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Applied Botany, Zoology & Ecological Consulting

Biodiversity Assessment: Halletts Way, Bacchus Marsh, Victoria

Report prepared for Werribee Vale Corporation Pty Ltd

Report 11028_9, Version 1.0

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Version Control

Version	Responsibility	Name	Date	Signature
1.0	Author	Matt Hatton	12 October 2020	
1.0	GIS Mapping	Stephen Hall	11 October 2020	

Front cover image: View to the south over Lot A (Abzeco 02 October 2020).

Acknowledgements

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- Allan Carlsson (Senior Development Manger – Kataland) for site and project information.

1 Introduction

Abzeco was commissioned by Werribee Vale Corporation to conduct a Biodiversity Assessment for a parcel of land associated with Halletts Way, Bacchus Marsh (otherwise known as Lot A PS821090 – Werribee Vale Road, Bacchus Marsh). The Biodiversity Assessment was required to inform a planning application for the rezoning and future residential development of part of the land.

The purpose of the Biodiversity Assessment was to identify native vegetation (patches and/or scattered trees), listed ecological communities, habitat for threatened flora and fauna species and to recommend further investigations if required in order to inform the ecological impacts of the proposed works.

This report presents the results of the biodiversity assessment discusses potential impacts associated with the proposed works and details relevant Commonwealth, State and local legislative implications and approvals required as part of the project. In particular, the report is intended to inform the planning process, providing an assessment of implications in accordance with the *Guidelines for the removal, destruction and lopping of native vegetation* (the Guidelines, DELWP 2017a). Other relevant legislation requiring consideration is the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), State *Flora and Fauna Guarantee Amendment Act 2019* (FFG Act) and *Catchment and Land Protection Act 1994* (CaLP Act).

1.1 Study Area and Surrounding Context

The entire study area covers approximately 2.5 ha and is scheduled to the Farming Zone. The subdivision plan provided (Traffix Group, no date) shows four lots (A-D), with Lot A located to the north-west of the Halletts Way/Adelong Way intersection, Lot B located to the south-west of the Halletts Way/Adelong Way intersection, and Lots C and D located on the east side of Halletts Way, which are separated by the 100 year flood height contour (Figure 1). We understand from communications that given Lot D is lower than the 100-year flood height, it is unable to be developed for any residential or commercial type use.

The four lots surround a relatively large, recently constructed roundabout that provides the main entrance to the closely associated Underbank Estate to the west, which is currently under development. All lots are all highly modified and the surrounding landscape has a long agricultural history including grazing, and cultivation, however, has in recent times been largely developed as part of the Bacchus Marsh and Darley residential areas.

All lots have a downslope to the south and somewhat to the east although no slope is greater than 20%. Substantial areas of bare ground are present in all lots, however, erosion is not severe. A poorly formed drainage line is present along the western margin of Lots C and D adjacent to Halletts Way, which enters the Werribee River corridor in the south and the northern border of both lots is closely associated with a drainage depression (Image 1). The southern portion of Lot B and the eastern portion of Lot D, are also closely associated with the Werribee River corridor and a revegetation band that buffers the shared trail.

Based on the Department of Environment, Land, Water and Planning (DELWP) Native Vegetation Information Tool (NVIM, DELWP 2020a), the study area occurs within the Central Victorian Uplands bioregion, the Port Phillip and Westernport Catchment Management Authority (PPWCMA) and the municipality of Moorabool Shire Council.

Image 1. Lot D, facing south along the drainage line toward Werribee River (Abzeco 02/10/2020)

1.2 Methods and Literature Review

A site inspection was conducted on 02 October 2020 by a qualified ecologist to determine the occurrence of native vegetation communities, flora and fauna species and potential habitat within and adjacent to the study area. Any native vegetation and scattered trees within and adjacent to the boundary of the study area were identified and mapped in accordance with the Vegetation Quality Assessment (VQA), Habitat hectare method (DSE 2004) and the *Guidelines for the removal, destruction and lopping of native vegetation* (the Guidelines) (DELWP 2017a).

