the native vegetation based on the agreed management and security commitments. Each habitat zone in the offset proposal is assigned a site gain per hectare according to the habitat hectare assessment and gain scoring methods. This is a number between 0 and 1. This information has been provided by or on behalf of the applicant in the GIS file. These values are aggregated to the level of the BCA in order to calculate offset amounts at the offset site.

**Specific offset attributes** The attributes of a specific offset site must match those in an offset requirement that is a condition on a permit to remove native vegetation, in order for that offset site to be used to satisfy the permit condition. Specific offsets must be located in the mapped habitat for the species that has triggered the specific offset requirement.

**Specific biodiversity equivalence units (specific units)** Specific biodiversity equivalence units (specific units) are associated with a particular rare or threatened species habitat. The specific biodiversity equivalence units quantifies the relative overall contribution that the protection and management of native vegetation at an offset site makes to the habitat of the relevant rare or threatened species. Specific units are calculated for each species in each biodiversity class area where the result of the threshold test is greater than 0.0025 per cent. Specific units are calculated as follows:

$$\begin{aligned} \text{Specific biodiversity equivalence units}_{\text{species } x} \\ = \text{site gain in habitat hectares} \times \text{habitat importance score}_{\text{species } x} \end{aligned}$$

**Strategic biodiversity score** This is the weighted average strategic biodiversity score of the marked native vegetation. The strategic biodiversity score has been calculated from the *Strategic biodiversity map* for each BCA. The strategic biodiversity score of native vegetation is a measure of the native vegetation's importance for Victoria's biodiversity, relative to other locations across the landscape. The *Strategic biodiversity map* is a modelled layer that prioritises locations on the basis of rarity and level of depletion of the types of vegetation, species habitats, and condition and connectivity of native vegetation.

**Threshold test** By default, a threshold test is applied to offset sites to limit the number of rare or threatened species for which specific biodiversity equivalence units are calculated. This is done to make organising and trading credits more manageable. The test determines if the offset site can generate specific habitat protection for any rare or threatened species above a threshold. The threshold is set at 0.0025 per cent of the total habitat for a species. When the proportion of habitat protected is above the threshold, specific biodiversity equivalence units are calculated for that species.



**Total extent  
(hectares) for  
calculating site  
gain in habitat  
hectares**

This is the total area of offset site native vegetation in hectares.

The total extent of native vegetation is an input to calculating the site gain in habitat hectares at a site and in calculating the total gain in general and specific biodiversity equivalence units.

## Appendix 5. Yearly site condition report

### Section 1:

Complete the table with the offset site identification details.

Landowner/Manager	Frankston City Council		
Offset site identifier			
Offset type			
Report year		of	10
Date report submitted			
Report completed by			
Signature			

### Section 2:

Complete the table by listing the management actions undertaken for each of the management commitments. Actions undertaken should be in line with the management actions committed to in the table of management actions within the management plan. Explain the reason for undertaken management actions which deviate from the management plan. Indicate if no actions are required.

Commitment	Year *	
Retain all standing trees	Current condition	
	Actions taken	
Exclude stock and other threats	Current condition	
	Actions taken	
Ensure that weed cover does not increase beyond initial level	Current condition	
	Actions taken	
Monitor for any new and emerging weeds and eliminate to <1% cover	Current condition	

Commitment	Year *	
	Actions taken	
Eliminate all Gain Scoring (GS) target weeds to <1% cover	Current condition	
	Actions taken	
Eliminate all woody weeds to <1% cover.	Current condition	
	Actions taken	
Retain logs and fallen timber	Current condition	
	Actions taken	
Retain organic litter	Current condition	
	Actions taken	
Control rabbits	Current condition	
	Actions taken	

\*Insert the correct year (1 - 10) of the report

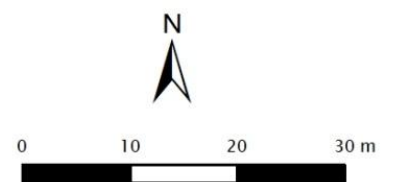


- Legend**
- Contours (1m)
  - Walking track
  - - - Subject site / Offset area
  - ▭ Parcels
  - ▭ Habitat zone
  - x - Fence

**Disclaimer**  
 Practical Ecology bears no responsibility for the accuracy and completeness of this information and any decisions or actions taken on the basis of the map. While information appears accurate at publication, nature and circumstances are constantly changing.

**Details**  
 Mapping by: Karen McGregor & Colin Broughton  
 Data Source: Aerial photography courtesy of Google Earth Pro.  
 Date: 14/10/2014

**Map 1. Offset Management Plan**  
 1n and 10n  
 Nepean Highway, Seaford



Scale 1:700 (Page size A3)