Native Vegetation and Biodiversity Impact Assessment of Western Irrigation Network Work for the Land Parcel containing 300 Agars Road and 3126 Geelong-Bacchus Marsh Road at Balliang East within Moorabool Shire

March 2021

Tree Wishes land care advice

Documentation

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Document Review

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- Russell and Peter Griffiths, Balliang East
- David Mohr, Pinion Advisory

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Introduction

Project Description

The Western Water Western Irrigation Network project (WIN) includes working with rural landholders in developing on farm irrigation plans. Much of this involves determining suitable areas for placement of Centre Pivot irrigation for reuse irrigation and developing a suitable long-term concept plan for the landholders.

The 1,700 hectare parcel of land owned by the Griffiths family contains several titles (hereafter called site) on Agars Road and Geelong-Bacchus Marsh Road Balliang East in Moorabool Shire is a broad-acre dryland cropping and sheep-grazing enterprise. It has been identified as suitable for a WIN project. This site has a number of scattered trees and small tree clumps which are protected through local, state and commonwealth legislation.

Tree Wishes has been engaged to assist Western Water with regard to vegetation and biodiversity planning matters for this WIN project for this site.

Study Area

Variable/Constant	Description
Location	3126 Geelong-Bacchus Marsh Road, Balliang East 300 Agars Road, Balliang East
General Description of the Land	Volcanic plains cropping and grazing land with a broad creek valley
Aspect	Flat
Municipality	Moorabool Shire Council
Planning Zones	Farming Zone (FZ)
Overlays	Environmental Significance Overlay (ESO 2) Waterway Protection Environmental Significance Overlay (ESO 7) Grasslands within the Werribee Plains Hinterland
Bioregion	Victorian Volcanic Plains (VVP)

Scope of Assessment

The objective of this report is to provide native vegetation and biodiversity planning advice to Western Water on the development of a WIN this site. The following steps were undertaken to determine the implications of the proposed works:

1. A detailed desktop review of existing databases including *Natureshare* databases, DELWP modelling, NVIM, Council sources and the Victorian Biodiversity Atlas.

2. A site visit to survey tree, native vegetation and biodiversity features (verify desktop research).

3. A report providing advice on landholder obligations/options with regard to biodiversity appropriate development on site.

Project Area

Across the 1,700 ha site, some 341 ha have been identified to yield irrigation water supply in areas defined as Stages 1 and 2 of this WIN project. The landscape setting is shown below in Figure 1 with a more detailed location of the irrigation fields within the site shown below in Figure 2. There are two stages to the project, with Stage 1 covering the western section of the property. Stage 2 of the project is some ten or more years away, and as such has not been included within this assessment. No works associated with Stage 1 will take place within the area of Stage 2.

