La Trobe Sports Precinct, Bundoora campus, Victoria: Additional information for assessment by Preliminary Documentation (EPBC 2018/8343)

Report prepared for La Trobe University

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- Jeff White & Lachlan Milne (Conservation Management Plan)
- Steve Mueck (Offset Management Plan, quality assurance)
- Imogen Merlo (Matted Flax-lily Salvage & Translocation Plan)
- Sally Mitchell (mapping)

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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

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Glossary and abbreviations

CMP	Conservation Management Plan
DAWE	Australian Government Department of Agriculture, Water and the Environment
DELWP	Victorian Government Department of Environment, Land, Water and Planning
DSE	Victorian Government Department of Sustainability and Environment, now DELWP
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ESD	Ecologically Sustainable Development
EVC	Ecological Vegetation Class
FTE	Full-time Equivalent
GEWVVP	Grassy Eucalypt Woodlands of the Victorian Volcanic Plain
GGF	Growling Grass Frog
GHFF	Grey-headed Flying-fox
LGA	Local Government Area
MFL	Matted Flax-lily
MNES	Matters of National Environmental Significance
OMP	Offset Management Plan
Proposed action area	Full extent of the proposed works required for Stage 3 of the La Trobe Bundoora Sports Precinct
SSA	State Sporting Associations
VBA	DELWP's Victorian Biodiversity Atlas

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Summary

La Trobe University is seeking Commonwealth approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for the development of a sports precinct for sport teaching and research at La Trobe University, Bundoora. The current proposed action constitutes Stage 3 of a four-stage project. Stage 1 of the project commenced in late October 2017.

The proposed action was referred to the Australian Government Department of Agriculture, Water and the Environment (DAWE) on 20 December 2018. On 1 February 2019, DAWE declared that the proposed action is deemed a 'controlled action' due to potential significant impacts on listed threatened species and communities. On 14 June 2019 a delegate of the Minister decided that the proposed action would be assessed by preliminary documentation, and requested further information in order to assess the relevant impacts of the proposed action. The request for further information encompassed the 11 components (listed below as 2-12) and were addressed as follows:

1. Introduction
2. Description of the action
3. Description of the existing environment and relevant matters of national environmental significance
4. Assessment of the relevant impacts of the action
5. Proposed avoidance and mitigation measures
6. Offsets
7. Economic and social matters
8. Other approvals and conditions
9. Environmental record of the person proposing to take the action
10. Ecologically Sustainable Development
11. Conclusion
12. Information sources
13. References

The proposed action area is located on La Trobe University land and contains native vegetation that does not meet the diagnostic criteria to be considered the EPBC-listed Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP) ecological community. The proposed action area is also located adjacent to Darebin Creek, which supports habitat for the EPBC Act listed Growling Grass Frog *Litoria raniformis*. Swift Parrot *Lathamus discolor* and Grey-headed Flying-fox *Pteropus poliocephalus* are also known to occur in the vicinity of the study area. Matted Flax-lilies *Dianella amoena* and corresponding habitat were recorded within the study area during targeted surveys.

A biodiversity assessment was initially undertaken in 2018 to inform the planning and design of the proposed action. The proposed footprint has undergone a series of revisions and design iterations to avoid and minimise impacts to matters protected under the EPBC Act.

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Residual significant impacts of the proposed action will be limited to the loss of 23 Matted Flax-lilies within 1.26 hectares of suitable habitat. Mitigation measures are proposed to be implemented to avoid residual indirect impacts to Growling Grass Frog, Grey-headed Flying-fox, Swift Parrot and the environment as a whole.

This report provides the preliminary documentation required by DAWE to assess Stage 3 of the La Trobe Sports Precinct as a controlled action. The document has sought to adequately address the items raised by DAWE, and has considered all relevant existing information including assessment reports, recovery plans, conservation advice and EPBC Act policy documents.

1. Introduction

La Trobe University is seeking Commonwealth approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for the development of Stage 3 of the La Trobe University Sports Precinct Stage 3, Bundoora (the proposed action) at La Trobe University, Victoria. The proposed action is required to facilitate the development of a sports teaching, research and community use facility at the Bundoora campus.

Biosis Pty Ltd was commissioned by La Trobe University to undertake a biodiversity assessment of the broader area potentially impacted by the proposed action (Biosis 2019). This information was used to minimise the development footprint and to provide supporting information for the referral of this action under the EPBC Act (Referral 2018/8343).

On 14 June 2019 the proposed action to clear native vegetation and construct a sports precinct for sport teaching and research at La Trobe University, Bundoora, Victoria was determined as a controlled action to be assessed by preliminary documentation. The proposed development was identified as a controlled action under the EPBC Act for its potential impact on five Matters of National Environmental Significance (MNES) including:

- Matted Flax-lily (MFL) *Dianella amoena* – Endangered
- Swift Parrot *Lathamus discolor* – Critically Endangered
- Grey-headed Flying-Fox *Pteropus poliocephalus* – Vulnerable
- Growling Grass Frog (GGF) *Litoria raniformis* – Vulnerable
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP)– Critically Endangered

As such, the Department of Agriculture, Water and the Environment (DAWE) requested further information in order to assess the relevant impacts of the proposed action on 28 June 2019. The request for additional information is provided in Appendix 1. Since the referral was submitted, the proposed footprint has been updated to reflect a reduction of the impact area to exclude impacts to one individual MFL and to minimise removal of native vegetation and suitable habitat for MFL.

This report provides the details requested by DAWE as part of the approval process for this project. Table 1 summarises the additional information requested and provides a reference for where in this document each request is addressed.

Information sources used to prepare this documentation are referred to throughout and listed as information sources and references in Sections 12 and 13 respectively. All information sources are considered current and reliable.

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Table 1 Summary of additional information requested by DAWE (Appendix 1) and reference to sections within this document where the request is addressed

Description of the action	
All components of the action described	Section 2
The location, boundaries and size (in hectares) of the disturbance footprint and of any adjoining areas	Section 2, Figures 1 and 2
Brief description of works	Section 2
A brief overview of construction methods, techniques and materials	Section 2.2
An overview of the operational requirements of the proposed action and any anticipated maintenance works	Section 2.3, Section 5
Any feasible alternatives to the proposed action	Section 2.4
Timing and duration (including start and completion dates)	Section 2
Description of the environment and matters of national environmental significance	
A description of how the proposed action may impact the protected matters identified within and adjacent to the proposed action area	Section 3
Targeted surveys to confirm the presence, status and extent of relevant matters	Section 3
Information detailing known populations (and records) or habitat for the relevant protected matters within 5 km of the proposed action area	Section 3
Information about the resources used to identify and assess the environmental values of the site	Section 3
An assessment of the adequacy of any surveys undertaken	Section 3
Whether consultation or advice was sought from local community groups or experts	Section 3
Relevant impacts	
An assessment of all potential impacts from proposed action on the MNES	Section 4
The direct and indirect loss, disturbance, degradation and modification of habitat for each protected matter	Section 4
Local, regional and national scale analysis of the likely impacts to each protected matter	Section 4
Any technical data and other information used or needed to make a detailed assessment of the relevant impacts	Section 4
Analysis of the acceptability of the relevant impacts	Section 4
Details of any likely unknown, unpredictable or irreversible impacts	Section 4
The ability of the retained habitat in the proposed action area to maintain connectivity between other areas of habitat adjacent to the proposed action	Section 4
Proposed avoidance and mitigation measures	

A detailed description of the measures proposed	Section 4 and 5
A statement addressing the environmental objectives and outcomes that the proposed measures are expected to achieve	Section 4 and 5
Details of ongoing management, including research and monitoring programs	Section 4, 5 and 6
A description (including maps) of the location, boundaries and size (in metres) of any buffer areas for proposed exclusion zones or conservation purposes	Section 4, 5 and 6, Figure 4
An assessment of the predicted effectiveness of the measures proposed	Section 4 and 5
Any statutory or policy basis for the measures proposed	Section 4 and 5
The achievability of the measures proposed, including affordability	Section 4, 5 and 7
A description of any proposed rehabilitation to disturbed habitat areas, including its management, methodology and timing	Section 4, 5 and 6
Offsets	
The preliminary documentation package must provide details of the likely residual impacts on protected matters	Section 6
The type of offset/s proposed	Section 6
The extent to which the proposed offset correlates to, and adequately compensates for, the residual significant impacts on protected matters, resulting from the proposed action	Calculations is outlined in Section 6; OMP attached as Appendix 3
Suitability of the location of any proposed offset site for each of the protected matters	Section 6
Conservation gain to be achieved by the offset i.e. positive management strategies that improve the site or avert the future loss, degradation or damage of the protected matter	Section 6
Time it will take to achieve the proposed conservation gain	Section 6
Level of certainty that the proposed offset will be successful	Section 6
Current land tenure of any proposed land-based offset and the method of securing and managing that offset for 20 years or the period of the impact	Section 6
Statement on the cost effectiveness of the measures proposed and how these will be funded	Section 7
Salvage and Translocation Plan for MFL including justification, timing, protocols, translocation site, post-translocation management, contingency measure and ongoing monitoring	Section 6
Economic and social matters	
Basis for any estimations of costs and/or benefits	Section 7
Specific dollar or other numeric values where relevant	Section 7
Potential employment opportunities expected to be generated at each phase of the proposed action	Section 7

Details of any public and stakeholder consultation activities, including the outcomes	Section 7
Discussion of how the principles of ecologically sustainable development are addressed in the proposed action	Section 10
Discussion of the environmental history of the company	Section 9
Other approvals and conditions	
The preliminary documentation package must include information on any other requirements for approval or conditions that apply	Section 8
Environmental record of the person proposing to take the action	
Detail any proceedings under Commonwealth, State or Territory law for environmental protection or sustainable use of natural resources against person proposing to take the action	Section 9
Details of the corporation's environmental policy and planning framework	Section 9
Ecologically Sustainable Development	
Description of the proposed action in relation to the principles of ecologically sustainable development	Section 10
The long-term and short-term economic, environmental, social and equitable considerations	Section 10
Consideration of the precautionary principle and the principle of inter-generational equity	Section 10
Consideration of the conservation of biological diversity and ecological integrity	Section 10
improved valuation, pricing and incentive mechanisms should be promoted	Section 10
Conclusion	
Provide an overall conclusion to the environmental acceptability of the proposal	Section 11
Information sources	
Describe the source, currency and reliability of information provided, any uncertainties, and the guidelines, plans and/or policies considered	Section 12 and 13

2. Description of the action

The area surrounding the study area currently contains a baseball diamond, soccer pitches, a football/cricket oval, a golf driving range and car parking. The University is delivering a 30-40 year Melbourne Campus Vision that will underpin future academic functions and growth in student enrolments and unlock significant opportunities for long term population and employment outcomes within Melbourne's northern sub-region. The Melbourne Campus Master Plan identifies a major opportunity for the existing sports and recreation neighbourhood on the south-west corner of the campus to provide for new integrated sports facilities and infrastructure catering to a diverse range of users including La Trobe Sport.

The proposed action designates the development of Stage 3 of the La Trobe University Sports Precinct Stage 3, Bundoora and will involve the construction of sporting and education facilities to establish and operate a world-class multi-sports and recreation precinct benefitting the university, elite sport club partners and the wider community and which confirms the University's status as a major destination and venue for sports programs and recreation activity. The proposed action area is 12.3 hectares and the proposed action will involve the removal of 3.203 hectares of native vegetation in total, which includes both patch vegetation and scattered trees.

Stage 3 is located on the western side of La Trobe campus, Bundoora, and about 50 metres east of Darebin Creek, with a smaller area just west of Kingsbury Drive (Figure 1). The designated study area and impact area are displayed in Figure 2. The proposed impact footprints are collectively referred to hereafter as 'the proposed action area'.

Stage 3 of the development involves:

- Construction of three community courts
- Establishment of two synthetic football pitches
- Construction of a pavilion for the football field
- Construction of a pavilion for the rugby pitch
- Establishment of synthetic soccer pitches
- Establishment of two new natural grass rugby pitches
- Establishment of a new junior AFL oval
- Establishment of a baseball diamond
- Establishment of a sports drive and associated infrastructure
- Establishment of a new multi-directional intersection

The approximate start and end dates and duration of each project phase are summarised in Table 2.

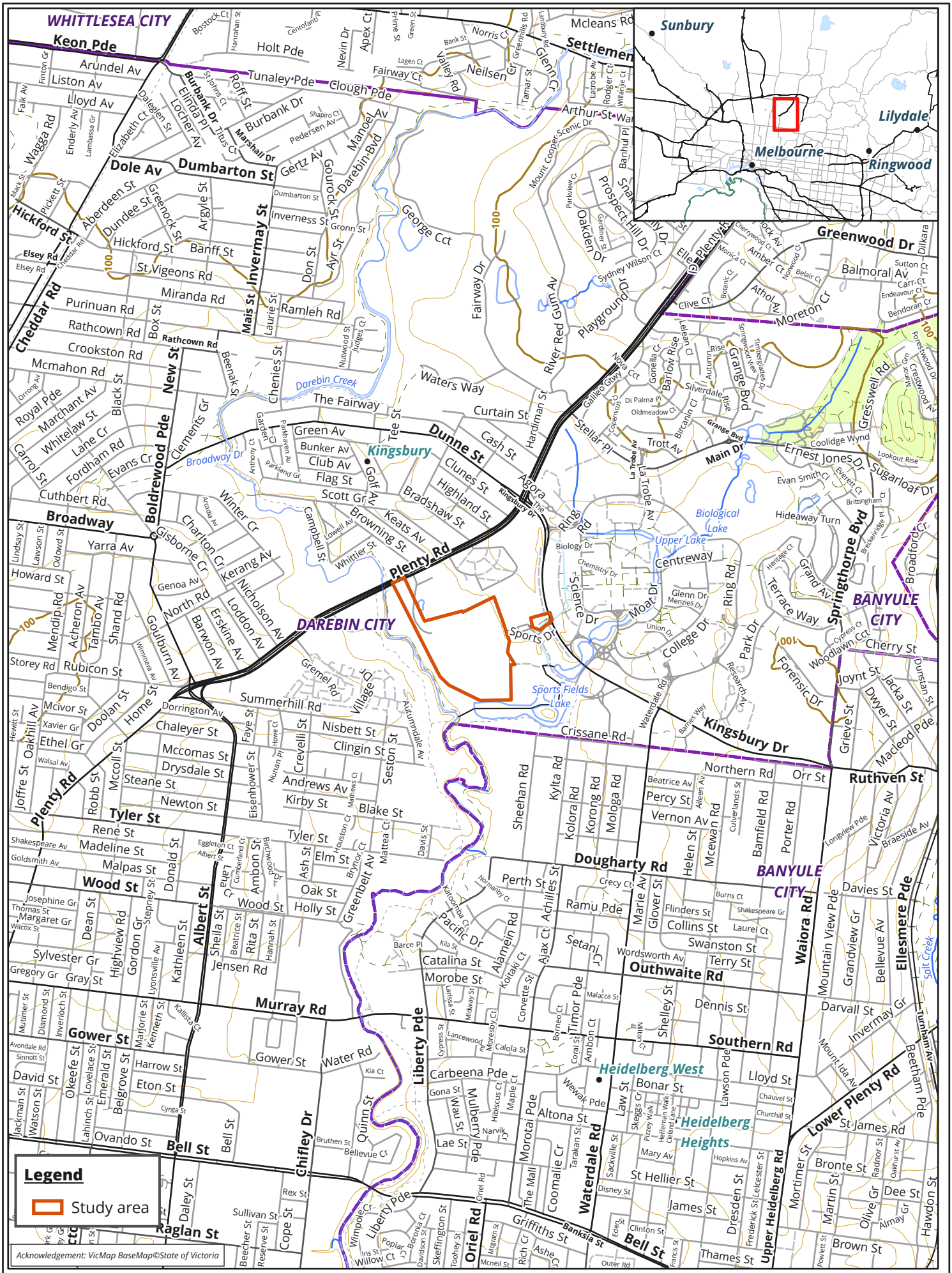


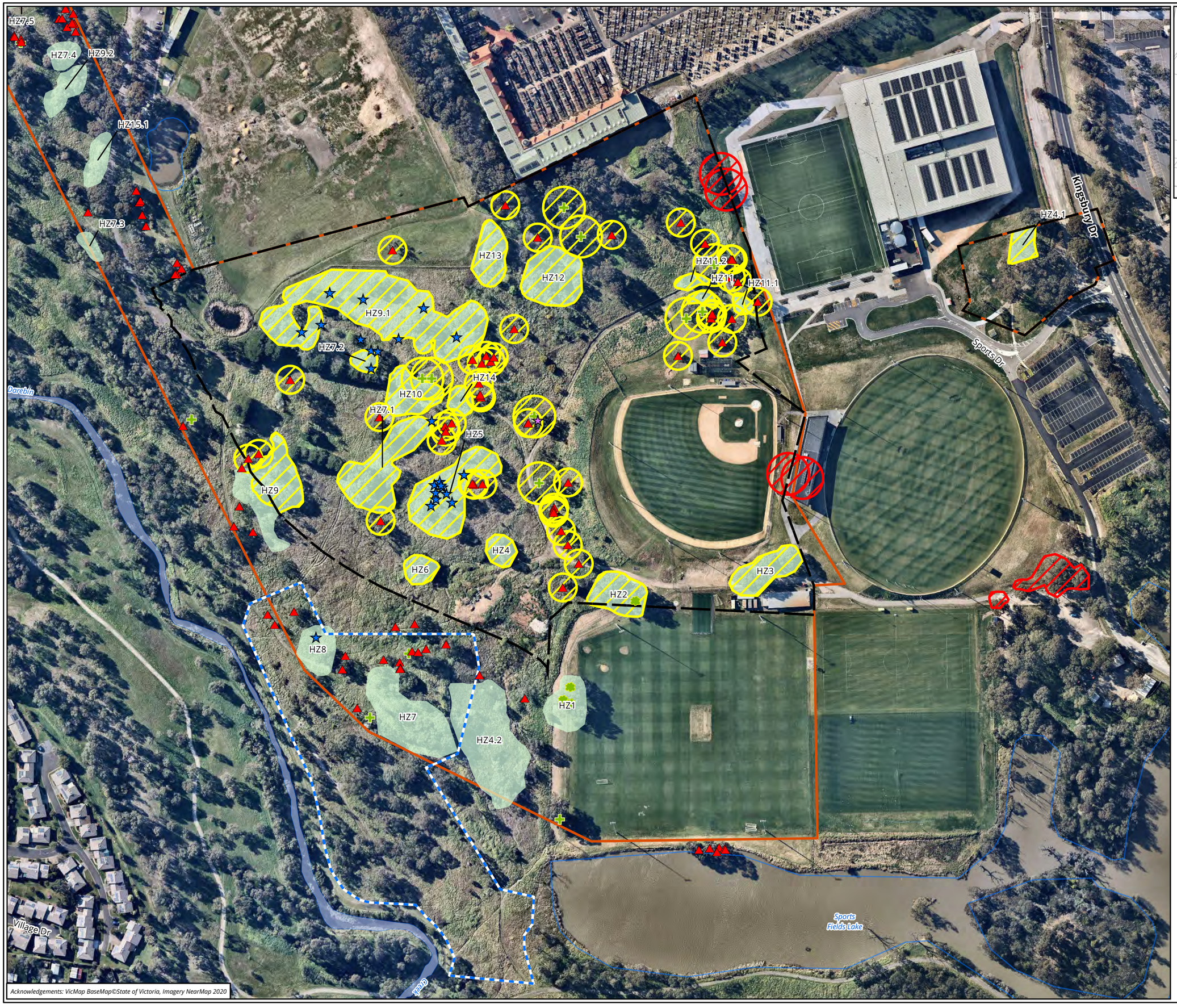
Figure 1 Location of the Study Area - La Trobe University, Bundoora, Victoria

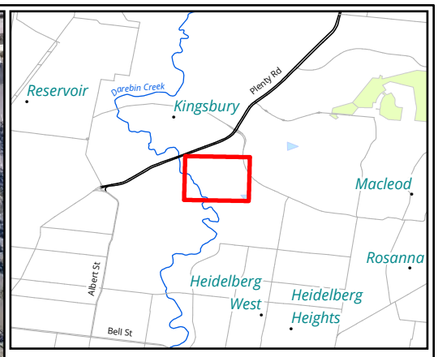
Matter: 30363, Date: 08 January 2021,
Prepared for: IM, Prepared by: SKM, Last edited by: smitchell
Layout: 30363_F1_Locality
Location: P:\30300s\30363\Mapping\30363_CMP_SportsPrecinct_LaTrobeUni.aprx

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

N

00





Legend

- Study area
- Stage 3 impact area
- Proposed offset site - 2.81ha

Vegetation

- Matted Flax-lily within survey area (Jacobs 2016)
- Matted Flax-lily(MFL) within survey area (Biosis 2018)
- Large tree within patch
- Plains Grassy Woodland (EVC 55)
- Large scattered tree
- Small scattered tree

Vegetation clearing

- Proposed vegetation removal
- Past permitted clearing

Figure 2 Proposed development plan

0 20 40 60 80 100

Metres

N

Scale: 1:2,500 @ A3

Coordinate System: GDA 1994 MGA Zone 55

biosis

Matter: 30363,
Date: 22 January 2021 ,
Prepared for: IM, Prepared by: SKM, Last edited by: lmilne
Layout: 30363_F2_DevPlan_Prev_Clearing
Project: P:\30300s\30363\Mapping\
30363_CMP_SportsPrecinct_LaTrobeUni.aprx

Table 2 Proposed programme, timing and duration for each phase of the Project

Pre-construction phase (feasibility studies, schematic and detailed design)	Within 1 year of funding being secured	Within 1 year of funding being secured	Within 1 year
Construction phase	Within 1 year of funding being secured	Within 4 years of funding being secured	Up to three years (contemplating development proceeding in stages)
Operational phase	First stage within 3 years of funding being secured	Within 4 years of funding being secured	Ongoing

2.1 Pre-construction

Pre-construction survey and investigation works were undertaken within the study area to inform each of the design phases (feasibility, schematic and detailed design) and the procurement of the La Trobe University Sports Park. These are summarised as follows:

- 50% schematic design of first concept
- Master planning of alternate concept
- Sketch plans of further concepts
- Flora and fauna assessment
- Targeted surveys for MFL
- Underground utility investigations

2.2 Construction phase

Construction works associated with the project can be identified as the following for the La Trobe University Sports Park Program:

- Construction of several playing fields
- Development of pavilions
- Development of Change rooms
- Development of an administration headquarters
- Development of support facilities

Materials and equipment will be delivered from the contractor compound to the temporary compound and storage areas within the impact area. All compounds and temporary material storage locations will be contained within the proposed action area.

2.3 Operation phase

Following completion of the construction phase of the project, all operation and maintenance activities will be undertaken in accordance with the Conservation Management Plan (CMP) and Offset Management Plan (OMP).

2.4 Alternatives to taking the action

The proposed footprint has undergone a series of revisions and design iterations to minimise impacts to MFL and the removal of native vegetation. When pre-construction feasibility studies were commenced for Stage 3, a construction footprint was under consideration. This was denoted by the entire study area for Stage 3, which would have resulted in direct impacts to 24 MFL rather than the current 23. Since the EPBC Act referral submission, the proposed action area has been refined to the current impact area, and now spares the loss of 1.05 hectares of native vegetation and 8 scattered trees.

The proposed action area has been refined and reduced as much as practicable to minimise direct impacts to native vegetation and MFL. The current proposed action area supports 1.87 hectares of Plains Grassy Woodland patches, none of which meets the diagnostic criteria to be considered Grassy Eucalypt Woodland of the Victorian Volcanic Plain (Biosis 2019). Most of these patches overlap with MFL habitat and the proposed action will result in the loss of 1.26 hectares of suitable habitat associated with the loss of the 23 MFL. Some patches of Plains Grassy Woodland were considered unsuitable to support MFL. In these instances, patches were defined by the overlapping dripline of three or more native canopy trees under the Victorian Guidelines for the Removal, Destruction or Lopping of Native Vegetation, while the understorey was weed-infested and covered in fill, and would not support MFL.

The overall design and exact construction footprint are yet to be confirmed as La Trobe University Bundoora is seeking funding for the sports park and will not be able to finalise a final plan until such a time as funding is secured. To account for this, the entire impact area is currently treated as the construction footprint, although it is likely that some native vegetation within this area will be retained in the final construction plans. Beyond refinements to design and total impact area, there are no possible alternative locations for the proposed action. The proposed action will augment existing sporting and teaching facilities associated with Stages 1 and 2 of the Sports Precinct development. The current location and use are the only ones under consideration other than not taking the action, which would heavily impede La Trobe's ongoing plans to create a world-class sports and teaching facility which is expected to achieve many educational, recreational and health-related benefits.

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3. Description of the environment and Matters of National Environmental Significance

The proposed action area is located on private land owned by La Trobe University Bundoora. La Trobe has commissioned a number of ecological investigations to inform the proposed sports precinct. This includes the Biodiversity Assessment for Stage 3 and targeted surveys for MFL in the proposed action area, as well as investigations into potential offset sites on the La Trobe campus (Biosis 2019, Biosis 2020a).

The ecological features of the proposed action area are therefore well documented and understood. This information has been reviewed and used to determine the ecological values of the proposed action area, including the likelihood of occurrence for listed threatened species. The proposed action area has been determined to have potential impacts on the following matters protected under the EPBC Act:

- Matted Flax-lily – Endangered
- Swift Parrot – Critically Endangered
- Grey-headed Flying-Fox – Vulnerable
- Growling Grass Frog – Vulnerable
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain – Critically Endangered

The following sections provide a general description of the environment affected by and surrounding the proposed action area in the short or long term, including MNES.

3.1 Matted Flax-lily

Matted Flax-lily is listed as Endangered under the EPBC Act 1999. This species is fully described in Carr & Horsfall (1995). Each plant consists of sparse to dense tufts of leaves, which are narrow, 4–12 mm wide, blue-green in colour, and usually have small 'teeth' on the upper edges and mid-rib. The leaf tufts may be widely spaced along the rhizome (up to 30 cm), making it difficult to accurately determine the number of individual plants within an area. Matted Flax-lily flowers during late-spring to summer. The flowering inflorescence is a spreading panicle, often 50–60 cm in height, with scented pale mauve to blue flowers. Blue fleshy berries containing the seeds are produced after flowering.

Matted Flax-lily generally occurs in grassland and grassy woodland habitats, on well drained to seasonally wet fertile sandy loams to heavy cracking clay soils derived from Silurian or Tertiary sediments, or from volcanic geology (Carter 2010). The species is known from grassland and grassy woodland in Victoria, and there are historic records from Tasmania, where the species may still occur (Carr & Horsfall 1995). Matted Flax-lily has been recorded from about 120 sites DELWP's Victorian Biodiversity Atlas (VBA) although the number of reproductively independent populations may be much less than this, probably closer to 50. Most populations are small and highly fragmented, and there is thought to be only around 2,500 plants in total (Carter 2010).

Carr & Horsfall (1995) note that natural recruitment for MFL is believed to be non-existent. Seedlings have not been seen in the wild (Carr pers. comm. in Carter, unpublished). Buzz pollination by native bee species is required for seed production, hence the habitat requirements for these species is important. The species is self-compatible (Carr & Horsfall 1995). Matted Flax-lily is readily propagated by division and seed, although it may be difficult to collect large quantities of seed, as the berries are often sparse and drop quickly once ripe (Carr & Horsfall 1995).

Matted Flax-lilies are known to occur in the local area (DELWP 2017a). During the initial flora and fauna assessment MFL was detected within the study area. A targeted search for MFL was undertaken on 6 September 2018 by two Biosis botanists. Due to the rhizomatic nature of MFL and in the absence of official guidance as how to identify individual plants, an individual MFL plant is considered to occupy an area defined by a set of leaf tufts such that all tufts are within approximately 0.5 metres of another tuft. This separation rule worked well on-site and there were no uncertainties. The targeted surveys used standard search methods, walking transects at 5 metre intervals. The presence of the MFL detected by Jacobs (2016) (Figure 2 andFigure 3) was confirmed by Biosis during a site inspection in July 2020.

Twenty-four MFL were detected within the overall study area during the targeted survey. Since the timing of surveys, the impact area has been reduced to exclude one MFL so at present twenty-three MFL exist within the proposed action area. 1.26 hectares of associated MFL habitat was identified within the study area.

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. The occurrence of MFL in the impact area predominantly overlaps within patches of the Ecological Vegetation Class (EVC) Plains Grassy Woodland (EVC 55_61), which is amongst the preferred habitat-types for MFL. These areas have relatively open ground cover, with a relatively high proportion of native grasses and herbs. Within the impact site, areas outside of these patches of Plains Grassy Woodland were typically heavily disturbed and the original soil surface often covered by fill or otherwise physically disturbed. These areas have been colonised by introduced species such as Kikuyu *Cenchrus clandestinus*, Toowoomba Canary-grass *Phalaris aquatica* and Cocksfoot *Dactylis glomerata*, which form a tall dense groundcover where MFL is unable to persist or recolonise. However the presence of mature and regenerating trees in this disturbed environment can allow some of these heavily disturbed site to be defined as native vegetation under the Victorian Guidelines for the Removal, Destruction or Lopping of Native Vegetation (DELWP 2017b). In these instances, patches were defined by the overlapping dripline of three or more native canopy trees, while the understorey was weed-infested and covered in fill, and would not support MFL. For this reason, the definition of native vegetation for Victoria does not necessarily correlate with an area of potential MFL habitat.

By contrast, areas in both the impact and offset sites that were weed-dominated but comprised the original soil surface were still considered appropriate as habitat, and within the impact area MFL persisted in such areas. None of the offset site contained dumped fill, therefore the entire area is considered suitable potential habitat for MFL, with some patches of Plains Grassy Woodland that currently provide high quality habitat within the offset site.

A total of 1.26 hectares of MFL habitat has been identified for removal within the proposed action area. Offsets for MFL habitat will be achieved by setting aside 2.81 hectares of suitable habitat as an offset area to the south of the impact area. While this area is presently considered suitable habitat as is, it will be rehabilitated and maintained to improve its condition in line with the Offset Management Plan (Biosis 2020a).

Impacts to MFL are considered in detail in Section 4.1, while offsets for MFL are addressed Offset Management Plan. Salvage and translocation procedures are outlined in the MFL Salvage and Translocation Plan.

3.2 Swift Parrot

The Swift Parrot is a relatively small species with a total length of approximately 25 cm and weight of 65 grams (Higgins et al. 1999) (i.e. a little larger and heavier than a Budgerigar). It is a nectarivorous parrot and is identified by its bright green colouration with patches of yellow, red and blue located on its throat, chin, face and wings. They occur as a single population that is estimated to be approximately 1000 pairs which is most

likely continuing to decline (Garnett et al. 2011, Saunders and Tzaros 2011). Swift Parrot is currently listed as 'Critically Endangered' under the EPBC Act and is also listed as a threatened species in all states and territories in which it occurs (New South Wales, Tasmania, Victoria, Queensland, ACT and South Australia).

Swift Parrots are endemic to Australia, breeding in Tasmania and overwintering in mainland Australia (Saunders and Tzaros 2011). Breeding occurs between September and April in Tasmania in a range of forest types (Higgins 1999). Once breeding is complete, they disperse from breeding areas, across Tasmania, and to mainland Australia (Higgins 1999). Birds arrive in Victoria as early as February and March, however most 'first' records for the year are from April (Higgins 1999). Most birds spend the winter in Victoria and New South Wales, but they are also known to extend as far north as Brisbane, although this is unusual (Higgins 1999). They disperse across broad landscapes, foraging on nectar, pollen and lerps in a variety of eucalypt species. (Saunders and Tzaros 2011). They return to Tasmania in August and September, with the largest number of 'returning' records from September (Higgins 1999).

