

ADVERTISED PLAN

**19-23 Horswood Rd,
Narre Warren North**

Vegetation Management Plan

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Prepared for Pared Victoria Limited

February 2024
Report No. 19120.03 (1.0)



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1. Introduction

Pared Victoria Limited engaged Nature Advisory Pty Ltd to produce a Vegetation Management Plan (VMP) for a 8.4-hectare area of land in Narre Warren North. The specific area investigated, referred to herein as the 'study area', comprised the entire property at 19-23 Horswood Road, Narre Warren North. The portion of the study area to be managed, referred to as the 'conservation area', comprised the proposed wetland and retained Habitat Zones A and B, as mapped in Nature Advisory (2024). Management advice is also given for the 'Ecological Education Areas' and "Natural Pasture Grass" facilities mapped on the Landscape Masterplan. Habitat Zones A and B are proposed to be retained and enhanced to form part of the proposed wetland. The Ecological Education and Natural Pasture Grass areas are to be developed on land that is currently dominated by exotic grasses. This Plan was developed in response to a request for information from Casey Council which sought to determine how ecological values on site will be retained, enhanced and managed. It also addresses the relevant application requirements of the Significant Landscape Overlay (SLO1) covering the property. The conservation area will be managed by the landowner or nominated authority/agent during the five-year duration of this VMP, after which a revised plan must be created and implemented.

The VMP has been created to allow the landowner to conform to the management requirements of the property, which is zoned in a Green Wedge Zone and is subject to a Significant Landscape Overlay in the Casey Planning Scheme. Specifically, it addresses the following requirements:

- To conserve and enhance the existing pattern of vegetation to maintain landscape quality and remaining natural ecosystems.
- To encourage land management practices compatible with landscape conservation.
- A professionally prepared landscape and management plan that demonstrates how the land can be revegetated over time.

This follows a detailed native vegetation assessment of the study area in March, 2023, during which the extent of native vegetation removal was identified (Nature Advisory, 2024).

This VMP aims to inform management requirements of threats including weeds, pests, habitat decline, fencing, lack of natural regeneration, dumping of rubbish and fauna management. It also aims to inform management of the area over a five-year period to support bird, amphibian, reptile and bat habitat.

This Plan prescribes management actions to be undertaken over a 5-year period and includes:

- A statement of methods used and sources of information consulted for the investigation, including any limitations, where applicable;
- Results of the review of existing information documenting biodiversity, ecological values and management requirements of the site and study area;
- A list of weed/flora species and habitat values identified during the site survey and identification of key threats to ecological values in the study area;
- Maps of the study area showing the ecological values to be conserved, threats and relevant management measures;
- Construction environmental mitigation measures to ensure protection of the environmental values within the conservation area during construction works for the adjacent development; and
- Table of appropriate management actions required.

Implementation of this VMP must commence immediately upon its approval by the Responsible Authority.

This plan was prepared by a team from Nature Advisory comprising Ezra Janetzki (Botanist) Merinda Day-Smith (Senior Botanist & Project Manager), Andrew Lewis (Senior Ecologist & Project Manager), and Eloise Marriott (GIS Analyst).

2. Environmental values and threats

2.1. Site assessment method

A site assessment of the property was undertaken by Nature Advisory on the 8th of March, 2023. This assessment aimed to document current environmental values and management issues within the study area, to inform the preparation of this vegetation management plan and a flora and fauna assessment report (Nature Advisory, 2024). During this assessment, the study area was surveyed on foot.

All environmental values and threats encountered in the study area were recorded and mapped using ArcGis Field Maps (accurate to approximately five metres).

Photos of the site are provided in Section 2.3. All photos provided in this plan were taken on the 8th of March, 2023, with the aim of demonstrating the status of the environment in the study area at that time.

2.2. Site description

The study area for this investigation is the entire property at 19-23 Horswood Road, Narre Warren North, approximately 35 kilometres southeast of the Melbourne CBD. It constitutes 8.4 hectares of private land that is proposed to be developed into a school. It is bordered by Horswood Road to the north, private residential property to the east and south, and Lysterfield Park to the west.

The study area supported chromosols with a loamy surface horizon, on an east facing slope with a low lying drainage line on the eastern-most boundary. A dam was present on the drainage line. The site has been cleared and has historically been used for agricultural grazing.

Vegetation in the study area primarily consisted of paddocks of exotic pasture species, notably including Brown-top Bent, Sweet Vernal, Toowoomba Canary-grass, Kikuyu and Couch. Herbaceous weeds such as Flatweed, Ribwort, Curled Dock, Spear Thistle and Onion Grass were occasionally interspersed. There was also a notable presence of Blackberry infestations along some fence lines and amongst debris piles. Native vegetation was comparatively limited in extent and restricted to the eastern border of the study area, where it occurred adjacent to farm dams and within damp sections of paddock. Remnant patches were highly modified and species-depauperate, mostly consisting of Native Rush, Tall Spike-rush and Common Reed. Native herbs including Common Woodruff, Bidgee-widgee, Hairy Willow-herb and Slender Knotweed were also present. Treed vegetation bordered the northern property boundary and comprised native trees such as Lightwood and Black Wattle.

The conservation area comprises Habitat Zones A and B, and the surrounding proposed constructed wetland. Habitat Zones A and B are poor-quality patches of Swampy Riparian Woodland identified during the March 2023 assessment that comprised a semi inundated depression dominated by native rushes and Blackberry.

The proposed constructed wetland aims to replace existing pasture grasses and other exotic species, enhancing Habitat Zones A and B into a native wetland capable of supporting a diverse range of native fauna.

The scope of the report is also to provide recommendations for ecological enhancement and management across the wider site, including the Ecological Education Facilities, which are to be developed on areas that are currently dominated by exotic pasture grasses.

The conservation area is required to be managed so that development of the school avoids impacts to Habitat Zone A and minimises the impacts to Habitat Zone B. This is under recommendation from Casey City Council's Environment team, who have advised these actions be taken and implemented as part of the Ministerial Planning Permit application to DEECA. Furthermore, the areas must be managed to

enhance their ecological values and eradicate high threat weeds present within them. Implementation of the measures set out in this VMP aim to address these requirements.

The study area lies within the Highland – Southern Fall bioregion and falls within the Port Phillip and Westernport catchment management area and City of Casey local government area. It is currently zoned in the Green Wedge A Zone in the Casey Planning Scheme. It is subject to a Significant Landscape Overlay, partially subject to a Bushfire Management Overlay, and borders an area subject to an Environmental Significance Overlay.

2.3. Environmental values

2.3.1. Native vegetation

Evidence on site, including floristic composition and soil characteristics, suggested that Swampy Riparian Woodland (EVC 83) was present in the east of the study area (Figure 1 , Photos 1 and 2). Habitat Zone A, and part of Habitat Zone B are to be retained and enhanced.

These patches represent low quality Swampy Riparian Woodland, due to the lack of canopy trees, depauperate understory and a high cover of high-threat weeds. Both patches lacked large trees or canopy species, though Patch B supported two mature Blackwood trees. Patch B supported a shrub layer of scattered Sallow Wattle (a native species that is invasive to the area) on the fence line and high-threat woody weeds Blackberry, Gorse and Hawthorn were present in both patches. The understory was predominantly a mixture of natives, Giant Rush, Pale Rush, Common Reed and Cumbungi, and invasive ground cover weeds including Buttercup, Annual Meadow-grass, Paspalum, Spear Thistle, Drain Flat Sedge and Couch. Patch B contained a dam that supported an aquatic Tall Spike-rush and Common Water Ribbons. No bryophytes or lichen, and little to no litter cover, were present.



Photo 1. Swampy Riparian Woodland at a dam in Habitat Zone B, fringed by Tall Spike-rush and Blackberry infestations.



Photo 2. Degraded Swampy Riparian Woodland comprising largely Giant Rush forming habitat zone A, to be incorporated into the proposed wetland conservation area.

2.3.2. Fauna habitat

The conservation area supports the following fauna habitat types:

- Aquatic habitat; and
- Scrub habitat.

Aquatic habitat consisted of a farm dam and associated drainage line. The dam occurred beyond the eastern boundary of the study area on the adjacent property but it was bordered by dense rush and sedge vegetation, some of which extended across the eastern boundary into the study area. This habitat provides shelter for some native fauna, particularly birds, and two Latham's Snipe (*Gallinago hardwickii*) were seen in this habitat on the property during the site assessment. This habitat is also likely to provide a water source for fauna and limited feeding opportunities for a small number of waterbirds. Aquatic habitat was very limited in extent and disconnected from Lysterfield Lake to the west and larger farm dams to the east.