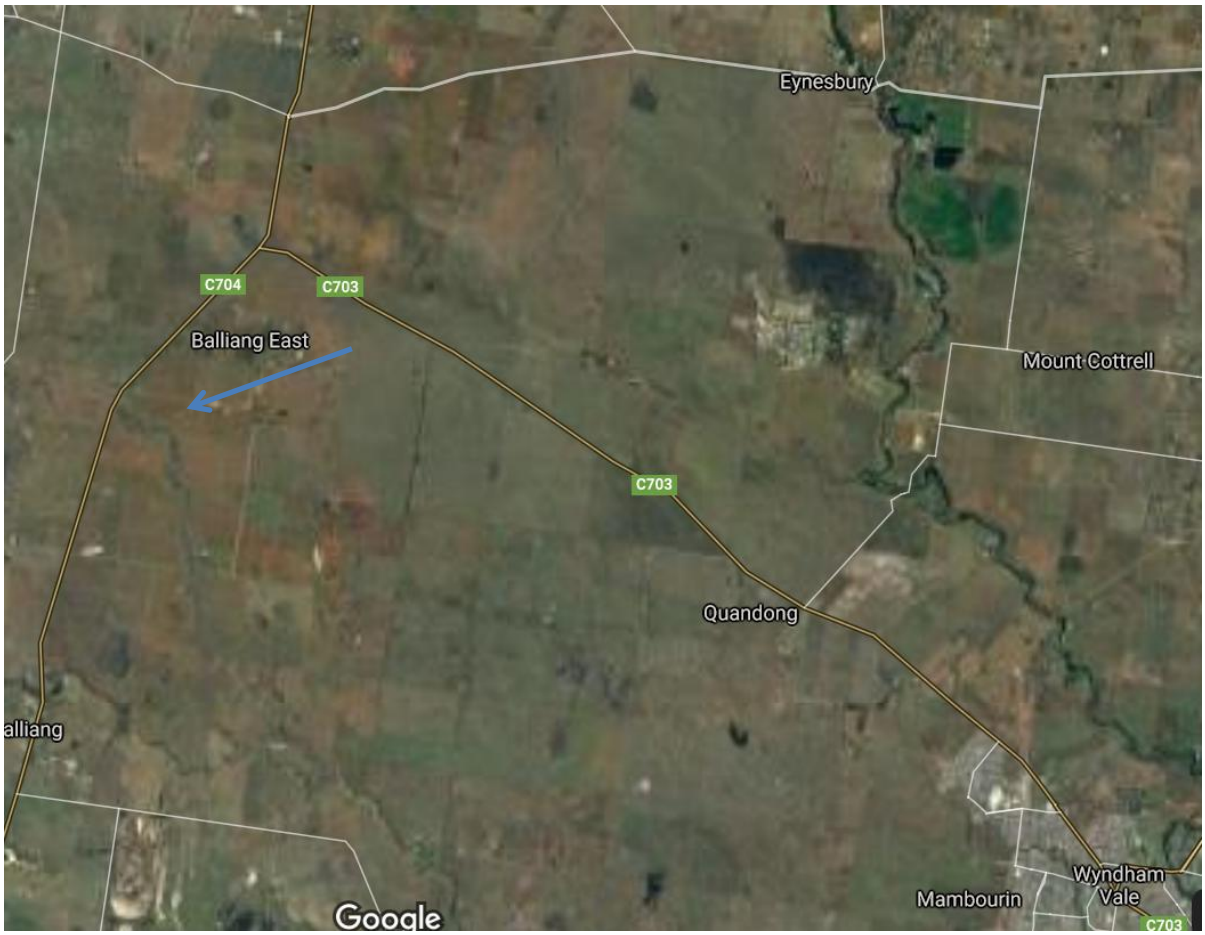


Figure 1. Location of the study site within the wider cleared landscape around of Balliang East.

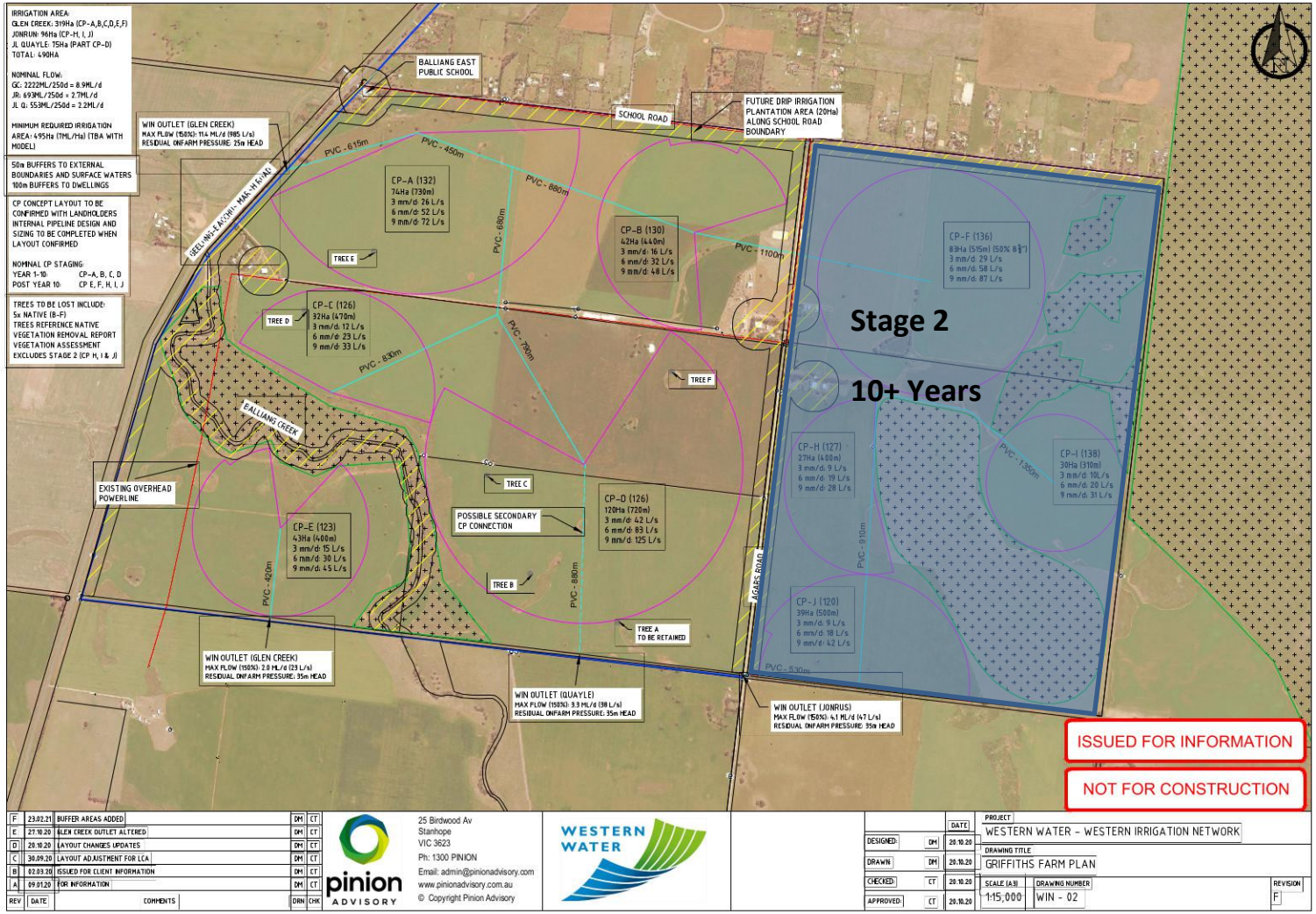


Figure 2. Concept design showing location of pivot areas and scattered trees A, B, C, D, E and F

Ecological Features of Site

Desktop Research

NatureKit

The Victorian Government's DELWP *Naturekit* website (http://maps.biodiversity.vic.gov.au/viewer/?viewer=NatureKitgovernment) indicated that the pre-1750 vegetation system across this site and much of the broader plains landscape was almost entirely composed of Low-rainfall Plains Grassland Ecological Vegetation Class (EVC 132_63). This was largely a treeless vegetation system dominated by medium height graminoids (grass-like plants) and chenopods (saltbushes).

