# La Trobe University Sports Precinct Stage 3: EPBC Act Offset Management Plan (EPBC 2018/8343)

Final Plan
Prepared for La Trobe University
25 September 2020

## Biosis offices

**NEW SOUTH WALES**

**Albury**

Phone: (02) 6069 9200
Email: albury@biosis.com.au

**Newcastle**

Phone: (02) 4911 4040
Email: newcastle@biosis.com.au

**Sydney**

Phone: (02) 9101 8700
Email: sydney@biosis.com.au

**Wollongong**

Phone: (02) 4201 1090
Email: wollongong@biosis.com.au

**VICTORIA**

**Ballarat**

Phone: (03) 5304 4250
Email: ballarat@biosis.com.au

**Melbourne (Head Office)**

Phone: (03) 8686 4800
Email: melbourne@biosis.com.au

**Wangaratta**

Phone: (03) 5718 6900
Email: wangaratta@biosis.com.au


## Document information

| | |
|---|---|
| Report to: | La Trobe University |
| Prepared by: | Steve Mueck |
| Biosis matter no.: | 30808 |

## Document Information:

| Version/date | Internal review by | Date sent to client |
|---|---|---|
| Draft version 01 | MSG | 28/10/2019 |
| Final version 01 | SGM | 02/12/2019 |
| Final version 02 | SGM | 23/01/2020 |
| Final version 03 | SGM & IM | 25/09/2020 |

**File name: 30808.LaTrobeMFL.OMP.FinalDraft.23012020**

Citation: Biosis 2020. La Trobe University Sports Precinct Stage 3: EPBC Act Offset Management Plan (EPBC 2018/8343). Report for La Trobe University. Author: Steve Mueck, Biosis Pty Ltd, Melbourne. Project No. 30808.


## ACKNOWLEDGEMENTS

Biosis acknowledges the contribution of the following people and organisations in undertaking this study:

- La Trobe University: Tony Inglis
- Department of the Environment, Land, Water and Planning for access to the Victorian Biodiversity Atlas

The following Biosis staff were involved in this project:

- Sonika Kumar for mapping

# Contents

## List of Figures



## List of Tables

**Declaration of accuracy**

In making this declaration, I am aware that section 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed

Tony Inglis
Project Manager
La Trobe University

# Summary

Biosis Pty. Ltd. was commissioned by La Trobe University to prepare an Offset Management Plan (OMP) for a section of its campus at Bundoora, Victoria. The section assessed, covering 2.81 hectares, (the offset area) is located in the south western corner of the campus, just west of the western end of Sports Field Lake on a portion of land otherwise known as 906 Plenty Road Bundoora 3083.

The 2.81 hectare offset area meets the quantity and quality requirements for an offset of Matted Flax-lily *Dianella amoena* (MFL) habitat as determined by Department of Agriculture, Water and the Environment (DAWE) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in association with the approval conditions for referral EPBC 2018/8343.

Specifically this plan addresses the approval under the EPBC Act for the development of the La Trobe University Sports Precinct Stage 3, Bundoora, Victoria as outlined under referral 2018/8343.

A suitable offset site has been identified immediately south of the Stage 3 development. The offset area is located within the university campus on land owned and controlled by La Trobe University. The northern half of the offset area has been the subject of a targeted survey for MFL and is known to support one individual in similar vegetation to that proposed to be impacted by the Stage 3 development (Biosis 2019).

The proposed offset area of 2.81 hectares, amounts to an offset of about 2.2 times the impact to 1.26 hectares of MFL habitat, with a 215% gain in number of individuals within the Stage 3 Sports Precinct development.

This OMP requires that some land use rights are relinquished and that management actions have the primary objective aimed at conserving and improving of defined areas of habitat for MFL. The management actions outlined in this plan consider key management issues identified for the protection and enhancement of habitat for MFL.

The offset site will be secured in-perpetuity through an appropriate legal encumbrance registered on the property (a covenant as to part Section 3A Victorian *Conservation Trust Act 1972*). Gains in vegetation and MFL habitat quality through on-ground actions are expected over the initial 10 years of this OMP, and will be maintained through enduring commitments to manage the offset site for MFL and biodiversity conservation.

This plan specifies a range of management actions for the offset area, including weed management, revegetation works and ecological burning practices and protection of the habitat values of the offset site from degradation by development and unauthorised access. The plan includes an adaptive management approach, in which management actions are modified based on the results of monitoring and auditing activities in order to keep management focussed on the outcome of protecting and enhancing MFL habitat. The risk assessment also includes triggers for plan review, following environmental events such as significant weed invasion that has the potential to prejudice attainment and maintenance of OMP completion criteria.

# 1. Introduction

## 1.1 Project background

Biosis Pty Ltd was commissioned by La Trobe University to prepare an Offset Management Plan (OMP) for an offset site required for losses associated with the development of it Stage 3 Sporting Precinct at the Bundoora Campus in Victoria as outlined under referral 2018/8343. The location of the development site is shown in Figure 1.

An ecological assessment of the offset site, including a habitat hectare assessment, is documented by Biosis (2019a & b). That report identifies the condition and extent of native vegetation, including areas of the ecological vegetation class (EVC) Plains Grassy Woodland and habitat for Matted Flax-lily *Dianella amoena* (MFL) to be both impacted (Figure 2) and protected in association with the proposed development (Figures 3 and 4). Biosis (2019b) was used, in conjunction with the *Environment Protection and Biodiversity Conservation Act 1999* EPBC Act offsets policy, to identify the extent of MFL habitat to be protected outside the project area.

The development is under assessment by the Department of Agriculture, Water and the Environment (DAWE) under the EPBC Act through referral 2018/8343.

The development footprint would result in clearing of 3.203 hectares of native vegetation. This impact would also result in the loss of 23 individuals of Matted Flax-lily *Dianella amoena* within 1.26 hectares of suitable habitat (Figure 2).

Offsets for the proposed development are prescribed by both state (DELWP) and federal (DAWE) regulators. Offsets prescribed under the EPBC Act and the Guidelines cannot be generated concurrently and therefore separate offset sites are required to satisfy all the offsets required for the development. Offsets proposed under the EPBC Act involve securing a minimum 2.65 hectare offset site supporting MFL habitat.

The EPBC Act offset for MFL will be sourced from a 2.81 hectare section of La Trobe University immediately south of the Stage 3 development (Figure 3). An ecological assessment of the proposed offset area was conducted by Biosis (2019b). This report provides the basic ecological information to support this OMP and identified three remnant, largely contiguous patches of the ecological vegetation class (EVC) Plains Grassy Woodland (EVC 55) supporting one existing record of MFL (Figure 4). The balance of the site is considered potential MFL habitat which will be subject to intensive ecological management to improve this habitat. It will also be the recipient site for the salvage and translocation of the 23 MFL to be impacted by the Stage 3 development.

Management of the EPBC Act offset will involve protection and active ecological management of 2.81 hectares of vegetation which is potential MFL habitat and supports remnants of Plains Grassy Woodland (EVC 55) which also supports a known individual of MFL (Figure 4). Active management of this offset area will improve the condition of this vegetation to the point where it will satisfy the definition of Grassy Eucalypt Woodland of the Victorian Volcanic Plain community (Commonwealth of Australia 2011).

Both the Stage 3 Sports Precinct and offset site are within the Victorian Volcanic Plain (VVP) Bioregion (www.delwp.vic.gov.au). The offset site is immediately south of the Stage 3 development site (Figure 4).

A glossary of technical terms used throughout this OMP is provided in Appendix 3.