Scrub habitat, which primarily comprised Blackberry infestations (Photo 3), was associated with debris piles and fringed aquatic habitat in the east of the study area. This habitat type may provide shelter for small birds and mammals, as well as seasonal feeding opportunities when fruiting. However, this habitat type was very limited in extent and isolated from scrub habitat in the wider landscape.

Given the identified Swampy Riparian Woodland EVC in the conservation area, and the modelled occurrence of Grassy Forest in the wider study area, the site also has potential to support treed habitat. The intention of the conservation area is a constructed native wetland requiring tree canopy to not exceed 10%; optimal coverage for riparian vegetation and basking wildlife. The presence of planted trees along the eastern boundary outside the property meet this canopy benchmark.

Treed habitat including native and exotic trees, as well as fruit trees will be planted across the site to be utilised for nesting and feeding by birds, with seasonal flowering also supporting pollinators. Treed habitat was identified in the broader study area on the roadside reserve adjacent to Horswood Road (Photo 4).



Photo 3. Blackberry Scrub fringing aquatic habitat in the east of the study area.



Photo 4. Example of treed habitat comprising Lightwood and Eucalypt species present on the road reserve adjacent to Horswood Road.

2.4. Management issues and threats

The following sections describe current threats to environmental values in the conservation area.

2.4.1. Weeds

High-threat weeds pose a significant risk to native vegetation within the conservation area

A high-threat weed is determined as any of the following:

- All woody weeds;
- Declared noxious weeds under the CaLP Act 1994;
- Any other weed deemed to be high-threat due to the potential risk the species poses to the surrounding landscape; or
- Weeds not otherwise accounted for above that are on DEECA's *Advisory List of Environmental Weeds* and occurred above a negligible cover.

An infestation site comprises the following:

- The location of a woody weed; or
- A defined area or the location of an herbaceous high-threat weed.

Land managers are required to meet the obligations under the CaLP Act regarding preventing the growth and spread of regionally controlled weeds.

32 weed species were recorded during the field study (Appendix 1), nine of which were woody or high-threat herbaceous weeds and included six species listed under the CaLP Act. In accordance with the CaLP Act these six species (listed below) must be managed to prevent their growth and spread:

- Boneseed;
- Spear Thistle;
- Hawthorn;
- Sweet Briar;
- Blackberry; and
- Gorse.

High-threat weed infestations occurred across the study area. Mainly comprising scattered herbaceous weeds throughout the pasture as well as Blackberry and Sweet Briar individuals. These infestations mainly occurred around stockpile areas (Photo 5). If left untreated these infestations can spread.



Photo 5. Example of Spear Thistle and Blackberry infestations growing around a stockpile in pasture field.

The conservation area was infested with several high-threat woody weeds along the drainage line (Photo 6). These species are currently out-competing indigenous species and will continue to do so if left untreated. Woody species pose the most significant threat in the conservation area because they smother native shrubs and herbs, and occupy space that could otherwise be used by native wetland species, as well as disrupting the natural hydrology of the site.. These woody weeds include Blackberry, Gorse, Sweet Briar, Hawthorn and Sallow Wattle. Other high priority weed species in the conservation area are Spear Thistle, Boneseed, Paspalum, Toowoomba Canary-grass and Yorkshire Fog.

Weed control methods are discussed in Section 3.2.



Photo 6. Spear Thistle and Blackberry in foreground, Hawthorn in background fringing habitat zone B.

2.4.2. *Pest animals*

Risks are posed to the conservation area by rabbits. Rabbits pose a risk to the native vegetation throughout the conservation area through overgrazing and are particularly detrimental to native groundcovers. Furthermore, rabbits can cause soil erosion, and aid establishment of opportunistic weeds. This is a particularly potent threat to the process of revegetating the conservation area with native species.

Pest animal control methods are discussed in Section 3.3.

2.4.3. *Unauthorised/inappropriate access*

Unauthorised access to the conservation area poses risks to the conservation values, both during the construction phase of future development (i.e. by construction work personnel, equipment and activities). Unauthorised or inappropriate access may lead or has led to the following:

- Habitat destruction and soil compaction;
- Destruction or degradation of health of environmental values;
- Weed invasion;
- Introduction of pests and diseases;
- Dumping of rubbish; and
- Introduction of environmental pollutants.

The study area was devoid of fencing except for that along the boundary of the property. Temporary fencing will be required protect the conservation area and retained native vegetation during construction. Existing fencing must continue to aid in the safety and free movement of native wildlife from surrounding areas.

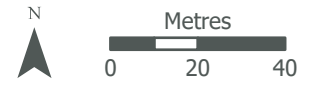
Section 3.1 discusses fencing requirements.



Figure 1: Natural values and environmental threats

Project No: 19120.03 **Project:** 19-23 Horswood Road, Narre Warren North **Date:** 19/02/2

- SA
- - Property boundary
- Native vegetation**
- ▨ Swampy Riparian Woodland (EVC0083)
- ▨ Grassy Forest (EVC0128)
- Environmental threats**
- Rabbits
- ▨ Blackberry and Gorse



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Figure 1: Natural values and environmental threats - Created by: - E:\GIS\2019 jobs\19120\19120_03 LMP Figure 1 and Figure 4 240219.aprx

3. Management measures

3.1. Fencing

The landowner has an obligation under this current plan to install, upgrade and maintain fencing to exclude threats for the duration of the plan. Fencing helps manage threats to native vegetation from construction personnel as well as protect native wildlife during construction.

The current fencing plan omits a permanent fence along the western boundary of the conservation area adjacent to the school, aiming to foster an interactive learning environment with the wetland. To balance accessibility with conservation, it is proposed to install interpretive signboards. These signboards would detail the various habitats, ecosystems, and species present on site, promoting awareness and encouraging visitors to respect and preserve the integrity of the wetland area.

Information on fencing if required is outlined below.

3.1.1. Temporary exclusion fencing

The entire site, including the conservation area should be entirely fenced during development of the school buildings and grounds to exclude inappropriate/unauthorised access as well as protect wildlife during construction.

As the conservation area occurs near the perimeter of the property, permanent perimeter fencing should be installed on the eastern boundary prior to construction (see section 3.1.2 below). Once permanent perimeter fencing has been erected, temporary exclusion fencing must be placed around the rest of the conservation area, buffered at a minimum of 2 metres from the edge of the conservation area and retained native vegetation. Signs denoting 'Conservation Area - NO GO ZONE' must be affixed to any fencing protecting the conservation area at 10-metre intervals and at a height of 1.5 metres.

Temporary fencing detailed below must also be installed on the southern boundary so ensure kangaroos do not enter the property during the construction phase.

Construction details for temporary exclusion fencing are presented below, as per DEECA *requirements for Construction Environmental Management Plans under the Melbourne Strategic Assessment (DELWP 2020)*:

- Posts are vertical steel pipes to a height of 1.8 metres, driven 0.7 metres into the ground at 3 metre intervals.
- Chain link or welded mesh fencing affixed to posts.