Presently this DELWP modelling shows the presence of remnant native vegetation mainly along the Balliang Creek valley, consisting of mosaic of EVC 132_63, Plains Grassy Woodland (EVC 125) and Creekline Grassy Woodland (EVC 68).

Threatened Flora

Victorian Biodiversity Atlas

A search of the DELWP's Victorian Biodiversity Atlas (VBA) revealed that three threatened flora species has been recorded at or within three km of the site within the 30 years. These are listed in Table One below. This is casting a wide net across the spatial and temporal dimensions here in order to undertake a precautionary approach to determining impacts on threatened species.

Environmental Protection Biodiversity Conservation Protected Matters

The protected matters report detailed ten flora species whose habitat may occur, is likely to occur or is known to occur within the area.

These species are listed in Table 1 below titled Rare and Threatened Flora, Status and Protections.

Table 1. Rare and Threatened Flora, Status and Protections

Common Name	Scientific Name	Status	FFG	EPBC	Record
Adamson's Blown-grass, Adamson's Blowngrass	*Lachnagrostis adamsonii*	Endangered	-	EPBC	Species or species habitat may occur within area
Black Roly-poly	*Sclerolaena muricata muricata*	Poorly Known	FFG		1998
Buloke	*Allocasuarina leuhmannii*	Vulnerable	FFG		2007
Button Wrinklewort	*Rutidosis leptorhynchoides*	Endangered		EPBC	Species or species habitat likely to occur within area
Clover Glycine	*Glycine latrobeana*	Vulnerable	FFG	EPBC	1992. Species or species habitat known to occur within area
Hoary Sunray	*Leucochrysum albicans tricolor*	Endangered		EPBC	Species or species habitat may occur within area
Maroon Leek-orchid, Slaty Leek-orchid, Stout Leekorchid, French's Leek-orchid, Swamp Leek-orchid	*Prasophyllum frenchii*	Endangered	FFG	EPBC	Species or species habitat likely to occur within area
Matted Flax-lily	*Dianella amoena*	Endangered	FFG	EPBC	Species or species habitat likely to occur within area
Plains Rice-flower, Spiny Rice-flower, Prickly Pimelea	*Pimelea spinescens subsp. spinescens*	Critically Endangered	FFG	EPBC	Species or species habitat likely to occur within area
River Swamp Wallaby-grass	*Amphibromus fluitans*	Vulnerable		EPBC	Species or species habitat likely to occur within area
Swamp Everlasting	*Xerochrysum palustre*	Endangered		EPBC	Species or species habitat may occur within area
Trailing Hop-bush	*Dodonaea procumbens*	Endangered		EPBC	Species or species habitat may occur within area

Threatened Fauna

Victorian Biodiversity Atlas

A search of the DELWP's Victorian Biodiversity Atlas (VBA) revealed that one threatened fauna species have been recorded at or within three km of the site within the last 30 years. These are listed in Table Two below. This is casting a wide net across the spatial and temporal dimensions here in order to undertake a precautionary approach to determining impacts on threatened species.

The species, their statuses and protections are listed in Table Two below.

Environmental Protection Biodiversity Conservation Protected Matters

The protected matters report detailed 18 listed threatened terrestrial species. These species are known to occur, or their habitat may occur, is likely to occur or is known to occur within the area.

These species, their statuses and protections are listed in Table 2 below.

Table 2. Rare and Threatened Fauna, Status and Protections

Common Name	Scientific Name	Status	FFG	EPBC	Record
Australasian Bittern	*Rostratula poiciloptilus*	Endangered		EPBC	Species or species habitat likely to occur within area
Curlew Sandpiper	*Calidris ferruginea*	Critically Endangered	-	EPBC	Species or species habitat known to occur within area
Diamond Firetail	*Stagonopluera guttata*	Near Threatened	FFG		1998
Eastern Curlew, Far Eastern Curlew	*Numenius madagascariensis*	Critically Endangered	-	EPBC	Species or species habitat may occur within area
Eastern Quoll	*Dasyurus viverrinus*	Regionally extinct	FFG		2013 – Mt Rothwell earth sanctuary
Fat-tailed Dunnart	*Sminthopsis crassicaudata*	Near threatened	FFG		1988
Grassland Earless Dragon	*Tympanocryptus pinguicolla*	Endangered		EPBC	Species or species habitat may occur within area
Grey Falcon	*Falco hypoleucos*	Vulnerable		EPBC	Species or species habitat likely to occur within area
Grey-headed Flying-fox	*Pteropus poliocephalus*	Vulnerable	FFG	EPBC	Foraging, feeding or related behaviour likely to occur within area
Golden Sun Moth	*Synemon plana*	Critically Endangered	FFG	EPBC	Species or species habitat likely to occur within area
Painted Honeyeater	*Grantiella picta*	Vulnerable	FFG	EPBC	Species or species habitat likely to occur within area
Painted Snipe	*Rostratula australis*	Critically Endangered	FFG	EPBC	Species or species habitat known to occur within area
Plains-wanderer	*Pedionomus torquatus*	Critically Endangered	FFG	EPBC	1998 - Species or species habitat likely to occur within area
Powerful Owl	*Ninox strenua*	Vulnerable	FFG		1983
Regent Honeyeater	*Anthochaera phrygia*	Critically Endangered	-	EPBC	Foraging, feeding or related behaviour may occur within area
Spotted Harrier 2018	*Circus assimilis*	Near threatened	FFG	EPBC	Species or habitat may occur within area
Striped Legless Lizard	*Delma impar*	Vulnerable	FFG	EPBC	2016 - Species or species habitat likely to occur within area
White-throated Needletail	*Hirundapus caudacutus*	Threatened	-	EPBC	Species or species habitat known to occur within area.