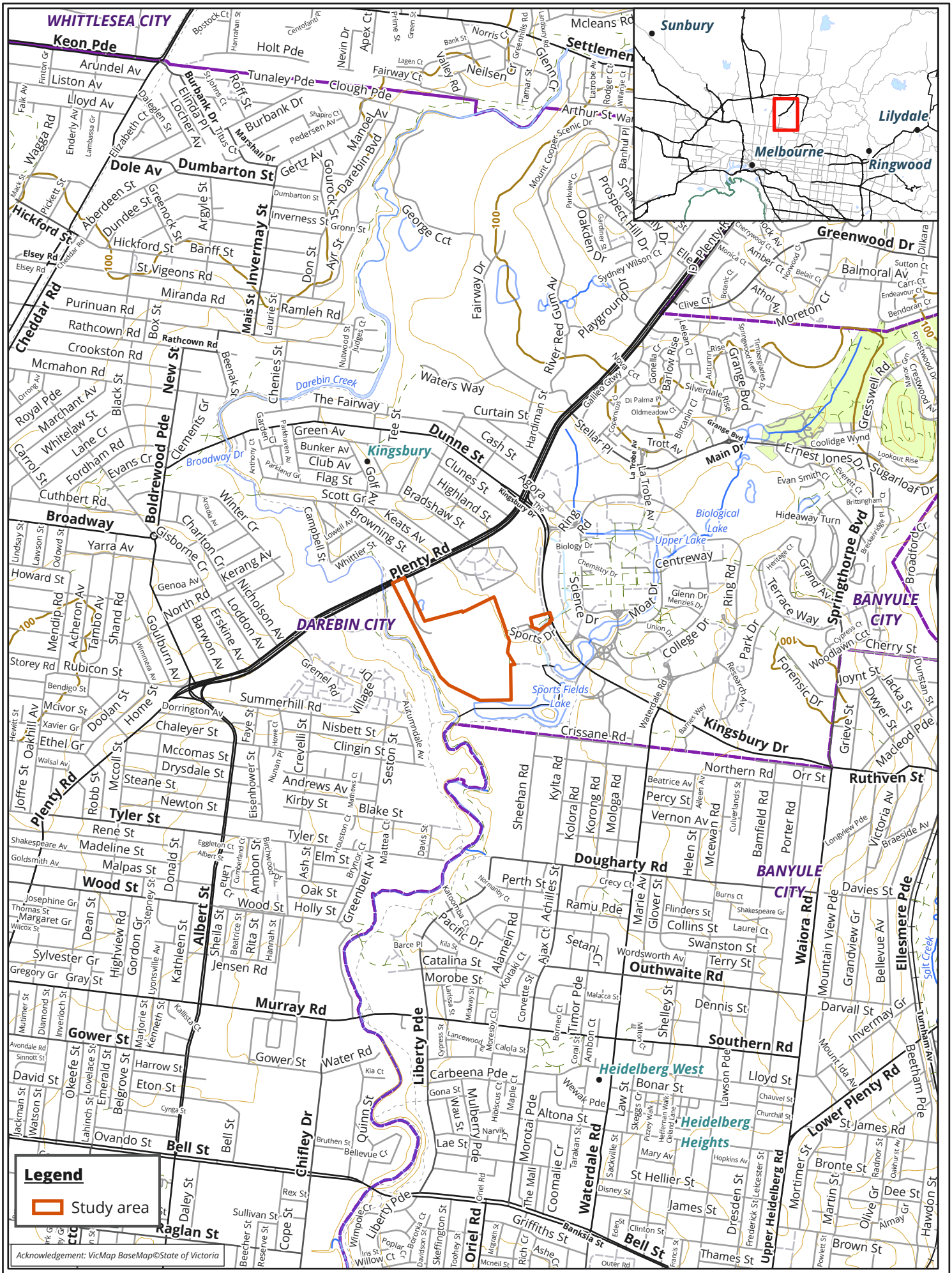


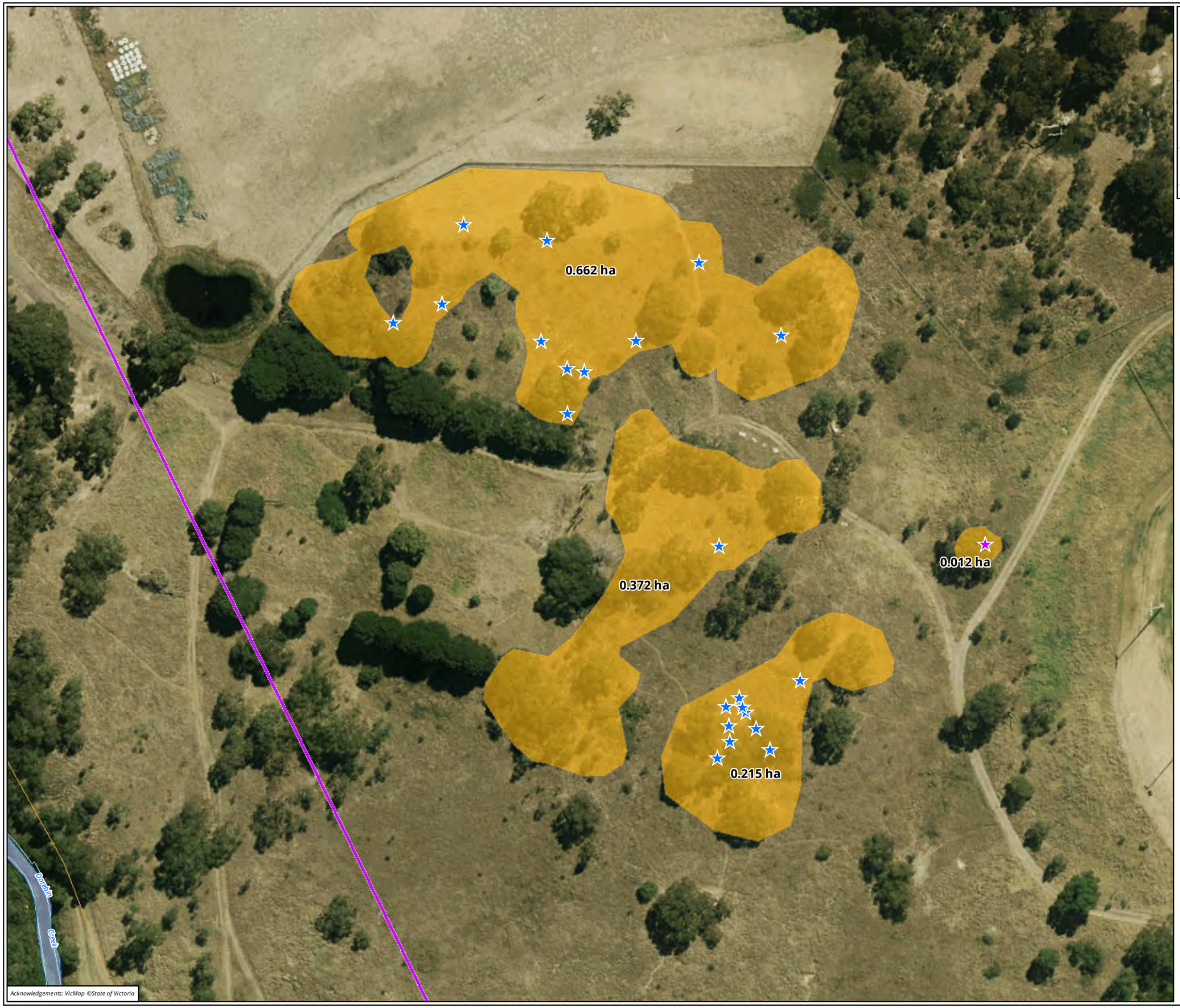

**Figure 1 Location of the Study Area - La Trobe University, Bundoora, Victoria**

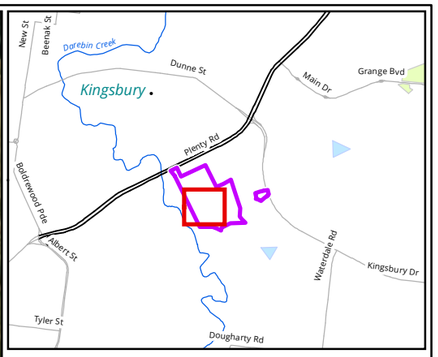
Matter: 30363, Date: 08 January 2021,
Prepared for: IM, Prepared by: SKM, Last edited by: smitchell
Layout: 30363_F1_Locality
Location: P:\30300s\30363\Mapping\30363_CMP_SportsPrecinct_LaTrobeUni.aprx

0 250 500 750 1,000
Metres
Scale: 1:25,000 @ A4
*Coordinate System GDA 1994 MGA Zone 55*

N

00




**Legend**

- Matted Flax-lily within survey area (Biosis 2020)
- Matted Flax-lily within survey area (Biosis 2018)
- Matted Flax-lily habitat
- La Trobe University Sports Precinct Stage 3

**Figure 2 Location of MFL habitat within the La Trobe University Sports Precinct Stage 3, Bundoora, Victoria**

0 8 16 24 32 40

Metres

N

Scale: 1:1,000 @ A3

*Coordinate System: GDA 1994 MGA Zone 55*

Matter: 30808,
Date: 08 January 2021,
Checked by: SGM, Drawn by: JPT, Last edited by: smitchell
Location: P:\30300s\30363\Mapping\30808_F3_MFL.mxd

00

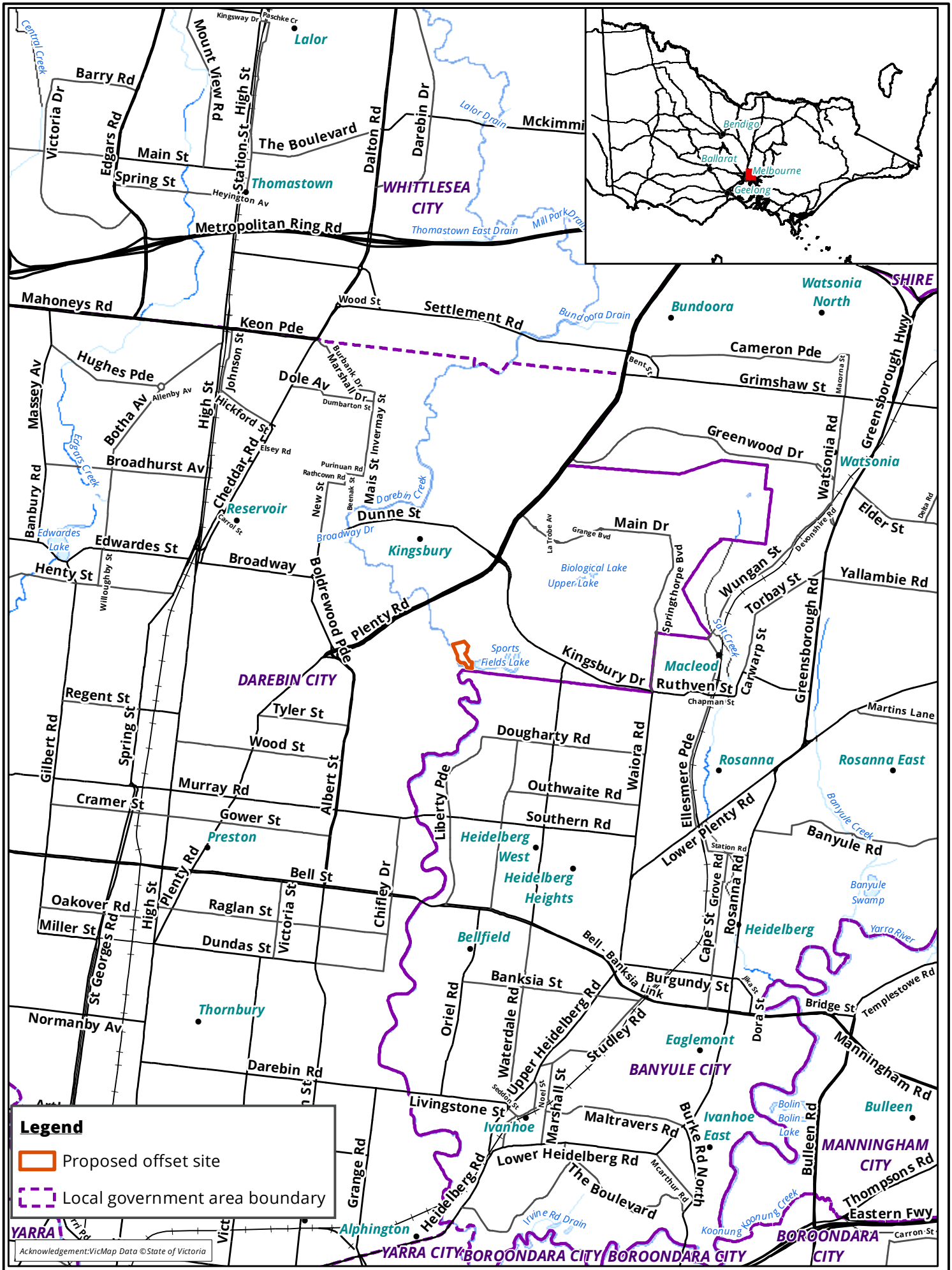
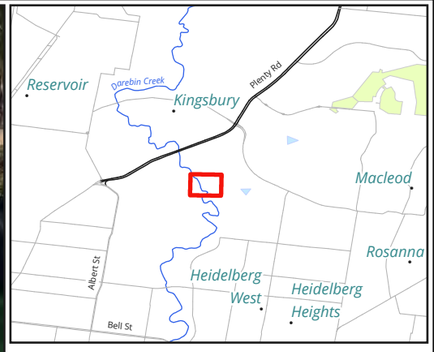



**Figure 3 Location of the La Trobe University MFL offset site, Bundoora, Victoria**

Matter: 30808,
Date: 29 October 2019,
Checked by: SGM, Drawn by: JPT, Last edited by: jturner
Location:P:\30800s\30808\Mapping\30808_F3_OffsetLocality.mxd

Biosis Pty Ltd
Albury, Ballarat, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong


**Legend**

- Proposed offset site - 2.81ha
- Matted Flax-lily(MFL) record (Biosis 2018)
- Plains Grassy Woodland (EVC 55)

**Figure 4 The distribution of MFL and its habitat at the La Trobe University offset site, Bundoora, Victoria**

0 10 20 30 40 50

Metres

Scale: 1:1,200 @ A3

*Coordinate System: GDA 1994 MGA Zone 55*

N

biosis

Matter: 30363,
Date: 11 January 2021 ,
Prepared for: IM, Prepared by: SKM, Last edited by: smitchell
Layout: 30363_F5_OffsetSite
Project: P:\30300s\30363\Mapping\
30363_CMP_SportsPrecinct_LaTrobeUni.aprx

## 1.2 Objectives

The objective of the OMP is to document the development site and offset site details to meet EPBC Act approval requirements for offsetting impacts to MFL by securing, maintaining and improving MFL habitat within the designated offset site. The objectives of this plan are to:

- Improve the condition of 2.81 hectares of MFL habitat at the La Trobe University offset site in a manner consistent with the EPBC Act Environmental Offsets Policy;
- support establishment of legal security arrangements for the in perpetuity protection and management of the offset site;
- Undertake management actions to protect and improve the quality of native vegetation and MFL habitat within the offset site;
- Provide a timetable of management actions, outcomes and progress reviews;
- Detail appropriate monitoring and evaluation of management actions and completion criteria; and
- Attain and maintain the offset completion criteria for the life of the EPBC Act approval for EPBC 2018/8343.

## 1.3 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) 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 site, and includes details regarding approved clearing, gain and site improvement 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).
- **Part B: Offset Implementation** - This section describes how the offset is to be implemented. Part B includes details regarding landowner and EPBC Act approval holder commitments, management activities, monitoring and reporting. This section is intended for those responsible for implementing the plan, including LTU and future landowners. Information in this section is intended to be placed on title.

The plan also addresses the requirements of guidelines for the preparation of an environmental management plan (Commonwealth of Australia 2014).