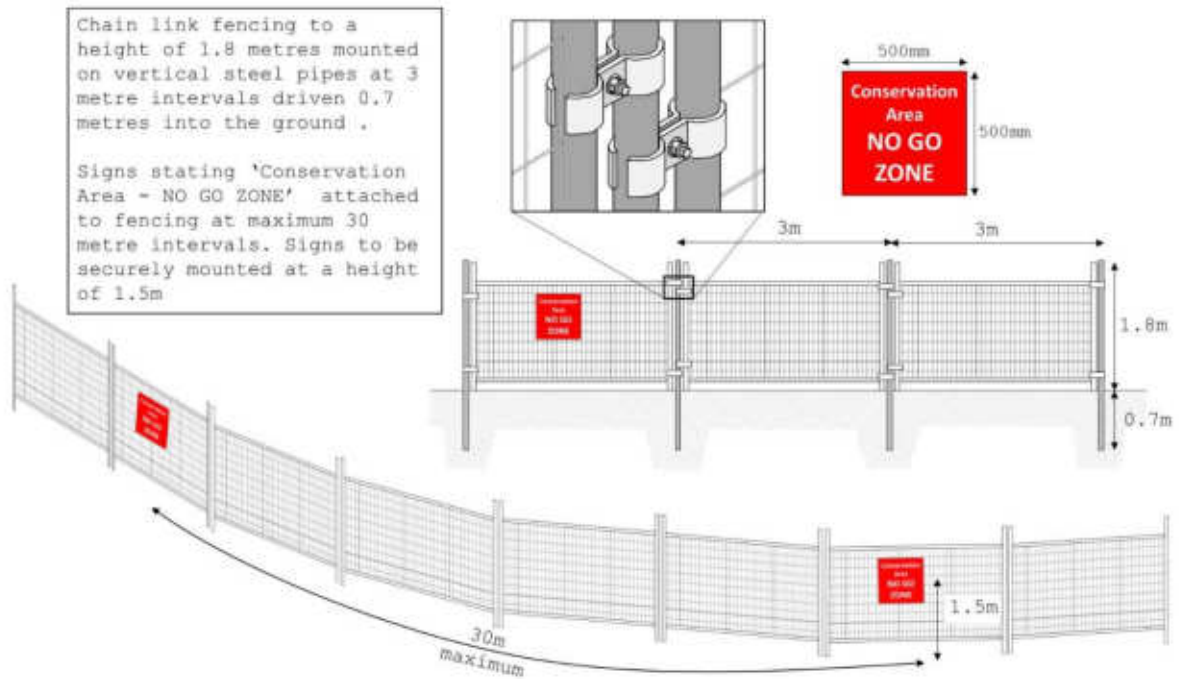


Figure 2: Temporary exclusion fencing

Once construction work has been completed, temporary construction fencing must be removed. The permanent perimeter fencing (described below) must stay in place to exclude threats..

Temporary fencing should also be considered for revegetation areas if success is hindered by herbivory.

3.1.2. Permanent perimeter fencing

Currently, existing fencing includes a tall cross wire fence along the western boundary delineating Lysterfield Park and a post wire fence bordering the southern boundary of the property.

During the site assessment, kangaroos were observed landlocked in the southwestern corner of the property, only escaping through a small hole in the southern section of the fence. If free movement of native wildlife is intended post construction, the southern boundary fence will need to be upgraded to allow this. A permanent fence must also be installed on the eastern boundary to protect from threats from surrounding dwellings. Standards for suitable permanent fencing are provided in Figure 3 and detailed below.

Currently, the permanent fencing plan does not incorporate the exclusion of rabbits. As rabbits are currently not identified as a threat, a more targeted approach will be used should they become a threat in the future. See Section 3.3.1 for more detail on management.

Fences must be installed and upgraded (if required) within three months of this plan being approved by the responsible authority, and prior to the commencement of construction.

Construction details are presented below, as per *Management standards for native vegetation offset sites* (DEECA 2023):

- Posts are at least 1.8 metres high and of treated pine or steel, no more than 10 metres apart and with two droppers in between these.
- Strainers are 2.1-metre-high posts of either 150 mm wide treated pine, railway iron or large diameter steel.

- Stays are 3 metre treated pine.
- Wires are to be four strand plain wire.

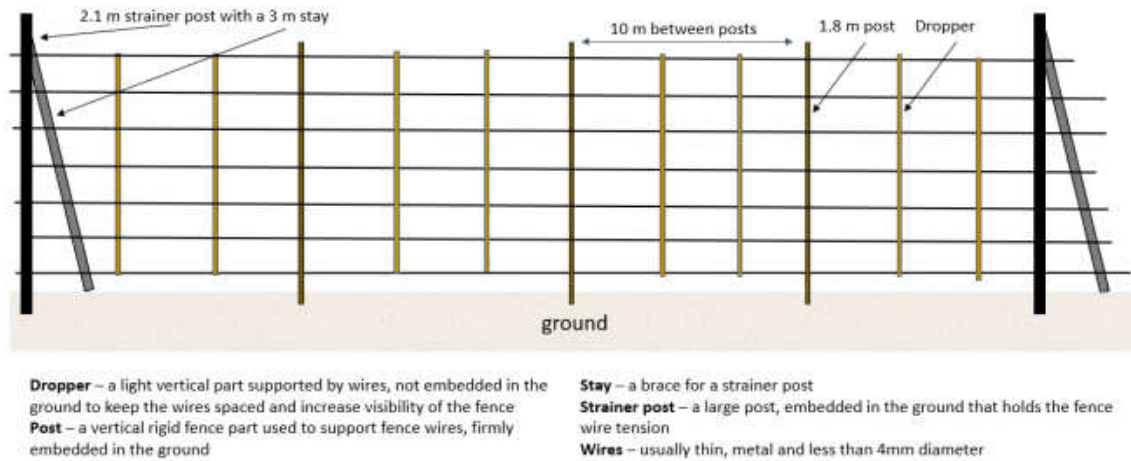


Figure 3: Permanent perimeter fencing

3.2. Weed control and monitoring

The aim of weed control in the works area is to prevent the spread of high-threat weeds from within the study area into the conservation area. Potential sources of introduction or spread of weeds are listed in Table 1.

The entire works area must initially be controlled for high-threat weeds prior to the removal of topsoil. Results of the initial control must be evaluated prior to soil stripping to ensure that CaLP targets are met. The stripping of topsoil alone is not considered adequate weed control. Environmentally sensitive weed control must also occur in the conservation area.

Weed control works in the works area must be conducted until the school and its grounds are fully developed. The weed threat (species and cover) must be monitored continually by the weed control contractor to determine the need for and timing of management actions, and managed accordingly. The site supervisor must monitor the site weekly for new weed management risks and populate the appropriate logbook (Appendix 2). Any new threats identified by either the site supervisor or the weed control contractor must be communicated appropriately and acted upon accordingly.

Table 1: Potential sources of introduction or spread of weeds

Source	Mitigation measures
Importation of contaminated construction materials such as soil and gravel	Inspect all material before entry to and exit from site. Reject all material that contains noxious weed propagules. Dispose of material containing declared noxious weeds in accordance with the CaLP Act. Keep records of disposal of abovementioned materials. Keep records for all importation and exportation of materials to and from site.

Vehicles, machinery and equipment brought onto site	Clean all vehicles, machinery and plant equipment before entering and leaving the site at the designated clean-down area. Keep records and maintain a logbook for use of cleaning and washdown areas.
Existing established weeds	Undertake satisfactory weed control before, during and after development to maintain the <5% and <1% infestation targets. Maintain a logbook that outlines weed control that has been undertaken.
Neighbouring land with weed infestations	Be aware of these sources and act accordingly at these interfaces when weeds spread on the site. Request that the relevant authority controls these weed infestations where these occur on public land.
Inappropriate disposal of weed materials	Control weeds prior to stockpiling of topsoil. Dispose of material on site in the designated burn area if possible or seek permission to transport and dispose of the material at a legal place of disposal.

3.2.1. Weed control targets

Nine weed species identified during the field assessment are high threat and must be controlled.. The remaining weed species must also be controlled but are of lower priority. These weeds were assessed as being a priority for management based on the following criteria:

- All woody weeds;
- Declared noxious weeds under the CaLP Act 1994;
- Any other weed deemed to be high-threat due to the potential risk the species poses to the surrounding landscape; or
- Weeds not otherwise accounted for above that are on DELWP’s *Advisory List of Environmental Weeds* and occurred above a negligible cover.

Management targets for priority weeds to be controlled are discussed in the following sections. Recommended methods for their control, optimal timing for control and current infestation status are detailed in Table 2. The locations of major weed infestations on the site are presented in Figure 1.

Woody weeds

Woody weeds within the conservation area are to be eliminated, i.e. **no mature plants present**. It may take several years of continued management to attain this goal for some species, particularly Blackberry and Gorse which are widespread in the study and conservation areas. The following woody weed species were recorded within the conservation area:

- Blackberry
- Gorse
- Hawthorn

- Sweet Briar
- Boneseed
- Sallow Wattle

All woody weeds are to be removed from the conservation area and disposed of appropriately. The 'cut-and-paint' method is the most effective means of controlling any woody weeds on the site. This entails a clean cut to the main stem/s of the plant followed by immediate application of a non-selective herbicide to the entire surface of the cut stem/s. The dead left over branches should be removed and immediately disposed of at a municipal landfill. Seedlings must be sprayed with an appropriate herbicide during their active growth period.

