



**Flora and Fauna Assessment,
Native Vegetation Impact Assessment
and Land Management Plan,**

**Yarra Flats TreeTop Adventure Park,
Ivanhoe East**



December 2018

Flora and Fauna Assessment, Native Vegetation Impact Assessment and Land Management Plan, Yarra Flats TreeTop Adventure Park, Ivanhoe East

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Report by Liza James – includes updates for 2018 policy
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1. INTRODUCTION

Practical Ecology Pty Ltd was commissioned by Ecoline Pty Ltd to update the existing Flora and Fauna Assessment, No Net Loss Analysis and Land Management Plan for the proposed Yarra Flats Tree Top Adventure Park, Ivanhoe East prepared by Practical Ecology in 2016.

The initial assessment was undertaken in 2016 to propose a combined planning scheme amendment according to Victoria's Planning Provisions under Clause 52.03 for a Specific Site Exclusion and to support a planning permit application. The initial assessments also provided detailed information in response to native vegetation protection (as required by the state section of the Banyule Planning Scheme and Clause 52.17). The Environmental Significance Overlay was also considered in the context of the development and within the Land Management Plan to ensure both are considered within the context of the relevant planning scheme requirements. Clause 13.05 of the Banyule Planning Scheme was also addressed as the site is within a Bushfire Prone Area (BPA).

It is understood that a planning scheme amendment and planning permit application was submitted 11th May 2018. In response to the application Banyule Council have Requested Further Information (RFI) and below is a copy and paste from an email provided by Ecoline calling for more information. Specifically this proposal seeks to respond to the items below:

- *An updated flora and fauna assessment and plan or confirmation that information within the 2016 assessment and plan are still up to date and applicable.*

In accordance with Clause 13.05 of the Banyule Planning Scheme provide a report that addresses how the proposed use and development considers:

- *The risk of bushfire to people, property and community infrastructure.*
- *Outlines appropriate bushfire protection measures to address the identified bushfire risk.*
- *Explains how the proposed development can implement bushfire protection measures without unacceptable biodiversity impacts.'*

The rules about the removal of native vegetation have recently changed with planning schemes being amended on 12 December 2017. The previous *Permitted clearing of native vegetation – Biodiversity assessment guidelines 2013* have now been replaced by the new *Guidelines for the removal, destruction or lopping of native vegetation 2017*.

Due to the above information this report is a revised version of the report prepared by Practical Ecology 2016 in order to address Councils RFI and to align with the new *Guidelines for the removal, destruction or lopping of native vegetation 2017* and Clause 13.05 (now Clause 13.02).

1.1 Project Background

The site for the proposed TreeTop Adventure Park is covered with native vegetation and is located in the Yarra Valley Parklands. The site borders the Yarra River, is within Banyule City Council and is managed by Parks Victoria. The native vegetation on the site is Flood Plain Riparian Woodland but is significantly disturbed in the groundstorey and dominated by exotic weeds while the shrub layer is mixed and the tree layer is predominantly indigenous.

The proposed TreeTop Adventure Park at Yarra Flats will comprise of 8 courses with a total of 100 challenges which will comprise a series of challenges suspended between the trees, with non-invasive platforms attached around trees. Other features will include flying foxes, nets, Tarzan jumps and high rope adventure challenges. All of the courses are in the tree canopy off of the ground, are only accessed through rope ladders (secured after hours) and exited by reaching the ground via a flying fox.

Ecoline designs, constructs and operates the TreeTops experiences which currently include; TreeTop Adventure Park, TreeTop Crazy Rider and TreeTop Safari. The first TreeTop Adventure Park was built in NSW, at Wyong Creek on the NSW Central Coast. Three additional parks are now operating in Newcastle, Western Sydney and Taronga Zoo. Previous projects have worked in partnership with government and currently operate on government land.

Ecoline (parent company of TreeTops) was the successful proponent in the EOI process put out in 2009 by Parks Victoria to design, build and operate a high ropes adventure course on the site. Ecoline has advised that Parks Victoria supports the proposal and will provide consent for the permit application.

A draft lease agreement is in preparation by Ecoline Pty Ltd and is being negotiated with Parks Victoria. This assessment attempts to recommend the proposed commitments for the development which will feed into the proposed agreement.

1.2 Aims

In support of the planning permit for the proposed development, this report details the following:

- a **Flora and Fauna Assessment** that details the vegetation and habitat within the study site
- an **Assessment of Native Vegetation Impact** that details how the proposal minimises impacts to biodiversity, calculates loss of native vegetation and details any required native vegetation offsets.
- a **Land Management Plan** detailing how the development and overall site, with consideration to the relevant planning scheme requirements, will be managed during construction works and into the future. This will outline different land-uses and management zones across the site including management of existing vegetation, weeds, areas of defensible space etc.
- a **Bushfire risk assessment** to document relevant bushfire conditions on site to inform the collaboration process, under the Bushfire Prone Area requirements any buildings require a Bushfire Attack Level Assessment, and address any potential requirements under clause 13.02 of the Planning Scheme.

1.3 Scope

The scope of works includes

- review the relevant flora and fauna databases and available literature
- a description of the existing site conditions
- categorise the vegetation according to *Guidelines for the removal, destruction and lopping of native vegetation* (DELWP 2017a) as either native vegetation patches; scattered trees; or non-native vegetation
- a description of the existing and/or original Ecological Vegetation Classes found within the site and assessment based on the Habitat Hectares scoring method
- tree census for remnant patch canopy trees and scattered trees which will be potentially impacted, based on Australian Standard AS 4970–2009 – Protection of trees on development sites
- the compilation of a list of vascular plants observed across the study site
- consideration of the potential for the occurrence of significant flora and fauna
- the assessment and detailing of the bushfire risk including a Bushfire Attack Level Assessment as per AS3959–2009 for the proposed development
- discussion of relevant ecological and bushfire policy and legislation in relation to the proposed development
- determination of the extent of vegetation removal that may be required for the development proposal
- A Native Vegetation Impact Assessment (NVIA) due to the development proposal
- A statement outlined how the development design has avoided and minimised loss of native vegetation
- the development of a 10 year Land Management Plan for rehabilitation of retained vegetation on-site, and management of the remaining areas of the site with consideration to erosion, weeds, hydrology and dams, tracks, fences, pest animal management and other relevant land management issues
- mapping to illustrate necessary information, including existing conditions and the proposed management zones under the development proposal.

1.4 Subject Site

1.4.1 Site description

The site for the proposed TreeTop Adventure Park is located in the Yarra Valley Parklands at 540 The Boulevard, Ivanhoe East (Map 1). The site borders the Yarra River to the east and Banksia Street is located to the north of the site. The Yarra Flats Entry Road is the main access into the site entering east from The Boulevard. A carpark and amenities are located within nearby surrounding areas and are adjacent to the Yarra Flats Entry Road.

There is an existing entry point into the site from the Yarra Flats Entry Road roundabout which connects a network of existing cleared walking tracks. The site is mostly covered by degraded riparian native vegetation that has some ecological values comprising mostly indigenous Large Old Trees with an exotic understory with steep escarpment that runs through the site.

The study area for the purposes of this assessment is the area of the course overlay approximately 1.5ha, as shown in Map 1. All remaining vegetation that falls outside of this study area will not be impacted in any way by the proposed TreeTop Adventure Park.

1.4.2 Adjacent land

Adjacent land to the north and south contains similar riparian vegetation, mostly bordering the length of the Yarra River. A Floodplain Wetland Aggregate known as the Annulus Wildlife Sanctuary and the Bolin Bolin Billabong a Highly localised asset is located south of the site. The Main Yarra Trail runs adjacent to the site, located to the west towards the Boulevard and is a shared use path for cyclists and pedestrians which follows the Yarra River throughout the north eastern suburbs.

1.4.3 Landscape

Bioregions are a landscape-scale approach to classifying the environment using a range of attributes such as climate, geomorphology, geology, soils and vegetation. There are 28 bioregions identified within Victoria, the study area falls within the Gippsland Plain Bioregion (DELWP 2018a).

Under the Catchment and Land Protection Act 1994 (the CaLP Act), Victoria is divided into ten catchment regions with a Catchment Management Authorities (CMA) established for each region (Victorian Water Industry Association Inc 2015). The study site occurs within the Port Phillip and Westernport Catchment (DELWP 2018a).

The surrounding area is pastoral and heritage landscapes, natural bushland, wetlands and picnic areas and is bordered by the Yarra River. Urban development with homes, offices and businesses is adjacent to the park on the west and east.

1.4.4 Geology and soils

The soils on the site are earths and pale yellow and grey texture contrast soils (Hydrosols) of alluvial origin. There are floodplains of the larger meandering rivers and major creeks, in conjunction with one or more

floodplain wetland communities. Elevation and rainfall are relatively low and soils are fertile alluviums subject to periodic flooding and inundation.

1.4.5 Land-use history

The current land-use is for conservation purposes and recreational activity mostly for walkers taking advantage of the network of cleared walking tracks that exists throughout the site. Open areas located near the site are being used as picnic areas and recreational purposes.

The site was privately owned farmland for many years before it was acquired for parkland in the 1970's. As such it was heavily cleared and disturbed post-settlement but has recovered fairly well since it became part of Yarra Valley Park. This earlier use has certainly been a dominant influence on its current condition as the native vegetation has recovered significantly in the last few decades although it is still significantly invade by exotic weeds in the groundstorey and shrub layer.

1.4.6 Zoning and Overlays

The site is zoned Public Conservation and Resource Zone (PCRZ) and Road Zone (RDZ1) and is subject to the following overlays:

- Environmental Significance Overlay (ESO1)
- Environmental Significance Overlay (ESO4)
- Heritage Overlay (HO134)
- Land Subject to Inundation Overlay (LSIO)
- Significant Landscape Overlay (SLO)
- contains Areas of Aboriginal Cultural Heritage Sensitivity (AACHS)
- and is within a Bushfire Prone Area (BPA)

2. METHODS

2.1 Field survey

Field survey was undertaken by Liza James and Lincoln Kern on 17th February 2016, involving:

- mapping and assessing vegetation as per the habitat hectare methodology
- mapping all Large and Scattered Trees
- the compilation of a list of vascular plants observed across the study site
- consideration of the site's habitat values for threatened fauna and flora
- the compilation of a list of incidental fauna observed
- an assessment of weeds, erosion and other relevant land management issues across the site

The site was revisited 29th August 2018 by Liza James to reassess the site in accordance with the *Guidelines for the removal, destruction and lopping of native vegetation (DELWP 2017a)* and to review the current site conditions and vegetation quality.

2.2 Vegetation Categorisation, Classification and Quality

Vegetation was assessed for its categorisation according to the *Guidelines for the removal, destruction and lopping of native vegetation (DELWP 2017a)*, then it's Ecological Vegetation Class and finally, quality, as determined by a Habitat Hectare assessment.

2.2.1 Vegetation Categories

Vegetation in the study area was categorised in accordance with the *Guidelines for the removal, destruction and lopping of native vegetation (DELWP 2017a)* which defines native vegetation as :

- **Native Vegetation**

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

- **Native Vegetation Patch**

A *patch* of native vegetation is either:

- an area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native
- any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy, or

- any mapped wetland included in the current wetlands layer available in the Department of Environment, Land, Water and Planning's (DELWP) Native Vegetation Information Management tool and other DELWP systems.

- **Native canopy tree**

A *native canopy tree* is a mature tree (i.e. that is able to flower) that is greater than 3m in height and is normally found in the upper layer of the relevant vegetation type.

Trees are measured by diameter at breast height (DBH) at 1.3 metres above ground level.

- **Large Tree**

A *Large Tree* is either: a live tree that is equal to or greater than the large tree benchmark for the species in the relevant EVC; or a standing dead tree has a DBH measurement of 40 centimeters or greater

- **Scattered Tree:**

A Scattered Tree is a native canopy tree that does not form part of a patch.

Scattered Trees have 2 size classes, Large Trees and Small Trees, i.e. those that have a DBH that is less than the large tree benchmark for the species in the relevant EVC.

2.2.2 Ecological Vegetation Classes

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

Modelled EVC distribution was accessed to assess the EVC likely to occur on the study area (DELWP 2018a). EVCs were then identified in the field according to observable attributes including dominant and characteristic species consistent with the benchmark descriptions (DELWP 2018b).

2.2.3 Habitat Hectare Assessment

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

This process begins with the identification of the EVC. Each EVC has an optimal benchmark representing its mature, natural (pre-1750) state. The assessment area is measured based on 7 habitat/vegetation components and 3 landscape components as a percentage of the EVC benchmark.

Assessment areas are separated into different habitat zones two types of EVCs are observed or where there are observed differences in condition within a single EVC.

When undertaking a habitat hectare assessment, *Large Trees* are documented either within a native vegetation patch or as a Scattered Tree.

2.3 Tree Census

All indigenous Large and Scattered Trees were identified on the site.

The location, species and DBH for each Large and Scattered Tree was recorded and detailed in Section 3.1.3 and illustrated on Map 1.

Tree Protection Zones (TPZ) were also considered for the purpose of this assessment. A TPZ is the area around the trunk of a tree which has a radius of 12 times the DBH.

A TPZ can be assigned to a maximum of 15 metres and no less than 2 metres. Dead trees greater than 40 cm DBH are assigned a TPZ a radius of 15 metres from the base to be considered retained (DELWP 2017b).

Information was also obtained from the Arborist report prepared by Advanced Treescape Consulting (Kingdom 2018)

2.4 Taxonomy

Flora and fauna taxonomy used in this report is in accordance with the Victorian Biodiversity Atlas Taxa List dated 03/02/2018 (DELWP 2018c).

2.5 Flora

2.5.1 Existing information

Existing flora records on the Victorian Biodiversity Atlas (DELWP 2018d) for a five kilometre radius around the study area was obtained on 19/17/2015.

2.5.2 Flora survey

During the assessment, the study area was inspected on foot. A species list (or defined area list) for indigenous or naturalised flora (i.e. not including planted species) over the entire study site was compiled

2.5.3 Identification

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

2.5.4 Limitations of flora survey

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

- it was undertaken in late summer and again in late winter which is not the optimal time for plant identification
- it is expected that some other species, particularly orchid, lily and other herbaceous species that can only be observed for a limited period of time may not have been recorded during the present assessment
- flora surveys were undertaken over a short period of time and focussed on areas of the site most impacted upon by the proposed development.

Nonetheless the survey was considered an adequate representation of site condition and sufficient to determine potential impacts associated with the development and guide land management across the site.

On this basis, it is considered that the quality of the survey results were at least partially compromised. In particular, many parts of the study site showed signs of damp conditions, indicating that it is likely that in wetter times of the year, a higher cover of native herbs would be present. Additionally, the conditions encountered on the day meant that it is much less likely that it can be concluded that any rare or threatened flora species are not present.

However, the process of assessing the likelihood of the presence of threatened flora that is reported on in Section 3.2.1 assists in mitigating the potential risk that rare or threatened flora species were not identified during the site assessment. It is considered further in the analysis of relevant policy and legislation, Section 5.

2.6 Fauna

2.6.1 Existing information

Existing fauna records on the Victorian Biodiversity Atlas (DELWP 2018d) for a five kilometre radius around the study area was obtained on 08/06/2015.

2.6.2 Fauna habitat survey

The main focus in regards to fauna was to undertake a habitat assessment. The habitat assessment relies upon making judgements on the suitability of habitat present within the study site for any significant species recorded in the database search.

2.7 Potentially occurring rare or threatened species

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

- previous recordings of species in the local area
- date of last record
- the habitat requirements of individual species
- the physical attributes of the site, such as topography, geology, soils, aspect and other habitat features such as trees with hollows, the presence of rocks or boulders, logs on the ground
- the history of land use at the study site
- the ecological landscape context; i.e. the degree of connectivity, modification and fragmentation across the landscape.

A basic matrix that describes the justification for the likelihood of occurrence is presented in Table 1.

Table 1. Criteria for potential occurrence of significant species

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

2.8 Mapping

Spatial data collection was carried out using a combination of a handheld GPS enabled device, aerial photography and the existing feature survey. Determination of vegetation boundaries was undertaken using a combination of GPS data and ground-truthing with aerial photography. GPS data and mapping should be considered approximate only (e.g. $\pm 1-5\text{m}$).

3. RESULTS

3.1 Vegetation Categorisation, Classification and Quality

Native vegetation within the assessment area occurs in one Habitat Zone (HZ) and includes the entire area within the tree course. Similar vegetation occurs beyond the assessment area. Map 2 indicates the distribution of the Habitat Zone and the area assessed across the site. The Ecological Vegetation Classes on site and their bioregional conservation status are indicated in Table 2.

Table 2. Bioregional Conservation Status for Extant EVCs at Study Site.

EVC No.	EVC	Bioregional Conservation Status
56	Floodplain Riparian Woodland	Endangered

3.1.1 Floodplain Riparian Woodland

Floodplain Riparian Woodland vegetation type occupies the majority of the site. For the purposes of this assessment only the area to be impacted was assessed and is identified as one Habitat Zone 1 (Figure 1). HZ1 is in moderate condition dominated by Large River Red Gums *Eucalyptus camaldulensis* approximately 20m tall (Figure 4). Most trees are relatively older but there is a number of younger trees through-out (Figure 2).

Understorey trees and shrub species include Blackwood *Acacia melanoxylon*, Silver Wattle *Acacia dealbata*, Burgan *Kunzea ericoides* spp. agg. Prickly Currant-bush *Coprosma quadrifida* and Tree Violet *Melicytus dentatus* s.l.

A high cover of exotic shrub species was also present through-out comprising: Box-elder Maple **Acer negundo* Sweet Pittosporum **Pittosporum undulatum* Hawthorn **Crataegus monogyna* Cherry Plum **Prunus cerasifera*.

Wandering Jew **Tradescantia fluminensis*, a high threat weed dominated the groundstorey along with other high threat weeds such as: English Ivy **Hedera helix* White Bladder-flower **Araujia sericifera* Blackberry **Rubus fruticosus* spp. agg. Toowoomba Canary-grass **Phalaris aquatica* and Couch **Cynodon dactylon* (Figure 3).



Figure 1. Floodplain Riparian Woodland



Figure 2. Large trees with younger trees throughout



Figure 3. Wandering Jew *Tradescantia fluminensis* dominating the groundstorey



Figure 4. Large Old River Red Gum

3.1.2 Habitat hectare assessment

Table 3 presents the results of the Habitat hectare assessment.

Table 3. Habitat hectare assessment

Habitat Zone			1
Bioregion			GP
EVC Name (initials)			FRW
EVC Number			56
EVC Conservation Status			EN
Size of Zone (ha)			1.557
		Max Score	Score
Site Condition	Large Old Trees	10	5
	Canopy Cover	5	4
	Understorey	25	5
	Lack of Weeds	15	0
	Recruitment	10	10
	Organic Litter	5	3
	Logs	5	2
	EVC Standardiser		1
	Standardised Site Score	75	29
Landscape Context		25	10
Habitat points		100	39
Habitat Score (habitat points/100)		0.##	0.39
No. of Large Old Trees			15

3.1.3 Tree census

Table 4 shows the tree classification by diameter-at-breast-height (DBH) for the EVCs identified within the study site.

Table 4. Tree Classification for EVCs at Study Site

EVC No.	EVC	DBH of:			
		Very Large Old Tree	Large Old Tree	Medium Old Tree	Small Tree
56	Floodplain Riparian Woodland	≥ 120 cm	≥ 80 cm to <120cm	≥60cm to <80cm	≥20cm to <60

Scattered trees and Large Old Trees (LOTs) were identified, the species determined, DBH measured and location mapped. Map 2 shows the location of these trees across the site.

The tree census is provided in Appendix 5.

3.2 Flora

A total of 42 plant taxa were recorded in the study area during this survey of which 13 were indigenous (30%) and 30 (70%) were introduced or naturalised outside their natural range. Appendix 1 lists all flora recorded within the study site respectively. Table 5 summarises plant taxa recorded in the study area during this survey.

Table 5. Summary of plant species recorded

Flora Status	Number of Taxa
Indigenous vascular species	12
Exotic species	28
Native species outside of natural range	2
TOTAL	42

3.2.1 Rare or threatened flora

A total of 15 state or nationally significant flora species are recorded within a five-kilometre radius of the study area in the VBA (DELWP 2015a;b). Details of these species are given in Appendix 2.

No species listed under the EPBC Act were recorded within the study area. It is unlikely that any species listed under the EPBC Act including River Swamp Wallaby-grass *Amphibromus fluitans* are likely to occur due to the highly modified nature of the vegetation, in particularly due to the high weed cover within the understory.

No species listed as threatened under the FFG Act were recorded within the study area. It is unlikely that any species listed as threatened under the FFG Act are likely to occur due to the highly modified nature of the vegetation.

3.3 Fauna

3.3.1 Fauna habitat

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

- tree canopies, and trees with small and large hollows
- leaf litter
- sparse understorey vegetation
- small logs

Vegetation on site provides good fauna habitat and is connected to broader areas of native vegetation. Within the site there are many large old trees containing hollows and suitable nesting habitat for many bird and bat species as well as possums. Small hollows also occur within deadwood of the tree canopy and are characteristic of River Red Gum trees which dominate the site.

The midstorey varies and is thick in some areas and sparse in others and generally providing good nesting habitat for smaller birds. Some areas within the site contain thick leaf litter that is ideal habitat for smaller fauna species such as lizards, frogs and invertebrates. It also provides good foraging material for birds. There are many small logs on site that can be used for nesting and foraging by smaller mammals and lizards.

3.3.2 Rare or threatened fauna

No rare or threatened fauna of state or national significance were recorded during the site inspection.

A total of 56 state or nationally significant fauna species are recorded within a five-kilometre radius of the study area in the VBA (DEPI 2014b). Details of these species are given in Appendix 3. Three species are considered to have a 'medium' likelihood of using the habitat on-site: the Powerful Owl *Ninox strenua* and the Grey-headed Flying-fox *Pteropus poliocephalus* and the Azure Kingfisher *Alcedo azurea*.

The Grey-headed Flying-fox is listed as Vulnerable under the EPBC Act, listed on the FFG Act and is listed as vulnerable under DELWP's Victorian Rare Or Threatened (VROT) list. The species may use the area for foraging, but no known camps are present on site. The nearest camp is located approximately more than two km from the study area and will not be impacted by any proposed works. Therefore no significant impacts are expected to occur to the species.

The Powerful Owl is listed on the FFG Act and is listed as vulnerable under DELWP's Victorian Rare Or Threatened (VROT) list. The Powerful Owl is known to use the Yarra River corridor and riparian vegetation associated with the site for roosting, foraging and breeding. This species is known to occur approximately 2km from the study area, where a pair of breeding Owls are within River Red gum hollows within riparian vegetation located at the end of Macarthur road (Garry French, Parks Victoria pers. comm.). Furthermore a known breeding site is located by the banks of the Yarra River at Wilson Reserve in Ivanhoe approximately 3.8km from the study area is (Alice Ewing pers. comm.). Another breeding pair is within 2kms upstream of the site near the Banyule Billabong (Garry French Pers. Comm.)

Given this there are no known breeding or roosting sites that occur within the study site and at most the Powerful Owl is likely to only use the site as a connecting corridor to fly through at night (Garry French Pers. Comm.) or to hunt in occasionally.

The Azure Kingfisher is listed as near threatened under DELWP's Victorian Rare Or Threatened (VROT) list. There are recorded Records nearby but not suitable habitat for nesting burrows at the site. Perching locations may occur and may use the site to fly through. Therefore no significant impacts are expected to occur to the species.