# 2. Part A: Offset suitability

This section provides details of the development site, and includes details regarding approved clearing, gain and site improvement. This section 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 under the *Victorian Conservation Trust Act 1972*). The location of the development site and the proposed offset site are provided in Figures 1 and 3 respectively.

## 2.1 Clearing site details

| | |
|---|---|
| **Landowner of clearing site** | La Trobe University |
| **Location and address of clearing site** | 906 Plenty Road Bundoora 3083, Victoria |
| **Local Government Area** | City of Darebin |
| **Catchment Management Authority** | Port Phillip and Western Port |
| **Responsible Authority** | La Trobe University |
| **Permit applicant** | La Trobe University |
| **Planning Permit Number (ID)** | To be determined |
| **Date Approved** | To be determined |
| **EPBC Act Referral** | 2018/8343 |
| **Date Approved** | To be determined |

## 2.2 Vegetation approved for removal

Vegetation / habitat removal associated with the construction of the La Trobe University Sports Precinct Stage 3 (Figure 1) has been authorised under the EPBC Act approval for EPBC 2018/8343. Vegetation proposed for removal is described in the biodiversity assessment prepared by Biosis (2019a) and the 1.26 hectares of MFL habitat to be removed is identified in Figure 2.

## 2.3 Description of the La Trobe University offset site

The offset area (approximately 2.81 hectares) is located in the south western corner of the campus, just west of the western end of Sports Field Lake on a portion of land otherwise known as 906 Plenty Road Bundoora 3083 (Figure 3). The property is currently zoned as Public Use Zone 2 (PUZ2) and is partly covered by an environmental significance overlay (ESO2).

The offset area assessed (Figure 4) is immediately south of the Stage 3 impact area (Figure 1). This land parcel includes broader areas dominated by degraded Plains Grassy Woodland (EVC 55) in relatively uniform, poor, condition. Other parts of this parcel of land have been cleared for the development of a variety of sporting fields and other infrastructure. The parameters for assigning MFL habitat within both the impact and offset sites were areas of grassland/woodland that comprised the original soil surface (i.e. not fill) with some native vegetation in the ground layer. Accordingly, the entire offset area has been designated as suitable MFL habit based on supporting the original topsoil and containing some native vegetation in the ground layer, even in areas dominated by weeds, where MFL have been shown to persist. The offset area includes four habitat zones and other areas dominated by introduced species, all of which will be managed to provide the MFL offsets for development of the Stage 3 Sporting Precinct (Referral 2018/8343).

The original vegetation (as at 1750) of the local area includes the ecological vegetation classes (EVCs) Stream Bank Shrubland (EVC 851) along Darebin Creek, Creekline Grassy Woodland (EVC 68) along the floodplain of Darebin Creek and Plains Grassy Woodland (EVC 55) elsewhere.

The landscape is relatively flat with gently undulating rises. The offset site includes broader areas dominated by introduced species, interspersed with areas with more than 25% of the perennial ground cover provided by indigenous species such as Kangaroo Grass *Themeda triandra*, Spear-grasses *Austrostipa* spp., Weeping Grass *Microlaena stipoides*, Tussock-grasses *Poa* spp. and Wallaby-grasses *Rytidosperma* spp.

The vegetation of the proposed offset area is mapped by DELWP as Plains Grassy Woodland (EVC 55). This community is typically dominated by River Red-gum *Eucalyptus camaldulensis*. Mature and regenerating River Red-gums are common across the site as are planted non-indigenous trees such as Spotted Gum *Corymbia maculata* and Sugar Gum *Eucalyptus cladocaylx*.

Biosis (2019a) identified three habitat zones within the proposed offset area (Habitat Zones 4.2, 7 and 8). These habitat zones (HZ) are open eucalypt woodlands with an overstorey of River Red-gums, a largely absent shrub layer (apart from occasional wattles such as Blackwood *Acacia melanoxylon* and Black Wattle *Acacia mearnsii)*, and a ground layer dominated by weedy grasses with some native grasses. More open areas of these patches are defined by a ground layer of native grasses such as Kangaroo Grass and wallaby-grasses and scattered native herbs such as *Geranium* sp. and Grassland Wood-sorrel *Oxalis perennans*.

A single individual of MFL was recorded by Biosis (2019a) in HZ8. Additional individuals of MFL could occur within the southern section of the offset site which was not subject to the targeted survey conducted as part of Biosis (2019).

The rocky slope west of the ornamental lake is dominated by Kangaroo Grass and includes a variety of other species including Wattle Mat-rush *Lomandra filiformis*, Common Woodruff *Asperula conferta*, Common Cotula *Cotula australis*, and Variable Sword-sedge *Lepidosperma laterale*. This area was identified by Biosis (2019b) as HZA.

**Current permitted land uses**

The property is zoned Public Use Zone 2 (PUZ2) within the Darebin Planning Scheme.

Within Victoria, removal of native vegetation is controlled under Clause 52.17 of the Victoria Planning Provisions. Some removal of native vegetation is currently permitted (exempt from a planning permit requirement – See Clause 52.17-7) to the minimum extent possible, for activities including:

- Removal of dead vegetation.
- Removal of vegetation for construction of a boundary fence.
- Mowing of understorey grass vegetation to a height of 100 millimetres above ground level.
- Grazing by domestic stock.
- Timber harvesting of 'reasonable amounts' for personal use, including firewood and construction of fences or buildings.
- Pruning of up to 1/3 of the foliage of individual plants.
- Treatment of pest animal burrows or weed infestations.
- Stone exploration or extraction.
- Fire protection, including periodic fuel reduction burning or construction of firebreaks and firefighting access tracks.

**Existing offset arrangements**

The proposed offset site has not been allocated for the provision of any other offsets, either under the EPBC Act Environmental Offsets Policy or for provision of offsets under any current or past Victorian policy,

including the Biodiversity Assessment Guidelines (DELWP 2017) or the Net Gain Framework (DNRE 2002).

# 3. Part B: Offset implementation

This section presents the actions required to implement the OMP. The OMP details methods for the management, conservation, and improvement of native vegetation and the rehabilitation of other areas dominated by introduced species at the offset site for the benefit of the protected matter (MFL) over a ten year period commencing from EPBC Act approval of this OMP. These actions are required over the initial ten year period and, while the OMP may be updated after that period with approval from DAWE, active ecological management to maintain or improve MFL habitat condition is required for the life of the EPBC Act Approval and from thereon in perpetuity.

All works will be conducted by a suitably qualified and experienced contractor and/or the landholder. Prescribed management actions are, where relevant, in accordance with the Victorian BushBroker standards for management (DSE 2012a, DSE 2012b and DSE 2012c).

This OMP aims to achieve habitat improvement gains through on-ground actions and therefore is required to be achievable, straightforward and practical. All of the management actions specified must be measurable and support the offset completion criteria.

## 3.1 Offset site details

Table 1 provides details of the offset site, including the landowner, parcel details and local government property information.

**Table 1 Offset Site details**

| Offset Site Details | |
|---|---|
| **Landowner of offset site** | La Trobe University |
| **Type of offset** | 1st party |
| **Location and address of offset site** | 100 Kingsbury Drive Bundoora 3083 Victoria |
| **Area of offset site (hectares)** | 2.81 |
| **Parish** | Keelbundora |
| **Allotment** | 1\PS444016 |
| **Volume / Folio** | XXXX / XXX |
| **Local Government Area** | Darebin City Council |
| **Council Property Number** | No Council Property Recorded |
| **Bioregion** | Victorian Volcanic Plain |

## 3.2 Strategy for offset site

The offset site is to be secured and managed for the purposes of conservation for MFL in perpetuity. This offset site is a smaller component of a larger area of university land much of which will not be managed in a sympathetic manner. La Trobe University (LTU) have nominated a section of this parcel for this offset which has otherwise not been allocated for the provision of any other offsets, either under the EPBC Act Environmental Offsets Policy or for provision of offsets under any past or present Victorian policy, including the Biodiversity Assessment Guidelines or the Net Gain Framework.

All easements noted on the current title have been excluded from the net offset area. No future easements can be applied to the offset area as these are likely to conflict with the objectives of this OMP. The nominated offset area provides a small excess of the area prescribed by the EPBC Act offset calculator.

### 3.3 Offset security, management responsibility and reporting requirements

LTU has located a suitable first party offset site within their Bundoora Campus. The offset site will be secured and managed for the purposes of conservation in perpetuity via covenant as to Section 3A *Victorian Conservation Trust Act* 1972 supervised by the Trust for Nature (TfN). The management strategy for the proposed offset site consists of implementing a vegetation OMP incorporating the management of ground cover biomass, weed and vermin control and regular monitoring. Details of security and management responsibility are shown in Table 2.

**Table 2 Security and management responsibility and reporting requirements**

| Responsibility | |
|---|---|
| **Who is liable/responsible for meeting offset requirements?** | La Trobe University |
| **Type of security** | Covenant as to part Section 3A *Victorian Conservation Trust Act 1972* |
| **Date of commencement for the covenant** | To be completed in 2020 |
| **Date covenant registered on-title** | To be completed in 2020 |
| **Offset site management responsibility** | La Trobe University |
| **Offset Monitoring Responsibility** | La Trobe University |
| **Site management** | La Trobe University |
| **Monitoring** | La Trobe University |
| **Auditing** | La Trobe University |
| **Reporting responsibility (to TfN)** | La Trobe University |
| **Reporting responsibility (to DAWE)** | La Trobe University |
| **Plan review** | La Trobe University |

The offset area will be secured in-perpetuity via a covenant as to part Section 3A *Victorian Conservation Trust Act 1972*, to be registered on the title prior to the commencement of development associated with the Stage 3 Sporting Precinct. The encumbrance registered on title requires the landholder and future owners to manage the land in accordance with this OMP or any future approved revisions of this plan.

The covenant will specifically state the in-perpetuity land-use commitments across the offset site to:

- Retain and manage all native vegetation as directed by this offset management plan;
- Retain all fallen timber and branches;
- Exclude development and earthworks of any kind;
- Exclude the application of any infrastructure easement;
- Exclude all domestic stock;

- Eliminate any woody weeds and control the cover of other high threat weeds ensuring this cover does not exceed levels achieved upon attainment of Year 10 offset completion criteria;
- Ensure that pest animals are controlled and that level of control attained at the completion of Year 10 of management is maintained in perpetuity.
- Exclude pasture improvement and any type of cultivation and cropping;
- Exclude fertilizer application;
- Control the accumulation of ground cover biomass through the controlled application of fire if required;
- Revegetate areas not identified as patches of native vegetation with locally indigenous species;
- Monitoring for any new and emerging weeds and continuously treating those weeds to avoid further seed set, dispersal or infestation;
- Maintain a progressive annual works plan which caters to current conditions and prescribes ongoing management with the promotion of native perennial grasses, and attainment and maintenance of offset completion criteria, as its primary objective; and
- Monitor and report on the abundance of MFL within the offset site.

Implementation of this management plan is the overall responsibility of La Trobe University, which can engage an external contractor to deliver the offset outcomes on the universities behalf. Direct management responsibility may be delegated to a designated site manager and/or managing ecologist. However, the land owner is responsible for engaging a qualified ecologist to conduct monitoring (Section 3.9) with reports submitted to TfN, LTU and DAWE. Management actions by the land owner will be overseen by the TfN as part of the legal protection over the site.

The TfN is responsible for:

- Undertaking site inspections at least 4 times over the initial 10 year period and provide input into the annual works program.
- Review of ecological monitoring reports including an assessment of attainment and maintenance of the offset completion criteria.

Implementation of the management plan will be monitored by the TfN, who will verify that the management actions have been carried out appropriately.

Implementation of the OMP will begin on a defined date (DAWE to be notified in writing at least three week prior as to the date of commencement) with registration of the covenant to be completed as soon as possible prior to the commencement of Stage 3 works.