Upon arrival on the mainland, Swift Parrots disperse throughout Victoria and New South Wales, and occasionally into southern Queensland and eastern South Australia, where they forage on flowers and lerps in preferred *Eucalyptus* and *Corymbia* spp. (Saunders and Tzaros 2011). Swift Parrots may utilise woodlands and forests supporting those species across their mainland range. Previous studies evaluating the tree species in Box-Ironbark woodlands found that White Box *Eucalyptus albens* (19.5% of observations) was the preferred nectar for Swift Parrot. Additionally, Swift Parrots forage upon a range of other species including Yellow Gum *Eucalyptus leucoxylon*, Yellow Box *Eucalyptus melliodora* and Grey Box *Eucalyptus microcarpa* (Higgins 1999), none of which are found within the study area. Although Swift Parrot will utilise a variety of age classes, they prefer larger, mature trees as these provide more reliable resources than younger trees (Wilson and Bennett 1999, Law et al. 2000, Kennedy and Overs 2001, Kennedy and Tzaros 2005).

Habitat mapping conducted throughout the Box-Ironbark forest regions in Victoria identified 40 priority sites where Swift Parrot have a high level of site fidelity or occur in large flocks (Saunders et al. 2007). This species has been recorded in suitable habitat within the La Trobe Bundoora campus but outside the study area during the annual period between March/April and September when the species is on the mainland. Despite nearby records, no preferred foraging trees are present within the study area. For this reason, the study area is not considered important habitat for Swift Parrot and therefore no targeted surveys were undertaken within the study area for this species.

3.3 Grey-headed Flying-fox

The Grey-headed Flying-fox (GHFF) is listed as Vulnerable under the EPBC Act and is a large frugivorous and nectarivorous bat and is distinguished by a rufous collar and grey head (DAWE 2020). The habitat requirements of GHFF are suitable roosting and foraging habitat, which typically comprise vegetation types such as rainforest, open forests, and closed and open woodlands (DAWE 2020). This species will generally roost along water courses (van der Ree et al. 2005). The primary food source for this species is flowering eucalypts, banksias, melaleucas and fruit-producing rainforest trees (Eby 1998). Due to the patchy nature of foraging resources for this species, GHFF has a migratory habit (Eby 1998). As such, this species occupies a broad distribution across the east coast of Australia, and is known to forage on modified vegetation in urban and suburban areas (DAWE 2020).

There is a large and ecologically significant camp of GHFF located approximately 10 kilometres south of the study area at Yarra Bend, Victoria. The study area contains River Red Gums, which are a known foraging resource for GHFF. They are also a highly mobile species, so individuals from the Yarra Bend camp may visit the study area occasionally to forage on flowering River Red Gums but would be unlikely to utilise the impact area as a roost site. Given that the study area is separated from the Yarra Bend camp by 10 kilometres of non-contiguous habitat, the study area is not likely to be a regular foraging site for GHFF. The Victorian

Biodiversity Atlas does not contain records of this species within the study area (DELWP 2017a). Most records of GHFF within a 5-kilometre buffer of the study area occur along the Salt Creek, a tributary of the Yarra River, which provides contiguous habitat to the Yarra Bend camp (DELWP 2017a). Visitation to the area by this species would most likely occur along Darebin Creek, which is separated from the impact area by approximately 50 metres. We therefore consider it highly unlikely that the impact area provides important habitat for GHFF. For this reason targeted surveys were not undertaken for this species.

3.4 Growling Grass Frog

The Growling Grass Frog is listed as Vulnerable under the EPBC Act. This species is characterised by its warty back, large size (up to 10cm), dull to bright green back and obvious eardrum. Growling Grass Frog is known to be present in waterways and dams within the broader local area, including nearby Darebin Creek (DELWP 2017a). Areas of particular value to the species include permanent or semi-permanent waterbodies containing abundant aquatic vegetation, particularly floating aquatic vegetation. Waterways are important for habitat connectivity and to facilitate movement of individuals throughout the landscape. The species can also utilise terrestrial habitat adjacent to occupied wetlands for foraging, dispersal and over-wintering (DEWHA 2009a). Typically permanent waterbodies supporting a high cover of aquatic vegetation close to existing populations of GGF are more likely to be occupied by the species, while isolated, ephemeral or intermittent waterbodies with little or no aquatic vegetation are much less likely to be occupied (Heard, Scroggie, & Clemann 2010).

While the study area is nearby (around 50 metres) from Darebin Creek, the construction footprint itself does not contain suitable wetland habitat for GGF in the form of creeks, farm dams and other off-stream waterbodies. Since there are no waterbodies present within the study area, it is considered highly unlikely that the study area would provide important habitat for GGF. For this reason targeted surveys were not undertaken for this species. However, indirect impacts to Darebin Creek (e.g. sediment pollution) should be avoided. This will be considered in Section 4, and further detailed in the CMP.

3.5 Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Grassy Eucalypt Woodland of the Victorian Volcanic Plain is a vegetation community listed as Critically Endangered under the EPBC Act and is known to occur in the broader local area. This community has a canopy cover typically consisting of River Red Gums with a limited shrub layer and a species-rich composition of grasses and herbs comprising the ground layer (DEWHA 2009b). In Victoria's classification of native vegetation, all examples of GEWVVP would be identified as the EVC Plains Grassy Woodland (EVC 55).

The proposed action area was assessed to determine the presence and extent of native vegetation and threatened ecological communities over five days between 1 and 4 May and 6 September 2018, to inform a Biodiversity Assessment of the proposed action area for Stage 3 (Biosis 2019). The vegetation assessment was undertaken by a senior botanist with Biosis, Jeff Yugovic, who has over 35 years of experience in vegetation assessment and survey. Seventeen patches (habitat zones) of the Plains Grassy Woodland (EVC 55_61) were identified within the proposed action area, with a total of 26 patches across the entire study area. Habitat zones range from areas of open eucalypt woodland with an overstorey of River Red Gums (some hollow bearing), an absent shrub layer (apart from occasional wattles Blackwood *Acacia melanoxylon* and Black Wattle *Acacia mearnsii*) and a ground layer dominated by weedy grasses with some native grasses. Other zones lack an overstorey and are defined by a ground layer of native grasses such as Kangaroo Grass *Themeda triandra* and wallaby-grasses *Rytidosperma* spp. Scattered native herbs such as *Geranium* sp. and Grassland Wood-sorrel *Oxalis perennans* occur in low numbers.

Modified GEWVVP is present, however it does not meet the diagnostic criteria and condition thresholds to be considered the listed community under the EPBC Act, due to both the weediness of the understorey (less than 25 per cent of the total perennial understorey cover consisted of native plants) and not meeting the threshold for patch size of 0.5 hectares (Biosis 2019). As such, no further investigations were conducted for this listed community.

3.6 Other MNES

3.6.1 Listed threatened species and ecological communities

A summary of all federally listed threatened species and ecological communities, and their status predicted to occur within the broader La Trobe area and current proposed action area is included in Table 3 below. Information sources include results from an EPBC Act Protected Matters Report for La Trobe University Bundoora, incorporating a 5 kilometre buffer (Appendix 2), previous ecological assessment report (Biosis 2019), the Victorian Biodiversity Atlas (DELWP 2017a) and DELWP NatureKit vegetation mapping (DELWP 2018). All information sources are included as references and listed in Sections 12 and 13, with the exception of the EPBC Act Protected Matters Report which is provided as Appendix 2.

3.6.2 Migratory species

A database search of fauna records undertaken in 2018 and an updated EPBC Act Protected Matters Report obtained on 24 April 2020 identified a combined total of 21 migratory species that may potentially occur within or adjacent to the proposed action area (Appendix 2; Biosis 2019).

The proposed action area is highly modified and does not itself contain any waterbodies which would attract migratory shorebirds or waterbirds. While some of these species may use the proposed action area on occasion, none are likely to do so regularly. The proposed action area does not provide important habitat for a significant proportion of these migratory species. The proposed development will not impact on any migratory species (Biosis 2019). Migratory species are therefore not considered further within this documentation.

3.7 Existing environment

A biodiversity assessment was undertaken to document the flora and fauna values of the proposed action area (Biosis 2019). A total of 31 indigenous and 16 introduced flora species were identified during the field assessment (Biosis 2019). Further information on the impacts to the existing environment are discussed in Section 5 and the CMP (Biosis 2020b).

Table 3 Status of listed threatened species and ecological communities within the broader La Trobe area and proposed action area.

MNES	Detail on survey effort and / or status within broader local area	Status within current proposed action area
Threatened ecological communities		
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Twenty-six patches of Plains Grassy Woodland are identified. Habitat zones range from areas of open eucalypt woodland with an overstorey of River Red Gums (some hollow bearing), an absent shrub layer (apart from occasional wattles Blackwood *Acacia melanoxylon* and Black Wattle *Acacia mearnsii*) and a ground layer dominated by weedy grasses with some native grasses. Other zones lack an overstorey and are defined by a ground layer of native grasses such as Kangaroo Grass *Themeda triandra* and wallaby-grasses *Rytidosperma* spp. Scattered native herbs such as *Geranium* sp. and Grassland Wood-sorrel *Oxalis perennans* occur in low numbers. Due to insufficient native grasses and herbs in the understorey and small patch size, these patches do not meet the diagnostic criteria to be classified as GEWVVP. Although this Critically Endangered community is predicted to occur within 5 km of La Trobe University Bundoora (Appendix 2), ecological surveys undertaken at La Trobe have not recorded GEWVVP.	GEWVVP – Critically Endangered under the EPBC Act. A vegetation assessment of the proposed action area determined that this ecological community is not present within the proposed action area. This assessment concluded that this ecological community will not be impacted by the proposed works (Biosis 2019). No further consideration required.
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Predicted to occur within 5 km of La Trobe Bundoora (Appendix 2), however ecological surveys undertaken at La Trobe have not recorded this ecological community.	Not present within or adjacent to the proposed action area. No further consideration required.
Natural Temperate Grassland of the Victorian Volcanic Plain	Predicted to occur within 5 km of La Trobe Bundoora (Appendix 2), however ecological surveys undertaken at La Trobe have not recorded this ecological community.	Not present within or adjacent to the proposed action area. No further consideration required.
White-Box –Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Predicted to occur within 5 km of La Trobe Bundoora (Appendix 2), however ecological surveys undertaken at La Trobe have not recorded this ecological community.	Not present within or adjacent to the proposed action area. No further consideration required.

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Natural Damp Grassland of the Victorian Coastal Plains	Predicted to occur within 5 km of La Trobe Bundoora (Appendix 2), however ecological surveys undertaken at La Trobe have not recorded this ecological community.	Not present within or adjacent to the proposed action area. No further consideration required.
Threatened flora species		
Matted Flax-lily *Dianella amoena*	Targeted surveys identified 24 MFL were recorded within the study area and 23 of those individuals are located within the proposed action area (Biosis 2019). The proposed development will involve the clearing of 23 MFL including 1.26 hectares of suitable habitat.	23 MFL are present within the proposed action area and will be impacted by the proposed development. All individuals will be salvaged and translocated to a recipient site and maintained according to the MFL Salvage and Translocation Plan accompanying this document. Offsets for the impacted MFL are proposed in the MFL Offset Management Plan.
River Swamp Wallaby-grass *Amphibromus fluitans*	No suitable habitat and no known occurrences near study area. There are no dams or wetter areas within the study area to provide suitable habitat for the species.	Species not recorded within proposed action area during Biodiversity Assessment (Biosis 2019). Vegetation assessment of the proposed action area determined that this species has a low likelihood of occurrence and will not be impacted by the proposed works (Biosis 2019). No further consideration required.
Clover Glycine *Glycine latrobeana*	The most recent record for this species is from 1988 (DELWP 2017a). Although there is some suitable habitat within the study area, there are no known occurrences nearby.	Species not recorded within proposed action area during Biodiversity Assessment (Biosis 2019). Vegetation assessment of the proposed action area determined that this species has a low likelihood of occurrence and will not be impacted by the proposed works (Biosis 2019). No further consideration required.
Green-striped Greenhood *Pterostylis chlorogramma*	No suitable habitat and no known occurrences near study area.	Species not recorded within proposed action area during Biodiversity Assessment (Biosis 2019). Vegetation assessment of the proposed action area determined that this species has a low likelihood of occurrence and will not be impacted by the proposed works (Biosis 2019). No further consideration required.

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Swamp Everlasting ***Xerochrysum palustre***	No suitable habitat and no known occurrences near study area. There are no dams or wetter areas within the study area to provide suitable habitat for the species.	Species not recorded within proposed action area during Biodiversity Assessment (Biosis 2019). Vegetation assessment of the proposed action area determined that this species has a low likelihood of occurrence and will not be impacted by the proposed works (Biosis 2019). No further consideration required.
Adamson's Blown-grass ***Lachnagrostis adamsonii***	No suitable habitat and no known occurrences near study area.	Species not recorded within proposed action area during Biodiversity Assessment (Biosis 2019). Vegetation assessment of the proposed action area determined that this species has a low likelihood of occurrence and will not be impacted by the proposed works (Biosis 2019). No further consideration required.
Charming Spider-orchid ***Caladenia amoena***	No suitable habitat and no known occurrences near study area.	Species not recorded within proposed action area during Biodiversity Assessment (Biosis 2019). Vegetation assessment of the proposed action area determined that this species has a low likelihood of occurrence and will not be impacted by the proposed works (Biosis 2019). No further consideration required.
Round-leaf Pomaderris ***Pomaderris vacciniifolia***	No suitable habitat and no known occurrences near study area.	Species not recorded within proposed action area during Biodiversity Assessment (Biosis 2019). Vegetation assessment of the proposed action area determined that this species has a low likelihood of occurrence and will not be impacted by the proposed works (Biosis 2019). No further consideration required.
Spiny Rice-flower ***Pimelea spinescens*** **subsp.** ***spinescens***	No suitable habitat and no known occurrences near study area.	Species not recorded within proposed action area during Biodiversity Assessment (Biosis 2019). Vegetation assessment of the proposed action area determined that this species has a low likelihood of occurrence and will not be impacted by the proposed works (Biosis 2019). No further consideration required.

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Maroon Leek-orchid *Prasophyllum frenchii*	No known occurrences near study area.	Species not recorded within proposed action area during Biodiversity Assessment (Biosis 2019). Vegetation assessment of the proposed action area determined that this species has a low likelihood of occurrence and will not be impacted by the proposed works (Biosis 2019). No further consideration required.
Leafy Greenhood *Pterostylis cucullata*	No suitable habitat and no known occurrences near study area.	Species not recorded within proposed action area during Biodiversity Assessment (Biosis 2019). Vegetation assessment of the proposed action area determined that this species has a low likelihood of occurrence and will not be impacted by the proposed works (Biosis 2019). No further consideration required.
Button Wrinklewort *Rutidosis leptorhynchoides*	No known occurrences near study area.	Species not recorded within proposed action area during Biodiversity Assessment (Biosis 2019). Vegetation assessment of the proposed action area determined that this species has a low likelihood of occurrence and will not be impacted by the proposed works (Biosis 2019). No further consideration required.
Threatened fauna species		
Growling Grass Frog *Litoria raniformis*	This species inhabits still or slow-flowing waterbodies and surrounding terrestrial vegetation. There are known records from the adjacent Darebin Creek therefore indirect impacts to the creek should be considered. (DELWP 2017a, Biosis 2019). Further detail outlined in CMP (Biosis 2020b).	Study area does not support habitat for this species. The adjacent Sports Fields Lake is unlikely to support breeding habitat for this species. Neither this species nor its preferred habitat were recorded within proposed action area during Biodiversity Assessment (Biosis 2019). Impacts to Darebin Creek should be avoided in line with the La Trobe CMP.

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Grey-headed Flying-Fox *Pteropus poliocephalus*	This species inhabits rainforest, wet and dry sclerophyll forest, woodland and urban areas. A known colony of this species is located 10km away from the study area in Yarra Bend Park, Kew. It is likely that this species would visit the study area to forage on flowering eucalypts.	River Red Gums trees present some potential foraging habitat. This species was not recorded within proposed action area during Biodiversity Assessment (Biosis 2019). The likelihood of the species making regular use of the proposed action area is considered low.
Swift Parrot *Lathamus discolor*	This species inhabits a range of forests and woodlands including well-treed urban areas, especially those supporting nectar-producing tree species. They are known to frequent the La Trobe University site when on the mainland, however previous records have been associated with preferred habitat trees in a La Trobe car park.	Swift Parrots may occasionally utilise mature River Red Gums within the study area as foraging habitat when in flower, however they are not a preferred foraging resource for this species. This species was not recorded within proposed action area during Biodiversity Assessment (Biosis 2019).
Superb Parrot *Polytelis swainsonii*	This species inhabits Red-gum and box-dominated forests and woodlands.	The study area is outside of this species' distribution and no suitable habitat occurs within the study area. Occasional records of this species occur in the area but these are expected to be vagrants or aviary escapes. This species is therefore not considered further within this report.
Orange-bellied Parrot *Neophema chrysogaster*	This species inhabits coastal vegetation including saltmarshes, dunes, pastures, shrublands, sewage plants, saltworks, islands, and beaches. When on the mainland Orange-bellied Parrots are largely restricted to suitable habitat within the Western Treatment Plant.	There is no suitable habitat present within the study area. This species is therefore not considered further within this report.
Australian Grayling *Prototroctes maraena*	Adults inhabit cool, clear, freshwater streams.	There is no suitable habitat and no recent records from the local adjacent waterways. This species is therefore not considered further within this report.
Golden Sun-moth *Synemon plana*	This species inhabits natural temperate grassland, grassy woodland and pasture supporting spear grasses, wallaby grasses and exotic grassland dominated by Chilean Needle-grass. Although there are small pockets of suitable habitat within the study area in the form of native and introduced grasses, the study area occurs outside the species' typical range. There are no recent records nearby.	There is limited suitable habitat available within the study area and this species is not known to be present within the local area. This species is therefore not considered further within this report.

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Eltham Copper Butterfly ***Paralucia pyrodiscus lucida***	This species inhabits drier sclerophyll forests and woodlands supporting Sweet Bursaria *Bursaria spinosa*, especially along ridgelines.	There is no suitable habitat within the study area and no food plants for this species (Sweet Bursaria) were recorded within the study area. This species is therefore not considered further within this report.
Striped Legless Lizard ***Delma impar***	This species inhabits natural temperate grassland, grassy woodland and exotic grassland. No Striped Legless Lizard populations are known from within 5 km of La Trobe.	There is no suitable habitat within the study area and species not known from the local area. This species is therefore not considered further within this report.
Dwarf Galaxias ***Galaxiella pusilla***	This species inhabits slow-flowing or still freshwater wetlands such as swamps, drains and backwaters of streams. This species has known records from Darebin Creek and the wetland located within the La Trobe University Wildlife Sanctuary.	There is no suitable habitat within the study area. This species has known records from Darebin Creek and the wetland located within the La Trobe University Wildlife Sanctuary, indirect impacts to adjacent waterways are to be considered in line with the CMP.
Yarra Pygmy Perch ***Nannoperca obscura***	This species inhabits lakes, pools and slow-flowing streams with abundant aquatic vegetation. Darebin Creek forms part of this species' known range, however there are no records of this species within 5 km of the study area.	There is no suitable habitat within the proposed action area. This species is therefore not considered further within this report.
Macquarie Perch ***Macquaria australasica***	This species inhabits streams with clear water and deep, rocky holes with abundant cover.	There is no habitat within the study area. This species is not known from the adjacent Darebin Creek. Closest records are from the Yarra River.
Swamp Antechinus ***Antechinus minimus maritimus***	This species inhabits dense wet heath and heathy woodland, sedgeland and dense tussock grassland.	There is no suitable habitat within the study area.
Greater Glider ***Petauroides volans***	This species inhabits wet and damp sclerophyll forest with large hollow-bearing trees. These vegetation types are absent from the local area and there are no records of this species within 5 km of the study area.	Records and associated habitat for this species are absent from the proposed action area and broader local area. This species is not considered further within this report.
Murray Cod ***Maccullochella peelii***	This species inhabits a diverse range of stream habitats in the Murray-Darling basin; principally the main channels of rivers and their major tributaries. The closest records for this species are from the Yarra River with no records from Darebin Creek.	There is no habitat within the study area and this species is not known from the adjacent Darebin Creek. This species is not considered further within this report.

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Regent Honeyeater ***Anthochaera phrygia***	This species inhabits a range of dry woodlands and forests dominated by nectar-producing tree species. This species' distribution currently restricted to the Chiltern - Mt Pilot National Park in north-eastern Victoria following severe range contraction and population decline.	Although this highly mobile species may visit the study area on occasion the study area does not support significant habitat for this species. The range for this species mainly occurs in dry open forest and woodland in areas of low to moderate relief on the inland slopes of the Great Dividing Range. This species is not considered further in this report.
Australasian Bittern ***Botaurus poiciloptilus***	Inhabits shallow freshwater and brackish wetlands with abundant emergent aquatic vegetation. Habitat in wetlands within and adjacent to La Trobe are considered unlikely to support this species.	There is no suitable habitat within the study area, the adjacent Sports Fields Lake and Darebin Creek do not support suitable habitat for this species. This species is not considered further in this report.
Plains-wanderer ***Pedionomus torquatus***	This species inhabits native grassland with a sparse, open structure. This species is now considered extremely rare in southern Victoria.	The study area is outside of species' current range, and no suitable habitat is located on the site. It is expected that the most recent database record from 2000 is an inaccurate record as this record is from a suburban house block. It is highly unlikely to be present within or adjacent to the proposed action area based on lack of recent records within the local area. This species is not considered further in this report.
Painted Honeyeater ***Grantiella picta***	This species is associated with dry open woodlands and forests located on the inland foothills of the Great Dividing Range. It typically forages for fruit and nectar in mistletoes and in tree canopies. It is rarely recorded in southern Victoria, and not previously recorded within the La Trobe local area.	Although this species may visit the study area on occasion to feed on flowering mistletoes, the study area does not support significant habitat for this species. The species is most common in Box-Ironbark communities on the inland side of the Great Dividing Range. This species is not considered further in this report.
Australian Painted Snipe ***Rostratula australis***	This species is rare and erratically recorded in southern Victoria, with the most recent records occurring along the Yarra River approximately 5 km from the impact area. Wetlands and waterways within and adjacent to La Trobe lack suitable habitat characteristics to support this species. It is therefore considered highly unlikely to occur.	No suitable habitat within the study area, the adjacent Sports Fields Lake and Darebin Creek do not support suitable habitat for this species. This species is not considered further in this report.

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Curlew Sandpiper *Calidris ferruginea*	This species inhabits large intertidal sandflats, banks, mudflats, estuaries, inlets, sewage farms, saltworks, harbours, coastal lagoons and bays. The wetlands and waterways surrounding La Trobe area do not support suitable habitat for migratory waders.	No habitat present within or adjacent to the proposed action area. This species is not considered further in this report.
Eastern Curlew *Numenius madagascariensis*	This species inhabits large intertidal sandflats, banks, mudflats, estuaries, inlets, sewage farms, saltworks, harbours, coastal lagoons and bays. The wetlands and waterways surrounding La Trobe area do not support suitable habitat for migratory waders.	No habitat present within or adjacent to the proposed action area. This species is not considered further in this report.

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4. Relevant impacts

This section provides details on the potential impacts (including direct, indirect, consequential and cumulative impacts) that may occur as a result of the proposed action, taking into account all elements and project phases. Impacts are considered for the following matters that are known to occur within or adjacent to the proposed action area:

- Matted Flax-lily
- Growling Grass Frog
- Swift Parrot
- Grey-headed Flying-fox

Greater focus is placed on direct impacts to MFL and indirect impacts to GGF with the justification that these impacts are considered to be the highest risk. This section also summarises the proposed avoidance and mitigation measures to reduce impacts to these matters, and assesses the proposed impacts to guidance notes, conservation advices and recovery plans, where relevant.

4.1 Matted Flax-lily

4.1.1 Overview

Twenty four MFL were detected within the overall study area during the targeted survey for this species (Biosis 2019). Since the timing of surveys, the impact area has been reduced to exclude one MFL so that twenty three MFL exist within the proposed action area. The MFL predominantly overlap with patches of Plains Grassy Woodland (EVC 55_61), which are amongst the preferred habitat-types for MFL. A total of 1.26 hectares of MFL habitat has been identified for removal within the proposed action area, with parameters for MFL habitat outlined in section 3.1.

4.1.2 Direct impacts

The proposed action area contains 23 MFL which will be directly impacted. These individuals, and 1.26 hectares of suitable habitat, will be considered lost as a result of the proposed action. Figure 3 shows the extent of MFL and suitable habitat proposed to be impacted by the proposed action. A summary of known and potential direct impacts to MFL and proposed mitigation is provided in Table 4 below.

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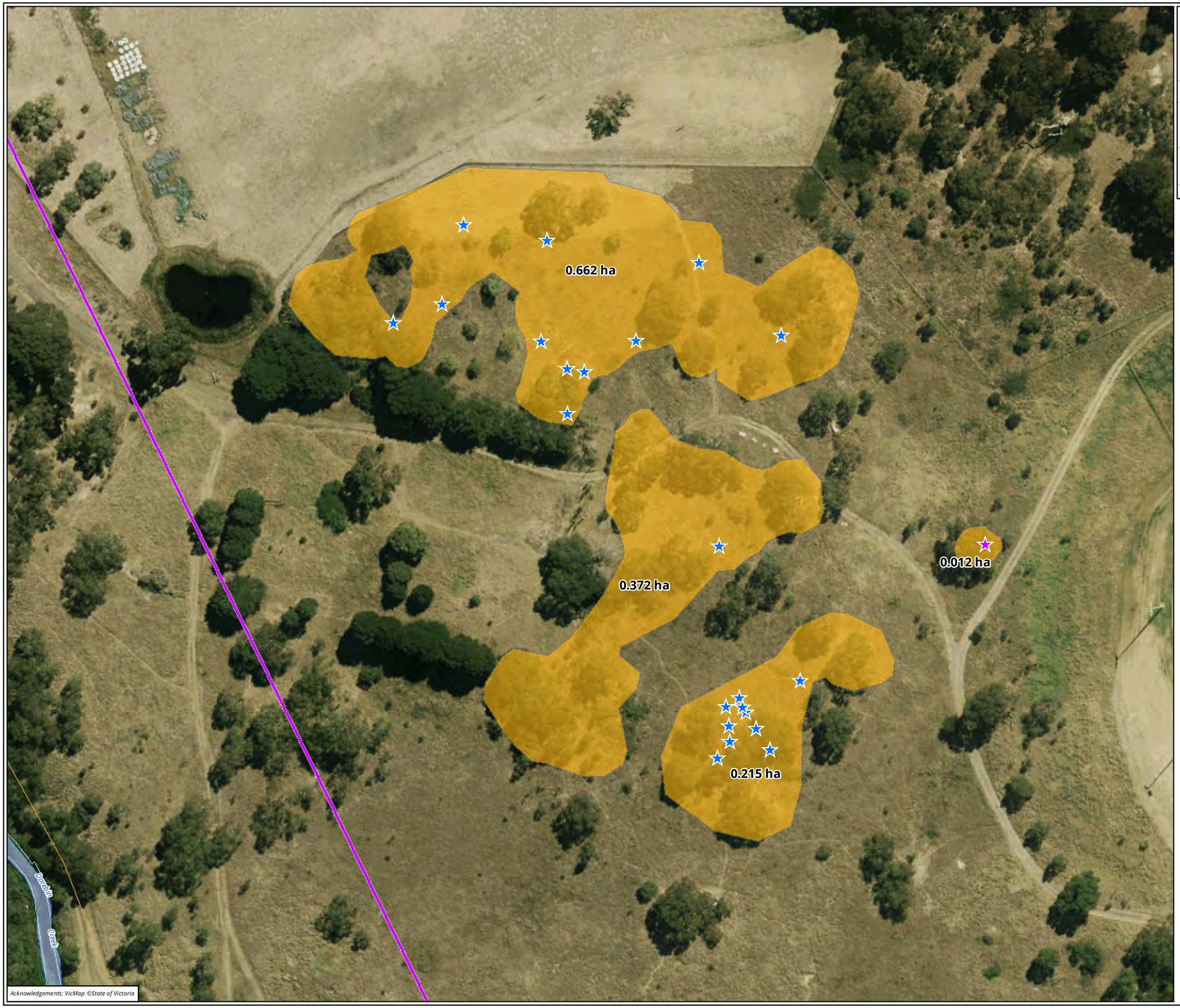
Table 4 Summary of direct impacts to Matted Flax-lily and proposed mitigation measures

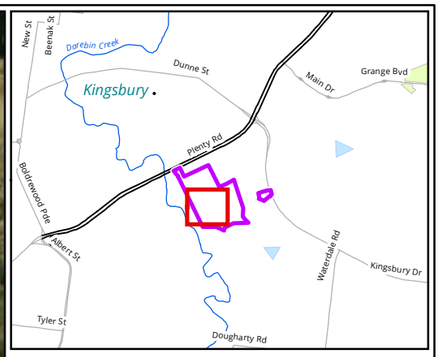
Loss of 23 Matted Flax-lilies from the proposed action area	The proposed action will result in the loss of 23 MFL from the proposed action area, which form part of a population of 23 individuals in the broader study area (Figure 3).	• All 23 MFL will be salvaged and translocated in line with the MFL Salvage and Translocation Plan which was developed to support the proposed action (Biosis 2020c). Salvaged material will be used to establish six clones propagated from each plant and four clones from each plant will be translocated into the recipient site to increase the survival and promote expansion of the population. The expected outcome is for three clones of 90% of the original plants to establish after 5 years (63 plants established). • La Trobe University and Friends of the Wildlife Reserves have partnered to support an honours student and La Trobe Wildlife Sanctuary by providing field assistance and onsite resourcing for an honours level academic research project to map and genotype the nursery population of translocated plants. Further information for the project is provided in Section 6.4.
Loss of 1.26 hectares of suitable habitat for MFL from the proposed action area	The proposed action will result in the loss of 1.26 hectares of suitable MFL habitat from the proposed action area (Figure 3).	• To offset residual losses resulting from the proposed action, a 2.81-hectare offset site containing suitable MFL habitat will be established in line with the Offset Management Plan developed to support the proposed action (Biosis 2020a). • The OMP outlines maintenance, monitoring and mitigation conditions which must be adhered to.

4.1.3 Indirect and consequential impacts

The proposed action results primarily in direct impacts to MFL, however, some indirect and consequential impacts which must be considered include potential impacts to the broader population. The proposed action will remove 23 MFL and 1.26 hectares of suitable habitat from the population of 24 identified MFL within the broader study area. This is a significant loss to the local MFL population by removing genetic diversity from the population. To mitigate against this loss, the proposed offset site is situated within the known population (but outside the proposed action area) and contains the remaining individual from the local population, which will now be protected in line with the OMP (Biosis 2020a). All salvaged MFL will be translocated into the proposed offset area, within proximity of the remnant individual, in line with the MFL Salvage and Translocation Plan (Biosis 2020c). This plan protects against the loss of genetic diversity to the local population of MFL by retaining and protecting translocated individuals alongside the retained individual within the local area, with the nursery population providing a buffer to loss of individuals.

A proposed benefit that results from protecting all translocated and retained Matted Flax-lilies within the offset area, is that the offset area will undergo significant rehabilitation, maintenance and monitoring in line with the Offset Management Plan (Biosis 2020a). The OMP aims to significantly improve habitat for MFL and thereby offers potential for the population to expand.





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 3 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

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4.1.4 Residual impacts and offsets

The proposed action will result in direct impacts to 23 MFL and 1.26 hectares of MFL habitat. Residual impacts will be addressed through offsets (Biosis 2020a) and salvage of the 23 MFL individuals that would otherwise be lost from the population and translocation of 92 clones with a target survival three out of four of 90% of the translocated clones, which translates to 63 clones surviving (Biosis 2020c).

Potential indirect impacts are managed by implementing mitigation measures outlined in the associated CMP and committing to proposed outcomes.

4.1.5 Outcomes

The assessment of impacts to MFL and associated habitat has considered information within the species' Recovery Plan (Carter 2010), particularly regarding potential threats and direct and indirect impacts. The proposed action will result in a significant impact to MFL, in accordance with Significant Impact Guidelines 1.1 for Matters of National Environmental Significance (DoE 2013)

The proposed action will result in direct impacts to 23 MFL and 1.26 hectares of suitable habitat, which will be offset by protecting, rehabilitating and maintaining a 2.81-hectare offset site located just south of the study area. The entire offset area is considered suitable habitat for MFL based on containing the original soil surface, and within this area there are several patches of high quality habitat. Weed control and other maintenance practices will be conducted in line with the OMP to improve the quality of habitat across the entire offset area. All impacted MFL will be salvaged and propagated in a nursery to produce 138 clones in total, of which 92 clones will be translocated to the offset site, which will contain and protect the remnant individual from the local population which will not be impacted.