The following literature and online databases were also reviewed prior to the field assessment to obtain information on known ecological values associated with the study area, including:

- The DELWP Native Vegetation Information Management (NVIM) Tool (DELWP 2020a) and NatureKit (DELWP 2020b) for modelled data for Location categories (1, 2 and 3), habitat importance mapping for rare and threatened flora and fauna, and the modelled extent of current and historic Ecological Vegetation Classes (EVCs);
- EVC benchmarks for descriptions and characteristics of each bioregion (DELWP 2020c);
- The Victorian Biodiversity Atlas (VBA) for previously documented records of flora and fauna in the locality (DELWP 2020d);
- The Commonwealth Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) for matters of National Environmental Significance (NES) listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act; DAWE 2020);
- Relevant literature, including the following:
    - The Guidelines (DELWP 2017a) and other explanatory documents relating to measuring value of native vegetation (DELWP 2017b), the Assessor's Handbook (DELWP 2018a), Applicant's Guide (DELWP 2018b) and relevant planning permit exemptions (DELWP 2017c).
- The latest Threatened and Protected Species Lists (DELWP 2017d, 2018c) under the Victorian *Flora and Fauna Guarantee Amendment Act 2019* (FFG Act);

- VicPlan (DELWP 2020e) and Planning Schemes Online (DELWP 2020f) for the zoning and overlays relevant to the study area;
- Aerial photography of the study area.

All data was collected using a Motion Tablet™ with ArcPad linked to a wireless Holux GPS receiver.

Scientific and common names of flora and fauna follow the determinations of Walsh and Stajsic (2007), DEPI (2014), the Flora of Victoria Online (VicFlora 2020) and the VBA (DELWP 2020d). Names of plants are generally introduced in-text by use of the common name followed by the scientific name, and subsequently only referred to by the common name.

Where an asterisk (*) appears in-text as a prefix to all scientific names (flora and fauna), this indicates the entity to be introduced to Australia. A hash (#) prior to a plant scientific name denotes those species native to Australia or Victoria but non-indigenous to the study area or to the relevant vegetation type.

1.3 Limitations

The surveys were conducted in spring, which is an optimal time of year for ecological assessments. Adequate material was available for positive identification of all species observed and the information collected was considered appropriate for the purposes of the assessment.

A detailed zoological survey comprising a range of techniques over different seasons was not undertaken as this was beyond the scope of works. However, the stated limitations do not significantly affect the overall results of the field assessment and are sufficient for informing the relevant requirements associated with the proposed development.

1.4 Native Vegetation Permitted Clearing under the Guidelines

Clause 52.17 of the Victorian Planning Provisions and the Guidelines are publicly available documents covering regulatory and technical requirements of assessing applications that propose to impact native vegetation.

In accordance with the Guidelines, native vegetation is defined by two categories (DELWP 2017a):

- **A patch** of native vegetation:
  - An area of vegetation where at least 25% of the total perennial understory plant cover is native;
  - Any area with three (3) 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 map (DELWP 2017a).
- **A scattered tree –** defined as a native canopy tree that does not form part of a patch.

2 Results

2.1 Vegetation assessment

A total of sixty-nine (69) vascular plant species are present within the study area, comprising 58 exotic, 10 indigenous, and one native Australian species (Appendix 1). As the species composition suggests, all four lots are dominated by a high cover of exotic weeds with no shrub cover and effectively no canopy trees.

Lot A (north-west): Lot A is rectangular, covers approximately 0.5 hectares and is defined by residential fencing to the west, a relatively steep hillside/escarpment to the north, and arterial roads to the east and south (Image 2). The lot is dominated by a wide range of grassy and herbaceous weeds including Barley-grass **Hordeum* spp., Perennial Rye-grass **Lolium perenne,* Bearded Oat **Avena barbata,* Sow Thistle **Sonchus olearaceus,* Hogweed **Polygonum aviculare,* Curled Dock **Rumex crispus,* Paterson's Curse **Echium plantagenium* and a very high cover of Galenia **Galenia pubescens* (Image 3). No trees or shrubs occur within Lot A and the only indigenous plant identified was a single Cotton Fireweed *Senecio quadridentatus,* which is a ruderal species often found in disturbed sites (seen front-left – Image 3).

Image 2. Lot A, facing north, showing high weed cover especially Galenia (Abzeco 02/10/2020)

Image 3. Lot A, facing south, showing the high density of thistles (Abzeco 02/10/2020)

Lot B (south-west): Lot B is a narrow triangular parcel covering approximately 0.28 hectares and slopes moderately to the south toward the Weribee River corridor. The lot is further defined by residential fencing and a tree windbreak to the west and arterial roads to the north and east. Some dumped rubbish is present and large areas of bare ground and minor erosion are present throughout (Images 4 & 5). The site is heavily disturbed from past agricultural use and recent roadworks to extend Halletts Way. An informal access track runs through the centre of the lot likely used by both pedestrians and maintenance vehicles and machinery.

