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| Final Report  **Offset Management Plan: ‘Terrinallum South’, 833 Darlington-Carranballac Road, Darlington, Victoria**  Prepared for  **VicRoads (Western Highway Project)**  **March 2015** |
|  |
| **Ecology and Heritage Partners Pty Ltd** |

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* The landowners who provided access to the study area.

DOCUMENT CONTROL

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# Title offset plan

Title information for the offset site is documented in Table 1.

Table . Title information for the offset site

|  |  |  |  |
| --- | --- | --- | --- |
| Title Offset Plan | | | |
| Planning Permit Number (ID) / Work Authority No: | TBC | | |
| Proponent: | VicRoads (Western Highway Project) | | |
| Address: | 237 Ring Road, Wendouree, Victoria, 3355 | | |
| Landowner and Permit (Work Authority) Holder Statement | | | |
| **Permit (Work Authority) Holder** | | | |
| Print Name: | VicRoads (Western Highway Project) | | |
| Signature: |  | | |
| Date: |  | | |
| **Landowner of Offset Site** | | | |
| Print Name: | Tom and Kate Calvert | | |
| Signature: |  | | |
| Date: |  | | |
| Responsible Authority Statement | | | |
| The native vegetation credits described in this plan provide an offset for the removal of native vegetation specified in this plan to the satisfaction of the Department of Environment, Land, Water and Planning and the Department of Environment. | | | |
| Print Name: | Department of Environment, Land, Water and Planning | | Department of Environment |
| Position: |  | |  |
| Signature: |  | |  |
|
| Date: |  | |  |
| Responsible Authority Approval | | | |
| This Offset Plan has been approved and is endorsed by the responsible authority. | | | |
| Print Name: |  |  | |
| Position: |  |  | |
| Responsible Authority: | Department of Environment, Land, Water and Planning | Department of Environment | |
| Signature: |  |  | |
|
| Date: |  |  | |
| Date of Commencement: |  |  | |

# INTRODUCTION

## Background

Ecology and Heritage Partners Pty Ltd was commissioned by VicRoads (Western Highway Project) to develop an Offset Management Plan (OMP) for the Western Highway Project, Beaufort to Ararat (Section 2), Victoria (Figure 1).

The Western Highway (A8) is being progressively upgraded as a four-lane divided highway for approximately 110 kilometres (km) between Ballarat and Stawell, and this is referred to as the Western Highway Project. As the principal road link between Melbourne and Adelaide, the Western Highway serves interstate trade between Victoria and South Australia and is the key corridor through Victoria’s west, supporting farming, grain production, tourism and a range of manufacturing and service activities. The Western Highway Project consists of three stages:

* Section 1: Ballarat to Beaufort
* Section 2: Beaufort to Ararat
* Section 3: Ararat to Stawell.

A flora, fauna and Net Gain assessment as well as targeted flora, fauna and aquatic surveys were conducted by Ecology and Heritage Partners Pty Ltd between October 2010 and January 2012 in order to document flora and fauna values and legislative implications of the proposed development between Beaufort to Ararat (Section 2) (Ecology and Heritage Partners Pty Ltd 2012).

### *Planning and Environment Act 1987*

A planning permit for the project is required from local Council. The project is subject to the provisions of the *Native Vegetation Framework*: *A Framework for Action* (the Framework) (NRE 2002)*.*The *Permitted Clearance Regulations* and *Biodiversity Assessment Guidelines* (DEPI 2013), which supersede the Framework for projects granted approval prior to 30 December 2013, are not relevant as the planning permit was granted prior to the changes being implemented.

### *Environment Protection and Biodiversity Conservation Act 1999*

One flora species, two ecological communities and two fauna species listed under the Commonwealth’s *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded within the proposed alignment (Ecology and Heritage Partners Pty Ltd 2012). Based on the EPBC Act Significant Impact Guidelines (DEWHA 1999; 2009), the Project will have a significant impact on Golden Sun Moth *Synemon plana* andthe Grassy Eucalypt Woodland of the Victorian Volcanic Plain and Natural Temperate Grassland of the Victorian Volcanic Plain ecological communities.

An EPBC Actreferral has been submitted for the proposed construction works. VicRoads were advised by the Department of the Sustainability, Environment, Water Population and Communities on 17 December 2010 that the proposed project is a controlled action requiring assessment and approval in accordance with the EPBC Act. Specifically, Condition 12 and 16 of the approval conditions outlines the requirements that must be addressed as part of this Offset Management Plan.

#### Condition 12

Within 9 months of the date of this approval, the person taking the action must submit a draft NTGVVP Offset Management Plan to the Department for the Minister’s approval. The NTGVVP Management Plan must be prepared in consultation with a suitably qualified ecologist and provide for the conservation and enhancement of NTGVVP within the NTGVVP Offset (s), and must include details of:

1. baseline data and other supporting evidence that documents the baseline condition of NTGVVP on the NTGVVP Offset(s);
2. description, key performance indicator, and timeframe for implementing specific management actions to improve the condition of NTGVVP within the NTGVVP Offset(s), including but not limited to control of weed and pest species, control of access to the protected land, strategic fire and grazing management (acknowledging that such impacts may be positive or negative depending on circumstances);
3. measures to ensure that actions taken have no detrimental impact on the populations or habitat of other listed threatened species and communities that are likely to occur or utilise the NTGVVP Offset(s);
4. information and commitments about monitoring and reporting on the improvements in condition of the offset site; and
5. corrective actions and contingency measures to be implemented where monitoring under the NTGVVP Offset Management Plan indicates a degradation of the NTGVVP.

#### Condition 16

Within 9 months of the date of this approval, the person taking the action must submit a draft Golden Sun Moth Offset Management Plan to the Department for the Minister’s approval. The Golden Sun Moth Management Plan must be prepared in consultation with a suitably qualified ecologist and provide for the conservation and enhancement of Golden Sun Moth within the Golden Sun Moth Offset (s), and must include details of:

1. baseline data and other supporting evidence that documents the baseline condition of Golden Sun Moth on the Golden Sun Moth Offset(s);
2. description, key performance indicator, and timeframe for implementing specific management actions to improve the condition of Golden Sun Moth within the Golden Sun Moth Offset(s), including but not limited to control of weed and pest species, control of access to the protected land, strategic fire and grazing management (acknowledging that such impacts may be positive or negative depending on circumstances);
3. measures to ensure that actions taken have no detrimental impact on the populations or habitat of other listed threatened species and communities that are likely to occur or utilise the Golden Sun Moth Offset(s);
4. information and commitments about monitoring and reporting on the improvements in condition of the offset site; and
5. corrective actions and contingency measures to be implemented where monitoring under the Golden Sun Moth Offset Management Plan indicates a degradation of the Golden Sun Moth.

## Objectives

The objective of the OMP is to document the clearing site and offset site details to meet EPBC Act and Net Gain requirements by securing, maintaining and improving remnant vegetation within the designated offset site.

Specifically, the objectives of the OMP are to:

* Review offset requirements based on vegetation clearance and the outcomes of the EPBC Act Offsets Policy and Planning Permit conditions;
* Address the requirements of condition 12 and 16 of the EPBC Act approval conditions; and
* Develop an OMP to compensate for the permitted loss of vegetation as part of the proposed development. This will include but not be limited to the following:
  + Means of calculating the offsets;
  + Location of the offset sites;
  + Type of offsets to be provided;
  + Details of management actions for remnant vegetation;
  + Investigate an appropriate 'security' arrangement, if applicable;
  + Based on available information from the client, prepare a map of the offset sites;
  + Develop a timetable of management actions, outcomes and progress reviews; and,
  + Suggest appropriate monitoring and evaluation of management actions.

## Report Structure

The structure and content of the OMP is consistent with the requirements of the ‘Standard Offset Plan’ template provided by the Department of Environment, Land, Water and Planning (DELWP) (formerly known as the Department of Environment and Primary Industries) and is organised in several parts:

* *Introduction -* This section summarises the background information relevant to the Project, including the purpose and scope of the work and the assessment methodology.
* *Part A: Offset Suitability -* This section assesses the suitability of the proposed offset sites, and includes details regarding approved clearing, Like-for-Like criteria and gain calculations. Part A should be read in conjunction with Part B, but due to its technical nature, the information it contains is not intended to be placed on title (e.g. covenant or Section 173 Agreement pursuant to the *Planning and Environment Act 1987*).
* *Part B: Offset Implementation -* This section describes how the offset is to be implemented. Part B includes details regarding landowner commitments, management activities monitoring and reporting. This section is intended for those responsible for implementing the plan, including future landowners. Information in this section is intended to be placed on title.

# METHODS

## Database and Literature Review

The Victorian Biodiversity Atlas (DSE 2011a; 2011b), the Flora Information System (Viridans 2012a) and the Victorian Fauna Database (Viridans 2012b) were reviewed to identify previous records of native and exotic flora and fauna species within the local area, as well as threatened flora and fauna species that have the potential to occur within 10 kilometres of the proposed offset site.

Information pertaining to matters protected under the EPBC Act including listed taxa, ecological communities and Ramsar wetlands, was obtained from the Department of Environment (DoE) Protected Matters Search Tool (DoE 2014).

Reports and documents detailing the ecological features of the study area as relevant to the OMP were reviewed, in particular:

* Ecology and Heritage Partners Pty Ltd 2012. *Western Highway Project: Section 2, Beaufort to Ararat, Victoria. Impact Assessment Report – Flora, Fauna and Ecological Communitie*s. Report prepared for VicRoads.
* Brett Lane and Associates 2013. ‘Terrinallum South’, 833 Pura Road, Darlington, Vic, 3271 Native Vegetation and Threatened Species Assessment. Report prepared for Tom and Kate Calvert.
* Enics Solutions 2012. Terrinallum South Golden Sun Moth Survey, December 2012. Report prepared for Tom and Kate Calvert.

This OMP has been developed based on *Victoria's Native Vegetation Management: A Framework for Action* (The Framework) (DNRE 2002), as well as relevant vegetation management guidelines and other relevant templates published by DELWP.

## Gain Scoring Method

### The Framework

Gains in habitat score can be achieved via a number of means, where a commitment is made to designate an area as a permanent offset site to compensate for vegetation loss elsewhere. Gains can also be achieved through revegetation of formerly modified land where such offset types are permitted.

Four types of gains are recognised by DELWP for existing vegetation offset sites (DSE 2006a), including:

* *Prior Management Gain* – This gain acknowledges actions to manage a freehold site and usually attracts a score of 10% of the current habitat score of the offset site;
* *Security Gain* – This is gain resulting from actions to enhance the security of the on-going management and protection of native vegetation. This gain usually attracts between 10 and 40% of the current habitat score of the offset site, depending on the security agreement reached and land tenure of the offset site;
* *Maintenance Gain –* This is gain from commitments that contribute to the maintenance of current vegetation quality over time (i.e. avoiding any decline); and,
* *Improvement Gain* – This is gain resulting from management commitments beyond existing obligations under legislation to improve the current vegetation quality.