Indirect impacts to the local population will be mitigated by protecting the retained MFL within the offset site and translocating four clones of each of the salvaged individuals to the offset area, with an insurance population at a nursery, to prevent the loss of genetic variation.

The overall outcome is therefore considered acceptable and has given due regard to the Recovery Plan for MFL and other relevant policy documents.

4.2 Growling Grass Frog

4.2.1 Overview

The Growling Grass Frog is endemic to south-eastern Australia and occurs within a variety of permanent and semi-permanent water bodies generally containing abundant submerged, floating and emergent aquatic vegetation, including slow-flowing streams, swamps, lagoons, lakes, farm dams, irrigation channels, rice crops and disused quarries (Clemann and Gillespie 2012). This species has undergone a substantial decline in range and abundance. The Recovery Plan and Background Paper for GGF identify key threats as loss and degradation of habitat, barriers to movement, disease, predation and application of biocides (Commonwealth of Australia 2009b, Clemann and Gillespie 2012).

The concept of an 'important population' is relevant to assessing impacts to vulnerable species listed under the EPBC Act (Commonwealth of Australia 2013a). An 'important population' of GGF is defined in the EPBC Act Policy Statement for the species, which considers any viable population as an 'important population' for the persistence and recovery of the species (Commonwealth of Australia 2009a). Viable populations must be able to interact with other populations or waterbodies, through the dispersal of frogs across connected terrestrial and aquatic habitat. In addition, a GGF population may be considered an 'important population' if it is located near the limit of the species' range (Commonwealth of Australia 2009a). The Recovery Plan for GGF also

identifies populations subject to intensive and extensive research as being important (Clemann and Gillespie 2012).

Breeding populations of GGF are present in Darebin Creek (approximately 50 metres west of the proposed action). The Darebin Creek population occurs within connected waterways and is therefore considered to be an 'important population' in accordance with the EPBC Act Policy Statement and Recovery Plan for Growling Grass Frog.

4.2.2 Direct impacts

The proposed action area does not contain any aquatic habitat for GGF. Growling Grass Frogs are unlikely to utilise terrestrial habitat within the proposed action area for foraging, over-wintering and/or dispersal activities, due to the lack of suitable habitat. Therefore the proposed action will not create barriers to frog movement between Darebin and other nearby water bodies.

In summary, the proposed action area does not contain habitat for GGF and therefore the proposed action will not directly affect the species or its habitat. The proposed action will therefore not directly impact on an important population of GGF.

4.2.3 Indirect and consequential impacts

The proposed action will occur approximately 50 metres from a population located in Darebin Creek to the west of the proposed action area. Due to the proximity of the proposed works to this important population of GGF, there is a risk that indirect impacts will occur as a result of the proposed action, potentially resulting in adverse impacts to GGF and associated habitat. A summary of potential indirect impacts to GGF and proposed mitigation is provided in Table 5 below.

Table 5 Summary of indirect impacts to Growling Grass Frog and proposed mitigation measures

Indirect impact	Details	Proposed mitigation or outcome
Hydrological changes, sediment run-off and deterioration of water quality	The proposed action area is approximately 50m east of Darebin Creek, which supports a known population of GGF. Construction activities will require soil excavation, resulting in exposure of soils. Rain events during construction could result in the suspension of soils and sediment running off the site into adjacent waterways. This risk is temporary and restricted to the construction phase. Soil excavation may alter surface water runoff, which may have impacts on aquatic habitat during the construction phase for Stage 3.	• Best practice sediment control will be implemented during construction, such as the installation of sediment traps to prevent pollutants from entering Darebin Creek (refer to CMP). • A catch drain must be constructed upslope, and runoff directed through a modular sediment trap or check dam. • Use of erosion suppression techniques including sediment fencing and matting over exposed areas, where appropriate. • Appropriate dust suppression must be in place at all times. • Weekly inspection will be undertaken of sediment control measures during the construction phase, to ensure controls remain in good order and are promptly repaired where required. • All measures detailed in the CMP must be communicated to staff during site ecological induction.
Introduction of pollutants and biocides	Construction activities may result in accidental chemical spills, which could run into adjacent waterways and reduce habitat quality. Mortality of frogs may occur from contact with certain pollutants.	• No fuel or chemical storage is permitted on site. • Spill kit to be provided on all plant or on site • Re-fuelling of vehicles and machinery is to occur in designated areas, located on stable ground and away from watercourses, using portable bunding. • Reporting and response procedure will be developed for accidental spills. • All measures detailed in the CMP must be communicated to staff during site ecological induction.
Introduction and spread of weeds	Movement of soil and/or contaminated machinery and equipment could have the potential to introduce new weeds or pathogens, which could spread to Darebin Creek GGF habitat, which risks altering habitat structure and quality.	• A hygiene protocol is set out in the CMP, which will requires that all construction machinery and/or vehicles are cleaned thoroughly and are free of plant reproductive material and pathogens before first entering the proposed action area. • Monitoring of areas adjacent to the proposed action will be undertaken after construction has commenced, to identify any weed introductions requiring remediation. Monitoring and remediation requirements are detailed in the CMP, the required outcome of which will be no novel weed introduction or spread from construction areas into retained vegetation as a result of the proposed action.

Indirect impact	Details	Proposed mitigation or outcome
Introduction of disease	The fungal pathogen responsible for the amphibian disease chytridiomycosis (chytrid fungus) can be transported by contaminated machinery and equipment. This fungal pathogen is widespread and is likely to be present within local waterways. However works may result in the introduction of a novel strain which would place additional pressure on GGF.	• A hygiene protocol will be established and implemented, which will require that all machinery, vehicles and equipment are cleaned thoroughly before first entering the proposed action area. • Hygiene protocol outlined in CMP will be communicated to all contractors and staff by the Project Manager prior to commencement of works. • Proposed action is unlikely to result in increased risk of disease transmission to GGF population of Darebin Creek as works will be separated from the creekline and riparian vegetation by construction fencing.
Introduction of predators	Exotic fish species and introduced predators such as foxes and cats present a predation risk to GGF. While these predators are likely to be present in the local area, some activities can indirectly facilitate spread of predators. Exotic fish can be transported unintentionally during construction activities.	• The proposed works will not introduce, or facilitate the spread of, any predatory species. • Hygiene protocol will require all machinery, vehicles and equipment to be free of material that may contain exotic fish. • Proposed works will not increase network of tracks outside existing areas, and will therefore not facilitate spread of foxes or cats into GGF habitat.

Indirect impact	Details	Proposed mitigation or outcome
Impacts of noise and lighting	Artificial light can impact on frog populations by altering foraging behaviour, affecting antipredator behaviour and affecting calling and breeding behaviour (Buchanan 2006). Some frog species are attracted to light, usually due to accumulations of insect prey at artificial lights. Noise can impact on frog populations by altering calling behaviour and breeding success and increasing stress.	• Proposed action will result in the construction of sports lighting, which will increase artificial lighting in the proposed action area and immediate surrounds already associated with adjacent sporting pitches and ovals. • Proposed action will result in an increase noise pollution in the proposed action area and immediate surrounds due to increased use of the action area. • GGF populations are already persisting in the presence of human and road traffic noise and street lighting from the University and nearby densely-populated urban areas. Accounting for the 50m buffer between the proposed action area and Darebin Creek, the proposed action is unlikely to significantly increase existing levels of artificial noise and light on the Darebin Creek population. • Any artificial lighting required during construction will only be directed over construction areas, and will avoid increasing light in adjacent waterways. • Any artificial lighting required will be turned off when not in use. • In the unlikely situation that GGFs are attracted to insect accumulation under artificial lights, any sightings will be reported immediately to the Project Manager and works suspended until resolved.

4.2.4 Residual impacts and offsets

The proposed action will not result in any direct impacts to GGF, and potential indirect impacts are managed by implementing mitigation measures outlined in the associated CMP and committing to proposed outcomes. No residual impacts will occur as a result of undertaking the proposed action, therefore no offsets are required or proposed.

4.2.5 Outcomes

The assessment of impacts to GGF and associated habitat has considered information within the species' Recovery Plan (Clemann and Gillespie 2012), EPBC Act Policy Statement 3.14 (Commonwealth of Australia 2009a) and associated Background Paper (Commonwealth of Australia 2009b), particularly regarding potential threats and indirect impacts.

The proposed action will not result in any direct impacts to GGF, and potential indirect impacts will be managed through the implementation of mitigation measures. No residual impacts are expected as a result of implementing the proposed mitigation measures, which are further detailed in the CMP. The proposed action will not result in a significant impact to GGF, in accordance with significant impact thresholds detailed in EPBC Act Policy Statement 3.14 (Commonwealth of Australia 2009a).

The overall outcome is therefore considered acceptable and has given due regard to the Recovery Plan for GGF and other relevant policy documents.

4.3 Swift Parrot

4.3.1 Overview

Swift Parrot has been recorded in suitable habitat within the La Trobe Bundoora campus but outside the study area during the annual period between March/April and September when the species is on the mainland. However, the proposed action area does not contain preferred habitat for this species.

4.3.2 Direct impacts

The proposed action area does not contain any preferred foraging trees for Swift Parrot. Swift Parrots are unlikely to utilise the River Red Gums within the proposed action area for foraging on a regular basis, although they may visit the proposed action area on occasion for supplementary foraging when eucalypts are in heavy flower. Swift Parrots are a highly mobile species with a large range when on the mainland, therefore the proposed action will not create barriers to movement for this species.

In summary, the proposed action area does not contain important habitat for Swift Parrot, therefore the proposed action will not directly affect the species or its habitat. The proposed action will therefore not directly impact on an important population of Swift Parrot.

4.3.3 Indirect and consequential impacts

The proposed action will occur within one kilometre of a known feeding site on the La Trobe campus to the east of the proposed action area. Although the proposed action area is within close proximity to this known feeding site, the proposed action will not reduce suitable foraging habitat for Swift Parrot, and given that Swift Parrot commonly navigates across fragmented habitat, it is considered highly unlikely that the proposed action will result in indirect impacts to the local Swift Parrot population or associated habitat.

4.3.4 Residual impacts and offsets

The proposed action will not result in any direct or indirect impacts to Swift Parrot provided works are confined to the proposed action area. No residual impacts will occur as a result of undertaking the proposed action, therefore no offsets are required or proposed.

4.3.5 Outcomes

The assessment of impacts to Swift Parrot and associated habitat has considered information within the species' Recovery Plan (Saunders and Tzaros 2011), Survey guidelines for Australia's threatened birds (DEWHA 2010a) and associated Background Paper (Saunders et al. 2010), particularly regarding potential threats and indirect impacts.

The proposed action will not result in any direct, indirect or residual impacts to Swift Parrot. The proposed action will not result in a significant impact to Swift Parrot, in accordance with Significant Impact Guidelines 1.1 for Matters of National Environmental Significance (DoE 2013).

The overall outcome is therefore considered acceptable and has given due regard to the Recovery Plan for Swift Parrot and other relevant policy documents.

4.4 Grey-headed Flying-fox

4.4.1 Overview

There is a large and ecologically significant camp of GHFF located approximately 10 kilometres south of the study area at Yarra Bend, Victoria. Given that the study area is separated from the Yarra Bend camp by 10 kilometres of non-contiguous habitat, the study area is not likely to be a regular foraging site for GHFF,

however, they are likely to visit the local area and may occasionally feed on flowering River Red Gums in the proposed action area. Visitation to the area by this species would most likely occur along Darebin Creek, which is separated from the impact area by approximately 50 metres.

4.4.2 Direct impacts

The proposed action area contains River Red Gums, which are a known foraging tree for GHFF. This species may visit the proposed action area on occasion for supplementary foraging when eucalypts are in heavy flower, however the proposed action area would not be considered a suitable roost site. Grey-headed Flying-fox is a highly mobile species with a large range, therefore the proposed action will not create barriers to dispersal for this species.

Although the proposed action will result in the loss of ten large River Red Gums, which could potentially provide supplementary foraging habitat for GHFF when visiting the area, it is considered highly unlikely that this loss will constitute a significant impact to this species given its large range and distance of the proposed action area from the nearest camp. In summary, the proposed action area does not contain important habitat for GHFF, therefore the proposed action will not directly affect the species or its habitat. The proposed action will therefore not directly impact on an important population of GHFF.

4.4.3 Indirect and consequential impacts

The proposed action will occur approximately ten kilometres from the nearest ecologically significant camp of GHFF. The proposed action area will not result in any loss of riparian vegetation along Darebin Creek, and mitigation measures implemented under the CMP will ensure that Darebin Creek will not be impacted by the proposed action. Given that this is the nearest suitable roosting habitat for GHFF to the proposed action area, it is considered highly unlikely that the proposed action will result in indirect impacts to GHFF.

4.4.4 Residual impacts and offsets

The proposed action will not result in any direct or indirect impacts to GHFF, provided works are confined to the proposed action area. No residual impacts will occur as a result of undertaking the proposed action, therefore no offsets are required or proposed.

4.4.5 Outcomes

The assessment of impacts to GHFF and associated habitat has considered information within the species' Draft Recovery Plan (DoEE 2017), Survey guidelines for Australia's threatened bats (DEWHA 2010b), particularly regarding potential threats and indirect impacts.

The proposed action will not result in any direct, indirect or residual impacts to GHFF. The proposed action will not result in a significant impact to GHFF, in accordance with Significant Impact Guidelines 1.1 for Matters of National Environmental Significance (DoE 2013).

The overall outcome is therefore considered acceptable and has given due regard to the Draft Recovery Plan for GHFF and other relevant policy documents.

4.5 Landscape context

4.5.1 Potential impacts to habitat connectivity within the existing environment

The proposed action does not encroach on Darebin Creek or its riparian vegetation. Given that the Stage 3 development is directly adjacent to the other stages of development, which abut Kingsbury Drive and University facilities, the proposed action is not considered to reduce overall habitat connectivity for MNES.

4.5.2 Cumulative impacts

Cumulative impacts are the successive, incremental and combined environmental impacts of one, or more activities. Cumulative impacts result from the aggregation and interaction of environmental impacts of past, present or future activities. To assess potential cumulative impacts, past, current and projected developments at La Trobe University Bundoora have been considered.

The proposed action forms Stage 3 of the La Trobe Sports Precinct, and is situated directly adjacent to the previous two stages. The total combined losses to ecological values for the Sports Precinct are summarised below.

Stage 1 has commenced, and resulted in the removal of 0.103 hectares of Plains Grassy Woodland (EVC 55) and four scattered trees. Stage 2 involves the removal of 0.238 hectares of Plains Grassy Woodland (EVC 55) and one small scattered River Red Gum. Stage 3 involves the removal of 3.203 hectares of native patch vegetation, 10 large trees (one patch, 9 scattered) and 50 small scattered trees (all River Red Gum) and 23 MFL along with 1.26 hectares of suitable habitat.

As a whole, the La Trobe Sports Precinct Stage 3 will result in the loss of 3.203 hectares of native vegetation (including patch vegetation and scattered trees), including:

- 1.87 hectares of Plains Grassy Woodland patch vegetation (including one large patch tree and 1.26 hectares of MFL habitat);
- 59 scattered trees (all River Red Gum); and
- 23 MFL

All impacts will be addressed and offset in line with relevant management plans and policy documents. This overall outcome is considered acceptable and has given due regard to all relevant available information and policy documents.

Stage 3 is the only stage to have had any impact or potential impact on MNES.

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5. Proposed avoidance and mitigation measures

Section 4 covers relevant impacts to MNES, as well as relevant mitigation measures. Further detail on avoidance and mitigation measures to MNES, as well as avoidance and mitigation measures relevant to the broader environment are addressed in the CMP for the proposed action (Biosis 2020b).

The CMP is provided as an attachment to the preliminary documentation (Appendix 6). This report provides a summary of the avoidance and mitigation measures requested in Attachment A (Appendix 1) which will be implemented to minimise impacts to the existing environment and MNES resulting from the proposed action (particularly to the listed threatened species MFL, and to GGF habitat located in adjacent waterways).

Figure 4 outlines environmental controls to be installed during the implementation of the CMP.

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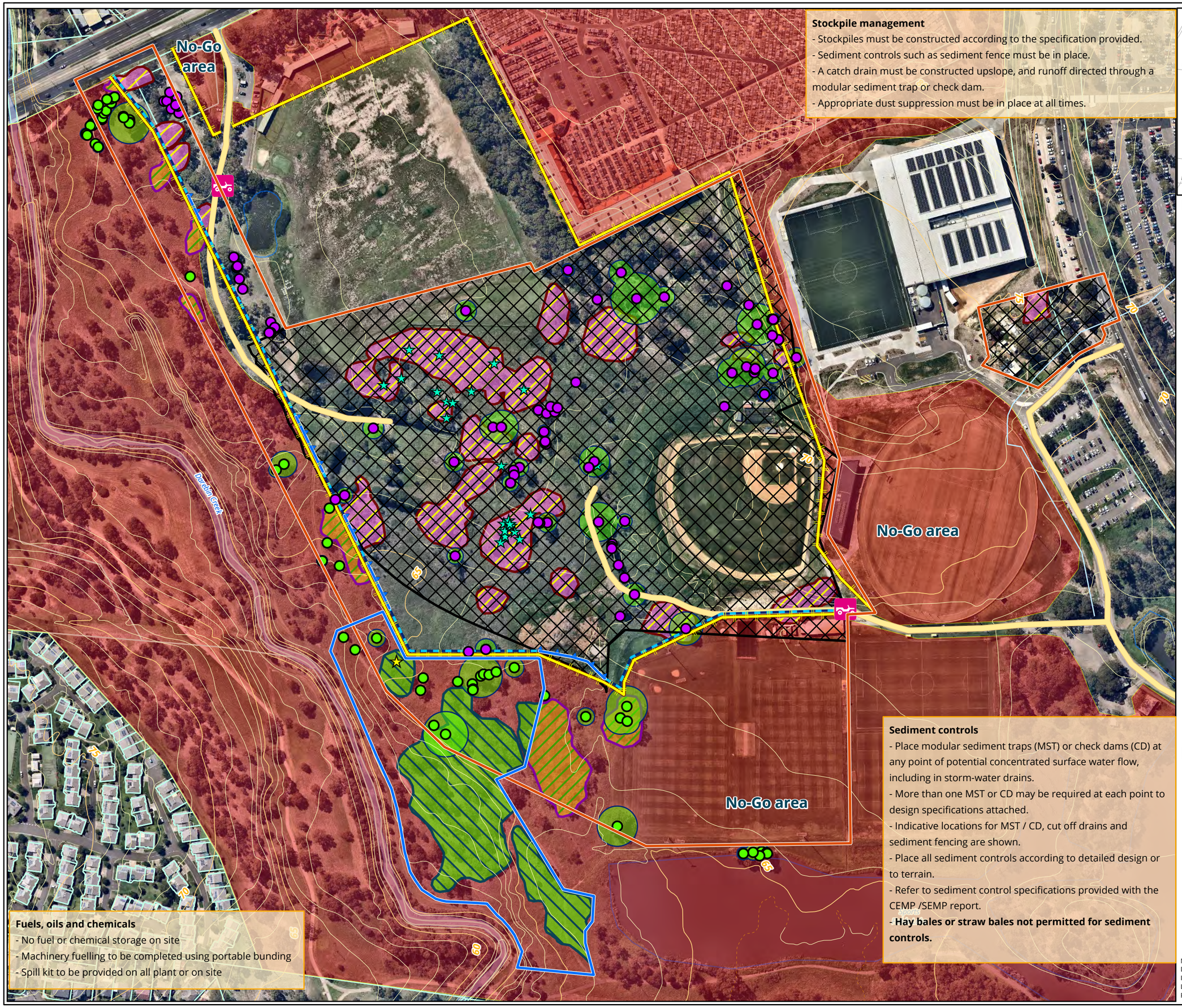


Legend

- Study areas
- Proposed offset site - 2.81ha

Matted Flax-lily management

- Retain and protect from disturbance
- Translocate

Native tree and vegetation management

- Tree - retain
- Tree - to be removed, retain where possible
- Vegetation to be removed - Pending permit approval
- Vegetation to be retained - Protected offset
- Vegetation to be retained - Removal permit required
- Tree protection zone

Construction management plan

- Site access
- Construction exclusion fence
- Modular sediment trap
- Sediment fence
- Temporary access track
- No-Go Area (All vegetation retained)
- ImpactArea_original

Figure 4 Environmental Management Map

0 50 100

Metres

Scale 1:2,750 @A3

Coordinate system: GDA 1994 MGA Zone 55

biosis

Matter No: 30363,
Date: 22 January 2021 ,
IM, Last edited by: lmilne
Layout: 30363_F4_EMM
Project: P:\30300s\30363\Mapping\30363_CMP_SportsPrecinct_LaTrobeUni.aprx

6. Offsets

The proposed action will result in significant residual impacts to 23 MFL currently within the proposed action area. La Trobe University proposes to provide an offset package in response to these residual significant impacts. Offsets for impacts to MFL and associated suitable habitat is addressed in detail in the La Trobe MFL Offset Management Plan (OMP).

All 23 impacted MFL will be salvaged and translocated to a suitable recipient site, defined as the offset area proposed in the OMP. Salvage and translocation procedures are outlined in detail in the La Trobe MFL Salvage and Translocation Plan. The offset area/recipient site is located just south of the proposed action area within La Trobe Bundoora and will be managed and maintained to provide suitable offsets for the loss of MFL associated with the proposed action.

The offsets proposed for the significant residual impact to MFL have been calculated using the EPBC Act Offsets Assessment Guide and the proposed OMP has been prepared to meet the requirements of the Department's *EPBC Act Environmental Offsets Policy* (October 2012).

No other significant residual impacts to MNES will occur as a result of the proposed action.

6.1 Offset Calculator Impact

The area of MFL habitat lost in association with the proposed works amounts to 1.26 hectares.

Site context is assessed as a score out of three as follows:

- 0/3 = Habitat patch* size <1 ha.
- 1/3 = Habitat patch size 1 ha and up to 5 ha.
- 2/3 = Habitat patch size 5 ha to 50 ha in a shape ** which minimises edge effects.
- 3/3 = Habitat patch size more than 50 ha in a shape ** which minimises edge effects.

*A patch is considered to be an area of suitable habitat either occupied by the species or habitat that the species could expand into.

**Assessed on a case by case basis.

Site condition is assessed as a score out of three as follows:

- 0/3 = dominated by introduced vegetation.
- 1/3 = dominated by poor quality native vegetation (VQA Site Condition score up to 6-30/75).
- 2/3 = dominated by moderate quality native vegetation (VQA Site Condition score of 30-45/75).
- 3/3 = dominated by high quality native vegetation (VQA Site Condition score of 45+/75).

Matted Flax-lily is not known from any extensive areas of native vegetation outside an urban context and its extent within the reserves from which it is recorded is not readily identified. While most known populations are small, the larger populations don't appear to occur at densities of much more than 5 plants per hectare although there are known exceptions to this (i.e. Simpsons Barracks in Greensborough, Melbourne). This density is therefore set as providing the highest stocking rate score.

Species stocking rate is assessed as a score out of four as follows:

- 0/4 = species not present
- 1/4 = <1 plant per hectare*
- 2/4 = 1 – 2 plants per hectare*
- 3/4 = 2 -5 plants per hectare*
- 4/4 = more than 5 plants per hectare*

*Density calculated as an average across the area of suitable habitat.

The input settings used for the impact and offset calculator are considered standard and are consistent with other approved offset calculations associated with other referrals.

Using the above listed criteria, the site context score for the impact area is assigned a score of 0/3, Site Condition is assigned a score of 1/3 (i.e. all site condition habitat hectare scores are between 6 and 30), and the Species Stocking rate is assessed as having a score of 4/4. This provides a habitat quality score of 5/10.

The EPBC offset calculator therefore assesses the adjusted total quantum of impact as 0.65 adjusted hectares of MFL. Offset calculations area provided in Appendix 4.

6.2 Offset Management Plan

The proposed offset area is 2.81 hectares in size, and is located just south of the proposed action area within La Trobe Bundoora campus (Figure 5). An OMP has been developed for the nominated La Trobe offset site and is provided as an attachment to this preliminary documentation (Biosis 2020a; Appendix 3).

The proposed offset site provides a consolidated area of potential habitat of over a hectare. It is therefore allocated a site context score of 1/3. It is dominated by poor quality native vegetation with a VQA Site Condition score of between 6 and 30 and is therefore allocated a site condition score of 1/3. With one plant recorded from the proposed offset area the Species Stocking rate is greater than zero but less than 1 plant per hectare. The offset area therefore scores 1/4 for this parameter.

The offset site therefore has a starting quality of 3/10 but is currently considered suitable habitat for MFL on the basis that its condition is at least as good as the MFL habitat in the impact area with suitable topography, vegetation composition and structure, it comprises a natural soil surface and contains a MFL individual.

Without this area being defined as an offset it is likely that MFL would become locally extinct within the next ten years. This would result in the Species Stocking rate score declining from 1/4 to 0/4. The Future quality of the offset site would therefore decline to at least 2/10 over the next ten years. With active management as an offset and in association with the translocation, the stocking rate would increase to at least 2 to 5 plants per hectare and therefore the score for species stocking rate conservatively set to increase to 3/4. This provided a Future quality with offset score of 5/10. The management actions outlined in the Offset Management Plan aim to yield significant improvements to the condition of suitable habitat by reducing weed cover. These improvements should allow the translocated and remnant population to establish and expand.

Using these parameters the offset area required to provide a 100% offset for the proposed impact is calculated to be 2.63 hectares. Based on number of individuals, the offset is calculated at 215% due to the translocation of 92 clones from the source population with a target survival rate of 63 clones.

6.3 Salvage and Translocation Plan

The Salvage and Translocation Plan for the 23 MFL to be impacted by the proposed action is provided as an attachment to the preliminary documentation (Biosis 2020c; Appendix 5).

6.4 La Trobe grant for research into Matted Flax-lily genetics

To contribute to the broader bank of knowledge on MFL, La Trobe has put together a high-level outline of a research project into the genetics of the translocated MFL, as outlined below.

Matted Flax-lily Project

*The Matted Flax-lily is an EPBC-listed species and is the most endangered plant species on the La Trobe University Campus (Bundoora). It has been recorded from about 120 sites in Australia comprising around 1,400 plants (DSE Flora Information System), although the number of reproductively independent populations may be much less than this, probably closer to 50 (*Dianella amoena *recovery plan). The recovery plan states that of the top 21 sites on public land across its range, 4 of them are local to the Bundoora area including Cherry St Grassland Reserve with around 100 plants, Springthorpe buffer zone on the edge of Gresswell forest with 75 plants, Gresswell Hill NCR with 28 plants and Gresswell Forest NCR with around 25 plants. 55 plants have been mapped on La Trobe University (LTU) Land including the Wildlife Sanctuary in a study done by Jacobs. This indicates that at least 20% of the world's known plants of* MFL *occur within the Bundoora area.*

Community Grant

The Friends of the Wildlife Reserves have partnered with LTU (both LTWS and EEE academics) and the Yarra Yarra branch of the Australian Plant Society on a grant from the federal Environment Community Environment Grant Program ($18500). APS have contributed funds to support an honours student and LTWS is providing field assistance and onsite resourcing.

This project has the following components:

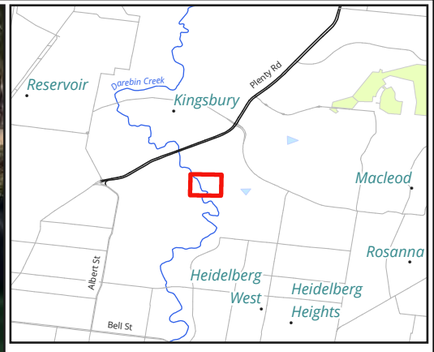
1. Genetics - An honours level academic research project will map and genotype around 175 plants or approximately 12.5% of the world's current known population. Samples will be taken from the LTU Bundoora Campus and other local reserves. This will contribute to academic knowledge surrounding the genetic variability of this species.

2. Nursery population – from the genetic study, variability of genetics for individual plants will be known and these will be sampled to establish the most genetic variability within a captive population. Progeny of these plants will be available for land management projects which has been a deficiency in the conservation effort for this species.

Status

The Grant was awarded for 2020 completion however the granting body is seeking feedback on any delays associated with the impacts of COVID-19 and it is anticipated that extensions will be considered.

Field work for the project has been suspended (as is the case for all honours projects at the moment). However initial mapping has been undertaken and genetics on some samples is proceeding. Sampling will continue when restrictions are lifted although the plant dies back across the colder months and is more difficult to sample from. Literature reviews and other aspects of the project are progressing. There is a possibility that the project will be extended into a Master project depending on a successful honours project. Indications are that enough field work has been done for a successful honours project. The sample size will be increased if time commits. The results will influence how to proceed with establishment of a diverse nursery population.



Legend

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

Figure 5 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

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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

7. Economic and social matters

7.1 Project benefits

The La Trobe Sports Precinct development as a whole is projected to yield many high-level economic benefits, including:

- Approx. $185 million direct capital works resulting in economic, community and environmental benefits for University and surrounding La Trobe employment cluster.
- Up to 500 direct full-time equivalent (FTE) jobs during construction phase.
- 380-400 indirect FTE jobs supported during the life of the project.
- Economic benefit for the Victorian economy of up to $800 million during the life of the project.

There are likely to be significant flow-on effects / economic cluster benefits / skills for the area. Expected benefits are outlined in Table 6.

7.2 Stakeholder consultation

La Trobe University has a strong commitment to engaging with relevant stakeholders, and prioritise ensuring that the proposed development is both appropriate and filling a niche in the local area. Discussions were undertaken with State Sporting Associations (SSAs), Local Government Areas (LGAs), State Government bodies and La Trobe internal stakeholders to ensure positive outcomes for all parties from the proposed action. A full list of stakeholders consulted in provided in Table 7.

University Council approved a comprehensive Business Case and associated Neighbourhood Plan that details the social and financial benefits of the development of this community sporting hub to service Melbourne's North (MacroPlan 2016).

The proposed action is limited to areas owned by La Trobe University, and will therefore not require any land acquisition that will affect the local community. The proposed action will not result in the displacement of residents from privately owned land, nor exclude people from areas currently used as recreational open space.

Significant funds will be spent to protect and manage 2.81 hectares of MFL habitat on-campus, in order to offset the loss of 1.26 hectares of MFL habitat from the proposed action area. This will result in the generation of local jobs at the proposed offset site including fencing, regeneration, fire management and pest control.

The proposed action is expected to generate a number of temporary jobs during the construction stage, and is likely to generate ongoing roles during the operational stage following the establishment of Stage 3 of the development. There are no quantified detriments to the local community / economy that may arise from this proposal at this time.

7.3 Stakeholder consultation

La Trobe University has a strong commitment to engaging with relevant stakeholders, and prioritise ensuring that the proposed development is both appropriate and filling a niche in the local area. Discussions were undertaken with State Sporting Associations (SSAs), Local Government Areas (LGAs), State Government

bodies and La Trobe internal stakeholders to ensure positive outcomes for all parties from the proposed action. A full list of stakeholders consulted is provided in Table 7.