Threatened Communities

The EPBC protected matters report detailed five ecological communities which may occur within the area:

- Grassy Eucalypt Woodland of the Victorian Volcanic Plain; Critically Endangered
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia; Endangered
- Natural Temperate Grassland of the Victorian Volcanic Plain; Critically Endangered
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate lowland Plains; Critically Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland; Critically Endangered

Native Vegetation Information Management System (NVIM)

The Native Vegetation Information Management system (NVIM) is an online tool to access Victoria's native vegetation information. The tool is designed for accessing the information required to apply for a permit to remove native vegetation using Victoria's permitted clearing regulations (Clause 52.16 and Clause 52.17 of the Victoria Planning Provisions).

The tool generates a report that can be submitted with an application for a permit to remove native vegetation.

According to NVIM mapping, shown in Figure 3 below, most of the property is within Location 1, with smaller portions toward the Balliang Creek valley within Location 2 and Location 3. A Native Vegetation Removal Report (NVRR) produced from the NVIM system states that if any remnant native vegetation is to be removed has a total extent of <0.5 hectares, then the removal is not expected to have a significant impact on the habitat of any rare or threatened species or vegetation communities.

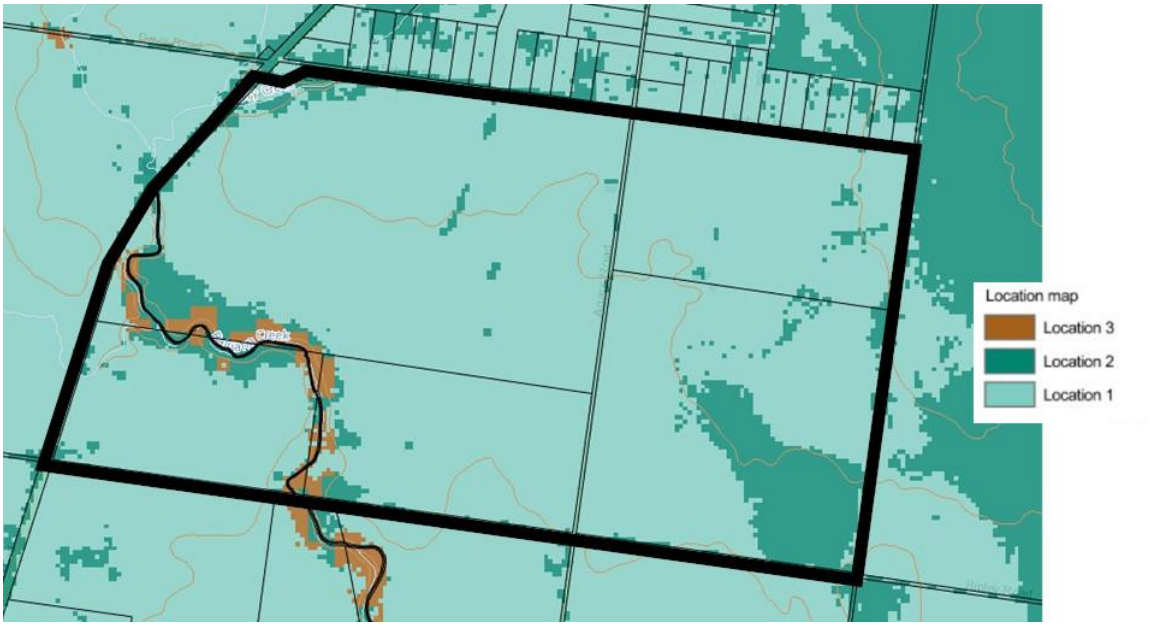


Figure 3. Location categories across the site as according to DELWP's NVIM.

The native vegetation condition map is a modelled layer based on survey data combined with a benchmark model and a range of other environmental data. The condition score of native vegetation is a site-based measure of how close the native vegetation is to its mature natural state, as represented by a benchmark reflecting pre-settlement circumstances. Condition score is a score out of 100, with 100 being very good condition and 0 being no condition.

According to NVIM mapping, shown in Figure 4 below, most of the property carries native vegetation of near zero condition (0.00 – 0.20), with the valley environs carrying vegetation of increasingly higher values up to 0.61 – 0.80.