The amount of gain achieved also depends on the land tenure of the offset site. Gain scores must be consistent with the Vegetation Gain Approach – Technical basis for calculating gains through improved native vegetation management and revegetation (DSE 2006a) and the Native Vegetation: Scoring Gain from an offset – DSE Gain Calculator user instructions (DSE 2006b).

Gain scores for managing existing vegetation and revegetation works are to be achieved over a ten year management period. The vegetation quality achieved from these activities at year ten of management must be protected and maintained in similar condition in perpetuity (DNRE 2002).

Gain scoring was assessed using the (former) Department of Sustainability and Environment (DSE) Gain Calculator (DSE 2010). The calculator allocates maintenance and improvement gain, prior management gain and security gain scores based on the habitat hectare measures and vegetation management actions used to maintain or improve vegetation quality over the mandatory 10 year management period (DSE 2006b).

# PART A - OFFSET SUITABILITY

## Clearing Site Details

The clearing site details are provided in Table 2. A detailed description of ecological values within the study area is provided in the Impact Assessment Report (Ecology and Heritage Partners Pty Ltd 2012).

Table . Clearing Site Details

|  |  |
| --- | --- |
| Clearing Site Details | |
| Landowner of clearing site | VicRoads |
| Location and address of clearing site | Western Highway, Section 2 (Beaufort to Ararat) |
| Local Government Area | Western section: City of Ararat  Eastern section: Shire of Pyrenees |
| Catchment Management Authority | Glenelg-Hopkins Catchment Management Authority |
| Responsible Authority | DELWP and DoE |
| Applicant | VicRoads |
| Planning Permit Number (ID) | TBC |
| Date approved | TBC |

### Significant Species and Communities

A total of 227 plant taxa (151 indigenous, 76 exotic) were recorded within the study area (Ecology and Heritage Partners Pty Ltd 2012). One nationally significant flora species (Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens*), two nationally significant flora communities (Natural Temperate Grassland of the Victorian Volcanic Plain and Grassy Eucalypt Woodland of the Victorian Volcanic Plain), three State significant flora species (Yarra Gum *Eucalyptus yarraensis*, Emerald-lip Greenhood *Pterostylis smaragdyna* and Golden Cowslips *Diuris behrii*), two State significant ecological communities (Western (Basalt) Plains Grassland and Victorian Temperate Woodland Bird Community) and numerous species of regional significance were identified.

A total of 76 fauna species (67 indigenous, 9 exotic) were recorded within the study area (Ecology and Heritage Partners Pty Ltd 2012). Two nationally significant fauna species (Dwarf Galaxias *Galaxiella pusilla* and Golden Sun Moth *Synemon plana*), two State significant species (Brown Toadlet *Pseudophryne bibronii* and Brown Treecreeper *Climacteris picumnus*) and one regionally significant species (Baillon’s Crake *Porzana pusill*) were identified. In addition, the State significant Powerful Owl *Ninox strenua* and Brush-tailed Phascogale *Phascogale tapoatafa* were reported to be present within the study area by a local landholder whose property lies south of the intersection of Martins Lane and Western Highway. Based on the EPBC Act Significant Impact Guidelines (DEWHA 1999; 2009), the Project will have a significant impact on Golden Sun Moth and the NTGVVP and GEWVVP ecological communities.

### Ecological Vegetation Classes

The alignment footprint intersects ten Ecological Vegetation Classes (EVCs) with varying quality and extent including Alluvial Terraces Herb-rich Woodland, Creekline Grassy Woodland, Grassy Dry Forest, Grassy Woodland, Heathy Dry Forest, Hills Herb-rich Woodland, Heathy Woodland, Plains Grassland, Plains Grassy Woodland and Plains Grassy Wetland.

The Plains Grassland, Plains Grassy Woodland, Alluvial Terraces Herb-rich Woodland, Creekline Grassy Woodland and Plains Grassy Wetland EVCs are considered endangered within the Victorian Volcanic Plain bioregion. Within the Central Victorian Uplands bioregion, the Grassy Woodland, Creekline Grassy Woodland and Alluvial Terraces Herb-rich Woodland EVCs are listed as endangered, the Hills Herb-rich Woodland EVC is listed as vulnerable, the Grassy Dry Forest and Heathy Woodland EVCs area listed as depleted and Heathy Dry Forest EVC is listed as least concern.

## Summary of Losses and Net Gain targets

### Federal

Losses associated with Matters of National Environmental Significance (NES) are summarised in Table 3. Offset targets were determined through discussions with the DoE and in accordance with the EPBC Act Offsets Policy (October 2012).

Table . Losses associated with Matters of NES

|  |  |  |
| --- | --- | --- |
| Matter of NES | Losses | Offset Target |
| Spiny Rice-flower | 1 plant | N/A (Plant to be translocated) |
| Golden Sun Moth | 31.56 hectares | 100 hectares |
| Dwarf Galaxias | None proposed | N/A |
| Grassy Eucalypt Woodland of the Victorian Volcanic Plain | 11.14 hectares | 33.5 hectares |
| Natural Temperate Grassland of the Victorian Volcanic Plain | 5.25 hectares | 20.3 hectares |

### State (Victoria)

Offset requirements and multipliers are specified in accordance with Appendix 4, Table 6, pp. 54-55 of the Framework (DNRE 2002) and Table 5 of the Glenelg Hopkins Native Vegetation Plan (GHCMA 2006). A detailed description of vegetation losses is provided in the Flora and Fauna Impact Assessment Report (Ecology and Heritage Partners Pty Ltd 2012).

#### Vegetation Patches and Large Old Trees

Total losses and Net Gain targets for remnant native vegetation and Large Old Trees associated with the clearing site are outlined in Table 4.

#### Scattered Trees

Total losses and Net Gain targets for scattered trees associated with the clearing site are outlined in Table 5.

Table . Vegetation losses and Net Gain targets

| Bioregion | Target EVC | Conservation significance | Vegetation | | | | Large Old Trees | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Total Losses (Ha) | Total Losses (HabHa) | Net Gain Multiplier\* | Net Gain Target (HabHa) | Total Losses | Protection Multiplier | Total to be Protected | Recruitment Multiplier | Total to be Recruited |
| CVU | ATHrW | V. High | 7.36 | 3.48 | 2 | 6.96 | 40 | 8 | 320 | 40 | 1,600 |
|  | CGW | V. High | 0.01 | 0 | 2 | 0 | 8 | 8 | 64 | 40 | 320 |
|  | GDF | High | 9.69 | 5.1 | 1.5 | 7.65 | 6 | 4 | 24 | 20 | 120 |
|  |  | Low | 3.2 | 0.7 | 1 | 0.7 | 0 | 0 | 0 | 0 | 0 |
|  |  | Medium | 4.09 | 1.57 | 1 | 1.57 | 5 | 2 | 10 | 10 | 50 |
|  | GW | V. High | 1.38 | 0.8 | 2 | 1.6 | 2 | 8 | 16 | 40 | 80 |
|  | HDF | High | 2.99 | 1.76 | 1.5 | 2.64 | 6 | 4 | 24 | 20 | 120 |
|  |  | Low | 0.35 | 0.2 | 1 | 0.2 | 5 | 0 | 0 | 0 | 0 |
|  | HHrW | High | 7.44 | 3.13 | 1.5 | 4.7 | 5 | 4 | 20 | 20 | 100 |
|  |  | V. High | 4.88 | 2.93 | 2 | 5.86 | 29 | 8 | 232 | 40 | 1,160 |
|  | HW | High | 1.58 | 0.94 | 1.5 | 1.41 | 10 | 4 | 40 | 20 | 200 |
| VVP | ATHrW | V. High | 4.14 | 1.82 | 2 | 3.64 | 36 | 8 | 288 | 40 | 1,440 |
|  | CGW | High | 0.87 | 0.25 | 1.5 | 0.38 | 10 | 4 | 40 | 20 | 200 |
|  |  | V. High | 5.71 | 1.82 | 2 | 3.64 | 16 | 8 | 128 | 40 | 640 |
|  | GW | V. High | 0.96 | 0.54 | 2 | 1.08 | 1 | 8 | 8 | 40 | 40 |
|  | PG(HS) | High | 6.93 | 2.08 | 1.5 | 3.12 | 0 | 4 | 0 | 20 | 0 |
|  |  | V. High | 3.93 | 1.16 | 2 | 2.32 | 0 | 8 | 0 | 40 | 0 |
|  | PGW | High | 26.36 | 8.21 | 1.5 | 12.32 | 34 | 4 | 136 | 20 | 680 |
|  |  | V. High | 5.77 | 2.82 | 2 | 5.64 | 8 | 8 | 64 | 40 | 320 |
|  | PGWe | High | 0.21 | 0.06 | 1.5 | 0.09 | 0 | 4 | 0 | 20 | 0 |
|  |  | V. High | 0.05 | 0.01 | 2 | 0.02 | 0 | 8 | 0 | 40 | 0 |
| **Total** |  |  | **97.9** | **39.38** |  | **65.54** | **221** |  | **1,414** |  | **7,070** |

**Notes:** CVU = Central Victorian Uplands, VVP = Victorian Volcanic Plain, GDF = Grassy Dry Forest, PG (HS) = Heavier-soils Plains Grassland, HHrW = Hills Herb-rich Woodland, PGWe = Plains Grassy Wetland, CGW = Creekline Grassy Woodland, GW = Grassy Woodland, ATHrW = Alluvial Terraces Herb-rich Woodland, PGW = Plains Grassy Woodland, HDF = Heathy Dry Forest, HW = Heathy Woodland. Alignment area has not been fully assessed for Net Gain (i.e. indicative Due Diligence assessment undertaken in some areas). As such Net Gain targets may vary marginally following detailed assessment. Large Old Tree targets are based on estimates of trees present and potential losses within each patch, further assessment is required to determine the number of Large Old Trees within all patches within the study area.

Table . Scattered Tree losses and Net Gain targets

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Study Area | Conservation Significance | Size | Losses | Protect | | Recruit | | Recruit Only | |
| Multiplier\* | Target | Multiplier\* | Target | Multiplier\* | Target |
| VVP | High | LOT | 41 | 2 | 82 | 10 | 410 | 100 | 4,100 |
|  |  | MOT | 5 | 1 | 5 | 5 | 25 | 50 | 250 |
|  |  | ST | 22 | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | VLOT | 45 | 4 | 180 | 20 | 900 | 200 | 9,000 |
| CVU | High | LOT | 24 | 2 | 48 | 10 | 240 | 100 | 2,400 |
|  |  | MOT | 4 | 1 | 4 | 5 | 20 | 50 | 200 |
|  |  | VLOT | 3 | 4 | 12 | 20 | 60 | 200 | 600 |
|  | Low | LOT | 7 | 0 | 0 | 5 | 35 | 50 | 350 |
|  |  | MOT | 4 | 0 | 0 | 5 | 20 | 50 | 200 |
|  |  | ST | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | VLOT | 5 | 1 | 5 | 5 | 25 | 50 | 250 |
|  | Medium | LOT | 4 | 1 | 4 | 5 | 20 | 50 | 200 |
|  |  | MOT | 3 | 1 | 3 | 5 | 15 | 50 | 150 |
|  |  | VLOT | 1 | 2 | 2 | 10 | 10 | 100 | 100 |

**Notes:** CVU = Central Victorian Uplands, VVP = Victorian Volcanic Plain, VLOT = Very Large Old Tree, LOT = Large Old Tree, MOT = Medium Old Tree, ST = Small Tree.