Table 6 Community and economic benefits from La Trobe Sports Precinct development

Key Focus Area	Key priorities highlighted by State Government / Councils	Precinct Outcomes
Economy	• Economic growth Investment in strategic infrastructure • Competitive business environment • Increased population growth • Increased share of population living in urban areas • Optimised density of development • Additional sports facility investment • Investment in health innovation • Increased research into health/sport • Technology enabled sports participation	• Major new investment in sports neighbourhood $100m-$300m with capacity to stimulate both new jobs and economic growth • Major new regionally-significant sports facility investment in an emerging economic cluster in Melbourne • Improved access to major sporting, cultural and events precincts with flow-on impacts for the Victorian economy • New state-level sports facilities capable of supporting elite sporting clubs / activities • Residents living in new dwellings located on campus will inject significant expenditure into the local economy during the life of the project as will new workers and visitors to La Trobe during the life of the project
Community & Environment	• Increased open space • Avoided Sprawl • Healthy weight • Better Buildings • Greenhouse Gas Reduction • Better air-conditioning • New distributed energy • Reduced reliance on cars / mode split for journeys • Protect environmental assets • No net loss of biodiversity • Renewable energy and energy-efficient dwellings • Reduce mains water consumption and climate dependent water resources • Increased use of public transport	• An exciting vibrant new place for families, young people and older Australians with a strong focus on sports participation, wellness and the environment • Improved access to major sporting, cultural and events precincts • A meeting point for major sporting and cultural events • Reinforcement of cultural, indigenous and historical significance through open spaces designed to draw different groups together for active and passive recreation and events • Opportunities for energy and water saving initiatives in buildings and open space including environmentally-sensitive design and development linking to onsite water treatment systems • Reduced reliance on private vehicle trips to CBD through use of existing heavy rail / light rail infrastructure, walking and cycling paths • Preservation of natural environment through reduced vehicle trips and congestion

Table 7 List of stakeholder consultation for La Trobe Sports Precinct

Sports organisations (NSOs, SSAs, Clubs, Peak bodies)	Local Government Authorities	State Government	La Trobe University internal stakeholders
• AFL Victoria • Basketball Australia • Basketball Victoria • Baseball Victoria • Cricket Victoria • Disability Sport and Recreation • Girls Sport Victoria • Gymnastics Australia • Gymnastics Victoria • Hockey Victoria • Lacrosse Victoria • Melbourne City Football Club • Melbourne United Basketball Club • Netball Victoria • Northern Football League • Softball Australia • Victorian Sports Federation (VicSport)	• Banyule City Council • City of Whittlesea • Darebin City Council • Shire of Nillumbik	• Metropolitan Planning Authority • Sport and Recreation Victoria	• Teaching and Research units • La Trobe University sports clubs • La Trobe University Business Services

Consultations with professional sport franchises focused on identifying the possibilities for locating their administration and training operations in the Sports Park; the opportunities for La Trobe students to be involved in research and work integrated learning opportunities; and their particular requirements for security and privacy for some of their operations. Consultations with SSAs focused on reviewing their respective plans for facility developments in the north of Melbourne including:

- Their understanding of the demand for their respective community level competitions.
- The degree of alignment between existing state-wide facility plans with a range of possible new facilities on the La Trobe Sports Park.
- Possibilities for delivery of any high-performance programs if the appropriate facilities were developed.

Consultations with LGAs focussed on identifying their respective existing plans for facility developments in their LGA including their understanding of the demand for their respective community level competitions; their respective most pressing priorities for sport facility development; and their preferred model for participating in the governance of the Sports Park.

Consultations with the above stakeholders identified the need to develop sport facilities that:

- are complementary to existing and proposed developments in the adjacent LGAs and are aligned to the future requirements of the SSAs;
- can facilitate regular community use and enable the hosting of large participation events;
- ensure a balanced model for community, elite and university usage; and
- maximise the possibilities for engagement between the university and all stakeholders through community education, research and student development opportunities.

In the 12 months since the Preliminary Business Case and Neighbourhood Plan were approved:

1. The interest from additional sporting groups (namely Victorian Rugby Union, Hockey Victoria, Northern Football League) and further consultation has increased potential demand for space within the Sports Park;
2. Banyule Council has agreed to invest $5 million toward the indoor stadium within the Sports Park, on the proviso that the University develop at least 6 courts in the University-funded stages of construction;
3. IEPC has approved the transfer of a portion of the Crissane Road site currently occupied by City Football Group from the Research Precinct to the Sports Park Precinct.

7.4 Project costs & funding

An updated business plan for this project outlines cost estimates which total approximately $153 million (MacroPlan 2019) capital investment in nominal terms associated with the use mix in the revised Master Plan including Stage 1, Stage 2 and Stage 3 (Table 8). The cost estimates include demolition works, building works/sporting fields, external sports and services (where relevant), allowance for FF&E/AV/IT and a number of facilities, plus a 10% design/construction contingency and allowance of 2.5% per annum for cost escalation.

La Trobe University has already committed extensive funds on a number of detailed investigations, including broad and targeted biodiversity investigations in order to inform the design and Business Case development associated with the project. Table 8 provides a summary of the costs associated with the proposed action.

The project team is actively managing the next phase of detailed design to fit within the original budget of $143 million.

The current budget plan indicates that a total of $75.16 million funding is available including $70.16 million through La Trobe University and $5 million from City of Banyule, which can fully fund Stage 1 and Stage 2. The balance of funds is to be sourced from elsewhere to deliver the balance of the project.

The following highlights some of the issues and interdependencies relating to funding including potential costs associated with precinct-wide infrastructure:

- SRV funding – securing a funding commitment from the Victorian State Government for capital works will enable the project to proceed in a timely manner and provide certainty for La Trobe University and other stakeholders about the future success of the project. If State Government funding is not received the University will need to consider alternative funding strategies.
- Council funding – a one-off capital contribution for works relating to specific sports facilities (i.e. soccer, highball) may be offered by neighbouring municipalities and is welcomed. The absence of Council funding would not necessarily prevent the project from proceeding.
- University funding – the University will need to fund a portion of the capital works required to deliver the project including whole-of-life costs. The absence of funding from SRV would impact the University's capacity to deliver the whole project.
- Water Harvesting projects – it is anticipated that significant investment will be required to provide sustainable water harvesting solutions to Sports Park playing fields. This cost sits outside the project budget.

Table 8 Breakdown of costs estimates for the La Trobe Sport Precinct Project

Scope or project stage	Estimated costs
Stage 1 & Stage 2	$75 million
Stage 3	$78 million
EPBC Act offset costs and cost-recovery fees	TBC
Total	**$153 million**

The assumptions for operational costs relating to the Sports Park remain largely unchanged based on the peer review of the preliminary Business Case and inputs from LTU.

The operational cost estimates for sporting facilities include routine maintenance expenses such as:

- For natural grass surface: mowing and edging, fertiliser, spraying and growth regulator, topsoil dressing, de-compaction and aeration, over-seeding and thatch control, watering and irrigation system operation, line marking, and sodding replacement / replanting;
- For synthetic turf surface: cleaning, stain and debris removal, grooming and drag / power brushing, moss and algae prevention and removal, line marking, check and top up infill levels (filled surfaces only), joints and seam inspections, and irrigation.

Staff/employee expenses for the sport facilities (i.e. salaries, wages, long service leave & superannuation) are assumed to be included in the operational costs for the common areas and cover the management of the whole Sports Park.

A breakdown of the individual facilities annual baseline operational cost estimates (in nominal terms) in the first year of full operation is presented in Table 9.

Table 9 Breakdown of projected operating costs for all 3 stages

Facility	Operating Expense Allowance
AFL / Cricket Ovals **Senior Oval** **Junior Oval**	 $60,000 per oval $100,000 per oval
Soccer Pitches **Synthetic x3** **Natural Grass x2**	 $35,000 per pitch $50,000 per pitch
Hockey Pitches x2	$25,000 per pitch
Rugby Pitches x2	$50,000 per pitch
Baseball Diamond x1	$60,000 per pitch
Highball Courts	$55 per sqm
Western Edge Playing Fields	$100,000 per item
Pavilions **PAV 1** **PAV 2 & 3**	 $110 per sqm *Assume revenue neutral*
Academic Facility	$110 per sqm

8. Other approvals and conditions

8.1 Victorian *Planning and Environment Act 1987*

A Planning Permit under the *Planning and Environment Act 1987* (Vic.) will be required, and native vegetation impacts will require offsetting under the Victorian Guidelines for the Removal, Destruction or Lopping of Native Vegetation ("the Guidelines", DELWP 2017b). A planning permit will be sought for the proposed action from Darebin City Council once funding is secured and construction plans can subsequently be finalised. Offsets for any loss of native vegetation will be secured in line with the Guidelines.

Environment Protection Act State environment protection policies (SEPPs) are subordinate legislation made under the *Environment Protection Act* 1970 (Vic) (EP Act) to safeguard the environment from the effects of pollution and waste. The SEPP standards will be complied with during the construction and operation phase of the proposed action.

8.2 Flora and Fauna Guarantee Act 1988

The *Flora and Fauna Guarantee Act 1988* (Vic) (FFG Act) does not apply to the proposed action because the study area is within private ownership and the area is not considered 'critical habitat' for the purposes of the FFG Act. In addition, the flora species proposed to be removed are not being taken for the purpose of commercial sale.

8.3 Catchment and Land Protection Act 1994

The *Catchment and Land Protection Act 1994* (CaLP Act) identifies and classifies certain species as noxious weeds or pest animals, and provides a system of controls on noxious species. Four declared noxious weeds (all regionally controlled) have been identified within the study area.

Appropriate weed control and hygiene methods will be employed during development of the site to ensure that noxious weeds are not spread during construction. These requirements are incorporated into the CMP.

8.4 Description of monitoring, enforcement and review procedures

The primary State authorisation for the proposed action will be the planning permit which will be sought from Darebin City Council following securement of funding. It is anticipated that the Planning Permit will be accompanied by a number of conditions, all with which La Trobe intends to comply. Darebin City Council is responsible for enforcing the planning permit conditions and will receive any monitoring reports, as appropriate. If any areas of non-compliance with the permit arise, Darebin City Council (or any other person) can take enforcement action against the owner or occupiers of the land under the PE Act. In addition to the enforcement mechanisms available under the PE Act, there are also enforcement processes under the EP Act e.g. in the event of pollution of spills during the construction period that may affect MNES.

Planning Permit conditions may include the development of a CMP, which has already been prepared to accompany the response set out in the Preliminary Documentation. La Trobe will comply with all mitigation, monitoring and maintenance measures outlined in both the CMP, the MFL Offset Management Plan, and the MFL Salvage and Translocation Plan (Biosis 2020b, Biosis 2020a, Biosis 2020c).

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9. Environmental record of La Trobe University

The proponent for the proposed action is La Trobe University. La Trobe University complies with Commonwealth and (where applicable) State legislation for the protection of the environment on its land.

La Trobe University has a long history of prioritising conservation and environmental initiatives. La Trobe was the first University in Australia to be awarded a six-star Green Star community rating from the Green Building Council of Australia. This rating system assesses factors of governance, liveability, economic prosperity, environment and innovation.

La Trobe University was recently ranked fourth in the world in the Times Higher Education assessment against the United Nations' Sustainable Development Goals, while it was ranked first in the world for gender equality, and second for its contribution to health and wellbeing.

La Trobe University has led the longest community-based environmental regeneration and rehabilitation project, with the 50-year transformation of pastoral land in Bundoora to the La Trobe Wildlife Sanctuary. This sanctuary now works as an endemic plant seed orchard for many local councils and, with the installation of a predator-proof fence, is providing habitat for the reintroduction of the fat-tailed dunnart into the wild. The sanctuary has also provided many opportunities for student research since its founding in 1967, as well as providing a space for recreation, appreciation of Australian flora and fauna, and education. In 2012, La Trobe University entered into an agreement with Trust for Nature to place a Conservation Covenant on the land to ensure that the native vegetation, including the habitat for plants and wildlife, is protected in perpetuity.

There have been no legal proceedings to remedy actions taken by La Trobe University in regards to environmental protection or conservation and sustainable use of natural resources under any Commonwealth or State law.

10. Ecologically Sustainable Development

The goal of Ecologically Sustainable Development (ESD) is to "use, conserve and enhance the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased" (ESDSC 1992).

ESD is a significant driver for La Trobe University. The University's design standards stipulate a minimum 5-star Green Star minimum for all buildings. The recently completed stadium building within the sports park is applying for a six-star Green Star rating. The sports precinct, and the university as a whole, direct stormwater runoff to a series of dams under a Take and Use licence with Melbourne Water. This water is harvested for irrigation and some services use.

The proposed action is broadly consistent with the guiding principles of ESD outlined in the National Strategy for Ecologically Sustainable Development (ESDSC 1992). The proposed action will stimulate positive social and economic outcomes, while seeking to avoid and minimise environmental impacts wherever possible. The proposed action will be carefully designed and has been informed by a number of preliminary investigations that fundamentally informed the decision-making process, such as a biodiversity assessment and targeted surveys for MFL (Biosis 2019), and underground utility investigations. The final ESD-nature of the building will depend on the final development design and functionality, however, La Trobe University is committed to increasing the adoption of ESD principles in the University's developments.

The precautionary principle has been adopted throughout the planning and design of the proposed action, particularly in determining potential impacts. The precautionary principle will continue to be applied during construction, to ensure that no serious or irreversible environmental damage occurs as a result of scientific uncertainty.

The proposed action will result in the loss of 1.26 hectares of suitable habitat that corresponds to the EPBC-listed threatened MFL. However this impact is proposed to be offset by protecting, improving and maintaining an offset area of 2.81 hectares, which amounts to an offset of about 2.2 times the impact to 1.26 hectares of MFL habitat lost as a result of the Stage 3 Sports Precinct development. 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 implementation of the associated OMP, and will be maintained through enduring commitments to manage the offset site for MFL and biodiversity conservation (Biosis 2020a). This offset site will be protected and managed in perpetuity, and is therefore broadly consistent with the ESD principle of inter-generational equity.

11. Conclusion

This report provides the preliminary documentation required by DAWE to assess Stage 3 of the La Trobe University Sports Precinct at La Trobe Bundoora as a controlled action. The document and relevant supporting documents have sought to adequately address the items raised by DAWE, and have considered all relevant existing information including assessment reports, recovery plans, conservation advice and EPBC Act policy documents. This report demonstrates that impacts to matters protected under the EPBC Act have been avoided and minimised where possible. This report also provides details on how residual impacts will be offset in accordance with the EPBC Act Environmental Offsets Policy (Commonwealth of Australia 2012). The proposed action is therefore considered to be acceptable and it is concluded that the action should be approved, with outcomes-based conditions based on the commitments detailed within this report and relevant supporting documents.

12. Information sources

This Preliminary Documentation was collated based on the most current information available at the time of publication. The primary source of uncertainties in this application comes from not having final construction plans for the sports precinct. This is currently limited by La Trobe not yet having secured funding to build the precinct. However, despite unknowns in the construction plans and timeframes, the development will not exceed the construction footprint, and all associated plans and conditions will be followed.

Supporting documents such as the OMP (Biosis 2020a), the MFL Salvage and Translocation Plan (Biosis 2020c) and the CMP (Biosis 2020b) are based on desktop and field assessments of the study area and offset site by senior botanist Steve Mueck, who has over 30 years' experience in conducting botanical assessments of this nature and is highly experienced in facilitating offset transactions.

Background information for all MNES identified within the request for further information was sought from relevant National Recovery Plans, Approved Conservation Advice, Significant Impact Guidelines, species records from the Victorian Biodiversity Atlas, and relevant literature for those matters (Carter 2010; DEWHA 2009a; DEWHA 2009b; DAWE 2020; DELWP 2017a; Commonwealth of Australia 2009b, Saunders and Tzaros 2011).

A full list of references used in providing background information to this report is provided below.

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Appendices

Appendix 1 Department of Agriculture, Water and the Environment request for additional information

Australian Government
Department of the Environment and Energy

EPBC Ref: 2018/8343

Tony Inglis
Project Director
La Trobe University
Bundoora VIC 3086

Dear Mr Inglis

Additional information required for preliminary documentation
La Trobe University Sports Precinct Stage 3, Bundoora Campus, Vic

I am writing to you in relation to your proposal to clear native vegetation and construct a sports precinct for sport teaching and research at La Trobe University, Bundoora, Victoria.

On 1 February 2019, a delegate of the Minister decided that the proposed action is a controlled action due to potential significant impacts on listed threatened species and communities (sections 18 and 18A) protected under Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

On 14 June 2019, a delegate of the Minister decided that the the proposed action would be assessed by preliminary documentation. Further information will be required to be able to assess the relevant impacts of the proposed action.

Details outlining the information required are at Attachment A.

Details on the assessment process and the responsibilities of the proponent are set out in the enclosed fact sheet. Further information is available from the department's website at http://www.environment.gov.au/epbc.

Please note, under subsection 520(4A) of the EPBC Act and the *Environment Protection and Biodiversity Conservation Regulations 2000* your assessment is subject to cost recovery. Please find attached an invoice for Stage 2 fees at Attachment B. Fees will be payable prior to each stage of the assessment proceeding. Further details on cost recovery are available on the Department's website at: http://www.environment.gov.au/epbc/cost-recovery.

If you have any questions about the assessment process or the further information required, please contact the project manager, Jessica Koeck, by email to jessica.koeck@environment.gov.au, or telephone (02) 6274 1253 and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

Tiffeny Horwood
Director
Victoria and Tasmania Assessments Section
20 June 2019

REQUEST FOR ADDITIONAL INFORMATION – PRELIMINARY DOCUMENTATION

La Trobe University Sports Precinct Stage 3, Bundoora Campus, Vic (EPBC 2018/8343)

Additional information required for assessment by Preliminary Documentation:

In order for the Department of the Environment and Energy (the Department) to adequately assess the nature, scale and severity of likely impacts of the proposed action on matters of national environmental significance, and determine the adequacy of avoidance, mitigation and compensatory measures, please provide the additional information described below.

Please note, the additional information must include a copy of this request and a table indicating where the information fulfilling the assessment requirements is included in the preliminary documentation.

General content, format and style

The preliminary documentation package should include all information provided in the initial referral (updated or corrected as necessary) as well as the additional information requested below. The documentation should be provided as a consolidated package or single indexed document along with any appendices. Where relevant information was provided at the referral stage, incorporate or refer to this information as necessary in the documentation.

The level of analysis and detail in the documentation should reflect the expected level of impacts on the environment. The information provided should be objective, clear, succinct, and where appropriate, be supported by maps, plans, diagrams or other descriptive detail. Detailed technical information, studies or investigations supporting the text of the main document should be included as appendices where feasible, or at least directly linked to avoid readers having to search for the documents. Any variables or assumptions made in the assessment should be clearly stated and discussed. In addition, the extent to which limitations, if any, of available information influenced conclusions of the environmental assessment should be discussed.

The preliminary documentation package should be written to enable interested stakeholders, and the Minister for the Environment, to clearly understand the environmental consequences of the proposed development. The documentation should avoid passive language and use active, clear commitments (e.g. ‘must’ and ‘will’). Passive language affects the auditability of approval conditions and is likely to be unacceptable. The documentation must be able to be read as a stand-alone document, and must include summaries of all relevant information. Any documents that are not already available to the public should be made available at appropriate locations, at least during the period for public display of the preliminary documentation. The information presented should allow any conclusions reached to be independently assessed.

All sources must be appropriately referenced using the Harvard standard. The reference list should include the address of any web pages used as data sources. The documentation should also include a list of persons or agencies consulted and the names of, and work done by, the persons involved in preparing the documentation. Any standards or criteria published by the Department should clearly be addressed where relevant to the matters being assessed, and appropriate reference must be made to any relevant Departmental policy documents.

If it is necessary to make use of material that is considered to be confidential in nature, the proponent should consult the Department on the preferred presentation of that material, before submitting the documents for approval for publication.

The preliminary documentation should be produced on A4 size paper, capable of being photocopied, with maps and diagrams on A4 or A3 size and in colour. Relevant maps, plans, diagrams and technical information must be clearly annotated, in colour and high resolution. The proponent should consider the format and style of the document appropriate for publication on the internet. The capacity of the website to store data and display the material may have some bearing on how the document is constructed.

Assessment requirements

On 1 February 2019, a delegate for the Minister for the Environment determined that the proposed action to clear native vegetation and construct a sports precinct for sport teaching and research at La Trobe University, Bundoora, Victoria (EPBC 2018/8343) (the proposed action) is likely to have a significant impact on listed threatened species and communities (section 18 & section 18A) protected under Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Please note, from this point listed threatened species and communities are collectively referred to as protected matters.

On 14 June 2019, the proposed action was determined as being assessed by preliminary documentation. In order to adequately assess the likely scale and nature of potential impacts of the proposed action on protected matters, the Department requires the following additional information:

1. Description of the action

The preliminary documentation package must include a summary of all components of the proposed action, a description of the activities associated with the potential development, and plans or maps to delineate the position of all components of the proposed action. Please clearly state any variables in the design of the proposed action and take this into account in the discussion of impacts required under Section 3 below.

Please ensure the information includes the following:

a) The location, boundaries and size (in hectares) of the disturbance footprint and of any adjoining areas which may be indirectly impacted by the proposed action, including nearby habitat for protected matters.

b) Brief description of works, including but not limited to:

c) A brief overview of construction methods, techniques and materials.

d) An overview of the operational requirements of the proposed action and any anticipated maintenance works.

e) Any feasible alternatives to the proposed action to the extent reasonably practicable, including the alternative of taking no action, a comparative description of the impacts of each alternative on each protected matter and sufficient detail to make clear why any alternative is preferred to another. The short, medium and long-term advantages and disadvantages of the options should be discussed.

f) The anticipated timing and duration including start and completion dates.

Where relevant information was provided at the referral stage, please incorporate or refer to specific parts of the attached referral as necessary.

2. A description of the existing environment and relevant matters of national environmental significance

The preliminary documentation package must address how the elements of the proposed action (during all phases) may impact the protected matters identified within and adjacent to the proposed action area. The documentation must provide a general description of the environment affected by and surrounding the proposed action area, in both the short and long term. This section must address protected matters including, but not limited to:

- Matted Flax-lily (*Dianella amoena*) – Endangered
- Swift Parrot (*Lathamus discolor*) – Critically Endangered
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – Vulnerable
- Growling Grass Frog (*Litoria raniformis*) – Vulnerable
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain – Critically Endangered

Please provide further descriptions of the existing environment and each of the relevant protected matters listed above, including:

a) Targeted surveys to confirm the presence, status and extent of relevant matters within the proposed action area. If it is believed that targeted surveys are not necessary, an explanation of why, including evidence the existing habitat conditions are unlikely to support populations of these species, should be provided.

b) Information detailing known populations (and records) or habitat for the relevant protected matters within 5 km of the proposed action area.

c) Information about the resources used to identify and assess the environmental values of the site (i.e. was consultation or advice sought from flora experts in regard to the potential presence of threatened plant species).

d) An assessment of the adequacy of any surveys undertaken (including survey effort, timing and in accordance with the Department's relevant scientific and policy guidance).

e) Whether consultation or advice was sought from local community groups or experts.

Where relevant information was provided at the referral stage, please incorporate or refer to specific parts of the referral as necessary.

3. An assessment of the relevant impacts of the action

The preliminary documentation package must include an assessment of potential impacts (including direct, indirect, consequential and cumulative impacts) that may occur as a result of all project phases of the proposed action on the protected matters addressed at Section 2.

Consideration of impacts must not be confined to the immediate area of the proposed action but must also consider the potential of the proposed action to impact on adjacent areas that are likely to contain habitat for protected matters. This must include, but not be limited to an assessment of:

a) The direct and indirect loss, disturbance, degradation and modification of habitat for each protected matter and analysis of the impacts to species population resulting from the proposed action. This assessment must include the quality and type of habitat impacted and a quantification in hectares (and as number of individuals, if available and applicable) of the total impact area as well as areas indirectly impacted from the proposed action.

b) Local, regional and national scale analysis of the likely impacts to the protected matter listed at section 2 above. This should include a discussion of potential cumulative impacts on relevant protected matters within the broader region where potential impacts from this proposed action are in addition to existing impacts of other activities (including known and/or potential future expansions or developments by the proponent and other developers in the region and vicinity).

c) Any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

d) Analysis of the acceptability of the relevant impacts.

e) Details on whether any impacts are likely to be unknown, unpredictable or irreversible.

f) The ability of the retained habitat in the proposed action area to maintain connectivity between other areas of habitat adjacent to the proposed action, including mechanisms to ensure long term security and management of conserved habitat.

All discussions and conclusions should include a full justification based on the best available information including relevant conservation advices, recovery plans, threat abatement plans and guidance documents, if applicable. Departmental documents regarding protected matters can be found at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

4. Proposed avoidance and mitigation measures

The preliminary documentation package must provide information on proposed avoidance and mitigation measures to avoid, prevent or minimise impacts, to the protected matters addressed at Section 2 above, that are likely to be impacted by the proposed action. A consolidated list of proposed avoidance and mitigation measures must be provided, based on best available practices and must include, but not be limited to, the following elements:

a) A detailed description of the measures proposed. This must include relevant protocols, the name of the agency responsible for each measure, locations and the timing for each measure.

b) A statement addressing the environmental objectives and outcomes that the proposed measures are expected to achieve. This must include details of any baseline data, performance criteria, monitoring, reporting and corrective action proposed to demonstrate progress towards achieving these objectives. For further information on outcomes-based conditions please see relevant Departmental policy documents at: http://www.environment.gov.au/epbc/publications/outcomes-based-conditions-policy-guidance.

c) Details of ongoing management, including research and monitoring programs to support an adaptive management approach and determine the effectiveness of the measures proposed.

d) A description (including maps) of the location, boundaries and size (in metres) of any buffer areas for proposed exclusion zones or conservation purposes and details on how these areas will be excluded or protected from the proposed action.

e) An assessment of the expected or predicted effectiveness of the measures proposed.

f) Any statutory or policy basis for the measures proposed.

g) The achievability of the measures proposed, including affordability.

h) A description of any proposed rehabilitation to disturbed habitat areas, including its management, methodology and timing.

Specific measures can be presented in the form of a management plan, such as a Conservation Management Plan and/or a Construction Environmental Management Plan, which is specific to the proposed action. At a minimum, the plan/s must include a detailed outline that sets out the framework for management, mitigation and monitoring of relevant impacts of the proposed action, including provision for independent auditing. The plan/s must include details of the key commitments and measures to ensure that impacts to relevant protected matters are avoided and minimised. The plan/s should refer to relevant conservation advices, recovery plans, threat abatement plans, and other guidance documents published by the Department.

The Department's *Environmental Management Plan Guidelines 2014* are available at: www.environment.gov.au/epbc/publications/environmental-management-plan-guidelines.

5. Offsets

The preliminary documentation package must provide details of the likely residual impacts on protected matters identified at Section 2 above, that are likely to occur after proposed avoidance and/or mitigation measures are taken into account. If applicable, include the reasons why avoidance or mitigation of impacts cannot be reasonably achieved.

If relevant, to compensate for residual impacts on protected matters, the documentation should include details of any offset package proposed to be implemented along with an analysis of how the offset package meets the requirements of the *EPBC Act Offsets Policy* (Offsets Policy), including:

a) The type of offset/s proposed.

b) The extent to which the proposed offset correlates to, and adequately compensates for, the residual significant impacts on protected matters, resulting from the proposed action.

c) Suitability of the location of any proposed offset site for each of the protected matters.

d) Conservation gain to be achieved by the offset i.e. positive management strategies that improve the site or avert the future loss, degradation or damage of the protected matter.

e) Time it will take to achieve the proposed conservation gain.

f) Level of certainty that the proposed offset will be successful.

g) Current land tenure of any proposed land-based offset and the method of securing and managing that offset for 20 years or the period of the impact (whichever is less).

The documentation must also include a statement on the cost effectiveness of the measures proposed and how these will be funded.

Offsets should directly contribute to the ongoing viability of the protected matters impacted by the proposed action and deliver an overall conservation outcome that improves or maintains the viability of the protected matters as compared to what is likely to have occurred under the status quo that is if neither the proposed action nor the offset had taken place.

An offset package may include a combination of direct offsets and other compensatory measures, so long as it meets the requirements of the Offset Policy. An offset package should align with conservation priorities for the impacted protected matter and be tailored specifically to the attribute of the protected matter that is impacted in order to deliver a conservation gain. An offset package should compensate for an impact for the full duration of the impact.
Note that offsets do not make an unacceptable impact acceptable and do not reduce the likely impacts of a proposed action. Instead, offsets compensate for any residual significant impact.

Salvage and Translocation Plan for Matted Flax-Lily (*Dianella amoena*)

Please provide a detailed translocation plan for the Matted Flax-Lily, which addresses the following:

a) why the proposed translocation will result in an acceptable environmental outcome for the Matted Flax-lily (please refer to the National Recovery Plan for the Matted Flax-lily *Dianella amoena*)

b) specific timing (i.e. month/season) of plant removal and translocation to optimise survival

c) further detail on proposed translocation protocols and propagation methods and their predicted effectiveness

d) further details of proposed translocation sites, including location, suitability of habitat, site security, and ongoing management arrangements

e) post-translocation management

f) contingency measures in the case of translocation failure

g) ongoing monitoring, research and reporting requirements.

Any translocation proposal should address the Department's publicly available Environmental Offsets Policy (available at: http://www.environment.gov.au/epbc/publications/environmental-offsets-policy.html).

6. Economic and social matters

The preliminary documentation package must provide information on the economic and social impacts (both positive and negative) of the proposed action. Matters of interest may include:

a) Basis for any estimations of costs and/or benefits.

b) Specific dollar or other numeric values where relevant.

c) Potential employment opportunities expected to be generated at each phase of the proposed action.

d) Details of any public and stakeholder consultation activities, including the outcomes.

e) Discussion of how the principles of ecologically sustainable development are addressed in the proposed action.

f) Discussion of the environmental history of the company.

Economic and social impacts must be considered at the local, regional and national level.

7. Other approvals and conditions

The preliminary documentation package must include information on any other requirements for approval or conditions that apply, or that are reasonably believed as likely to apply, to support the proposed action. This must include:

a) A description of any approval obtained or required to be obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the EPBC Act), including any conditions that apply (or are reasonably expected to apply) to the proposed action in relation to the Salvage and Translocation Plan for Matted Flax-Lily.

b) A statement identifying any additional approval that is required.

c) A description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the proposed action.

d) A statement identifying any interaction with other approved projects under the EPBC Act, including compliance with conditions on other approved projects.

8. Environmental record of the person proposing to take the action

The additional information provided must include details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

a) the person proposing to take the action

b) for an action for which a person has applied for a permit, the person making the application.

If the person proposing to take the action is a corporation, details of the corporation's environmental policy and planning framework should be described.

9. Ecologically Sustainable Development

The preliminary documentation package must provide a description of the proposed action in relation to the principles of ecologically sustainable development and the objects and requirements of the EPBC Act:

a) the long-term and short-term economic, environmental, social and equitable considerations

b) the precautionary principle which states that a lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation where there are threats of serious or irreversible environmental damage

c) the principle of inter-generational equity which states that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations

d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making

e) improved valuation, pricing and incentive mechanisms should be promoted.

The *National Strategy for Ecologically Sustainable Development* (1992) is available on the following web site: http://www.environment.gov.au/resource/national-strategy-ecologically-sustainable-development.

10. Conclusion

The proponent may wish to include a statement as to whether or not the controlled action should be approved and may recommend conditions pertaining to an approval. This should include justification for undertaking the proposed action in the manner proposed.
The measures proposed or required by way of offset for any unavoidable impacts on protected matters and the relative degree of compensation, should be restated here.

11. Information sources

The preliminary documentation package must state for the information provided, the following:

a) the source and currency (date) of the information

b) how the reliability of the information was tested

c) the uncertainties (if any) in the information

d) the guidelines, plans and/or policies considered.