4. DEVELOPMENT PROPOSAL

The current proposal for the study site includes establishment of a TreeTop Adventure Park and associated infrastructure (refer to Map 4). Impacts on vegetation and habitat at the study site will arise from various aspects associated with the proposed development and its future use. These impacts on native vegetation will occur in the following 'land management zones' (discussed further in section 8) that are proposed for establishment on this site. These zones correspond with those shown on Map 5 and are described below:

4.1 Proposed development

Construction Zone (CZ):

- This zone will consist of areas within HZ1 and the current clearing.
- The building envelope (or Administration building footprint) will be established within this zone. The administration building will be approximately 10.2m x 18.2m and will be fully removable, made out of recycled shipping containers and clad timber. A steel, hybrid footing system that has minimal impact called Surefoot Footings www.surefootfootings.com.au may be used or screw piles instead of cement piers in order to have minimal impact on the site. A water tank for firefighting will be situated next to the building. A 1m buffer area has been included to allow for any impacts to native vegetation that may be caused during the construction phase.
- It is likely that vegetation within this zone, predominantly some shrubs, will need to be cleared to allow for the administration building location. Therefore, all vegetation within the Construction Zone will be considered lost even though some vegetation may be retained.
- Ecoline has advised that no trees will be removed including tree number 1 where the proposed administration building is within close proximity to the tree roots (**Error! Reference source not found.**). Ecoline has advised that the tree will be protected by decking with poles that will be constructed well away from the Tree Protection Zone (TPZ) of tree number 1. Impacts to tree number 1 have been discussed in section 6 (Guidelines for design) of the Arborist report (Kingdom 2018). If the guidelines for design are followed then the arborist has confirmed that the tree can be retained and not deemed lost under the *Guidelines for the removal, destruction and lopping of native vegetation* (DELWP 2017a). The development plans in Appendix 7 also depict how the tree will be avoided.

Fuel Modified Conservation Zone (FMCZ) and Modified Conservation Zone (MCZ)

- Zones will be located beyond the Construction Zone; it will include remaining areas of HZ1. This is the broader area within the proposed course overlay. The construction in this area will include 8 courses and associated non-invasive platforms around trees (Figure 5). The courses will include a series of flying foxes, rope ladders and high rope challenges linking platforms. There will also be upgrades to existing pathways which will be widened and mulched (Figure 6).
- All other associated features relating within this zone include a connecting mulched pathway that will be linked to Parks Victoria's existing path system.

- Ecoline has advised that no trees will be removed however; vegetation in this zone may be slightly modified to allow for the obstacle course facilities in trees and for the safety of participants. The majority of the remnant vegetation in particular canopy trees will be retained however as outlined in the Arborist report prepared by Advanced Treescape Consulting (Kingdom 2018) some canopy trees will require some remedial work such as crown cleanup and deadwooding. Furthermore it is likely that some understorey trees and medium shrubs that reach the height of the canopy and are also growing densely throughout the site will need to be trimmed to clear an aerial pathway for the apparatus in particular the high rope adventure challenges or flying foxes.



Figure 5. non-invasive built platforms around trees with mulched pathways



Figure 6. Proposed pathways

4.2 Future use

- The future use of the site will be limited to daylight hours opening 7 days a week, 364 days per year and closed Christmas Day. Operating hours to vary from the summer months to winter.
 - Summer – Monday to Sunday 9.00am -- 6.00pm
 - Winter -- Monday – Friday 10.00am – 4.00pm (we open at 9.00am for school groups or corporate groups)
 - Saturday – Sunday & School Holidays – 9.00am – 4.30pm
- TreeTops opens in all weather conditions except very heavy winds or lightning. It is likely that due to the site occurring within a Bushfire Prone Area that there will be closure of the facility and evacuation of all staff on Extreme and Code Red fire danger days. An emergency management plan safeguarding Yarra Valley Park and management of the Treetops facility will be incorporated into the plan.
- Capacity: Maximum number of people able to be on the courses at one time is 100. The maximum capacity of the facility on summer's day will be approx. 240.
- The carpark that already exists adjacent to the site will be refurbished to bring it in line with relevant Australian standard and will be configured to allow for 41 car spaces and 2 disabled parking spaces.

It must be noted that this refurbishment is not included in the current assessment. Access to the car park will be limited to operating hours only.

- Toilets located nearby will also be refurbished and used by visitors
- Public Access: TreeTops will not restrict public access to the park except in the immediate office vicinity where participants are equipped and briefed for the experience.
- All activities will be restricted to the treetops within the courses which start at the Administration building.

5. RELEVANT POLICY AND LEGISLATION

The following section explores relevant policy and legislation pertaining to ecology and bushfire from the national level through to the local level.

5.1 Environment Protection and Biodiversity Conservation Act

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) applies to sites where proposed developments or projects may have a significant impact on matters of National Environmental Significance (NES). There are currently seven matters of National Environmental Significance:

- World Heritage properties
- National Heritage places
- nationally listed threatened species and ecological communities
- listed migratory species
- Ramsar wetlands of international importance
- Commonwealth marine areas
- nuclear actions (including uranium mining).

Under the EPBC Act, a proponent must refer proposed actions that may have a significant impact on matters of national environmental significance to the Australian Government Environment Minister (or delegate)

Relevance to proposal

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of an important population of a species
 - *No important population on site. Will not impact the camp located at Yarra Bend, located >2km from study site*
- reduce the area of occupancy of an important population
 - *no removal of trees on site*
- fragment an existing important population into two or more populations
 - *No existing important population on site*
- adversely affect habitat critical to the survival of a species
 - *Minimal impact to trees on site*
- disrupt the breeding cycle of an important population
 - *No important population on site*
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

- *Minimal impact to vegetation on site. No trees proposed for removal*
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat
 - *No invasive species are likely to establish due to proposal*
- introduce disease that may cause the species to decline, or
 - *N/A*
- interfere substantially with the recovery of the species.
 - *N/A*

What is an important population of a species?

An 'important population' is a population that is necessary for a species' long-term survival and recovery.

This may include populations identified as such in recovery plans, and/or that are:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

Development within the study site is not likely to have a significant impact on species, nor any other matters of environmental significance protected under this Act.

5.2 Flora and Fauna Guarantee Act 1988

The *Flora and Fauna Guarantee Act 1988* (FFG Act) was legislated to ensure the continued survival of all Victorian species of flora and fauna and all Victorian communities of plants and animals. The FFG Act provides a number of ways to help achieve its objectives including:

- listing of threatened taxa, communities of flora or fauna and potentially threatening processes, and creation of Action Statements and Management Plans for all listed taxa communities of flora or fauna and processes
- declaration of a Critical Habitat if the habitat is critical for the survival of a species or a community of flora or fauna, if listed as Critical Habitat, the Minister for Environment may then make an Interim Conservation Order (ICO) to conserve the Critical Habitat (NB: no Critical Habitat has been declared in the State)
- protection of flora and fauna through listing offences such as penalties relating to not following an ICO and taking, trading in, keeping, moving or processing protected flora without a licence. (NB: this does not apply to taking protected flora from private land (other than land which is part of the critical habitat for the flora) except for taking tree-ferns, grasstrees or sphagnum moss for the purpose of sale.

The Department of Environment, Land, Water and Planning (DELWP) is the referral authority for matters under the FFG Act.

5.2.1 Protected flora

The protected flora controls are set out in Division 2 of Part 5 of the *Flora and Fauna Guarantee Act 1988* (FFG Act). It is an offence to take, trade in, keep, move or process protected flora without a permit, or unless authorised by Order of the Governor in Council published in the *Government Gazette* (GIC Order). The FFG Act defines "take" to mean to kill, injure, disturb or collect.

For all protected flora, the controls apply to flora "...in any form including the whole organism or any part or product, whether alive or dead or however processed." (Section 45 of the FFG Act). This does not apply to private land where permission is given by the owner and the flora is not taken for the purposes of selling.

The Protected Flora List includes plants from three sources:

- plant taxa which are not threatened but are declared to be protected under section 46 of the *Flora and Fauna Guarantee Act 1988*
- plant taxa which are listed as threatened under section 10 the *Flora and Fauna Guarantee Act 1988*
- plant taxa belonging to communities which are listed as threatened under section 10 of the *Flora and Fauna Guarantee Act 1988*.

As well as protecting threatened species, protected flora are listed as protected to regulate exploitation including removal from the wild for cultivation and the cut-flower industry. Among others the list includes all clubmosses, ferns and fern allies (excluding *Pteridium esculentum*), all members of the Asteraceae (daisies) family, all members of Epacridaceae (heaths), all members of Orchidaceae (orchids) and all Acacias (excluding Silver, Early Black, Lightwood, Blackwood and Hedge Wattles).

5.2.1.1 Threatened flora

No flora species listed as threatened under the FFG Act were recorded within the study area. It is unlikely that any species listed as threatened under the FFG Act are likely to occur due to the highly modified nature of the vegetation.

Relevance to proposal

There are no implications associated with threatened flora under the FFG Act in relation to the project.

5.2.1.2 Protected flora

Species listed as protected flora that are not listed as threatened, do not occur within the study area.

Relevance to proposal

A permit is not required as the proposed works will not kill, injure or disturb protected flora species.

5.2.1.3 Threatened fauna

There are 56 species of fauna listed under the FFG Act 1988 recorded within a 5 km radius study area; one of these, the Powerful Owl may potentially occur on site.

Relevance to proposal

There are no known breeding or roosting sites for Powerful Owl or Camps for Grey-headed Flying-fox that occur within the study site. Powerful Owl is only known to use the site as a connecting corridor to fly through at night and the Grey-headed Flying-fox may use the area for foraging. The proposed construction of the TreeTops Adventure Park will have minimal impact on habitat (refer to section 3) and furthermore the recreational construction activities following construction will be restricted to daylight hours and therefore it is unlikely that the construction or the future use of the site will have any significant impact on the Powerful Owl or any other species listed under this Act.

5.2.1.4 Threatened communities

No threatened vegetation communities recorded during the assessment.

Relevance to proposal

There are no implications associated with threatened communities under the FFG Act in relation to the project.

5.3 Planning and Environment Act 1987

The *Planning and Environment Act 1987* establishes the framework for planning the use, development and protection of land in Victoria in the present and long-term interests of all Victorians. This includes providing the structure for and administering the implementation of Planning Schemes in each municipality through the Victorian Planning Provisions (VPPs). Planning Schemes are legal instruments outlining provisions for land use, development and protection. They are constructed and sourced from the VPPs.

The following section considers relevant sections of the Planning Scheme.

5.3.1 Ministerial Direction No. 11 Strategic Assessment of Amendments

From time to time, the Minister for Planning issues directions to planning authorities about the preparation of planning schemes and amendments to planning schemes. Planning authorities also must consider any other Ministerial direction when preparing a planning scheme or an amendment to a planning scheme.

The purpose of Direction No. 11 Strategic Assessment of Amendments is to ensure a comprehensive strategic evaluation of a planning scheme amendment and the outcomes it produces. In preparing an amendment a planning authority must evaluate and include in the explanatory report a discussion about how the amendment addresses the following strategic considerations:

- Why is an amendment required?
- How does the amendment implement the objectives of planning in Victoria?
- How does the amendment address any environmental effects?
- How does the amendment address any relevant social and economic effects?
- How does the amendment address any relevant bushfire risk?
- Does the amendment comply with the requirements of any other Minister's Direction applicable to the amendment?
- How does the amendment support or implement the State Planning Policy Framework and any adopted State policy?

- How does the amendment support or implement the Local Planning Policy Framework, and specifically the Municipal Strategic Statement?
- Does the amendment make proper use of the Victoria Planning Provisions?
- How does the amendment address the views of any relevant agency?
- Does the amendment address the requirements of the Transport Integration Act 2010?

It is outside the scope of this document to address all these matters. Section 5.7 of this document aims to respond to the consideration of bushfire risk and consideration of environmental effects are considered throughout.

5.3.2 State Planning Policy Framework

Clause 12 Environmental and Landscape Values

Clause 12 of the planning scheme recognises that planning:

- should help to protect the health of ecological systems and the biodiversity they support (including ecosystems, habitats, species and genetic diversity) and conserve areas with identified environmental and landscape values.
- must implement environmental principles for ecologically sustainable development that have been established by international and national agreements.
- should protect sites and features of nature conservation, biodiversity, geological or landscape value.

Clauses of particular relevance include:

- Clause 12.01–1 Protection of biodiversity
- Clause 12.01–2 Native vegetation management

Relevance to proposal

The objectives of these clauses are considered in the body of this report that relate to avoiding and minimising impacts to biodiversity.

Clause 13 Environmental Risks

This clause recognises that planning should adopt a best practice environmental management and risk management approach which aims to avoid or minimise environmental degradation and hazards. This includes consideration of:

- climate change
- floodplains
- soil degradation
- erosion and landslip

- noise and air
- air quality
- bushfire

Clause 13.02 Bushfire

The objective of this clause is to assist to strengthen community resilience to bushfire. The overarching strategies are to:

- prioritise the protection of human life over other policy considerations in planning and decision-making in areas at risk from bushfire,
- apply the precautionary principle to planning and decision-making when assessing the risk to life, property and community infrastructure from bushfire.

This includes considerations such as:

- Apply the best available science to identify vegetation, topographic and climatic conditions that create a bushfire hazard.
- Development should not proceed unless the risk to life and property from bushfire can be reduced to an acceptable level.

Relevance to proposal

Consideration of the bushfire risk has been incorporated into the project design and is specifically addressed in detail in section 5.7.

5.3.3 Banyule Zoning

The site is zoned Public Conservation and Resource Zone (PCRZ). The purpose of this zone includes:

- To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies
- To protect and conserve the natural environment and natural processes for their historic, scientific, landscape, habitat or cultural values.
- To provide facilities which assist in public education and interpretation of the natural environment with minimal degradation of the natural environment or natural processes

Under this zone, the subject site requires a permit to construct a building or construct or carry out works. However this assessment seeks to support a planning scheme amendment according to Victoria's Planning Provisions under Clause 52.03 for a Specific Site Exclusion.

Clause 52.03 – Specific Sites and Exclusions

The purpose of this clause includes:

- To recognise specific controls designed to achieve a particular land use and development outcome existing on the approval date.
- To provide in extraordinary circumstances specific controls designed to achieve a particular land use and development outcome.

Land identified in the schedule to this clause may be used or developed in accordance with the specific controls contained in the incorporated document corresponding to that land. The specific controls may:

- allow the land to be used or developed in a manner that would otherwise be prohibited or restricted;
- prohibit or restrict the use or development of the land beyond the controls that may otherwise apply;
- exclude any other control in this scheme

Relevance to proposal

Minor changes to zoning will make the proposed development acceptable for the site.

5.3.4 Banyule Overlays

The site is also covered by the following overlays under the Banyule Planning Scheme

- Environmental Significance Overlay (ESO1)
- Environmental Significance Overlay (ESO4)
- Heritage Overlay (HO134)
- Land Subject to Inundation Overlay (LSIO)
- Significant Landscape Overlay (SLO1)

ESO1 – Environmental Significance Overlay – Schedule 1 Yarra River, Plenty River and Darebin Creek

This overlay applies to the entire area and largely focuses on areas along the Yarra River and Darebin Creek that have significant natural habitat and environmental qualities. They include the protection of streamside areas supporting open space and substantial remnants of indigenous vegetation and wetlands of at least local conservation significance, which in turn, provide habitat for a variety of native animals threatened with local extinction.

Under this overlay a permit is required to remove, destroy or lop any vegetation.

The objectives for this overlay are as follows:

- To protect areas along watercourses from development and loss of vegetation that may damage the streamside environment as a visual, conservation, ecological and recreation resource.
- To enhance and encourage the conservation and maintenance of the streamside environment as a conservation, ecological and recreation resource.

- To address the threatening processes associated with widespread habitat loss and degradation that has occurred in North East Melbourne.
- To conserve water quality and watercourse capacity to enable appropriate beneficial land use and water-based activities to be undertaken
- To encourage the retention and enhancement of a continuous corridor of indigenous vegetation along river and creek banks in order to provide corridors and habitat for the movement of wildlife.
- To protect the watercourse and adjoining parkland and its flora and fauna from the effects of polluted waters conveyed by the stormwater system or other means.
- To protect and enhance sites with archaeological or scientific significance.
- To encourage development consistent with any approved concept plan for the area.
- To ensure that development and management of land is compatible with the natural environmental character and landscaped qualities of the watercourse and its surrounds.

Requirements under this overlay are as follows:

Before deciding on an application to remove, destroy or lop any vegetation the responsible authority must consider, as appropriate:

- The role of native vegetation in conserving flora and fauna.
- The need to retain native or other vegetation if it is rare, supports rare species of flora or fauna or forms part of a wildlife corridor.
- The need to retain vegetation which prevents or limits adverse effects on ground water recharge.
- The need to retain vegetation:
 - Where ground slopes exceed 20 percent.
 - Within 30 metres of a watercourse or wetland.
 - On land where the soil or subsoil may become unstable if cleared.
 - On land subject to or which may contribute to soil erosion, slippage or salinisation.
 - In areas where the removal, destruction or lopping of vegetation could adversely affect the integrity or long term preservation of an identified site of scientific, nature conservation or cultural significance.
 - Which is of heritage or cultural significance.
- Any relevant permit to remove, destroy or lop native vegetation in accordance with a land management plan or works program.
- Whether the application includes a land management plan or works program.

- Whether provision is made or is to be made to establish and maintain native vegetation elsewhere on the land.
- *The Middle Yarra River Concept Plan – Dights Falls to Burke Road, August, 1990; the Middle Yarra Concept Plan – Burke Road to Watsons Creek, July 1991; the Lower Plenty River Concept Plan, October 1994; the Lower Darebin Creek Concept Plan, March 1995; or any other approved concept plan, as relevant*
- Any report on the value or otherwise of the specified vegetation including:
 - An Inventory of Sites of Environmental Significance in the City of Banyule and Adjoining Areas, Banyule City Council, September 1995,
 - Sites of Faunal and Habitat Significance in North East Melbourne, Cam Beardsell, 1997,
 - Lower Plenty River Concept Plan Vegetation Report 1991,
 - Banyule Weed Management Strategy 2006, and
 - Wildlife Corridor Program, Banyule City Council, 2000.
- The conservation and enhancement of vegetation in the area.
- The benefits of retaining a buffer strip of vegetation within specified distances of watercourses, roads and property boundaries.
- The benefits of requiring planting, replanting or other treatment of any part of the land.
- The views of the relevant drainage authority.
- Any proposed landscape plan or agreement to replace areas of vegetation on the site.
- The management of vegetation to minimise fire hazard and to ensure safety to people and property.
- If appropriate, the views of Parks Victoria, with those views to be sought under Section 52 of the Planning and Environment Act 1987.
- Whether the native or exotic vegetation makes a significant contribution to the visual amenity or landscape qualities of the streamside environment

Relevance to site

The objectives of the Overlay have been met, as although there will be some native vegetation removal, it will be limited and complete loss has been minimised (refer to section 4 for the development proposal and section 6 which refers to vegetation removal). Due to the nature of the development and limited clearing of native vegetation within the construction zone it is unlikely that the site will have adverse effects on landscape values, wildlife habitat or corridors or lead to land degradation through soil erosion or loss of water quality. Furthermore, as although some areas of vegetation will require some remedial work such as crown cleanup and deadwooding, this will be minor and will not have any adverse effects on significant natural habitat and environmental qualities.

The development is consistent with the guidelines in that impacts to significant natural habitat and environmental qualities are low. Significant habitat will be avoided and the planning to ensure the development is sustainable and will be guided through the preparation of a Land Management Plan.

Other sections of the policy have been met or demonstrated throughout this report, particularly in Sections 5, 6 and 8.

ESO4 – Environmental Significance Overlay – Schedule 4 Significant trees and areas of vegetation

This Overlay applies to the many individual trees, groups of trees and areas of vegetation within Banyule, which have special significance. They include a variety of native and exotic trees and other vegetation, which are of landscape, habitat, horticultural or genetic value, are rare or of localised distribution, are outstanding examples of their species or are of cultural or historical significance. All are included on the *Banyule City Council Significant Trees Register* and some are included on the *National Trust of Australia's Register of Significant Trees of Victoria*.

The objective for this overlay is to protect and enhance trees and areas of vegetation that are significant.

A permit is required to remove, destroy or lop any significant tree or area of vegetation specified in the table to this clause.

Before deciding on an application under this overlay the responsible authority must consider, as appropriate:

- The significance of any specified trees or areas of vegetation.
- Whether any specified trees or areas of vegetation are of botanical, scientific or cultural significance and the impact of its removal on the integrity of the landscape.
- The benefit of a condition regarding the method to be employed in lopping any specified trees.
- The benefit of conditions requiring a long-term maintenance program for specified trees or areas of vegetation and especially those subject to continuing works.
- Whether the proposed location or design of any building or works will impair the appearance or health of specified trees or areas of vegetation.
- The “*National Trust (Victoria) Significant Trees Register*”, the “*Banyule City Council Significant Trees and Vegetation Register*” and the “*City of Banyule – Significant Trees and Vegetation Study (March 2000)*”.
- Any report which identifies, describes or deals with specified trees or areas of vegetation.

Relevance to site

The objectives of the Overlay have been met and no trees or areas of vegetation listed on the *Banyule City Council Significant Trees Register* or on the *National Trust of Australia's Register of Significant Trees of Victoria* are proposed to be impacted.

Consideration has been made of the Monterey Cypress *Cupressus macrocarpa* 'Horizontalis' and *C. macrocarpa* 'Horizontalis aurea' (Many) Cupressus Hedges Code 273 listed on Councils Significant Tree Register at 340–680 The Boulevard, Ivanhoe East. The location of these are more than 1km away from the proposed site and will not be impacted by the proposal.

LSIO – Land Subject to Inundation Overlay

The objectives for this overlay are as follows:

- To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.
- To identify land in a flood storage or flood fringe area affected by the 1 in 100 year flood or any other area determined by the floodplain management authority.
- To ensure that development maintains the free passage and temporary storage of flood waters, minimises flood damage, is compatible with the flood hazard and local drainage conditions and will not cause any significant rise in flood level or flow velocity.
- To reflect any declaration under Division 4 of Part 10 of the Water Act, 1989 where a declaration has been made.
- To protect water quality in accordance with the provisions of relevant State Environment Protection Policies, particularly in accordance with Clauses 33 and 35 of the State Environment Protection Policy (Waters of Victoria).
- To ensure that development maintains or improves river and wetland health, waterway protection and flood plain health.

Before deciding on an application, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate:

- The State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.
- Any local floodplain development plan.
- Any comments from the relevant floodplain management authority.
- The existing use and development of the land.
- Whether the proposed use or development could be located on flood free land or land with a lesser flood hazard outside this overlay.
- The susceptibility of the development to flooding and flood damage.
- The potential flood risk to life, health and safety associated with the development. Flood risk factors to consider include:
 - The frequency, duration, extent, depth and velocity of flooding of the site and accessway.
 - The flood warning time available.
 - The danger to the occupants of the development, other floodplain residents and emergency personnel if the site or access way is flooded.

- The effect of the development on redirecting or obstructing floodwater, stormwater or drainage water and the effect of the development on reducing flood storage and increasing flood levels and flow velocities.
- The effect of the development on river health values including wetlands, natural habitat, stream stability, erosion, environmental flows, water quality and sites of scientific significance.

Relevance to site

A permit is required for the proposal under this overlay. Consideration needs to be made of the decision guidelines provided for in the schedule. This report addresses some of these concerns, however most the matters are outside the scope of this report and should be fully considered by the applicant to ensure they are met.

SLO1 – Significant Landscape Overlay – Schedule 1 Yarra (Birrarung) River Corridor Environs

The objectives for this overlay are as follows:

Landscape, environmental and cultural values

- To protect and enhance the natural landscape character of the Yarra River corridor where the river, its topography, adjacent public open space and a continuous corridor of vegetation and canopy trees are the dominant features.
- To protect, rehabilitate and expand a continuous corridor of riparian and indigenous vegetation using appropriate indigenous species.
- To protect and enhance both terrestrial and aquatic habitat to allow the movement of wildlife within the Yarra River corridor.
- To protect and conserve areas of known indigenous and non-indigenous cultural or archaeological significance.
- To retain exotic vegetation of heritage or neighbourhood character where it contributes to landscape significance.

Protection of waterway and the riparian zone

- To ensure buildings and works are set back from the banks of the river to protect existing riparian vegetation, habitat and not impede its natural flood and watercourse characteristics.
- To maintain and protect the river's natural geomorphology, banks stability and reduce the risk of erosion.
- To reduce the rate or quantity of stormwater, sediment or other pollutants directly entering watercourses or wetlands.

Public open space and access

- To maintain and protect linear public open space and provide for secluded areas of public open space with appropriate public access to the river and its public open space.