Funding for implementation of this OMP will be estimated by LTU, the land owner and TfN. Where appropriate, or otherwise agreed, funding will be held by the TfN and paid to the land owner over the 10 year management period as per a land owner agreement. This will include agreed funding for anticipated ongoing management required to maintain completion criteria at the offset site in perpetuity, beyond the initial 10 year period during which the completion criteria are achieved.

## 3.4 Offset outcomes

The key environmental outcomes / criteria to be achieved through protection and management of the offset area are:

- Permanent legal protection of 2.81 hectares of MFL habitat;
- Physical protection of the habitat area from manageable threats including grazing by domestic stock, weed infestations and degradation by pest animals.
- Attainment of MFL habitat condition completion criteria (below), as measured by habitat monitoring.

### 3.4.1 Future site condition - completion criteria

The 2.81 hectare offset site must achieve the following site condition:

a) be dominated by good quality native vegetation (VQA site condition score of 30 - 45/75).

b) Support a population of MFL with a density of at least 2 to 5 plants per hectare*.

*It should be noted that in order to achieve conditions under the corresponding MFL Salvage and Translocation Management Plan, at least three out of four planted clones from 21 of the 23 salvaged plants (63 clones total) will need to establish within the offset area, which will result in a planting density of 23 plants per hectare (Biosis 2020). Matted Flax-lily translocation generally results in a higher planting density compared to the source population as salvage protocol requires four clones to be planted per individual salvaged in order to improve chances of establishment of the translocated population. The proposed planting density of 23 plants per hectare is therefore considered acceptable given that the source population occurs at a density of 18 plants per hectare, which one 0.215-hectare patch supporting ten individuals (density: 47 plants/hectare).

Monitoring assessments will be undertaken in marked quadrats distributed through the offset site as described in Section 3.9. A key performance target, to assist in attainment of (a), is to eliminate woody weeds and reduce the abundance of perennial, introduced pasture grasses such as Chilean Needle-grass *Nassella neesiana*, Toowoomba Canary-grass *Phalaris aquatica* and Cocksfoot *Dactylis glomerata*. The weed reduction target for introduced perennial grasses is set at 50% of the baseline cover identified by baseline monitoring.

The relatively dense ground cover structure across the site currently appears to be the result of an absence of any grazing and a general lack of any regular maintenance by LTU.

Achieving the nominated goals will increase the Lack of Weeds score and provide opportunities for additional understorey lifeforms to establish. These outcomes will elevated the offset site condition score to the required level to achieve the defined completion criteria.

### 3.4.2 Performance criteria

Key performance criteria for this OMP are:

- Continuous improvement in average site condition as described in Section 3.4.1.
- Effective threat abatements, including the exclusion of unauthorised access, weeds and pests as specified in Section 3.8.
- Completion of scheduled management actions (Section 3.8 and Tables 4 & 6).
- Completion of scheduled monitoring activities (Section 3.9 and Table 6).
- Completion of scheduled reports and audits (Section 3.10, 3.11 and Table 7).

## 3.5 Limitations and uncertainty

This management plan has been formulated using information from recently conducted site inspections (Biosis 2019b). The OMP has been subject to external review and quality assurance by TfN as part of the process to register the site covenant. Relevant federal and state government policies, procedures and databases have also been consulted where appropriate.

The proposed offset site supports a population of MFL, which has been confirmed by recording the species within the offset site during targeted surveys (Biosis 2018).

The OMP includes a reasonable expectation that the control of environmental weeds to reduce their cover and prevent / restrict their production of seed, while concurrently encouraging the growth and seed production of the existing cover of indigenous grasses, will result in an increase in the abundance and cover of native grasses, herbs, woody species and MFL. The active and persistent control of woody and other environmental weeds will increase the overall Site Condition score as assessed using the habitat hectare assessment protocols (DSE 2004). However, there is a possibility that the recruitment of indigenous species will be slower than expected or prolonged drought conditions may inhibit recruitment.

If seed production is restricted by unforeseen circumstances such as drought then seed collection and dispersal options would be investigated. Alternatively the time period for active management would be extended to compensate for any lag in the establishment of indigenous species.

## 3.6 Ongoing management commitments

The offset site will be managed for the conservation of MFL.

From the commencement of the approved OMP and conservation agreement, the landowner agrees to undertake the following management commitments in perpetuity:

- Eliminating all woody weeds through continuous detection, treatment and infestation prevention.
- Monitoring for any new and emerging weeds and eliminate through continuous detection, treatment and infestation prevention.
- Controlling rabbits, hares and foxes to an extent above existing legal requirements.
- Retaining all standing trees, dead or alive.
- Retaining fallen logs and fallen branches.
- Exclude all domestic stock.
- Exclude pasture improvement (but not ground cover rehabilitation to increase the cover of native grasses and herbs), and cultivation for commercial cropping.
- Exclude fertilizer application.

## 3.7 Risk assessment and adaptive management

Active ecological management is expected to provide a high probability of generating improvements in the condition of the vegetation present (i.e. increasing the abundance of native grasses and herbs while decreasing the abundance of introduced species) and attainment of the offset completion criteria. Note however, that the extent of this offset has conservatively been based on the assumption that management will, at a minimum, improve the condition of MFL habitat and, through translocation increase the size and condition of the MFL population.

The management actions proposed in this plan are based on a combination of experience in the management of native grasslands and grassy woodlands, documents prepared by Victoria's Department of

Environment, Land, Water and Planning (i.e. DSE 2009) and other publications (i.e. Marshall 2013, Williams et al. 2015).

The proposed strategies for the management of this site are consistent with established practices for the management of grasslands and grassy woodlands elsewhere including State conservation reserves and offset sites.

The active involvement of TfN is also expected to provide high quality guidance and advice to the landholder in their management of the site.

The monitoring protocols documented in this plan are considered adequate to detect attainment of the offset completion criteria (above).

The plan includes an ecological burning regime for ground-cover biomass control which is considered a major ecological requirement for the site. Ecological burning also provides opportunities to stimulate the natural regeneration of indigenous species and provide a level of control for introduced species.

It is acknowledged that the response of natural environments to management can be unpredictable and management activities need to be flexible to respond to changing conditions and unpredictable events. Examples of potential risks are outlined in Table 5 and discussed below. Seasonal conditions can also vary greatly from year to year and influence offset site management actions in any one year. This seasonality is recognised in this offset plan by allowing for flexibility around timing of actions at the discretion of the land manager in consultation with TfN so as to attain and maintain performance and completion criteria

There is some risk that biomass control is not properly managed in any one year. This has the potential to occur in response to above average rainfall years when ground cover growth is persistently high and wet conditions maximise ground cover biomass production and restrict the potential use of ecological burning. If such events occur, the land manager will ensure additional efforts are made by in subsequent years to maintain the rate of improvement required.

Another major ecological management requirement is weed control, with the objective of reducing the overall presence of weeds and maintaining an open ground cover. Varying seasonal conditions will provide triggers for changes in the abundance of different species, particularly weeds. The greatest risk to achieving the required outcomes is a failure to conduct an appropriate level of work at an appropriate time or the occurrence of persistent adverse conditions restricting an appropriate management response. The regular site inspections will allow land managers to anticipate changes in seasonal conditions and respond accordingly. Persistent, well timed management actions will be able to take advantage of seasonal fluctuations to achieve the completion criteria.

Woody weeds are relatively common within the offset site and control will require a high level of initial works and persistent follow-up control efforts. While woody weeds will probably colonise the site from near-by infestations, seedlings will be detected through monitoring and controlled by the proposed on-going works. If mature woody weeds are detected in the offset area beyond Year 3 of the plan corrective actions would be required (e.g. increase woody weed control activities to ensure elimination of these species within one year).

Similarly control works will target perennial weeds including Canary-grasses, Chilean Needle-grass and Cocksfoot. Persistent herbicide application is an effective control measure for these species and while these species are likely to reinvade from surrounding infestations, ongoing works are planned to cope with the associated management requirements. If adequate resources are not allocated to these tasks, the cover of these species may remain static or increase. Any observations or monitoring which detect an increase in perennial weeds above previous assessed conditions and percentage cover will trigger a requirement for a greater management input (the required corrective action being targeted increased management actions). In that context additional site observations (over and above formal monitoring) collected by TfN (or an independent ecologist) is essential in providing feedback on the efficacy of management.

Another significant risk associated with the management of this site is the occurrence of climatic triggers which would increase the abundance of weed species by triggering the germination of any soil stored seed reserves. In the first instance management will over allocate resources to weed control as the more comprehensive control achieved by such works the lower the ability these species have to recover / recolonise. Integrating herbicide control works with biomass control works (i.e. fire) increases the efficacy of both actions and the outcomes-based approach to this plan (i.e. to attain and maintain the offset completion criteria) supports this approach. Given persistent management occurs it is considered a relatively low risk that the completion criteria will not be achieved.

If after the first 8 years of management, the monitoring results indicate that the completion criteria are unlikely to be achieved, DAWE will be contacted to determine potential additional future offset requirements. If the offset area fails to attain and maintain the completion criteria at or following year 10, but during the period of EPBC Act Approval, an additional offset area will be provided to account for the failed offset. DAWE will be consulted with to determine the suitability of the replacement offset.

Active management to target the control of pest plants and to manage the accumulation of ground-cover biomass is advantageous to both the health of this grassy woodland but also to the ability of MFL to persist within this environment. As such the proposed management regime is considered unlikely to have a negative impact on MFL. This has been our experience where Biosis has managed other grassland / grassy woodland reserves in metropolitan Melbourne. If the single known MFL dies and the translocation of salvaged individuals has poor results the ongoing suitability of the site as an offset for MFL would be investigated and appropriate corrective actions implemented. Such an outcome resulting from the implementation of this OMP is considered highly unlikely (i.e. low risk).

This OMP describes management and monitoring actions at the offset site for the 10 year period following commencement of the OMP. At the end of that period management and monitoring actions will be reviewed in light of the new condition of the offset and any new information relating to the management of this type of grassy woodland environment. Note that active conservation management is required until 2040 and the quality of the vegetation needs to be maintained in perpetuity. The timing of actions is based on adaptive management. By monitoring management actions, and habitat condition, management will be adapted to ensure the stated commitments in the OMP are achieved. Also over time, new management techniques may become available, or further information on the ecology and status of the vegetation communities onsite may necessitate adjustment to management actions. The landowner will continue to receive advice from TfN on any developments in grassy woodland management and update the OMP as appropriate in perpetuity.

Section 4 includes tables of management actions (Table 5) and a risk assessment (Table 6) with associated monitoring (Table 7) and reporting (Table 8) programs.

Key risks identified in Table 6 include:

- Unauthorised human activities or entry of vehicles into the offset area;
- Woody weed infestations;
- Failure to detect and control new infestations, as well as failure to reduce existing infestations;
- Failure to increase the species composition and density of perennial native grasses.
- Rabbit infestations; and
- An unexplainable decline in the abundance of MFL.

Failure of the adaptive management approach to adequately respond to risks, as identified in monitoring reports (Section 3.10) or audits (Section 3.11), will result in a review of this plan, as discussed in Section 3.12 and Table 5.

## 3.8 Management actions and land use commitments

The main threats to this native grassy woodland include the existing permitted uses associated with normal university practices such as vehicle movement and inadvertent loss through unplanned vehicle activities. Other threats include the expansion of the existing high threat weed populations, weed invasion in general and the accumulation of ground cover biomass. Currently the accumulation of ground cover biomass is not subject to any specific control activities and there appears to be a significant build-up of weedy groundcover species.

Currently the site is not actively managed for biodiversity values.

The prescribed management actions outlined below are intended to achieve a conservation outcome which improves the viability of the MFL population within the offset site. This will be achieved through active ecological management (maintenance and improvement) and permanent protection of the offset site. Table 5 details these prescribed actions and outlines the relevant timing for implementation. These actions will be applied to the entire offset area identified in Figure 4.