Image 4. Lot B, facing south, showing dumped rubbish and bare ground (Abzeco 02/10/2020)

Image 5. Lot B, facing north, showing bare ground and weeds (Abzeco 02/10/2020)

Vegetation is dominated by grassy and herbaceous weeds including Chilean Needle-grass **Nassella neesiana,* Barley-grass, Cocksfoot **Dactylis glomerata,* Cat's Ear **Hypochoeris radicata,* Ribwort **Plantago lanceolata,* Twiggy Turnip **Brassica fruticulosa,* Prickly Lettuce **Lactuca serriola* and Galenia. Lot B does not support any shrubs, however, a small windbreak of Australian native Swamp Sheoak are in the south-west (Image 6; Figure 2). This species is not indigenous to the local area and is therefore not included in offset calculations. The stand of Swamp Sheoak has provided protection from slashing for approximately five Fragrant Saltbush *Rhagodia parabolica* specimens (Image 7). This species is listed as rare in Victoria (see Section 2.4).

Image 6. Small windbreak of the Australian native Swamp Sheoak in Lot B (Abzeco 02/10/2020)

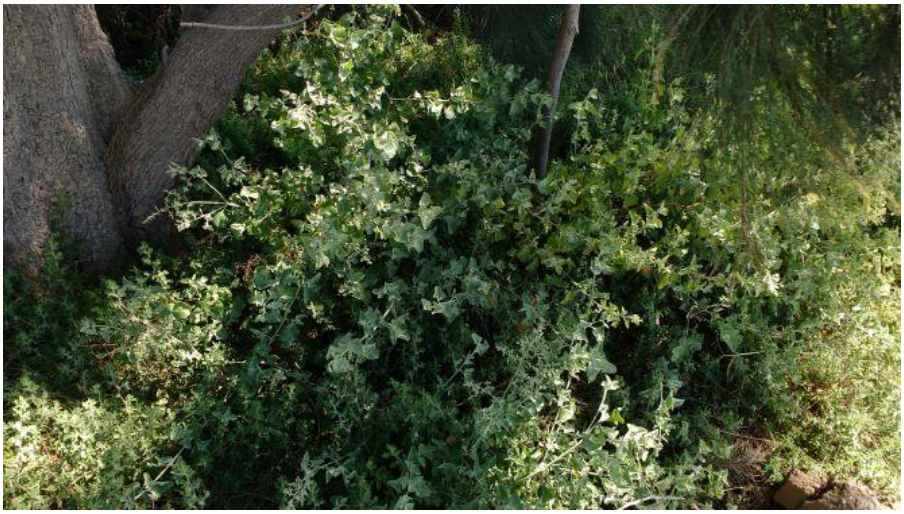


Image 7. Fragrant Saltbush beneath Swamp Sheoak – Lot B (Abzeco 02/10/2020)

Lot C (north-east): Lot C is small trapezoidal shaped parcel covering approximately 0.3 hectares and slopes gently to the south and east toward the Weribee River corridor. Lot C is bordered by a strip of planted and self-recruited exotic trees to the north-east, associated with a minor drainage tributary to the Werribee River (Image 8). Canopy species within the drainage line include Willow **Salix* spp. and Pepper Tree **Schinus mole,* however, only one Pepper Tree is closely associated with the northern point of the lot. No shrubs are present and the understorey is dominated by weeds (Image 9).

Image 8. View to the north over Lot C from Lot D showing exotic trees in the bordering drainage line (Abzeco 02/10/2020)

Image 9. Lot C is dominated by wide variety of exotic understorey weed species (Abzeco 02/10/2020)

Lot D (south-east): Lot D is roughly trapezoidal and covers approximately 1.8 hectares. This section is substantially lower than Lots A-C with the majority of the land parcel below the 100 year flood level and sloping moderately in parts to the south and the Weribee River corridor (Image 10). Lot D supports a large tin shed in the north-east corner that is flanked by a semi-mature Pepper Tree (Image 11). The Werribee River shared trail is immediately adjacent the eastern boundary.

Weed cover is extremely high (>95%) with only scattered occurrences of indigenous species such as Nodding Saltbush *Einadia nutans* subsp. *nutans* present along fence lines and Common Cotula *Cotula australis* in disturbed or regularly slashed sections. Other than one small Hege Wattle *Acacia paradoxa* behind the tin shed and one Sifton Bush *Cassinia sifton* in the open heart of the lot, shrub species are absent. Furthermore, only two canopy trees occur within Lot D; one Swamp Sheoak in the north-west (see Image 8) and one indigenous River Red-gum *Eucalyptus camaldulensis* in the southern tip.