- To encourage the co-location or clustering of buildings, jetties and mooring facilities on public land.
- To encourage bicycle and shared paths that are well located, avoid unnecessary earthworks and vegetation removal and have good visibility to help increase safety for users.

Siting and design of built form

- To avoid light spill and overshadowing from buildings and works on the banks and water of the Yarra River, adjacent public open space and along bicycle and shared paths.
- To minimise the visual intrusion of buildings and works when viewed from the Yarra River and adjacent public open space, bicycle and shared paths and bridge crossings.
- To ensure buildings are sited and designed to reduce visual contrast with the natural landscape character setting of the Yarra River corridor.
- To ensure all buildings are subordinate to the existing vegetation with all views of buildings filtered through vegetation.
- To ensure all fencing within close proximity to the Yarra River is low in scale, visually permeable and does not create contrast with its natural landscape character.

A permit is required to:

- Remove, destroy or lop vegetation.
- Construct a fence within 30 metres of the banks of the Yarra River or where it abuts public open space unless all of the following requirements are met:
 - the maximum height of the fence does not exceed 1.4 metres at any point above natural ground level; and
 - the fence is of timber post and rail, and timber or metal post and wire construction

Relevance to site

The objectives of the Overlay have been met, as although there will be some native vegetation removal, it will be limited and complete loss has been minimised (refer to section 4 for the development proposal and section 6 which refers to vegetation removal). No canopy trees will be removed or deemed lost according to the Arborist Report (Kingdom 2018). Some areas of vegetation will require some remedial work such as crown cleanup and deadwooding however this will be minor and will not have any adverse effects on any Landscape or Environmental Values. Furthermore revegetation and supplementary planting has been recommended to rehabilitate the area to assist with expanding a continuous corridor of riparian and indigenous vegetation using appropriate indigenous species (see section 8.8).

Other sections of the policy have been met or demonstrated throughout this report, particularly in Sections 5, 6 and 8.

A permit is required for the proposal under this overlay. Consideration needs to be made of the decision guidelines provided for in the schedule. This report addresses some of these concerns, however some of the matters are outside the scope of this report and should be fully considered by the applicant to ensure they are met.

5.3.5 Clause 52.17

Under Clause 52.17 a permit is required to remove, destroy or lop native vegetation on sites greater than 0.4 hectares. Clause 52.17 requires a planning permit for the removal of native vegetation (exemptions apply). The purpose of the clause (amongst others) is to minimise impacts on Victoria's biodiversity from the removal of native vegetation and to manage native vegetation to minimise land and water degradation.

Application requirements and decision guidelines are listed within the Clause. Applications may fall into a basic, intermediate or detailed pathway depending on the location and extent of vegetation removed. The application requirements and decisions depend on the relevant assessment pathway. Referral to DELWP under Clause 66.02 may be required for an application to remove native vegetation; e.g. if clearing is greater than 0.5 ha or the application follows the detailed pathway.

This report, and in particular, Section 6, seeks to respond to this Clause.

5.4 Wildlife Act 1975 and Wildlife Regulations 2013

The *Wildlife Act 1975* provides for the protection and conservation of native wildlife (fauna) within Victoria. It also provides the basis for the majority of wildlife permit/licensing requirements within the state. Under the Act a person must not hunt, take or destroy endangered, notable or protected wildlife; this includes all native vertebrate animals, all kinds of deer, non-indigenous quail, pheasants, and partridges, and all terrestrial invertebrate animals listed under the Flora and Fauna Guarantee Act 1988.

The *Wildlife Regulations 2013* provide further detail relating to the act, including that a person not to damage, disturb or destroy any wildlife habitat (s42), although this does not apply if the person is authorised to do so under any other Act such as the *Planning and Environment Act 1987*.

Relevance to proposal

It is unlikely a separate permit is required under this Act as damage should only be to wildlife habitat and not wildlife. However, if any wildlife is located within the habitat proposed for clearing, salvage and translocation of such wildlife may be required as part of the planning permit. This should also ensure wildlife is not damaged during construction works.

5.5 Catchment and Land Protection Act 1994

The *Catchment and Land Protection Act 1994* (CaLP Act) intends to manage land degradation including detrimental environmental or economic impacts of declared noxious weeds and pest animals.

Under section 20 of the (Catchment and Land Protection Act 1994) CaLP Act, all land owners, including the Crown, public authorities and licensees of Crown lands, must, in relation to their land, take all reasonable steps to:

- avoid causing or contributing to land degradation which causes or may cause damage to land of another land owner;
- eradicate regionally prohibited weeds;

- prevent the growth and spread of regionally controlled weeds on their land;
- prevent the spread of, and as far as possible, eradicate established pest animals.

These are also provisions within the Act to prevent the spread of declared noxious weeds, through regulating the purchase, sale, possession for the purposes of sale, display, propagation or transport of these species into or within Victoria. Furthermore, under the Act it is prohibited to bring into Victoria, keep, sell or release declared pest animals without an authority (permit).

Declared noxious weeds are categorised into four groups depending on their known and potential impact and specific circumstances for each region. These categories are:

- State Prohibited Weeds (S) are either currently absent in Victoria or are restricted enough to be eradicated. The Victorian Government is responsible for their control.
- Regionally Prohibited Weeds (P) in the Port Phillip Catchment Management Authority (CMA) area these weeds are not necessarily widespread but have the potential to become widespread. It is expected that weeds that meet this criteria can be eradicated from the region. For weeds considered to be Regionally Prohibited it is the responsibility of the land owner to control these weeds on their land but not on adjacent roadside reserves.
- Regionally Controlled Weeds (C) are usually widespread but it is important to prevent further spread. It is the responsibility of the landowner to control these weeds on their property and on adjacent roadside reserves.
- Restricted Weeds (R) include plants that pose unacceptable risk of spreading in the State or other Australian states and are considered to be a serious threat to primary production, Crown land, the environment and/or community health if they were traded in Victoria. Trade in these weeds and their propagules, either as plants, seeds or contaminants in other material is prohibited.

Relevance to proposal

There were 5 weeds declared noxious under the *Catchment and Land Protection (CaLP) Act 1994* identified on the site. The following table lists the declared noxious weeds observed on site.

Table 6. Declared noxious weeds occurring within the study area

Scientific Name	Common Name	Control Category (Port Phillip)
<i>*Cirsium vulgare</i>	Spear Thistle	C
<i>*Lycium ferocissimum</i>	African Boxthorn	C
<i>*Crataegus monogyna</i>	Hawthorn	C
<i>*Rubus fruticosus spp. agg.</i>	Blackberry	C
<i>*Foeniculum vulgare</i>	Fennel	R

Established pest animals potentially occurring on the site include:

Table 7. Declared established pest animals potentially occurring on site

Common Name	Scientific Name
Dog	<i>*Canis lupus familiaris</i>
European Hare	<i>*Lepus europaeus</i>
European Rabbit	<i>*Oryctolagus cuniculus</i>

Red Fox

**Vulpes vulpes*

5.6 Bushfire Prone Areas

The Victorian *Building Regulations 2006* are created under *Building Act 1993*. The Regulations incorporate the Building Code of Australia (BCA) so that in designated bushfire prone areas (BPA) *Australian Standard 3959–2009 Construction of Buildings in bushfire-prone areas* (Standards Australia 2009) applies to:

- Class 1 (houses)
- Class 2 (apartments)
- Class 3 (residential buildings other than class 1 or 2) buildings
- ‘specific use bushfire protected buildings’ which includes schools, kindergartens, childcare facilities, aged care facilities and hospitals
- associated Class 10a buildings (carports, garages, sheds and the like).

AS 3959 provides a method of determining the Bushfire Attack Level (BAL) which is a measure of the severity of a building’s potential exposure to bushfire. Following the calculation of a building site’s BAL, the Standard then provides an appropriate building construction design.

Relevance to site

The site is within a Bushfire Prone Area (BPA), however AS3959 does not apply in this instance as the proposed development does not include any buildings that require its application under the Victorian Building Regulations 2006.

5.7 Bushfire risk

Map 3 provides an overview of the bushfire risk context. It can be seen that the bushfire potential is highly limited by the surrounding urban environment. There is still however potential for a local bushfire to occur. This would include grassland and woodland fuels scattered along the Yarra corridor. With these fuels bushfire behaviour may potentially be intense locally but fire size and overall risk to property and life relatively low.

Egress and access from the site is very good and it would be quite reasonable to anticipate able bodied persons would be able to egress the area at risk should a bushfire start in the local area.

5.8 Recommended Bushfire Risk Management

As detailed in Section 5 ensuring that bushfire risk is adequately addressed is required under Ministerial Direction 11 and Clause 13.05 of the planning scheme. Furthermore under the Victorian *Occupational Health and Safety Act 2004* an “employer must, so far as is reasonably practicable, provide and maintain for employees of the employer a working environment that is safe and without risks to health” (Section 21). If people are employed to work at the facility consideration in relation to bushfire risk is required under this Act.

In order to address the bushfire risk there are a number of considerations that should be made including:

- Building and infrastructure resilience to bushfires, including siting options to reduce risk
- Defendable space
- Access for fire fighting
- Egress from the site
- Water supply for fire fighting
- Management of staff, customers and the public in the event of bushfire.

Building siting and defendable space

Consideration of the need for defendable space has been included in the siting of the administration building. A brief assessment has been undertaken to consider defendable space required. Based on the vegetation type, classified as Forest vegetation and the slope of the site the defendable space distance required from the building façade for a BAL-40 based on AS3959-2009 is 19m. Note this likely overestimates the risk given the limited bushfire run and the generally lower fuel levels on the site than assumed in AS3959.

The management of defendable space is included in the Land Management Plan outlined in section 8. The main consideration here is to ensure that revegetation in this area is limited and does not increase the risk to this infrastructure, and potentially staff inside.

Bushfire Emergency Management Plan

A Bushfire Emergency Management Plan (BEMP) may be required to the satisfaction of Council or the CFA associated with the planning amendment/application. Regardless one should be prepared to address the requirements of the *Occupational Health and Safety Act 2004*. Such a plan should include the following principles:

- Induction of all staff members on bushfire procedures with annual reviews
- information notices in designated areas of meeting points and procedures in case of fire
- the need for a designated fire warden on site at all times
- closure of the facility and evacuation of all staff on Extreme and Code Red fire danger days
- Emergency Evacuation Procedures that incorporate a shelter-in-place option as a last resort
- incorporate well-defined triggers to evacuate all personnel off site in an emergency bushfire event or have them shelter-in-place if it is determined that evacuating may be unsafe
- The Bushfire Emergency Management Plan should be reviewed each year to ensure it meets with evolving standards and responds to changing circumstances of the operation.

These general principles that should be followed in perpetuity are provided in lieu of a draft Bushfire Emergency Management Plan. A draft plan would age quickly and become irrelevant over time because a wide range of factors could change over time, from changes in planning law to operational changes for the facilities. The above principles are proposed as the minimum measures to include in a BEMP that would be developed by the facility manager and reviewed on an annual basis. If necessary, the CFA and Council may consider how these key principles are followed in the development of a BEMP for the facility over time, potentially through a Section 172 agreement or as a permit condition.

6. NATIVE VEGETATION IMPACT ASSESSMENT

This section addresses the proposed native vegetation impacts associated with this permit application. A permit is required to remove native vegetation on the site as outlined in the Native Vegetation Clause 52.17 of the planning scheme and detailed in the *Guidelines for the removal, destruction and lopping of native vegetation* (DELWP 2017a).

The purpose of clause 52.17 and 'the Guidelines' is to ensure a no net loss to biodiversity as a result of removal or loss of native vegetation. This is achieved in three steps:

1. Avoid the removal, destruction or lopping of native vegetation
2. Minimise impacts from the removal where native vegetation cannot be avoided and,
3. Provide an offset to compensate for the biodiversity impact if a permit is granted

6.1 Assessment Pathway

An application to remove, destroy or lop native vegetation must be classified as one of the following assessment pathways:

- basic
- intermediate
- detailed

The application requirements and decision guidelines in Clause 52.17 must be applied in accordance with the relevant assessment pathway.

To determine the assessment pathway, two factors are considered in relation to the native vegetation proposed to be removed:

- the location categories (shown in the location maps a location 1, 2 or 3)
- the extent of proposed native vegetation removal

Table 8. Determining the Assessment pathway

Extent of native vegetation	Location category		
	Location 1	Location 2	Location 3
Less than 0.5 hectares and not including any large trees	Basic	Intermediate	Detailed
Less than 0.5 hectares and including one or more large trees	Intermediate	Intermediate	Detailed
0.5 hectares or more	Detailed	Detailed	Detailed

Source: Table 3, *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP 2017a)

6.1.1 Location category

The location category has been determined for all of Victoria. Native vegetation will be in either location 1, 2 or 3 as outlined below

- Location 3 – includes locations where the removal of less than 0.5 hectares of native vegetation could have a significant impact on habitat for a rare or threatened species.
- Location 2 – includes locations that are mapped as endangered EVCs and/or sensitive wetlands and coastal areas are not included in Location 3
- Location 1 – includes all remaining locations in Victoria.

The vegetation to be removed is in location 3. Figure 7 shows the location category.

Figure 7. Location category for vegetation to be removed



6.1.2 Extent of impact from proposed development

As outlined in 'The Guidelines', an application must consider:

- the proposal and all buildings and works that could impact on existing native vegetation, including mapped wetlands.

- Consider any ancillary uses, utilities, access and earthworks associated with the use or development and any defensible space requirements.
- The full extent of native vegetation removal must be considered.
- Assumed losses account for indirect loss of native vegetation for example, encroachment into tree protection zones, loss from changed water flows and shading.

An approved development will result in the loss of native vegetation patches and scattered trees.

Impacts to remnant patches have been calculated as per (DELWP 2017a):

A small area of remnant vegetation (identified as a remnant patch) where the administration building is proposed will be removed and requires offsetting, with the exception of tree number 1 which will be retained. It must be noted that only tree canopy modification will occur across the remainder of the site for the removal of hanging branches, dead wood and some remedial work in the future such as crown cleanup and deadwooding. Other associated works will include some maintenance to existing paths. Further details on these losses are provided in Section 6.2 below.

- the Construction Zone, where all of the vegetation will be potentially removed
 - 100% of the vegetation currently present is considered lost. The CZ is based on identifying all areas of vegetation to be cleared, with the exception of tree number 1 which will be retained
- the Fuel Modified Conservation Zone and Modified Conservation Zone where understorey will be impacted as well as some deadwooding of canopy trees:
 - 50% loss of habitat score (probably well above the actual impact but this is the only partial clearing allowed by DEWLP)

The table below provides an indication of losses from the land management zones that are to be established to facilitate development at the study site.

Table 9. Extent of native vegetation loss due to proposed development

Land Management Zone	Habitat Zone	Habitat Zone score	Area of loss (ha)	Extent of loss	% loss
Construction Zone (CZ)	1a	39	0.025	Complete loss of native vegetation as a result of construction. Encompasses proposed administration building envelope allowing a 1m buffer zone	100
Modified Conservation Zone (MCZ) and Fuel Modified Conservation Zone (MCZ) (combined)	1b	39	0.472	Assumes some losses to the canopy through dead wooding, mid and some understorey vegetation. Considers that 50% of existing score will be lost.	50
Total loss			0.498		

6.1.3 Assessment pathway

As the vegetation is within location 3 the proposed clearing within the site follows the detailed assessment pathway.

Table 10 presents the application requirements to remove native vegetation under Clause 52.17 as provided in *the Guidelines for the removal, destruction and lopping of native vegetation* (DELWP 2017a) and details whether these have been met.

Table 10. Application requirements for applications for a permit to remove native vegetation

No.	Application requirements	Assessment Pathway	Provided/response
		Detailed	
1	Information about the native vegetation to be removed, including: <ul style="list-style-type: none"> the assessment pathway and reason for the assessment pathway. This includes the location category of the native vegetation to be removed a description of the native vegetation to be removed maps showing the native vegetation and property in context the offset requirement, determined that will apply if the native vegetation is approved to be removed. 	NVR Report and Section x	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a <input type="checkbox"/>
2	Topographic and land information relating to the native vegetation to be removed, showing ridges, crests and hilltops, wetlands and waterways, slopes of more than 20 percent, drainage lines, low lying areas, saline discharge areas, and areas of existing erosion, as appropriate.	Section x	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a <input type="checkbox"/>
3	Recent photographs (dated) of the native vegetation to be removed.	Section x	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a <input type="checkbox"/>
4	Details of any other native vegetation approved to be removed, or that was removed without the required approvals, on the same property or on contiguous land in the same ownership as the applicant, in the five year period before the application for a permit is lodged.	Section x	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a <input type="checkbox"/>
5	An avoid and minimise statement. The statement describes any efforts to avoid the removal of, and minimise the impacts on the biodiversity and other values of native vegetation, and how these efforts focussed on areas of native vegetation that have the most value.	Section x	Yes <input type="checkbox"/> No <input type="checkbox"/> N/a <input checked="" type="checkbox"/>
6	A copy of any property vegetation plan that applies to the site.	N/A	Yes <input type="checkbox"/> No <input type="checkbox"/> N/a <input checked="" type="checkbox"/>
7	Where the removal of native vegetation is to create defensible space, a written statement explaining why the removal of native vegetation is necessary. This is not required when the creation of defensible space is	Section x	

No.	Application requirements	Assessment Pathway	Provided/response
		Detailed	
	in conjunction with an application under the Bushfire Management Overlay.		
8	If the application is under Clause 52.16, a statement that explains how the proposal responds to the Native Vegetation Precinct Plan	N/A	Yes <input type="checkbox"/> No <input type="checkbox"/> N/a <input checked="" type="checkbox"/>
9	An offset statement explaining that an offset that meets the offset requirements for the native vegetation to be removed has been identified and how it will be secured.	Section x	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a <input type="checkbox"/>
10	A site assessment report of the native vegetation to be removed, completed by an accredited native vegetation assessor.	Section x	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a <input type="checkbox"/>
11	Information about impacts on rare or threatened species habitat	Section x	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a <input type="checkbox"/>

6.2 Minimising impacts to biodiversity

Ecoline has advised that all canopy trees will be retained which has been confirmed by an Arborist (Kingdom 2018). Ecoline have established a non-invasive construction method that will not have any impacts on trees. Given this there will be some impacts associated with the development which have been considered above however steps have been taken to minimise biodiversity impacts.

Table 11 details the steps that have been applied to minimise biodiversity impacts of the proposed development.

Table 11. Steps taken to minimise biodiversity impacts

Steps taken to minimise biodiversity impacts
<ul style="list-style-type: none"> • Avoids clearing of native vegetation by utilising some of the existing pathways. Where vegetation is to be removed for course access, branches will be used to give the outline for the pathway and then fill in with wood chip sourced from an approved supplier. • Avoids removal of Tree 1 due to arborist assessment • The administration building is located in the best area to avoid the removal and indirect removal of all canopy trees. • The administration building has been reduced in size from 16m x 18m to 10.2m x 18.2m and will be fully removable, made out of recycled shipping containers and clad timber. A steel, hybrid footing system that has minimal impact called Surefoot Footings may be used or screw piles instead of cement piers in order to have minimal impact on the site. • Minimises impacts by having a small administration building that is fully removable. • Minimises impacts to trees by using a non-invasive technique and makes equipment fully removable. Equipment is built around trees without drilling through and half logs are used to protect trees from the pressure of wires • Minimises impacts by having no heavy machinery for construction • Minimises impacts through the preparation of a Land Management Plan to guide vegetation and habitat management. Avoids clearing of native vegetation by locating some of the proposed

Steps taken to minimise biodiversity impacts

building envelope and much of the defensible space in areas with less vegetation.

6.3 Native vegetation impact

The Native Vegetation Impact report is provided by (DELWP 2018e) based on GIS data produced by Practical Ecology and as per the clearing outlined above. A summary of the report is given in Table 12 and the full report is provided in Appendix 4.

Table 12. Summary of native vegetation to be removed

Summary Item	Result
Assessment pathway	Detailed
Total extent	0.498 ha
Extent of past removal	0.000 ha
Extent of proposed removal	0.489ha
No. of Large Trees proposed to be removed	0
Location category	3

Offset targets

If a permit is granted to remove the selected vegetation, a requirement to obtain a native vegetation offset will be included in the permit conditions. The offset must meet the following requirements:

Table 13. Offsets required if a permit is granted

Offset type	Offset requirements
Specific offset amount	<ul style="list-style-type: none"> 0.184 species of habitat units of habitat for Grey-headed Flying-fox, <i>Pteropus poliocephalus</i> 0.204 species units of habitat for Pink Mountain-correa, <i>Correa lawrenceana</i> var. <i>cordifolia</i>
Large trees	<ul style="list-style-type: none"> 0 trees

Based on a desktop review undertaken for Pink Mountain-correa where a total of 0.204 species units are required to meet the offset requirements shown in Table 13 and Appendix 4 and further advice from botanical specialists David Cameron from DELWP (Appendix 8), Karl Just and Geoff Carr (pers. comm.). It has been concluded that there is clear evidence that there is a DELWP modelling error for the Pink Mountain-correa, *Correa lawrenceana* var. *cordifolia* and therefore will not be considered as an offset requirements for this proposal.

The evidence is provided in this report where the DELWP modelling for the Pink Mountain-correa (Species number 505466) at the site and across Victoria was analysed see Map 5, Map 6 and Map 7. Maps were compared to previously recorded species shown on the Victorian Biodiversity Atlas (DELWP 2018d) Map 8. The modelling is not consistent with existing VBA records which occur in far East Gippsland.

Furthermore it has been concluded that the site does not support habitat for *Correa lawrenceana* var. *cordifolia* for the following reasons:

- Following the advice from botanical specialists David Cameron (attached email below) and Geoff Carr (pers. comm.) *Correa lawrenceana* var. *cordifolia* is confined to NSW. As stated in the attached email dated 16/10/2018 Appendix 8:

Geoff Carr is currently revising the genus Correa and informs me that the Drummer specimen found in Vic represents an undescribed taxon within the C. lawrenceana complex which is quite distinct from the true var. cordifolia which is apparently restricted to NSW. The taxon collected in the Drummer State Forest is known also from the Howe Ranges near the NSW border and extends at least to Mt Dromedary in southern NSW which is also the type locality for the true C. lawrenceana var. cordifolia. The Drummer entity does not bear pink flowers as indicated by the collector's notes and the specimen seen by Geoff at MEL. As well flower colour there are also conspicuous differences in leaf shape and flower arrangement to distinguish these two taxa.

- VBA Records for *Correa lawrenceana* var. *cordifolia* shows that the species has only been collected from East Gippsland and is likely to be the undescribed taxon within the *C. lawrenceana* complex Geoff Carr (pers. comm.)
- The VBA record in South Yarra is the Herbarium cultivated specimen seen by Geoff.
- The specimen described in the Flora of Vic by Paul Wilson states that *Correa lawrenceana* var. *cordifolia* is confined to rainforest margins and along creeks which is not the habitat type at the project site. Furthermore Geoff has explained that this has also been misidentified.
- The site for this project is in Ivanhoe East along the Yarra River in Melbourne and the vegetation is within EVC 56: Floodplain Riparian Woodland which is not the known habitat or distribution for the species Geoff Carr (pers. comm.)
- The understory is extremely modified and completely dominated by introduced *Tradescantia fluminensis* in particularly within the area where modelled habitat occurs for *Correa lawrenceana* var. *cordifolia* which also overlaps onto the road as shown in the attached map.
- Understorey habitat hectare score is also very low and completely modified (Table 3)

It may be the case that the modelling is based on the cultivated specimen recorded at the Melbourne herbarium as shown on the VBA.

For the above reasons it is proposed that *Correa lawrenceana* var. *cordifolia* be removed from consideration in the assessment of this application for a permit to remove native vegetation for the site located at 540 The Boulevard Ivanhoe East.

6.4 Offset Strategy

All applications that require a permit to remove native vegetation must include an offset strategy as a part of the application.