High-threat herbaceous weeds

High-threat non-woody (herbaceous) weeds within the conservation area are to be 'eliminated' (reduced to **less than 1% cover with no concentrated populations present**). They currently exist at low cover levels and can realistically be 'eliminated'. The following high-threat herbaceous weeds were recorded in the conservation area:

- Spear Thistle

These species can be treated with an appropriate broadleaf-selective herbicide.

High-threat grassy weeds

High-threat grassy weeds within the conservation area are to be reduced to different levels depending on the extent of infestation.

Three high priority grassy weeds following species are required to be periodically slashed prior to seed-set rather than be controlled, due to the current extensive cover. This is with the exception of Toowoomba Canary-grass, which can be invasive in aquatic environments. This should be eradicated (less than 1% cover) in the conservation area using control methods that are sensitive to aquatic environments.

- Yorkshire Fog
- Paspalum
- Toowoomba Canary-grass

Remaining weed species should be managed according to whether they are grassy or herbaceous weeds. They should be managed in the same fashion as the high priority non-woody weeds. They must be 'eliminated' (reduced to **less than 1% cover**. For species that may be used in lawns, such as Kikuyu or Couch, this of course will not be possible. In this case these species must be managed through a regular mowing regime. Within the conservation area the target of elimination applies to all weed species (see Appendix 1 for comprehensive weed species list).

Other weeds

All other weeds will be controlled such that cover does not exceed current levels. The study area should also be monitored for the introduction of any new high threat weed species.

Table 2: Weed control management actions for high threat weeds within the conservation area/management area

Recommended treatment method	Common name	Scientific name	Listing	Timing	Current infestation status/% cover	Management outcome to be achieved and maintained per species
Multiple methods	Gorse	<i>Ulex europaeus</i>	C, WoNS, DELWP	Slashing all year round but ideally before flowering in spring. Following slashing regular chemical spraying with an appropriate herbicide should occur. Control of any seedlings that germinate following initial control must be exterminated.	Some infestations in the east of the study area	<1% cover
	Boneseed	<i>Chrysanthemoides monnifera</i>	C, DELWP		Present in the study area	
Cut and Paint	Hawthorn	<i>Crataegus monogyna</i>	C, DELWP	All year round.	Present in the conservation area	
	#Sallow Wattle	<i>Acacia longifolia</i>			Present in the conservation area	
Spray with an appropriate herbicide	Blackberry	<i>Rubus fruticosus</i>	C, WoNS, DELWP	When actively growing from spring to mid-autumn.	large infestations throughout the proposed conservation area and scattered throughout study area.	
	Sweet Briar	<i>Rosa rubiginosa</i>	C, WoNS, DELWP	When actively growing from late spring to mid-summer.	Present in the study area	
Slash	Yorkshire Fog	<i>Holcus lanatus</i>	DELWP	Prior to seed set in late spring and continually every three months or as required.	Infestations dispersed throughout the study area	Maintain at current levels until earthmoving commences, prevent the spread of seed.
	Paspalum	<i>Paspalum distichum</i>	DELWP		Infestations in the conservation area and broader study area	
	Toowoomba Canary-grass	<i>Phalaris aquatica</i>	DELWP		Infestations in the conservation area	

3.2.2. Disposal of weed material

Any fertile weed material, especially that of any CaLP Act-listed weeds **must** be burned or otherwise legally disposed of using appropriate permits for disposal and transportation.

If weeds are to be stockpiled and burned, all fertile or woody weed material must remain on site and be piled in the designated stockpile area, and a permit to do so must be obtained under the relevant legislation. Prior to any burning off, appropriate warning will be given to local residents through a letterbox drop and fire authorities will be notified. Firebreaks will be slashed around the perimeter of the designated stockpile area in the lead up to burns.

Burns will be undertaken on days with only light wind, with sufficient numbers of suitably experienced bushland contractor personnel on hand within firebreaks with portable water supplies to halt the fire if required. Bushland contractors would remain at the site of the burn until an appointed team leader confirms that all fire has been extinguished.

3.3. Pest animal control

All pest animals are to be monitored and controlled as required within the reserve for the life of the plan. Regular monitoring will be required throughout the year to inform the control methods used.

3.3.1. Rabbit control

Rabbits were not recorded during the site assessment but may occur in the study area, especially in the west, where they may disperse out of the Lake Lysterfield boundary. The control of rabbits is particularly important as they could encourage permanent populations of other introduced species including cats and foxes, in addition to promoting erosion and loss of native flora. Potential methods of rabbit control during construction are summarised in Table 3.

Table 3: Summary of possible rabbit control methods

Method	Time	Cost	Advantages	Risks
1080 Baiting with carrot pieces	Late summer	Most cost-effective method	Large areas covered quickly. Foxes killed by eating poisoned rabbit. Most native animals at low risk from ingesting carrot bait.	Dry weather required. No effective antidote. Hazardous to livestock. Not suitable if stock grazing.
Pindone baiting	Late summer	Moderate cost	Less hazardous to domestic animals.	Hazardous to livestock. Not suitable in view of proposed land use (i.e., school) Risk to some native animals.
Harbor removal	Any time	Labor-intensive	Good follow-up method to combine with other treatments.	Few where native vegetation not present
Warren fumigation and ripping	After autumn rains when soil softens	Labor intensive	Removes shelter –effective when undertaken in combination with harbor removal.	Limited

Method	Time	Cost	Advantages	Risks
Rabbit-proof fencing	Before planting/seeding.	Very labor-intensive. High initial cost	Long-term effect, stops reinvasion.	Need regular checking. May also stop native fauna dispersal and would require significant changes in stock management on the farms.
Shooting	All year round. Optimum late summer.	Low to Moderate cost.	Appropriate for low numbers.	Very labor-intensive and unlikely to exclude rabbits permanently

Source: adapted from Farrelly & Merks 2001.

Combining several control methods listed in Table 3 is more effective in controlling rabbit populations than limiting control to one method. Rabbit control, where required, should focus on harbour removal and warren destruction. Where numbers are high, baiting should be considered prior to warren ripping. Any baiting would require careful planning to ensure no risk of accidental ingestion by non-target species. Shooting can also be undertaken when numbers are low.

The overall rabbit control strategy for this plan focuses on ensuring that there is no increase in habitat for rabbits during construction. It responds to potential risks arising from earthworks that can create additional harbour and warren opportunities for rabbits (i.e. weed control).

Rabbit carcasses must be removed to prevent poisoning of native predators. Control methods should be approved by Casey Council and must be independently monitored to determine if these are adequate.

After construction most strategies outlined in table 3 are inappropriate due to the proposed land use. Instead, regular monitoring of rabbit activity must be undertaken and control methods including harbor removal, warren ripping/fumigation and fencing should be implemented as needed.

3.3.2. Fox control

Regular monitoring of fox activity (at least quarterly) must be undertaken to control foxes as needed. If dens are located, they must be destroyed through fumigation and hand collapse.

3.4. Rubbish removal

Stockpiling, equipment lay-down and personnel rest areas will be located outside of the conservation area to prevent any impact on the conservation area.

All rubbish in the vicinity of the conservation area must be promptly removed before any management measures are performed. Rubbish, comprising litter, contaminated fill and construction laydown must be removed in such a way that the native vegetation in the conservation area is not adversely impacted. Rubbish must be disposed of at an approved landfill site and adequate fencing must be installed to prevent continual dumping of rubbish.

Large rocks on site may be re-instated into the conservation area, but not within areas of retained native vegetation, to create habitat for insects, lizards and small mammals.

3.5. Construction of the wetlands

In order to construct the proposed wetlands in a way that does not adversely impact Habitat Zones A and B, sensitive construction methods must be used. A 1-metre construction buffer around the edge of Habitat Zone A and B must be left un-impacted. Earthworks to construct the pond must occur outside of this buffer zone.

Moisture levels in the habitat zones should be monitored throughout the construction of the wetlands. If moisture levels drop supplementary watering should be employed. Weed control should occur within these habitat zones *before* the wetlands are filled with water. This is to ensure that no chemical contamination occurs.