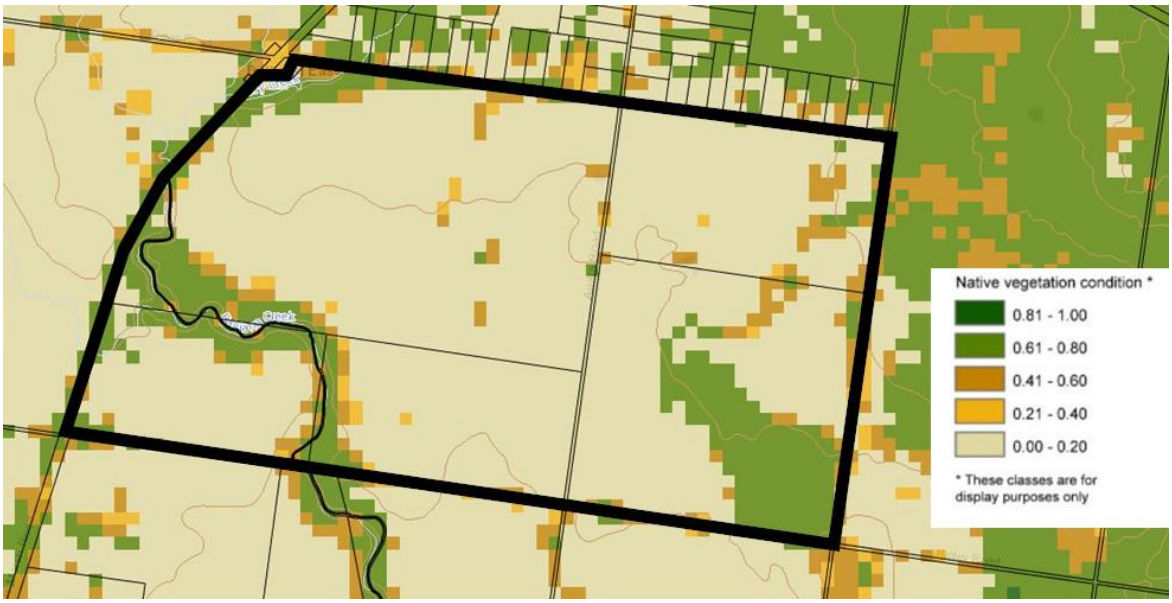


Figure 4. Native vegetation condition across the site as according to DELWP's NVIM.

The strategic biodiversity value score represents the complementary contribution to Victoria's biodiversity of a location, relative to other locations across the state. This score is the weighted average strategic biodiversity value score of the mapped native vegetation calculated using the Strategic biodiversity value map. The strategic biodiversity score of any remnant native vegetation across the site ranges from 0.00 to 1.00.

According to NVIM mapping, shown in Figure 5 below, most of the property carries strategic biodiversity values of 0.21 - 0.60, with the valley environs carrying vegetation of increasingly higher values up to 1.00.

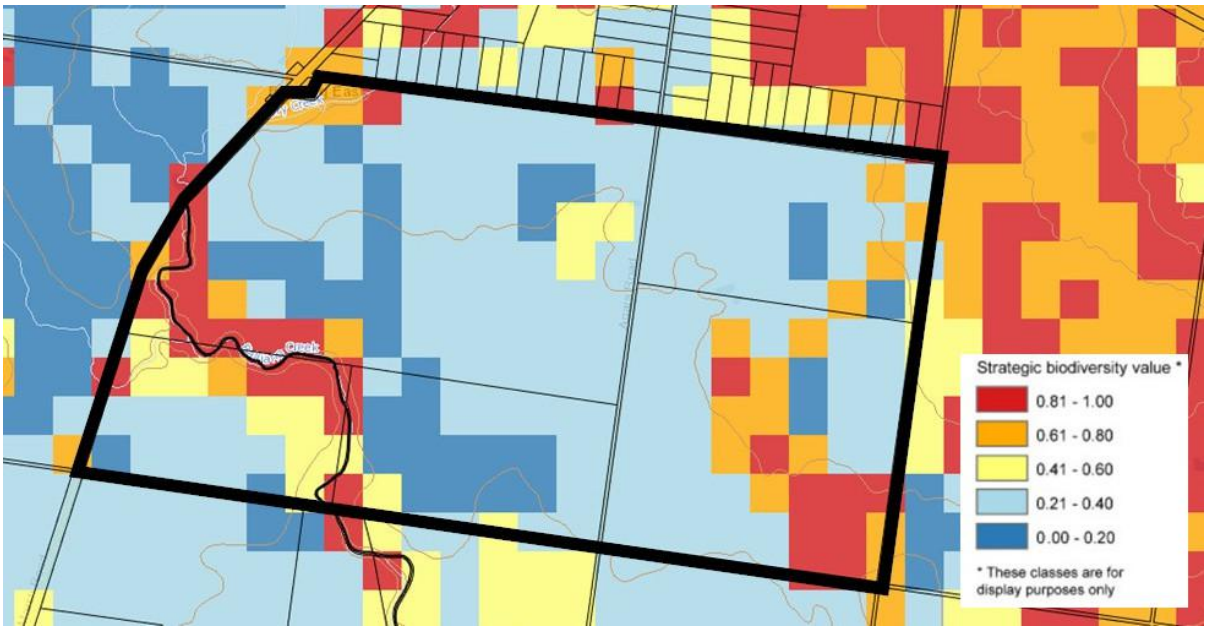


Figure 5. Strategic Biodiversity Value across the site as according to DELWP's NVIM.