Image 10. Lot D is substantially lower and slopes moderately to toward the Werribee River corridor (Abzeco 02/10/2020)

Image 11. The north-east corner of Lot D showing the tin shed and exotic Pepper Tree (Abzeco 02/10/2020)

2.2 Patches of Native Vegetation

No patches of native vegetation were identified within any of the four lots. Modelled pre-1750 native vegetation mapping for the local area indicates that the study area was historically dominated by Red Gum Swamp (EVC 292) (DELWP 2020c). With exception of the one River Red-gum tree in the southern tip of Lot D, which is likely to have been planted, the current vegetation composition and cover does not equate to the modelled vegetation type, or any other ecological vegetation class and cannot be assessed as a native patch.

2.3 Scattered Trees

A single River Red-gum tree in the southern tip of Lot D is the only scattered indigenous tree relevant to the entire study area. As Lot D is below the 100-year flood level, this area is not proposed for development, therefore the River Red-gum will not be impacted.

2.4 Rare and Threatened Flora Species

No Commonwealth listed flora species were recorded in the study area, however, Lot B supports several specimens of Fragrant Saltbush *Rhagodia parabolica,* which is considered rare under the *Advisory list of rare or threatened plants in Victoria* (DEPI 2014).

The VBA contains previous records for two EPBC Act-listed flora species (Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* and Sunshine Diuris *Diuris fragrantissima,* as well as 30 State-listed flora species within a 5km radius of the study area. State listed species include but are not limited to recent (post-2010) records for, Bacchus Marsh Wattle *Acacia rostriformis,* Arching Flax-lily *Dianella* spp. aff. *longifolia* (Benambra), Slender Bindweed *Convolvulus angustissimus* subsp. *omnigracilis* and Austral Tobacco *Nicotiana suaveolens.* Most of the recent records are attributable to areas of nearby intact vegetation such as the Brisbane Ranges National Park to the south, Long Forest Flora Reserve to the east, Lerderderg State Park to the north, as well as the nearby corridor of the Werribee River that connects with Werribee Gorge State Park to the west. The PMST search contains an additional 13 EPBC Act-listed species that have not been previously recorded but are considered to have the potential to occur in the local area (DAWE 2020).

Despite the diversity of threatened species records in the local area, suitable habitat is considered absent for all remaining threatened flora species, given the lack of intact understorey vegetation and the long history of disturbance from farming, grazing and other agricultural uses. There is a low likelihood that the site may support the 'poorly known' Slender Bindweed, however, targeted surveys for significant flora species are not recommended and the proposed works are considered unlikely to impact any additional rare or threatened flora species listed under the Commonwealth EPBC Act, the FFG Act, or the *Advisory list of rare or threatened flora in Victoria* (DEPI 2014).

2.5 Determination of Listed Vegetation Communities

The EPBC Act PMST identifies four listed threatened ecological communities as having the potential to occur within five kilometres of the study area (DAWE 2020):

- Grassy Eucalypt Woodland of the Victorian Volcanic Plain (listed as Critically Endangered);
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (listed as endangered);
- Natural Temperate Grassland of the Victorian Volcanic Plain' (listed as Critically Endangered); and,
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (listed as Critically Endangered).

Vegetation within the study area does not correspond to the descriptions or condition thresholds of the ecological communities listed above. There are also no FFG Act-listed ecological communities present in the study area (DELWP n.d.).

2.6 Significant Fauna Species and Fauna Habitat

The majority of the study area has poor vegetation structure and low habitat quality as there is a lack of canopy trees and shrubs, no woody debris and limited litter in the understorey. In addition, there is a lack of scattered and embedded rock, with large areas of bare ground and surface erosion in parts. Suitable habitat is therefore limited for ground dwelling fauna such as reptiles and small mammals and vegetation in the study area is likely to provide only limited habitat for a small range of common fauna species adapted to modified environments such as Australian Magpie *Cracticus tibicen*.

Despite a lack of consolidated grass cover and suitable palatable species, there is evidence in the form of tracks and prints of Eastern Grey Kangaroos *Macropus giganteus* utilising, or at a minimum passing through Lots C and D. Evidence of European Rabbit **Oryctolagus cuniculus* is also present throughout parts of the study area, with some diggings and scats observed, however, no warrens appear to be present. Red Fox **Vulpes vulpes* was not observed although is highly likely to utilise parts of the study area, especially in connection with the Werribee River corridor.