Offsets can be either:

- First party – located on land owned by the landholder who is proposing to remove the native vegetation

- Third party – located on land owned by a third party

The current site is not eligible to create first party offsets on-site for the following reasons outlined below:

- The current site is located on crown land and therefore offsets cannot be secured under a Section 69 agreement or a Section 173 agreement
- Site gains cannot be generated as the site is currently being managed by Parks Victoria
- The size of the offset zone likely to be required to offset the losses is likely to be too large for the site requiring > 8 ha of remnant vegetation

Due to the above points the site is not eligible to be an offset and therefore on-site first party offsets are not an option in this instance. The offsets that are required to account for vegetation clearing on site are to be achieved by seeking a third party off-site offset.

The offsets that are required to account for vegetation loss on site are to be achieved by creating third party offsets off-site. The required offsets are available and it is proposed they are to be purchased from Yarra Ranges Biodiversity Offsets Program provided by the DEWLP Native Vegetation Offset Register. The quote is provided in Appendix 9.

7. RECOMMENDATIONS

Measures to mitigate/ameliorate potential impacts on the ecological values in the study area include:

- All vegetation within Modified Conservation Zone should be marked out with pegs and flags, by a qualified Ecologist, to ensure that the area will not be entered during the construction of activities within the construction zone.
- For the construction of Administration building follow the Guidelines for design as outlined in section 6 of the Arborist report (Kingdom 2018) and ensure an arborist is to be onsite during any inground works/excavation within the TPZ of Tree 1.
- All tree pruning is to be carried out by a qualified and experienced arborist who has a thorough knowledge of tree physiology and pruning methods. Pruning must be carried out in accordance with Australian Standard AS 4373–2007 Pruning of Amenity Trees.
- Prior to the removal of any limbs or deadwood from the trees, limbs and deadwood are to be inspected for all hollows for the presence of fauna. The inspection must be carried out by suitably qualified and experience Zoologist. If fauna is located during the inspection, they must be salvaged and relocated by a suitably qualified and experience Zoologist and, if appropriate in consultation with the DELWP.
- As outlined in the Aboricultural standards (2009) pruning of limbs and deadwood is to be cut to the collar. In this instance due to the presence of hollows and fauna habitat within deadwood, which is characteristic of large old River Red Gums trees, it is advised that this practise be avoided where possible. It is suggested to only prune to a location which maintains the integrity of the existing hollow while adhering to safety guidelines if achievable.
- The trunks and limbs removed from trees are to be retained a placed in the Modified Conservation Zone.
- A Fauna Management Plan may be required to guide the salvage and translocation process.
- A Construction Environment Management Plan should be developed prior to any works commencing on the project.
- Appropriate sediment and run-off controls should be in place and incorporated into Water Sensitive Urban Design (Melbourne Water 2012) for any proposed development.
- A Weed Management Plan should be developed to control weeds (particularly noxious species), targeting areas within the modified construction zone; and,
- Use indigenous plants associated with the relevant EVCs as part of any landscaping works to increase habitat for native fauna.

Further recommendations

- Liaise with Parks Victoria to determine the appropriate and ongoing management of the site.
- Speak with Warringal conservation council and friends of Yarra valley parklands to engage with the community to inform them of the proposed development and consider any recommendations they

may have in regards to the protection of native vegetation and fauna habitat and the management of the site.

8. OFFSET AND LAND MANAGEMENT PLAN

The intention of this Offset and Land Management Plan is to provide a framework that guides land management practices at the site to ensure environmental values are effectively managed and impacts due to construction and domestic occupation are minimised. It also provides reparation for vegetation loss associated with the proposed development.

The landowner and any third party that enters the property, such as building contractors, are required to follow the guidelines within this plan to ensure environmental impacts are minimised.

8.1 Management zones

For the purpose of managing land-use commitments and easy identification of management regimes and issues the site has been broken into management zones. Each of the management zones are depicted on Map 9

8.1.1 Construction Zone (CZ)

Purpose of zone:

- To provide a location in which construction activities and associated features can be undertaken which include an administration building and a water tank
- To provide an area for the public to congregate and to undertake recreational activities.
- This zone may require bushfire fuel management

Size of zone:

- The Construction Zone encompasses a total area of approximately 0.025 ha.

8.1.2 Fuel Modified Conservation Zone (FMCZ)

Purpose of Zone:

- To provide an area around the proposed Construction Zone that has reduced bushfire fuel levels but still consists of indigenous vegetation. This also includes a connecting mulched pathway which will provide access to the site

Size of Zone:

- The Fuel Modified Conservation Zone has a total area of approximately 0.22 ha.

8.1.3 Modified Conservation Zone (MCZ)

The Modified Conservation Zone is the outer zone of the Construction Zone and is the extent of the course overlay.

Purpose of Zone:

- To provide an area around the Construction Zone in which will include the course overlay and associated non-invasive platforms around trees. The courses will also include a series of flying foxes and high rope adventure challenges. This will also include the construction of aerial pathways throughout the site. The majority of vegetation and habitat will be retained and protected within this area with the exception of some remedial work such as crown cleanup and deadwooding of some trees and some understorey trees and medium shrubs which will need to be trimmed to clear the aerial path for the apparatus.
- To provide an area in which vegetation and habitat will be largely retained and managed for conservation purposes and for aesthetics purposes for the public to appreciate while undertaking recreational activities within this zone.

Size of Zone:

- The Modified Conservation Zone has a total area of approximately 0.94 ha.

8.1.4 Bushland Conservation Zone (BCZ)

Purpose of Zone:

- To provide an area in which vegetation and habitat will be retained and protected.

Size of Zone:

- The Bushland Conservation Zone encompasses a total area of approximately 0.38 ha.

8.2 General development/construction guidelines

The following guidelines are presented to assist with ensuring that retained native vegetation is not adversely affected during any construction works:

- contractors are to be made aware of the need to be sensitive to the surrounding native vegetation
- fencing of the vegetation to be retained is to be undertaken prior to any other construction activities.
- during construction all disturbance due to machinery access, stock-piling of fill or building products is to be within the defined Construction and Domestic Zone
- all earthworks must be undertaken in a manner that will minimise soil erosion and adhere to Construction Techniques for Sediment Pollution Control (EPA 1991) and any exposed areas of soil must be stabilised to prevent erosion

- where earthmoving equipment is needed, smaller versions of equipment should be considered to minimise disturbance
- earthmoving equipment should be cleaned before entering and leaving the site, including the Construction and Domestic Zone to prevent the spreading of weed propagules and pathogens such as *Phytophthora cinnamomi*.
- the above requirements must be observed outside of the construction zone, i.e. within the Fuel Modified Conservation Zone, Modified Conservation Zone and Bushland Conservation Zone:
 - no vehicular access
 - the existing soil level must not be altered
 - the soil must not be compacted or the soil's drainage change
 - no fuels, oils, chemicals, poisons, rubbish and other materials harmful to trees are to be stored or dispersed
 - no storage of equipment, machinery or material is to occur
 - open trenching to lay underground services e.g.: drainage, water, gas, etc. must not be used unless approved by the Responsible Authority
 - nothing whatsoever, including temporary services wires, nails, screws or any other fixing device, is to be attached to any tree
 - no building or any other structure is to be erected
 - tree roots must not be severed or injured
 - machinery must not be used to remove any existing materials or debris.
- copies of this Land Management Plan and associated maps should be provided to contractors when working on site, particularly during any permitted vegetation clearance to ensure management regimes are respected.

8.3 Fencing and demarcation of zones

To control development, vegetation clearance and management it is important that management zones are clearly identifiable on the ground. The demarcation requirements should be the responsibility of the proponent as landowners need to be spatially aware of the limitations imposed on them by a commitment to maintain, and expand, the habitat values across the site.

The following fencing regime is to be implemented at the site:

Demarcation of Construction Zone:

- Temporary installation of star-pickets and para-webbing around the boundary of this zone is to be installed prior to any construction works
- This will help demarcate the edges of the CDZ for any vehicles or machinery, and prevent disturbance beyond this point.

Demarcation of Fuel Modified Conservation Zone,

- To delineate the different vegetation management regimes between the Fuel Modified Zone and the Modified Conservation Zone markers such as temporary painted capped star pickets and para-webbing is to be installed

Demarcation of Modified Conservation Zone,

- To delineate the different vegetation management regimes between the Modified Conservation Zone and the Bushland Conservation Zone vegetation beyond this zone markers such as painted capped star pickets and para-webbing is to be installed

It must be noted that no permanent fencing will be required and fencing is only to be installed during construction. Any other material can be used as long as it clearly defines between zones during construction activities and is removed following construction. If logs are to be used as an alternative then it is important to note that no logs are to be used from the site as relocating logs within the site will disturb fauna habitat. If logs are to be used ex-situ for fencing then all logs are to be removed from the site following construction.

8.4 Erosion control

Although the site is generally steep in some areas it is likely that the proposed works will not involve the excavation of soils and therefore erosion is unlikely to be a significant issue. However, all effort should be made to ensure that soil, building debris, litter, vegetative material, weeds, nutrients or other foreign items are not transported out of the CDZ. If soil is stockpiled, the capture and trapping of sediment runoff should be managed by careful placement within the CDZ and if necessary an adequate sediment barrier.

Construction site

- A line of straw bales (or equivalent, e.g. silt fencing and star pickets; coir logs) should be placed inside the temporary fence that surrounds the Construction Zone (Figure 8). These bales should be pinned to the ground with stakes, prior to construction. They will effectively line the defined development area, and retain all soil within the fenced area.

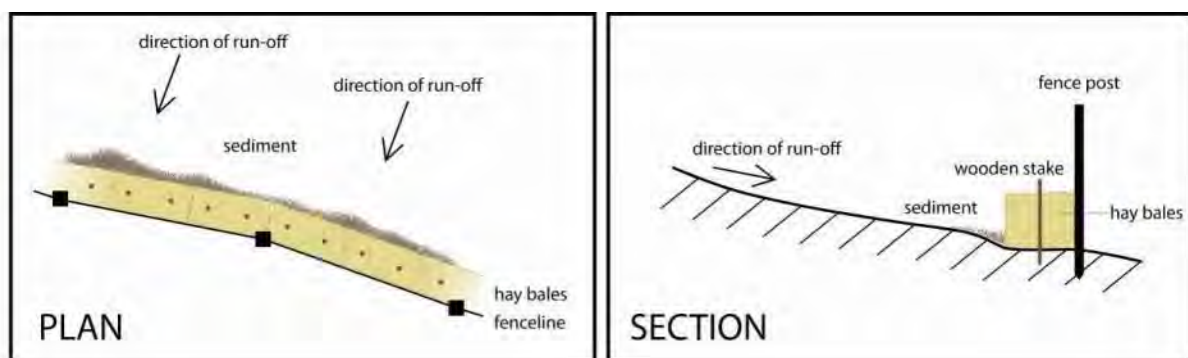


Figure 8. Hay bale installation for control of sediment

- At the end of construction, any displaced soil will need to be kept in the Construction and Domestic Zone to avoid erosion and limit weed spread. Vegetated swales may also be created along the lower

boundaries of the Construction and Domestic Zone, or at the end of diversion weirs, to manage nutrient and water run-off (Figure 9).

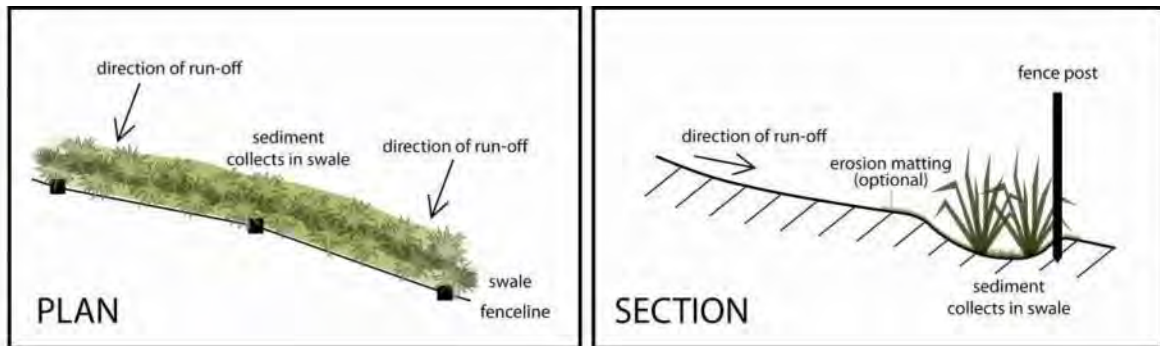


Figure 9. Jute mat spread and vegetated swales planted for erosion control.

8.5 Fuel reduction

There is a need to manage some vegetation for fuel reduction in order to address the bushfire risk. Fuel reduction is proposed within the Construction Zone and within the Fuel Modified Zone. Fuel reduction will involve slashing of the grasses to 5 cm during the declared fire danger period. No other fuel reduction is required at the site apart from considering where revegetation is to occur within the Construction Zone and the Fuel Modified Zone. The following standards adapted from (CFA 2014) are provided as guide for the management of the Construction Zone and the Fuel Modified Zone which is the nominated defendable space (Map 5):

CFA defendable space management standards (CFA 2014):

- Grass must be short cropped and maintained during the declared fire danger period.
- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
- Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.
- Plants greater than 10 centimetres in height must not be placed within 3m of a window or glass feature of the building.
- Shrubs must not be located under the canopy of trees.
- Individual and clumps of shrubs must not exceed 5 sq. metres in area and must be separated by at least 5 metres.
- Trees must not overhang or touch any elements of the building.
- The canopy of trees must be separated by at least 5 metres.
- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

There will need to be initial works to achieve the required fuel management standards and then ongoing works each fire danger season. The following recommendations relate to fuel-reduction works that will need to be undertaken on the site:

- thin shrubs by initially targeting the removal of non-indigenous species, eucalypt branches below two metres and then finally, if required, other native species, choosing the most abundant species onsite first
- remove and rake strips of fallen bark from eucalypt trees
- all work is to avoid soil disturbance and should be undertaken in drier months to minimise soil damage
- initial work in reducing elevated fuels will require use of hand-held machinery, such as chainsaw and bladed brush-cutter; this work is to be undertaken without soil disturbance, with rootstocks retained in the soil and woody stumps cut to ground level
- slashing of the groundstorey should be undertaken as close to the beginning of the 'Fire Danger Period' as declared by the CFA, to allow any wildflowers and native grasses the best chance to set seed; additional slashing should not occur after the Fire Danger Period has ended
- wherever possible, impacts on orchids should be avoided.

8.6 Vegetation Removal

Vegetation removal should be done sensitively to ensure minimal impacts to adjacent infrastructure, retained vegetation and soil profiles. The following conditions are required for vegetation removal:

- All tree pruning is to be carried out by a qualified and experienced arborist who has a thorough knowledge of tree physiology and pruning methods. Pruning must be carried out in accordance with Australian Standard AS 4373–2007 Pruning of Amenity Trees.
- Prior to the removal of limbs from the trees, limbs to be removed are to be inspected for all hollows for the presence of fauna. The inspection must be carried out by suitably qualified and experienced Zoologist. If fauna is located during the inspection, they must be salvaged and relocated by a suitably qualified and experienced Zoologist and, if appropriate in consultation with the DELWP.
- The trunks and limbs removed from trees are to be retained a placed in the Modified Conservation Zone.

8.7 Weed management

Preventing invasion and spread

Particular care during construction and after construction will be required as soil disturbance, destroying native vegetation and introduction of weed seeds facilitates weed invasion. In order to effectively control weeds at the site, the following general guidelines should be followed:

- weeds should be frequently monitored and controlled to ensure sensitive removal of exotic species
- any new and emerging weeds within the Modified Conservation Zone are to be eliminated (< 1% cover)

- soil or vegetative material should be transported as little as possible around the site and particular care should be taken not to introduce such materials into the Modified Conservation Zone;
- all machinery should be cleaned for soil or vegetative material before entering the property during the construction of the dwellings and associated features;
- no earthmoving equipment should be operated outside of the Construction Zone;
- soil and vegetation disturbance during constructions works should be minimised through the use of erosion control methods and defined fencing;
- no topsoil should be transported through or used in any areas but the Construction Zone; and
- no environmental weeds should be planted on the site.

The above guidelines will not only aid the removal of weeds and prevent their spread, it will also minimise the disturbance to areas of retained native vegetation during weed control.

Managing existing weeds

Fuel Modified Zone and Modified Conservation Zone

Woody weeds such as Hawthorn, Sweet Pittosporum, Box-elder Maple, Cherry Plum, English Ivy, and Blackberry are high threat weeds that occur within the Modified Conservation Zone. Current weed levels are high and should be targeted for management.

Herbaceous weeds such as Wandering Jew which dominates the ground layer should also be the main target for weed control as well as Fennel, Toowoomba Canary-grass and Couch also occurs throughout the site.

Other weeds that are scattered through the site include Spear Thistle and African Boxthorn and should also be targeted for control.

The aim of woody weed control is to cut-and-paint or drill-and-fill with herbicide all mature plants and hand pull juveniles in Year 1. There should be ongoing follow up and treatment where any seedlings or plants have been treated to ensure eradication of the species. It must be noted that some of the woody weeds provide habitat for bird species and therefore control of woody weeds should be undertaken in a staged approach to ensure woody weed are being replaced with indigenous shrubs.

The herbaceous weeds will also require an ongoing effort, and will include a variety of methods as outlined below. While a number of control methods have been outlined, the type of method used will depend on the location at which the weed occurs and the impact the control method may have on the surrounding vegetation. The table below lists priority weeds for management on the property with a brief description of their occurrence. Monitoring of these weeds should be undertaken and treatment undertaken to prevent there spread.

Table 14. Priority Weeds for Management

High Threat	Scientific Name	Common Name	Occurrence	Management aim	Control Methods [^]
Woody Weeds					
Yes	* <i>Craetagus monogyna</i>	Hawthorn	Throughout the site	If practical reduce cover and ensure cover does not increase. Eradicate if practical and monitor	H (immature plants), C, D
Yes	* <i>Pittosporum undulatum</i>	Sweet Pittosporum	Throughout the site	If practical reduce cover and ensure cover does not increase. Eradicate if practical and monitor	H (immature plants), C, D
Yes	* <i>Acer negundo</i>	Box-elder Maple	Throughout the site	If practical reduce cover and ensure cover does not increase. Eradicate if practical and monitor	H (immature plants), C, D
Yes	* <i>Lycium ferocissimum</i>	African Boxthorn	Throughout the site	If practical reduce cover and ensure cover does not increase. Eradicate if practical and monitor	H (immature plants), C, D
Yes	* <i>Rubus fruticosus spp. agg.</i>	Blackberry	Throughout the site	Monitor and prevent spread into site	H (immature plants), S, C, D
Yes	* <i>Prunus cerasifera</i>	Cherry Plum	Throughout the site	If practical reduce cover and ensure cover does not increase. Eradicate if practical and monitor	H (immature plants), C, D
Yes	* <i>Hedera helix</i>	English Ivy	Throughout the site	practical reduce cover and e cover does not increase. ate if practical and monitor	H (immature plants), C, D
Grassy and Herbaceous Weeds					
Yes	* <i>Tradescantia fluminensis</i>	Wandering Jew	Dominates the ground layer	If practical reduce cover and ensure cover does not increase. Eradicate if practical and monitor	H, S
Yes	* <i>Foeniculum vulgare</i>	Fennel	Scattered throughout the site	If practical reduce cover and ensure cover does not increase. Eradicate if practical and monitor	H, S
Yes	* <i>Phalaris aquatica</i>	Toowoomba Canary-grass	Scattered throughout the site	If practical reduce cover and ensure cover does not increase. Eradicate if practical and monitor	H, S
Yes	* <i>Cynodon dactylon</i>	Couch	Scattered throughout the site	If practical reduce cover and ensure cover does not increase. Eradicate if practical and monitor	H, S
[^]Control Methods Legend					
H: Hand weeding	Ensure that the whole plant (including roots) is removed; knife, chisel, mattock are useful.				
C: Cut-and-paint	Cut the stem or trunk of the plant completely and as near to the ground as possible then immediately paint an appropriate herbicide on the freshly cut surface. Initial cut and paint 'sweep' should be followed annually on newly emergent individuals.				
D: Drill-and-fill	Drill hole around the trunk of the plant and immediately fill it with an appropriate herbicide; used especially on larger plants. Initial drill and fill 'sweep' should be followed annually on newly emergent individuals.				
S: Spot Spray	Spray target weed species with an appropriate herbicide avoiding damage to non-target species; this can				

High Threat	Scientific Name	Common Name	Occurrence	Management aim	Control Methods^
					be facilitated by use of a dye and a low pressure; don't spray when plants are stressed (i.e. too hot or cold). Should be undertaken every 3–4 months within first year then twice yearly in Autumn and Spring afterwards

8.8 Revegetation and supplementary planting

Modified Conservation Zone

To enhance the quality of the vegetation and habitat for fauna, and to improve the visual amenity or landscape qualities of riparian vegetation revegetation can be implemented. It is also important to replace vegetation that will be removed such as weed species that are to be targeted for control. Therefore it is recommended that a supplementary planting regime be implemented.

Placement of planting will need to be well considered and avoid any impacts on existing native vegetation. Planting density may vary depending on the regeneration response of existing native species following the removal of weed species, however it should be at least 3 plants per 1m² across the zone in particularly for graminoid species mainly Common Tussock-grass *Poa labillardierei* and Sword Tussock-grass *Poa ensiformis*. Supplementary planting should focus on areas that are supporting exotic vegetation, bare areas, and areas opened up by removal of weeds in particularly areas where Wandering Jew has been removed.

Supplementary planting will be a useful tool to regain a competitive advantage over dominant weeds after the application of herbicide. A summary of suitable species for the site is given in 0 and is a species list of EVC 56: Floodplain Riparian Woodland which is the vegetation type identified on site. The land manager should choose appropriate locations for the installation of these plants post weed control. Thought should be given to the appropriate life-form, the substitutive role, the habitat and soil requirements and the effect of follow-up weed control on the species.

Table 15 shows the potential layout of the EVC that occurs on the site. It is structured in a way that indicates the distribution of lifeforms within the Modified Conservation Zone; substitutions of different species of similar lifeforms are appropriate.

Table 15. Revegetation planting guide for supplementary plantings associated with weed control works

	Proposed Density (plants per m2)	3
	Ecological Vegetation Class	Floodplain Riparian Woodland
Common Name	Species/Structure	Open, Grassy
Shrubs		
Gold Dust Wattle	Acacia acinacea	
Prickly Moses	Acacia verticillata	2
Silver Banksia	Banksia marginata	
Sweet Bursaria	Bursaria spinosa	
River Bottlebrush	Callistemon sieberi	2
Prickly Currant Bush	Coprosma quadrifida	
Goodenia	Goodenia ovata	2
Bushy Needlewood	Hakea decurrens	
Tree Violet	Hymenanthera dentata	5
Christmas Bush	Prostanthera lasianthos	
Muttonwood	Rapanea howittiana	4
Grasses, Tussocks		
Wallaby Grasses	Austrodanthonia spp.	
Spear Grasses	Austrostipa spp.	
Red-leg Grass	Bothriochloa macra	
Marsh Club-sedge	Bolboschoenus medianus	
Tall Sedge	Carex appressa	
Common Sedge	Carex inversa	20
Poongoor't	Carex tereticaulis	20
Silky Blue Grass	Dicanthium sericeum	
Common Spike-sedge	Eleocharis acuta	
Knobby Clubrush	Isolepis nodosa	
Rushes	Juncus spp.	
Spiny-headed Matrush	Lomandra longifolia	30
Weeping Grass	Microlaena stipoides	30
Sword Tussock Grass	Poa ensiformis	75
Common Tussock Grass	Poa labillardierei	50
Velvet Tussock Grass	Poa morrissii	
Kangaroo Grass	Themeda triandra	
Wildflowers		
Bulbine Lily	Bulbine bulbosa	
Lemon Beauty Heads	Calocephalus lacteus	
Tall Everlasting	Chrysocephalum semipapposum	
Matted Flax-lily	Dianella amoena	
Pale Flax Lily	Dianella longifolia	20
Black Anther Flax Lily	Dianella revoluta	
Scaly Buttons	Leptorhynchos squamatus	
Wiry Buttons	Leptorhynchos tenuifolius	
Narrow-leaf New Holland Daisy	Vittadinia meulleri	
Native Bluebells	Wahlenbergia spp.	
Vines, Creepers		
Bidgee-widgee	Acaena novae-zelandiae	10
Berry Saltbush	Atriplex semibaccata	
Swamp Pennywort	Centella cordifolia	20
Small-leafed Clematis	Clematis microphylla	
Kidney Weed	Dichondra repens	10
Creeping Saltbush	Einadia nutans	
Slender Knotweed	Persecaria decipiens	
Total for a typical 100 m2		300
Total number of plants to be planted within Modified Conservation Zone (1.313ha)		39.390

8.8.1 Maintenance

Maintenance of revegetation areas is critical in the 12 months following installation of plants. The process of site preparation and planting causes significant disturbance of the soil that often results in a flush even through mulch. Prompt weed control before any seed production can deplete the weed seed on the surface of soil and/or mulch resulting in less efforts being required.