## Offset Management Strategy

Several offset sites have been identified to meet federal offset requirements. This document relates to the offsets identified within the property located at Terrinallum South, 833 Darlington-Carranballac Road, Darlington, Victoria. To be referred to here as the Darlington property.

The following summarises the federal and State offset requirements that are proposed to be met within the Darlington property.

### Federal

Table 6 summarises the quantity and location of offsets identified to compensate for losses associated with Matters of NES.

Table . Offsets associated with Matters of NES

|  |  |  |  |
| --- | --- | --- | --- |
| Matter of NES | Losses | Offset Target | Offsets identified (Ha); Location |
| Golden Sun Moth | 31.56 hectares | 100 hectares | 100 hectares; Darlington property |
| Natural Temperate Grassland of the Victorian Volcanic Plain | 5.25 hectares | 20.3 hectares | 20.3 hectares; Darlington property |

It should be noted that remnant vegetation within the offset site qualifies as both habitat for Golden Sun Moth and the ecological community Natural Temperate Grassland of the Victorian Volcanic Plain concurrently. Therefore, a total area of 100 hectares is proposed to satisfy offsets for both Matters of NES listed in Table 6.

#### Environment Protection and Biodiversity Conservation Act 1999 Offsets Policy

Offset targets were determined through discussions with DoE and in accordance with the EPBC Act Offsets Policy (October 2012). The EPBC Act Offsets calculator (Excel spreadsheet) was used to determine appropriate offset targets to compensate for the loss of Matters of NES. The calculator spreadsheets are provided in Appendix 1, and the assumptions used to populate the calculator are presented below.

##### Golden Sun Moth

* *Offset location* = Darlington property.
* *Habitat to be removed* = 31.56 hectares.
* *Habitat quality* = 4/10. The majority of Golden Sun Moth habitat to be removed comprises grassland areas that do not qualify as a remnant patch due to a native species cover of less than 25%, and with a high cover of weed species. These areas do, however, support scattered tussocks of wallaby grass *Rytidosperma* spp., a preferred food source for Golden Sun Moth.
* *Time over which loss is averted* = 2 years. The land will be managed in perpetuity for conservation purposes for Golden Sun Moth.
* *Time until ecological benefit* = 10 years. Native vegetation is expected to improve in extent, species diversity and density within 2 years through applied weed and biomass control regimes.
* *Start area and quality* = 100 hectares and 6/10. The offset site supports native grassland habitat of moderate quality. Cover of indigenous grass and herb species is high, however, the diversity of species is low and there is little inter-tussock space particularly in areas of dense Kangaroo Grass *Themeda triandra*.
* *Risk of loss without offset* = 15%. Without protection as an offset site there is uncertainty regarding the future use of the land. Most likely the property would continue to be managed under the current regime, however there remains potential that the property will be cropped or grazing intensity will be increased, as is the case with surrounding properties.
* *Future quality without offset* = 6/10. Assumes management proceeds in accordance with the current regime and quality remains at 6/10.
* *Risk of loss with offset* = 5%. The land will be managed in perpetuity for conservation purposes for Golden Sun Moth.
* *Future quality with offset* = 8/10. The offset site is to be secured and managed for conservation purposes in perpetuity, with implementation of a vegetation management plan incorporating weed control and regular monitoring, aiming to maintain and enhance native biodiversity.
* *Confidence in result* = 80%. Confidence in applied scores is relatively high due to careful consideration of the offset site, existing habitats and landscape context.

##### Natural Temperate Grassland of the Victorian Volcanic Plain

* *Offset location* = Darlington property.
* *Habitat to be removed* = 5.25 hectares.
* *Habitat quality* = 6/10. The majority of NTGVVP to be removed is located along the existing Western Highway and comprises of a high cover of indigenous grass, herb and shrub species. These areas are modified due to previous disturbance from road and rail construction, farming and their close proximity to the road with high levels of weed infestations particularly along the road verge.
* *Risk-related time horizon* = 2 years. The land will be managed in perpetuity for conservation purposes for NTGVVP.
* *Time until ecological benefit* = 10 years. Native vegetation is expected to improve in extent, species diversity and density within 2 years through applied weed and biomass control regimes.
* *Start area and quality* = 20.3 hectares and 5/10. The offset site supports native grassland habitat of moderate quality. Cover of indigenous grass and herb species is high, however, the diversity of species is low and the opportunity for further recruitment of indigenous species is also low.
* *Risk of loss without offset* = 15%. Without protection as an offset site there is uncertainty regarding the future use of the land. Most likely the property would continue to be managed under the current regime, however there remains potential that the property will be cropped or grazing intensity will be increased, as is the case with surrounding properties.
* *Future quality without offset* = 5/10. Assumes management proceeds in accordance with the current regime and quality remains at 5/10.
* *Risk of loss with offset* = 5%. The land will be managed in perpetuity for conservation purposes for NTGVVP.
* *Future quality with offset* = 7/10. The offset site is to be secured and managed for conservation purposes in perpetuity, with implementation of a vegetation management plan incorporating weed control and regular monitoring, aiming to maintain and enhance native biodiversity.
* Confidence in result = 80%. Confidence in applied scores is relatively high due to careful consideration of the offset site, existing habitats and landscape context.

### State (Victoria)

#### Vegetation Offsets

Table 7 summarises the Net Gain offset targets that can be met with the gain available within the proposed offset site and the remaining offset deficit that must be sourced elsewhere.

Table . Offsets associated with loss of patches of native vegetation

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bioregion | Target EVC | Conservation significance | Total Losses (HabHa) | Net Gain Target (HabHa) | Offsets identified (HabHa); Location | Offsets to be sourced (HabHa) |
| VVP | ATHrW | V. High | 1.82 | 3.64 | - | 3.64 |
|  | CGW | High | 0.25 | 0.38 | 0.38, Darlington | 0 |
|  |  | V. High | 1.82 | 3.64 | - | 3.64 |
|  | GW | V. High | 0.54 | 1.08 | - | 1.08 |
|  | PG(HS) | High | 2.08 | 3.12 | 3.12, Darlington | 0 |
|  |  | V. High | 1.16 | 2.32 | 2.32, Darlington | 0 |
|  | PGW | High | 8.21 | 12.32 | 10.5 Darlington | 1.82\* |
|  |  | V. High | 2.82 | 5.64 | - | 5.64\* |
|  | PGWe | High | 0.06 | 0.09 | 0.09, Darlington | 0 |
|  |  | V. High | 0.01 | 0.02 | - | 0.02 |

Note: VVP = Victorian Volcanic Plain, PG (HS) = Heavier-soils Plains Grassland, PGWe = Plains Grassy Wetland, CGW = Creekline Grassy Woodland, GW = Grassy Woodland, ATHrW = Alluvial Terraces Herb-rich Woodland, PGW = Plains Grassy Woodland, , \* denotes offsets that can be sourced through another proposed offset also containing matters of NES.

Table 8 summarises the quantity offsets identified to compensate for losses associated with Large Old Trees and Scattered Trees. No trees are proposed to be offset within the Darlington property.

Table . Offsets associated with loss of Large Old Trees and Scattered Trees

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bioregion | Trees | Scattered | LOT | Total | Offsets identified (no. trees); Location | Offsets to be sourced (no. trees) |
| VVP | Total Losses | 113 | 105 | 218 | N/A | N/A |
|  | To be Protected | 267 | 664 | 931 | 0 | 931\* |
|  | To be Recruited | 1335 | 3320 | 4655 | 0 | 4655\* |
|  | Recruit Only | 13350 | N/A | 13350 | N/A | N/A |

**Notes:** Offsets sourced must be either “protect and recruit” or “recruit only”. Under “protect and recruit” five (5) trees are assumed recruited for every one (1) tree that is protected, \* denotes offsets that can be sourced through another proposed offset also containing matters of NES

# DESCRIPTION OF THE OFFSET SITE

The study area supports one broad vegetation and habitat type: native grassland. Vegetation condition and habitat quality are discussed in further detail below.

## Vegetation Condition

Vegetation within the study area is dominated by grassland, located throughout the property along with several other vegetation types. Based on the field assessment, grassland within the study area is consistent with the Plains Grassland EVC. This is broadly consistent with extant DELWP mapping which shows these areas are dominated by Plains Grassland (EVC 175) and Plains Grassy Wetland (EVC 125) (DEPI 2014b).

Plains Grassland is described as treeless vegetation mostly less than one metre tall dominated by largely graminoid and herb life forms (DEPI 2014a).

Remnant vegetation within the study area consisted of high quality grassland dominated by indigenous grass species including Kangaroo Grass *Themeda triandra*, wallaby grasses *Rytidosperma* spp. and Common Tussock-grass *Poa labillardierei*. Due to the sub-optimal timing of the survey, a low diversity of herb species was observed (Sheep’s Burr *Acaena echinata*, Blue Devil *Eryngium ovinum*, Varied Raspwort *Haloragis heterophylla*, Lemon Beauty-heads *Calocephalus citreus*, and Pink Bindweed *Convolvulus angustissimus* subsp. *angustissimus)*. A higher diversity of herbs may be observed during spring as indicated by Brett Lane and Associates (BLA 2013).

The site is currently rotationally grazed by sheep at a low rate. Paddocks are secured through well maintained and planned internal fences to control stock access throughout the property. Weed infestations were scattered but often found in areas where sheep are likely to congregate e.g. tanks, troughs etc. These areas were typically dominated by the noxious weeds Horehound *Marrubium vulgare* and Spear Thistle *Cirsium vulgare* as well as other exotic grass and herb species. Grassy pasture species including Toowoomba Canary-grass *Phalaris aquatica*, Cocksfoot *Dactylis glomerata*, Perennial Rye-grass *Lolium perenne*, and Squirrel-tail Fescue *Vulpia bromoides* were found throughout the site in varying densities and distributions. Typically the areas of Plains Grassland included in this offset plan had a relatively low weed cover (<25%) (Figure 2).

A habitat hectare assessment was conducted on remnant patches of Plains Grassland vegetation within the offset site to determine a baseline condition (Appendix 2). All patches except one (PG11) were assessed to have a habitat condition score greater than 0.4, all patches were considered to be of Very High conservation significance. The main difference in quality for these remnant patches was the cover of weed species, recruitment area and type of organic litter present.

### Natural Temperate Grassland of the Victorian Volcanic Plain

One nationally listed vegetation community, NTGVVP listed as critically endangered under the EPBC Act, was recorded within the study area. The NTGVVP ecological community is also listed as Western (Basalt) Plains Grasslands Community under the *Flora and Fauna Guarantee Act 1988* (FFG Act), and has been mapped as Plains Grassland (Figure 2).