No EPBC Act or State-listed fauna species were recorded during the current field assessment. The VBA contains previous records for seven EPBC Act-listed and an additional 13 State-listed fauna species within a five kilometre radius of the study area (DELWP 2020d). Recent records include but are not limited to the EPBC Act-listed Swift Parrot *Lathamus discolor*, Golden Sun

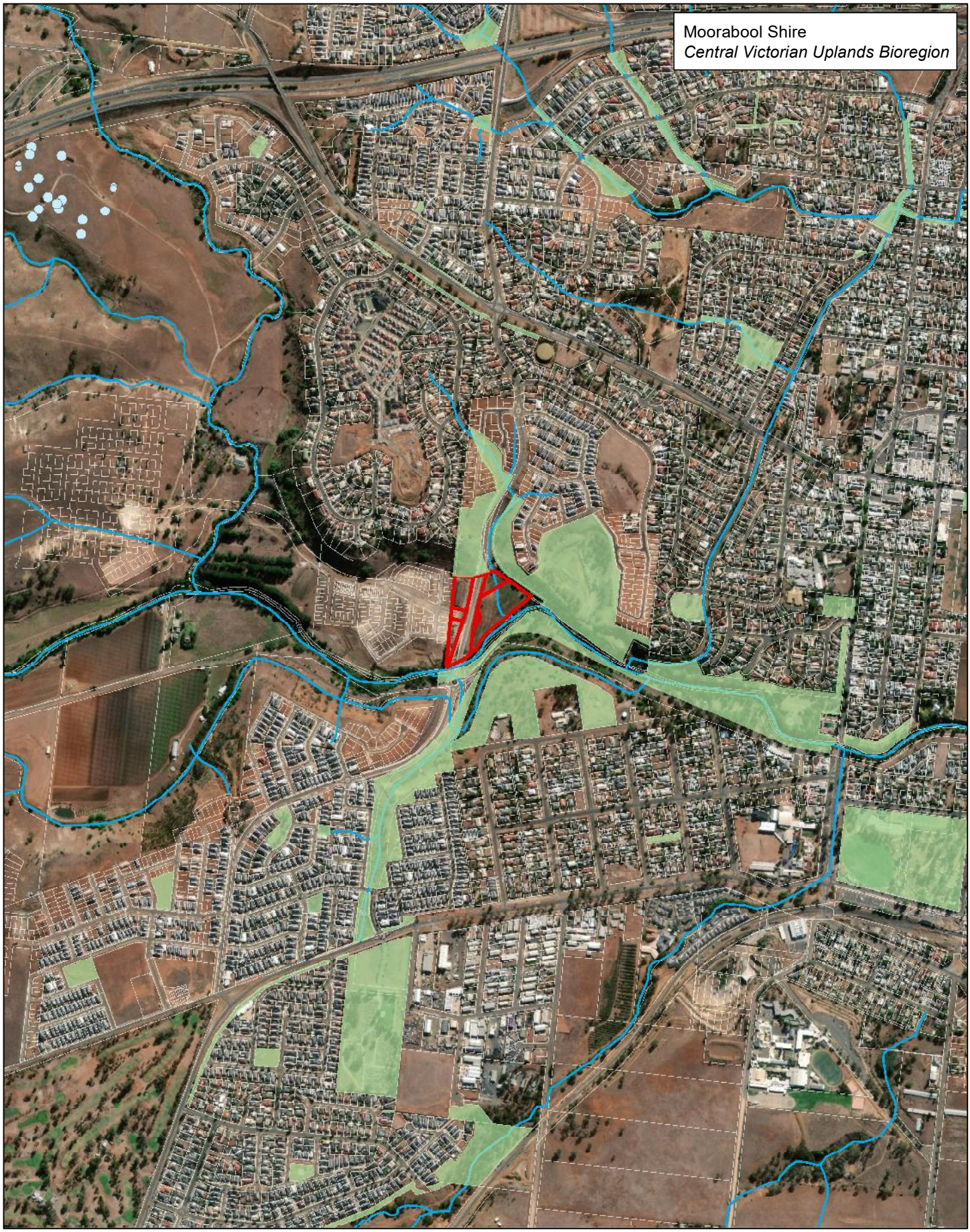
Moth *Synemon plana* and Growling Grass Frog *Litoria raniformis,* as well as the State-listed Spotted Harrier *Circus assimilis,* Grey Goshawk *Accipiter novaehollandiae,* Black Falcon *Falco subniger* and Speckled Warbler *Pyrrholaemus sagittatus* (DELWP 2020d). Most of the recent records are attributable to the Long Forest region to the east, while there are isolated and often old records along the Werribee River and various waterbodies in the broader landscape for Growling Grass Frog and other aquatic dependent fauna such as various species of duck and Eastern Great Egret *Ardea modesta.* The PMST search contains additional EPBC Act-listed fauna that have not been previously recorded but are considered to have the potential to occur in the local area, including Striped Legless Lizard *Delma impar* and migratory fauna such as Fork-tailed Swift *Apus pacificus*, Satin Flycatcher *Myiagra cyanoleuca* and Rufous Fantail *Rhipidura rufifrons* (DAWE 2020a).