The maintenance of revegetation areas does require specific skills. Familiarity with indigenous species, at all stages from seedlings to adults, is the essential requirement.

8.9 Pest animals

Rabbits are likely to be present in the surrounding landscape however there was no evidence that the site is significantly impacted by or is harbouring individuals. So at present there is appears not to be a significant threat from introduced herbivores. However, it should be made aware of the potential threats these animals pose. At present there is no need to undertake specific management actions beyond monitoring for their presence.

Foxes and cats are the other likely threat to ecological values.

Any future pest animal management regime should be undertaken in co-operation with Parks Victoria. Some management of foxes (and rabbits) by sensitively destroying any identified fox dens (or rabbit warrens) is an easy and practicable management action that should be undertaken.

8.10 Summary

The table below sets out the land-use and management commitments that the current and any future landowners will need to implement and follow.

The intent of the table is to show the progression of the different development and conservation actions and how works will flow into maintenance regimes over time. The land use and management commitments proposed are essentially in the order in which they are to take place within a particular zone. Referral must be made to the sections above for specific instructions and regulating guidelines.

Table 16. Land Management Plan summary by zone

Construction Zone		
Land-use Commitment		
<ul style="list-style-type: none"> Ensure all activities associated with construction of the administration building and associated infrastructure is confined to this zone. Utilise appropriate machinery and equipment during construction to minimise impacts to vegetation surrounding Construction Zone and trees within this zone Ensure that all soil displaced during building is kept within this zone and not transported to other areas of the property. If this is not possible displaced soil may need to be moved to an appropriate offsite location. Ensure that during building of the administration building and associated infrastructure, damage to root structures of vegetation is minimised as much as possible. Ensure that any plants installed are not environmental weeds or listed as noxious under the Catchment and Land Protection Act 1994. Implement seasonal fuel reduction efforts throughout zone, including preventing contact of any vegetation with dwelling. Ensure that weeds and any other threats that may impact on adjacent native vegetation are controlled. 		
Management Commitments		
Years from Commencement	Management actions to be completed	Timing of activity (if applicable)
One to Three	Construct temporary fencing of Construction Zone	On commencement of works
	Sensitively clear vegetation in accordance with erosion management guidelines	
	Construction of administration building and associated infrastructure	
	Ensure that any plants installed are not considered to be environmental weeds, or those listed as noxious under the <i>Catchment and Land Protection Act 1994</i> .	All year
	Implement fuel reduction efforts across zone as per required standards	Fire danger period
	Monitor and treat weeds as appropriate	All year
Four to Ten	Continue to ensure that any plants installed are not considered to be environmental weeds, or those listed as noxious under the <i>Catchment and Land Protection Act 1994</i> .	
	Implement fuel reduction efforts across Zone during the fire danger period	Fire danger period
	Monitor and treat weeds as appropriate	All year
Ongoing	Maintain seasonal fuel reduction efforts across Zone. Continue to control weed species.	See above

Fuel-Modified Zone		
Land-use Commitment		
<ul style="list-style-type: none"> • Ensure clear demarcation between Fuel-modified Conservation Zone and Modified Conservation Zone • Retain native vegetation in a fuel reduced state • Implement seasonal fuel reduction efforts without soil disturbance across entire zone • Minimise vehicle use in the zone and minimise all other land disturbance activities • Ensure no accumulation of rubbish or materials occurs • Ensure that weeds and any other threats that may impact on adjacent native vegetation are controlled 		
Management Commitments		
Years from Commencement	Management actions to be completed	Timing of activity (if applicable)
One to Three	Construct temporary fence to separate Fuel-modified Conservation Zone from the Construction Zone	On commencement of works
	Install pickets or similar markings to delineate Fuel-modified Conservation Zone from Modified Conservation Zone.	Prior to commencement of construction works
	Undertake initial fuel reduction to achieve required standards: <ul style="list-style-type: none"> • Use hand held machinery and tools to limit disturbance, such as chainsaw and bladed brush-cutter • Rake and remove without soil disturbance 	Prior to first summer of occupation
	Implement seasonal fuel reduction efforts across zone during the fire danger period without soil disturbance	Fire danger period
	Monitor and treat weeds as appropriate	All year
Four to Ten	Implement seasonal fuel reduction efforts across zone during the fire danger period without soil disturbance	Fire danger period
	Monitor and treat weeds as appropriate	All year
Ongoing	Maintain seasonal fuel reduction efforts across Zone. Continue to control weed species.	As required

Modified Conservation Zone		
Land-use Commitment		
<ul style="list-style-type: none"> • Ensure clear demarcation between Modified Conservation Zone and the Construction Zone and vegetation beyond this zone • Minimise vehicle use in the zone and minimise all other land disturbance activities • Ensure no accumulation of rubbish or materials occurs • Prior to the removal of limbs from the trees, limbs to be removed are to be inspected for all hollows for the presence of fauna • Ensure tree pruning is to be carried out by a qualified and experienced arborist • Ensure that weeds and any other threats that may impact on native vegetation are controlled • Implement supplementary planting regime 		
Management Commitments		
Years from Commencement	Management actions to be completed	Timing of activity (if applicable)
One to Three	Construct temporary fence to separate Modified Conservation Zone from the Construction Zone	On commencement of works
	Install pickets or similar markings to delineate Modified Conservation Zone from all vegetation beyond this zone.	Prior to commencement of construction works
	limbs to be removed are to be inspected for all hollows for the presence of fauna	Prior to commencement of construction works
	Monitor and treat weeds as appropriate	All year
	Consider and source stock material for supplementary planting	All year
	Implement supplementary planting regime	All year
Four to Ten	Monitor and treat weeds as appropriate	All year
	Implement and monitor supplementary planting regime	All year
Ongoing	Implement and monitor supplementary planting regime where required	As required
	Continue to control weed species.	As required

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Appendix 1. Flora recorded at study site

The following table provides a list of flora recorded in the study area during fieldwork.

Conservation status under EPBC Act 1999:	Conservation status under FFG Act 1988:
EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant	L: Listed, N: Nominated, R: Rejected, D: Delisted, I: Invalid
Victorian Rare or Threatened Species (VROT) (DEPI 2014)	Origin
x: Presumed extinct, e: Endangered, v: Vulnerable, r: rare and k: poorly known	*: exotic species; #: Victorian native species extended beyond natural range; Empty: Indigenous species

Family	Origin	Scientific Name	Common Name	EPBC	FFG	VROT
DICOTS						
Amaranthaceae		<i>Alternanthera denticulata s.l.</i>	Lesser Joyweed			
Apiaceae	*	<i>Foeniculum vulgare</i>	Fennel			
Apocynaceae	*	<i>Araujia sericifera</i>	White Bladder-flower			
Araliaceae	*	<i>Hedera helix</i>	English Ivy			
Asteraceae	*	<i>Cirsium vulgare</i>	Spear Thistle			
Asteraceae	*	<i>Conyza bonariensis</i>	Flaxleaf Fleabane			
Asteraceae	*	<i>Sonchus spp.</i>	Sow Thistle			
Brassicaceae	*	<i>Brassica X juncea</i>	Indian Mustard			
Chenopodioidae	*	<i>Atriplex prostrata</i>	Hastate Orache			
Fumariaceae	*	<i>Fumaria spp.</i>	Fumitory			
Hippocastanoideae	*	<i>Acer negundo</i>	Box-elder Maple			
Mimosaceae		<i>Acacia dealbata</i>	Silver Wattle			
Mimosaceae	*	<i>Acacia decurrens</i>	Early Black-wattle			
Mimosaceae		<i>Acacia melanoxylon</i>	Blackwood			
Myrtaceae		<i>Eucalyptus camaldulensis</i>	River Red-gum			
Myrtaceae		<i>Kunzea ericoides spp. agg.</i>	Burgan			
Oleaceae	*	<i>Fraxinus angustifolia subsp. angustifolia</i>	Desert Ash			
Pittosporaceae	#	<i>Pittosporum undulatum</i>	Sweet Pittosporum			
Polygonaceae	*	<i>Acetosa sagittata</i>	Rambling Dock			
Polygonaceae		<i>Persicaria decipiens</i>	Slender Knotweed			
Polygonaceae	*	<i>Rumex pulcher subsp. pulcher</i>	Fiddle Dock			
Proteaceae	*	<i>Hakea salicifolia subsp. salicifolia</i>	Willow-leaf Hakea			
Rosaceae	*	<i>Crataegus monogyna</i>	Hawthorn			
Rosaceae	*	<i>Prunus cerasifera</i>	Cherry Plum			
Rosaceae	*	<i>Rubus fruticosus spp. agg.</i>	Blackberry			
Rubiaceae		<i>Coprosma quadrifida</i>	Prickly Currant-bush			
Solanaceae	*	<i>Lycium ferocissimum</i>	African Boxthorn			
Solanaceae		<i>Solanum aviculare</i>	Kangaroo Apple			
Solanaceae	*	<i>Solanum nigrum s.l.</i>	Black Nightshade			
Solanaceae	*	<i>Solanum pseudocapsicum</i>	Madeira Winter-cherry			
Verbenaceae	#	<i>Verbena officinalis s.l.</i>	Common Verbena			
Violaceae		<i>Melicytus dentatus s.l.</i>	Tree Violet			
MONOCOTS						
Commelinaceae	*	<i>Tradescantia fluminensis</i>	Wandering Jew			
Cyperaceae	*	<i>Cyperus eragrostis</i>	Drain Flat-sedge			
Juncaceae		<i>Juncus filicaulis</i>	Thread Rush			
Poaceae	*	<i>Bromus catharticus</i>	Prairie Grass			
Poaceae	*	<i>Cenchrus clandestinus</i>	Kikuyu			
Poaceae	*	<i>Cynodon dactylon</i>	Couch			

Family	Origin	Scientific Name	Common Name	EPBC	FFG	VROT
Poaceae	*	<i>Ehrharta erecta var. erecta</i>	Panic Veldt-grass			
Poaceae	*	<i>Holcus lanatus</i>	Yorkshire Fog			
Poaceae	*	<i>Phalaris aquatica</i>	Toowoomba Canary-grass			
Poeae	*	<i>Dactylis glomerata</i>	Cocksfoot			

Appendix 2. Potentially occurring rare or threatened flora species

Conservation status under EPBC Act 1999: EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant			Conservation status under FFG Act 1988: L: Listed, N: Nominated, R: Rejected, D: Delisted, I: Invalid			Victorian Rare or Threatened Species (VROT) (DEPI 2014) x: Presumed extinct, e: Endangered, v: Vulnerable, r: rare and k: poorly known			
EPBC	FFG	VROT	Scientific name	Common name	Habitat/species notes	Last record	No. recs.	Likelihood of occurrence	Likelihood Reasoning
VU	X		<i>Amphibromus fluittans</i>	River Swamp Wallaby-grass	Moist soils, usually confined to permanent swamps, and tolerates inundation. Mainly distributed along Murray River, it is rarer in southern Victoria (Australian Plants Society Maroondah 2001, p. 449; Walsh and Entwisle 1994). Largely restricted in greater Melbourne to seasonal wetlands and mudflats of River Red Gum swamps of the Lower Yarra and Plenty/Merri volcanic plains north of Melbourne (Cam Beardsell pers. comm.)	1995	4	Low	Poor habitat and would likely have been observed
		k	<i>Caesia parviflora var. minor</i>	Pale Grass-lily	Moist, well-drained soils of damp lowland grassland, open grassy woodland and tea-tree heath (Australian Plants Society Maroondah 2001, p. 657; Walsh and Entwisle 1994).	1886	1	Nil	Unsuitable habitat
	X	r	<i>Callitriche umbonata</i>	Winged Water-starwort	Occurs mostly inland in swampy or wet areas (Walsh and Entwisle 1999).	1770	2	Low	Unsuitable habitat
		k	<i>Convolvulus angustissimus subsp. omnigracilis</i>	Slender Bindweed	This plant is known to occur in Grassy Woodland, Plains Grassland, Plains Grassy Woodland and Plains Woodland, also on heavy basalt soils (Bull 2014)	2006	1	Nil	Unsuitable habitat
		v	<i>Corymbia maculata</i>	Spotted Gum	Native distribution only in Tara Range, south of Buchan, Vic. Otherwise, widely planted in urban environment as an ornamental species (Walsh and Entwisle 1999, p. 953).	2011	2	Low	Not within natural range
EN	L	e	<i>Dianella amoena</i>	Matted Flax-lily	This plant is known to occur in lowland grasslands, grassy woodlands and grassy wetlands. It ranges from well drained to seasonally wet soils (DSE 2006).	2010	12	Low	Unsuitable habitat and would likely have been observed

EPBC	FFG	VROT	Scientific name	Common name	Habitat/species notes	Last record	No. recs.	Likelihood of occurrence	Likelihood Reasoning
		r	<i>Eucalyptus fulgens</i>	Green Scentbark	Open forest areas, tolerating damp conditions. Found in areas east of Healesville and Woori Yallock to the Latrobe Valley (Walsh and Entwisle 1996).	1989	1	Low	Not within natural range
	L	e	<i>Eucalyptus leucoxylon subsp. megalocarpa</i>	Large-fruit Yellow-gum	The Victorian occurrence, near Nelson, is the easternmost part of the mainly South Australian coastal distribution, south of Mt Gambier. Flowers spring to summer. The largest-fruited form of the species. It has been widely planted for its pink to red flowers (Walsh and Entwisle 1996, p. 993).	2010	2	Low	Unsuitable habitat
		e	<i>Eucalyptus X studleyensis</i>	Studley Park Gum	A naturally occurring hybrid (<i>E. ovata</i> × <i>E. camaldulensis</i>) found in Studley Park/Yarra Bend and along the Yarra Valley (Australian Plants Society Maroondah 2001).	2006	6	Low	Poor habitat and would likely have been observed
		r	<i>Fimbristylis velata</i>	Veiled Fringe-sedge	On drying mud beside lakes and rivers and in seasonally wet depressions (Walsh and Entwisle 1994, p. 332).	1998	1	Low	Unsuitable habitat
VU	L	v	<i>Glycine latrobeana</i>	Clover Glycine	Widespread, infrequent populations in southern Victoria (Walsh and Entwisle 1996). It occurs mainly in grassland and grassy woodland habitats, less often in dry forests, and only rarely in heathland. Populations occur from sea level to c. 1,200 m altitude (900 m in Tasmania). In Victoria, plants grow in a range of soil types including alluvial soils, and those derived from sandstones, mudstones, granite and basalt. Soils are usually clay, but may also have high loam content (Carter and Sutter 2010).	1988	1	Low	Unsuitable habitat
		r	<i>Goodia medicaginea</i>	Western Golden-tip	Favouring drier habitat to <i>Goodia lotifolia</i> this species has a distribution in dry sclerophyll forest throughout south-western (i.e. north of Portland/Mt Arapiles), central (Eaglehawk/Killawarra Forest), north-eastern Victoria (Suggan Buggan), also west of Melbourne at Long Forest (Walsh and Entwisle 1996).	2002	1	Low	Unsuitable habitat
EN	L	e	<i>Lepidium hyssopifolium</i>	Basalt Peppercross	Grows on basalt plains; rarely reported in western Victoria and only present at two known locations north and north-east of Melbourne (Walsh and Entwisle 1996).	1990	1	Low	Unsuitable habitat

EPBC	FFG	VROT	Scientific name	Common name	Habitat/species notes	Last record	No. recs.	Likelihood of occurrence	Likelihood Reasoning
		k	<i>Lepidium pseudohyssopifolium</i>	Native Peppercress	Uncommon plant, most recent reports from heavy soils of the Murray River floodplain in the far north-west (Walsh and Entwisle 1996, p. 421).	2007	1	Low	Unsuitable habitat
		r	<i>Melaleuca armillaris subsp. armillaris</i>	Giant Honey-myrtle	Mostly confined to near-coastal sandy heath, scrub on slightly raised saltmarsh, riparian scrub, foothill outcrops, and rocky coastlines. Mainly distributed (native) east of Marlo, Vic., but regularly naturalizes in areas where planted (Walsh and Entwisle 1996, p. 1031).	2011	4	Low	Unsuitable habitat

Appendix 3. Potentially occurring rare or threatened fauna species

International Treaty

B: Bonn Convention; C: CAMBA; J: JAMBA; R: ROKAMBA.

EPBC Act 1999 conservation status

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

FFG Act 1988 status

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

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

ex: Extinct, rx: Regionally Extinct, wx: Extinct in the Wild, cr: Critically Endangered, en: Endangered, vu: Vulnerable, nt: Near Threatened, dd: Data Deficient

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
		L	vu	<i>Accipiter novaehollandiae novaehollandiae</i>	Grey Goshawk	The Grey Goshawk has a stronghold in Victoria, particularly the white form, in the Otway Ranges, where wet forests and gullies containing Mountain Grey Gum adjoin partly cleared farmlands. They occur in lower densities in similar habitats in the Strzelecki Ranges, Gippsland Plains and Otway Plains. Elsewhere in the State they are occasionally seen in woodlands, dry forests, suburban parks and wooded farmlands (Marchant and Higgins 1993).	1999	9	Low	Marginal habitat and few records, may use the site to fly through
			nt	<i>Alcedo azurea</i>	Azure Kingfisher	This species is usually found near well vegetated wetlands. Uses root-festooned banks of fresh or tidal creeks, rivers, streams, lakes, swamps, estuaries or mangroves for perching. It forages by plunge-diving from perches to below surface of still or slow moving water, which may sometimes be only a few centimetres deep (Higgins 1999). Nesting occurs in small burrows in creek banks (Pizzey and Knight 2007).	2008	26	Medium	Records nearby but not suitable habitat for nesting burrows at the site. Perching locations may occur and may use the site to fly through.

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
			vu	<i>Anas rhynchos</i>	Australasian Shoveler	The Australasian Shoveler occurs mainly on large well vegetated wetlands and lakes, occasionally including areas with saline waters. Populations are found in higher numbers on permanent, well-vegetated freshwater swamps with areas of open water. This species nests in grass nests on the ground, usually in dense cover and near water (Marchant and Higgins 1990; Pizzey and Knight 2007).	2007	9	Low	Unsuitable habitat
		L	nt	<i>Anseranas semipalmata</i>	Magpie Goose	Most of the populations of this species has been re-introduced. They breed colonially and build platform nests over water, usually among tall rushes or reedbeds. The Magpie Goose feeds by digging in mud or by up-ending in shallow water, they have also been seen grazing and digging well away from water (Marchant and Higgins 1990).	1908	1	Low	Few older records
	EN	L	cr	<i>Anthochaera phrygia</i>	Regent Honeyeater	Occurs mainly in box-ironbark forests and woodlands north of the Great Divide. There are historical and recent isolated records from drier parts of south-eastern Victoria. Highly nomadic, their movements are determined by the flowering of eucalypts (DSE 2003).	1998	18	Nil	Unsuitable habitat
		L	en	<i>Ardea intermedia</i>	Intermediate Egret	The Intermediate Egret occurs in the shallows of mainly grassy inland wetlands, flooded pastures or grasslands. They only occasionally visit coastal wetlands and are generally rare in Victoria. They are sometimes seen foraging in pastures with grazing cattle. This species builds platform nests which are built in trees in riverine forest, swamp woodland and mangroves (Pizzey and Knight 2007).	2008	3	Low	Unsuitable habitat

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
CAMB AJAM BA		L	vu	<i>Ardea modesta</i>	Eastern Great Egret	Eastern Great Egret is widespread in Australia and has been observed in a wide range of wetland habitats including swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pastures or agricultural lands; reservoirs; sewage treatment ponds; drainage channels; salt pans and salt lakes; salt marshes; estuarine mudflats, tidal streams; mangrove swamps; coastal lagoons; and offshore reefs (DEWHA 2010).	2013	192	Low	Records nearby but marginal habitat on site
			vu	<i>Aythya australis</i>	Hardhead	Hardheads inhabit deep to shallow wetlands with open water and fringing emergent vegetation (Pizzey and Knight 2007). The species feeds by diving in deep water and occasionally by dabbling just under the water surface (Rogers 1990). Nests are built in thick vegetation (e.g. reeds, lignum, cumbungi), usually over water (Halse <i>et al.</i> 2005; Rogers 1990). These birds are most common in the wetland systems of inland Australia (Halse <i>et al.</i> 2005). Birds do visit Victoria from these areas in spring and summer, returning as the northern wetlands is replenished by rain (Halse <i>et al.</i> 2005). However, some birds are present in Victoria all year round depending on the suitability of the wetland (Pizzey and Knight 2007).	2013	41	Nil	Unsuitable habitat
			vu	<i>Biziura lobata</i>	Musk Duck	Usually seen in small numbers on the deep waters of well vegetated fresh to saline lakes, swamps and occasionally shallow inlets and bays. Nests formed in low vegetation in areas sheltered by surrounding vegetation (Marchant and Higgins 1990; Pizzey and Knight 2007).	1998	4	Nil	Unsuitable habitat
	EN	L	en	<i>Botaurus poeciloptilus</i>	Australasian Bittern	This species is part nocturnal and forages over water in dense cover, sometimes from platforms in wetland vegetation. Habitat is usually tall reedbeds, sedges, rushes, cumbungi or lignum. Also occurs on rice fields, drains in tussocky paddocks and occasionally on saltmarshes and brackish wetlands. Nests are shallow saucers on trampled water plants (Pizzey and Knight	2007	6	Nil	Unsuitable habitat

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
						2007).				
			dd	<i>Chelodina longicollis</i>	Common Long-necked Turtle	Distributed throughout south eastern Australia, Coastal Rivers of Victoria, occurs in a broad range of habitats including permanent riverine waterholes, lakes, farm dams and shallow temporary ponds, greatest abundance in shallow , ephemeral waterholes or in bodies of water that are remote from remanent rivers, often in the absence of other turtle species. Able to distribute overland. (Kennet <i>et al.</i> 2009)	2011	10	Nil	Unsuitable habitat
			nt	<i>Chlidonias hybridus javanicus</i>	Whiskered Tern	This is mainly a summer migrant to Victoria, although some remain here over winter. They inhabit shallow freshwater swamps and fresh or brackish lakes, favouring areas with emergent vegetation. The Whiskered Tern build nests on the water in colonies among flooded or emergent vegetation (Pizzey and Knight 2007).	1991	1	Nil	Unsuitable habitat
			nt	<i>Chrysococcyx osculans</i>	Black-eared Cuckoo	Summer migrants to Vic from northern wintering areas. Occur in mallee scrubs, dry woodlands and box-ironbark forests, mainly north of the Great Divide. They feed in low shrubs and from open ground among trees; lay their eggs in nests of other birds. Occasional or irregular visitor south of the Great Divide (Higgins 1999).	2003	3	Nil	Unsuitable habitat