The key diagnostic criteria and condition thresholds present within the study area, as outlined in Policy Statement 3.8 (EPBC Act Policy Statement 3.8 2008) for NTGVVP include:

* At least one of the following grass genera is the dominant native species in the ground layer: Themeda (Kangaroo-grass), Austrodanthonia (Wallaby-grass), Austrostipa (Spear-grass) and/or Poa (Tussock-grass).
* For a native vegetation remnant >1 hectare in size, the minimum contiguous size of the grassland patch is 0.5 hectare.
* The total perennial tussock cover represented by the native grass genera Themeda, Austrodanthonia, Austrostipa or Poa is at least 50%.

Remnant Plains Grassland (Habitat Zones 1, 2, 3, 4, 5, 6, 7, 8 and 10) meets the condition thresholds outlined above and is considered to be representative of the NTGVVP vegetation community (Figure 2). Remnant vegetation within Habitat Zones 9 and 11 do not meet the condition thresholds and are not considered to correspond with this ecological community. There is approximately 126 hectares of NTGVVP available for offset within the study area.

## Fauna Habitat

Native grassland within the offset site provides moderate to high quality habitat for native fauna. These areas are likely to be utilised by birds adapted to open areas and large macropods including Australian Magpie *Gymnorhina tibicen*, Magpie-lark *Grallina cyanoleuca* and Eastern Grey Kangaroo *Macropus giganteus*. Nocturnal and diurnal raptors are likely to forage over these areas, with Black-shouldered Kites *Elanus axillaris* observed during the site assessment, hovering over grassland areas. Areas of native grassland, particularly those with a high cover of wallaby-grasses *Rytidosperma* spp. provide known and likely habitat for the nationally significant Golden Sun Moth. Areas identified as Stony Knoll Shrubland (Figure 2) support cracking soils as well as surface and embedded rock, which may provide sheltering habitat for reptiles and small mammals including the nationally significant Striped Legless Lizard *Delma impar* and the regionally significant Fat-tailed Dunnart *Sminthopsis crassicaudata*.

Previous surveys identified numerous significant fauna species across the entire property, listed in Table 9 (Damien Cook, Australian Ecosystems in Brett Lane and Associates Pty Ltd 2013; Enics Solutions 2012). Of these species, Brolga *Grus rubicunda* and Golden Sun Moth *Synemon plana* are likely to occur within the offset site.

Table . Significant fauna identified during previous surveys

| Species | DEPI Advisory List | FFG Act | EPBC Act | Recorded by |
| --- | --- | --- | --- | --- |
| Australian Shoveler *Anas rhynchotis* | Vu | - | - | 1 |
| Whiskered Tern *Chlidonias hybridus* | NT | - | - | 1 |
| Spotted Harrier *Circus assimilis* | NT | - | - | 1 |
| Brown Quail *Coturnix ypsilophora* | NT | - | - | 1 |
| Latham’s Snipe *Gallinago hardwickii* | NT | - | - | 1 |
| \*Brolga *Grus rubicunda* | Vu | L | - | 1 |
| Growling Grass Frog *Litoria raniformis* | En | L | Vu | 1 |
| Caspian Tern *Hydroprogne caspia* | NT | L | - | 1 |
| \*Golden Sun Moth *Synemon plana* | Cr | L | Cr | 2 |
| Corangamite Water Skink *Eulamprus tympanum marnieae* | En | L | Cr | 3 |

Notes: 1 = Damien Cook, Australian Ecosystems *in* Brett Lane and Associates Pty Ltd 2013; 2 = Enics Solutions 2012; 3 = identified by landowner *in* Brett Lane and Associates Pty Ltd 2013. Cr = Critically Endangered; En = Endangered; Vu = Vulnerable; NT = Near Threatened; L = Listed. \* = Suitable habitat within the offset site.

An ecological assessment undertaken by Brett Lane and Associates Pty Ltd (2013) identified suitable habitat for numerous additional fauna species which have potential to occur across the entire property. These species include Black Falcon *Falco subniger*, Curlew Sandpiper *Calidris ferruginea*, Eastern Great Egret *Ardea modesta*, Emu *Dromaius novaehollandiae*, Fat-tailed Dunnart *Sminthopsis crass*icaudata, Fork-tailed Swift *Apus pacificus*, Gull-billed Tern *Gelochelidon nilotica*, Rainbow Bee-eater *Merops ornatus*, Red-necked Stint *Calidris ruficollis*, Royal Spoonbill *Platalea regia*, Striped Legless Lizard *Delma impar*, Tussock Skink *Pseudemoia pagenstecheri*, White-throated Needletail *Hirundapus caudacutus* and White-bellied Sea-Eagle *Haliaeetus leucogaster*. Of these species, there is suitable habitat within the offset site for Striped Legless Lizard, Fat-tailed Dunnart and Tussock Skink.

### Golden Sun Moth

Golden Sun Moth has been identified within the study area during previous assessments (Enics Solutions 2012, Plume Ecology Pty Ltd, 2015). Five male Golden Sun Moths were identified within the study area on 11 December 2012 (Figure 2). Three male and two female Golden Sun Moths were identified on 10 December 2012 approximately 200 metres east of the study area. Moths were recorded within remnant grassland vegetation with a high cover of wallaby grasses, a preferred food source for Golden Sun Moth. Further targeted surveys have been completed (2014/15 season) to determine the viability of the Golden Sun Moth population within the site. Over 300 individuals recorded within the offset site including four females indicating that the site does support a viable breeding population (Plume Ecology, 2015).

Suitable habitat for Golden Sun Moth includes all areas identified as Plains Grassland and Stony Knoll Shrubland including 100 hectares within the offset site (Figure 2). The targeted surveys demonstrate that the offset area is utilised by Golden Sun Moths and contains a viable breeding population..

# LIKE-FOR-LIKE CRITERIA

In determining the appropriate offset responses for permitted vegetation clearance, the Framework sets out several like-for-like criteria, which must be met for any offset site (DNRE 2002). Relevant like-for-like criteria are shown in Table 10.

Based on the criteria in Table 10, the quality objectives have been met for all vegetation losses.

Table . Summary of offset site requirements to meet Net Gain criteria

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Offset Attributes | Conservation Significance | | | |
| Very High | High | Medium | Low |
| Vegetation or habitat type | The same vegetation / habitat type | The same vegetation / habitat type OR a Very High significance vegetation / habitat in the same Bioregion | Any EVC in the Bioregion OR a Very High or High significance vegetation / habitat in an adjacent Bioregion | |
| Landscape role | Similar or more effective ecological function AND land protection function as impacted by the loss | Similar or more effective ecological function OR land protection function as impacted by the loss | Similar or more effective land protection function as impacted by the loss | |
| Quality | 90% of the quality being lost | 75% of the quality being lost | 50% of the quality being lost | |
| Revegetation | 10% | 25% | 50% | 100% |
| ‘Trading up’ | Where gains are achieved in vegetation / habitat of a higher significance than the vegetation lost, then the amount of the offset will be proportionally reduced. E.g. offsetting losses in Medium conservation significance with Very High conservation significance gains will reduce the amount of the offsets by half, i.e. the Medium multiplier (1) divided by the Very High multiplier (2). | | | |

## Gains Available in Proposed Offset Site

Quantification of the available gains at the offset site is shown in Table 11. The gains available at the offset site are based on several commitments, such as managing existing remnant vegetation (i.e. by retaining and protecting vegetation, all fallen coarse woody debris within all zones and controlling pest animals) and increasing security (through an on-title agreement, such as a Section 173 agreement or Trust-for-Nature covenant). The offset site is private land for the purposes of calculating gain as per DELWP guidelines (DSE 2010a). Therefore prior management, security, maintenance and improvement gains are available (DSE 2006a, Table 2a. p.7; DSE 2010a).

The gains achievable from the “proposed offsets” from remnant vegetation are presented within this section.

### Remnant vegetation gains available

A habitat hectare assessment has previously been undertaken within part of the site (BLA 2013). These sites and their condition scores were reviewed and additional assessments were conducted on remnant patches of Plains Grassland vegetation outside of the original assessment area within the offset site (Table 11). In total, five Habitat Zones are proposed to be utilised as part of the offset site with a combined area of 94.12 hectares, comprising 48.36 habitat hectares of Very High conservation significance Plains Grassland. This vegetation is considered of Very High conservation significance, as Plains Grassland vegetation is endangered in the Victorian Volcanic Plain bioregion (DSE 2013b).

The native vegetation Gains available in the study area have been calculated using the habitat scores for each Plains Grassland habitat zone recorded above, DSE’s Gains Calculator and Vegetation Gain Approach (DSE 2006) (Table 11). A total gain of 18.94 habitat hectares of Very High conservation significance Plains Grassland is available in the five habitat zones recorded in the study area.

These Gains are available on the basis that the site will be secured with an on-title agreement (e.g. Section 173 or equivalent) and contains an approved 10-year Offset Management Plan outlining the management actions required to maintain and improve the current condition of native vegetation recorded.

Five patches of Stony Knoll Shrubland have also been included in the proposed offset area which contains suitable habitat for Golden Sun Moth (Figure 2). These remnant patches were not assessed as part of the previous or current assessments as Stony Knoll Shrubland is not required to satisfy the Net Gain offset requirements for the project.

### Remnant trees gains available

No remnant trees are proposed to be retained within the site.