Appendix 2 EPBC Act Protected Matters Report – 5 km radius of La Trobe University

Australian Government
Department of the Environment and Energy

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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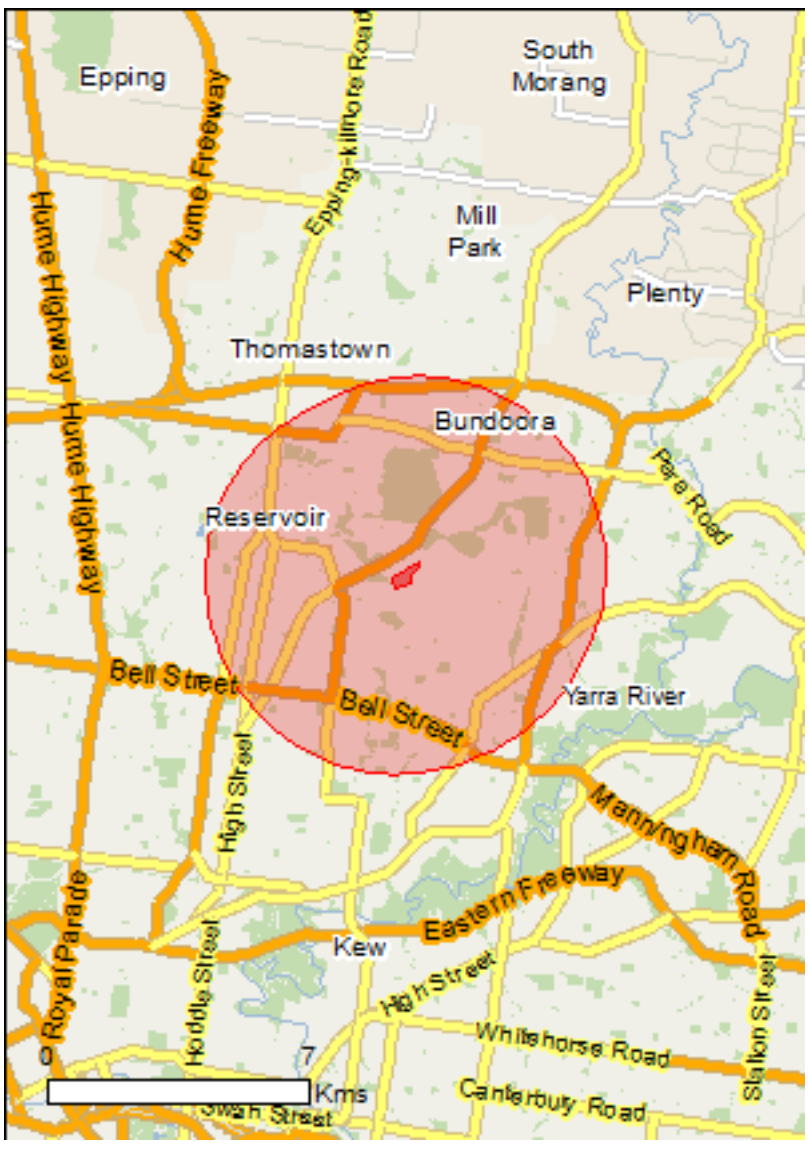

This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates

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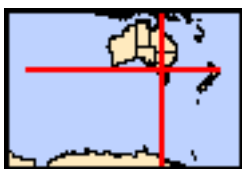

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	34
Listed Migratory Species:	14

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	3
Commonwealth Heritage Places:	None
Listed Marine Species:	23
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	4
Regional Forest Agreements:	1
Invasive Species:	50
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities		[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.		
Name	Status	Type of Presence
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Critically Endangered	Community known to occur within area
Natural Damp Grassland of the Victorian Coastal Plains	Critically Endangered	Community may occur within area
Natural Temperate Grassland of the Victorian Volcanic Plain	Critically Endangered	Community may occur within area
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Critically Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur

Name	Status	Type of Presence
		within area
Thinornis rubricollis rubricollis		
Hooded Plover (eastern) [66726]	Vulnerable	Species or species habitat may occur within area
Fish		
Galaxiella pusilla		
Eastern Dwarf Galaxias, Dwarf Galaxias [56790]	Vulnerable	Species or species habitat known to occur within area
Maccullochella peelii		
Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area
Nannoperca obscura		
Yarra Pygmy Perch [26177]	Vulnerable	Species or species habitat likely to occur within area
Prototroctes maraena		
Australian Grayling [26179]	Vulnerable	Species or species habitat may occur within area
Frogs		
Litoria raniformis		
Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat known to occur within area
Insects		
Paralucia pyrodiscus lucida		
Eltham Copper Butterfly [66766]	Endangered	Species or species habitat likely to occur within area
Synemon plana		
Golden Sun Moth [25234]	Critically Endangered	Species or species habitat likely to occur within area
Mammals		
Antechinus minimus maritimus		
Swamp Antechinus (mainland) [83086]	Vulnerable	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population)		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area
Petauroides volans		
Greater Glider [254]	Vulnerable	Species or species habitat may occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Plants		
Amphibromus fluitans		
River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat known to occur within area
Dianella amoena		
Matted Flax-lily [64886]	Endangered	Species or species habitat known to occur within area
Glycine latrobeana		
Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat likely to occur within area
Lachnagrostis adamsonii		
Adamson's Blown-grass, Adamson's Blowngrass [76211]	Endangered	Species or species habitat may occur within area
Pimelea spinescens subsp. spinescens		
Plains Rice-flower, Spiny Rice-flower, Prickly	Critically Endangered	Species or species

Name	Status	Type of Presence
Pimelea [21980]		habitat may occur within area
Pomaderris vacciniifolia		
Round-leaf Pomaderris [4256]	Critically Endangered	Species or species habitat likely to occur within area
Prasophyllum frenchii		
Maroon Leek-orchid, Slaty Leek-orchid, Stout Leek-orchid, French's Leek-orchid, Swamp Leek-orchid [9704]	Endangered	Species or species habitat likely to occur within area
Pterostylis chlorogramma		
Green-striped Greenhood [56510]	Vulnerable	Species or species habitat may occur within area
Pterostylis cucullata		
Leafy Greenhood [15459]	Vulnerable	Species or species habitat may occur within area
Rutidosis leptorrhynchoides		
Button Wrinklewort [7384]	Endangered	Species or species habitat may occur within area
Senecio psilocarpus		
Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat likely to occur within area
Xerochrysum palustre		
Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Delma impar		
Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis		
Black-faced Monarch [609]		Species or species habitat likely to occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca		
Satin Flycatcher [612]		Breeding known to occur within area
Rhipidura rufifrons		
Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur

Name	Threatened	Type of Presence
		within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -
Defence - IVANHOE TRAINING DEPOT
Defence - SIMPSON BARRACKS - WATSONIA

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat may occur within area
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Gresswell Forest (part a) N.C.R.	VIC
Gresswell Forest (part b) N.C.R.	VIC
Gresswell Hill N.C.R.	VIC
Unnamed C0683	VIC

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

Name	State
Central Highlands RFA	Victoria

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Carduelis chloris European Greenfinch [404]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Turdus philomelos Song Thrush [597]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Carrichtera annua Ward's Weed [9511]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within

Name	Status	Type of Presence
		area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-37.720586 145.043622,-37.721706 145.04375,-37.722793 145.041862,-37.72449 145.041991,-37.725406 145.038128,-37.723336 145.037034,-37.720586 145.043622

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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Appendix 3 OMP for the proposed La Trobe offset site (Biosis 2020a)

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

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

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- Sonika Kumar for mapping

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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.

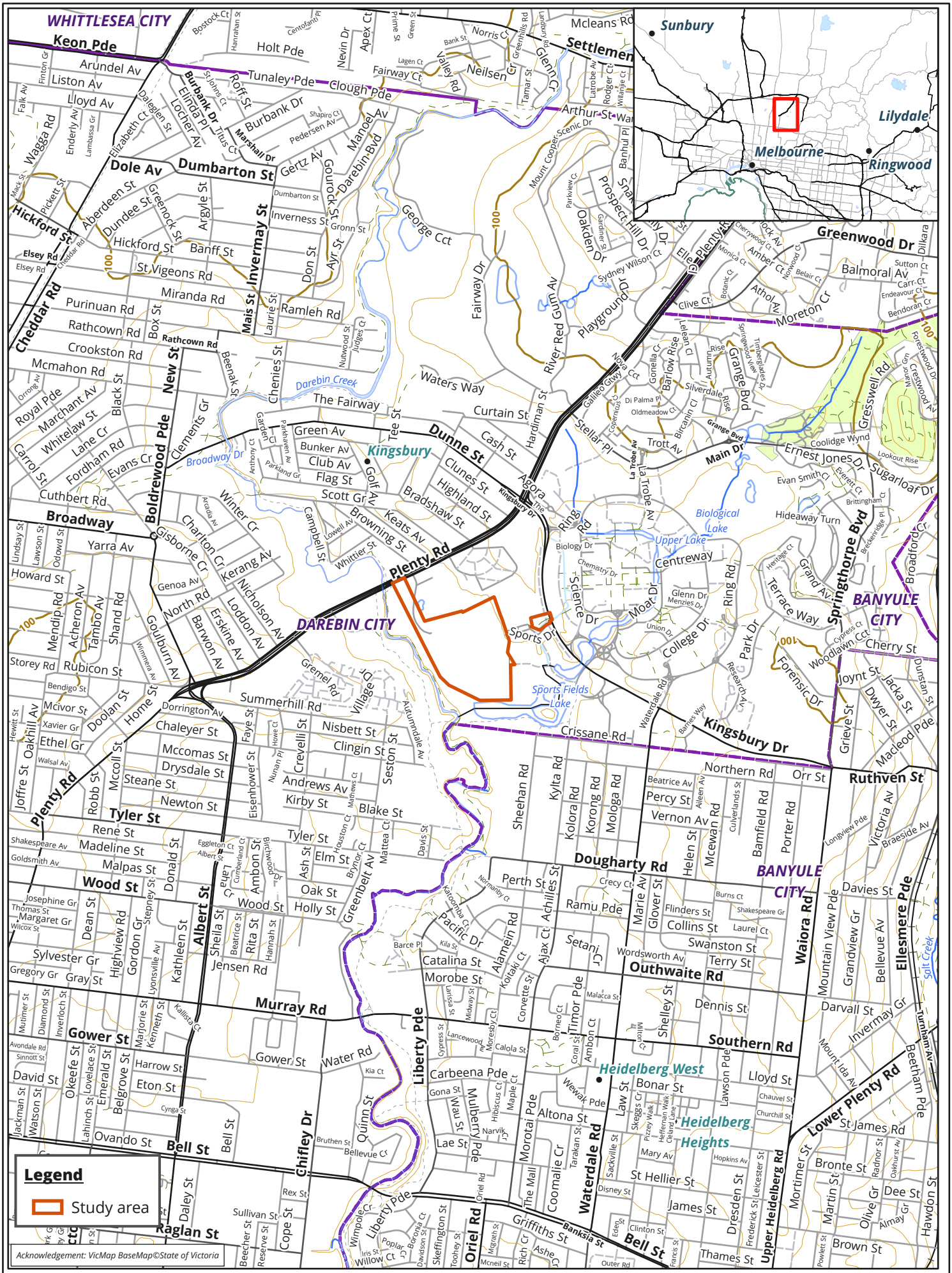

Figure 1 Location of the Study Area - La Trobe University, Bundoora, Victoria

Matter: 30363, Date: 08 January 2021,
Prepared for: IM, Prepared by: SKM, Last edited by: smitchell
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Metres
Scale: 1:25,000 @ A4
Coordinate System GDA 1994 MGA Zone 55

N

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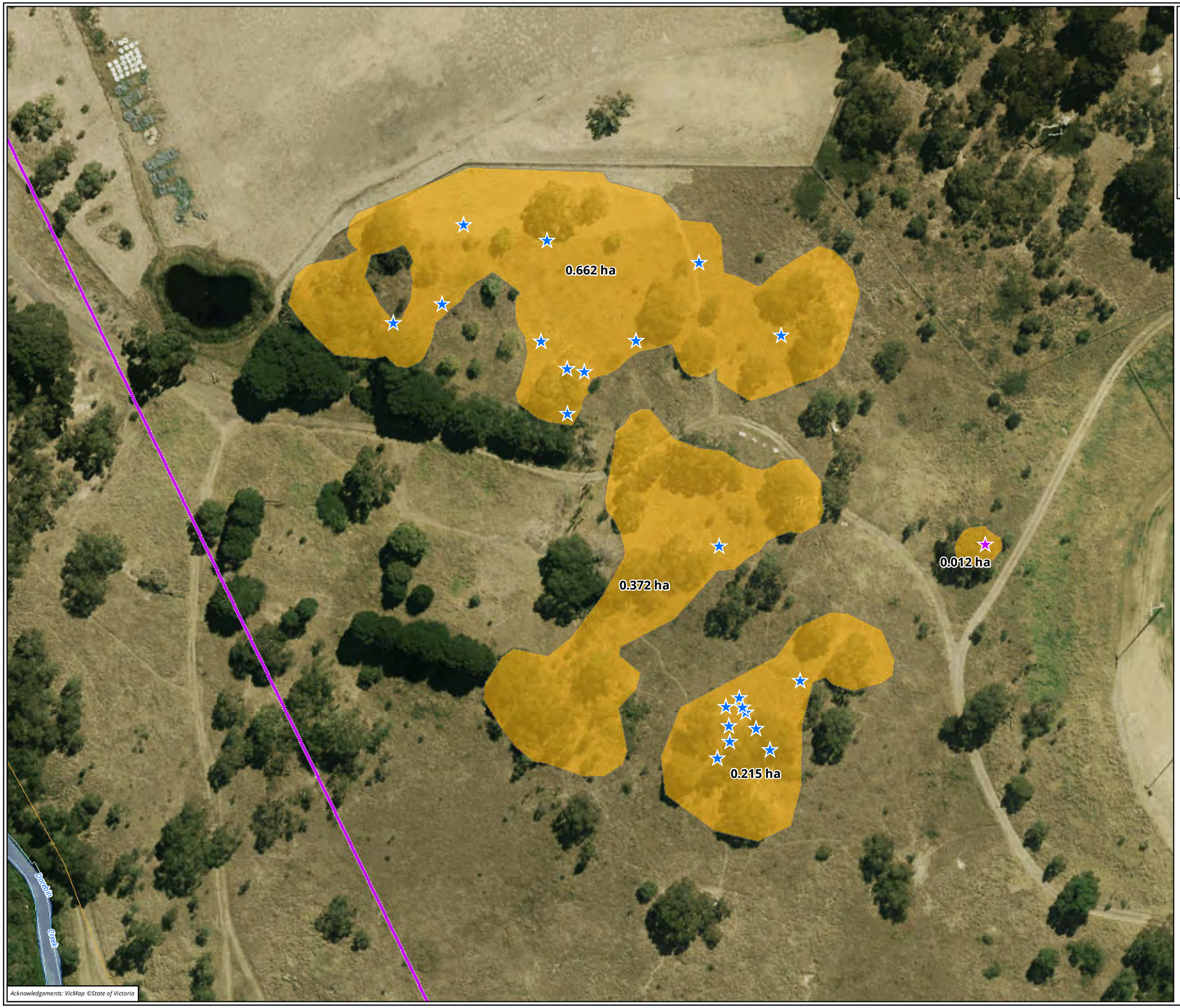

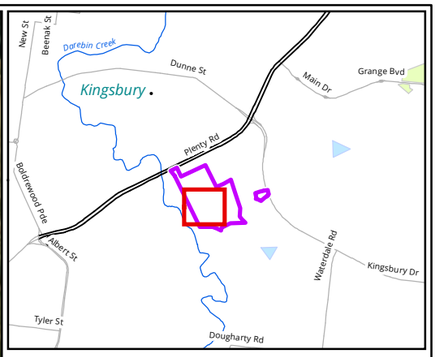

Legend

- 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

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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

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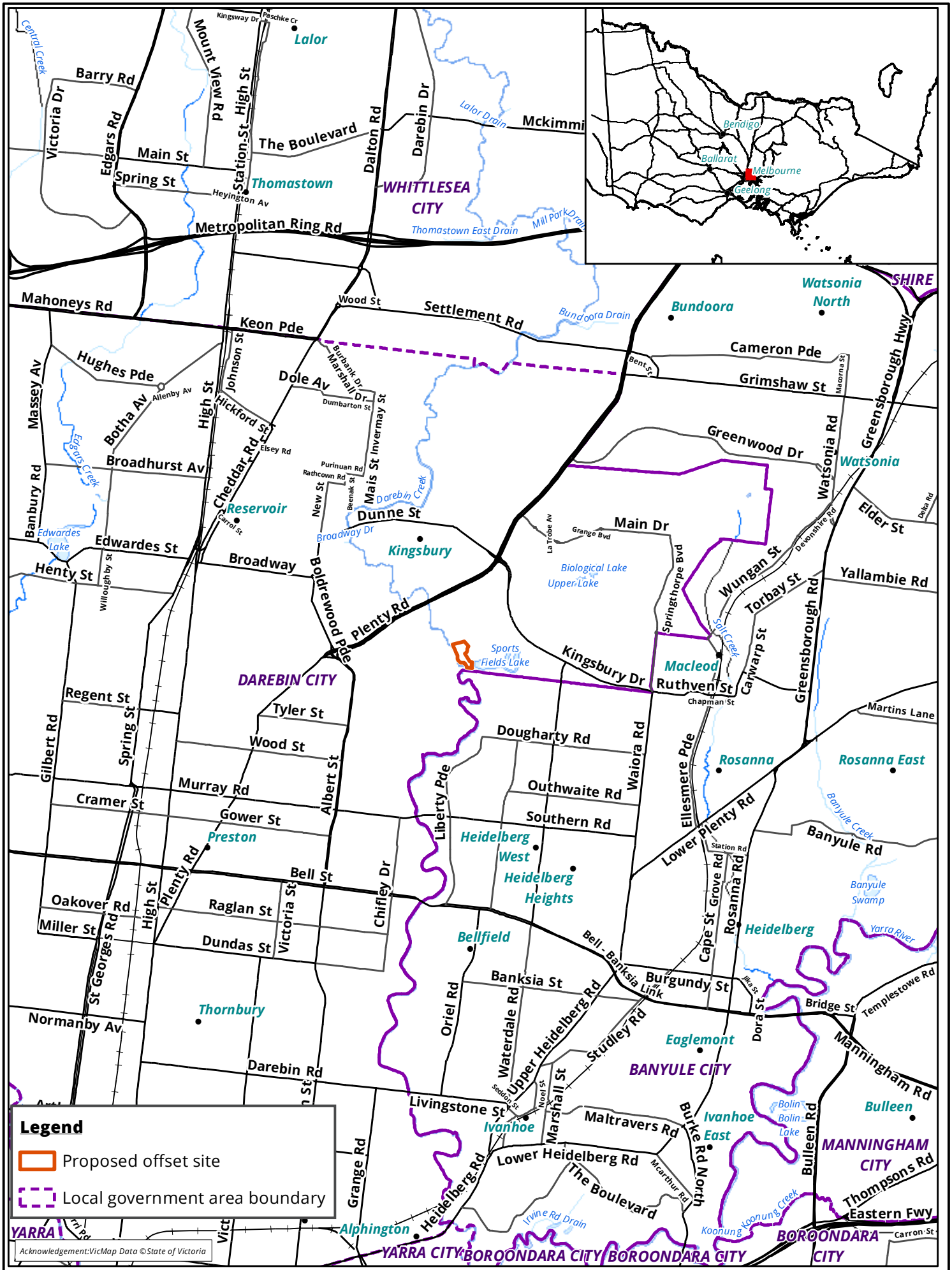

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Albury, Ballarat, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

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

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Date: 29 October 2019,
Checked by: SGM, Drawn by: JPT, Last edited by: jturner
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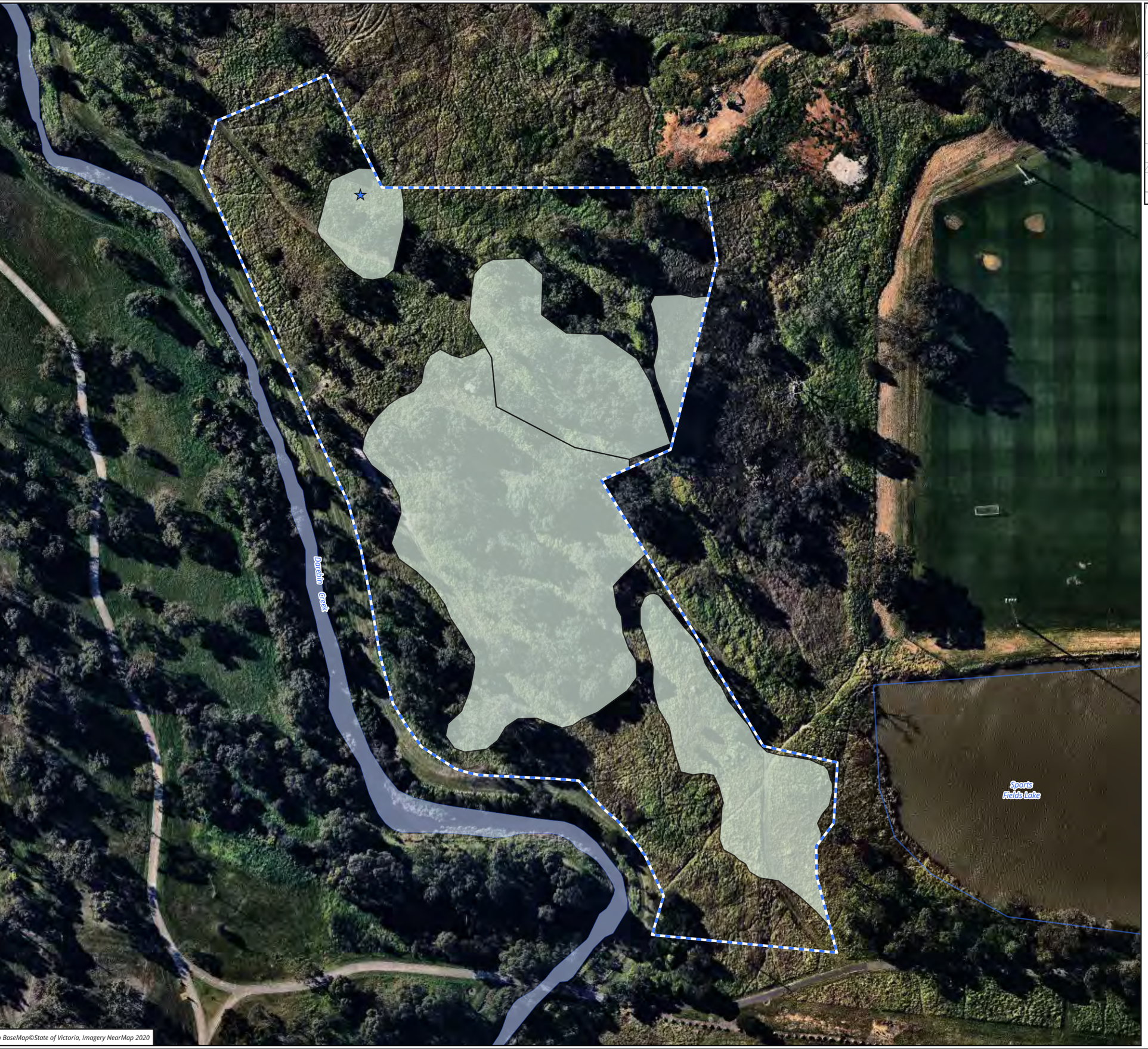

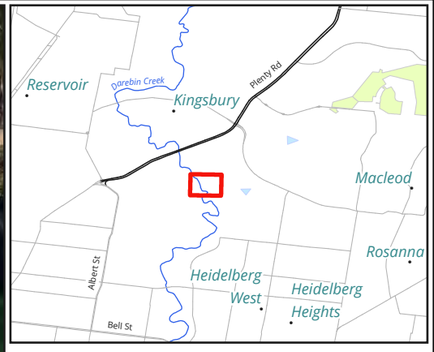

Legend

- 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 10th 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.** 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 Monitoring #2 & 3 Sec. 3.9.2
1 and all years following	**2. Prevent unauthorised activities and vehicle access.** Ensure access to the offset site is appropriately controlled to exclude unplanned disturbances. 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. Exclude unauthorised access and firewood collection. 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 Monitoring #1 - Sec. 3.9.1
1 and all years following	**3. Remove all woody weed infestations within the offset area.** 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. Minimise off-target damage (avoid all native plants). Record and control any woody weed regeneration / re-colonisation.	Management Sec. 3.8.2 Monitoring #2 - Sec. 3.9.2
All years	**4. Reduce herbaceous weed covers.** Control methods and timing specified in Table 4 and in accordance with DSE (2012b). 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. Minimise off-target damage (avoid all native plants). Introduced perennial grasses to reduce in cover to 1% at the end of 10 years management.	Management Sec. 3.8.3 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. No woody weeds present within offset area. Minimise off-target damage (avoid all native plants).	Management Sec. 3.8.2 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 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 Monitoring #2 - Sec. 3.9.5
All Years	**8. Maintain and enhance the MFL population.** Report on population and habitat condition.	Late Spring.	Document known MFL population. Establish translocated MFL population. Assessment of any trends in MFL population size, health or extent. Documentation of the condition of MFL habitat based on visual assessments.	Management Sec. 3.9.7 Monitoring #2
All years	**9. Enhance MFL habitat condition.** 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 Monitoring #6
All years	**10. Control Rabbits, Hares and Foxes.** 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. No active rabbit warrens within offset area, minimal surface harbour for rabbits and hares present (excluding natural harbour such as logs and rocks). No active fox dens within offset area, if present they are to be destroyed through fumigation and hand collapse. Continue to monitor and control rabbits and foxes all year round.	Management Sec. 3.8.3 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 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. May impact temporarily or permanently on natural regeneration. May impact upon weed recruitment patterns. 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). Undertake weed control works to take advantage of new growth. Inspect access control infrastructure condition and repair any damage. 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. 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. 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. 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 TfN 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 TfN LTU	Completion of annual monitoring
3	Review of offset management plan (Section 3.12).	3	LTU	As required.	DAWE 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 TfN 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

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Appendices

Appendix 1

A1.1 Plant species (17 native and 41 weeds) recorded within the La Trobe University offset site

Rare or threatened species status:

Victorian status: (DEPI 2014)

v	vulnerable
r	rare
P	Protected under the FFG Act

Noxious weed status:

RR	Regionally restricted species
RC	Regionally controlled species

Status	Scientific Name	Common Name
Rare or threatened species		
EN, L, P, e	*Dianella amoena*	Matted Flax-lily
Indigenous species		
	Acacia implexa	Lightwood
	Acacia melanoxylon	Blackwood
	Acaena echinata	Sheep's Burr
	Arthropodium strictum	Chocolate Lily
P	*Asperula conferta*	Common Woodruff
	Carex tereticaulis	Poong'ort
P	*Cotula australis*	Common Cotula
	Crassula decumbens var. *decumbens*	Spreading Crassula
	Eucalyptus camaldulensis	River Red-gum
	Lepidosperma laterale	Variable Sword-sedge
	Lomandra filiformis	Wattle Mat-rush
	Lomandra longifolia	Spiny-headed Mat-rush
	Oxalis perennans	Grassland Wood-sorrel
	Poa labillardierei	Common Tussock-grass
P	*Senecio quadridentatus*	Cotton Fireweed
	Themeda triandra	Kangaroo Grass
Introduced species		
RR	*Allium triquetrum*	Angled Onion
	Arctotheca calendula	Cape weed
RR	*Asparagus asparagoides*	Bridal Creeper
	Brassica fruticulosa	Twiggy Turnip
	Cassinia sifton	Drooping Cassinia
	Cenchrus clandestinus	Kikuyu
	Centaurium erythraea	Common Centaury
	Cerastium glomeratum s.s.	Sticky Mouse-ear Chickweed
RC	*Cirsium vulgare*	Spear Thistle

Status	Scientific Name	Common Name
	Cynodon dactylon	Couch
	Dactylis glomerata	Cocksfoot
RC	*Echium plantagineum*	Paterson's Curse
	Ehrharta longiflora	Annual Veldt-grass
	Erodium botrys	Big Heron's-bill
	Erodium moschatum	Musky Heron's-bill
	Festuca arundinacea	Tall Fescue
	Fraxinus angustifolia	Desert Ash
	Fumaria bastardii	Bastard's Fumitory
	Fumaria capreolata	White Fumitory
	Galenia pubescens	Galenia
	Galium aparine	Cleavers
RC	*Genista monspessulana*	Montpellier Broom
	Helminthotheca echioides	Ox-tongue
	Hirschfeldia incana	Buchan Weed
	Hypochaeris radicata	Flatweed
	Lysimachia arvensis	Scarlet Pimpernel
	Medicago polymorpha	Burr Medic
RR	*Nassella neesiana*	Chilean Needle-grass
RC	*Nassella trichotoma*	Serrated Tussock
RR	*Oxalis pes-caprae*	Soursob
	Paspalum dilatatum	Paspalum
	Phalaris aquatica	Toowoomba Canary-grass
	Plantago lanceolata	Ribwort
	Prunus cerasifera	Purple-leaf Cherry-plum
	Romulea minutiflora	Small-flower Onion-grass
	Romulea rosea	Onion Grass
RC	*Rosa rubiginosa*	Sweet Briar
RC	*Rubus anglocandicans*	Common Blackberry
RC	*Ulex europaeus*	Gorse
	Verbascum virgatum	Twiggy Mullein
	Vicia sativa	Common Vetch

A1.2 Additional flora species suitable for use in revegetation works within the La Trobe University MFL offset site (not an exhaustive list)

Legend

LS	Large Shrub	MS	Medium Shrub
PS	Prostrate Shrub	MH	Medium Herb
SH	Small Herb	SC	Scrambler climber
LTG	Large Tufted Graminoid	MTG	Medium Tufted Graminoid
MNG	Medium Non-tufted Graminoid		

Status	Scientific Name	Common Name	Lifeform
	Acacia dealbata	Silver Wattle	LS
P	*Cassinia longifolia*	Shiny Cassinia	MS
	Pimelea humilis	Common Rice-flower	SS
P	*Acrotriche serrulata*	Honey-pots	PS
	Bossiaea prostrata	Creeping Bossiaea	MH
	Brunonia australis	Blue Pincushion	MH
	Bulbine bulbosa	Bulbine Lily	MH
	Burchardia umbellata	Milkmaids	MH
	Drosera peltata	Pale Sundew	MH
	Eryngium ovinum	Blue Devil	MH
	Geranium gardneri	Rough Crane's-bill	MH
	Geranium retrorsum	Grassland Crane's-bill	MH
	Geranium sp. 2	Variable Crane's-bill	MH
	Gonocarpus tetragynus	Common Raspwort	MH
	Haloragis heterophylla	Varied Raspwort	MH
P	*Leptorhynchos squamatus*	Scaly Buttons	MH
	Lythrum hyssopifolia	Small Loosestrife	MH
	Opercularia ovata	Broad-leaf Stinkweed	MH
	Oxalis perennans	Grassland Wood-sorrel	MH
	Plantago varia	Variable Plantain	MH
	Rumex brownii	Slender Dock	MH
P	*Senecio glomeratus*	Annual Fireweed	MH
P	*Senecio odoratus*	Scented Groundsel	MH
P	*Senecio quadridentatus*	Cotton Fireweed	MH
	Stellaria pungens	Prickly Starwort	MH
P	*Thelymitra peniculata*	Trim Sun-orchid	MH
	Tricoryne elatior	Yellow Rush-lily	MH
	Veronica gracilis	Slender Speedwell	MH
	Wahlenbergia spp.	Bluebell	MH
	Crassula sieberiana	Sieber Crassula	SH
	Dichondra repens	Kidney-weed	SH
P	*Euchiton japonicus*	Creeping Cudweed	SH
	Hydrocotyle laxiflora	Stinking Pennywort	SH

Status	Scientific Name	Common Name	Lifeform
	Hypericum gramineum	Small St John's Wort	SH
	Lobelia pedunculata s.s.	Matted Pratia	SH
P	*Solenogyne dominii*	Smooth Solenogyne	SH
P	*Solenogyne gunnii*	Hairy Solenogyne	SH
k	*Clematis decipiens*	Slender Clematis	SC
	Eleocharis acuta	Common Spike-sedge	MNG
	Eleocharis pusilla	Small Spike-sedge	MNG
	Austrostipa mollis	Supple Spear-grass	MTG
	Austrostipa pubinodis	Tall Spear-grass	MTG
	Luzula meridionalis var. *densiflora*	Common Woodrush	MTG
	Poa rodwayi	Velvet Tussock-grass	MTG
	Poa sieberiana	Grey Tussock-grass	MTG
	Rytidosperma caespitosa	Common Wallaby Grass	MTG
	Rytidosperma carphoides	Short Wallaby Grass	MTG
	Rytidosperma eriantha	Hill Wallaby Grass	MTG
	Schoenus apogon	Common Bog-sedge	MTG

Appendix 2

A2.1 DAWE EMP Guidelines Risk Framework

Risk Framework

		Consequence				
		Minor	**Moderate**	**High**	**Major**	**Critical**
Likelihood	**Highly Likely**	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

Likelihood

Qualitative measure of likelihood (how likely is it that this event/circumstances will occur after management actions have been put in place/are being implemented	
Highly Likely	Is expected to occur in most circumstances
Likely	Will probably occur during the life of the project
Possible	Might occur during the life of the project
Unlikely	Could occur but considered unlikely
Rare	May occur in exceptional circumstances

Consequence

Qualitative measure of consequences (what will be the consequence / result if the issue does occur)	
Minor	Minor incident of environmental damage that can be reversed
Moderate	Isolated but substantial instances of environmental damage that could be reversed with intensive efforts
High	Substantial instances of environmental damage that could be reversed with intensive effort
Major	Major loss of environmental amenity and real danger of continuing
Critical	Severe widespread loss of environmental amenity and irrecoverable environmental damage

Appendix 3

A3.1 Glossary

This appendix contains definitions of technical terms used in this OMP.
Items marked with an asterisk (*) are cited from DELWP (2007b)

Benchmark*

A standard vegetation –quality reference point, dependent on vegetation type, which is applied in Habitat hectare assessments. Represents the average characteristics of a mature and apparently long undisturbed state of the same vegetation type.