3.6. Revegetation

In accordance with Schedule 1 to Clause 42.03 Significant Landscape Overlay, instructions on how to revegetate the subject land must be provided within this report. Revegetation will be required for the ongoing preservation and enhancement of remnant native vegetation, predominantly situated in the demarcated conservation area. The conservation area has been broken up into three zones, with each zone prescribed different revegetation works based on variations in soil and hydrology proposed for enhancement and preservation. The conservation area includes Habitat Zones A and B, and the proposed wetland. Planting advice for the proposed Ecological Education Facility and area of Natural Pasture Grasses in the south of the study area (as per the site masterplan) are provided in section 4.1. The indicative conservation area and associated management zones are outlined in Figure 4.

Revegetation of the conservation area should attract wetland birds to the proposed wetlands. During the March 2023 assessment, Latham's Snipe was observed in the area. Additionally, bird species such as Herons, Grebes, Cormorants, Purple Swamphen, and Ducks, may be attracted to use the wetlands.



Figure 4: Conservation area and management zones

Project No: 19120.03 Project: 19-23 Horswood Road, Narre Warren North Date: 29/02/2024

- Study area
- Property boundary
- Conservation Area
- Natural Pasture Grass
- Zone 1
- Zone 2
- Zone 3
- Swampy Riparian Woodland (EVC0083)
- Grassy Forest (EVC0128)
- Ecological Education Facility



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Figure 4: Conservation area and management zones - Created by: - E:\GIS\2019 Jobs\19120\19120_03 LMP Figure 1 and Figure 4 240219.aprx

3.6.1. *Revegetation timing*

Revegetation works in the conservation area must be initiated at the time when scraping occurs to construct the hole for the wetlands. Installation of jute matting for weed control must commence as soon as possible to ensure that planting can occur without delay.

3.6.2. *Planting preparation*

Weed control must be conducted at least one month prior to planting to reduce competition from weeds and in turn increase the likelihood of plant establishment and survival. Ideally weed control should occur in the spring and autumn before planting occurs.

Revegetation works should be undertaken as soon as possible after scraping occurs.

3.6.3. *Planting design*

Revegetation design in the conservation area has been informed by the Swampy Riparian Woodland EVC benchmark and the Growling Grass Frog Habitat Design Standards (DELWP 2017). It is designed to complement the vegetation found within Habitat Zones A and B. Some species in this planting guide already occur in the abovementioned Habitat Zones and planting of them is designed to enhance their numbers. Plants should be grouped by life form in dense patches to create a mosaic effect throughout the revegetation zones. This enables all life forms to establish without outcompeting each other, while limiting the opportunity for weeds to become established.

The three planting zones are designed with respect to the distance from water. Zone 1 is to contain floating and submergent plants. Zone 2 is to contain plant species that are emergent from the water. Zone 3 is to contain grass species for the edge of the wetlands.

3.6.4. *Planting guide*

Species recommended for revegetation of the Swampy Riparian Woodland EVC have been sourced from the relevant Highlands – Southern Fall bioregion benchmarks. A planting guide has been designed to rapidly revegetate and stabilise the ground, and a variety of plants have been chosen to enhance the biodiversity values of the area. The following sections describe revegetation within each zone. Recommended revegetation species and estimated tube-stock and seed quantities for each zone are listed in Table 4.

Given the highly modified nature of the property, it is impractical to expect revegetation efforts to result in habitat resembling a pre-European EVC. The planting schedule summarised in Table 4 is intended as a guide only and local indigenous plant nurseries should be consulted regarding suitable indigenous species for the area and to substitute like-for-like species if others are not available. Given that a large quantity of plants is required, we recommend that a local indigenous nursery be consulted as soon as possible to enable the preparation of tube-stock for planting by spring.

Tube-stock is to be used for all shrubs and herbs as well as Common Tussock-grass, Grey Tussock-grass and Red-fruit Saw-sedge. For all other grassy species, only direct seeding will be undertaken. This is best carried out in late winter - early spring or autumn. Ideally seeding shall occur as soon as possible after scraping of topsoil has occurred in Zone 3, and immediately after a rainfall event and during a period of little to no wind.

Planting density for the site has been calculated based on the Victorian Department of the Environment, Land, Water and Planning's (DELWP) revegetation planting standards (DSE 2006). This calculation was then reduced in most cases, as GGFs require predominantly low, grassy vegetation. A total number of plants for each life form has been provided. For each revegetation zone, this total should comprise a combination of the suitable species (indicated by the ✓) and should not be considered as a rate for each

specific species. A combination of the below species and their representative seeding/tube-stock quantities should be used dependent on availability and the recommendation of the contractor. Using a mix of species will create a diverse habitat structure and have a lower risk of failure than using a few select species.

The planting guide provided is intended to inform revegetation decisions with respect to the density of planting and species selection. Design is left to the landowner, however design recommendations based on GGF habitat requirements are outlined.

Direct seeding and planting of tube-stock will be undertaken by hand (manually) or using direct seeding machines (mechanically). No earthworks or rock removal is permitted within the conservation area. Therefore, it is recommended that direct seeding is done manually, or with a seed spreader rather than a seed sower. Small labour force could comfortably direct seed the conservation area in one day.

3.6.5. Zone 1 – Submergent wetland plants

The aim of the Zone 1 revegetation area is to plant up species that are suited to conditions where they are permanently inundated in shallow or deep water. This is an important aspect of Growling Grass Frog habitat as they like to breed and lay eggs amongst such species. More broadly, these plant species will supplement the existing wetland native vegetation that occurs within Habitat Zones A and B.

Revegetation in this zone will involve planting of tube stock within the jute matting. It is important that the planting occurs at a high density so that there are no gaps in native vegetation for weed species to exploit. It is also important that the wetland area is filled with water soon after the planting occurs and that plants are watered twice daily in the interim. The aim of this zone is to attain 50% cover of native vegetation in the shallow water zone of the wetlands, as per the Growling Grass Frog Design standards (DELWP 2017).

The following native plant species will be planted in Zone 1:

- Water-milfoil (*Myriophyllum* spp.);
- Pondweed (*Potamogeton* spp.); and
- Common Water-ribbons (*Cycnogeton procerum*).

Submergent wetland plants will be planted within jute matting to assist in soil stability.

The following target is to be achieved in regards to vegetation restoration within Zone 1:

- Establish 50% native vegetation cover, derived from a mix of aquatic plant species.

3.6.6. Zone 2 – Emergent wetland plants

The aim of the Zone 2 revegetation area is to plant up species that are suited to wet soil conditions where they are frequently inundated in shallow water. These species are to be planted on the edges of the wetland ponds. Plant species such as these provide excellent habitat for wetland birds and frogs alike. They will also supplement the existing wetland native vegetation that occurs within Habitat Zones A and B.

Revegetation in this zone will involve planting of tube stock within the jute matting. It is important that the planting occurs at a high density so that there are no gaps in native vegetation for weed species to exploit. It is also important that the wetland area is filled with water soon after the planting occurs and that plants are watered twice daily in the interim. The aim of this zone is to attain 50% cover of native vegetation on the edge of wetland ponds.

The following native plant species will be planted in Zone 2:

- Common Spike-sedge (*Eleocharis acuta*);
- Golden Rush (*Juncus flavidus*);
- Giant Rush (*Juncus ingens*); and
- Tall Sedge (*Carex appressa*).

Emergent wetland plants will be planted within jute matting to assist in soil stability.

The following target is to be achieved in regards to vegetation restoration within Zone 2:

- Establish 50% native vegetation cover, derived from a mix of semi-aquatic plant species.

3.6.7. Zone 3 – Grassland plants to border wetland

The aim of the Zone 3 revegetation area is to plant up a grassland to skirt the perimeter of the wetlands. This zone is a band around the perimeter of the wetlands, of **10 metres** width. This is an important aspect of habitat continuity that will allow frogs to disperse to and from the conservation area. It will also help connect the Natural Pasture Grass area to the conservation area.

Revegetation in this zone will involve direct seeding and planting of tube stock within the jute matting. It is important that the planting occurs at a high density so that there are no gaps in native vegetation for weed species to exploit. Grasses must be watered regularly in the weeks immediately after the planting occurs so that they can establish in fertile conditions (see table 5).

The following species will be established in Zone 3 via direct seeding:

- Wallaby-grasses (*Rytidosperma spp.*); and
- Weeping Grass (*Microlaena stipoides var stipoides*).