Table . Meeting Like-for-Like criteria for clearing remnant patches

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Clearing site | | | | | | | Offset site | | | | | | |
| Target # | Habitat Zones | Bioregion | EVC | Conservation Significance | Min. Habitat Score for Target | Other Like-for-Like Requirements | Trading up | Offset Zones | Bioregion | EVC | Conservation Significance | Habitat Score | Other Like-for-Like Attributes |
| H1 | PG | VVP | Plains Grassland | Very High | 0.43 | Best 50% of habitat for GSM | No | PG1 | VVP | Plains Grassland | Very High | 0.54 | GSM habitat confirmed |
| H2 | PG | VVP | Plains Grassland | High | 0.24 | N/A | Yes | PG1, PG7 | VVP | Plains Grassland | Very High | 0.54, 0.30 | N/A |
| H3 | PGWe | VVP | Plains Grassy Wetland | High | 0.22 | N/A | Yes | PG1 | VVP | Plains Grassland | Very High | 0.54 | N/A |
| H4 | CGW | VVP | Creekline Grassy Woodland | High | 0.24 | N/A | Yes | PG1 | VVP | Plains Grassland | Very High | 0.54 | N/A |
| H5 | PGW | VVP | Plains Grassy Woodland | High | 0.39 | N/A | Yes | PG1,  PG9, PG10, PG11 | VVP | Plains Grassland | Very High | 0.54, 0.45, 0.53, 0.47 | N/A |

Table . Native vegetation gains available

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| EOI Code / land manager name | | | Darlington | | | Darlington | | | Darlington | | | Darlington | | | Darlington | | |
| Site code (number) / Habitat Zone ID (letter) | | | PG1 | | | PG10 | | | PG9 | | | PG11 | | | PG7 | | |
| Land tenure | | | freehold | | | freehold | | | freehold | | | freehold | | | freehold | | |
| Property Size | | | >=10 Ha | | | >=10 Ha | | | >=10 Ha | | | >=10 Ha | | | >=10 Ha | | |
| Patch Size | | | >=20Ha | | | >=20Ha | | | >=20Ha | | | >=20Ha | | | >=20Ha | | |
| Zone type | | | Offset (Stat Planning) | | | Offset (Stat Planning) | | | Offset (Stat Planning) | | | Offset (Stat Planning) | | | Offset (Stat Planning) | | |
| Proposal type | | | Remnant patch | | | Remnant patch | | | Remnant patch | | | Remnant patch | | | Remnant patch | | |
| Security arrangement | | | Registered on-title agreement or crown land equivalent | | | Registered on-title agreement or crown land equivalent | | | Registered on-title agreement or crown land equivalent | | | Registered on-title agreement or crown land equivalent | | | Registered on-title agreement or crown land equivalent | | |
| Bioregion | | | Victorian Volcanic Plain | | | Victorian Volcanic Plain | | | Victorian Volcanic Plain | | | Victorian Volcanic Plain | | | Victorian Volcanic Plain | | |
| EVC name | | | Plains Grassland | | | Plains Grassland | | | Plains Grassland | | | Plains Grassland | | | Plains Grassland | | |
| BCS | | | E | | | E | | | E | | | E | | | E | | |
| EVC standardiser | | | 1.36 | | | 1.36 | | | 1.36 | | | 1.36 | | | 1.36 | | |
|  | | Max | CC | M/ha | I/ha | CC | M/ha | I/ha | CC | M/ha | I/ha | CC | M/ha | I/ha | CC | M/ha | I/ha |
| Scores | Large Trees | 10 | na | na |  | na | na |  | na | na |  | na | na |  | na | na |  |
| Tree Canopy Cover | 5 | na | na | na | na | na | na | na | na | na | na | na | na | na | na | na |
| Understorey | 25 | 15 | 3.75 | 0.625 | 15 | 3.75 | 0.625 | 15 | 3.75 | 0.625 | 5 | 1.25 | 0.625 | 15 | 3.75 | 0.625 |
| Lack of Weeds | 15 | 9 |  | 1 | 6 |  | 1 | 6 |  | 1 | 0 |  | 1 | 4 |  | 1 |
| Recruitment | 10 | 0 | 0 | 0.5 | 6 | 1.5 | 0.5 | 0 | 0 | 0.5 | 6 | 1.5 | 0 | 0 | 0 | 0.5 |
| Organic Litter | 5 | 3 | 0.75 | 0.5 | 3 | 0.75 | 0.5 | 3 | 0.75 | 0.5 | 2 | 0.5 | 0.5 | 3 | 0.75 | 0.5 |
| Logs | 5 | na | na | na | na | na | na | na | na | na | na | na | na | na | na | na |
| Standardised Site Condition | 75 | 37 |  |  | 41 |  |  | 33 |  |  | 18 |  |  | 30 |  |  |
| Landscape Context | 25 | 17 |  |  | 12 |  |  | 12 |  |  | 12 |  |  | 17 |  |  |
| HabHa Score | 100 | 54 |  |  | 53 |  |  | 45 |  |  | 30 |  |  | 47 |  |  |
| Subtotal of gains | | |  | 4.5 | 2.625 |  | 6 | 2.625 |  | 4.5 | 2.625 |  | 3.25 | 2.125 |  | 4.5 | 2.625 |
| Standardised Sum Main + Impr Gain/Ha | | | 9.69 | | | 11.73 | | | 9.69 | | | 7.31 | | | 9.69 | | |
| Prior Mgt Gain/Ha | | | 5.4 | | | 5.3 | | | 4.5 | | | 3 | | | 4.7 | | |
| Security Gain/Ha | | | 5.4 | | | 5.3 | | | 4.5 | | | 3 | | | 4.7 | | |
| Total Gain/Ha | | | 20.49 | | | 22.33 | | | 18.69 | | | 13.31 | | | 19.09 | | |
| Size of habitat zone (Ha) | | | 66.39 | | | 6.81 | | | 17.53 | | | 1.82 | | | 1.56 | | |
| TOTAL GAIN (HHa) | | | 13.6 | | | 1.52 | | | 3.28 | | | 0.24 | | | 0.3 | | |

Notes: E = Endangered, CC = Current Condition, M/ha = Maintenance Gain/ha, I/ha = Improvement Gain/ha

## Summary of Available Gains

The gains available within the proposed offset site were calculated based on the quality and condition of the remnant native vegetation as well as applicable management actions and objectives. The following gains are available within the offset site (Table 12, Figure 2):

* 18.94 habitat hectares of Very High conservation significance Plains Grassland (EVC 132).

Remnant vegetation identified in Figure 2 within the offset site is proposed to be protected as part of this OMP. Additional areas within the offset site are available for protection including additional areas of Plains Grassland and other EVCs (Stony Knoll Shrubland, Plains Grassy Wetland, Creekline Tussock Grassland and Brackish Wetland). Some areas of Plains Grassland have also been assigned as offsets for other projects and are pending formal approval.

## Allocation of Native Vegetation Gains

Based upon the retained vegetation and the potential gains available within the proposed offset site, Table 13 documents how the Net Gain targets can be partially met via the retention, protection and management of the offset site. The total gains to be utilised within the offset site (16.41 habitat hectares) forms part of the offset strategy for the total gain targets required. Not all offsets can be satisfied with the available gain within the offset site due to the like-for-like criteria for some offsets. As such, additional gains must be secured at other offset sites to meet total gain targets for the proposed losses.

A surplus of 5.77 habitat hectares of Very High conservation significance Plains Grassland (habitat zones PG9, PG10, PG11 and part of PG1) remains after the allocation of gain to all suitable offset targets where like-for-like criteria can be met.

Table . Allocation of native vegetation gains for clearing a remnant patch

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Gain Target | | | | Trading Up | Gain Target | Source of gains to meet targets | | Outcome | |
| Target # | EVC | Conservation significance | Target (HHa) | Discount | Gain Target | Offset Zone | Gain (Hha) | Total Gains from designated offset area (Hha) | Surplus/Deficit (Hha) |
| 1 | PG | Very High | 2.32 | 0 | 2.32 | PG1 | 13.6 | 2.32 | +11.28 |
| 2a | PG | High | 3.12 | 0.75 | 2.34 | PG7 | 0.3 | 0.3 | -2.04\* |
| 2b | PG | High | 3.12 | 0.75 | 2.34 | PG1 | (+11.28)^ | 2.04 | +9.24 |
| 3 | PGWe | High | 0.09 | 0.75 | 0.07 | PG1 | (+9.24)^ | 0.07 | +9.17 |
| 4 | CGW | High | 0.38 | 0.75 | 0.29 | PG1 | (+9.17)^ | 0.29 | +8.88 |
| 5 | PGW | High | 10.87 | 0.75 | 8.15 | PG1 | (+8.88)^ | 8.15 | +0.73 |
|  |  |  |  |  |  | PG10 | 1.52 | 0 | +1.52 |
|  |  |  |  |  |  | PG9 | 3.28 | 0 | +3.28 |
|  |  |  |  |  |  | PG11 | 0.24 | 0 | +0.24 |
| **Total** |  |  | **16.41** |  | **12.9** |  | **18.94** | **12.9** | **+5.77** |

Notes: ^Carry over, indicates surplus from PG1. \* Indicates remaining deficit that must be satisfied through another remnant patch. ~Indicates deficit carried over from Target 5a.

# Part B – Offset Implementation

This section presents the actions required to implement the OMP. The plan details methods for the management and conservation of native vegetation at the offset site over the requisite ten year management period and in perpetuity.

It is anticipated that the offset management works will begin prior to the clearing of native vegetation associated with the proposed development. It is envisaged that the majority of the works would be conducted by the landholder or a suitably qualified and experienced contractor nominated by the landholder.

The plan aims to achieve vegetation gains through on-ground actions and therefore is required to be simple and practical. However, the management actions must be measurable against the commitments made in the calculation of habitat gain scoring (i.e. measures to achieve the Net Gain target) and to the satisfaction of the Department of Environment.

## Details of Offset Site

Table 14 provides details of the offset site.

Table . Offset Site Details

|  |  |
| --- | --- |
| Offset Site Details | |
| Landowner of offset site | Tom and Kate Calvert |
| Type of offset (onsite, 3rd party) | 3rd Party |
| Location and address of offset site | 833 Carranballac–Darlington Road, Darlington 3271 |
| Total area of property (ha) (Figure 2) | 220 hectares (Approx.) |
| Area of offset site (ha) | 100 hectares in total |
| Offset site number (if applicable) | N/A |
| Volume | 8434 |
| Folio | 127 |
| Parish | Jellalabad |
| Allotment | 17a and 17b |
| Local Government Area | Moyne Shire Council |
| Responsible Authority | DoE and DELWP |
| Bioregion | Victorian Volcanic Plain |

## Strategy for Offset Site

The offset site is to be secured and managed for conservation purposes in perpetuity. The management strategy for the proposed offset site consists of implementing a vegetation offset management plan incorporating weed control and regular monitoring. The offset site is part of a larger area that is proposed to be managed for conservation purposes through other offset agreements (Figure 2).

Details of security and management responsibility are shown in Table 15.

Table . Security and Management Responsibility

|  |  |
| --- | --- |
| Offset Security and Management Responsibility | |
| Who is liable/responsible for meeting offset requirements? | VicRoads |
| Type of security i.e. Planning Permit Condition, Section 69 of the *Conservation, Forest and Lands Act 1987* (Vic), Section 173 of the *Planning and Environment Act 1987* (Vic), Covenant under the *Victorian Conservation Trust Act 1972* (Vic) | Section 173 of the Planning and Environment Act 1987 |
| Agreement or Planning Permit Number (ID) | TBC |
| Date 10-year offset management to commence | TBC |
| Date 10-year offset management expires | TBC |
| Registered on title? (Yes/No) | Yes |
| Offset site management responsibility (i.e. Landowner, Authority Name) | Landowner |
| Offset Monitoring Responsibility (i.e. Responsible Authority, DELWP) | DoE and DELWP |

## Adaptive management

This Plan provides actions for a period of 10 years. The timing of actions and whether they occur is based on adaptive management. By monitoring the outcomes of actions, management may be adapted to ensure the stated commitments in the Plan are upheld. For example, new techniques for controlling high threat weeds may become available, or further information on the ecology and status of the vegetation communities may necessitate adjustment to management actions. The western districts of Victoria are known to be highly seasonal and conditions can vary greatly from year to year. This seasonality is acknowledged in this offset plan by allowing for flexibility around timing of actions at the discretion of the land manager.