Biodiversity*

The variety of all life forms, the different plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part.

Bioregion*

Biogeographic areas that capture the patterns of ecological characteristics in the landscape or seascape, providing a natural framework for recognising and responding to biodiversity values. A landscape based approach to classifying the land surface using a range of environmental attributes such as climate, geomorphology, lithology and vegetation.

BushBroker

A program coordinated by DELWP to match parties that require native vegetation offsets with third party suppliers of native vegetation offsets.

Canopy Tree

Defined in the Habitat Hectare (DSE 2004) vegetation quality assessment method, as a mature tree that is greater than three metres in height, and is normally found in the upper layer of the relevant vegetation type.

DBH (Diameter at Breast Height)*

The diameter of the main trunk of a tree measured 1.3 m above ground level.

Ecological vegetation class (EVC)*

A native vegetation type classified on the basis of a combination of its floristic, life form, environmental and ecological characteristics.

EPBC Act

Environmental Protection and Biodiversity Conservation Act 1999

Habitat hectares*

Combined measure of condition and extent of native vegetation. This measure is obtained by multiplying the site's condition score (measured between 0 and 1) with the area of the site (in hectares).

Habitat score*

The score assigned to a habitat zone that indicates the quality of the vegetation relative to the ecological vegetation class benchmark – sum of the site condition score and landscape context score, usually expressed as a percentage or on a scale of 0 to 1.

Habitat zone*

A discrete area of native vegetation consisting of a single vegetation type (EVC) within an assumed similar quality. This is the base spatial unit for conducting a Habitat hectare assessment. Separate *Vegetation Quality Assessments* (or Habitat hectare assessments) are conducted for each habitat zone within the designated assessment area.

Improvement gain*

This is gain resulting from management commitments beyond existing obligations under legislation to improve the current vegetation quality. Achieving improvement gain is predicated on maintenance commitments being already in place. For example, control of any threats such as grazing that could otherwise damage the native vegetation must already be agreed.

Indigenous vegetation*

The type of native vegetation that would have normally been expected to occur on the site prior to European settlement.

Offset*

Protection and management (including revegetation) of native vegetation at a site to generate a gain in the contribution that native vegetation makes to Victoria's biodiversity. An offset is used to compensate for the loss to Victoria's biodiversity from the removal of native vegetation.

Offset Management Plan (OMP)

A document which sets out the requirements for establishment, protection and management of an offset site.

Medium Shrub

A shrub life-form used in the Habitat Hectare (DSE 2004) vegetation quality assessment method. The life-form includes shrubs between 1 and 5 m high.

Revegetation*

Establishment of native vegetation to a minimum standard in formerly cleared areas, outside of a remnant patch.

Scattered tree*

An indigenous canopy tree that does not form part of a remnant patch of native vegetation (see definition of remnant patch of native vegetation).

Site

An area of land that contains contiguous patches of native vegetation or scattered trees, within the same ownership.

Recruitment*

The production of new generations of plants, either by allowing natural ecological processes to occur (regeneration etc.), by facilitating such processes such as regeneration to occur, or by actively revegetating (replanting, reseeding). See Revegetation.

Remnant vegetation*

Native vegetation that is established or has regenerated on a largely natural landform. The species present are those normally expected in that vegetation community. Largely natural landforms may have been subject to some past surface disturbance such as some clearing or cultivation (or even the activities of the nineteenth century gold rushes) but do not include man-made structures such as dam walls and quarry floors.

Understorey*

Understorey is all vegetation other than mature canopy trees – includes immature trees, shrubs, grasses, herbs, mosses, lichens and soil crust. It does not include dead plant material that is not attached to a living plant. More information on understorey life forms is set out in the Vegetation Quality Assessment Manual (DSE 2004).

Victoria Planning Provisions

A list of planning provisions that provides a standard template for individual planning schemes.

Appendix 4 Outputs from EPBC Act Offset Calculator

Offsets Assessment Guide

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

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Matted Flax-lily
EPBC Act status	Endangered
Annual probability of extinction Based on IUCN category definitions	**1.2%**

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

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	MFL habitat	**Area**	1.3	Hectares	Habitat hassessment
			Quality	**5**	Scale 0-10	
			Total quantum of impact	0.65	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	Yes	plants	23		Count	Biosis report

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	0.65	Adjusted hectares	2.63	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	2.63	**Risk of loss (%) without offset**	10%	**Risk of loss (%) with offset**	1%								
									Future area without offset (adjusted hectares)	2.4	**Future area with offset (adjusted hectares)**	2.6	0.24	90%	0.21	0.17	0.65	100.17%	Yes	
					Time until ecological benefit	10	**Start quality (scale of 0-10)**	**3**	**Future quality without offset (scale of 0-10)**	**2**	**Future quality with offset (scale of 0-10)**	**5**	3.00	90%	2.70	2.40				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No			92	10		3		2		5			90%						
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	Yes	23	Count	Target survival: 63 (3/4 clones from at least 90% of original plants)	10		1		1		63		62	90%	55.80	49.53	215.33%	Yes		

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	23	49.53	215.33%	**Yes**	$0.00	N/A	$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	0.65	0.65	100.17%	**Yes**	$0.00	N/A	$0.00
Area of community	0				$0.00		$0.00
					$0.00	**$0.00**	**$0.00**

Appendix 5 Matted Flax-lily Salvage and Translocation Plan (Biosis 2020c)

La Trobe University Sports Precinct Stage 3: EPBC Act Matted Flax-lily Salvage & Translocation Plan (EPBC 2018/8343)

Final Plan
Prepared for La Trobe University
25 September 2020

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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

1. Introduction

1.1 Project background

Biosis Pty Ltd was commissioned by La Trobe University to prepare a Translocation Plan for 23 Matted Flax-lilies (MFL) *Dianella amoena* impacted by the planned development of Stage 3 Sporting Precinct at the La Trobe Bundoora campus in Victoria as outlined in the referral 2018/8343 issued under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This report will form part of the Preliminary Documentation to address Matters of National Environmental Significance (MNES) potentially impacted by the development of the precinct.

The location of the development site is shown in Figure 1.

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 MFL within 1.26 hectares of suitable habitat (Figure 2). An offset area has been identified, which will also serve as the recipient site for the translocated MFL.

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

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

1.1.1 On-site native grassland reserve

An offset site has been identified to compensate for losses associated with the development of the precinct, as detailed in La Trobe University Sports Precinct Stage 3: EPBC Act Offset Management Plan (EPBC 2018/8343) (Biosis 2020). Biosis (2020) identifies the condition and extent of native vegetation, including areas of the ecological vegetation class (EVC) Plains Grassy Woodland (EVC 55) and habitat for MFL to be both impacted and protected in association with the proposed development (Figures 2 and 4). Biosis (2019b) was used, in conjunction with the EPBC Act offsets policy, to identify the extent of MFL habitat to be protected outside the project area. This site has also been identified as the recipient site for the translocation of the 23 MFL to be impacted by the Stage 3 development.

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 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).

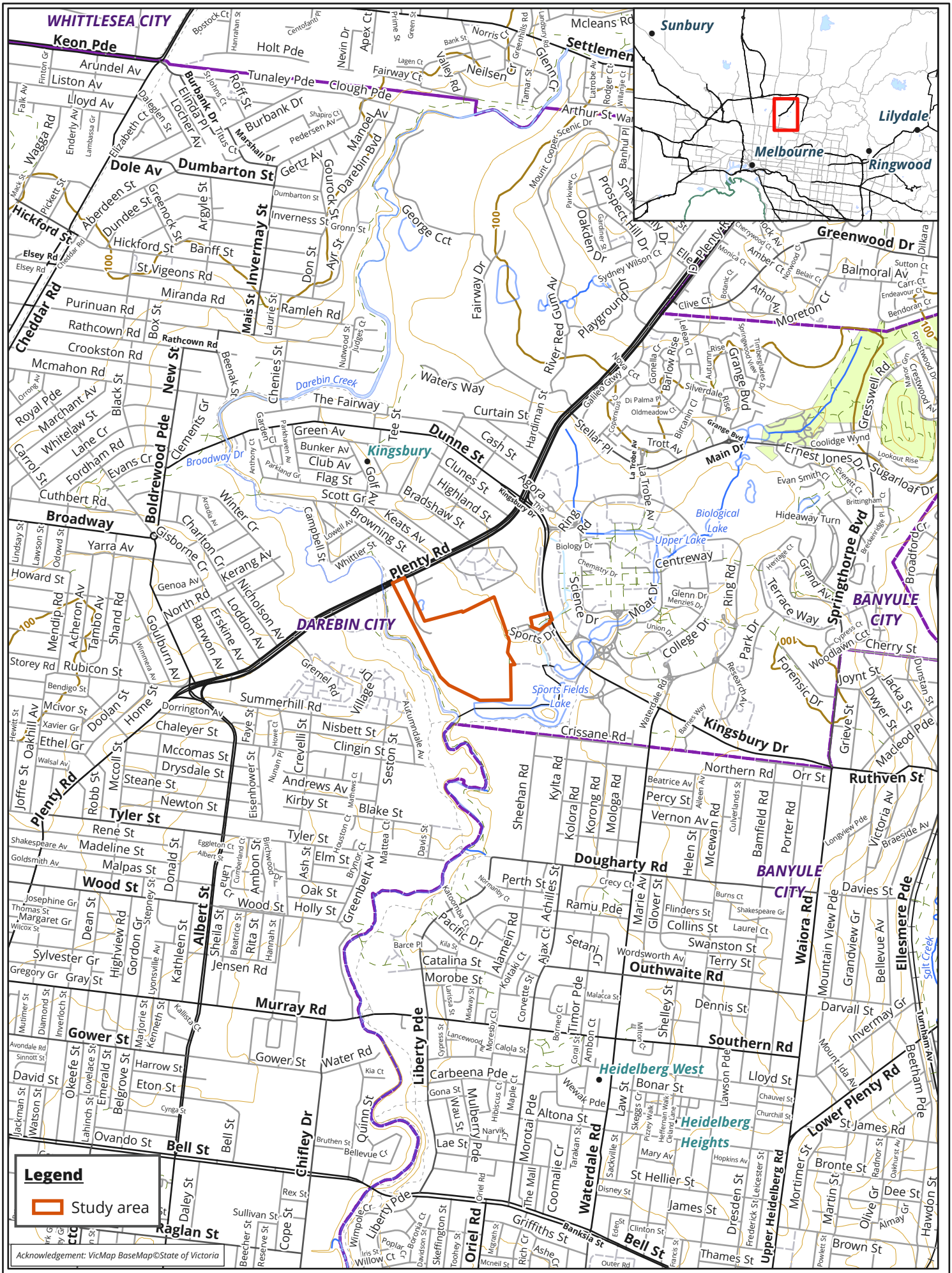

Figure 1 Location of the Study Area - La Trobe University, Bundoora, Victoria

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Scale: 1:25,000 @ A4
Coordinate System GDA 1994 MGA Zone 55

N

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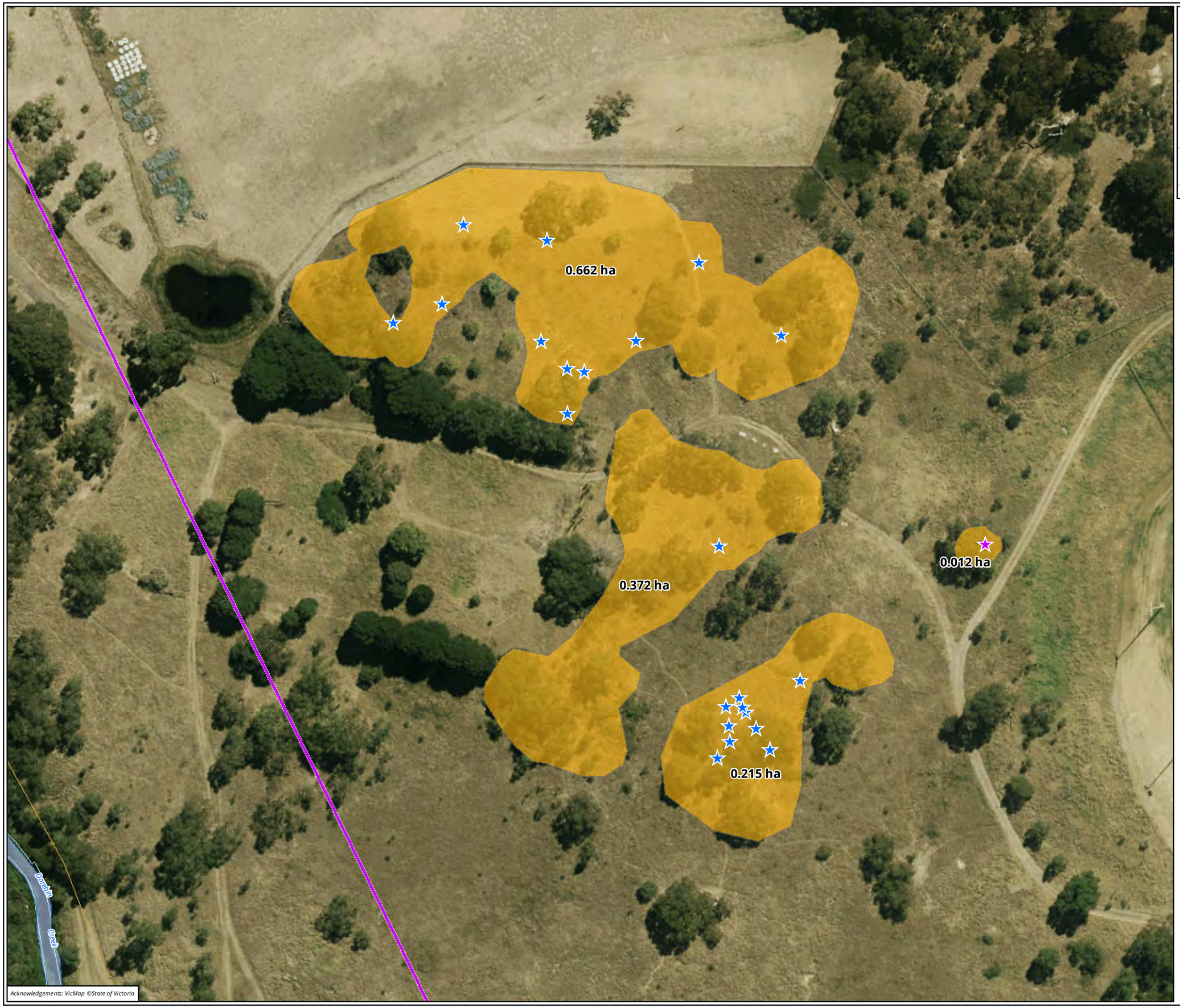

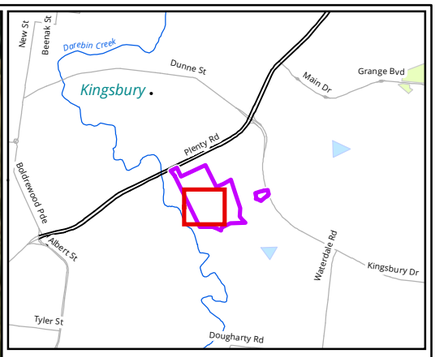

Legend

- 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

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Date: 08 January 2021,
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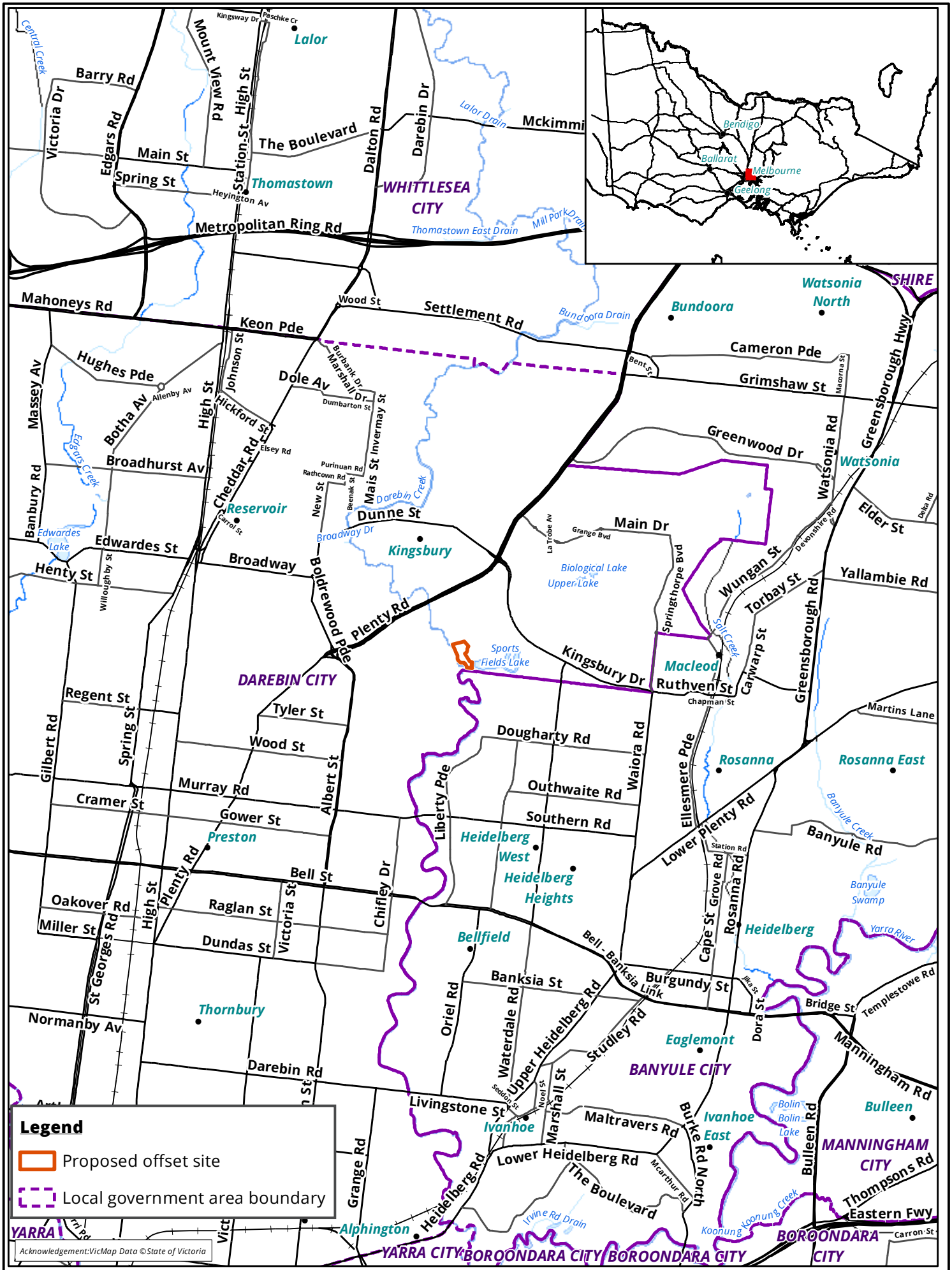

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Figure 3 Location of the La Trobe University MFL offset site, Bundoora, Victoria

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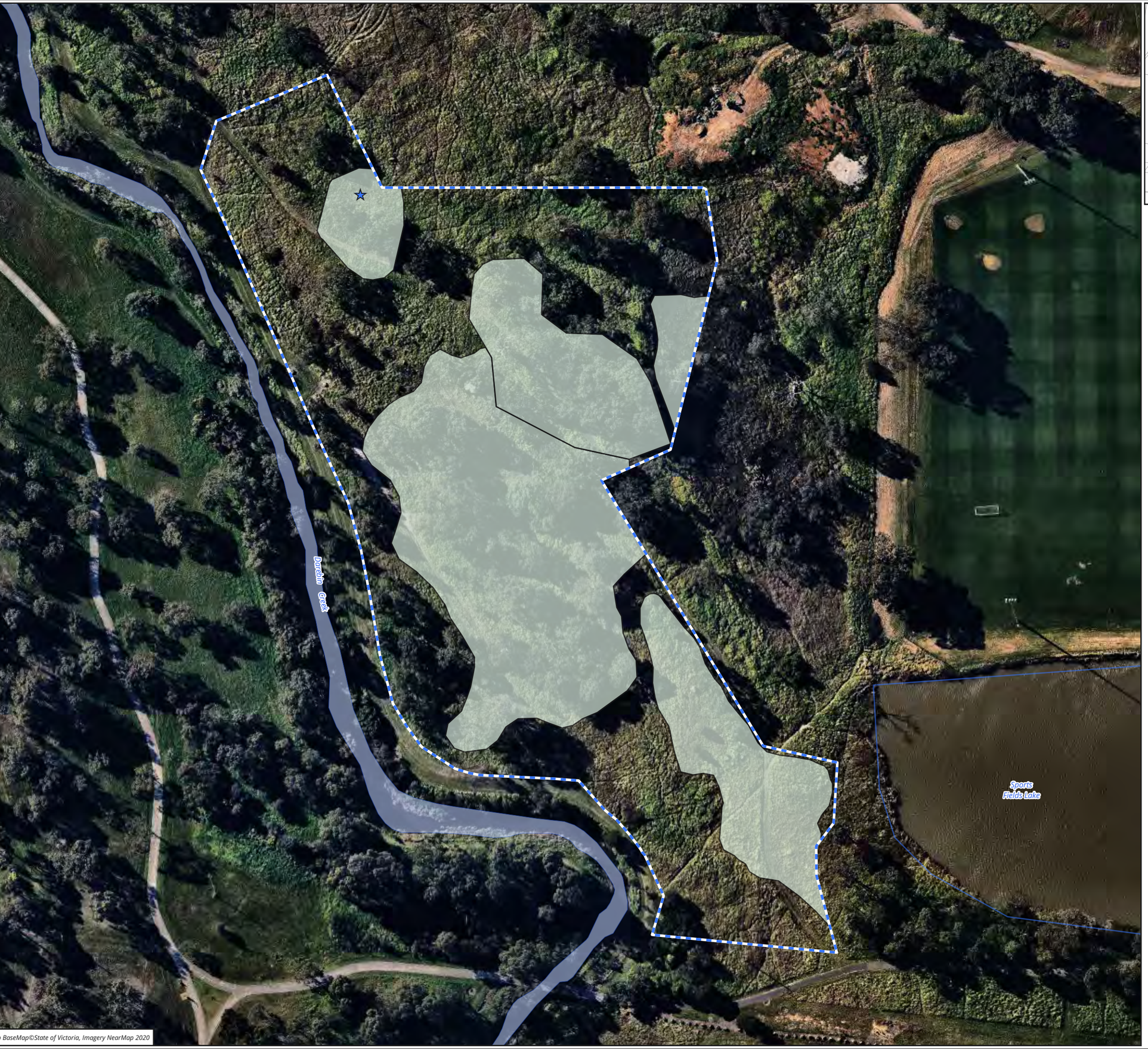

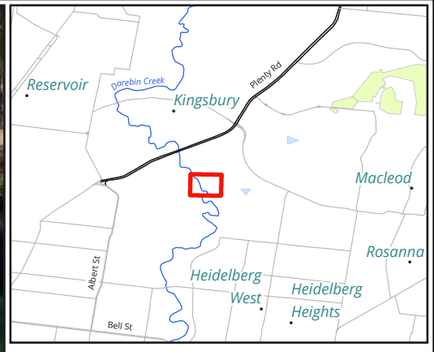

Legend

- 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

The original vegetation (as at 1750) of the local area includes the 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.

Once translocated, the salvaged MFL are required to be retained and managed as part of the native grassland reserve (Figure 2).

1.1.2 Suitability of the recipient site

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. Matted Flax-lily within the development footprint will be translocated to the offset site which will also function as the on-site native grassy woodland reserve. The entire reserve is currently considered to support suitable habitat for the translocation of the MFL, with some areas which correspond to Plains Grassy Woodland supporting higher condition habitat.

To improve the condition of MFL habitat within the recipient site, substantial management and maintenance will be undertaken by La Trobe in line with the Offset Management Plan (Biosis 2020). In order to create more manageable habitat for the translocated MFL, the following management actions will be implemented by La Trobe prior to planting and extend over 10 years of management:

- Retain and manage all native vegetation as directed by the offset management plan;
- Retain all fallen timber and branches;
- Exclude development and earthworks of any kind;
- Exclude the application of any infrastructure easement(s);
- 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 as 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.

Given there is an existing MFL record within this reserve and it occupies the same land form from which plants will be salvaged, suitable management of the reserve as prescribed in the offset management plan is expected to create habitat which will allow MFL to establish and reproduce. The reserve is within the same Bioregion (Victorian Volcanic Plain) and supports similar terrain, soils and vegetation types as the impact area, but has not been subject to the same level of disturbance to the topsoil compared with the impact area.

Plants are proposed to be translocated from the existing area of habitat (1.26 hectares) into a slightly larger offset area (2.81 hectares) to the south of the impact area. The density of plating will be higher as each 'individual' will be planted as four clones. This is done to increase the chances of establishment for each separate plant and also acts to provide a short term (minimum five year) increase in the density of occurrence as plants find a natural balance within the offset site over time. Over time the artificially higher density of MFL will be able to balance out within the managed environment of the offset site.

The reserve area is the product of a decision under the EPBC Act and is subject to audit under this act. The reserve also functions as an offset site prescribed under the EPBC Act and will be protected and managed as a Conservation Reserve encumbered with a Trust for Nature covenant or equivalent and owned by La Trobe University in perpetuity.

1.2 Summary of the translocation proposal

Details of the translocation proposal are provided in this plan, however key points are summarised below:

- Material from all 23 plants salvaged from the proposed development footprint will be replanted within the on-site native grassy woodland reserve. Salvaged material will be used to establish six clones propagated from each plant (138 tube-stock plants). This material will be held in an approved nursery.
- From this material, four clones (tubes) sourced from each of the original 23 plants will be planted in pairs into selected areas of the reserve in an attempt to establish three clones from each plant. For each plant two clones will be retained in a nursery as a safety net to replace any translocated clones which die.

- Where a clone from the nursery safety net is used to replace plants within a reserve, the remaining nursery plant will be divided to maintain the safety net of two clones per plant.
- The establishment of three clones from each plant using the salvaged material will be taken as the successful translocation of that individual. An individual clone will be considered established if the planted material survives within the planting area for a period of five years.
- The translocation program will be considered completed when three clones have been established from 21 of the 23 salvaged plants (i.e. 90% of the salvaged population). Monitoring of these plants will be incorporated into an annual MFL monitoring program conducted within the native grassy woodland reserve after they have been established for two years.
- Once the translocation plan has been considered successful the nursery clones will be given to La Trobe University for use at their discretion (i.e. used as landscape plantings).

1.3 Timeframe

The translocation program will commence prior to any development works occurring, including any physical soil disturbance. The translocation program will follow the timeline outlined in Table 1. Preparation of the proposed recipient sites within the selected conservation reserve will also begin as soon as plants have been salvaged, with the selection of specific localities and initial weed control.

The required 138 plants (six clones of each of the 23 plants) will be held at the approved nursery until required for planting. Once the translocation plan reaches the defined success rate (survival of three clones for 90% of salvaged individuals for five years after planting) then the nursery plants will be provided to La Trobe University for use at their discretion. Excess plants that have been transferred to other projects will no longer be the responsibility of the project proponent.

Table 1 Summary of actions and timing

Step	Timing	Action
1	September of the year of salvage	Preparation of recipient site commences.
2	Autumn of the year after salvage	Initial preparation of Conservation Reserve recipient sites completed.
3	Autumn - Winter of the year after salvage (at or when soil moisture conditions are appropriate)	Planting of salvaged plants into Conservation Reserve identified within the offset management plan for La Trobe Stage 3 Sports Precinct (Figure 4). Suggest the installation of a watering system.
4	4 weeks following planting (i.e. 1st month)	Ongoing weed control, weekly monitoring and other management actions as specified to continue in Conservation Reserves. Water plants as required. Replace any clones that die.
5	From 2nd month to 12 months following planting (Year 1)	Monthly monitoring of translocated plants in Conservation Reserve. Water plants as required and increase the frequency of monitoring if considered necessary. Replace any clones that die.
6	Second year following planting (Year 2)	Monitoring every two months of translocated plants in Conservation Reserve. Monitoring of plants established for two years will be incorporated into an annual MFL monitoring program conducted within the Conservation Reserve. If at the end of April five years after planting three clones from 21 of the 23 original planted clones have survived, then the translocation program is considered successful and this translocation plan will be considered complete except for annual monitoring under the annual reserve monitoring program. If more than one clone from any individual has died then monitoring of replanted individuals needs to return to Step 5 until the survival requirement for three clones from each of 21 plants is achieved.

Step	Timing	Action
7	November / December each year from two years after a clone has been planted.	Include translocated plants into the annual monitoring program conducted within the on-site grassy woodland Conservation Reserve. Submit annual report to DAWE on the outcomes of the translocation plan.
8	**June Five years post planting***	**Submit final report to DAWE on the outcomes of the translocation plan with recommendations.**

* Another report may be required after this if it takes longer to establish 3 clones from 90% of the original 23 plants.

2. Translocation requirements

This Translocation Plan must be approved by the Australian Government Minister for the Environment prior to its implementation.

The translocation process must be consistent with the details outlined by this plan. These requirements include:

- The site needs to be managed on an ongoing basis to maintain the populations indefinitely.
- Long term management arrangements need to be identified.
- Grazing by domestic stock should be excluded.
- The reserve should be fenced for protection.
- Weed control is a requirement for site preparation and is also an ongoing management requirement.
- Plants must be monitored to ensure their establishment.

The translocation sites selected within the on-site Conservation Reserve, the associated management protocols defined within this plan and the on-site Offset Management Plan (Biosis 2020 and any approved revisions) satisfy all of these requirements.

3. Translocation proposal

The successful translocation of the plants salvaged from the development footprint at Stage 3 of the Sports Precinct at La Trobe University Bundoora will be achieved as follows:

3.1 Sound and detailed translocation planning

Details of the translocation plan are provided in Section 4.

3.2 Commitment and expertise

Biosis Pty. Ltd. (or an equivalent consultant) will provide ecological expertise to the translocation project from the initial planning stages through to ongoing monitoring and site management. All work will be undertaken by qualified ecologists, supervised by senior staff with previous experience in translocation and vegetation management.