Definitive Findings

- The vast majority of the site is cleared of native vegetation.
- Surveying the site has confirmed that EVC 132_63 was likely to be the common pre-1750 EVC. The presence, however, of *Eucalyptus microcarpa*, *Eucalyptus camaldulensis, Eucalyptus leucoxylon* and *Allocasuarina luehmannii* across the site and adjoining roadsides and properties indicates that the EVC 803 Plains Woodland was also part of the mosaic of plains grassland and plains woodland vegetation patterns.
- The site carries remnant patches and scattered trees from both EVC 132_63 and 803. Approximately 13.4 hectares of EVC exists across this site (according to *Naturekit* modelling).
- Some of the native vegetation patches may correspond (depending on size and condition thresholds) with the Natural Temperate Grasslands of Victorian Volcanic Plain and the Grey Box (Eucalyptus microcarpa) Grassy Woodland commonwealth-listed communities.
- These patches and scattered trees reflect the NVIM modelling for native vegetation condition and strategic biodiversity value, in that the quality is higher near the Balliang Creek valley and the north-eastern corner where several *Eucalyptus camaldulensis* exist.

Proposed Impacts on Native Vegetation

Direct Impacts

Direct impacts will occur from the removal of vegetation in order to install the irrigation infrastructure.

- Five centre pivot irrigation systems will be installed across 490 ha. of the property.
- This proposal will unavoidably remove five trees - three *Allocasuarina luehmannii* (Buloke), one *Eucalyptus microcarpa* (Grey Box) and one *Eucalyptus camaldulensis* (River Red Gum). These trees are native and considered scattered trees and not patches of remnant native vegetation (rnv).
- These trees are varying age and size, as shown in Table 3 below.
- NVIM tool measures the combined area of impact for the loss of five trees as 0.352 ha.
- Figure 6 shows the location of these five scattered trees standing separate from other nearby scattered trees at the edge area between the cropped paddocks and the broader creek valley and adjoining stony ground.
- All other native vegetation including along the creek valley will avoid impact. The pipeline infrastructure will be installed to avoid all native trees and vegetation. A 15m protection zone will be applied to native vegetation.

Indirect Impacts

Indirect impacts are as a result of recycled water, particularly nutrients on native vegetation.

- Run-off of irrigation water has the potential to impact native vegetation, by increasing nutrient loads. The likely impact is higher weed growth, and potentially death of native trees and shrubs which cannot tolerate the nutrient load.
- It is not expected that there will be any indirect impacts associated as part of the project.
- Irrigation water must be contained to the irrigation area, and run-off from irrigation water is not permitted. Pivot irrigation is best practise irrigation method for managing run-off.
- The risk of pipe leakages or failure are low, and systems are in place the monitor water flow, which will cause an alert leading to quick action to stop the flow.

Table 3. Trunk circumferences and species for the five trees proposed for removal across the site.

Tree ID	Species	Circumference (cm)
A	*Eucalyptus camaldulensis*	565
B	*Eucalyptus microcarpa*	251
C	*Allocasuarina luehmannii*	218
D	*Allocasuarina luehmannii*	161
E	*Allocasuarina luehmannii*	181