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
			nt	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (south-eastern ssp.)	Occurs in eucalypt woodlands, particularly open woodland lacking a dense understorey (Higgins, Peter and Steele 2001). It is sedentary and nests in tree hollows within permanent territories, breeding in pairs or communally in small groups. Birds forage on tree trunks and on the ground amongst leaf litter and on fallen logs for ants, beetles and larvae (Higgins, Peter and Steele 2001).	1977	1	Low	Unsuitable habitat
		L	rx	<i>Dasyurus viverrinus</i>	Eastern Quoll	A range of open forests, woodlands and grasslands, where they would build a den amongst fallen logs or rock piles (DSE 2009). Found in open forest, scrubland and heath habitats, especially where interspersed with grassy clearings. Dens in burrow, hollow log or rock crevice.	1948	10	Low	Unsuitable habitat
			nt	<i>Dromaius novaehollandiae</i>	Emu	Plains, scrublands, open woodlands, coastal heaths, alpine pastures, semi-deserts, margins of lakes, pastoral and cereal growing areas, mostly absent from closely settled parts, common in pastoral and cropping regions, state forests and national parks (Pizzey and Knight 2007)	1976	1	Low	Unsuitable habitat
		L	en	<i>Egretta garzetta nigripes</i>	Little Egret	Inhabits terrestrial wetlands and shallow margins of tidal estuaries and inland lakes and rivers. Feed in shallow water and nest colonially, often with other waterbirds. Stick-nests are usually built in trees over water, although occasionally in reedbeds (Marchant and Higgins 1990).	2000	9	Nil	Unsuitable habitat
		L	en	<i>Falco hypoleucos</i>	Grey Falcon	Inhabit grasslands, lightly wooded plains and scrublands of interior Australia. Birds occur sporadically on the periphery of their range, such as nw. Vic. More common in Vic during or after droughts. They surprise their prey on the ground while flying low and fast over open country and also catch prey in flight. Nest in trees, in disused stick-nests of other birds.	1977	1	Low	Unsuitable habitat

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
			vu	<i>Falco subniger</i>	Black Falcon	The Black Falcon has a stronghold in inland Australia. Most Victorian records come from the lowlands and only occasionally from the foothills. It occurs mainly over croplands, grasslands and wooded farmlands. To catch flushed prey, they sweep low over croplands and grasslands and are often attracted by smoke from grassfires and late-summer burning off. This species nests in trees in old stick-nests of other birds (Marchant and Higgins 1993; Pizzey and Knight 2007).	2008	6	Nil	Unsuitable habitat
BONN A2H,C AMBA JAMB A,ROK AMBA			nt	<i>Gallinago hardwickii</i>	Latham's Snipe	Latham's Snipe is a migratory species. The species migrates to Victoria from breeding grounds in Japan. In Victoria this species is widely distributed in a range of habits including heavily vegetated freshwater swamps, and pools or ditches in heaths or subalpine herblands (Pizzey and Knight 2007). Also occurs in small ephemeral wetlands such as wet depressions after floods recede. Generally roosts in thick vegetation during the day, sometimes under shrubs away from wetlands, and will feed in swamps at night. They are occasionally seen feeding during the day. This species feeds by probing in soft mud and rarely moves far from concealing vegetation (Higgins and Davies 1996).	2013	76	Low	Unsuitable habitat, may sue the site to fly through

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
		L	vu	<i>Grus rubicunda</i>	Brolga	The Brolga is a large light grey crane with males reaching over and females up to 1 meter tall. It is generally found in tropical, subtropical and temperate freshwater terrestrial wetlands. It is an omnivorous bird eating tubers, grains, insects and molluscs. Numbers in Victoria have reduced due to draining of freshwater wetlands for agriculture (Marchant and Higgins 1993). Occur in the Northern Plains and along adjacent parts of the Murray river as well as on the plains and adjacent foothills of w. Vic. Uses shallow wetlands, farm dams, flooded areas, margins of large lakes, pastures, grasslands, crops and stubbles. Obtains food from the surface of the ground or by digging in moist areas. Nests are usually made on the ground on islands or as isolated mounds within wetlands. Drainage and grazing of wetlands and other human activities have contributed to reductions in numbers.	1991	1	Nil	Unsuitable habitat
CAMB AJAM BA,RO KAMB A			vu	<i>Hirundapus caudacutus</i>	White-throated Needletail	In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable. In Australia, White-throated Needletails almost always forage aerially, at heights up to 'cloud level', above a wide variety of habitats ranging from heavily treed forests to open habitats, such as farmland, heathland or mudflats (Higgins 1999).	1999	81	Low	Unsuitable habitat
CAMB AJAM BA		L	nt	<i>Hydroprogne caspia</i>	Caspian Tern	Mostly sheltered coastal embayments, including harbours, lagoons, inlets, bays, estuaries and river deltas, usually with sandy or muddy margins. Will use artificial wetlands, including reservoirs, sewage ponds and saltworks (Higgins and Davies 1996).	1980	2	Nil	Unsuitable habitat

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
	EN	L	nt	<i>Isodon obesulus obesulus</i>	Southern Brown Bandicoot	The Southern Brown Bandicoot is both active during the day and night. It is found in forest, heath and shrub communities. It shelters in a nest of vegetation beneath dense cover, it eats fungi, tubers and arthropods (Menkhorst and Knight 2001; Paull 2008).	1948	1	Nil	Unsuitable habitat
		L	en	<i>Ixobrychus minutus dubius</i>	Little Bittern	Occurs mainly in dense emergent vegetation in freshwater swamps, lakes and watercourses, where forage in shallow water or from supporting emergent or aquatic vegetation over deep water. Tolerate brackish-saline waters in mangrove swamps, Juncus-dominated saltmarsh, and wooded margins of coastal lagoons. Nests in densely vegetated freshwater wetlands; invariably over water; in sedge, reeds or rush, either in pure stands or interspersed in woodland thickets. Most records from the Murray-Darling Basin (Marchant and Higgins 1990, p. 1040).	1991	1	Nil	Unsuitable habitat
			nt	<i>Larus pacificus pacificus</i>	Pacific Gull	The Pacific Gull is one of the largest gulls within the Australian and New Zealand territories, confined to the coast where flocks occur on intertidal mudflats and nearby rubbish tips in Port Phillip Bay, Western Port and Corner Inlet, with smaller numbers elsewhere on estuaries, along beaches and on other intertidal habitats (Higgins and Davies 1996). This species breeds mainly on islands in Bass Strait and off Tasmania. Some smaller numbers breed on islands off Wilsons Promontory. Their nests are built on the ground on the tops of steep-sided islands (Higgins and Davies 1996).	1997	1	Nil	Unsuitable habitat

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
	EN	L	en	<i>Lathamus discolor</i>	Swift Parrot	The Swift Parrot is a winter migrant to Victoria (Swift Parrot Recovery Team 2001). Arriving from their breeding areas in Tasmania, however small numbers of non-breeding birds may remain here during summer (Higgins 1999; Swift Parrot Recovery Team 2001). They are nomadic, and follow the flowering of trees and psyllid infestations. In Victoria their distribution is centred on box-ironbark forests, but they are often seen in town parks and occur sporadically elsewhere in dry forests, dry woodlands and wooded farmlands but are seldom seen in treeless areas, rainforests or wet forests (Higgins 1999; Pizzey and Knight 2007). Feed mainly in winter-flowering plants, especially Red Ironbarks and ornamental trees and shrubs (Higgins 1999; Swift Parrot Recovery Team 2001).	2005	23	Nil	Unsuitable habitat
		L	vu	<i>Lewinia pectoralis pectoralis</i>	Lewin's Rail	Inhabits densely vegetated, fresh, brackish or saline wetlands, usually with areas of standing water. Use long tussocky grass, reeds, rushes, sedges or bracken and are occasionally found amongst tangled clumps of weeds such as Blackberries and Lantana (Marchant and Higgins 1993).	1999	2	Nil	Unsuitable habitat

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
	VU	L	en	<i>Litoria raniformis</i>	Growling Grass Frog	The species often inhabits water bodies with a diverse assemblage of aquatic vegetation, including emergent species such as sedges (<i>Gahnia</i> spp.), submergent species such as curly pondweed (<i>Potamogeton</i> spp.), floating species such as water ribbon (<i>Triglochin</i> spp.) and filamentous algae (Hamer and Organ 2006; Heard, Robertson and Scroggie 2004). The aquatic vegetation provides sites for male frogs to call from, sites for eggs to be deposited and relatively safe development, and food and shelter for tadpoles. Dense submergent vegetation is especially important to protect eggs and tadpoles from predation (Heard, Robertson and Scroggie 2004). However, it is also known to occur in ditches, dams and swamps or sheltering under discarded debris near those sites (Tyler and Knight 2009, pp. 38–39).	1991	22	Nil	Unsuitable habitat
		L	vu	<i>Lophocroa leadbeateri</i>	Major Mitchell's Cockatoo	Occur mainly in uncleared parts of the Mallee where they inhabit woodlands of Slender Cypress Pine (<i>Callitris preissii</i>)–Belah (<i>Allocasuarina cristata</i>) and Black Box (<i>Eucalyptus largiflorens</i>)–Buloke (<i>Allocasuarina luehmannii</i>), and adjacent mallee scrubs (esp. White Mallee <i>E. gracilis</i> and Dumosa Mallee <i>E. dumosa</i>). Occasionally visit nearby croplands that still have mallee and woodland remnants. Seldom occur in large areas of mallee heath. Feeds on the ground and in trees or shrubs; nests in tree hollows, often in old cypress pines	2006	2	Nil	Unsuitable habitat
	VU	L	vu	<i>Maccullochella peelii</i>	Murray Cod	The Murray Cod lives in a wide variety of habitats from silty slow moving rivers to clear rivers with pools and riffles. This fish prefers instream habitat of rocks and logs with over-hanging vegetation (Allen, Midgley and Allen 2002).	2015	6	Nil	Unsuitable habitat

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
		X	nt	<i>Macquaria ambigua</i>	Golden Perch	Occurs in a variety of riverine habitats, but prefers warm, slow-moving, turbid sections of streams. Also found in flooded lakes, backwaters and impoundments. Tolerant of temperatures between 4° and 35°C and high salinity levels (up to 35 p.p.t) (Allen, Midgley and Allen 2002, p. 199).	2008	1	Nil	Unsuitable habitat
	EN	L	en	<i>Macquaria australasica</i>	Macquarie Perch	The Macquarie Perch is found in the Murray River and its tributaries and is also found in parts of the Yarra River. It is most often found as a solitary individual, however can form schools during breeding season. The Macquarie Perch is more commonly found in slow moving rivers, reservoirs and lakes (Allen, Midgley and Allen 2002).	2015	43	Low	Unsuitable habitat, may use the site to fly through
		L	nt	<i>Melanodryas cucullata cucullata</i>	Hooded Robin	Highest density in semi-arid nw. Victoria where they inhabit mallee scrubs, cypress pine woodlands, mallee heaths with scattered trees and box-ironbarks forests. Uncommon in southern Vic where they occur in a range of lightly timbered habitats containing tall shrubs. These include Box woodlands, coastal heaths and heathy woodlands. Forage on bare ground, using vantage points such as dead limbs or fence posts to detect prey (Marchant and Higgins 1993; Pizzey and Knight 2007).	1992	3	Nil	Unsuitable habitat
		L	en	<i>Ninox connivens connivens</i>	Barking Owl	Occurs in dry woodlands, wooded farmlands and dry forests in the 500–800mm annual rainfall zone and extend into semi-arid areas in River Red Gum forests along the Murray River. Hollow dependent species (Higgins 1999; Pizzey and Knight 2007).	1989	1	Low	Unsuitable habitat
		L	vu	<i>Ninox strenua</i>	Powerful Owl	Widespread in foothill and coastal forests where they especially favour gullies with peppermint–Manna Gum forests. Occasionally seen in wetter mountain forests, drier box-ironbark forests and woodlands, and softwood plantations. Hunts at night by flying through the forest canopy catching prey from tree branches. They nest in large holes in trees (DSE 2004a).	2011	9	Medium	Likely to use the habitat as a corridor to fly through at night

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
			nt	<i>Nycticorax caledonicus hillii</i>	Nankeen Night Heron	The Nankeen Night Heron has a widespread distribution in wetlands throughout Australia, particularly in the north, south, and southwest. This species inhabits shorelines of lakes and rivers, estuaries, terrestrial wetlands and grasslands. Particularly those sheltered by tall ground vegetation and/or trees, with shallow, slow-moving water. Breeds in colonies, usually in the crown or canopy of trees, in forks or on horizontal boughs; also in reed beds or atop shrubs. In Victoria, most numerous in the Murray River region, and in smaller numbers in more coastal/near-coastal regions (Marchant and Higgins 1990; Pizzey and Knight 2007).	2008	101	Low	Unsuitable habitat, Breeding colonies occur >2km
		L	en	<i>Oxyura australis</i>	Blue-billed Duck	This species inhabits deep, permanent, well-vegetated swamps, but at times (especially in winter) may occur in large numbers on large open wetlands. The Blue-billed Duck catches food while diving or occasionally by feeding from the water surface. Their nests are built on trampled swamp vegetation around the base of established stands of reeds/rushes, often over water or on small islands (Marchant and Higgins 1990; Pizzey and Knight 2007).	2003	1	Nil	Unsuitable habitat
	VU	L	cr	<i>Pedionomus torquatus</i>	Plains-wanderer	Main distribution is within the Riverina of NSW, patchy elsewhere, and only occurring in small numbers in northern Victoria. Inhabits open grasslands with preference towards Danthonia and Stipa species. However, vegetation structure is more important than floristic composition. Does not occur in dense grasslands and woodlands (Marchant and Higgins 1993; Pizzey and Knight 2007).	1980	1	Nil	Unsuitable habitat

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
	EN	L	wx	<i>Perameles gunnii</i>	Eastern Barred Bandicoot	In Victoria confined to a few colonies derived from captive-bred animals and dependent on on-going control of foxes and cats. Occupies open grassland, including introduced pasture, with patches of dense vegetation for shelter (Van Dyck and Strahan 2008).	1883	1	Nil	Unsuitable habitat
			nt	<i>Phalacrocorax varius</i>	Pied Cormorant	This species is most often found along the coast, however are known to use inland wetlands including billabongs, deep and open swamps and rivers (large freshwater and saline wetlands). They nest in colonies, building platforms nests in mangroves or other trees (Marchant and Higgins 1990; Pizzey and Knight 2007).	2008	16	Nil	Unsuitable habitat
			nt	<i>Platalea regia</i>	Royal Spoonbill	The Royal Spoonbill inhabits the shallow parts of fresh and saline wetlands; these birds are gregarious in small flocks. They are mostly common on intertidal mudflats in coastal bays. Their stick-nests are built in reeds, shrubs or trees, singly or in loose colonies and are often seen with other species (Marchant and Higgins 1990).	2008	42	Nil	Unsuitable habitat
BONN A2S,C AMBA			nt	<i>Plegadis falcinellus</i>	Glossy Ibis	Found in terrestrial wetlands, occasionally wet grasslands and sheltered marine habitats. Forages in shallow water over soft substrate or on grassy or muddy verges of wetlands, preferring those that provide a variety of depths. Will use brackish and occasionally saline wetlands, mangroves and mudflats (Marchant and Higgins 1990; Pizzey and Knight 2007).	1977	1	Nil	Unsuitable habitat

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
	VU	L	en	<i>Polytelis swainsonii</i>	Superb Parrot	Found only in the Upper Murray Valley, mainly in the riverine forests and woodlands of Barmah Forest in Victoria. All other sightings have been made along or within 10 km of the Murray, Ovens and Goulburn Rivers. Nests located in hollows of very large riparian trees in River Red Gum forests. Feeds mainly in Black Box, Grey Box and Yellow Box woodlands and wooded farmlands away from their nest-trees but also within the River Red Gum forests round their nest. All nests are within 10km of major feeding areas. Forages on the ground and occasionally in eucalypts and mistletoes. The loss in range of this species is attributed to clearing and grazing of woodland feeding habitats but laying of poison baits for rabbits and Galahs, illegal trapping for the avicultural trade and logging of nest-trees are other possible causes (Higgins 1999` . pp. 287–295).	1999	2	Low	Unsuitable habitat
		L	vu	<i>Porzana pusilla palustris</i>	Baillon's Crake	This species returns to northern Victoria in spring, but few details on migration. It inhabits freshwater wetlands and floodwaters usually containing floating plants or tall emergent vegetation. The Baillon's Crake feeds in shallow water, mud and emergent aquatic plants. It has been found to nest in clumps or tussocks of vegetation surrounded by water (Marchant and Higgins 1993; Pizzey and Knight 2007).	2006	13	Nil	Unsuitable habitat
	VU	L	vu	<i>Prototroctes maraena</i>	Australian Grayling	This species only spends part of its life in freshwater streams, Australian Graylings migrate between freshwater streams and the ocean. Streams where this species occur tend to be clear with gravel bottoms and a variety of instream habitat such as pools and riffles. The upstream migration of this species has been effectively terminated in some rivers by dams (Allen, Midgley and Allen 2002).	2014	4	Low	Unsuitable habitat, may use the site to fly through

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
			vu	<i>Pseudemoia pagenstecheri</i>	Tussock Skink	Tussock Skinks favour tussock grasslands with few/no trees, with a disjunct distribution within the NSW highlands, and throughout the NSW–VIC high country to VIC low altitude basalt plains, and parts of SE SA, and Tas. (Wilson and Swan 2008).	1979	1	Nil	Unsuitable habitat
			vu	<i>Pseudemoia rawlinsoni</i>	Glossy Grass Skink	Inhabits swamp and lake edges, salt-marshes and boggy creeks with dense vegetation (Wilson and Swan 2008).	1991	1	Low	Unsuitable habitat
		L	en	<i>Pseudophryne bibronii</i>	Brown Toadlet	Frequent dry forest, woodland, shrubland and grassland; sheltering under leaf-litter and other debris in moist soaks and depressions. Eggs are spawned in shallow burrows (or nets) under litter, in low areas, near water, that will later be flooded. Tadpoles are aquatic in ponds, flooded grassland and roadside ditches (Hero, Littlejohn and Marantelli 1991).	2005	2	Low	Unsuitable habitat
			vu	<i>Pseudophryne semimarmorata</i>	Southern Toadlet	The Southern Toadlet can be found in dry forest, woodland, shrubland, grassland and heaths. It shelters under leaf litter and other debris in moist soaks and depressions. Their eggs are spawned in shallow burrows under organic litter in low areas close to water (Hero, Littlejohn and Marantelli 1991).	1988	1	Low	Unsuitable habitat
	VU	L	vu	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Eastern coastal Australia from Gladstone in Qld to South Gippsland and Melbourne in Vic, rare influxes further west and south. Rarely more than 200km inland. In warmer months gathers in very large camps, usually in dense forest in gullies; population more dispersed in winter. Size of camps fluctuates in response to local food supplies; in south numbers fluctuate in regular pattern, being highest in late summer–autumn and lowest in winter (Menkhorst and Knight 2001).	2008	23	Medium	The species may use the area for foraging, but no known camps are present on site.

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
CAMB A	VU	L	cr	<i>Rostratula australis</i>	Australian Painted Snipe	Generally uncommon in Australia and scattered records in Victoria. Uses terrestrial shallow freshwater (occasionally brackish) wetlands; ephemeral and permanent: lakes, swamps, claypans, inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps lignum, canegrass or tea-tree (Marchant and Higgins 1993).	2001	3	Nil	Unsuitable habitat
		L	dd	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail Bat	Summer migrants to southern Australia, between January and April, the Yellow-bellied Sheathtail Bat is found in a wide variety of habitat types, including; wet and dry sclerophyll forests, open woodland, Acacia shrubland, mallee, grasslands and deserts. They generally roost in large tree hollows (Churchill 2008). Common in N. Australia but rare late-summer autumn visitors to South, occurs in most environments from wet forests to deserts, roosts singly or in small groups in tree hollows, in treeless areas known to roost in burrows of terrestrial mammals (Menkhorst and Knight 2001)	1990	1	Low	Unsuitable habitat
			nt	<i>Todiramphus pyrropygia pyrropygia</i>	Red-backed Kingfisher	An Australian endemic, the Red-backed Kingfisher is a summer migrant to northern Victoria from wintering grounds in the arid interior. Usually observed in dry woodlands and River Red Gum forest margins of the Murray River Valley, sporadic sightings elsewhere generally occur in dry forests, dry woodlands and mallee scrub remnants. Rarely seen south of the Great Divide. They pounce upon prey from elevated perches such as tree limbs or overhead wires. They usually dig nesting burrows in cliffs and creek banks but occasionally nest in hollow limbs in trees (Higgins 1999; Pizzey and Knight 2007).	1985	1	Nil	Unsuitable habitat

Treaty	EPBC	FFG	VROTS	Scientific name	Common name	Habitat	Last record	No. recs.	Likelihood occurrence	Likelihood Reasoning
BONN A2H,C AMBA JAMB A,ROK AMBA			vu	<i>Tringa stagnatilis</i>	Marsh Sandpiper	Salt, brackish, or freshwater wetlands, sewage ponds, commercial saltfields, bore drains, mangroves, tidal mudflats, estuaries, regular summer migrant (aug – may), mostly to coastal Aust, widespread but very scattered throughout inland (Pizzey and Knight 2007).	1999	2	Nil	Unsuitable habitat
		L	en	<i>Tyto novaehollandiae novaehollandiae</i>	Masked Owl	Inhabits forests, woodlands and caves. Active in middle storey (Simpson and Day 2000/2001). Inhabits diverse range of wooded habitats that provide tall or dense mature trees with hollows suitable for nesting and roosting, and nearby open areas for foraging (Higgins 1999).	1949	1	Low	Unsuitable habitat

Appendix 4. Biodiversity impacts and offset requirements report

Appendix 5. Tree Census

Legend

DBH = diameter-at-breast-height

TRZ = Tree Retention Zone

Tree ID	Tree species	DBH (cm)	Retain/Remove
1	<i>Eucalyptus camaldulensis</i>	94	Retain
9	<i>Eucalyptus camaldulensis</i>	82	Retain
13	<i>Eucalyptus camaldulensis</i>	101	Retain
15	<i>Eucalyptus camaldulensis</i>	85	Retain
16	<i>Eucalyptus camaldulensis</i>	95	Retain
17	<i>Eucalyptus camaldulensis</i>	85	Retain
18	<i>Eucalyptus camaldulensis</i>	94	Retain
20	<i>Eucalyptus camaldulensis</i>	105	Retain
20	<i>Eucalyptus camaldulensis</i>	120	Retain
23	<i>Eucalyptus camaldulensis</i>	80	Retain
29	<i>Eucalyptus camaldulensis</i>	90	Retain
49	<i>Eucalyptus camaldulensis</i>	90	Retain
50	<i>Eucalyptus camaldulensis</i>	100	Retain
59	<i>Eucalyptus camaldulensis</i>	80	Retain
60	<i>Eucalyptus camaldulensis</i>	80	Retain

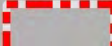
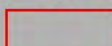
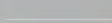
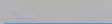
Appendix 6. Maps



Map 1. Subject Site

TreeTops Adventure Park,
Yarra Flats, Ivanhoe East

Legend

-  Subject Site
-  Parcels
-  Contours (1m)
-  Watercourse

Details

Date: 30/08/2018
Aerial photography from
Google Earth Pro (31/01/2014).
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0 40 80 m

Scale 1:2,007 (Page size A3)



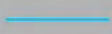
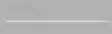


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Map 2. Ecological Assessment

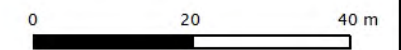
TreeTops Adventure Park,
Yarra Flats, Ivanhoe East

Legend

-  Subject Site
-  Parcels
-  Watercourse
-  Contour (1m interval)
- Native vegetation**
-  EVC 56: Floodplain Riparian Woodland
-  Large Old Trees

Details

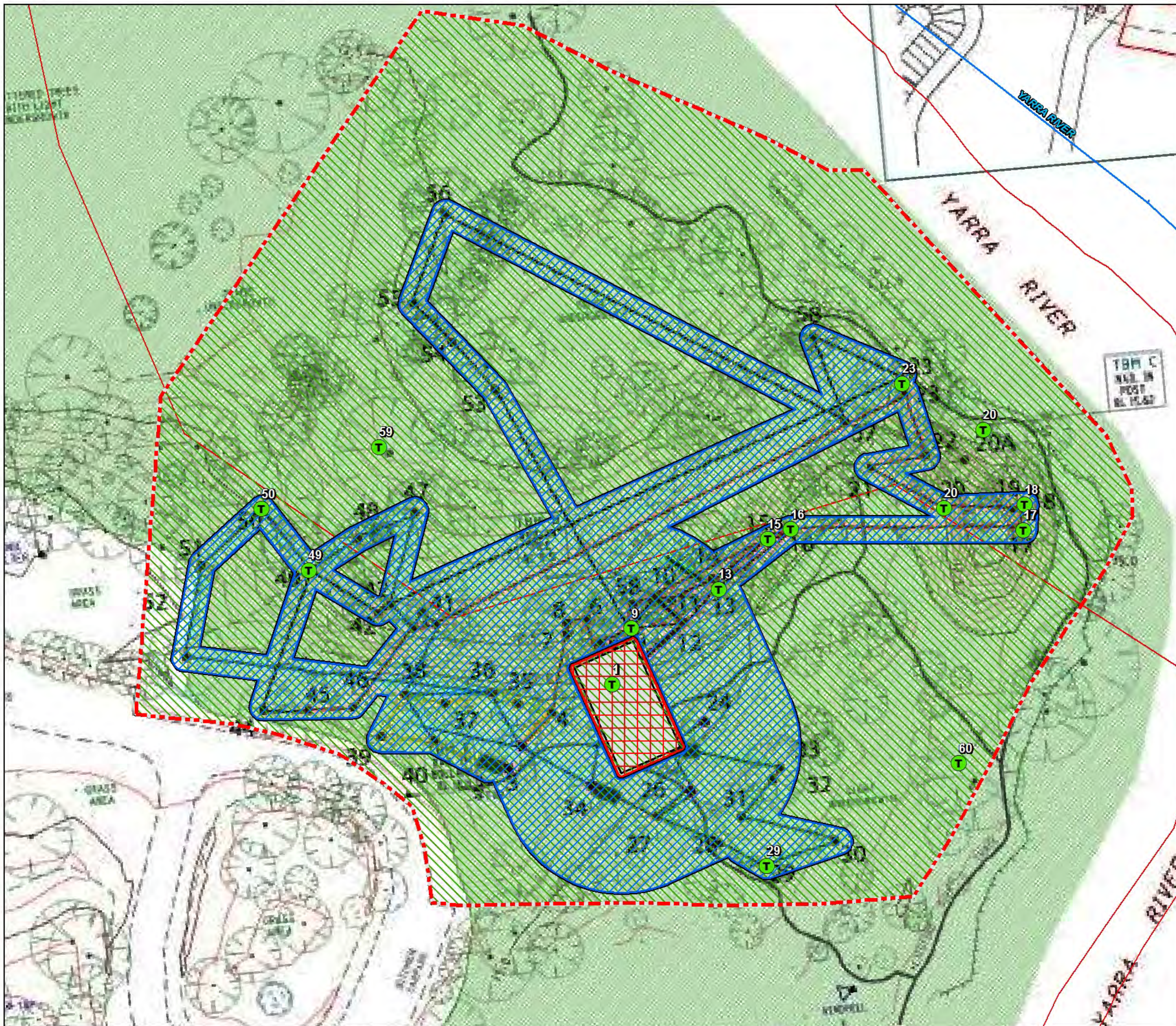
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Map 4. Vegetation Losses

Proposed TreeTops Adventure Park,
Yarra Flats, Ivanhoe East

Legend

- Subject Site
- Parcels
- Watercourse
- Native Vegetation to be retained
- Large Old Trees DBH>80cm (to be retained)
- Proposed Administration Building (10.2m x 18.2m)

Vegetation Losses

- 100% Vegetation Losses (Admin Building)
- 50% Vegetation Loss (Tree Course)

Date: 14/11/2018
Plans prepared by Thomas & George P/L
(22/02/2016).