## On-going Land Use Commitments

This section presents the actions required to implement the management strategy for remnant grassland within the offset site to satisfy the requirements of Condition 12 and 16 of the EPBC Act approval conditions. The site is to be secured and managed for conservation purposes in perpetuity. Management actions described below are to be implemented for a period of 10 years in accordance with Condition 13 and 17 of the EPBC Act approval conditions. The landowners will continue to manage the offset site after the completion of year 10 as specified in this plan, such that:

* weed cover is managed in perpetuity to ensure it does not increase beyond the level attained at year 10 of management;
* pest animals are controlled in perpetuity to the level attained at year 10 of the management; and,
* Golden Sun Moth habitat will be managed to maintain/improve populations.

Any proposed uses or development of the site which conflict with the landowners commitments are not permitted under this plan.

## Management Objectives

The offset site will be managed for the purposes of conservation. Management of this site will be in accordance with Condition 12 and 16 of the EPBC Act approval conditions and aims to achieve an improvement in the overall condition of vegetation in accordance with the EPBC Act offset Calculator (Appendix 1). Actions will involve physical protection of the proposed offset site, management of woody and noxious weeds, the control of pest animals, biomass reduction and the general objective of improving the character and quality of the native vegetation, consistent with its occurrence in an area of remnant grassland. Where appropriate, the offset management plan and specified management actions should form part of a broader strategy for long-term management of ecological values within contiguous land.

### Security Arrangements

The offset site will have on-title legal agreements put in place in accordance with Condition 11a and 15a of the EPBC Act approval conditions (conservation covenant [*Victorian Conservation Trust Act 1972*] or Section 173 [*Planning and Environment Act 1987*] in accordance with the relevant Responsible Authority) to ensure it is secured and managed appropriately in perpetuity. The boundary of the offset site will be surveyed and included in the on-title agreement.

### Access Control

Without active management and appropriate fencing, unrestricted access into the offset site may result in loss of native vegetation cover, soil disturbance and compaction, and weed facilitation. The perimeter of the property is currently enclosed by permanent post-and-wire fencing, with well maintained and planned internal fences to control stock access throughout the property. The site is currently rotationally grazed by sheep at a low rate with internal fences strategically erected and removed to manage stock movement.

The individual offset area will not be fenced separately as it is part of a larger area managed solely for conservation purposes and permanent internal fencing would result in unnecessary soil disturbance and loss of remnant vegetation and Golden Sun Moth habitat.

Access control will proceed in accordance with the following:

* Maintain permanent fences surrounding the offset area. Any new perimeter fencing should be vermin proof and constructed with minimal impact to the offset site (i.e. no stock piling of fencing materials or soil during construction);
* Time controlled grazing can continue within the offset site using appropriate fencing for stock control constructed with minimal impact to the offset site; and,
* Fence condition will be monitored on an annual basis with any gaps or holes repaired in a timely manner.

*Key Performance Indicators*

The following key performance indicator has been provided to measure the success of the access control:

* Permanent stock-proof fence prevents all unauthorised access to the offset site.

### Pest Control

#### Weed Control

The control of weed species is a key management action within the offset area and is critical to achieving a Net Gain. Effective weed control should promote the regeneration of existing populations of indigenous species and encourage recruitment from soil stored seed. Care should therefore be taken to ensure this ultimate objective is not compromised by excessive treatment. Weed control work may be carried out by the landholder or a suitably qualified contractor.

Whilst all weeds should be treated, emphasis is placed on priority weeds within the offset site. Priority weeds include woody weeds and all noxious weeds listed under the *Catchment and Land Protection Act 1994* (CaLP). High priority weeds that require immediate attention within the offset site and surrounds are also listed in Table 16. The control of priority weeds is a key management action within the offset site and must be adequately addressed if Net Gain is to be achieved.

The following key management actions will be undertaken to ensure success of the weed management program:

* Eliminate woody weeds (cover reduced to <1%) within all habitat zones (Table 16);
* Identify new infestations of weed species and implement control as appropriate;
* Control all other weeds within all habitat zones (cover maintained at current level) (Table 16);

The following guidelines should be taken as general management principles in regards to weed control:

* Weed control methodology for managing graminoid and herbaceous weeds will consist of manual removal and/or spot spraying weeds with an appropriate herbicide. Care should be taken when spraying herbicide to ensure that the poison does not affect native vegetation in the local application area. Weed species should be treated before seed is set, which may involve localised slashing if spot-spraying proves ineffective. A dye should be used in the spray to mark where the spraying has occurred;
* Selective herbicide application is preferable to broad area application but clearly the loss of non-target species needs to be balanced with the threat of incomplete control of the existing weed population;
* Weed control to be conducted outside of the normal active period for Golden Sun Moth (November to January) and activities will be conducted in a mosaic fashion to avoid any unexpected impacts affecting the entire population at the same time, and consideration to the application of herbicides as the effects of such chemicals on Golden Sun Moth larvae remain unknown;
* Any weed control should be done in a manner that minimises soil disturbance;
* Where herbicide application is employed, waterway sensitive products and non-residual herbicides are to be employed;
* Pest plants that reproduce sexually (by seed) are best controlled before seed set. If herbicide application is proposed after seed set, slashing should be undertaken to ensure seed does not reach maturity; and,
* To reduce the amounts of herbicide used, the target biomass should be reduced (e.g. slashed or recently grazed) before application so the herbicide can also be absorbed by the actively regrowing plants. Herbicides are only effective when plants are actively growing; and,

Weed control works should be monitored regularly to assess their effectiveness, perform follow up works and evaluate the feasibility of management objectives.

Table . High priority weeds to be controlled

| Common Name | | Scientific Name | Control Method | Timing | Current Cover | Threat Level | Goal |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Herbaceous Weeds** | | | | | | | |
| Thistles\* | | *Cirsium spp.* | SS, CH | SS – Winter-Spring, CH - All Year | 1% | High | Maintain (current level) |
| Horehound\* | | *Marrubium vulgare* | SS, CH | SS – Winter-Spring, CH - All Year | 1% | High | Maintain (current level) |
| Ox-tongue | | *Helminthotheca echioides* | SS, CH | Winter-Spring | 1% | Medium | Maintain (current level) |
| **Grassy Weeds** | | | | | | | |
| Annual Grasses | Fescue | *Vulpia spp.* | F, SS | Mid-winter to late spring | 10% | Medium | Maintain |
| Wild Oats | *Avena spp* | F, SS | Mid-winter to late spring | 10% | Medium | Maintain |
| Perennial Grasses | Ryegrass | *Lolium* spp. | MR, SS, F | SS – Winter-Spring, M, MR - All year | 10% | Medium | Maintain |
| Cocksfoot | *Dactylis glomerata* | MR, SS, F | SS – Winter-Spring, M, MR - All year | 10% | Medium | Maintain |
| Phalaris | *Phalaris aquatica* | MR, SS, F | SS – Winter-Spring, M, MR - All year | 10% | Medium | Maintain |

**Notes:** SS = Spot-spray; F = Frequent Grazing/Mowing; MR = Manual removal; CH = Chip Out or Hand Pull. Weed Status: \* = Declared Noxious Weed (DPI 2008)

*Key Performance Indicators*

The following key performance indicators have been provided to measure the success of the weed management program:

* Reduce woody weed cover to <1%; and,
* Maintain all other weed cover at current levels.

#### Pest Animal Control

The Catchment and Land Protection Act 1994 lists rabbits and foxes as established pest animals and requires that all landowners take reasonable steps to prevent the spread of, and as far as possible eradicate, established pest animals on their land.

Whilst rabbit activity is currently low within the offset site, they should be monitored and controlled throughout the year. Foxes are a threat to native fauna and should be controlled if found on your property. Fox dens where present are required to be destroyed through fumigation and hand collapse. Continue to monitor and control rabbits and foxes all year round as well as any new and emerging pest animals.

All vermin harbour (i.e. burrows) should be removed, without disturbance to native vegetation or significant soil disturbance. The landowner/contractor is to monitor pest animal use of the offset site whilst undertaking vegetation management works. Any changes in the influences of pest animals may require a change in the management actions.

The following key management actions should be undertaken to ensure success of the pest animal program:

* Monitor the population of pest animals (namely rabbits and foxes) during targeted night transect surveys and weed control works;
* Identify potential harbour and burrows, and destroy if soil disturbance can be minimised and all native vegetation retained; and,
* Adapt management as considered appropriate (i.e. if an increase in pest animal activity is observed then a targeted pest animal control program should be implemented). If necessary, undertake a pest animal control program, which may include shooting, baiting, fumigation and warren destruction.

*Key Performance Indicators*

The following key performance indicators have been provided to measure the success of the pest animal management:

* No increase in pest animal activity from approval of this plan; and,
* Minimal soil disturbance and no native vegetation loss from pest animal management activities.

### Biomass Control

The current biomass reduction method applied throughout the site consists of low-intensity rotational grazing by sheep. This grazing regime is considered appropriate as a method for managing biomass within the offset site on the provision that total vegetation cover remains to be at least 70%. It is also important to minimise stock ‘camping’ during grazing periods and allow adequate ‘rest’ between grazing periods.

Alternatively, low intensity mosaic burns can be used to maintain biomass levels as well as aid in the recruitment of indigenous species. Given the presence of suitable habitat for Golden Sun Moth, these activities should be conducted outside of the normal activity period (from November to January) for the species (e.g. employing cool autumn burns). Biomass reduction via ecological burning will be implemented on an as-needed basis, with consideration of the success of stock grazing and based on recommendations presented in vegetation monitoring reports (see Section 7.6).

*Key Performance Indicators*

The following key performance indicator has been provided to measure the success of the biomass control:

* Biomass is managed and maintained at current levels.

### Supplementary Planting

It is anticipated that natural regeneration of remnant native vegetation and implementation of weed control measures are likely to improve the overall cover and diversity of indigenous flora within the offset site and hence contribute to Net Gain targets. As such, direct seeding and supplementary planting is not essential at this stage of proceeding and has not been included as a required management action as part of this plan.

### Threatened Species

There is suitable habitat throughout the property, including within the proposed offset site, for several significant flora and fauna species (Section 5.2). Management actions should be undertaken to ensure that; firstly these species are protected, and; secondly recruitment or expansion of the species is encouraged. Ongoing management activities need to be aware of any significant species that may persist on the site. All workers involved in the control of pest plants and animals must be able to identify the significant plant and animal species present within the study area.

*Key Performance Indicators*

The following key performance indicator has been provided to measure the success of the threatened species management:

* All populations of threatened flora and fauna species are maintained or improved within the offset site through the habitat management actions detailed in this plan.

## Monitoring and Reporting

Monitoring of native vegetation and Golden Sun Moth habitats should be undertaken by a suitably qualified ecologist to ensure key performance targets are met and the responsible authorities notified of the successes and failures of works through regular progress reports. Progress reports will be provided to the responsible authority at the end of year 2, 5 and 10 of the program (Table 17).

### Monitoring

#### Native vegetation

Monitoring is required to assess the positive and negative impacts of management actions on the integrity of the offset site, and to implement change if required. Vegetation monitoring will be conducted in years 2, 5 and 10, with progress reports provided to the responsible authority at the end of these years.