Furthermore, more robust tufted grasses will be planted from tube stock within jute matting to assist in soil stability:

- Red-fruit Saw-sedge (*Gahnia sieberiana*); and
- Common Tussock-grass (*Poa labillardierei*).

The following target is to be achieved in regards to vegetation restoration within Zone 3:

- Establish 65% native vegetation cover, derived from a mix of tufted and non-tufted native grasses and sedges.
- Establish 50% cover of Weeping Grass and Wallaby Grass.
- Maintain a low height of Weeping Grass and Wallaby Grass – approximately 10 centimetres.
- Do not exceed 20% cover of tussock grasses and sedges (Red-fruit Saw-sedge and Common Tussock-grass).

Table 4: Suggested planting schedule for Revegetation Zones

Common name	Scientific name	Zone 1	Zone 2	Zone 3
		Planting Density		
Medium herbs (tube-stock)				
Pondweed ^S	<i>Potamogeton spp.</i>	2/sqm		
Water-milfoil ^{E, F, S}	<i>Myriophyllum spp.</i>	2/sqm		
Grasses and tufted perennials (tube-stock)				
Common Tussock-grass	<i>Poa labillardierei</i>			0.2/sqm
Golden Rush ^E	<i>Juncus flavidus</i>		2/sqm	
Tall Sedge ^E	<i>Carex appressa</i>		1/sqm	
Common Spike-sedge ^E	<i>Eleocharis acuta</i>		3/sqm	
Common Water-ribbons ^{E, F, S}	<i>Cycnogeton procerum</i>	2/sqm		
Red-fruit Saw-sedge	<i>Gahnia sieberiana</i>			0.1/sqm
Grasses (seeds)				
Wallaby-grass	<i>Rytidosperma spp.</i>			15kg/ha
Weeping Grass	<i>Microlaena stipoides var. stipoides</i>			25kg/ha

Notes: ^E = emergent aquatic species, ^F = floating and ^S= submergent aquatic species.

3.6.8. Plant protection

As previously stated, the installation of rabbit-proof fencing will deter herbivores such as rabbits, kangaroos and wallabies. If plants are being browsed, these must be protected by upgrading the fence to prevent access to the threat.

All newly planted trees will be protected with a stake and tree guards.

To best protect tree and/or shrub plantings from grazing pressures associated with kangaroos, wallabies and rabbits, mallee mesh tree guards should be used for protection.

3.6.9. Watering

Plants will require ongoing watering to aid in establishment and survival, particularly through the dry summer months. The frequency and amount of watering will be guided by monitored conditions on the site. It is likely that plants will require regular watering for 12 months after planting, and more frequently and for longer if conditions are particularly harsh and the plants are displaying signs of stress. Plants will not be required to be watered after a significant rainfall event (> 20 mm).

The table below suggests the frequency of watering for the initial 12 months. It should be noted that the wetland species are not subject to this regime and will require much more frequent watering until a permanent water source is established.

As some of the plants are aquatic or semi-aquatic, they will need standing water. The wetland should be monitored regularly to ensure that standing water is present.

Table 5: Watering requirements

Months after planting	Watering schedule
0-3	Weekly
3-6	Fortnightly
6-12	Monthly
12 onwards	Only if plants display signs of stress

3.6.10. Maintenance and adaptive management

Tree guards and fencing should be inspected every three months to determine the ongoing integrity of these protective measures. If damage is identified, tree guards should be replaced and fencing repaired.

Weed control must be conducted post seeding to facilitate the natural growth and recruitment of grassy vegetation. In order to minimise off-target impacts to germinating native grasses, spot-spraying of grassy weeds in revegetation areas should only occur once grasses are readily identifiable roughly 3 months after planting has occurred.

It is recommended that a monitoring assessment be conducted at two months and at six months post-seeding to assess the progress/success of rehabilitation and determine the need for supplementary seeding, weed control or watering. This assessment must be conducted by a qualified ecologist (independent of the weed control contractor) and the results of monitoring must be reported to Casey Council within a month of the monitoring. Supplementary planting in order to achieve the cover target for each lifeform may include additional tube-stock planting or over sowing with seed.

4. Design recommendations

Planning policy at the national, state, and local level and strategic biodiversity partnerships encourage inclusion of ecological enhancements in development projects. Ecological enhancements can also contribute to green infrastructure and ecosystem services such as storm water attenuation, improving air and water quality, reducing the urban heat island effect, improving building heating and cooling efficiency, and contribute to improved health and wellbeing.

The site is subject to Schedule 1 to Clause 42.03 Significant Landscape Overlay, and lies within Green Wedge A Zone (GWAZ) (Casey). These encourage conservation and enhancement of existing vegetation including vegetation corridors, and maintenance of existing natural ecosystems. They also encourage land management practices compatible with landscape conservation.

The following measures would be suitable for integration into the proposed development site's design but would require detailed design input to successfully implement.

4.1. Planting Guide Recommendations

Revegetation design in the proposed Ecological Education Facilities and the Natural Pasture Grass zones is informed by the Grassy Forest EVC, which is modelled to occur on site. Suggested modifications to the planting list have been included to enhance indigenous vegetation values and provide suitable habitat for indigenous animals in the area.

4.1.1. Ecological Education Facility species list

As indicated in the planting guide, some modifications to the Indigenous Native Planting List for the Ecological Education Facility are suggested. These are listed below, along with justifications:

- Remove *Corymbia maculata* and *Eucalyptus leucoxydon rosea* – these are not indigenous to the area and will likely attract an undesirable number of Noisy Miner birds, which may be detrimental to other native bird species in the area;
- Remove *Lophostemon*, *Melia azeradach*, Remove *Rhagodia* – these are not indigenous to the area;
- Remove Oak Tree – this is an exotic species;
- For *Dianella*, if possible plant the species *Dianella revoluta* s.l. (Black-anther Flax-lily), as it is indigenous to the area;
- For *Lomandra*, if possible plant the species *Lomandra filiformis* (Wattle Mat-rush) and/or *Lomandra longifolia* (Spiny-headed Mat-rush), as they are indigenous to the area;
- Plant Messmate (*Eucalyptus obliqua*), Narrow-leaf Peppermint (*Eucalyptus radiata* s.l.), Long-leaf Box (*Eucalyptus goniocalyx*) – these are indigenous to the Lysterfield Lake area and typical of the local Grassy Forest EVC;
- Plant Tree Everlasting (*Ozothamnus ferrugineus*) and/or Common Cassinia (*Cassinia aculeata*) – these are indigenous to the Lysterfield Lake area and typical of the local Grassy Forest EVC. They are also shorter statured than Gum Trees, providing structural variation for smaller bird species to exploit;
- Plant Common Heath (*Epacris impressa*) and Common Rice-flower (*Pimelea humilis*) – these are indigenous to the Lysterfield Lake area and typical of the local Grassy Forest EVC. They are shrubs, providing further structural variation for smaller bird species to exploit;
- Plant Kidneyweed (*Dichondra repens*) – this is a ground cover herb typical of the grassy forest EVC local to the area.

4.1.2. Natural Pasture Grass species list

It is recommended that native grassland species are planted to supplement the proposed Natural Pasture Grass area in the south of the site. This will help to form a nature corridor for animals such as Growling Grass Frogs to disperse between Lake Lysterfield and the wetland Conservation Area on site. As such, if the species in the below list are not available to cover the entire Natural Pasture Grass area, the existing exotic grasses should be retained in a mown state where necessary.

A sensitive mowing regime should be implemented along the southern boundary of the site. A band of grassland a few meters wide should be left unmown each year to allow grass species and herbs to flower and produce seed and pollen for invertebrates, and cover for frogs and other ground dwelling fauna. Remaining areas of grassland should be mown three times a year.

Grassland areas of high usage can be mown more regularly.

Suitable grass species are listed below:

- Kangaroo Grass (*Themeda triandra*), and Reed Bent-grass (*Deyeuxia quadriseta*) – these are tufted grass species indigenous to the area and typical of the Grassy Forest EVC;
- Weeping Grass (*Microlaena stipoides* var. *stipoides*) – this is a non-tufted grass species indigenous to the area and typical of the Grassy Forest EVC; and

4.2. Growling Grass-frog nature corridor

To connect the wetlands of the conservation area with wetlands of the surrounding area, a nature corridor should be created in the south of the study area, in the zone proposed to Natural Pasture Grass (see planting guide above). The maintenance of a grassy area along the southern border of the study area will allow frog species, particularly the endangered Growling Grass-frog, to disperse between the wetlands of the conservation area, Lake Lysterfield, and other surrounding aquatic habitat.