N
0 15 30 m
Scale 1:576 (Page size A3)

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Map 5. Pink Mountain correa

DELWP Modelling 505466

540 The Boulevard Ivanhoe East

Legend

Watercourse

— Constructed watercourse

— Natural watercourse

— Major Roads

▭ Correa lawrenceana var. cordifolia (Habitat)

▲ Town centre

Details

Date: 30/11/2018

Aerial photography from

Google Earth Pro (31/01/2014).

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0 10 20 m

Scale 1:1,744 (Page size A3)

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Map 6. Pink Mountain correa


DELWP Modelling 505466

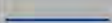
Yarra River


Legend


 Subject Site


Watercourse

 Constructed watercourse

 Natural watercourse

 Major Roads

 *Correa lawrenceana* var. *cordifolia* (Habitat)

 Town centre

Details

Date: 30/11/2018

Aerial photography from
Google Earth Pro (31/01/2014).

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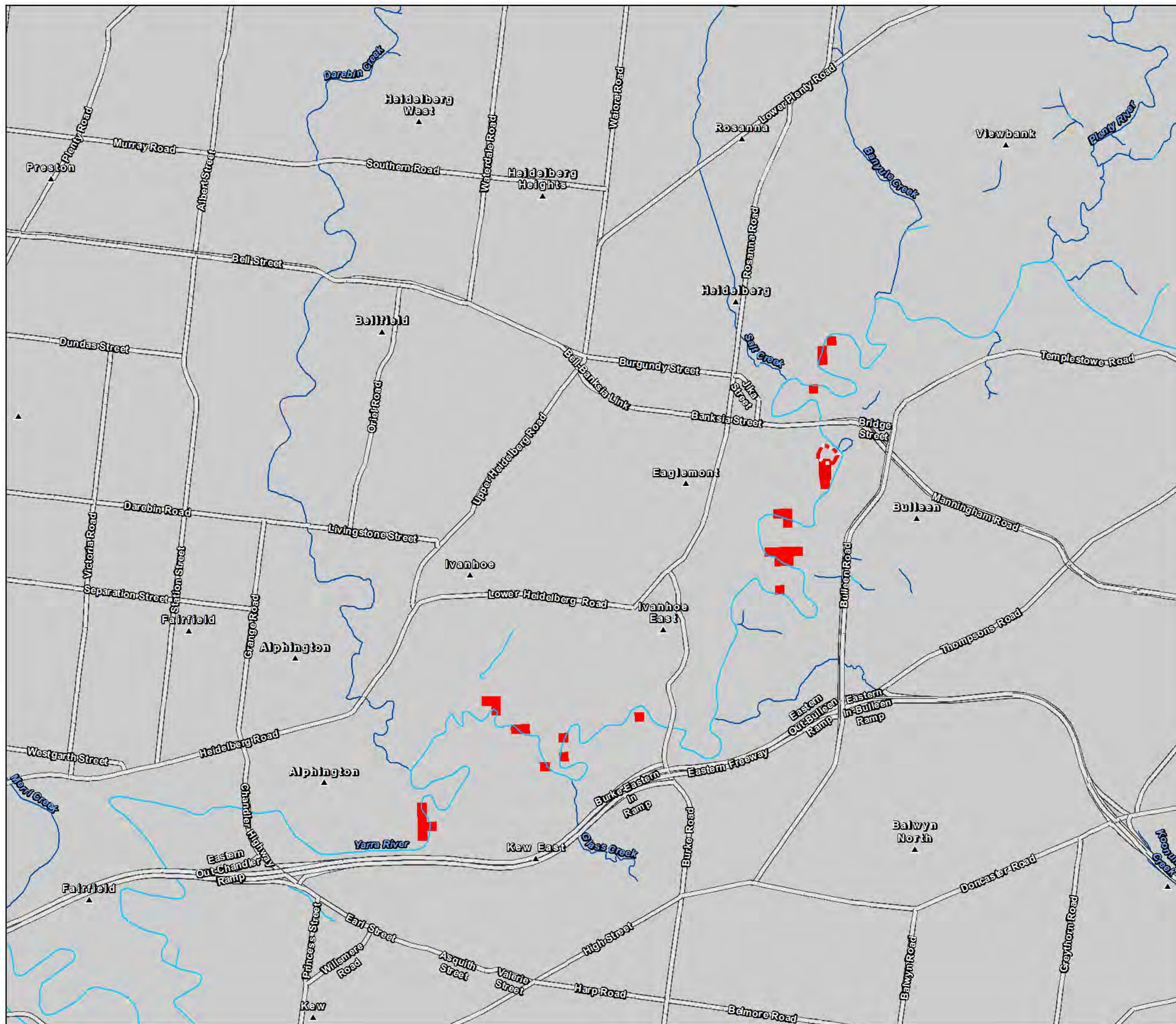
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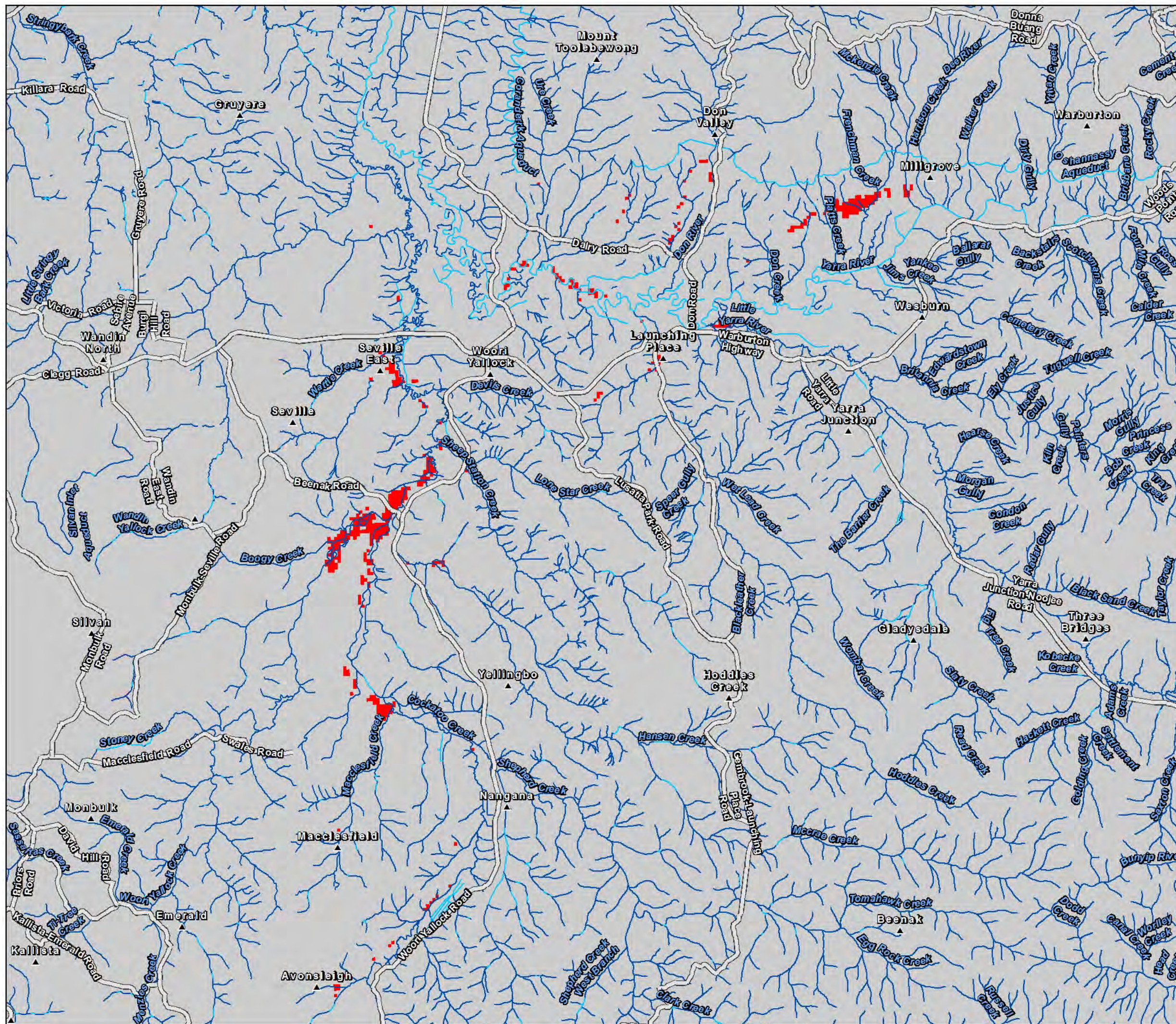


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Map 6. Pink Mountain correa
DELWP Modelling 505466



Legend

Watercourse

- Constructed watercourse
- Natural watercourse
- Major Roads
- Correa lawrenceana var. cordifolia (Habitat)
- ▲ Town centre

Details

Date: 14/11/2018
Aerial photography from
Google Earth Pro (31/01/2014).
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Scale 1:84,206 (Page size A3)

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Taxon Id	Scientific Name	Common Name	Discipline	Level
505466	<i>Correa lawrenceana</i> var. <i>cordifolia</i>	Pink Mountain-correa	Flora	Species



MyMap

- ☒ Geographic Distribution
- ☒ Sites for Taxon 1

Normal Satellite Hybrid

Scale = 1 : 4M


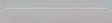


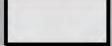




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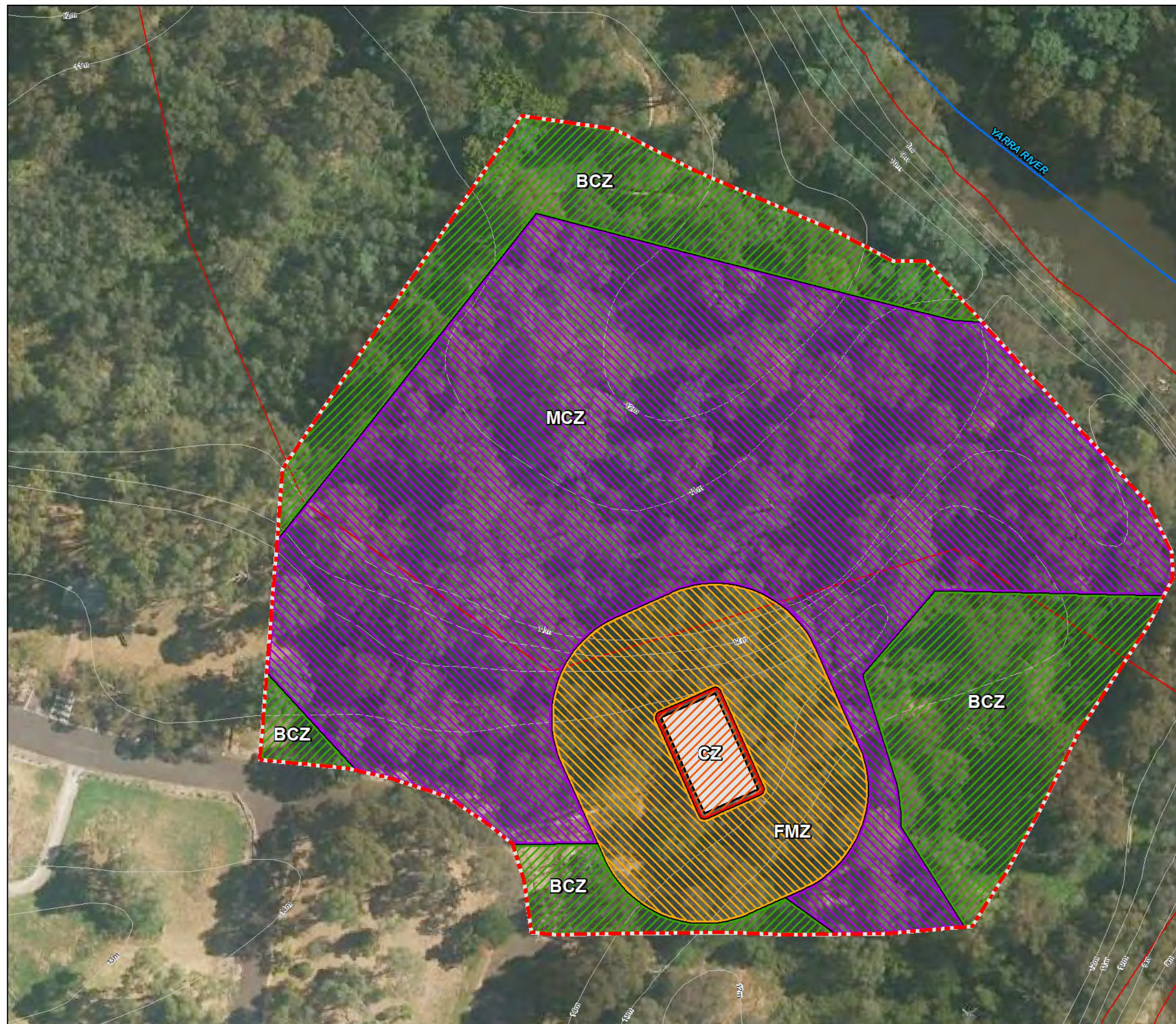
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Map 9. Land Management Plan

TreeTops Adventure Park,
Yarra Flats, Ivanhoe East

Legend

-  Study area
-  Contours (1m)
-  Watercourse
-  Parcels
-  Proposed Administration Building (10.2m x 18.2m)
- Management Zones**
-  Construction Zone (1m buffer)
-  Fuel Modified/Conservation Zone (19m buffer)
-  Modified Conservation Zone
-  Bushland Conservation Zone



Details

Date: 30/11/2018
Aerial photography from
Google Earth Pro (31/01/2014).
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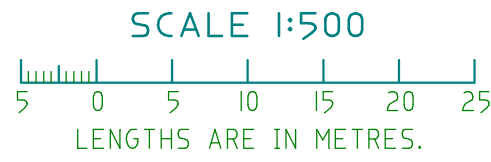
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Appendix 7. Detailed plans

FEATURE SURVEY PLAN
YARRA FLATS PARK, IVANHOE EAST



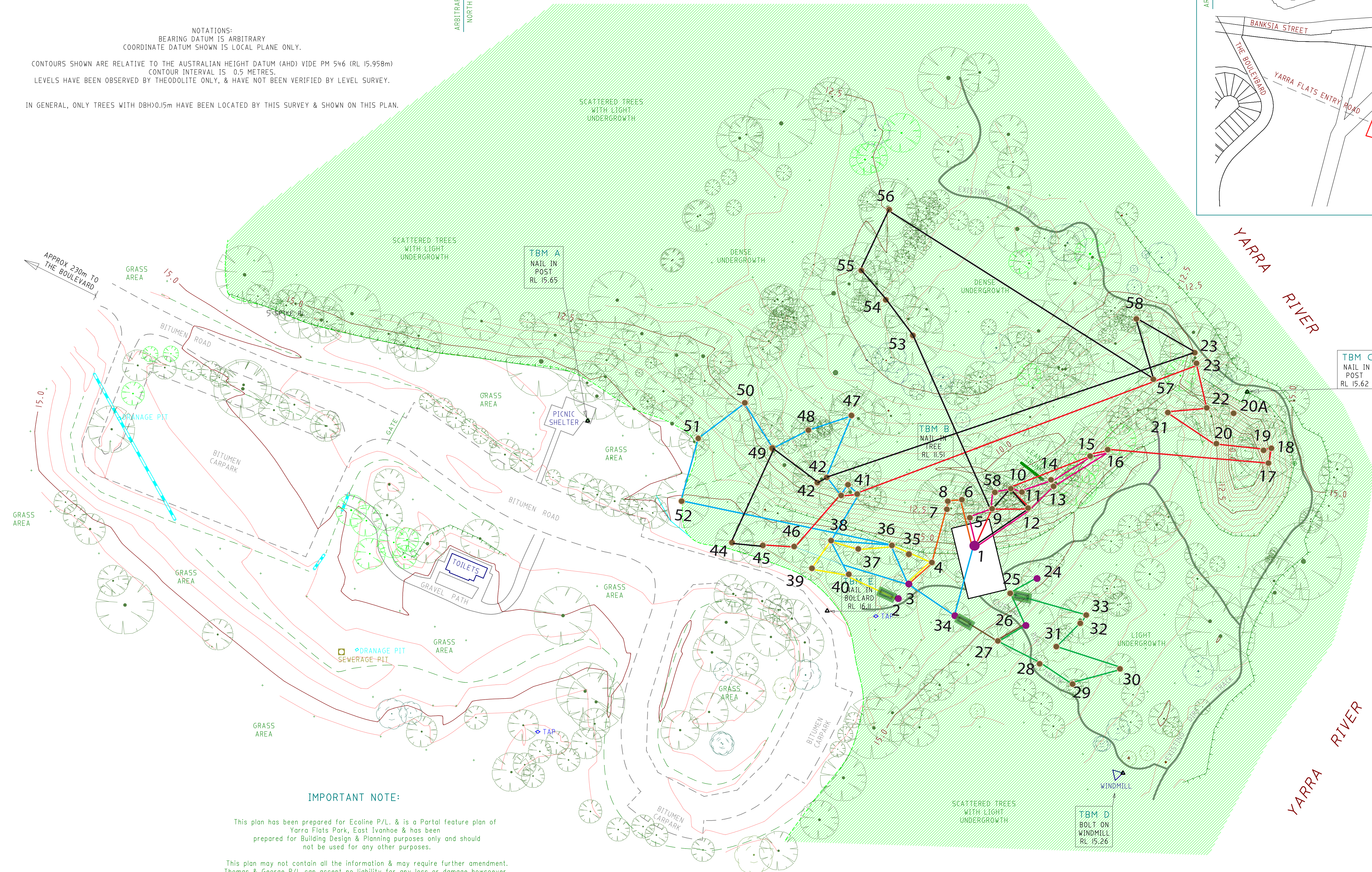
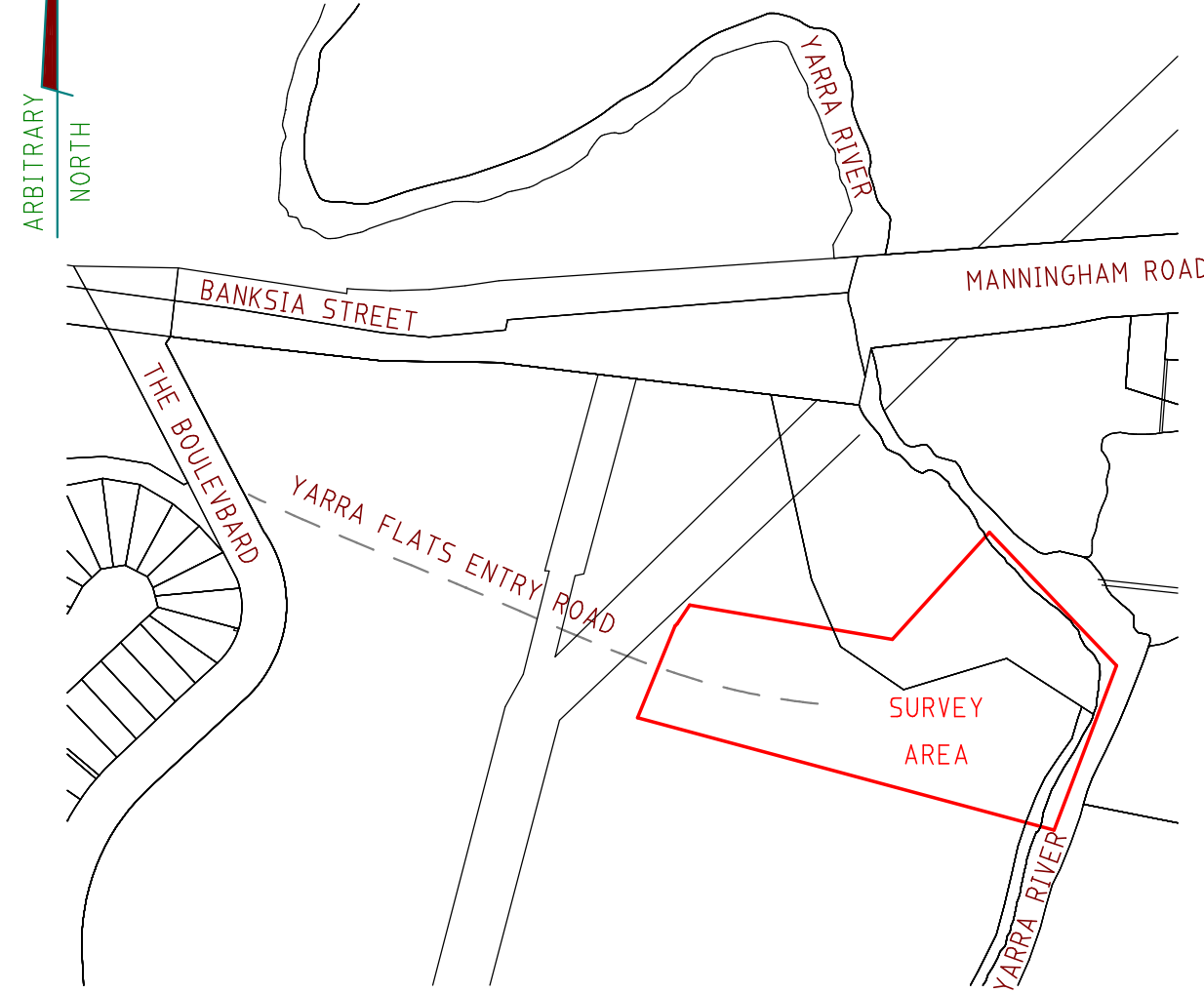
NOTATIONS:
BEARING DATUM IS ARBITRARY
COORDINATE DATUM SHOWN IS LOCAL PLANE ONLY.