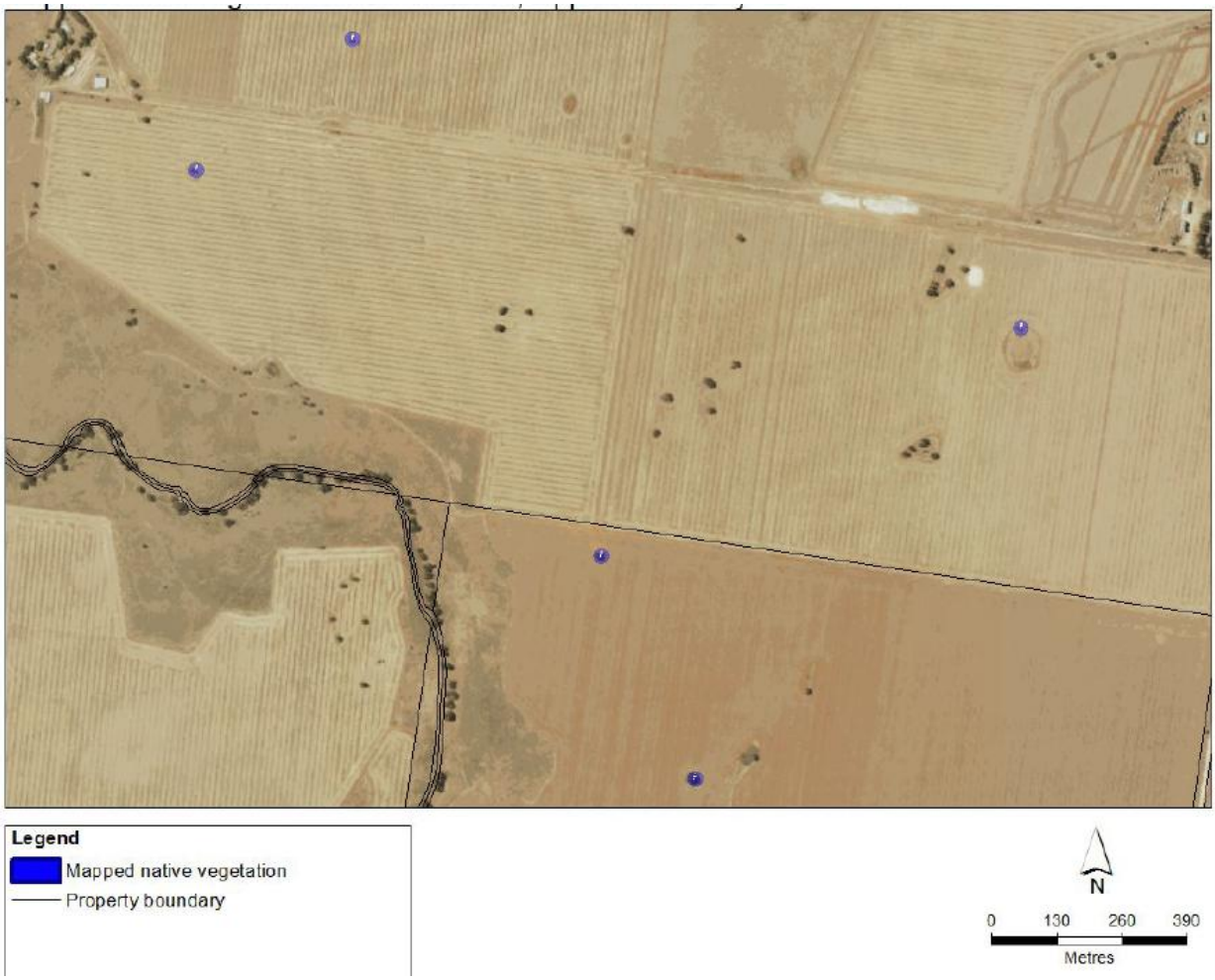


Figure 6. The blue spots show the five scattered trees identified for removal as part of this project

Commonwealth legislation impacts

Listed Communities

While the impacted *Allocasuarina luehmannii* (Buloke) trees can form part of the EPBC Act listed Grey Box (Eucalyptus microcarpa) Grassy Woodland and Derived Native Grasslands of South-eastern Australia (GBGW) threatened ecological community, the three impacted trees have been assessed as scattered trees not forming a patch of native vegetation. The quality and condition of vegetation containing the three impacted Buloke trees does meet the size or condition thresholds specified in the guidelines/listing criteria for the GBGW threatened ecological community. As identified in the Commonwealth guidelines to assessing these communities (DSEWPC, 2011) conditions provided are intended to focus protection on vegetation remnants that are most functional and in relatively good to excellent condition. As scattered Buloke, these trees cannot be considered as most functional as it lies within a cleared, ploughed and cropped landscape. Furthermore, the impact area, importantly, is confined to 0.352 hectares, below the 0.500 ha threshold for woodland for quality.

Action required: No referral required.

Figure 7. One of the Allocasuarina Luehmannii trees proposed to be removed.

Figure 8. A single Eucalyptus microcarpa (Grey Box) is proposed for removal as part of this irrigation project.

State legislation impacts

Planning and Environment Act 1987

Impact metrics

The NVIM tool assesses the impacts as occurring across 0.352 hectares of Location 1 category native vegetation. Two large trees are impacted upon and this requires an intermediate assessment pathway approach to the applying to remove native vegetation.

Minimisation

Ground surveys and discussions with Western Water staff and consultants were undertaken with regard to minimising impacts. Several large remnant eucalypts to the south-east of the site were initially proposed to be impacted upon. These were able to be avoided after the process of 'workshopping for minimisation'.

Offsets

The official offset requirement for these proposed losses is 0.065 general biodiversity units. This will be obtained through third-party sources and the quote is attached in Appendix B.

Action required:

1. A NVRR is required. This is attached to this report as Appendix A.
2. An offset quote is provided in Appendix B.

Flora and Fauna Guarantee Act 1988

The two communities of Western (Basalt) Plains Grassland and Grey Box – Buloke Grassy Woodland, along with the species *Allocasuarina luehmannii* (Buloke) are all listed as threatened under this FFG Act. *Allocasuarina luehmannii* (Buloke) is also listed as protected under this FFG Act. There is no impact proposed to communities of listed vegetation because the impacts are confined to scattered trees and not patches of native vegetation (i.e. sub-threshold for quality). Additionally, the works are on private land and the losses are confined to private land.

Action required:

None required – No permit is required to remove FFG listed communities because there are no patches of communities impacted. Permits are generally not required for impacts on private land, therefore, no permit is required for the impacts to listed the Buloke species because impacts are confined to private land.

Local legislation

ESO2 - *Waterway Protection*

All trees proposed for removal are further than 300 metres from to Balliang Creek and therefore, are well clear of the ESO area that aims to protect this waterway from development.

Action required: no further response required.