If feasible, it is recommended that a small number of wetland pools or ephemeral rainwater ditches be created amongst the Natural Pasture Grass area. These will act as stepping stones, and aid frogs and other amphibians in dispersing between the conservation area and Lake Lysterfield.

4.3. Bird and bat boxes

4.3.1. Bird boxes

To create habitat for tree-dwelling birds, nest boxes should be installed on the trees within the study area. Nest boxes provide nesting opportunities for birds, which will make them more likely to use the tree resources within the school. Construction and installation of the bird boxes could form part of a school project. The boxes should be monitored to ensure they are being used by target bird species and not by bees or over-competitive bird species like Common Mynahs. Boxes should face away from prevailing winds and the midday sun. Instructions on bird box design, including designing for particular species, can be viewed at <https://www.birdsinbackyards.net/Nest-Box-Plans-0> (Birds in Backyards 2024).

4.3.2. Bat boxes

In addition to bird boxes, it is recommended that some boxes be designed for microbats. Bat boxes should be multi-chambered to create differences in microclimate for bats to use. Bat boxes should have openings at the bottom and footholds from which bats can hang. Further information on building microbat boxes can be found at <https://www.ausbats.org.au/install-a-microbat-house.html> (Australasian Bat Society 2021).

4.4. Use of deadwood as habitat

The arborist report submitted by the Green Connection states that Tree 35 will be removed during the development of the school (The Green Connection 2024). It is recommended that wood from this tree be salvaged for use as fauna habitat. Several logs should be placed in the wetland to form snags. Other logs and branches should be used to form deadwood piles. This provides good habitat and refuge from predators for frogs and reptiles, and perching / sunning spots for waterfowl. These piles should be dotted amongst the banks of the wetland. This would complement the terraced rock piles planned for the wetland (as per the masterplan), as it will provide varying habitats and microclimates.

It should be noted that wood pile habitat should not be created where students will have easy access (ie. outside the proposed wetland). This is a precaution against snakes being attracted to the deadwood piles.

4.5. Masterplan comments

Some comments about the ecological aspects of the masterplan that have not previously been addressed in this report are provided below.

4.5.1. Wetland islands

The masterplan indicates that islands are proposed for the wetlands in the conservation area. This will be beneficial to local native fauna as it will provide more environmental variation and microhabitats, and more substrate that can be planted up with wetland plants. Importantly these islands will provide refuge for frogs and wetland birds from potential predators such as foxes. It is recommended that rocks cover approximately 20% of the wetland perimeter, as per the Growling Grass Frog Habitat Design Standards (DELWP 2017).

4.5.2. Boundary trees

The masterplan proposes tree planting along the property boundaries in compliance with the Casey Planning Scheme's Green Wedge Zone and Significant Landscape Overlay. However, the designated areas for some tree plantings overlap with planned habitats for the Growling Grass Frog, where tree coverage could render the habitat less suitable for these frogs.

It's recommended that trees along the southern boundary be spaced as outlined in the masterplan, ensuring they do not overshadow or encroach upon the Natural Pasture Grass area, crucial for maintaining a suitable habitat for the Growling Grass Frog. Additionally, the plan to introduce Swamp Gums in the property's southeast corner should be revised. While Swamp Gums are an appropriate species for aquatic environments, it's advised to limit their number to a maximum of two trees in this area. This restriction aims to keep canopy cover below 10%, preventing excessive shade that could make the area unsuitable for wetland birds and frogs. Modification of wetland footprint

In accordance with Casey Council Environment Team's RFI, the impact of the proposed wetland on the existing Habitat Zone B must be minimised. It is suggested that the wetland footprint is reduced slightly at the north of the footprint so that it does not encroach upon existing Swampy Riparian Woodland (see figure 4). Construction of the wetland should repair and complement existing native vegetation, not replace it.

4.5.3. Education opportunities

Creation of wetland habitat in the conservation area will provide education opportunities for students who attend the school. Furthermore, implementation of other recommendations in this report for the Ecological Education Facility and Natural Pasture Grass areas will provide students with the opportunity to learn about different kinds of ecosystems. Conservation programmes could be implemented as part of the curriculum to ensure implementation of this Vegetation Management Plan and continued

management of ecological values in the study area. Interpretive sign boards could be designed to describe the different habitats, ecosystems and species supported on site for example. These measures will help to provide a valuable nature education and interaction resource for the school.

5. Monitoring and reporting

From the acceptance of this plan, until the completion of the 5-year period, monitoring is to be undertaken by a suitably qualified ecologist or environmental officer every year in October-February in accordance to the schedule in Section 6. The responsible landowner will coordinate this monitoring, which will include:

- Extent and quality of retained native vegetation;
- Weed cover estimates to be recorded for each weed species that occurs in the conservation/management area;
- An overall weed cover estimate for the conservation area;
- Monitoring of pest animals to determine the need for pest animal control;
- Monitoring of revegetation progress;
- Monitoring of fencing; and
- Monitoring of site use by native animals.

Findings recorded during this periodic monitoring will be documented in a report, which will include:

- A summary of works completed since the last monitoring event;
- Assessment of the integrity of the property fencing for plant protection;
- Extent and quality of native vegetation and percentage cover of declared noxious weeds and high-threat weeds within the conservation area;
- Assessment of the status of weed control works;
- Identification of any new and emerging weeds, including extent of infestation;
- Assessment of the status of revegetation works;
- Assessment of the effects of pest animal activity;
- Discussion and evidence of the progress of the management actions listed in Section 6 and whether or not targets have been achieved; and
- Recommendations for future management of the site.

The responsible landowner will provide the periodic reporting to Casey Council within three months of the commencement this Plan (Section 6).

5.1. Ongoing management

The conservation area will be managed for conservation beyond the nominal 5-year period of this plan by Pared Victoria Ltd. It is recommended that a new Vegetation Management Plan is made at the end of the 5-year period.

5.2. Adaptive management

By monitoring the outcomes of actions, management may be adapted to ensure the stated commitments in the Plan are upheld. For example, new techniques for controlling high threat weeds may become available or further information on the ecology and status of vegetation communities may necessitate adjustment to management actions.

6. Management actions and timing

The following tables provide the management actions to be undertaken and proposed timelines.

Table 6: Management actions and timing year 1

Year 1						
Management Action	Timing	Target to be achieved	Responsible person	VMP reference	Completed (Yes/No)	Month completed
Establish conservation area	Upon approval of this Plan	Defines the start of the prescribed management period under this Plan	Landowner	N/A		
Demarcate conservation area – establish markers to identify boundary of the conservation area to assist with its management and monitoring	Prior to commencement of civil construction	Boundary of conservation area clearly demarcated onsite	Landowner in consultation with land surveyor	Figure 4		
Erect temporary construction fencing around the boundary of the conservation area and property boundary	Prior to commencement of civil construction	Temporary construction fencing to be erected prior to commencement of civil construction.	Landowner	Section 3.2.1		
Update or erect permanent fencing where required	Upon implementation of this Plan	Permanent fencing to be established prior to management actions being undertaken.	Landowner-nominated contractor	Section 3.2.2		
Removal of rubbish	Upon implementation of this Plan	All rubbish to be removed from the conservation area	Landowner-nominated contractor	Section 3.5.		
Weed control Herbicide and removal of woody weeds	As required as per optimal time for each species	See Section 3.3 for weed control targets for each species, each weed type and total weed cover.	Landowner-nominated contractor	Section 3.3.		
Pest animal control Implement rabbit and/or fox control as required	Autumn (or at commencement)	Pest animals controlled	Landowner-nominated contractor	Section 3.4.		
Revegetation Direct seeding and planting of tube-stock in jute matting	Early Spring or Autumn and preceding a forecast of a large rain event	Achieve at least 30% cover of direct seeding where this occurs and 80% survival rate of planted species.	Landowner nominated contractor	Section 3.7		
Site quality audit	No later than three months after the implementation of this plan	Results will inform management approaches and techniques.	Qualified ecologist engaged by the landowner	Section 5		
Monitoring to determine fencing integrity and timeliness of management actions	Permanent conservation area boundary fencing inspected annually; each management action monitored annually	Boundary fencing effective and management actions undertaken on time	Landowner	Section 5		
Report to be prepared documenting management actions undertaken and monitoring results	No later than three months after the implementation of this plan	Report delivered to Casey Council no later than three months after anniversary of commencement	Landowner	Section 5		