This monitoring will be undertaken by a suitably qualified ecologist, with some input from the landowners. However, the frequency of monitoring may need to vary to allow for seasonal variations and to target periods of active weed growth. Similarly, pest animal monitoring should be undertaken at a time of year when these animals are most active so that an accurate assessment of population sizes can be made.

It is recommended that monitoring be undertaken by a qualified ecological consultant familiar with the methodology for assessing the quality of vegetation as well as any offset and EPBC Act referral requirements. This plan provides the baseline data to be used as a reference point to assess the impacts of the management actions.

Monitoring and progress reports should include the following:

* Overall condition and composition of vegetation as well as consideration of measurable vegetation quality outcomes i.e. habitat hectare assessment;
* Biomass levels;
* The extent, severity, trend and presence of current weed species and any new and emerging weed species; and,
* Implementation of permanent photo points. Photographs must be taken at the same location and during the same time of each year. Photo points will allow monitoring of weed populations and maintenance of the current condition of native vegetation within the offset site. Details of photo points and photographs will be provided to DELWP and DoE where required as evidence of progress.

#### Golden Sun Moth

Golden Sun Moth populations are known to vary on spatial and temporal scales depending upon habitat conditions at a particular site. Monitoring is required to determine if Golden Sun Moth has persisted in grassland areas, to determine reproductive success and to ensure that management actions and habitats are suitable for a viable Golden Sun Moth population in the future.

Annual monitoring of Golden Sun Moth populations will be undertaken for an initial 4 year period (within the ten year management timeframe). If, at the end of the four year monitoring program, the results indicate a significant decline in the Golden Sun Moth population or degradation of Golden Sun Moth habitat, the OMP will be re-evaluated and adapted accordingly. Seasonal fluctuations may be taken into consideration.

Specific survey procedures will follow those approved by DoE and outlined in the Golden Sun Moth Significant Impact Guidelines (DEWHA 2009). The following will be undertaken as part of population and habitat monitoring of Golden Sun Moth habitat for the initial 4 year period (and extended if required):

* Collection of baseline data to be used as a reference point to assess the impacts of management actions. This will comprise targeted Golden Sun Moth surveys undertaken throughout the extent of the offset site;
* Surveys are to be conducted by suitably trained observers;
* Surveys must take place during the species’ flight season. This is generally November to early January. Ensure moths are active on the day of assessment by using a reference site where the species is known to be present;
* Surveys must be undertaken during conditions suitable for detecting the species. Male moths generally fly between 10am and 3pm on warm (over 20˚C by 10am) days with minimal cloud cover and still conditions. However if males are observed flying after 3pm or during moderately windy conditions surveys can continue until males are no longer observed flying; and,
* Surveys should be conducted using 50 metre wide, parallel transects with two observers walking or, if terrain permits, driving in a car at < 10 km / hour (flying male moths can be readily seen from a vehicle) until moths are observed. Tracks (transects) must be recorded with a GPS to show where survey has been undertaken.

#### Other Monitoring

Information relating to fencing, weed control and pest animal control will be provided by landowners and the relevant contractors, with a landowner monitoring form completed on an annual basis (see below). This information will be included in the progress report, discussed below.

#### Corrective Action

If monitoring identifies a trending degradation of vegetation and habitat quality within the offset site, taking into account seasonal environmental conditions or fluctuations, corrective actions and contingency measures may be required. Such corrective actions may comprise a change in management techniques, timing and/or frequency from those outlined in this plan. Corrective actions should be discussed with the ecological consultants prior to implementation and included in the annual report. Any significant issues should be raised with DoE and DELWP prior to implementation of corrective action.

Triggers for corrective action include:

* Security of the site is unable to be maintained (both physical and on-title arrangements);
* Noxious weed species cover exceeds Year 1 baseline levels or increase in cover is recorded over two consecutive years;
* Pest animal activity exceeds Year 1 baseline levels or an increase in activity is recorded over two consecutive years.

### Reporting

Progress reports will be provided to the responsible authority at the end of year 2, 5 and 10 of the program. Information to be provided in the progress report includes:

* A copy of the Management Actions Table (Table 17) detailing actions completed during the reporting period;
* Landowner monitoring and reporting forms;
* A description of the specific monitoring results from ecological surveys undertaken;
* Results of weed and pest animal control work;
* Successful management tools (i.e. techniques used to control weed species, monitoring technique, etc.);
* Any problems or issues experienced (i.e. new infestation of weed species, etc.);
* Any corrective actions and contingency measures where monitoring indicates that there has been a deterioration in the native vegetation or Golden Sun Moth population; and,
* Photographs showing evidence of works.

In order to meet EPBC Act referral conditions, all records/evidence of management actions must be maintained, and be submitted to DoE upon request, and any proposed management changes must be submitted to DoE prior to the changes being undertaken.

If any agreed management actions or commitments are incomplete or have not been undertaken in the times specified, the landowner is to document the justification and the actions that will be undertaken to implement the requirement.

#### Landowner Monitoring and Reporting Form

Information relating to fencing, weed control and pest animal control will be provided by landowners and the relevant contractors, with a landowner monitoring form completed on an annual basis (see below) and submitted with the progress reports at the end of year 2, 5 and 10 of the program. The template for a landowner monitoring and reporting form is shown in Table 18.

If any agreed management actions or commitments are incomplete or have not been undertaken in the times specified, the responsible party must explain the reasons why and what program of action/s will be undertaken to implement the action. If no action has been undertaken please explain the reason(s) and how the targets specified will be met.

## Management Actions Table

Management actions are summarised in Table 17. The actions constitute the minimum management requirements for the offset site over the mandatory 10 year management period.

Table . Management Actions Table

| Year | Action | Management action | Responsible authority / personnel | Timing of action | Report reference | Date completed |
| --- | --- | --- | --- | --- | --- | --- |
| 0 | 0.1 | Implement on-title legal agreements for offset site | Liaise between the landowner, DELWP and DoE. | Within three months of this plan being approved by DELWP and DoE | Section 7.5 |  |
| 1 | 1.1 | Check and maintain permanent fences surrounding the offset site, as required | Landowner | Within three months of this plan being approved by DELWP and DoE | Section 7.5.2 |  |
| 1 | 1.2 | Conduct weed control | Landowner and/or competent Contractor | Refer to Table 16 | Section 7.5.3 .1 |  |
| 1 | 1.3 | Monitor populations of pest animals and conduct control works if required | Landowner/Pest Animal Contractor | After peak breeding season - late summer/early autumn | Section 7.5.3 .2 |  |
| 1 | 1.4 | Conduct monitoring for Golden Sun Moth | Suitably qualified ecological specialist/ landowner | One year after commencement of OMP | Section 7.6.1 |  |
| 1 | 1.5 | Monitor biomass density and implement stock grazing regime or develop ecological burn/ fuel reduction plan. if appropriate | Landowner/ competent Contractor/CFA | Summer/Autumn | Section 7.4.3 |  |
| 1 | 1.6 | Complete landowner monitoring form | Landowner | During Autumn each year | Section 7.6.2.1 |  |
| 2 | 2.1 | Conduct weed control | Landowner and/or competent Contractor | Refer to Table 16 | Section 7.5.3 .1 |  |
| 2 | 2.2 | Monitor populations of pest animals and conduct control works if required | Landowner/Pest Animal Contractor | After peak breeding season - late summer/early autumn | Section 7.5.3 .2 |  |
| 2 | 2.3 | Conduct monitoring for vegetation and Golden Sun Moth | Suitably qualified ecological specialist/ landowner | Two years after commencement of OMP | Section 7.6.1 |  |
| 2 | 2.4 | Maintain fences | Landowner/Fencing Contractor | As required | Section 7.5.2 |  |
| 2 | 2.5 | Monitor biomass density and implement stock grazing regime or develop ecological burn/ fuel reduction plan if appropriate | Landowner/ competent Contractor/CFA | Summer/Autumn | Section 7.4.3 |  |
| 2 | 2.6 | Complete landowner monitoring form and submit progress report | Landowner | Two years after commencement of OMP | Section 7.6 |  |
| 3 | 3.1 | Conduct weed control | Landowner and/or competent Contractor | Refer to Table 16 | Section 7.5.3 .1 |  |
| 3 | 3.2 | Monitor populations of pest animals and conduct control works if required | Landowner/Pest Animal Contractor | After peak breeding season - late summer/early autumn | Section 7.5.3 .2 |  |
| 3 | 3.3 | Conduct monitoring for Golden Sun Moth | Suitably qualified ecological specialist/ landowner | Three years after commencement of OMP | Section 7.6.1 |  |
| 3 | 3.4 | Maintain fences | Landowner/Fencing Contractor | As required | Section 7.5.2 |  |
| 3 | 3.5 | Monitor biomass density and implement stock grazing regime or develop ecological burn/ fuel reduction plan if appropriate | Landowner/ competent Contractor/CFA | Summer/Autumn | Section 7.4.3 |  |
| 3 | 3.6 | Complete landowner monitoring form | Landowner | During Autumn each year | Section 7.6.2.1 |  |
| 4 | 4.1 | Conduct weed control | Landowner and/or competent Contractor | Refer to Table 16 | Section 7.5.3 .1 |  |
| 4 | 4.2 | Monitor populations of pest animals and conduct control works if required | Landowner/Pest Animal Contractor | After peak breeding season - late summer/early autumn | Section 7.5.3 .2 |  |
| 4 | 4.3 | Conduct monitoring for Golden Sun Moth | Suitably qualified ecological specialist/ landowner | Four years after commencement of OMP | Section 7.6.1 |  |
| 4 | 4.4 | Maintain fences | Landowner/Fencing Contractor | As required | Section 7.5.2 |  |
| 4 | 4.5 | Monitor biomass density and implement stock grazing regime or develop ecological burn/ fuel reduction plan if appropriate | Landowner/ competent Contractor/CFA | Summer/Autumn | Section 7.4.3 |  |
| 4 | 4.6 | Complete landowner monitoring form | Landowner | During Autumn each year | Section 7.6.2.1 |  |
| 5 | 5.1 | Conduct weed control | Landowner and/or competent Contractor | Refer to Table 16 | Section 7.5.3 .1 |  |
| 5 | 5.2 | Monitor populations of pest animals and conduct control works if required | Landowner/Pest Animal Contractor | After peak breeding season - late summer/early autumn | Section 7.5.3 .2 |  |
| 5 | 5.3 | Maintain fences | Landowner/Fencing Contractor | As required | Section 7.5.2 |  |
| 5 | 5.4 | Monitor biomass density and implement stock grazing regime or develop ecological burn/ fuel reduction plan if appropriate | Landowner/ competent Contractor/CFA | Summer/Autumn | Section 7.4.3 |  |
| 5 | 5.5 | Monitor and assess works | Suitably qualified ecological specialist/landowner | Five years after commencement of OMP | Section 7.6 |  |
| 5 | 5.6 | Complete landowner monitoring form and submit progress report | Landowner | Five years after commencement of OMP | Section 7.6 |  |
| 6 | 6.1 | Conduct weed control | Landowner and/or competent Contractor | Refer to Table 16 | Section 7.5.3 .1 |  |
| 6 | 6.2 | Monitor populations of pest animals and conduct control works if required | Landowner/Pest Animal Contractor | After peak breeding season - late summer/early autumn | Section 7.5.3 .2 |  |
| 6 | 6.3 | Maintain fences | Landowner/Fencing Contractor | As required | Section 7.5.2 |  |
| 6 | 6.4 | Monitor biomass density and implement stock grazing regime or develop ecological burn/ fuel reduction plan if appropriate | Landowner/ competent Contractor/CFA | Summer/Autumn | Section 7.4.3 |  |
| 6 | 6.5 | Complete landowner monitoring form | Landowner | During Autumn each year | Section 7.6.2.1 |  |
| 7 | 7.1 | Conduct weed control | Landowner and/or competent Contractor | Refer to Table 16 | Section 7.5.3 .1 |  |
| 7 | 7.2 | Monitor populations of pest animals and conduct control works if required | Landowner/Pest Animal Contractor | After peak breeding season - late summer/early autumn | Section 7.5.3 .2 |  |
| 7 | 7.3 | Maintain fences | Landowner/Fencing Contractor | As required | Section 7.5.2 |  |
| 7 | 7.4 | Monitor biomass density and implement stock grazing regime or develop ecological burn/ fuel reduction plan if appropriate | Landowner/ competent Contractor/CFA | Summer/Autumn | Section 7.4.3 |  |
| 7 | 7.5 | Complete landowner monitoring form | Landowner | During Autumn each year | Section 7.6.2.1 |  |
| 8 | 8.1 | Conduct weed control | Landowner and/or competent Contractor | Refer to Table 16 | Section 7.5.3 .1 |  |
| 8 | 8.2 | Monitor populations of pest animals and conduct control works if required | Landowner/Pest Animal Contractor | After peak breeding season - late summer/early autumn | Section 7.5.3 .2 |  |
| 8 | 8.3 | Maintain fences | Landowner/Fencing Contractor | As required | Section 7.5.2 |  |
| 8 | 8.4 | Monitor biomass density and implement stock grazing regime or develop ecological burn/ fuel reduction plan if appropriate | Landowner/ competent Contractor/CFA | Summer/Autumn | Section 7.4.3 |  |
| 8 | 8.5 | Complete landowner monitoring form | Landowner | During Autumn each year | Section 7.6.2.1 |  |
| 9 | 9.1 | Conduct weed control | Landowner and/or competent Contractor | Refer to Table 16 | Section 7.5.3 .1 |  |
| 9 | 9.2 | Monitor populations of pest animals and conduct control works if required | Landowner/Pest Animal Contractor | After peak breeding season - late summer/early autumn | Section 7.5.3 .2 |  |
| 9 | 9.3 | Maintain fences | Landowner/Fencing Contractor | As required | Section 7.5.2 |  |
| 9 | 9.4 | Monitor biomass density and implement stock grazing regime or develop ecological burn/ fuel reduction plan if appropriate | Landowner/ competent Contractor/CFA | Summer/Autumn | Section 7.4.3 |  |
| 9 | 9.5 | Complete landowner monitoring form | Landowner | During Autumn each year | Section 7.6.2.1 |  |
| 10 | 10.1 | Conduct weed control | Landowner and/or competent Contractor | Refer to Table 16 | Section 7.5.3 .1 |  |
| 10 | 10.2 | Monitor populations of pest animals and conduct control works if required | Landowner/Pest Animal Contractor | After peak breeding season - late summer/early autumn | Section 7.5.3 .2 |  |
| 10 | 10.3 | Maintain fences | Landowner/Fencing Contractor | As required | Section 7.5.2 |  |
| 10 | 10.4 | Monitor biomass density and implement stock grazing regime or develop ecological burn/ fuel reduction plan if appropriate | Landowner/ competent Contractor/CFA | Summer/Autumn | Section 7.4.3 |  |
| 10 | 10.5 | Complete landowner monitoring form and submit progress report | Landowner | Ten years after commencement of OMP | Section 7.6 |  |
| 10 | 10.6 | Monitor and assess works, and prepare final report | Suitably qualified ecological specialist/landowner | Ten years after commencement of OMP | Section 7.6 |  |