Given the close association of Lot D to the Werribee River corridor, there is a low likelihood that a species such as Growling Grass Frog may occasionally utilise the study area for foraging purposes or to overwinter. However, it should be noted that there is an existing frog fence to restrict access and use of the relevant section of Lot D (Image 12) and Lot D will also not be developed as it is below the 100-year flood level.

Image 12. Frog exclusion fencing at the southern end of Lot D (Abzeco 02/10/2020)

Based on the highly disturbed condition of the site and the lack of suitable habitat for threatened fauna species historically recorded in the local area, it is considered unlikely that threatened fauna species regularly visit, inhabit or depend on the study area. The vegetation in the study area is also not considered to represent critical or limiting habitat for any of rare or threatened fauna species. Targeted surveys for rare and threatened fauna species are therefore not recommended.

Figure 1. Location and Context of Study Area at Hallets Way, Bacchus Marsh



Property Reserve Watercourse

N

Note: location of property boundaries, watercourse & topography indicative only

250 0 250 500 Meters

Scale: 1:10,000 (A4)

Survey Date:

Created by: Stephen Hall

Report:11028 - v1.0

File: Abzeco_11028_HalletsWay_BacchusMarsh_2020.mxd

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Figure 2. Extent of Assessed Vegetation for Study Area at Hallets Way, Bacchus Marsh

Property
Watercourse
Swamp Sheoak
Fragrant Saltbush - State Listed 'Rare'
River Red Gum
Pepper Tree

Note: location of property boundaries, watercourse & topography indicative only

20 0 20 40 Meters

Scale: 1:1,500 (A4)

Survey Date: 02 Oct 2020
Created by: Stephen Hall
Report:11028 - v1.0
File: Abzeco_11028_HalletsWay_BacchusMarsh_2020.mxd

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2.7 Summary of impacts to native vegetation

The proposed rezoning and residential development of Lots A-C will not require removal of any native patches of vegetation or scattered indigenous trees. Lot D will not be developed as it is lower than the 100-year flood level.

2.8 Native vegetation offsets and offset strategy

As there are no native patches or indigenous scattered trees required for removal, no offset scenario or strategy is provided.

2.9 Avoidance and Minimisation Statement

As above, because there are no native patches or indigenous scattered trees required for removal, a statement relating to avoidance and minimisation is not applicable.

2.10 Legislation and Policy

***Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)**

No Matters of National Environmental Significance (MNES) are considered relevant to the study area. Critical or limiting habitat for EPBC Act-listed flora and fauna species is absent from the study area and a significant impact to a MNES is considered unlikely, therefore referral of the proposed action to the Commonwealth Minister for the Environment is not required.

***Flora and Fauna Guarantee Amendment Act 2019* (FFG Act)**

No species listed or protected under the FFG Act were observed within the study area. Furthermore, a permit for the removal of protected flora (obtained via application to DELWP) is not required as the study area is private land.

***Catchment and Land Protection Act 1994* (the CaLP Act)**

At least 11 declared noxious weed species are present within the study area including Bridal Creeper **Asparagus asparagoides,* African Boxthorn **Lycium ferocissimum,* Hemlock **Conium maculatum,* Wild teasel **Dipsacus fullonum,* Paterson's Curse, Horehound **Marrubium vulgare,* Chilean Needle-grass, Soursob **Oxalis pes-caprae,* Wheel Cactus **Opuntia robusta* and Variegated Thistle **Silybum marianum* (Appendix 1). At least four of these species are also listed as Weeds of National Significance (WoNS) (Appendix 1). Monitoring during any construction works should ensure that noxious weeds do not spread and new weeds are prevented from colonising the site. Landowners have a legal responsibility under the Act to control declared noxious weeds and ensure spreading of weeds is limited and managed during construction works.

***Wildlife Act 1975* and Wildlife Regulations 2002**

Any persons engaged in the salvage, translocation and/or handling of native fauna during any construction works must have a management authorization under the *Wildlife Act 1975*.

Planning and Environment Act 1987

Although no native patches or scattered indigenous trees are required to be removed, a planning permit to remove, destroy or lop native vegetation is nevertheless required under Clause 52.17 of the Moorabool Shire planning scheme as there are isolated and scattered occurrences of indigenous species that will be impacted should any development of Lots A-C proceed.