Biosis has designed and supervised a number of projects for translocation and management of threatened flora besides Matted Flax-lily at La Trobe Bundoora. These projects include:

- Salvage of Matted Flax-lily, re-establishment of clones, and ongoing management and monitoring at Reserves 12 & 13 of the Places Victoria Aurora residential subdivision, Epping.
- Salvage of Matted Flax-lily, re-establishment of propagules, and ongoing management and monitoring at Larundel Grassland reserve, Bundoora (Mueck and Brown 2005).
- Salvage, direct translocation and ongoing management of Matted Flax-lily at South Morang Flora and Fauna Reserve, South Morang (Yugovic 2006).
- Machine salvage and direct translocation of Spiny Rice-flower at the former Laverton RAAF Base, Laverton (Mueck 2000).

The on-ground aspects of the project will be undertaken by indigenous vegetation management specialists and include ecological burning, weed control and the control of pest animals.

3.3 Funding

La Trobe University Bundoora will be committed to establishing the on-site grassy woodland Conservation Reserve (Figure 4). This reserve will be fenced to exclude stock and will be managed intensively according to the approved on-site offset management plan (Biosis 2020). The University will also be responsible for the provision of adequate funding to complete high quality management works within the schedule identified by this translocation plan and the on-site grassland offset management plan (Biosis 2020).

Funding arrangements for the management of the plants in accordance with this plan will be provided by the University. Management responsibility may be transferred to another party (i.e. a qualified bushland manager) subject to negotiation to provide for the provision of adequate funding to implement this plan. Once a funding agreement has been negotiated and agreed, the person/organisation accepting management responsibility will be responsible for the planting, management, survival and monitoring of the 138 Matted Flax-lily clones.

3.4 Removal and ongoing control of threatening processes

The most immediate threats to the viability of the recipient sites are as follows:

- Weed invasion, particularly by woody weeds such as Sugar Gums *Eucalyptus cladocalyx*, Spotted Gums *Corymbia maculate*, Blackberry *Rubus anglocandicans*, Sweet Briar *Rosa rubiginosa*, and Sifton Bush *Cassinia sifton.*
- Weed invasion by introduced herbs and graminoids such as Chilean Needle Grass *Nassella neesiana*, Spear Thistle *Cirsium vulgare*, Serrated Tussock *Nassella trichotoma* and Toowoomba Canary-grass *Phalaris aquatica*.
- Grazing by introduced pest herbivores such as rabbits and hares.

The requirements for management of the Conservation Reserve are detailed in Biosis (2020) and summarised in Section 4. This active ecological management will continue to be undertaken by experienced native vegetation management contractors and monitored by an experienced grassland ecologist.

Management actions include fencing of the reserve, installation of gates and weed control. 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.

Management of the Conservation Reserve is an ongoing and permanent requirement.

3.5 Timing

This translocation plan will apply until three clones from each of 21 of the 23 salvaged plants have become established (i.e. 90% success). Establishment for each clone is defined as the survival of that clone for a period of five years. However management of the conservation reserve and the salvaged plants will continue in perpetuity, albeit at a lesser intensity. After plants are established, management will comprise periodic biomass reduction as required, pest plant and animal control and maintenance of fencing and gates. Once established the translocated plants will be incorporated into an annual MFL monitoring program conducted within the on-site Conservation Reserve.

4. Translocation process

4.1 Introduction

Matted Flax-lily is a tufted, mat-forming perennial lily, which spreads vegetatively by underground rhizomes. The species is fully described in Carr and Horsfall (1995). Each plant consists of sparse to dense tufts of leaves which are narrow, 4-12 mm wide (Carr and Horsfall 1995), blue-green in colour, and usually have small 'teeth' on the upper edges and mid-rib. The leaf tufts may be widely spaced along the rhizome (up to 30 cm), making it difficult to accurately determine the number of individual plants within an area. Matted Flax-lily flowers during late spring – summer. The flowering inflorescence is a spreading panicle, often 50 - 60 cm in height, with scented pale mauve to blue flowers. Blue fleshy berries containing the seeds are produced after flowering.

The species is known from grassland and grassy woodland in Victoria, and there are historic records from Tasmania where the species may still occur (Carr and Horsfall 1995). There are believed to be approximately 1,400 plants remaining in 120 separate populations (Carter unpublished). This is likely to underestimate the actual total population, as additional populations continue to be recorded as further survey is conducted in areas of suitable habitat on the urban fringe of Melbourne.

A national recovery plan for the species has been prepared (Carter 2010).

Carr and Horsfall (1995) note that recruitment for MFL is believed to be non-existent. Populations are clearly fragments of much larger populations that have persisted in highly degraded vegetation. Seedlings have not been seen in the wild (Carr pers. comm. in Carter unpublished). Buzz pollination by native bee species is required for seed production, hence the habitat requirements for these species is important. The species is self-compatible.

Matted Flax-lily is readily propagated by division and seed, although it may be difficult to collect large quantities of seed as the berries are often sparse and drop quickly once ripe. The plants proposed to be salvaged from the University will be divided to form many new plants after plants are established and grown in a nursery.

4.2 Recipient site

The offset site located directly south of the impact area has been identified as the recipient site.

Areas selected for planting within the reserve will be subject to intensive weed control works. These areas will be managed with an objective of removing all introduced plant species within one metre of each planted clone. Weed control works will commence as soon as possible prior to planting, with the objective of planting the MFL in April.

Recipient areas will be identified by a qualified botanist. Within these areas, particular planting sites will be identified and marked on-ground by that botanist. These will be located to avoid disturbance to any *in situ* MFL plants.

4.3 Translocation stages

The following stages and issues in translocation are discussed below:

- Preparation of nursery clones
- Site preparation
- Replanting
- Management

- Monitoring
- Performance targets
- Reporting

4.3.1 Preparation of nursery clones

Direct translocation into the reserve is not proposed, given the need to prepare the recipient sites and the potential for re-introduction of weeds in the salvaged material to those sites. Plants will be held in a suitable nursery for maintenance and growing on until planting conditions are suitable.

A minimum of six clones is required for each plant. Of these six, four will be planted out to contribute to the wild population and two will be held in the nursery as a security measure.

The nursery holding the plants required for this translocation will be responsible for maintaining the security of plants as long as required. The total length of time for holding plants will be determined by the time taken to identify and prepare all recipient sites and for the plants to become established. Once the plan is deemed successful the excess nursery plants will no longer be required. Any additional plants remaining after the translocation plan has been completed will be provided to La Trobe University for use at their discretion.

Detailed actions are as follows:

- Plants will be hardened off before planting into the Conservation Reserve.
- Four clones from each original salvaged plant will be planted into the offset reserve with the aim of incorporating these plants into the wild population.

4.3.2 Site preparation

Suitable recipient sites within the on-site reserve will be identified by a botanist. Preparation of these areas will begin no later than September in any year before the translocation occurs. Each site will be large enough to allow a group of plants to be replanted, for ease of monitoring and ongoing management and to provide for potential cross-pollination. Sites will be selected such that access for planting, management and monitoring is possible without trafficking more intact sections of the reserve. The sites will be marked with star pickets or similar to allow translocated plants to be easily monitored and protected during management works.

Weed control in the planting areas will be satisfactorily completed before plants are installed. The cover of perennial weeds within a minimum one metre radius of each planting site will have a cover of <1% or include less than 10 individuals of any weed species.

4.3.3 Replanting

1. Replanting of MFL will occur during the cooler months (autumn to winter). Planting sites will be accessed with minimal disturbance to the reserve from vehicles and equipment.
2. The minimum spacing between plants and the reserve boundary will be 5 metres, to allow for vegetative expansion.
3. At each recipient site, the planting hole will be dug by hand with minimal disturbance to the surrounding soil, and any excess excavated soil will be removed from the reserve. Watering of the planting hole is recommended before planting.
4. Each plant will be planted with the final soil level approximately equal or slightly lower than the natural surface and will be thoroughly watered.
5. Each plant will be labelled (with a durable metal label) and numbered for record keeping and monitoring purposes.
6. The location of the recipient site will be recorded using GPS and the data transferred onto the reserve map.

Additional relevant data will be recorded including the name of the person undertaking the work, date, time of day and prevailing climatic and other conditions (e.g. temperature, recent rainfall, frosts, fires, natural soil moisture and any other features that might affect the survival of the plant).

4.3.4 Management and monitoring

Reserve management actions and issues are described by this plan and Biosis (2020). Monitoring and specific management guidelines are as follows:

1. The planted MFL plants will be inspected weekly for at least the first month (as determined by the supervising botanist), then monthly for a total of one year and then every two months for two years post planting. This will allow for prompt management actions as necessary to maximise the chance of survival. Records of inspections will be kept and include descriptions of the condition of the plants, and will include inspections of the naturally occurring plants for comparison. Translocated plants will be photographed every six months for two years and then annually until plants are considered established.
2. Watering may be required periodically during the first summer, as determined by monitoring. If the plants are deemed to be declining in health due to moisture stress, hand watering will be organised promptly. Additional monitoring may be required if watering is required over a prolonged period. Records of watering events will be kept.
3. Vegetation competition (native or exotic) will be controlled for a minimum of one metre around each plant.
4. Weed control works will be conducted throughout the receptor site to facilitate the establishment of a native vegetation community.
5. Any competing vegetation will be regularly controlled using appropriate techniques. These may include hand weeding, brush-cutting or careful application of selective herbicide. Removal of weeds may require action each month during the spring growing season.
6. Any other threats, such as grazing by rabbits or kangaroos, will be monitored and managed as required. Any control activities undertaken will be recorded.
7. Any decline in the population will be reported to DAWE within two months with an explanation of the remedial management actions planned and taken.
8. In addition to the regular inspections to assess management requirements, the plant survival and growth will be assessed annually at the same time each year (between 1 October and 1 March) up until plants are considered established. The dimensions of each patch and number of leaf tufts will be recorded (photos are suitable for this task), and production of flowering stems noted. Observations of seed set, germination of MFL plants and the fate of seedlings will be recorded.
9. Any dead plants will be promptly replaced from the nursery with clones from the same parent plant. The nursery plant will also be replaced as back up.
10. Plants are considered established and independent after surviving for five years.
11. Once three clones from at least 21 of the original 23 plants are considered established then this translocation plan will no longer apply to any clones of that plant and the plant will be managed in line with the ongoing La Trobe University Sports Precinct Stage 3: EPBC Act Offset Management Plan (EPBC 2018/8343) and be incorporated into the annual MFL monitoring program conducted within the reserve.
12. Replaced plants will be monitored until three clones from that plant are considered established.

4.3.5 Performance targets

The over-riding objective of this translocation plan is the long term conservation of genetic material from the salvaged population and a long-term increase in the local population of the species. Based

on previous translocation exercises associated with this species, it is anticipated that the great majority of plants will be able to successfully establish within the recipient site within the nominated establishment period.

The translocation program will be deemed a success if it meets the following criteria:

1. Three out of four planted clones from 21 of the 23 salvaged plants become established. A clone is established when it has survived after planting out for a period of five years.
2. Weed cover within one metre of each planted clone is maintained at an acceptable level, such that competition from weeds does not reduce the potential expansion of each transplanted MFL and other native ground flora increase in cover.
3. The success of the translocation project has been regularly reviewed and management adjusted as required to maintain the health of plants.

In the unlikely event the criteria for success have not been met within 10 years from the date of approval of this plan then the University will provide the DAWE with an assessment of the translocation program that examines the reasons why the program was unable to meet its performance targets. This assessment will be provided to DAWE within 10 years and 6 months from the date of approval of this plan.

4.3.6 Reporting

The results of the translocation process and ongoing monitoring will be reported to the relevant authorities (DAWE and DELWP) by La Trobe University Bundoora (or subsequent authority on behalf of the University) on an annual basis. The final report will include an evaluation of the success of the program, methods used and recommendations for future programs. The report will also provide recommendations for the ongoing management of the MFL plants at each of the recipient sites. If plants are successfully established after two years, the final report for this project will be provided three years after this time.

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Appendix 6 Conservation Management Plan (Biosis 2020b)

La Trobe University Sports Park Precinct Stage 3

Conservation Management Plan

Prepared for La Trobe University

15 July 2020

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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

1. Introduction

1.1 Introduction

Biosis was commissioned by La Trobe University to prepare a Conservation Management Plan (CMP) to support for the development of the La Trobe University Sports Precinct Stage 3 (the project) at 906 Plenty Road Bundoora Victoria.

This document has been prepared in accordance with the Preliminary Documentation assessment method under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as described in the letter from Australian Department of Agriculture, Water and the Environment (DAWE) dated 28 June 2019. This letter was in response to the referral EPBC 2018/8343 (the referral) for the project being determined a controlled action under the EPBC Act.

This CMP details what measures will be taken to avoid, minimise and manage the impacts of the proposed use and development on the natural environment. This CMP includes clear commitments, which are to be taken to ensure that the effects of the project are environmentally acceptable.

1.2 Site location

The project is located at 906 Plenty Road, Bundoora, Victoria (site). The site is within the La Trobe University Bundoora campus and is within proximity to residential housing, university buildings and other built facilities.

1.3 Project description

La Trobe University seeks to provide Melbourne's north with a regional sporting precinct with the aim to be the nations preferred University for sports teaching and research. The project will be able to support major participation sports events, regular grassroots sports competitions and active recreation opportunities for students and community members. As part of stage 3, La Trobe University seeks to develop several sports fields and pavilions and establish a new multi-directional intersection.

The works required for the project will result in the clearing of 1.608 hectares of native vegetation (impact area). Matters of National Environmental Significance (MNES) have been identified in the impact area, which include:

- Matted Flax-lily *Dianella amoena* (MFL) – Endangered
- Swift Parrot *Lathamus discolor* (SP) – Critically Endangered
- Grey-headed Flying-fox *Pteropus poliocephalus* (GFF) – Vulnerable
- Growling Grass Frog *Litoria raniformis* (GGF) – Vulnerable
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP) – Critically Endangered

An area that is 2.81 hectares, located in the south-western corner of the Bundoora campus, just west of the western end of Sports Field Lake has been identified as a suitable area for a first-party offset (offset area). The offset area is required to meet approvals requirements to offset the loss of 23 MFL. The offset area is specific to MFL and will act as the translocation recipient site for plants salvaged from the project impact area.

1.4 CMP objectives

The objectives of this CMP are to:

- Provide practical measures to avoid, minimise and manage protected matters influenced by the project to ensure the impact of the project is environmentally acceptable.
- Prevent inadvertent environmental damage or harm to fauna and flora during the construction of the project.
- Prevent off site impacts from dust, runoff or pollution.
- Ensure mitigation measures are in place to manage environmental incidents.
- Ensure compliance with environmental regulation and legislation.
- Provide measures for ongoing management of MNES after the development is complete.

1.5 Relationship to other documents

This CMP identifies environmental management measures required to be implemented over the life of the project (preplanning, construction and post construction), including establishment of the offset area. This CMP comprises part of the Preliminary Documentation used to address additional information requested by DAWE. It is to be read in conjunction with the following documents:

- *La Trobe University Sports Precinct Stage 3: flora and fauna assessment* (Biosis 2019)
- *La Trobe University Sports Precinct Stage 3: EPBC Act Offset Management Plan (EPBC 2018/8343)* (Biosis 2020a) (OMP)
- *La Trobe University Sports Precinct Stage 3: EPBC Act Matted Flax-lily Salvage & Translocation Plan (EPBC 2018/8343)* (Biosis 2020b) (MFLSTP)
- La Trobe University Sports Precinct Stage 3: *Additional information for assessment by Preliminary Documentation (EPBC 2018/8343)* (Biosis 2020c)

1.6 How to use this CMP

The CMP is presented over the following six sections (Sections 2 – 7). These sections detail the site values, the potential risks to these values and actions required to avoid or mitigate the risks. The six sections and their purpose are described below.

Section 2 – Project management

This section details aspects of the plan that relate to overall project management. This section contains the following:

- Identifies responsibilities for delivery of the CMP
- A generalised construction schedule
- Disclaimer on easements and service locations
- Relevant environmental approvals
- Requires input of details of people responsible for delivery of the CMP and the construction schedule.

Section 3 – Site environmental values

This section identifies the environmental values to be protected by the CMP.

Section 4 - Environmental aspects, management objectives and risk assessment

This section identifies the potential risks to the site values posed by the project and details the management objectives to be achieved.

Section 5 – Environmental management action plan

This section is presented as an action matrix. The environmental risks identified are detailed with associated actions to be taken to address the risk. Monitoring responses and responsibilities are also detailed.

Section 6 – Environmental management map

This section comprises an Environmental Management Map (EMM) that shows the location of required CMP features or structures such as sediment controls, location of stockpiles, and other measures to reduce the risk of detriment to the environmental values of the area.

Section 7 – Post construction site remediation

This section details requirements for post-construction site remediation.

2. Project management

Responsibility for delivery of the CMP lies with the Project Manager. The Project Manager may delegate any tasks and responsibilities as required provided the details of the delegate and their responsibilities are documented. Section 2.1 provides a table to record the details of delegates and their responsibilities.

Responsible Project Manager:

Name:	TBA
Role:	TBA
Company:	TBA
Address	TBA
Email	TBA
Telephone	TBA
Mobile	TBA

2.1 Management responsibilities

Position	Responsibilities
Project Manager:	• Implement the CMP • Monitor progress and outcomes. • Delegate tasks as required. • Deliver site inductions - Ensure all personnel (including contractor/sub-contractors) are aware of contents of the CMP and what their responsibilities are. • Be available for on-site meetings when required. • Ensure all staff and contractors comply with all CMP requirements. • Include the CMP and EMM as part of any enforceable contracts or that the CMP links with internal personnel job descriptions.
All personnel and Contractors	• Comply with CMP requirements and directions of the Project Manager. • Work according to this plan. • Work within designated impact areas only. • Report any issues or incidents to the Project Manager.

2.2 Construction Schedule

An indicative construction schedule is outlined in Table 1. The Project Manager will update the timeframe once the construction plan has been finalised.

The key items of construction will be undertaken in the following sequence. The works schedule must be updated to include dates once a construction plan has been finalised.

Table 1: Works schedule

Stage	Date/timing
Site Establishment (i.e. site facilities, temporary access tracks, survey pre-works sediment controls)	TBC
Excavation to establish construction area	TBC
Construction	TBC
Site clean-up and stabilisation	TBC

TBC – to be confirmed

2.3 Environmental approvals / permits and applicable legislation

Australian Government - *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act)

The project must not commence until the assessment proceedings of the Preliminary Documentation assessment method have concluded in accordance with the EPBC Act.

Darebin Planning Scheme - *Planning and Environment Act 1987* (PE Act)

Development and/or vegetation removal associated with the development of the project must not commence until State / local government approval has been obtained.

2.4 Enforcement

This CMP complies with Commonwealth, State and local legislative requirements. Failure to implement the CMP may result in enforcement from regulatory authorities.

2.5 Project monitoring

The Project Manager will keep records of the implementation of the CMP in line with the monitoring frameworks within the CMP. These records may take the form of an email, spreadsheet or word document or other formats that can easily be supplied to the relevant authority in the event of an audit or incident. Minimum content for such records must cover:

- Construction progress (simple notes).

Summary of activities flagged for reporting in Table 5 of the CMP at the recommended frequency. Construction works will expose soil to erosion which could potentially lead to sediment movement by water within and beyond the impact area. Sediment movement in water is a pollutant of waterways and is a serious environmental risk that must be mitigated.

Land owners and project managers have responsibilities under law to prevent erosion and sediment pollution of waterways under the Environment Protection Act 1972 & 2018 (EPA Act) and the Catchment and Land Protection Act 1994 (CaLP Act). Sediment management is required to meet requirements under the EPA State Environmental Protection Policy (Waters) Construction works will expose soil to erosion which could potentially lead to sediment movement by water within and beyond the impact area. Sediment movement in water is a pollutant of waterways and is a serious environmental risk that must be mitigated.

Land owners and project managers have responsibilities under law to prevent erosion and sediment pollution of waterways under the Environment Protection Act 1972 & 2018 (EPA Act) and the Catchment and Land Protection Act 1994 (CaLP Act). Sediment management is required to meet requirements under the EPA State Environmental Protection Policy (Waters) Construction works will expose soil to erosion which could potentially lead to sediment movement by water within and beyond the impact area. Sediment movement in water is a pollutant of waterways and is a serious environmental risk that must be mitigated.

- Land owners and project managers have responsibilities under law to prevent erosion and sediment pollution of waterways under the Environment Protection Act 1972 & 2018 (EPA Act) and the Catchment and Land Protection Act 1994 (CaLP Act). Sediment management is required to meet requirements under the EPA State Environmental Protection Policy (Waters)
- Any environmental issues encountered.
- Responses implemented to address issues encountered.
- Dated photographs of key issues and responses – or links to an archive (e.g. DropBox, Evernote).

The construction monitoring program for identified environmental risks is outlined in Table 5.

2.6 Easements and existing service locations

This plan does not provide details of any easements or utility services that may be present within the project impact area. The Project Manager is responsible for managing any impacts on easements and utility services. As a minimum, the Project Manager should:

- Obtain easement and utility service details from Land Victoria (http://www.land.vic.gov.au/) 'Dial Before You Dig' and liaise with the utility to identify permitted, controlled or prohibited activities within the easement.
- Contact the 'Dial Before You Dig' service (phone 1100 or web www.1100.com.au) to identify where all existing easements, services and infrastructure are located.
- Contact the relevant service utility, service provider or council to determine what measures need to be implemented to best protect service assets. (For Information regarding Telstra: Telstra Network Integrity Services 1800 810 443).
- Review this CMP if required. Where results of Dial Before You Dig or easement discovery require changes to this CMP, the CMP must be reviewed to incorporate any changes necessary.

3. Environmental Values

3.1 Ecological values

Significant ecological values are identified on the site. These values are documented by the report *La Trobe University Sports Precinct Stage 3: flora and fauna assessment* (Biosis 2019). The ecological values on the site are:

- 2.92 hectares of native vegetation patches
- 18 large trees (one within a patch, 17 scattered) and 122 small scattered trees, all River Red-gums *Eucalyptus camaldulensis*
- 26 patches of the ecological vegetation class (EVC) Plains Grassy Woodland (EVC 55), which has a bioregional conservation status of endangered
- 24 plants of the EPBC Act and FFG Act listed Matted Flax-lily (MFL)
- Potential habitat for EPBC Act and FFG Act listed Swift parrot (SP)
- Potential habitat for EPBC Act and FFG Act listed Grey-headed Flying-fox (GFF)
- Potential habitat for 6 other FFG Act listed fauna
- Connectivity to the Darebin Creek wildlife corridor which provides habitat the EPBC Act and FFG Act listed Growling Grass Frog (GGF)

The impact area required for the development of the project includes:

- 1.87 hectares of native vegetation patches
- 10 large trees (one within a patch and 9 scattered) and 50 small scattered trees, all River Red-gums
- 17 patches of Plains Grassy Woodland (EVC 55)
- 23 plants of the EPBC Act listed MFL (one MFL excluded from the development footprint)

The offset area and native vegetation to be retained is shown on the EMM on page 21.

Pending PE Act approvals, native vegetation removal will occur within the site to enable the development of the project. All other native vegetation that is not designated for removal in the EMM is protected and must not be impacted by the development. Areas of native vegetation to be retained, including the offset area, will be shown on all construction plans and shown as a 'No Go Area'. Retained native vegetation and the offset area, will be secured by appropriate exclusion fencing as detailed in Table 5.

Protection measures for native fauna and their habitat have been included in the EMM for this project and must be implemented in conjunction with this CMP.

Any further Matted Flax-lilies that may be discovered during construction activities will be included in the current plan, and will be subject to all relevant propagation, translocation and management activities in line with this CMP and the MFLSTP.

3.2 Water quality

The project works must comply with the State Environmental Protection Policy (Waters) (SEPP) (EPA Victoria 2018). Specifically the Project Manager must:

> *(a) ensure their activities are managed to minimise the risks to **beneficial uses**, so far as reasonably practicable, including risks from dewatering, land disturbance, soil erosion or the discharge of sediments and other pollutants to waters; and*

(b) monitor surface waters where the construction activity adjoins or crosses surface waters to assess if beneficial uses are being protected; and

(c) comply with guidelines published or approved by the Authority in relation to the construction activity.'

Environmental quality objectives and indicators are defined in the SEPP to protect 'beneficial uses'. Beneficial uses include water quality for the protection of ecological values, human consumption, agriculture and industry, recreation, spiritual values and other uses (EPA Victoria, 2018).

Impacts to surface and ground water quality must not result in changes that exceed background levels and / or the range of environmental objectives (biological, nutrient, water quality) specified for the area in which the construction activity occurs. Where background levels exceed the specified environmental objectives (Table 2), water quality must align to background levels (EPA Victoria, 2018).

The SEPP maps different areas of Victoria as 'segments' based on generalised physical characteristics that help determine background water quality. This project fall within the segment:

"Urban (Highly modified) - Lowlands of Dandenong Creek, Mornington Peninsula, Western Port catchment and tributaries of the Yarra River"

The Project Manager must ensure that direct and indirect impacts to surface water quality (e.g. runoff) do not exceed the background levels and/or water quality objectives set in the SEPP for this segment.

The background water quality variables to be achieved for water leaving the construction area in the segment **- '"Urban (Highly modified) - Lowlands of Dandenong Creek, Mornington Peninsula, Western Port catchment and tributaries of the Yarra River**

'" are:

Table 2 Water quality variables and values

Variable	Statistical level	Target value
Total phosphorus (µg/L)	75t percentile	≤110
Total nitrogen (µg/L)	75th percentile	≤1300
Dissolved oxygen (% saturation)	25th percentile	≥70
Dissolved oxygen (% saturation)	Maximum	130
Turbidity (NTU)	75th percentile	≤35
Electrical Conductivity (µS/cm@25°C)	75th percentile	≤500
pH (pH units)	25th percentile	≥6.4
pH (pH units)	75th percentile	≤7.9
Toxicants Water	% protection	90
Toxicants Sediment	N/A	Low

This CMP provides measures to ensure water quality is not impacted by the construction of the sporting and recreation facility. See Table 5, part 5

Water quality monitoring

Provided all sediment controls are in place, regularly inspected and maintained; water quality monitoring is not mandatory for this project. The Project Manager may choose to monitor water quality to check water

quality leaving the site meets SEPP requirements. Minimum variables to monitor are turbidity, pH, and salinity.

Any water physically discharged from the site must be tested and treated to ensure it complies with SEPP requirements.

4. Environmental aspects, management objectives and risk assessment

This section identifies the potential risks and their likelihood and consequence associated with the project. Likelihood in this table refers to the uncontrolled inherent risk outcome in the **absence** of implementation of CMP measures. Where recommended measures are implemented according to this CMP, the overall likelihood reduces to 'Unlikely'. This risk assessment aligns with Risk management – Principles and guidelines (AS ISO 31000:2009) (Standards Australia 2009) and Managing environment related risk (HB 203:2012). (Standards Australia 2012)

Table 3 Risk assessment matrix

Consequence / Likelihood	Rare	Unlikely	Likely	Certain
Catastrophic	Medium	Significant	Significant	Significant
Major	Medium	Significant	Significant	Significant
Moderate	Low	Medium	Significant	Significant
Minor	Low	Low	Medium	Medium

Table 4: Project Risk Assessment

Environmental factor	Environmental and heritage values / assets	Management objectives	Risk factors	Likel	Con	Ove
Matters of National Environmental Significance	The proposed development will result in permitted loss of native vegetation (PE Act & EPBC Act), including the loss of 23 Matted Flax-lilies. The proposed development will remove mature River Red Gums, including some trees with hollows. These trees could provide roosting and foraging habitat to Swift Parrot and Grey-headed Flying-fox, although are not a primary foraging tree for Swift Parrot (Debbie Saunders & Chris Tzaros 2011) The proposed impact area is adjacent to Darebin Creek, The creek provides habitat for Growling Grass Frog. Modified Grassy Eucalypt Woodland of the Victorian Volcanic Plain is present within the impact area; However it does not meet the diagnostic criteria and condition thresholds to be considered the listed community under the EPBC Act (Biosis, 2019).	• No harm to MNES arising from the project, other than as approved. • Measures in place to salvage and translocate 23 Matted Flax-lilies within the impact area (See associated MFLSTP). • Measures in place to offset 23 Matted Flax-lilies within the impact area (See associated OMP). • No-go' areas must be in place prior to commencement of vegetation removal, particularly in relation to one individual Matted Flax-lily, which is located just outside the impact area. • Sediment fences and Construction exclusion fences must be in place according the EMM prior to construction and/or vegetation removal.	• Deliberate or accidental clearing of protected vegetation, particularly Matted Flax-lily individual outside impact area. • Deliberate or accidental physical injury or death of EPBC-listed flora or fauna. • Deliberate or accidental removal of nesting or roosting sites. • Potential isolated deaths of MNES due to works. • Erosion/runoff from impact area to Darebin Creek, potentially affecting suitability as habitat for Growling Grass Frog (discussed in detail in Water pollution – Erosion and sediment).	Likely	High	Significant
Non-threatened flora/ fauna	The proposed development will result in permitted loss of native vegetation (PE Act & EPBC Act). All other native vegetation (flora) within the surrounding area of the subject site is protected and must not be disturbed, traversed or used to stockpile materials or plant. Deliberate or inadvertent access to native vegetation adjacent the site must be prevented to reduce the likelihood of harm to native flora and fauna. Considering that the subject site is in a residential area, there is a minor possibility that fauna may enter the site during the construction period. However, the site will be adequately secured to prevent the fauna from entering the site.	• No harm to flora and fauna arising from the project, other than as approved. This will be achieved through numerous measures including a Zoologist with appropriate research permits and ethics approval being present to supervise the removal of potential habitat trees to capture and relocate any displaced native fauna. • Areas with flora and fauna present and not permitted for removal secured by a physical barrier and clearly designated a 'no-go' area. • No-go' areas must be in place prior to commencement of vegetation removal.	• Deliberate or accidental clearing of protected vegetation. • Deliberate or accidental physical injury or death of non-threatened flora or fauna. • Work activities that disturb vegetation or soil. • Accidental removal of nesting or roosting sites • Potential isolated deaths of fauna due to works. • Inappropriate location of stockpiles on protected vegetation. • Vehicle / plant movement through protected areas. • Introduction of soil or invasive plant seed on dirty vehicles. • Pollution arising from erosion or fuel / chemical spills.	Likely	High	Significant