Table . Landowner Monitoring and Reporting Form

|  |  |  |
| --- | --- | --- |
| Landowner of offset site |  | |
| Location and address of offset site |  | |
| Offset site number (if applicable) |  | |
| Offset plan reference number (if applicable) |  | |
| Responsible Authority | Greater Dandenong City Council | |
| Report # (Year since commencement) |  | |
| Actions completed within the offset site during the management year | Date and details of action | Key performance target met (Y/N) |
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|  |  |  |
| Signature |  | |
| Date |  | |

# References

Brett Lane and Associates Pty Ltd 2013. ‘Terrinallum South’, 833 Pura Road, Darlington, Vic, 3271 Native Vegetation and Threatened Species Assessment. Report prepared for Tom and Kate Calvert.

DEPI 2014a. EVC Benchmarks. www.depi.vic.gov.au. Department of Environment and Primary Industries, Melbourne, Victoria.

DEPI 2014b. Biodiversity Interactive Map 3.1., available from URL: [www.depi.vic.gov.au/about-dse/interactive-maps](http://www.depi.vic.gov.au/about-dse/interactive-maps). Department of Environment and Primary Industries, Melbourne, Victoria.

DNRE 2002. Victoria's Native Vegetation Management: A Framework for Action. Department of Natural Resources and Environment, Victoria.

DPI 2008. Declared Noxious Weeds – Listed by Common Name. Landcare Notes. Department of Primary Industries.

DSE 2004. Vegetation Quality Assessment Manual: Guidelines for Applying the Habitat Hectares Scoring Method, Biodiversity and Natural Resources Division, Department of Sustainability & Environment, East Melbourne, Victoria.

DSE 2006a. Vegetation Gain Approach – Technical basis for calculating gains through improved native vegetation management and revegetation. Victorian Government, Department of Sustainability and Environment, East Melbourne.

DSE 2006b. Native Vegetation: Scoring Gain from an offset – DSE Gain Calculator user instructions. Victorian Government, Department of Sustainability and Environment, East Melbourne.

DSE 2006c. Native Vegetation Revegetation planting standards – Guidelines for establishing native vegetation for net gain accounting. Victorian Government, Department of Sustainability and Environment, East Melbourne, Victoria.

DSE 2007. Native Vegetation: Guide for Assessment of Referred Planning Permit Applications, Department of Sustainability and Environment, East Melbourne, Victoria.

DSE 2010. Net Gain Calculator, Version 1.2.5., Department of Sustainability and Environment, East Melbourne.

DSE 2011a. Victorian Biodiversity Atlas (VBA).  Sourced from: ‘VBA\_FLORA25’ and ‘VBA\_FLORA100’, Department of Sustainability and Environment, Victoria.

DSE 2011b. Victorian Biodiversity Atlas (VBA).  Sourced from: ‘VBA\_FAUNA25’ and ‘VBA\_FAUNA100’, Department of Sustainability and Environment, Victoria.

DoE 2014. Environment Protection and Biodiversity Conservation Act 1999 Protected Matters Search Tool (PMST). <http://www.environment.gov.au/erin/ert/epbc/index.html>. The Department of Environment, Canberra.

Ecology and Heritage Partners Pty Ltd 2012. Western Highway Project: Section 2, Beaufort to Ararat, Victoria. Impact Assessment Report – Flora, Fauna and Ecological Communities. Report prepared for VicRoads.

Enics Solutions 2012. Terrinallum South Golden Sun Moth Survey, December 2012. Report prepared for Tom and Kate Calvert.

GHCMA 2006. Glenelg Hopkins Catchment Management Authority Native Vegetation Plan. Glenelg Hopkins Catchment Management Authority, Victoria.

Plume Ecology Pty Ltd 2015. Targeted Golden Sun Moth (Synemon plana) Survey Report – ‘Terrinallum South’, Darlington, Victoria. Draft report prepared for VicRoads.

Viridans 2012a. Flora Information System (FIS), Viridians Biological Databases Pty Ltd, Department of Sustainability and Environment, East Melbourne, Victoria.

Viridans 2012b. Victorian Fauna Database (VFD), Viridians Biological Databases Pty Ltd, Department of Sustainability and Environment, East Melbourne, Victoria.

# Figures

# APPENDIX 1 – EPBC ACT OFFSET CALCULATORS

# Appendix 2 – Habitat Hectare Assessment

Table A2.1. Habitat Hectares results for remnant vegetation recorded within the study area.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Vegetation Zone | |  | PG1 | PG10 | PG9 | PG11 | PG7 |
| Bioregion | |  | Victorian Volcanic Plain | Victorian Volcanic Plain | Victorian Volcanic Plain | Victorian Volcanic Plain | Victorian Volcanic Plain |
| EVC / Tree | |  | Plains Grassland | Plains Grassland | Plains Grassland | Plains Grassland | Plains Grassland |
| EVC Number | |  | 132\_61 | 132\_61 | 132\_61 | 132\_61 | 132\_61 |
| EVC Conservation Status | | | Endangered | Endangered | Endangered | Endangered | Endangered |
|  | Large Old Trees /10 | | NA | NA | NA | NA | NA |
|  | Canopy Cover /5 | | NA | NA | NA | NA | NA |
|  | Under storey /25 | | 15 | 15 | 15 | 5 | 15 |
|  | Lack of Weeds /15 | | 9 | 6 | 6 | 0 | 4 |
| Patch | Recruitment /10 | | 0 | 6 | 0 | 6 | 0 |
| Condition | Organic Matter /5 | | 3 | 3 | 3 | 2 | 3 |
|  | Logs /5 | | NA | NA | NA | NA | NA |
|  | Treeless EVC Multiplier | | 1.36 | 1.36 | 1.36 | 1.36 | 1.36 |
|  | Subtotal = | | 36.72 | 40.8 | 32.64 | 17.68 | 29.92 |
| Landscape Value /25 | | | 17 | 12 | 12 | 12 | 17 |
| Habitat Points /100 | | | 53.72 | 52.8 | 44.64 | 29.68 | 46.92 |
| Habitat Score | |  | 0.54 | 0.53 | 0.45 | 0.30 | 0.47 |
| Total Area (ha) | | | 66.39 | 6.81 | 17.53 | 1.82 | 1.56 |
| Total habitat hectares | | | 35.851 | 3.609 | 7.889 | 0.546 | 0.733 |
| Habitat hectares to be retained | | | 35.851 | 3.609 | 7.889 | 0.546 | 0.733 |
|  | | Cons. Status x Hab. Score | V. High | V. High | V. High | High | V. High |
| Conservation Significance | | Threatened Species | V. High | V. High | V. High | V. High | V. High |
|  | | Overall (highest rating) | V. High | V. High | V. High | V. High | V. High |