Planning zones and overlays

All lots are subject to the provisions of the Farming Zone (FZ) and are entirely covered under the Design and Development Overlay – Schedule 2 (DDO2). The majority of Lot D and the southern tip of Lot C are also covered by Schedules 2 and 8 of the Environmental Significance Overlay (ESO2 and ESO8). All lots are mapped as areas of Aboriginal Cultural Heritage Sensitivity as defined under the Aboriginal Heritage Regulations 2018. Relevant ecological matters are further outlined below.

Environmental Significance Overlay – Schedule 2 (ESO2) "Waterway Protection"

Statement of environmental significance

The Shire of Moorabool contains several proclaimed water catchments, which provide water to urban and rural development throughout the Shire. The protection of waterways, which carry water within these catchments, is essential to the health of all communities that rely on water for domestic and stock supply.

Environmental objectives to be achieved

- To protect the habitat significance of vegetation.
- To provide for appropriate development of land within 100 metres of either side of a waterway.
- To prevent pollution and increased turbidity of water in natural waterways.
- To prevent increased surface runoff or concentration of surface water runoff leading to erosion or siltation of waterways.
- To conserve existing flora and fauna habitats close to waterways and to encourage generation and regeneration of habitats.

Environmental Significance Overlay – Schedule 8 (ESO8) "River Red Gums In The Bacchus Marsh Valley"

Statement of environmental significance

River Red Gums, Eucalyptus camaldulensis, represent the oldest living natural heritage of Bacchus Marsh, and are a striking feature of the Bacchus Marsh Valley. The hollow-bearing nature of the River Red Gum provides ideal fauna habitat and food for many species of native birds, mammals, insects and spiders. Large hollows do not develop until the trees are well over 100 years old; therefore ongoing protection of all existing River Red Gums (regardless of age) is vital to the biodiversity values of the Bacchus Marsh Valley. Of the 1411 remaining River Red Gums within the Bacchus Marsh Valley, approximately 150 are aged greater than 300 years and 70% are between 50-150 years old. These younger trees must be protected, as without regeneration the long term population of the River Red Gums will decline.

Environmental objectives to be achieved

To provide for the long term preservation and regeneration of the River Red Gum population within the Bacchus Marsh Valley, therefore enhancing biodiversity and landscape quality. Ongoing management practices for River Red Gums should aim to achieve the following:

- Retain all hollow bearing trees.
- Minimisation of disturbance to the Tree Protection Zone for all River Red Gums.
- Support the regeneration of River Red Gums by protecting the growth of young trees.

3 Conclusion and Recommendations

The following key requirements should be considered as part of proposed development:

- No flora or fauna species or ecological communities listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded during the Biodiversity Assessment. No impacts to any matters of national environmental significance are anticipated and an EPBC Act referral is not required;
- Lot B supports several specimens of Fragrant Saltbush *Rhagodia parabolica,* which is listed as rare under the *Advisory list of rare or threatened flora in Victoria* (VRoT). Where possible this species should be protected and also adopted within future landscape designs;
- As the study areas is private land there are no relevant considerations under the Victorian *Flora and Fauna Guarantee Amendment Act 2019* (FFG Act);
- Although considered unlikely, management authorization under the *Wildlife Act 1975* is required for the salvage, translocation or handling of any native fauna if required during construction works;
- A planning permit to remove, destroy or lop native vegetation is required under Clause 52.17 of the Moorabool planning scheme (*Planning and Environment Act 1987*) as part of the proposed development; and,
- There is no offset requirement in association with the proposed rezoning and partial development of Lots A to D;
- The spread of weeds during construction to areas of adjacent high ecological value (i.e. the Werribee River corridor) should be appropriately managed during construction through appropriate hygiene protocols for machinery, vehicles and personnel;
- Sedimentation and erosion mitigation measures will be required to appropriately manage potential run-off into drainage lines and the Werribee River corridor;
- Although there will be no loss or impacts to River Red-gum trees as a result of the proposal, we recommend that Lot D is planted with River Red-gum at a density of approximately 10 trees per hectare in accordance with the Red Gum Swamp EVC benchmark for Large Old Trees, as Lot D is unable to be developed due to its position with regard to the 100-year flood level and this outcome would feed into the objectives of the both the ESO8 and ESO2;
- Recommended that the drainage line on the western boundary of Lots C and D adjacent to Halletts Way is improved to prevent further erosion and revegetated with indigenous reeds and aquatic species.