CONTOURS SHOWN ARE RELATIVE TO THE AUSTRALIAN HEIGHT DATUM (AHD) VIDE PM 546 (RL 15.958m)
CONTOUR INTERVAL IS 0.5 METRES.
LEVELS HAVE BEEN OBSERVED BY THEODOLITE ONLY, & HAVE NOT BEEN VERIFIED BY LEVEL SURVEY.

IN GENERAL, ONLY TREES WITH DBH>0.15m HAVE BEEN LOCATED BY THIS SURVEY & SHOWN ON THIS PLAN.

TREETOP ADVENTURE PARK
COURSE AND OFFICE OVERLAY

LOCALITY PLAN
SCALE 1:5000



LEGEND

- RM STAR PICKET
- SPIKE PL.
- ROUND POST - WOOD
- NL IN TREE
- TBM A NL IN POST
- EXISTING SURFACE
- BLACKWOOD
- EUCALYPT
- OTHER TREE
- WATTLE
- WINDMILL
- TAP
- INVERT 300mm
- GATE
- SEWERAGE PIT
- DRAINAGE PIT
- EXISTING TRACK
- TOE OF BANK
- GROUP OF TREES
- TOP OF BANK
- POST & RAIL
- BUILDING
- EDGE OF BITUMEN
- GATE
- U/G DRAINAGE PIPE
- VEGETATION UNDERGROWTH

IMPORTANT NOTE:

This plan has been prepared for Ecoline P/L & is a Partial feature plan of Yarra Flats Park, East Ivanhoe & has been prepared for Building Design & Planning purposes only and should not be used for any other purposes.

This plan may not contain all the information & may require further amendment. Thomas & George P/L can accept no liability for any loss or damage howsoever arising, to any person or corporation who may rely on this plan for any purpose.

Prior to any design, excavation, construction or cultivation activities on this site, a site inspection should be undertaken & all relevant authorities should be contacted for possible location of additional aboveground/underground services as this plan does not preport to represent all of that information. Services shown on this plan have been recorded "as is / where is" at the time of this survey however may not cover all of the existing As-Built infrastructure.

The original of this plan remains the property of Thomas & George P/L & copies of this plan must not be reproduced without this note which is an integral part of this plan.

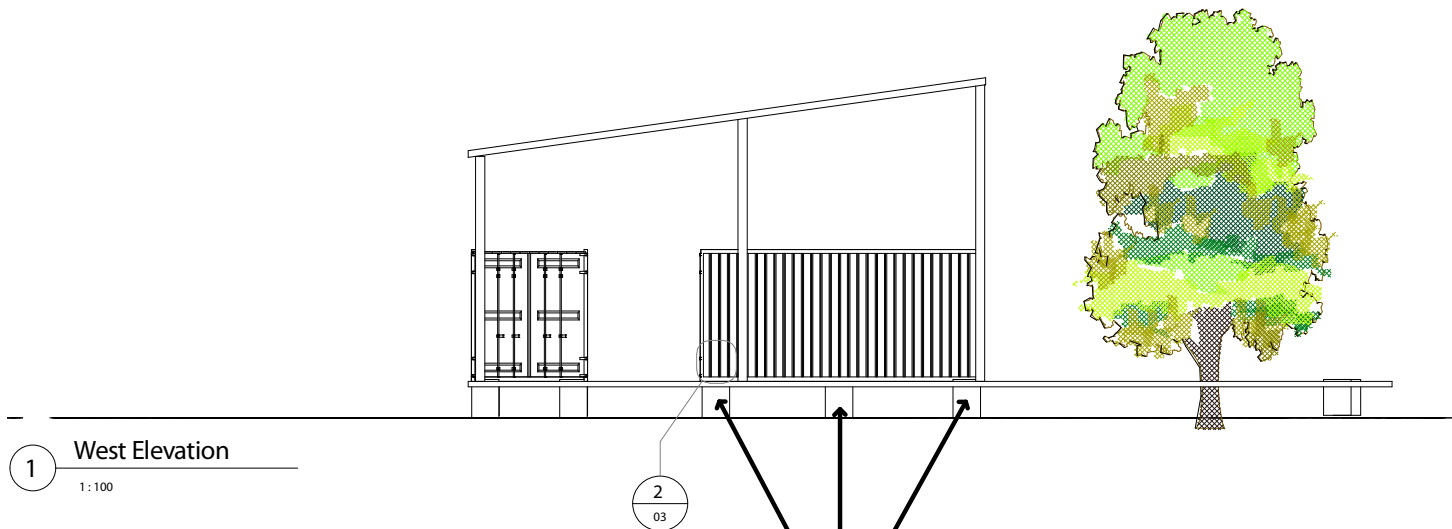
Key to Course and Office Overlay

- Tree with platform
- Tree with ground access
- Tree number
- Flying Fox landing
- Yellow course
- Orange course
- Purple course
- Administration Area
- Training course
- Green course
- Blue course
- Red course
- Black course

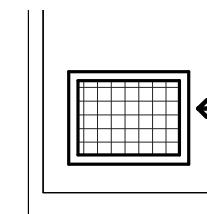
REF : 216006 F01

VERSION No. : 01
DATE OF SURVEY : 22/02/2016
ORIGINAL SHEET SIZE : A1
DRAWN BY: M.W. (2/03/2016)
CHECKED BY: T.G. (3/03/2016)

Yarra Flats - VIC	Version:6
TreeTop Adventure Park	Courses: 8
25/09/18	Challenges:90



1 West Elevation
1 : 100



2 Water Vent Detail
1 : 20

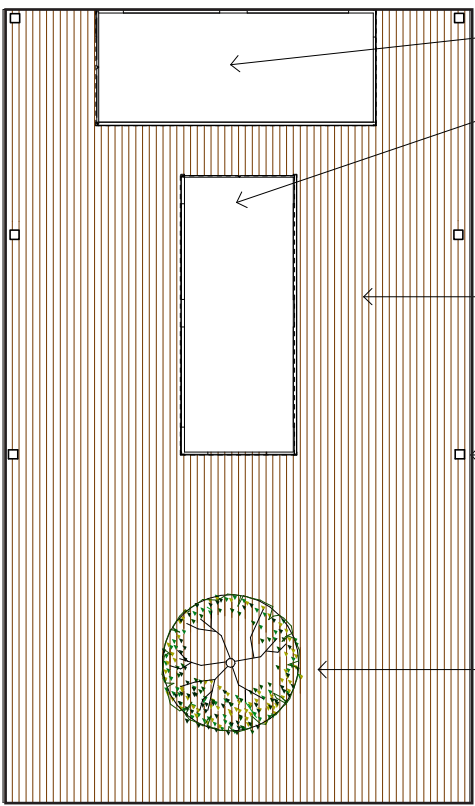
WATER VENT DESCRIPTION

This vent will be designed to allow water in the case of a flood to enter the container, allowing it to fill with water preventing it from floating. There will be 2 per container installed

CONTAINER & PIER FIXINGS

The containers, timber deck and awning will be bolted to Surefoot ootings, steel hybrid all in one footing.

<table><tr><th>Issued by</th><th>Revision Number</th><th>Revision Description</th><th>Date</th></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>				Issued by	Revision Number	Revision Description	Date													Building Designer Josh Clarke	DISCLAIMER "THESE DRAWINGS ARE PRELIMINARY DRAWINGS AND ARE SUBJECT TO CHANGE WITHOUT NOTICE DURING THE COURSE OF THE PROPOSED DEVELOPMENT AND IN CONSULTATION WITH COUNCIL. SUBMISSION OF THE DRAWINGS DOES NOT CONSTITUTE A REPRESENTATION OR WARRANTY BY THE DEVELOPER OR ITS SURVIVORS, AGENTS OR CONTRACTORS THAT THE PROPOSED DEVELOPMENT WILL TAKE PLACE IN ACCORDANCE WITH THESE DRAWINGS." BEFORE CARRYING OUT ANY WORK ENSURE THAT THE DRAWINGS USED CARRY THE LATEST AMENDMENTS No.	NOTES DRAWINGS MADE TO A LARGER SCALE AND THOSE SHOWING PARTICULAR DETAIL OF WORK SHALL TAKE PRECEDENCE OVER DRAWINGS MADE TO A SIMILAR SCALE AND FOR MORE GENERAL PURPOSES. WHERE ANY DISCREPANCY EXISTS BETWEEN FIGURED AND SCALED DIMENSIONS, THE FIGURED DIMENSION SHALL PREVAIL. BUILDER TO CHECK ALL SITE DIMENSIONS PRIOR TO FABRICATION OF FITTINGS. ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODES OF AUSTRALIA (NCS).	ALL WORK SHOULD CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES, SCHEDULES AND MODIFICATIONS ISSUED BY THE BUILDING DESIGNER. THE GENERAL CONTRACTOR SHALL REVIEW ALL DOCUMENTS AND VERIFY ALL DIMENSIONS AND FIELD CONDITIONS AND SHALL CONFIRM THAT WORK IS BUILDABLE AS SHOWN. ANY CONFLICTS OR OMISSIONS, ETC. SHALL BE IMMEDIATELY REPORTED TO THE BUILDING DESIGNER FOR CLARIFICATION PRIOR TO THE PERFORMANCE OF ANY WORK IN QUESTION. ALL THE CONSTRUCTION DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL CONSULTANTS AND CONTRACTOR DRAWINGS, SCHEDULES AND SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN BUILDING DESIGNERS AND CONSULTANTS DRAWINGS IN LOCATING STRUCTURAL ELEMENTS, MATERIALS, EQUIPMENT, THE BUILDING DESIGNER SHALL BE NOTIFIED FOR CLARIFICATION PRIOR TO PROCEEDING WITH CONSTRUCTION. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN PARTITION LOCATIONS, DIMENSIONS AND TYPES. IN CASE OF CONFLICT, NOTIFY THE BUILDING DESIGNER OR WRITTEN CLARIFICATION PRIOR TO PROCEEDING OR COMMENCEMENT OF CONSTRUCTION.	Legend CONCEPT DESIGN PROPOSAL	Client TREETOPS Project Address YARRA FLATS, VIC Project Discription SITE OFFICE	Sheet Name : Elevations Amendment : A	Scale As indicated Date : 20/09/2018 Drawing Number : Drawing Status Commencement Date :
Issued by	Revision Number	Revision Description	Date																								



Shipping Containers

Cypress Timber Deck

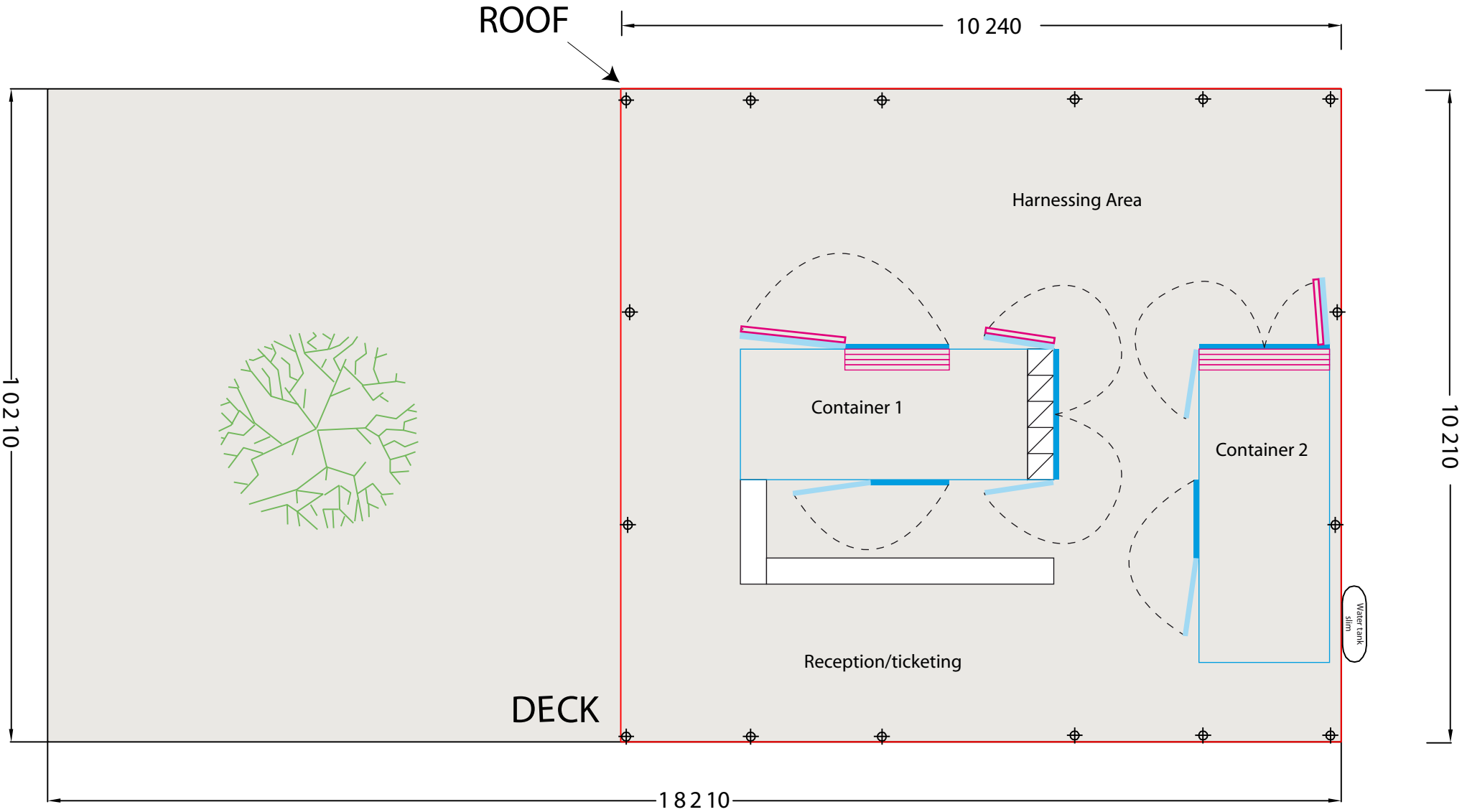
Columns From Roof Structure

Tree Through Deck

1 02 Timber Deck Level
1 : 100

				Building Designer	DISCLAIMER	NOTES	Legend	Client	Sheet Name :	Scale	1 : 100						
Issued by	Revision Number	Revision Description	Date	Josh Clarke	"THESE DRAWINGS ARE PRELIMINARY DRAWINGS AND ARE SUBJECT TO CHANGE WITHOUT NOTICE DURING THE COURSE OF THE PROPOSED DEVELOPMENT AND IN CONSULTATION WITH COUNCIL. SUBMISSION OF THE DRAWINGS DOES NOT CONSTITUTE A REPRESENTATION OR WARRANTY BY THE DEVELOPER OR ITS SERVANTS, AGENTS OR CONTRACTORS THAT THE DRAWINGS ARE FINAL NOR THAT THE PROPOSED DEVELOPMENT WILL TAKE PLACE IN ACCORDANCE WITH THESE DRAWINGS."	DRAWINGS MADE TO A LARGER SCALE AND THESE SHOWING PARTICULAR DETAILS OF WORK SHALL TAKE PRECEDENCE OVER DRAWINGS MADE TO A SIMILAR SCALE AND FOR MORE GENERAL PURPOSES.	ALL WORK SHOULD CONFORM TO THE CONTRACT DOCUMENTS WHICH INCLUDE SPECIFICATIONS, THE DRAWINGS, ALL ADDENDUMS, FINISHES, SCHEDULES AND MODIFICATIONS ISSUED BY THE BUILDING DESIGNER.	CONCEPT DESIGN PROPOSAL	TREETOPS	Site Plan	Date :	20/09/18					
															Drawing Number :		
																Drawing Status	
					BEFORE CARRYING OUT ANY WORK ENSURE THAT THE DRAWINGS USED CARRY THE LATEST AMENDMENTS NO.	ALL WORK SHOULD COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND BUILDING CODES OF AUSTRALIA (NCC).	DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN PARTITION LOCATIONS, DIMENSIONS AND TYPES. IN CASE OF CONFLICT, NOTIFY THE BUILDING DESIGNER OR WRITTEN CLARIFICATION PRIOR TO PROCEEDING OR COMMENCEMENT OF CONSTRUCTION.		Project Address YARRA FLATS, VIC	Amendment :		Commencement Date :					
									Project Discription SITE OFFICE	A							

PRELIMINARY PLAN FOR PROPOSED ADMINISTRATION AREA - YARRA FLATS



FLOOR PLAN

Locker (inside container)

Counter

Harness hooks

Door closed

Door open



Yarra Flats - VIC		Version: 3
Proposed TreeTops Site		
25/09/18	Administration Area	Not to scale

Appendix 8. Pink Mountain Correa

From: David.Cameron@delwp.vic.gov.au
To: Claire.Moxham@delwp.vic.gov.au; [Liza James](#)
Cc: Geoff.Sutter@delwp.vic.gov.au; Judy.Downe@delwp.vic.gov.au; gcarr@ecologyaustralia.com.au
Subject: Re: Fw: Correa lawrenceana var. cordifolia
Date: Friday, 12 October 2018 7:54:55 PM

Liza,

Geoff Carr is currently revising the genus *Correa* and informs me that the Drummer specimen represents an undescribed taxon within the *C. lawrenceana* complex which is quite distinct from the true var. *cordifolia* which is apparently restricted to NSW. The taxon collected in the Drummer State Forest is known also from the Howe Ranges near the NSW border and extends at least to Mt Dromedary in southern NSW which is also the type locality for the true *C. lawrenceana* var. *cordifolia*. The Drummer entity does not bear pink flowers as indicated by the collector's notes and the specimen seen by Geoff at MEL.

As well flower colour there are also conspicuous differences in leaf shape and flower arrangement to distinguish these two taxa.

You are welcome to contact Geoff at Ecology for further information regarding these plants.

Regards,

David Cameron | Senior Botanist | Flora Database Curator & Threatened Species Officer
Knowledge & Decision Systems Branch | Biodiversity Division
Energy, Environment and Climate Change | Department of Environment, Land, Water & Planning
Arthur Rylah Institute for Environmental Research 123 Brown Street, Heidelberg, Victoria 3084
T: 03 9450 8629 | M: 0411 752 221 | F: 03 9450 8799 | E: David.Cameron@delwp.vic.gov.au
www.delwp.vic.gov.au

From: Claire Moxham/Person/VICGOV1
To: David Cameron/Person/VICGOV1@VICGOV1, Judy Downe/Person/VICGOV1@VICGOV1, Geoff Sutter/Person/VICGOV1@VICGOV1,
Date: 10/10/2018 12:11 PM
Subject: Fw: Correa lawrenceana var. cordifolia

FYI - can someone please address the query below

ta

Claire

----- Forwarded by Claire Moxham/Person/VICGOV1 on 10/10/2018 12:10 PM -----

From: Research ARI/DSE/VICGOV1
To: Claire Moxham/Person/VICGOV1@VICGOV1,
Date: 10/10/2018 11:57 AM
Subject: Fw: Correa lawrenceana var. cordifolia
Sent by: ARI Reception

Hi Claire,

Are you able to assist with this enquiry?

Kind regards,

Michelle

Research ARI | Arthur Rylah Institute for Environmental Research

Energy, Environment and Climate Change | Department of Environment, Land, Water and Planning

123 Brown Street, Heidelberg, Victoria 3084

T: 039450 8600 | F: 03 9450 8799 | E: research.ari@delwp.vic.gov.au

For further information about ARI, please visit our website

www.ari.vic.gov.au



----- Forwarded by ARI Reception/Person/VICGOV1 on 10/10/2018 11:56 AM -----

From: Liza James <lizaj@practicalecology.com.au>
To: "research.ari@delwp.vic.gov.au" <research.ari@delwp.vic.gov.au>,
Date: 10/10/2018 11:16 AM
Subject: Correa lawrenceana var. cordifolia

Hi,

I am searching for some information on Pink Mountain-correa *Correa lawrenceana* var. *cordifolia*. I am wanting know a bit more information regarding specific habitat requirements for the species.

As far as I know it is confined to rainforest margins and along creeks according to the Flora of Vic. The VBA shows records in far east Vic and one in South Yarra that is described as planted.

Can anyone assist me with providing some more information or perhaps know of anyone who may specialise in this species?

Kind regards

Liza James

Ecological Consultant

Wednesday, Thursday and Friday

Practical Ecology, PO Box 228 Preston, 3072 | www.practicalecology.com.au

T: 03 9484 1555 | F: 03 9484 9133 | lizaj@practicalecology.com.au



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Appendix 9. Offset Quote

Reference BOP-130/2018
Contact Glen Terry
Telephone 9294 6113 / 1300 368 333



28th November 2018

Liza James
Practical Ecology

Dear Liza,

Biodiversity Offsets Program
Offset REF No: BOP-130/2018
Location: TBC

Thank you for your interest in purchasing biodiversity offset credits through the Yarra Ranges Biodiversity Offsets Program (BOP). The BOP has offset credits available that match your offset target requirements. The details of the offset credits are shown in the attached Purchase of Native Vegetation Offset Credits form.

A review of our Offset stock indicates we have a good stock of offset assets that meet your requirements.

Should you wish to proceed with the purchase please sign the attached form and return it (scanned copy sent via email preferred) to the Environmental Projects Officer within 30 days of receiving this letter.

Once the signed form has been received you will be issued an invoice for payment.

Should you have any further enquiries please feel free to contact me.

Kind regards,

Glen Terry
Environmental Projects Officer
Yarra Ranges Council
9294 6113
Yarra Ranges Council, PO Box 105, Lilydale Vic 3140
biodiversityoffsets@yarraranges.vic.gov.au

Reference: BOP 130/2018
Contact: Glen Terry
Telephone: 9294 6113



28th November 2018

Purchase of Native Vegetation Offset Credits Form

Section 1: Purchaser/vendor details

Purchaser Details	
Project Name /	TBC
Purchaser	TBC
Planning	TBC
Responsible	TBC
Contact	Liza James (Practical Ecology) lizaj@practicalecology.com.au Ph 9484 1555
Vendor Details	
Name / Organisation	Yarra Ranges Shire Council
Contact Person	Glen Terry (Environmental Projects Officer)
Contact Address	PO Box 105 Lilydale Vic 3140
e-mail	biodiversityoffsets@yarraranges.vic.gov.au
BN/ABN	21 973 226 012

Section 2: Credit price

Credit Type	Unit Price	Quantity	Price
SHU – Grey Headed Flying Fox	\$141,500.00	.184	\$26,036.00
DELWP Processing Fee	\$75.00	1	\$75.00
		GST	\$2,603.60
		TOTAL	\$28,714.60

I (the purchaser) agree to purchase and receive the credits summarised above (and detailed in Section 3) for the agreed price indicated. I am aware that there are alternative offset providers but have chosen to use the Yarra Ranges Biodiversity Offsets Program. I understand that a separate invoice will be issued once the responsible planning officer has approved the proposed offsets. This quote is valid for 30 days from the date of issue.

Purchaser (print name)

Signature and date

Section 3: Offset credits to be traded

Site/zone number	KHF – TFN- C1663 -1B & 1C
Location (Suburb only)	Montrose
Offset Type	
SHU's	.184
Strategic Biodiversity Value	.681

Section 4: Native Vegetation Credit Register transfer

This is to advise the Native Vegetation Credit Register that the funds specified above have been received and that the credits specified in Section 3 can be transferred to the ownership of the purchaser.

Glen Terry

.....
Glen Terry
Environmental Projects Officer
Yarra Ranges Council

.....
David Harper
Manager- Sustainable Environment and
Facilities.
Yarra Ranges Council