Offsets will be achieved by:

- Controlling access around the broader land parcel, and limiting access to the nominated offset area through fencing.
- Weed control through active management;
  - Eliminating all woody environmental weeds
  - Controlling high threat weeds to levels specified in Table 4.
  - Controlling perennial grassy weed cover to less than 1%.
  - Controlling broadleaf weed cover to less than 2%.
- Active revegetation works in areas not identified as native vegetation and within areas supporting minimal cover of indigenous ground cover species.
- Limiting organic litter and biomass accumulation (litter must not exceed the EVC benchmark cover of 10%);
- Active biomass control. Where the cumulative cover of bare ground, bryophyte/lichen and soil crust falls below an average cover of 20%, the ecological application of fire will be required;
- Ecological burning (any section of the offset area may be burnt at least five times within the 10 year management period) may be applied to portions of the site if ground cover biomass accumulated to unacceptable levels or burning would otherwise provide advantages for weed control works. No area is to be burnt more than once every two years;
- Controlling pest animals, particularly rabbits, hares, foxes and cats; and
- Managing native species understorey diversity and recruitment.

The management actions listed below outline the prescribed actions for achieving the required gains through active management (maintenance and improvement) and permanent protection of the offset site. Table 5 specifies these prescribed actions and the timing for implementation. These actions will be applied to the entire offset area as identified in Figure 4.

Prior to works being undertaken each year an annual works program (based on Table 5) will be developed by an experience bushland regenerator. The person undertaking the works will prepare a detailed works program in consultation with TfN. The works program for the coming year will also address issues that may not have been anticipated in formulating this offset management plan. The OMP will be updated as required with any revised versions of the OMP to be submitted to the DAWE for approval.

### 3.8.1 Fencing, information and access control

Permanent fencing able to exclude vehicles will be established around the boundary of the offset site or a broader management unit. Temporary fencing may be used within the offset area where negligible impacts to native vegetation associated with the placement and removal of that fencing can be guaranteed.

Posts marking the boundary of the offset site will be set up to clearly identify the area for monitoring and management purposes. Posts will be located in accordance with advice from a qualified ecologist to ensure impacts to native vegetation are avoided.

The offset area remains private property and access or disturbance to the offset site by unauthorised persons is prohibited. The existing access is inadequate to service the access management requirements of this offset area.

If the site is not fenced, additional fencing or vehicle control measures to control access to the offset site will be required.

No additional signs identifying the property as an offset site are proposed. Explicit signage may inadvertently attract undesirable impacts. However signs identifying the property as a protected area of native vegetation will be considered by the owner.

**Actions**

- Establish fencing and or other access control devices (i.e. gates) to control access to the offset site and repair promptly if damage occurs.
- Establish posts to mark the boundary of the offset site for management and monitoring purposes under supervision from a qualified ecologist.
- Control access and any passive use to minimise impacts on native vegetation.
- Provide access for management vehicles into the offset site, using the existing track network. No additional vehicle access is to be established.

### 3.8.2 Weed control

Woody weeds are prominent within the offset area and the broader environment. The woody weeds recorded are listed in Table 3 along with proposed control methods. All woody weeds are to be treated within one year, and eradicated from the offset site within three years of the commencement of this OMP. Any regeneration or isolated individuals missed by this initial knock-down exercise will be controlled as these are observed. Where woody weeds are observed during site management or monitoring activities, these need to be controlled and eliminated promptly (before fruiting and seed set). The existing woody weeds will be targeted for immediate control works and will not persist into the third year of management. The cover of woody weeds will be maintained at negligible levels in perpetuity.

Weed control works are required to achieve biodiversity gains for an offset under the EPBC Act and DAWE requires a habitat improvement for both the woodland and MFL habitat. Targets below therefore identify a reduction in the cover of woody, perennial and annual weeds.

Annual grassy weeds are prominent and typically the total weed cover (annuals and perennials) is about 50%. Existing grazing by kangaroos currently provides a level of control for these species. However it is possible in relatively wet years that grazing may not be able to have a large enough impact on ground cover biomass and in this situation the application of ecological burning will be evaluated. Application of fire prior to the seed set for weedy annual grasses is known to have a significant negative impact on these weeds. The timed application of fire is therefore strongly encouraged by this OMP to attempt to reduce the prominence of weedy annual grasses.

An overall weed reduction target is set for a reduction from the current estimated level of 50% cover of weeds to the target level of 20%.

All high threat weeds are to be controlled to minimise or reduce their occurrence and ensure no further spread of weeds. The total cover of perennial grassy and broad-leaf weeds on site will be reduced from the current average level of 10% to no more than 2% (Table 4). This includes specific targets for high threat species identified in Spot spraying with appropriate herbicide is the main method for reducing weed cover. Spot spraying will be undertaken regularly, particularly in spring and early summer, with a focus on killing weed plants prior to seed set. Biomass control is also considered as an effective method for controlling and reducing weed levels. Biomass control at the site will include controlled ecological burning. Spot spraying will be completed in a manner which minimises non-target damage. Spot spraying will not occur during high wind days or in close proximity to threatened flora without protective measures in place (i.e. physical shielding).

Burning is particularly effective at reducing weed cover, especially for species that are difficult to control. Burning will also allow greater access and efficiency for weed control and increased natural regeneration of indigenous plant species (Sections 3.8.4 and 3.8.5 below). Periodic burning that is followed by spot spraying will be important for weed species that are difficult to control (such as Canary Grass) until they are replaced by native species.

Table 4, perennial grassy weeds will be reduced to less than 1% total cover and broadleaf weeds will be reduced to less than 2% of the cover by the end of the ten year management period.

**Table 3: Woody weeds for priority control (Biosis 2019).**

| Scientific Name | Common Name | % cover | Control Proposed |
|---|---|---|---|
| ***Eucalyptus cladocaylx*** | Sugar Gum | <5 | Cut down mature individuals and paint stump with neat herbicide. Hand pull seedlings. |
| ***Eucalyptus maculata*** | Spotted Gum | <1 | Cut down mature individuals and paint stump with neat herbicide. Hand pull seedlings. |
| ***Fraxinus angustifolia*** | Desert Ash | <1 | Cut down mature individuals and paint stump with neat herbicide. Hand pull seedlings. |
| ***Cassinia sifton*** | Sifton Bush | 1 | Cut down mature individuals and paint stump with neat herbicide. Hand pull seedlings. |
| ***Genista monspessulana*** | Montpellier Broom | <1 | Spot spray, hand pull or dig out. |
| ***Prunus* spp.** | Cherry Plum | 1 | Cut down mature individuals and paint stump with neat herbicide. Hand pull seedlings. |
| ***Rosa rubiginosa*** | Sweet Briar | 1 | Cut down mature individuals and paint stump with neat herbicide. Hand pull seedlings. |
| ***Rubus anglocandicans*** | Blackberry | 1 | Spray and burn dead material. Hand pull or spot spray seedlings. |
| ***Ulex europaeus*** | Gorse | 2 | Spray and burn dead material. Hand pull or spot spray seedlings. |

The emphasis for weed control is the prevention of weed seed production with the goal being the reduction in the total weed cover with specific targets for high threat species on site. Weed control works will be timed appropriately in accordance with Tables 3, 4 & 5.

Weed levels will be monitored and management methods adapted over time in response to changing conditions. New and emerging high threat weeds will be monitored and treated if found. Any other significant environmental weeds identified during the ongoing site monitoring will also be controlled. The offset owner will contact the land owner of any public land (i.e. council managed road reserves adjacent to the offset site) where high threat weeds occur within the vicinity of the offset area, with the aim to have these weeds controlled.

Spot spraying with appropriate herbicide is the main method for reducing weed cover. Spot spraying will be undertaken regularly, particularly in spring and early summer, with a focus on killing weed plants prior to seed set. Biomass control is also considered as an effective method for controlling and reducing weed levels. Biomass control at the site will include controlled ecological burning. Spot spraying will be completed in a manner which minimises non-target damage. Spot spraying will not occur during high wind days or in close proximity to threatened flora without protective measures in place (i.e. physical shielding).

Burning is particularly effective at reducing weed cover, especially for species that are difficult to control. Burning will also allow greater access and efficiency for weed control and increased natural regeneration of indigenous plant species (Sections 3.8.4 and 3.8.5 below). Periodic burning that is followed by spot spraying will be important for weed species that are difficult to control (such as Canary Grass) until they are replaced by native species.

**Table 4: High threat weeds for priority control (Biosis 2019b).**

| Scientific Name | Common Name | % cover for the current assessment | Control Proposed | Desired Outcome^ |
|---|---|---|---|---|
| ***Allium triquetrum*** | Angled Onion | 1% | Spot spray with appropriate herbicide | <1% cover |
| **Annual grasses (i.e. Annual Veldt-grass *Ehrharta longiflora*)** | Annual Grasses | 2% | Spot spray with appropriate herbicide or slash to prevent seeding. | <1% cover |
| ***Asparagus asparagoides*** | Bridal Creeper | 1% | Spot spray with appropriate herbicide or dig out extensive root system | <1% cover |
| ***Cenchrus clandestinus*** | Kikuyu | 5% | Spot Spraying appropriate herbicide (spring). | <1% cover |
| ***Cirsium vulgare*** | Spear Thistle | 2% | Spot Spraying appropriate herbicide (prevent flowering). | <1% cover |
| ***Dactylis glomerata*** | Cocksfoot | 2% | Spot spraying appropriate herbicide (early spring). | <1% cover |
| ***Echium plantagineum*** | Paterson's Curse | 1% | Spot spraying appropriate herbicide (early spring). | <1% cover |
| ***Nassella neesiana*** | Chilean Needle-grass | 20% | Burn and spot spray regrowth with appropriate herbicide | <1% cover |
| ***Nassella trichotoma*** | Serrated Tussock | 1% | Burn and spot spray regrowth with appropriate herbicide | <1% cover |
| ***Oxalis pes-caprae*** | Sour-sob | 2% | Spot spraying appropriate herbicide (at corm exhaustion stage). | <1% cover |
| ***Phalaris aquatica*** | Toowoomba Canary-grass | 2% | Spot spraying appropriate herbicide (early spring). | <1% cover |
| ***Plantago lanceolata*** | Ribwort | 1% | Spot spraying appropriate herbicide (early spring). | <1% cover |
| ***Verbascum virgatum*** | Twiggy Mullein | 1% | Spot spraying appropriate herbicide (early spring). | <1% cover |

*^ Desired outcome after 10 years of ecological management*

Target species are likely to change over time in response to seasonal conditions, the result of macropod grazing or the conduct of any controlled burns (e.g. likely flush of broad-leaf weeds to be treated post-burn). Weed cover and species will therefore be monitored and management adapted in response to achieve desired outcomes outlined in this management plan. TfN will be consulted and approve the control techniques for any new or emerging weeds identified within the offset area.

The offset area is not in close proximity to any named waterway although a headwater ephemeral stream traverses the western third of the offset site. While there may be localised surface water flows during high rainfall events, any stream within the site is ephemeral and no specific runoff risk is identified for the application of herbicides to this area.