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Appendix 1. Flora Species Recorded in the Study Area

Legend:
***** – Introduced/exotic species;
- native to Australia or Victoria but non-indigenous to the study area;
r – Listed as rare under the *Advisory list of rare or threatened plants in Victoria* (DEPI 2014);
WoNS – Weed of National Significance (WONS); and,
C – Weed listed as regionally controlled under the CaLP Act.
R – Weed listed as regionally restricted under the CaLP Act.

Origin	Scientific Name	Common Name	Status
	Acacia paradoxa	Hedge Wattle	
*	*Agave americana*	Century Plant	
*	*Amaranthus spp.*	Amaranth	
*	*Arctotheca calendula*	Cape weed	
*	*Asparagus asparagoides*	Bridal Creeper	C, WoNS
*	*Avena barbata*	Bearded Oat	
*	*Brassica fruticulosa*	Twiggy Turnip	
*	*Bromus catharticus*	Prairie Grass	
*	*Bromus diandrus*	Great Brome	
*	*Bromus hordeaceus*	Soft Brome	
*	*Bromus rubens*	Red Brome	
*	*Capsella bursa-pastoris*	Shepherd's Purse	
	Cassinia sifton	Drooping Cassinia	
#	*Casuarina glauca*	Swamp Oak	
*	*Cerastium glomeratum s.s.*	Sticky Mouse-ear Chickweed	
*	*Chenopodium album*	Fat Hen	
*	*Conium maculatum*	Hemlock	C
	Cotula australis	Common Cotula	
*	*Cynara cardunculus subsp. flavescens*	Artichoke Thistle	C
*	*Cyperus eragrostis*	Drain Flat-sedge	
*	*Dactylis glomerata*	Cocksfoot	
*	*Diplotaxis spp.*	Rocket	
*	*Dipsacus fullonum*	Wild Teasel	C
*	*Echium plantagineum*	Paterson's Curse	C
*	*Ehrharta erecta*	Panic Veldt-grass	
	Einadia nutans subsp. nutans (s.s.)	Nodding Saltbush	
	Enchylaena tomentosa var. tomentosa	Ruby Saltbush	
*	*Erigeron bonariense*	Flaxleaf Fleabane	
*	*Erodium cicutarium*	Common Heron's-bill	
	Eucalyptus camaldulensis	River Red-gum	
*	*Fumaria bastardii*	Bastard's Fumitory	
*	*Galenia pubescens var. pubescens*	Galenia	
*	*Helminthotheca echioides*	Ox-tongue	
*	*Hypochaeris radicata*	Flatweed	
*	*Lactuca serriola*	Prickly Lettuce	
*	*Lolium perenne*	Perennial Rye-grass	
*	*Lycium ferocissimum*	African Box-thorn	C, WoNS
*	*Lysimachia arvensis*	Pimpernel	
	Maireana decalvans s.l.	Black Cotton-bush	
*	*Malva nicaeensis*	Mallow of Nice	
*	*Marrubium vulgare*	Horehound	C
*	*Medicago polymorpha*	Burr Medic	
*	*Melilotus indicus*	Sweet Melilot	

Origin	Scientific Name	Common Name	Status
*	*Modiola caroliniana*	Red-flower Mallow	
*	*Nassella neesiana*	Chilean Needle-grass	R, WoNS
*	*Opuntia robusta*	Wheel Cactus	C, WoNS
*	*Oxalis pes-caprae*	Soursob	R
	Panicum decompositum var. decompositum	Native Millet	
*	*Phalaris aquatica*	Toowoomba Canary-grass	
*	*Plantago lanceolata*	Ribwort	
*	*Poa annua s.s.*	Annual Meadow-grass	
*	*Polygonum aviculare s.s.*	Hogweed	
*	*Raphanus raphanistrum*	Wild Radish	
	Rhagodia parabolica	Fragrant Saltbush	r
*	*Rumex crispus*	Curled Dock	
*	*Schinus molle*	Pepper Tree	
	Senecio quadridentatus	Cotton Fireweed	
*	*Silybum marianum*	Variegated Thistle	C
*	*Solanum nigrum s.s.*	Black Nightshade	
*	*Sonchus asper s.s.*	Rough Sow-thistle	
*	*Sonchus oleraceus*	Common Sow-thistle	
*	*Symphyotrichum subulatum*	Aster-weed	
*	*Tribolium obliterum*	Desmazeria	
*	*Trifolium dubium*	Suckling Clover	
*	*Trifolium repens var. repens*	White Clover	
*	*Urtica urens*	Small Nettle	
*	*Veronica persica*	Persian Speedwell	
*	*Vicia sativa*	Common Vetch	
*	*Vulpia myuros*	Rat's-tail Fescue	