Table 7: Management actions and timing years 2–5

Year 2 – 5						
Management Action (see Year 1 for Plan reference)	Timing	Target to be achieved	Responsible person	Year		
				Location in Plan	Completed (Yes/No)	Month completed
Pest animal monitoring and control (if required)	Monitored annually in autumn control implemented as required	Pest animals controlled	Landowner nominated ecologist for monitoring and a contractor for control (if required)	Section 3.4.		
Weed monitoring	Annually in September to November	Results will inform management approaches and techniques. All new and emerging weeds should be controlled where possible	Landowner nominated ecologist	Section 3.3.		
Implement weed control (if required) Herbicide and mechanical removal.	March to May or September to November as required as per optimal time for each species	As per targets outlined in Section 3.3.	Landowner nominated contractor	Section 3.3.		
Monitoring of revegetation efforts to determine if supplementary seeding or planting required	Twice annually	Achieve at least 50% cover of direct seeding where this occurs and 75% survival rate of planted species.	Landowner nominated ecologist	Section 3.7.8.		
Supplementary direct seeding, planting and watering (if required)	Autumn to Winter (if required)	Achieve at least 50% cover of direct seeding and 80% survival rate of planted species.	Landowner nominated bushland contractor	Section 3.7.8.		
Site quality audit (includes pest control, weed control, revegetation progress, fencing condition and rubbish levels)	Annually late spring to early summer	Results will inform management approaches and techniques	Landowner nominated ecologist	Section 5		
Report to be prepared documenting management actions undertaken and monitoring results.	No later than three months after anniversary of commencement. Annually after the first report.	Report delivered to Melton Council no later than three months after anniversary of commencement	Landowner nominated ecologist	Section 5		

7. References

- Australasian Bat Society 2021, *Attract Microbats – install a bat house*, Australasian Bat Society, Milsons Point, New South Wales, < <https://www.ausbats.org.au/install-a-microbat-house.html> >.
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- DELWP 2017, *Growling Grass Frog Habitat Design Standards*, Victorian Government, Department of Land, Water and Planning, East Melbourne, Victoria, < https://www.msa.vic.gov.au/__data/assets/pdf_file/0019/73414/Growling-Grass-Frog-Habitat-Design-Standards_March2017.pdf >.
- DEECA 2023, *Management standards for native vegetation offset sites*, Department of Energy, Environment and Climate Action, East Melbourne, Victoria.
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- Department of Sustainability and Environment (DSE) 2004, *Ecological Vegetation Class (EVC) Benchmarks by Bioregion*, Department of Environment, Land, Water and Planning, East Melbourne, Victoria, <<http://www.depi.vic.gov.au>>.
- The Green Connection 2024, *Arboricultural Impact Assessment – 19-23 Horswood Road, Narre Warren North*, The Green Connection, Emerald, Victoria.
- Muyt, A 2001, *Bush invaders of south-east Australia: a guide to the identification and control of environmental weeds found in south-east Australia*, RG & FJ Richardson, Meredith.
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- White, M, Cheal, D, Carr, GW, Adair, R, Blood, K & Meagher, D 2018, *Advisory list of environmental weeds in Victoria*, Arthur Rylah Institute for Environmental Research Technical Report Series No. 287, Department of Environment, Land, Water and Planning, Heidelberg.

Appendix 1: Weed Species recorded in study area

Common name	Scientific name	High threat	CaLP Act	Origin
Cootamundra Wattle	<i>Acacia baileyana</i>	Y		*
Sheep Sorrel	<i>Acetosella vulgaris</i>			*
Brown-top Bent	<i>Agrostis capillaris</i>			*
Sweet Vernal-grass	<i>Anthoxanthum odoratum</i>			*
Kikuyu	<i>Cenchrus clandestinus</i>			*
Boneseed	<i>Chrysanthemoides monilifera</i>	Y	C	*
Spear Thistle	<i>Cirsium vulgare</i>	Y	C	*
Hawthorn	<i>Crataegus monogyna</i>	Y	C	*
Couch	<i>Cynodon dactylon</i>			*
Drain Flat-sedge	<i>Cyperus eragrostis</i>			*
Cocksfoot	<i>Dactylis glomerata</i>			*
Flaxleaf Fleabane	<i>Erigeron bonariensis</i>	Y		*
Sugar Gum	<i>Eucalyptus cladocalyx</i>			*
Yorkshire Fog	<i>Holcus lanatus</i>			*
Flatweed	<i>Hypochaeris radicata</i>			*
Hairy Hawkbit	<i>Leontodon saxatilis subsp. saxatilis</i>			*
Paspalum	<i>Paspalum dilatatum</i>			*
Water Couch	<i>Paspalum distichum</i>			*
Toowoomba Canary-grass	<i>Phalaris aquatica</i>	Y		*
Radiata Pine	<i>Pinus radiata</i>			*
Ribwort	<i>Plantago lanceolata</i>			*
Annual Meadow-grass	<i>Poa annua s.l.</i>			*
Creeping Buttercup	<i>Ranunculus repens</i>			*
Onion Grass	<i>Romulea rosea</i>			*
Sweet Briar	<i>Rosa rubiginosa</i>	Y	C	*
Blackberry	<i>Rubus fruticosus spp. agg.</i>	Y	C	*
Curled Dock	<i>Rumex crispus</i>			*
Rough Sow-thistle	<i>Sonchus asper s.l.</i>			*

Common Sow-thistle	<i>Sonchus oleraceus</i>			*
White Clover	<i>Trifolium repens var. repens</i>			*
Gorse	<i>Ulex europaeus</i>	Y	C	*
Squirrel-tail Fescue	<i>Vulpia bromoides</i>			*
Sallow Wattle	<i>Acacia longifolia subsp. longifolia</i>	Y		#

Notes: EPBC = threatened species status under the EPBC Act; FFG-T = threatened species status under the FFG Act; FFG-P: listed as protected under the FFG Act; CaLP Act: declared noxious weeds under the CaLP Act (S = State Prohibited Weeds [any infestations are to be reported to DELWP. DELWP is responsible for control of State Prohibited Weeds]; P = Regionally Prohibited Weeds [Land owners must take all reasonable steps to eradicate regionally prohibited weeds on their land]; C = Regionally Controlled Weeds [Land owners have the responsibility to take all reasonable steps to prevent the growth and spread of Regionally controlled weeds on their land]; R = Restricted Weeds [Trade in these weeds and their propagules, either as plants, seeds or contaminants in other materials is prohibited].

* = introduced to Victoria

= Victorian native taxa occurring outside the natural range

Appendix 2: Logbook for weed survey and weed control

Date										
Initials										
Monitoring checklist										
Site entrance										
Clean-down bay and discharge areas										
Materials transported to the site										
Stockpiles										
Areas of soil disturbance										
Disposal of sediment at clean-down bay as required										
Monitor remainder of site not included above										

Appendix 3: Reporting form for weed control

Weed type	Common name	Scientific name	Control method used	Date implemented	No. of infestations treated (%)	Management outcome to be achieved and maintained	Name of company/contractor undertaking works	Name of herbicide and rate applied	
Woody Weeds	Gorse	<i>Ulex europaeus</i>	Multiple methods			<1% cover			
	Boneseed	<i>Chrysanthemoides monolifera</i>							
	Blackberry	<i>Galenia pubescens</i> var. <i>pubescens</i>							
	Hawthorn	<i>Fraxinus angustifolia</i>	Cut-and-paint						
	#Sallow Wattle	<i>Acacia longifolia</i>							
	Sweet Briar	<i>Rosa rubiginosa</i>							
Broad-leaf herbaceous weeds	Spear Thistle	<i>Cirsium vulgare</i>	Spray with an appropriate herbicide			Maintain at current levels until earthmoving commences, prevent the spread of seed			
	Other herbaceous weeds								
Grassy weeds	Cocksfoot	<i>Dactylis glomerata</i>							
	Yorkshire Fog	<i>Holcus lanatus</i>							
	Toowoomba Canary-grass	<i>Phalaris aquatica</i>							
	Other grassy weeds								

Appendix 6: Critical contamination areas in earthmoving vehicles



Source: DJPR (2017).