**Actions**

- Treat all existing infestations of woody weeds within 12 months, and eradicate within three years. Continuous follow-up control to eradicate woody weed seedlings and other regeneration.
- Spot spraying of weeds with appropriate herbicide will be undertaken, particularly through spring and early summer.
- Target weeds will be treated before seed set; this requires repeated monitoring and treatment during the growing season.
- Ensure the absence of high threat woody weeds within the offset area through monitoring and where found to occur, control and eliminate promptly. Preferably control nearby infestations to prevent the spread of these species.
- Control works will ensure that the total cover of perennial weeds will be reduced to no more than 2% and preferably eliminated. Specific targets include: a reduction of high threat weeds in accordance with Table 4; perennial grassy weeds will be reduced to less than 1% total cover; and broadleaf weeds reduced to no more than 2% cover.
- Monitoring will be undertaken to demonstrate the effectiveness of weed control works and the results are to be used to adapt future control works and targets.
- Any populations of new and emerging high threat weeds will be treated promptly and eliminated. This will be done in consultation with TfN.
- Any other significant environmental weeds identified during the ongoing site monitoring will also be controlled in consultation with TfN.
- During weed control, natural regeneration of indigenous flora will be protected from off-target damage.
- Biomass management will be undertaken as per Sections 3.8.4 below.

### 3.8.3 Pest animals

The control of vermin including rabbits and other pest herbivores beyond the legal duty of care is a requirement of this OMP. Therefore pest animal control works are required within the offset site.

Grazing / browsing by European Rabbits *Oryctolagus cuniculus* and/or European Hares *Lepus europeaus* is evident and is likely to have a significant impact within the offset site. However, no active rabbit warrens were noted within the offset site. If detected rabbit warrens will be promptly controlled.

Control within the offset site would effectively be achieved through a reasonable level of works to eliminate any active warrens in the local area (i.e. land within the owners control and within 500 m of the offset site). Control will in part be achieved through the removal and destruction of the shelter provided by any woody weeds within the broader area managed by the same landowner. The landowner will therefore control all woody environmental weeds on their land within 500 m of the offset site. Control of rabbits will be undertaken in accordance with current guidelines provided by the relevant Victorian Government Department. This will generally be in the form of a targeted poison baiting program.

Ripping of rabbit warrens within the offset site is not permitted. If any warrens develop within the offset site they will be treated by low impact measures such as fumigation or implosion.

Other problem pest or problematic animals include cats and foxes. The general lack of shelter and harbour for cats and foxes reduces the likelihood that any animals are resident in the local area. Control techniques such as poisoning are therefore likely to be ineffective. The landowner will select from the range of control techniques available and apply the most effective in the local conditions.

**Actions**

- Control and seek to locally eliminate European Hares, European Rabbits, cats and foxes and using appropriate control techniques including poison baits or similar methods, without significant soil disturbance (i.e. ripping of warrens is not acceptable).
- Fumigate rabbit warrens within three weeks of detection. Fumigation works will be conducted by a suitably qualified operator.

### 3.8.4 Biomass / organic litter control

Biomass management is essential to maintain indigenous flora and fauna values throughout the offset site. Biomass management is also required to maintain inter-tussock spaces and prevent excessive competition to grassy woodland forbs. Where there is a sustained build up in ground cover biomass over any one year, resulting in a reduction of inter grass tussock space to an average of less than 30%, biomass will need to be actively reduced. Judgements on the cover of inter-tussock space and the build-up of groundcover biomass will be made by the landowner in consultation with the TfN. The independent ecological monitoring will also assess the effectiveness of the biomass control techniques applied and the need for any adjustments to the management regime to provide the prescribe outcome.

Ecological burning will also be utilised to assist in weed and biomass control.

**Use of fire for ecological management**

Burning within the offset area will only be undertaken with due consideration to relevant health and safety issues, in consultation with the Metropolitan Fire Brigade (MFB) and in line with a fire management plan completed by a suitably qualified consultant. The following provides guidelines for use of burning only in an ecological sense. The land owner is responsible for ensuring any burning outlined in this OMP can be carried out in a manner compliant with all other government planning requirements and permits.

The controlled application of fire is an efficient and cost-effective option for reducing biomass in grassy ecosystems such as those that occur within the offset site. Importantly, burning (c.f. grazing or slashing) allows greater access and efficiency for weed control and increased natural regeneration of indigenous plant species. While burning may enhance germination of indigenous species, it can also be expected to promote certain exotic species and as such post-burning weed-control will be vital in maintaining remnant vegetation. However stimulating the soil stored weed seed bank is seen as positive as this allows this seed bank to be exhausted through active management.

The controlled application of fire will be used for biomass reduction in all parts of the offset site. Fire can be applied at many scales from burning as little as tens of square metres to burning hectares at a time. Selected areas of this grassy woodland may be burnt to tackle particular weed issues or to assist in the lowering of soil nitrogen and phosphorous which would also assist in weed control works. However no potion of the offset area is to be burnt more frequently than once every two years. This is considered a low fire frequency for the management of grassy ecosystems.

The application of a mosaic burning regime is also considered advantageous and therefore any individual burn will not necessarily burn the entire site.

The landowner will prepare maps identifying the fire history of the offset area to ensure biomass control efforts are at appropriate frequencies and recorded. Details of fire within the offset area will also be documented in the annual report as outlined in Section 3.10.

Ecological burns will be conducted during benign (nil to low wind and mild temperature) weather conditions and are likely to be patchy (i.e. not result in the uniform burning of all areas). Patchy burns are a desirable outcome. Patch burning will ensure an array of small patches are burnt covering no more than about a hectare for any burnt patch. This will be mapped to ensure appropriate tracking of management actions.

**Actions**

- Engage a qualified contractor to produce a fire management plan which allows for an ecological burning regime described in the following dot points.
- Small localised fires outside any fire danger period can be implemented at the landowners discretion.
- Undertake ecological burning over the offset area (or parts there-of) so that no area is burnt more frequently than every two years;
- When planning burns, liaise with any relevant regulator regarding appropriate planning and permits in a timely manner;
- Plan and conduct ecological burning within different seasons to promote regeneration of a variety of species and remove debris created by the control of woody weeds.

### 3.8.5 Understorey diversity and recruitment

A major threat to understorey diversity in grassy woodlands is over-grazing by herbivores, competition from introduced plant species and the accumulation of biomass over a prolonged period (greater than a year). The areas of vegetation identified as patches of Plains Grassy Woodland within the offset site retain less than 50% of the expected number of understorey life-forms for this EVC, and are generally considered deficient in terms of the species diversity of the life-forms that are present. Missing or deficient elements include a variety of shrubs, herbs and graminoids. Enrichment planting is therefore an important component of active ecological management for this environment. This will parallel the restoration revegetation works required in areas not identified as patches of native vegetation (Section 3.8.6).

The control of rabbits and hares is required to maintain understorey diversity and encourage recruitment of native species. The use of fire for biomass reduction is also be required to facilitate regeneration, remove the dead biomass associated with weed control works and maintain inter-tussock spacing. The use of fire will be implemented at a number of scales. Initial control works could entail burning of the entire site although this would require adequate resources to tackle the follow-up weed control works required for the entire site. Burning will not occur over an area greater that the ability of management to cope with follow-up weed works.

Ideally, burning would take the form of a managed patch burn mosaic covering about half of the site over any one year. For targeted management actions for activities such as weed control burning could occur at a variety of scales, even down to tens of square metres using a hand held weed burner. Biomass control works will also reduce the potential for uncontrolled wildfire to impact this site.

Active management will seek to significantly reduce the cover of all exotic species with specific targets for high threat species given in Table 4.

**Actions**

- Active weed management to be undertaken as outlined in Section 3.8.2
- Biomass will be managed to enhance recruitment – see Sections 3.8.4 above.

### 3.8.6 Revegetation

Areas not identified as patches of native vegetation (Figure 4) will need to be subject to comprehensive revegetation works as these areas do not support the required minimum of 25% cover on indigenous understory vegetation. These areas may support valuable remnants of indigenous species and these should be protected where possible.

Areas not identified as native vegetation will be subject to comprehensive weed control works but given a requirement to re-establish native species the application of residual herbicides will be excluded.

Areas to be revegetated will need to be burnt and the regrowth subject to intensive control works. At least two cycles of spring weed elimination will be required prior to seed sowing or planting. During the minimum period of one year required for site preparation, species targeted for reintroduction (see Appendix 1a and 1b for a non-exhaustive list of native species suitable for use in the revegetation works) will be subject to seed collection and propagation. The EVC benchmark for Plains Grassy Woodland of the Victorian Volcanic Plain will provide a guideline for the target abundance of different lifeforms.

Once weed and biomass control activities have established areas with a low cover of weeds, these areas will be sown with a variety of suitable native graminoids (Appendix 1). This direct seeding will target a minimum establishment density of five grasses per square metre.

Indigenous shrubs, herbs and climbers will also be planted from locally indigenous (material collected from within 50 km of the offset site) tube-stock at a minimum density of one plant per square metre. This planting component of the revegetation works will target of one:

- large shrub per 100 square metres;
- climber per 50 square metres;
- medium shrub per 50 square metres;
- small shrub per 20 square metres;
- prostrate shrub per 20 square metres;
- large herb per five square metres;
- medium herb two square metres; and
- small herb per square metre.

All areas not identified as a patch of native vegetation will be ready for revegetation sowing and planting two years after the initiation of this plan.

## 3.9 Monitoring

### 3.9.1 Baseline site condition

While the condition of the broader area of woodland is documented by Biosis (2019b), details of the specific matters relating to the selected offset area of 2.81 hectares will be established by the collection of baseline condition data. These data will provide the baseline information for future comparisons and assessments to define the efficacy and progress of the management of the offset site to achieve the completion criteria.

Within three months of approval of this OMP and prior to the commencement of any management activities a suitably experienced botanist will systematically survey the site and collect information on the flora species (native and introduced) present and maintain a complete list of all vascular species observed. Notes will be taken on the distribution and location of weed species with GPS waypoints recorded to provide detailed information on the location, extent and severity of target pest plant infestations. This information will be mapped to provide a guide to both management activities and allow a visual assessment of management progress over the life of the plan.

GPS locations will be recorded and mapped to identify the location of any threatened species observed and the location of any other survey and monitoring infrastructure (i.e. photo points and monitoring quadrats).

Five permanent five by five metre monitoring quadrats will be established within the offset site, having regard for the nature and variability of the offset site. The minimum of five plots was selected on the basis of the extent of the site (provide at least 1 plot per 0.5 hectares), the topographic variation present (floodplain, rocky

slope and elevated plain) and the variation in site conditions (across a spectrum of weed dominated to patch vegetation).

These locations will be determined during the baseline site inspection prior to the commencement of other management works and will be representative of the offset site. They will be evenly distributed across the site and if considered appropriate, additional monitoring sites can be included. Quadrats will be clearly marked and accurately located by GPS or similar within the offset site. These quadrats will be used to assess and record the percentage total vegetation cover, the percentage cover of inter-tussock spaces, the average height of vegetation and the cover of native and exotic life-forms. These areas will also include the collection of biomass data using the golf ball method (Morgan 2015). These data will be collated, in conjunction with the observations made on herbaceous and woody weeds collected during the systematic site assessment survey, and be used to report on the baseline condition of the offset site. Ongoing monitoring will then assess progress in the management of weeds (including grasses) and biomass over the entire offset site. Ongoing use of the established monitoring plots will continue if this information is required to evaluate ongoing compliance with the completion criteria.

A project database will be maintained allowing for data storage and protection, data extraction, quality control, analysis, interpretation, reporting and presentation. The landowner and TfN will have ownership of all data collected, and be responsible for its distribution, availability and licensing to DAWE for compliance and recovery planning purposes.

All of the permanent vegetation monitoring quadrats established by the botanist will also serve as permanent photo points. Photo points will be located to adequately characterise the current vegetation condition. Using a selected marker point for the vegetation monitoring quadrat, a photo will be taken facing the four points of the compass (N, S, E & W). These baseline photos will be used to provide a visual document and for monitoring the vegetation response to management until 2040.

The average level of open inter-tussock spaces (as determined by the 5 monitoring plots) will be taken as the average open space available across the offset site unless the broad observations taken during the annual vegetation monitoring indicate this result is not representative of condition trends across the offset site.