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Environmental factor	Environmental and heritage values / assets	Management objectives	Risk factors	Likel	Con	Ove
Water pollution – Erosion and sediment	Construction works will expose soil to erosion which could potentially lead to sediment movement by water within and beyond the impact area. Sediment movement in water is a pollutant of waterways and is a serious environmental risk that must be mitigated. Land owners and project managers have responsibilities under law to prevent erosion and sediment pollution of waterways under the Environment Protection Act 1972 & 2018 (EPA Act) and the Catchment and Land Protection Act 1994 (CaLP Act). Sediment management is required to meet requirements under the EPA State Environmental Protection Policy (Waters) (EPA Victoria, 2018)	• No discharge of sediment laden runoff from the impact area directly or indirectly to waterways or stormwater. • No removal of vegetation beyond the impact area. (Retained vegetation helps reduce sediment movement.) • Any potential erosion / sediment source of pollution will be contained within the impact area.	• Erosion and sediment sources including cut/fill surface, exposed batters, stockpiles, waterway crossings and access tracks. • Potential erosion and sediment receptors include downslope storm water drains. • Extent of exposed earth and duration of time exposed: Access track and construction area. Exposed for 18 months approximately. • Soil type and erosivity: Basalt – low erosivity due to limited slope • Site drainage regime: Urban stormwater system- surface water drains naturally to Darebin Creek and the urban storm water system. • Rainfall: Variable – thunderstorms possible. • Slope: Flat to gently undulating. • Vehicle movements on and off site: Vehicle movements will be continuous, measures required to manage vehicle soil transport.	Likely	Moderate	Significant
Invasive species	Invasive plants (weeds) and animals pose serious threats to native ecosystems and are costly to control once established. The impact area contains several noxious weeds throughout the study area including Sitnkwort *Dittrichia graveolens*, Hawthorn *Crataegus monogyna*, Common Blackberry *Rubus anglocandicans* and Serrated Tussock *Nassella trichotoma*. Spread of invasive plants is a significant risk arising from construction activities. All contractors are required to ensure that all plant and equipment brought onto or removed from the impact area are clean and free of invasive plant seeds, soil and other propagules that could spread invasive plants onto, within or beyond the impact area.	• Prevent invasive plants and animals from establishing in the impact area. • Prevent the spread of invasive plants within the impact area to areas outside. • Ensure all vehicles and equipment are cleaned before entry to and exit from the impact area.	• Invasive plants introduced to the site during construction by vehicles or materials. • Existing invasive plants impacts expand due to construction and other disturbance. • Invasive plants spread to neighbouring properties or beyond.	Likely	Moderate	Significant
Fuel and chemical spill	Spills of fuel, oils or chemicals can cause temporary or persistent environmental pollution that may be hazardous to people and the environment and may be difficult to remediate. Prevention of spills is the most effective way to prevent pollution by fuels or chemicals. Fuels and oils are most likely to be spilled during refuelling or due to equipment failure. The risk of spills can be reduced by planning, the use of appropriate equipment, providing appropriate storage and having clean up kits accessible in the event of an accident. Use of hazardous chemicals will be avoided on site during construction. Fuels and oils will only be used to refill construction equipment and will not be stored on site.	• No spills or pollution arising from the use of fuels, oils and chemicals during the project. • Management practices will be in place to help prevent spills or clean up spills. • Appropriate clean up kits will be available on site during at all times during construction.	• Types of chemicals and fuels used on site: Petrol, diesel, paint, solvent (no chemical storage permitted on site). • Quantities of chemicals and fuels used and/or stored on site: <200l (fuels) <20l (other). • Potential chemical receptors: Personnel, soils, vegetation, nearby adjacent ephemeral waterways, fauna. • Proximity to potential chemical receptors: Immediate.	Likely	Moderate	Significant
Waste disposal and litter	Waste generation and disposal is costly and can generally be avoided by forward planning and by recycling which is usually free. Adequate waste / recycling materials storage facilities will be provided on the construction site at all times to help make recycling the easy option. Waste must be secured on site at all times to prevent it being blown beyond the impact area or being accessed by fauna.	• All contractors and staff commit to reducing waste and recycling materials where practical. • All waste or recycling materials will be secured on site against wind / water movement or disturbance by wildlife until it can be legally removed to landfill or a recycling facility. • All waste disposed of legally with records kept. • All waste management and recycling storage maintained with lockable lid, fit for purpose, in a tidy condition and emptied regularly.	• Nature of waste to be generated: Spoil (soil from excavation), general, building waste. • Presence of waste on site prior to work commencement: Nil. • Quantity of waste anticipated: < 40 cubic metres. • Potential waste receptors: Local residents. • Proximity to potential waste receptors: Immediate.	Likely	Moderate	Significant
Dust air pollution	Dust raised during construction is a serious issue for the health and safety of employees and the public. Dust can also be a traffic hazard that can limit visibility or distract drivers. During dry periods dust is easily suppressed by water sprinkler from a fixed system or a truck.	• Dust will not reach a volume that causes a health hazard to employees or the public. • Dust will not reach a volume that causes a traffic hazard. • Dust will be managed by water sprinkler from a fixed system or truck.	• Dust sources: Soil disturbance by vehicles and equipment in dry weather. Vehicle movements on dirt surfaces in dry weather. • Potential dust receptors: Workers, local residents, roadway, waterways. • Proximity of works to dust receptors: Immediate. • Extent of exposed earth and duration of time exposed: 18 months • Wind conditions: Exposed.	Likely	Moderate	Significant

Environmental factor	Environmental and heritage values / assets	Management objectives	Risk factors	Likel	Con	Ove
Noise	Construction noise can be obtrusive, stressful and disruptive. The project area is located in a residential area. Impacts on neighbours are likely to be significant. Good-will of immediate neighbours should be fostered by consulting with them prior to commencing construction works. The Project Manager should seek to understand their neighbour's tolerance of noise and to identify any specific sensitivity that can then be managed by negotiation. All plant and equipment shall be maintained in accordance with manufacturer's specifications to help prevent unnecessary noise.	• Noise generated from construction does not cause a nuisance to neighbours. • Neighbours consulted with to communicate potential noise impacts and to identify any sensitivity. • Manage noise according to EPA Victoria Environment Protection (Residential Noise) Regulations 2008 (EPA Victoria, 2008)	• Nature of noise generating works: Construction activities, power tools, large machinery reversing vehicles, radios. • Potential noise receptors: Workers, local residents, native fauna. • Proximity of works to noise receptors: 25 metres.	Certain	Moderate	Significant
Neighbour relations	Changes in land use or land development regularly raise community concerns or objections. Often these concerns relate to real or perceived environmental impacts or losses to amenity or local connection. Timely communication can often prevent or defuse local tensions in the community or between neighbours. As a precautionary action neighbours should be informed of the development and the timing of the works. Conversations are recommended to help detect any latent tensions or concerns that may not yet be apparent; but which dialogue could help resolve.	• Communicate with the local community about the project and how environmental and amenity issues are being carefully managed.	• Proximity of works to neighbours: Neighbours are distant from the project site.	Certain	Moderate	Significant
Economic	The supplier, subcontractor and developer of the site may experience financial hardship, which may result in the project being incomplete, leading to environmental management requirements being unfulfilled.	• Ensure financial risk for each supplier, subcontractor and developer is kept to a minimum. • Ensure that the supplier, subcontractor and developer has the appropriate insurances in place.	• Unforeseen economic downturns • Litigation of financial matters • Increased benchmarks for financial agreements	**U**nlikely	Moderate	Significant

5. Environmental management plan

This section provides an Environmental management plan that responds to the addresses all environmental factors, management objectives and risks identified in the Project Risk Assessment as outlined in Section 4.

Table 5 Environmental management plan

Environmental aspect or management activity	Actions to address risk	Monitoring response	Frequency of monitoring	Responsibility	Documentation
1. Establishment of the offset area	Prior to the commencement of works, the actions detailed within the relevant sections of the OMP must be: – Completed if related to the establishment of the offset area – Implemented if related to ongoing maintenance, auditing or reporting frameworks.	• As detailed in the OMP.	• As detailed in the OMP.	• As detailed in the OMP. • Project Manager.	• As detailed in the OMP.
2. Translocation of Matted Flax-lily	Prior to the commencement of works, the project action detailed within section 4 of the MFLSTP must be completed.	• As detailed in the MFLSTP.	• As detailed in the MFLSTP.	• Project Manager.	• Project records.
3. Swift Parrot Grey-headed Flying-fox Growling Grass Frog Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Prior to the commencement of works, or vegetation removal, sediment fences must be constructed in accordance to the EMM to prevent pollutants from entering into Darebin Creek. No native vegetation beyond the impact area must be removed. Any large River Red-gums removed during development should be assessed for the presence of cracks and hollows by a trained zoologist which may provide habitat to native fauna. Any displaced native fauna will be captured and relocated by the zoologist to suitable habitat outside the impact area, if safe to do so. Limbs and trunks with hollows should be salvaged where possible to supplement ground habitat within the prescribed offset area. Placement of the hollows shall be determined by contractors responsible for restoring the offset area and will avoid any translocated Matted Flax-lilies by a buffer of at least 1 metre. Rocks, logs and course woody debris will also be salvaged from the impact area to the offset area. This removal of this structural habitat will also be supervised by the zoologist to capture and relocate any displaced native fauna, if safe to do so.	• Document installation of sediment fences including photographs.	• Prior to commencement of works.	• Project Manager. • Contractor. • Fauna salvage conducted by zoologist with appropriate permits and ethics approval.	• Project records • Photographs.
4. Impact area preparation and identification	Prior to the commencement of works the Project Manager will ensure that the impact area and key site features are clearly established and identifiable on-ground and on plans according to the EMM (See Figure 1). The following items must be established and clearly identified: – Impact area – establish the impact area with exclusion fencing appropriate to the site. All construction works must be confined to the defined impact area. – Access points for the impact area must be made obvious to all staff and contractors prior to commencement of works and at all times during the construction process. Any access areas other than those identified in the EMM must be closed during construction. – Stockpile locations. – Site facilities and vehicle parking area. – Site sediment and erosion controls. – Site fencing, including other fencing to protect environmental or heritage values within the impact area. – Site waste and recycling storage facilities. – Chemical spill clean-up facilities or kits.	• Document impact area preparation and identification including photographs.	• Prior to commencement of works.	• Project Manager.	• Project records • Photographs.

Environmental aspect or management activity	Actions to address risk	Monitoring response	Frequency of monitoring	Responsibility	Documentation
5. Site induction	• Site induction to be provided for all personnel working on site, including sub-contractors. Induction must be undertaken by the Project Manager before all personnel commence work. • The induction will cover all the content of the CMP relevant to the role of the personnel. Details of the induction and content covered will be recorded for each person. The induction process will describe the location of copies of the CMP and will provide the contact details for the Project Manager and Project Manager. • 'Ask before acting' will be emphasised and encouraged to help prevent incidents.	• Document delivery of site inductions and details of participants.	• Prior to personnel commencing work on site.	• Project Manager.	• Project records.
6. Removal of native vegetation	• No trees, dead or alive, or native vegetation is to be removed, lopped or adversely impacted upon by the construction process, unless in accordance with the endorsed plans. • Native vegetation permitted to be removed will be clearly marked as on site by the Project Manager prior to removal, in accordance with the endorsed plans. Document marked area with photographs. • Native vegetation to be retained will be secured by exclusion fencing with signage attached reading 'Vegetation Protection Zone – No Work Permitted'. • Where possible, native plant species that will be impacted by the development will be salvaged or subject to seed collection to retain genetic diversity of the plant community adjacent to the Darebin Creek and enhance the restoration activities planned in La Trobe's Nangak Tamboree revegetation works, which has the aim to create an inviting, open and culturally aware space that protects biodiversity and connects communities.	• Photos of site with tree and offsite area protection fencing in place prior to commencement of works.	• Weekly or in response to reports.	• Project Manager.	• Photos of any changes. • Summary notes of changes.
7. Local erosion and sedimentation as a result of exposed soil within the impact area.	• Sediment controls will be installed according to Figure 1, prior to the commencement of works, to intercept sediment laden run-off and minimise any impacts on surrounding vegetation. • Crushed rock must be maintained on all access tracks at all times. • Storm water drains - Appropriate sediment control measures include silt traps, geotextile fabric filters, side entry drain pit protection, and portable bunding, drain covers, and drain wardens shall be placed at any stormwater drain entry points within or downstream of the impact area. • A rumble grid and wash down facility shall be provided to remove loose soil from vehicles prior to exit of the impact area. • The roadway adjacent the site entry point will be maintained clear of soil at all times. • Stockpile locations will be predetermined and sediment controls to prevent material movement will be implemented if required. • Sediment controls will be maintained until the construction project has been completed. • All sediment control measures must have a size and capacity to withstand a 1 in 2 year ARI 6 hour storm (EPA 480). • All soil stockpiles must be covered with an appropriate fabric to minimise their potential to become an erosion, dust and sedimentation source. Sediment controls must be installed down slope of stockpiles if they are not covered. • All stockpiles of materials must be placed in locations away from drainage lines, roadside channels and culverts unless adequately protected from erosion by diversion drains, sediment traps, bunds or similar works. • Monitor weather and avoid soil disturbance works in advance of and during extreme weather events.	• Visual inspections of the of sediment control measures supported by photographs. • Sediment control measures will be checked and maintained weekly. • Water quality measurements for parameters described in Section 3.2, measured where water leaves the impact area.	• Weekly. • Daily inspection of access points. • Following any rain event.	• Project Manager.	• Marked up plan indicating sediment traps have been placed. • Project records. • Water quality records. • Site photographs.

Environmental aspect or management activity	Actions to address risk	Monitoring response	Frequency of monitoring	Responsibility	Documentation
8. Disturbance and sedimentation of waterways, drainage systems and aquatic habitats, including beds and banks beyond the impact area.	• No activity or access is permitted beyond the impact area. All stockpiles, materials, vehicle movements and so on must be contained within the impact area or as shown in Figure 1. • Sediment controls will be installed where sedimentation risks are identified. • No vegetation is to be removed within or beyond the impact area, other than vegetation approved for removal.	• Visual inspection of all sediment controls. • Observe water movements during rainfall events and modify sediment traps to ensure they are located where they are most effective. • Observe water movements during rainfall to check that flows are not being concentrated which could lead to offsite erosion or creek bank instability.	• Weekly during works in these areas. • During and after rain events.	• Project Manager.	• Project records • Photographs of site condition. • Documentation of any remediation works.
9. Community concern for environmental protection or loss of amenity during works.	• Communicate project plan with neighbours or community, provide CMP to the public on request. • Implement Nangak Tamboree Vision outlined in point 6 of Table 5.	• Communicate project with neighbours.	• 1 month prior to works and as needed during.	• Project Manager.	• Project records. • Media release, flyer signage etc.
10. Movement of invasive plants (weeds) and soil pathogens onto or off site.	• Prior to entering or leaving the impact area, any vehicles, machinery, equipment and PPE will be washed down to remove soil and invasive plant seeds / propagules at a wash down area to be provided during construction. • All construction and landscaping materials must be certified free of contamination by invasive plant seeds / propagules or pathogens by the contractor/supplier. • All works contracts are to specify the contractor is responsible for prevention or follow up control of any invasive plants or pathogens introduced to the site for a minimum of 12 months post construction. • Fill, soil and landscaping materials imported onto the impact area must be certified free of pest plant seed / propagules, soil pathogens and pollutants. The Project Manager must be satisfied that the materials are obtained from legal sources. • Any invasive plants germinating within the impact area must be eradicated and not be allowed to flower and produce seed. • Any soil or material contaminated with weed seed or propagules must be disposed of onsite or according to the requirements of the Catchment and Land Protection Act 1994.	• Contractor and Project Manager to sign a statement that all vehicles have been washed down as prescribed and inspected. • Follow up visual inspections to detect invasive plant germination and signs of soil pathogen infection. • Appropriate contract specification clauses included to allow for vehicle wash-down procedures. • Retain quality statements for soil, fill and landscaping materials. • Record details of all contaminated soil/material disposal locations.	• As required for vehicles entering and leaving the impact area. • Weekly during construction and monthly for 1 year after construction completion. • Monitoring will be part of ongoing project management.	• Project Manager.	• Contract specification. • Project records. • Signed statement for each vehicle recording wash-down and inspection measures. • Certification that materials not contaminated.

Environmental aspect or management activity	Actions to address risk	Monitoring response	Frequency of monitoring	Responsibility	Documentation
11. Disturbance or injury to terrestrial or aquatic wildlife	• Disturbance or injury to wildlife is unlikely if all works are restricted to the impact area. • Site security fencing must be installed prior to construction in such a way as to provide a barrier to the movement of fauna into the impact area. • Prior to tree removal any subject tree must be inspected by an appropriately qualified zoologist to determine the presence of any native animals living or nesting in the tree. Should any native animals be detected they must be caught and relocated to a suitable habitat outside the impact area deemed appropriate by the zoologist, if safe to do so. • This removal of rocks, logs and course woody debris will also be supervised by the zoologist to capture and relocate any displaced native fauna, if safe to do so. • Appropriate animal handling permits must be in place prior to wildlife salvage (organised by the zoologist). • If injured wildlife is encountered the Project Manager will be immediately notified and a licenced wildlife handler/carer or local veterinarian will be consulted**.** • **Wildlife Victoria – ph. 1300 094 535 or *www.wildlifevictoria.org.au***	• Visual inspection of fences to ensure that there are no access points suitable for fauna to enter the impact area. • Document salvage process.	• Weekly. • During habitat removal.	• Project Manager.	• Project records • Photographs • Record any incidents and notify DELWP if native animals are injured or killed.
12. Litter, waste and recycling	• Waste is to be reduced by selecting, in this order of preference, avoidance, reduction, reuse and recycling methods. Construction should involve the reuse of materials and the recycling of waste wherever possible. • Impact areas must be kept free of litter at all times. Litter must be prevented from being blown or washed from the impact area and secured from wildlife. • Adjacent areas must be checked for litter monthly and at the completion of works. • All litter, recyclable or waste materials introduced to the work site must be removed frequently for legal disposal or recycling. Waste storage must not be allowed to overflow. • Adequate storage for waste and recycling materials must be provided to ensure recycling is as easy and practical as possible. • No waste may be disposed of in the impact area. • All unused construction materials and waste must be removed from the site when the project is completed. • Preparation of a Waste Management Plan in conjunction with the Project Manager and Project Manager is encouraged to help achieve compliance with the relevant performance standards. • No waste to be disposed of in domestic kerbside collection bins.	• Visual inspections of storage and machinery/equipment lay down areas.	• Daily.	• Project Manager.	• Project records. • Incident reporting as required.
13. Dust and air pollution	• Schedule activities to minimise dust generation and impacts, avoid receiving bulk deliveries on days of strong wind. • Reduce speed limit to 20 kilometres through the worksite. • Cover storage areas either temporarily or permanently. • Regularly inspect boundaries of worksite for dust build up. • All complaints from neighbours concerning dust to be recorded. • A water truck shall also be available on site to assist with any necessary dust suppression as need.	• Observe weather and wind conditions daily. • Note weather forecasts in advance of works and plan for water sprinkler use during dry and windy conditions.	• Daily or as required when conditions are dry and windy.	• Project Manager.	• Project records. • Record when dust mitigation measures are taken.
14. Noise	• Work will only occur between the hours of 7.00 am and 5.00 pm weekdays and 9.00am and 1.00pm Saturdays. Refer to EPA Victoria Environment Protection (Residential Noise) Regulations 2008 (EPA Victoria 2008). • Consultation with immediate neighbours to identify sensitivities that can be managed or negotiated around. • Plant maintained in good order, particularly mufflers and other sound-emitting components.	• Record consultation process including details of who has been consulted. • Enforce work hours.	• As required.	• Project Manager.	• Project records. • Record of consultation.

Environmental aspect or management activity	Actions to address risk	Monitoring response	Frequency of monitoring	Responsibility	Documentation

15. Inadvertent environmental damage or works without necessary permits. Non-compliance with Environmental Legislation	• Ensure all required permits have been obtained and that design meets any permit requirements or other legislative requirements for the works. Ensure all personnel are aware of the permitted works activities and the extent of the impact area.
	• Permit check list –
	  • Planning Permit (obtained – review and comply with conditions).
	  • Regulatory compliance checklist – Construction design will meet standards of key legislation and regulation including the *Water Act 1989, Environment Protection Act 1970*, *PE Act*, provided that this CMP is complied with.
		• Prepare a permit and regulatory compliance checklist.	• Project planning stage prior to the commencement of construction.	• Project Manager.	• Permits obtained.
					• Completed management plans to address regulatory compliance.

16. Storage areas for construction materials and transport of excavation spoil / fill off site	• The storage of all equipment, waste and building materials must be contained within the impact area. • No soil is to be removed from the site without written consent of the Project Manager. Any loads of excavation materials being taken off site must be covered and taken to a legal point of use or disposal. The Project Manager must confirm that the destination for excavation material is legal and keep records of the source and destination of the material.	• EMM map specifies suitable stockpile locations. • Record details of any material transported off site, providing evidence of its destination.	• As required.	• Project Manager.	• EMM. • Project Records.

17. Fuel, oil and chemical spill or pollution	• Use of hazardous chemicals or materials will be avoided as far as practicable. The works generally do not require the specific use of any hazardous substances other than machinery fuels and oils or standard construction materials.
	• No fuels, oil or any potential harmful substance will be stored or used on site without the prior written consent of the Project Manager.
	• Spill kits will be available, easily accessible and kept on the construction site at all times and all employees will be trained in their use.
	• Daily plant safety procedures for all plant shall be completed at the start of each day.
	• All refuelling shall be conducted at least 30 m away from waterways using a built-for-purpose fuel tender that is in good condition and is checked regularly for defects or leaks. The tender vehicle must have materials at hand to manage and clean up any spill incidents.
	• Machinery servicing and oil changes will not be performed on-site without the written consent of the Project Manager. The Project Manager will specify measures to manage risks associated with any machinery servicing.
	• When hazardous materials are used, the following controls measures will be put in place;
	  – The Project Manager will verify that staff or contractors have the relevant qualifications to use chemicals or hazardous materials.
	  – Lids to be kept securely closed on containers of chemicals.
	  – Containers on vehicles to be secure.
	  – Ensure no leaks and all taps and pipes are securely isolated.
	  – Material Safety Data Sheets (MSDS) are available on site for all relevant chemicals or materials.
	  – Storage of chemicals, temporary or otherwise, in the vicinity of a waterway is not permitted.
	• Storage - separate designated area shall be identified for the storage of chemicals and fuels that meets current work standards. The following practices shall be adopted:
	  – Storage areas kept clean and tidy.
	  – MSDS available for all chemicals on site.
	  – All chemicals and fuels labelled correctly.
	  – Spills shall be reported immediately to Project Manager.
	• Treatment of fuel / oil / chemical spills shall be immediately reported to the Project Manager.
	• Disposal of contaminated soil materials shall be at locations acceptable to EPA requirements.
		• Inspect the condition of any fuel tender before access is granted to the impact area.
		• Inspect condition of spill kits.
		• Observation of staff contractor behaviour with fuels / oils / chemicals and ensure safe work practices are followed.
			• Monthly.	• Project Manager.	• Project records.
					• Maintain a spreadsheet or similar recording inspections and outcomes.
					• Maintain a register of spill incidents and the action taken.

6. Environmental Management Map

The Environmental Management Map shows the location of areas with environmental values and the offset area. It also shows the locations of the minimum requirements for environmental management required to protect these values as specified in Section 5 Environmental Management Plan.

The details contained within the EMM must be implemented to fully meet the approvals for this project.

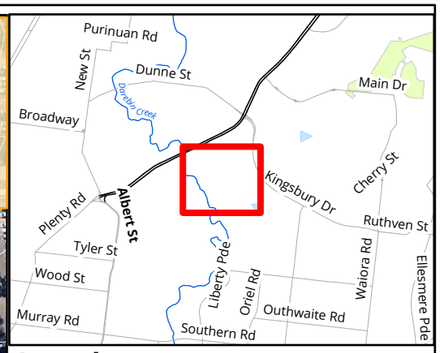
The EMM forms part of the CMP and must be provided to the contractor.

Written approval of the Project Manager must be obtained if the EMM needs to be amended in any way. All works must be implemented according to this CMP and associated documents.

Digital data included in these maps are available upon request.

Note –Existing easements / services locations are not shown. The Project Manager is responsible for identifying all relevant easements and service locations.

Stockpile management
- Stockpiles must be constructed according to the specification provided.
- Sediment controls such as sediment fence must be in place.
- A catch drain must be constructed upslope, and runoff directed through a modular sediment trap or check dam.
- Appropriate dust suppression must be in place at all times.



Legend

- Study areas
- Proposed offset site - 2.81ha

Matted Flax-lily management

- Retain and protect from disturbance
- Translocate

Native tree and vegetation management

- Tree - retain
- Tree - to be removed, retain where possible
- Vegetation to be removed - Pending permit approval
- Vegetation to be retained - Protected offset
- Vegetation to be retained - Removal permit required
- Tree protection zone

Construction management plan

- Site access
- Construction exclusion fence
- Modular sediment trap
- Sediment fence
- Temporary access track
- No-Go Area (All vegetation retained)
- ImpactArea_original

Sediment controls
- Place modular sediment traps (MST) or check dams (CD) at any point of potential concentrated surface water flow, including in storm-water drains.
- More than one MST or CD may be required at each point to design specifications attached.
- Indicative locations for MST / CD, cut off drains and sediment fencing are shown.
- Place all sediment controls according to detailed design or to terrain.
- Refer to sediment control specifications provided with the CEMP /SEMP report.
- **Hay bales or straw bales not permitted for sediment controls.**

Fuels, oils and chemicals
- No fuel or chemical storage on site
- Machinery fuelling to be completed using portable bunding
- Spill kit to be provided on all plant or on site

Figure 1 Environmental Management Map

0 50 100
Metres
Scale 1:2,750 @A3
Coordinate system: GDA 1994 MGA Zone 55

N

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Date: 22 January 2021 ,
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Project: P:\30300s\30363\Mapping\30363_CMP_SportsPrecinct_LaTrobeUni.aprx

7. Post construction site remediation and reporting

This section outlines the approach required to stabilise and rehabilitate the impact area post construction. This is not a landscape plan.

Site remediation will be achieved within the specification and design of the project, as detailed in the approved design or landscape plan. The objective of the project design concerning remediation is to ensure all the environmental aspects of the project are managed post construction.

Table 6 Post construction site remediation and monitoring

Environmental aspect or management activity	Actions	Frequency of monitoring	Responsibility	Documentation
1. Site clean-up	Once the development of the project is complete, site clean-up will consist of: • The removal of all temporary structures and fencing. • Disposal of all construction waste to recycling or legal landfill. The Project Manager must document all waste movements from the site and retain evidence of all waste disposal or recycling. • Disposal of all excess spoil to a legal disposal point. A disposal site for any spoil removal from site and truck route is to be submitted to, approved and documented by the project manager.	• Monthly until completion.	• Project Manager.	• Project records. • Maintain a spreadsheet or similar recording inspections and outcomes.

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Environmental aspect or management activity	Actions	Frequency of monitoring	Responsibility	Documentation
2. Site stabilisation and remediation	Minimum post-construction stabilisation and remediation methods to be implemented are: • Batters or other areas of exposed soil covered with permeable, biodegradable matting, e.g. durable jute matting securely pinned to soil surfaces sufficient to prevent soil movement for 18 months or spray seeded with native grass species (*Microlaena stipoides*). Kikuyu will not be used on this project, as Kikuyu is an invasive plant in reserves and waterways and could threaten nearby waterway Darebin Creek. • Minimum of soil disturbance must be achieved, i.e. no soil disturbance other than that required to construct the sporting facility. No disturbance beyond these areas. • Revegetation on exposed soil surfaces following the removal of the temporary access tracks will be spay-seeded or hand-seeded with native grass seed – *Microlaena stipoides* or sterile rye-grass. • If insufficient growth of the *Microlaena* seed or grass seed occurs within twelve months and the disturbed soil area has become colonised with invasive plant species, the proponent will be required to undertake invasive plant control and follow-up seeding of the area. • No use of viable non-native vegetation such as lawn seed mixes or grass / straw bales should occur anywhere on site.	• Quarterly until for the first year	• Project Manager • Land Manager	• Project records. • Maintain a spreadsheet or similar recording inspections and outcomes.

Environmental aspect or management activity	Actions	Frequency of monitoring	Responsibility	Documentation
3. Ongoing monitoring and maintenance	An ecologist will undertake monitoring of the habitat within a 100 metre buffer surrounding the impact area (east of Darebin Creek) and any retained habitat within the impact area at intervals of one month, three months and six months following construction to ensure that no weeds are encroaching from the impact area into nearby habitat. Any weed encroachment noted to occur will be followed up with weed maintenance activities as prescribed by the ecologist.	• One month, three months, six months.	• Project Manager	• Maintain a spreadsheet or similar recording inspections and outcomes.
4. Offset area	The ongoing management of the designated MFL offset area is to accord with the OMP.	• AS detailed within the OMP.	• AS detailed within the OMP.	• AS detailed within the OMP.

8. Glossary

Term	Definition
Impact area	The area within a site required for all works, including access tracks, stockpiles, temporary facilities, plant, the construction footprint and so on. Anywhere likely to be disturbed or impacted on by the works.
Native vegetation	Plants that are indigenous to Victoria including trees, shrubs, herbs and grasses (from the Victorian planning provisions – note this may include planted vegetation in addition to naturally occurring native vegetation)
Invasive plants	An invasive plant species is a species occurring, as a result of human activities, beyond its accepted normal distribution and which threatens valued environmental, agricultural or other social resources by the damage it causes. Invasive species have a major impact on Australia's environment, threatening our unique biodiversity and reducing overall species abundance and diversity.
Invasive animals	An invasive animal species is a species occurring, as a result of human activities, beyond its accepted normal distribution and which threatens valued environmental, agricultural or other social resources by the damage it causes.

9. Useful information resources:

SEPP (Waters)

State Environmental Protection Policy (Waters) 2018- http://www.gazette.vic.gov.au/gazette/Gazettes2018/GG2018S499.pdf

EPA publications

Environmental Guidelines for Major Construction Sites (EPA Publication 480) - https://www.epa.vic.gov.au/~/media/Publications/480.pdf

Construction Techniques for Sediment Pollution Control (EPA Publication 275) - https://www.epa.vic.gov.au/~/media/Publications/275.pdf

Doing it Right on Subdivisions: Temporary Environment Protection Measures for Subdivision Construction Sites (EPA Publication 960) – https://www.epa.vic.gov.au/~/media/Publications/960.pdf

Current design specifications for sediment and erosion control measures

Some example control measures are provided here, a full range of specifications can be sourced from the Catchment and Creeks website - https://www.catchmentsandcreeks.com.au/index.html. All content from this website is freely available for reproduction and use.

Standard controls

Sediment fence - https://www.catchmentsandcreeks.com.au/docs/SF-1.pdf

Filter sock / rock sausage - https://www.catchmentsandcreeks.com.au/docs/FS-1.pdf

Catch drain - https://www.catchmentsandcreeks.com.au/docs/CD1-1.pdf

Chute - https://www.catchmentsandcreeks.com.au/docs/CH1-1.pdf

Outlet structure - https://www.catchmentsandcreeks.com.au/docs/OS-1.pdf

Concentrated flows

Modular sediment trap - https://www.catchmentsandcreeks.com.au/docs/MST-1.pdf

Check dam sediment traps- https://www.catchmentsandcreeks.com.au/docs/CDT-1.pdf

Filter tube dam - https://www.catchmentsandcreeks.com.au/docs/FTD-1.pdf

Instream sediment controls

Filter tube barrier - https://www.catchmentsandcreeks.com.au/docs/I-FTB-1.pdf

Site access

Rumble / Vibration grid - https://www.catchmentsandcreeks.com.au/docs/V-Exit-1.pdf

Wash bay - https://www.catchmentsandcreeks.com.au/docs/W-Exit-1.pdf

Stockpile management - https://www.catchmentsandcreeks.com.au/docs/SPM-1.pdf

Storm water management

Urban stormwater best practice environmental management guidelines - State Environmental Protection Policy (Waters) - http://www.gazette.vic.gov.au/gazette/Gazettes2018/GG2018S499.pdf

Noise

EPA Victoria: Environment Protection (Residential Noise) Regulations 2008- http://www.legislation.vic.gov.au/domino/web_notes/LDMS/LTObject_Store/LTObjSt4.nsf/d1a8d8a9bed958efca25761600042ef5/6ffcb6621349aaafca2577610035fbb6/$FILE/08-121sr001.pdf

10. References

Biosis 2019. *La Trobe University Sports Precinct Stage 3: flora and fauna assessment*, Melbourne.

Biosis 2020a. *La Trobe University Sports Precinct Stage 3: EPBC Act Offset Management Plan (EPBC 2018/8343)*, Melbourne.

Biosis 2020b. *La Trobe University Sports Precinct Stage 3: EPBC Act Matted Flax-lily Salvage & Translocation Plan (EPBC 2018/8343)*, Biosis, Melbourne.

Biosis 2020c. *La Trobe University Sports Precinct Stage 3: Additional information for assessment by Preliminary Documentation (EPBC 2018/8343)*, Biosis Pty Ltd, Melbourne.

Debbie Saunders & Chris Tzaros 2011. *National Recovery Plan for the Swift Parrot Lathamus discolor*, Birds Australia, Carlton Victoria.

EPA Victoria 2008. *Environmental Protection (Residential Noise) Regulations 2008*, EPA Victoria, Melbourne, Victoria, accessed 25 March 2019, http://www.legislation.vic.gov.au/domino/web_notes/LDMS/LTObject_Store/LTObjSt4.nsf/d1a8d8a9bed958efca25761600042ef5/6ffcb6621349aaafca2577610035fbb6/$FILE/08-121sr001.pdf.

EPA Victoria 2018. *State Environment Protection Policy (Waters)*, EPA Victoria, Melbourne, Victoria, accessed 25 March 2019, http://www.gazette.vic.gov.au/gazette/Gazettes2018/GG2018S499.pdf.