ESO7 - *Grasslands within the Werribee Plains Hinterland*

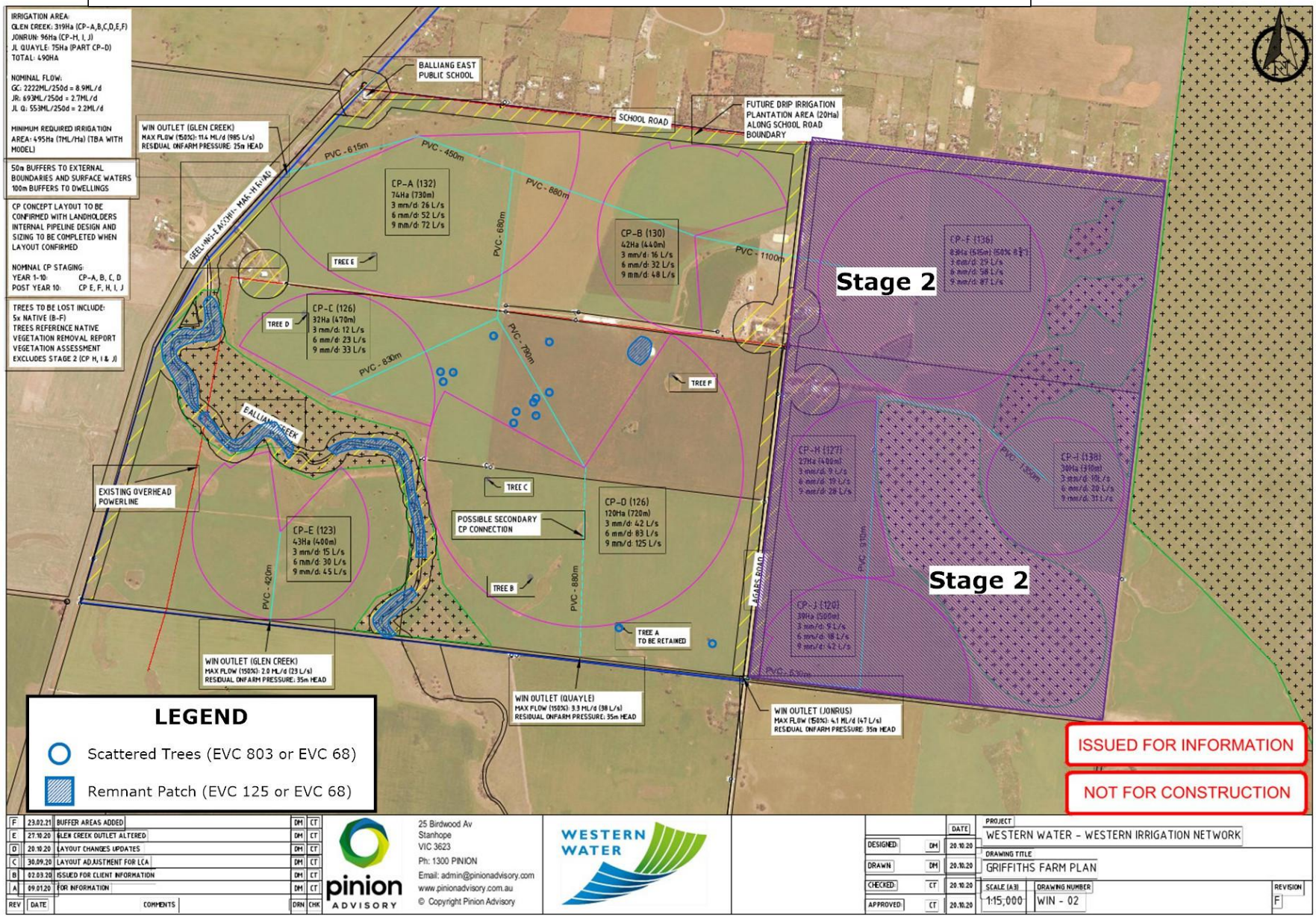
Native vegetation is proposed for removal which triggers the requirement of a permit under this Overlay. The information within this report including the NVRR in Appendix A provides the detail on the extent of proposed losses, minimisation steps and offset requirement.

Action required: permit is required for removal of native vegetation under this overlay.

Conclusion

- This site is part of a broad-acre cropping and sheep-grazing enterprise and has been identified as suitable for a WIN project.
- The property rests in a broad-acre grazing and cropping landscape. As a result of this history, the vast majority of the original native vegetation has been cleared.
- The vast majority of the site is cleared of native vegetation.
- Remnant trees and woodland communities remain in the non-arable parts such as rocky rises, creek valleys or in the corners of paddocks.
- Surveying has revealed that the site carries remnant patches and scattered trees from both EVC 132_63 and 803.
- Some of the native vegetation patches may correspond (depending on size and condition thresholds) with the Natural Temperate Grasslands of Victorian Volcanic Plain and the Grey Box (Eucalyptus microcarpa) Grassy Woodland commonwealth-listed communities.
- Five centre pivot irrigation systems will be installed as part of Stage 1 across the 1,700 hectares of the property.
- This proposal will unavoidably remove five scattered trees - three *Allocasuarina luehmannii* (Buloke), one *Eucalyptus microcarpa* (Grey Box) and one *Eucalyptus camaldulensis* (River Red Gum). These trees are native and considered scattered trees and not patches of remnant native vegetation.
- NVIM tool measures the combined area of impact for the loss of these five trees as 0.352 hectares.
- All other native vegetation including along the creek valley will avoid impact.
- Planning permits are required to remove these five trees under state and local legislation.
- Offsets will be purchased through third-party sources.

Map 1. Remnant Native Vegetation Across the Site



Appendix A – Native Vegetation Removal Report

Appendix B - Offset Quote