### 3.9.2 Continuous monitoring

Monitoring of the site is an integral component of the regular site management activities. Such monitoring identifies changes early, allowing an appropriate and timely management response to matters which would otherwise undermine the objectives of the OMP. This includes observations by the landowner during normal activities within the offset site and broader property. Such observations are important for maintaining the integrity of fencing and site security. While these are normal land management activities they have also been formalised in this OMP (See Table 5).

Regular site inspections (of about two hours at least every two months) to provide general condition observations are also a requirement of this plan (See Table 5). The landowner must keep a diary of any works conducted within the offset site and record any observations which could influence or initiate a management response (e.g. “observed seedlings of a new woody weed in the middle of the offset site today. Will spot spray these with an appropriate herbicide by the end of the week.”). These details provide valuable information on the management of the site and detail the commitment of the landowner to the OMP.

More general supervision/monitoring of the offset site will be undertaken by the TfN to ensure the grassy ground cover response to management actions achieve the OMPS completion criteria. TfN will visit the site a minimum of four times over any 10 year period (at least the spring of years 1, 3, 6 and 10) and will liaise with the land owner annually regarding the development of an annual works plan.

The progress of management works will be inspected by the land owner on a regular basis (at a minimum once every 2 months). The land owner will provide a management progress report to TfN on an annual basis

(or more frequently as required by TfN). Records of all management actions will be kept to provide evidence of completed works and management tasks.

A list of plant species observed, noting which, if any, weed species have become locally extinct will be maintained for the offset site by the landowner. While all data collection will be the responsibility of the landowner, all data collected will be provided to DAWE on request.

Annual vegetation monitoring assessments (during spring) conducted by suitably qualified ecologists will include a broad assessment of the entire offset site to document the general overall condition of the site and the ability of management works to attain and maintain the OMPs completion criteria.

### 3.9.3 Fence monitoring

Surveys of the offset boundary and any associated access control infrastructure will be conducted quarterly, and when visiting the site to conduct other monitoring or management actions. Any damage to that infrastructure that may allow vehicles to enter outside of the parameters outlined in this OMP will be repaired within seven days.

### 3.9.4 Weed monitoring

Weed monitoring will be conducted annually in spring (September – November). There will be four components to the monitoring:

- Inspection of the entire offset area for woody weeds, by walking throughout the area such that a visual inspection (including with binoculars) would detect the presence of any woody weeds. Complete coverage of the offset site will likely require at least two hours of survey. All patches of infestations or individual plants will be mapped with a GPS, and the locations will be supplied to the weed management contractor/landholder for treatment. Subsequent monitoring will then revisit previously mapped/identified infestations to evaluate the success of weed control, as well as inspecting the entire offset site for new infestations.
- While conducting the woody weed surveys, notes will be taken regarding the cover of herbaceous weed species, and cover will be estimated to the nearest five percent cover. Species and areas suitable for targeted treatment (such as spot spraying), will be mapped and supplied to the weed management contractor/landholder for treatment.
- Five (5), five by five metre quadrats will be established in selected locations across the offset site. Each monitoring quadrat will be representative of the management unit identified for that portion of the offset site. These quadrats will be used to assess and record the percentage total vegetation cover, the percentage cover of inter-tussock spaces, the average height of vegetation and the cover of native and introduced life-forms. These data will be collated and, in conjunction with the observations made on herbaceous weeds collected in association with woody weed monitoring, used to report on progress in attaining offset completion criteria.
- The permanent vegetation monitoring quadrats established by the botanist will also serve as permanent photo points. Photo points will be located to adequately characterise the current vegetation condition, and include a range of weed species. Using a selected marker point for the vegetation monitoring quadrat, a photo will be taken facing the four points of the compass (N, S, E & W). These baseline photos will be used to provide a visual document and for monitoring the vegetation response to management until 2040.

### 3.9.5 Pest animal monitoring

Signs of pest animals (rabbits, hares and foxes) will be recorded during weed monitoring surveys, and at all other times when visiting the offset site. In particular, the locations of any active rabbit warrens will be mapped using GPS, and the locations supplied to the pest animal management contractor/landholder for

treatment. Subsequent monitoring will then revisit previously mapped warrens to check for on-going use, as well as searching for new warrens throughout the offset area.

More formal monitoring for the presence of pest animals will occur annually in November. This will include a systematic spotlight survey of the offset site lasting no less than thirty minutes. The results of this survey will be included in the annual report to the DAWE.

### 3.9.6 Woodland monitoring

The condition of the Plains Grassy Woodland will be assessed annually during spring. This will be done using the offset site as a single unit and using the habitat hectare assessment protocols (DSE 2004).

### 3.9.7 Matted Flax-lily monitoring

As the site is specifically an offset site for the conservation of MFL, monitoring the known individuals of this species is considered essential to determine the efficacy of the actions taken to maintain and/or improve the size and health of the MFL population on the offset site. While only one individual is known to occur naturally within the offset site, the offset area will also be used as a translocation recipient site. The natural and translocated population of MFL and any other individuals observed during any works or monitoring within the offset site will have their location recorded and have their persistence and condition assessed annually.

A monitoring event will include an assessment of each known individual, taking a photo of the plant and its local environment, and recording any relevant information relating to plant health, flowering, fruiting, grazing impacts or the influence of weeds.

Surveys are to occur annually during late spring to early summer and be conducted in association with other monitoring events. The results of each survey will be reported to TfN and DAWE. The report will also include an assessment of any changes or trends noted in either the habitat condition or number of MFL observed by the ecologist.

### 3.9.8 Revegetation monitoring

Monitoring of the revegetation works will commence in the spring of Year 3. Sampling will be conducted to the extent that the revegetation targets noted in 3.8.6 can be assessed. Monitoring of the revegetation works will continue until such time as the targets have been achieved over two successive years. After this has occurred, the revegetation areas will continue to be managed in a manner that attains the goals for native vegetation outlined in this OMP.

## 3.10 Reporting

Unless otherwise advised by the Minister, the landowner, via the approval holder (LTU), must submit a report annually to TfN and DAWE for the period of the approval (i.e. until 2040). Reports are to be submitted at least two months prior to the anniversary date of the execution of the OMP to allow time for compliance to be assessed before the anniversary date. Reports will also be published on the LTU website within 3 months of every 12 month anniversary.

The Annual Report will address progress against the commitments set out in this OMP. Annual Reports will provide enough detail in the form of written comments and supporting evidence that an assessor can easily determine the completion of/progress against the management commitments and completion criteria for the offset site.

The annual report will include:

- Details of management actions, including on ground works, undertaken within the reporting period.
- Results of monitoring activities, including fence condition, weeds, pest animals, habitat quality, vegetation quality and ground cover biomass accumulation / the cover of open ground.
- Tracking of results in comparison to management performance targets and completion criteria.
- Site photographs including from eight defined photo points.
- Details of compliance or non-compliance with the schedule of management actions (Table 5).
- Details of compliance or non-compliance with performance targets (Section 3.4.2).
- Details of any incidents or new and emerging management issues, with recommendations for corrective action and plan review in order to obtain the offset completion criteria.
- Any triggers exceeded and which corrective actions were implemented.
- Details of any MFL monitoring events including an assessment of the relevant results.

The reporting schedule is detailed in Table 7.

## 3.11 Auditing

The approval holder (LTU) is responsible for auditing the implementation and effectiveness of the OMP. Audits will be conducted by an independent ecologist at the following stages:

- At the end of the first year of site management - this is to ensure that initial management and monitoring actions are conducted to the satisfaction of the approval holder and DAWE, including implementing the legal security mechanism, ensuring the property is securely fenced, and that other initial management and baseline monitoring actions have been completed.
- At the end of the fourth year of site management – this will involve a review of four annual monitoring and management reports, as well as an independent assessment of the condition of MFL habitat within the site.
- At the end of the eighth year of site management – as per the four year audit.
- Following the completion of the 10$^{th}$ and final year management period – to audit the implementation and effectiveness of the OMP.
- At the end of year 18 of site management to ensure that the offset completion criteria have been maintained from Year 10 and to the end of the period of approval (September 2040).

The timing of scheduled audits is detailed in Table 7. Additional audits may be triggered as a result of a plan review (Section 3.12) or following an environmental incident resulting in significant change to site conditions, as identified in the risk assessment (Table 6).

## 3.12 Plan review

This plan includes an adaptive management approach, where corrective actions will be triggered by events occurring within the offset site, or the results of monitoring activities. A review of the OMP will be necessary in the event of a major incident that makes a significant change to the character or condition of the offset area. The most likely such event is a major wildfire, as described in Table 6.

If a plan review is triggered, this will be conducted by LTU in consultation with the offset site owner and DAWE. Any future adaptive management changes will be incorporated into the OMP and an updated version of the OMP will be supplied to DAWE for approval.

The OMP review will involve changes to any part of the OMP, in order to adequately respond to the trigger and re-direct management actions towards achieving the offset completion criteria under potentially altered site conditions.

This could involve changes to:

- Specific details of offset site management methods.
- Monitoring methodology.
- Schedules of monitoring, reporting and auditing.

**Table 5: Management plan actions and timing for offsets on the La Trobe University offset site.**

This section provides a schedule of management actions (Table 5) for the offset area, an assessment of the risk of failing to achieve desired outcomes (Table 6), and specifies how this relates to the monitoring (Table 7) and reporting (Table 8) program.

| Year No | Objective – Entire offset site | Timing of activity – month(s) | Performance criteria | Related management and monitoring activity (# -see Table 7) |
|---|---|---|---|---|
| 1 and all years following | **1. Develop annual works plan.**<br>Ensure the annual works program is appropriately planned and coordinated to achieve short and long term targets. | Completed within 1 month of commencement of this OMP. | TfN approved annual works plan in place. | Management Sec. 3.3. 3.7 & 3.8<br>Monitoring #2 & 3 Sec. 3.9.2 |
| 1 and all years following | **2. Prevent unauthorised activities and vehicle access.**<br>Ensure access to the offset site is appropriately controlled to exclude unplanned disturbances.<br>Access control infrastructure to be monitored and maintained in functional condition. | Completed within 1 month of commencement of this OMP. | Exclude unauthorised vehicles from offset area.<br>Exclude unauthorised access and firewood collection.<br>Maintain access control infrastructure around the offset site. Any new infrastructure, if required to control threats to ecological values, will be constructed to an appropriate standard. | Management Sec. 3.8.1<br>Monitoring #1 - Sec. 3.9.1 |
| 1 and all years following | **3. Remove all woody weed infestations within the offset area.**<br>Weeds to be managed in accordance with BushBroker Information Sheet 8 – Standards for Management – Weeds (DSE 2012b) | Completed within 1 month of commencement of this OMP. | No mature woody weeds present within offset area after the completion of Year 2.<br>Minimise off-target damage (avoid all native plants).<br>Record and control any woody weed regeneration / re-colonisation. | Management Sec. 3.8.2<br>Monitoring #2 - Sec. 3.9.2 |
| All years | **4. Reduce herbaceous weed covers.**<br>Control methods and timing specified in Table 4 and in accordance with DSE (2012b).<br>Establish baseline monitoring sites including quadrats and photo points (5) and reassess annually in late spring. | Refer to Table 3. | Herbaceous weed cover to be less than baseline.<br>Minimise off-target damage (avoid all native plants).<br>Introduced perennial grasses to reduce in cover to 1% at the end of 10 years management. | Management Sec. 3.8.3<br>Monitoring #2 - Sec. 3.9.2 |

| Year No | Objective – Entire offset site | Timing of activity – month(s) | Performance criteria | Related management and monitoring activity (# -see Table 7) |
|---|---|---|---|---|
| All years | **5. Prevent new and emerging weeds.** | Ongoing. | New outbreaks of weeds to be detected and treated.<br>No woody weeds present within offset area.<br>Minimise off-target damage (avoid all native plants). | Management Sec. 3.8.2<br>Monitoring #2 - Sec. 3.9.2 |
| All years | **6. Revegetate areas dominated by introduced species.** | Ongoing. | Achieve nominated density of indigenous plant life-forms. | Management Sec. 3.8.6<br>Monitoring #2 - Sec. 3.9.8 |
| All years | **7. Manage ground cover biomass.** | Ongoing. | Maintain an open tussock grassy ground cover with inter-tussock spaces covering about 30% (+/- 10%). | Management Sec. 3.8.4<br>Monitoring #2 - Sec. 3.9.5 |
| All Years | **8. Maintain and enhance the MFL population.**<br><br>Report on population and habitat condition. | Late Spring. | Document known MFL population.<br><br>Establish translocated MFL population.<br><br>Assessment of any trends in MFL population size, health or extent.<br><br>Documentation of the condition of MFL habitat based on visual assessments. | Management Sec. 3.9.7<br>Monitoring #2 |
| All years | **9. Enhance MFL habitat condition.**<br>Utilise 5 quadrats used for weed monitoring and other general observations. | Late Spring (see Table 5) | Documentation of the condition of MFL habitat based on a habitat hectare assessment and other monitoring data. | Management Sec. 3.9.1<br>Monitoring #6 |
| All years | **10. Control Rabbits, Hares and Foxes.**<br>Rabbits to be managed in accordance with BushBroker Information Sheet 7 (DSE 2012a). | Ongoing | No fresh ground disturbance by pest animals (particularly rabbits) observed in the offset area.<br>No active rabbit warrens within offset area, minimal surface harbour for rabbits and hares present (excluding natural harbour such as logs and rocks).<br>No active fox dens within offset area, if present they are to be destroyed through fumigation and hand collapse.<br>Continue to monitor and control rabbits and foxes all year round. | Management Sec. 3.8.3<br>Monitoring #3 - Sec. 3.9.5 |
| All years | **11. Control all new and emerging pest animals.** | Ongoing | Control numbers of any new and emerging pests. | Management Sec. 3.8.3<br>Monitoring #3 - Sec. 3.9.5 |

| Year No | Objective – Entire offset site | Timing of activity – month(s) | Performance criteria | Related management and monitoring activity (# -see Table 7) |
|---|---|---|---|---|
| All years | **12. Report on OMP implementation.** | Submit 2 months prior to agreement anniversary date. | Annual report is signed, dated and submitted by the landholder at least 2 months prior to the anniversary date of the agreement. | Refer to section 3.10 |

**Table 6 Risk assessment and management**

This risk assessment uses the risk framework from the DAWE EMP guidelines. The likelihood and consequence classification is summarised in Appendix 2.

| Objective (refer to Table 5) | Event or circumstance | Likelihood | Consequence | Risk level | Trigger | Contingency/s | Related monitoring activity (# See Table 7) |
|---|---|---|---|---|---|---|---|
| 2 | Entry of vehicles to offset area. Damage to understorey vegetation, soil compaction. | Unlikely | Minor | Low | Vehicle observed on offset site. Evidence of recent vehicle access e.g. tyre tracks. | Repair fencing. Assess adequacy of fencing. | 1 |
| 2 | Unauthorised access. | Unlikely | Minor | Low | Evidence of firewood collection or physical disturbance observed. | Assess adequacy of fencing. | 1 |
| 3, 4 & 5 | Woody weeds are identified within offset area. Herbaceous weed cover exceeds baseline levels. | Possible | Minor | Low | Woody weeds are detected. Herbaceous weed cover exceeds baseline levels. | Control weeds. Minimise off-target damage (avoid all native plants). | 2 |
| 10, 11 | Pest animals observed within offset site. Damage to understorey vegetation or recruiting trees and shrubs. | Possible | Moderate | Medium | Fresh ground disturbance or scats of pest animals observed in the offset area. Active rabbit warrens observed within offset area. Active fox dens observed within offset area. New and emerging pest observed within offset area. | Destroy fox dens and rabbit warrens through fumigation and hand collapse. Undertake control works for new and emerging pests as appropriate. | 3 |
| 8 | MFL population drops significantly | Possible | Critical | Severe | Population of MFL declines by over 20% in comparison to any previous years without explanation as to how it may recover or habitat condition noted as significantly lower than previous year and recovery is uncertain. | Review ecological management parameters. Review plan. | 5 |

| Objective (refer to Table 5) | Event or circumstance | Likelihood | Consequence | Risk level | Trigger | Contingency/s | Related monitoring activity (# See Table 7) |
|---|---|---|---|---|---|---|---|
| 9 | Failure to attain completion criteria for MFL habitat. | Possible | Critical | Low | Habitat completion criteria assessed as unlikely to be achieved as at year 8 of OMP implementation. | Engage DAWE to determine suitable additional offsets. | 5 |
| 8 & 9 | Failure to maintain completion criteria for MFL habitat. | Unlikely | Critical | Low | Habitat condition for MFL declines after ten years | Review intensity of management inputs and implement more intensive management as required to reinstate completion criteria. | 5 |
| 6 | Failure to achieve revegetation objectives. | Possible | Critical | Medium | Habitat condition for MFL not suitable in revegetation zones. | Review intensity of management inputs and implement more intensive management as required to reinstate completion criteria. | 6 |
| 1, 2, 3, 4, 5, 7, 8, 9, 10 | Wildfire or uncontrolled planned burn.<br>May impact temporarily or permanently on natural regeneration.<br>May impact upon weed recruitment patterns.<br>May destroy access control measures. | Possible | Medium | Medium | Wildfire observed within offset area. | Monitor for increased weed invasion (immediately post fire and 12 months post fire).<br>Undertake weed control works to take advantage of new growth.<br>Inspect access control infrastructure condition and repair any damage.<br>Significant wildfire throughout the majority of the offset area is a trigger for plan review (Section 3.12). | 1, 4 |

**Table 7 Monitoring schedule**

| # | Monitoring activity | Parameter/s measured | Survey / monitoring guidelines | Where | When | Reliability |
|---|---|---|---|---|---|---|
| 1 | Access infrastructure monitoring. | Condition of all access infrastructure. | Survey the perimeter of the offset site to ensure access control measures are effective and intact and assess evidence of vehicle access or firewood harvesting.<br>Refer to Section 3.8.1 and 3.9.3 for details. | Offset site perimeter | Quarterly | High |
| 2 | Weed monitoring. | Cover of woody and herbaceous weed species. | Vegetation survey to be conducted to identify woody and herbaceous weed species and determine cover. Woody species to be mapped using GPS. Herbaceous weed cover (percentage cover) to be estimated for defined sections of the offset site. All weed species present identified to species level.<br>Refer to Section 3.8.2, 3.8.3 and 3.9.4 for details. | Offset area. | Annual - Spring | High |
| 3 | Pest animal monitoring (Rabbits, Hares and Foxes, and new and emerging pest animals). | Presence of pest animals or signs e.g. scats, diggings, browsing or grazing | Signs of pest animals to be recorded during vegetation surveys. Locations of rabbit warrens to be mapped using GPS.<br>Refer to Section 3.8.4 and 3.9.5 for details. | Offset area. | Annual – Spring During vegetation condition survey. | High |
| 4 | Matted Flax-lily population monitoring. | Number of MFL observed. Subjective condition of habitat | Refer to Section 3.9.7 for details. | Offset area. | Spring | High |
| 5 | MFL habitat condition monitoring. | Condition of habitat (VQA related parameters) | Refer to Section 3.9.1 for details. | Five permanent plots. | Annual – Spring (part of weed monitoring). | High |
| 6 | Revegetation monitoring. | Density of native plant lifeforms established | Refer to Section 3.9.8 for details. | Areas originally not identified as patches. | Annual – Spring (part of weed monitoring). | High |

**Table 8 Reporting schedule**

| # | Type of report | Approval condition | Responsibility | Timing | Reporting authority | Trigger (if any) |
|---|---|---|---|---|---|---|
| 1 | Annual management actions report. Tabulates management actions completed within the offset area (Section 3.10). | 3e & 8 | Offset site owner | Report to be completed by August 31 so information is available prior to spring monitoring. | DAWE<br>TfN<br>LTU | Not Applicable |
| 2 | Annual monitoring report. Presents results of offset site monitoring activities (Section 3.10). | 3 | Offset site owner | Annual monitoring to be completed in spring. Report to be completed by November 30 of each year. | DAWE<br>TfN<br>LTU | Completion of annual monitoring |
| 3 | Review of offset management plan (Section 3.12). | 3 | LTU | As required. | DAWE<br>TfN | Significant environmental event causing widespread impact to habitat within the offset site e.g. Wildfire. |
| 3 | MFL population and habitat condition assessment. | 3 | Ecologist | Annual compliance report to DAWE. | DAWE<br>TfN<br>LTU | Baseline population information at beginning of OMP. Annual in spring thereafter. Completion of annual habitat assessment using 8 monitoring plots. |
| 3 | Audit report (Section 3.11). | 3 & 10 | Approval holder (LTU) | End of years 1, 4, 8 and 10. | DAWE | Not Applicable |

# References


Biosis 2019a. La Trobe University Sports Precinct Stage 3: flora and fauna assessment. Report to La Trobe University. Authors: Hilliar S, Yugovic J, Biosis Pty Ltd, Melbourne. Project 27318.

Biosis 2019b. La Trobe University Sports Precinct Stage 3: Vegetation condition assessment and offset suitability for Matted Flax-lily. Report for La Trobe University. Author: Mueck, S. Biosis Pty Ltd, Melbourne. Project no. 20808.

Biosis 2020. La Trobe University Sports Precinct Stage 3: EPBC Act Matted Flax-lily Salvage & Translocation Plan (EPBC 2018/8343). Report for La Trobe University. Author: Merlo, I. Biosis Pty Ltd, Melbourne. Project No. 30363.

Commonwealth of Australia 2011. *Nationally Threatened Ecological Communities of the Victorian Volcanic Plain: Natural Temperate Grassland & Grassy Eucalypt Woodland – A guide to the identification, assessment and management of nationally threatened ecological communities EPBC Act*. Australian Government Department of Sustainability, Environment, Water, Population and Communities, Canberra.

Commonwealth of Australia 2014. *Guidelines for the preparation of an offset management plan under the EPBC Act offsets policy*. Australian Government Department of Sustainability, Environment, Water, Population and Communities, Canberra.

DEPI 2013. *Permitted clearing of native vegetation - Biodiversity assessment guidelines.* Victorian Government Department of Environment and Primary Industries, Melbourne (September 2013).

DEPI 2014. *Advisory list of rare or threatened plants in Victoria*. Department of Sustainability and Environment, Melbourne.

DSE 2007. *Native Vegetation - Guide for assessment of referred planning permit applications*. Victorian Government, Department of Sustainability and Environment, East Melbourne

DSE 2009. *BushBroker: Standards for management – Ecological grazing: Information Sheet No. 13.* DSE, East Melbourne.

DSEWPaC 2012. Environment Protection and Biodiversity Conservation Act 1999 *Environmental Offsets Policy*. Department of Sustainability, Environment, Water, Population & Communities. Australian Government, Canberra.

Marshall, A. 2013. *Start with the grasslands: Design guidelines to support native grasslands in urban areas (Final Draft).* Victorian National Parks Association, Melbourne.

Morgan, J.W. 2015. Biomass management in native grasslands. In Williams, N.S.G., Marshall, A. and Morgan, J.W. (eds) Land of sweeping plains: Managing and restoring the native grasslands of south-eastern Australia. CSIRO publishing, Clayton South, Melbourne.

Williams, N.S.G., Marshall, A. and Morgan, J.W. (eds) 2015. *Land of sweeping plains: Managing and restoring the native grasslands of south-eastern Australia.* CSIRO publishing, Clayton South, Melbourne.