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Land Management Plan

7 Stanley Street, Warrnambool, Victoria

**Prepared for:
NFM Nominees Pty Ltd**

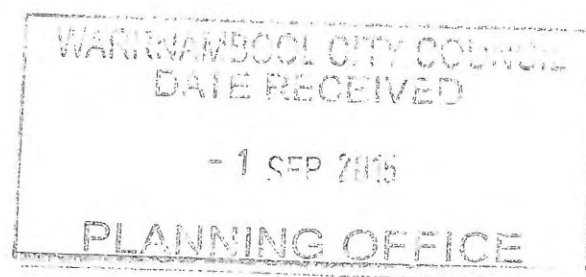
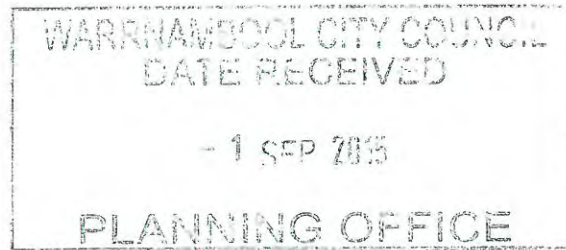


Table of Contents

Document Information	3
Document Control	3
Summary	4
1 Introduction	5
1.1 Background	5
1.2 Objectives	5
1.3 Site Description	5
Figure 1 – Site Location	7
2 Ecological Values	8
2.1 Native Vegetation	8
2.2 Threatened Species Habitat	8
3 Management Issues	9
3.1 Weeds	9
3.2 Stormwater Management	9
3.3 Interface between the Development and Ecological Values	9
3.4 Native Vegetation and Fauna Habitat	9
Figure 2 – Site Values	10
4 Management Measures	11
4.1 Weed Management	11
4.1.1 Key Objectives	12
4.2 Stormwater Management	12
4.2.1 Key Objectives	12
4.3 Interface between the Development and Ecological Values	12
4.3.1 Key Objectives	13
4.4 Native Vegetation and Fauna Habitat	13
4.4.1 Key Objectives	13
5 References	14





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Document Information

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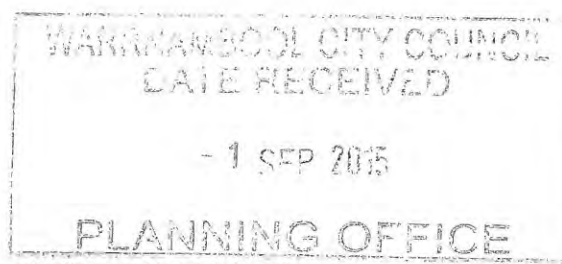
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Document Control

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Summary

Okologie Consulting was engaged by NFM Nominees Pty Ltd to prepare a Land Management Plan for the property at 7 Stanley Street, Warrnambool, Victoria.

The site is proposed for a seven-lot residential subdivision and is covered by Design and Development Overlay – Schedule 10 under the City of Warrnambool planning scheme. The Site Layout and Building Envelope provision of Design and Development Overlay – Schedule 10 states:

A setback of 25 metres applies to any boundary that abuts the high water mark of the Merri River or wetland areas, except where an agreed management plan provides appropriate management techniques to control any impact.

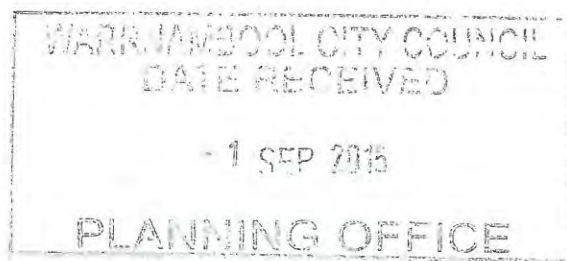
The Land Management Plan has been prepared to address this provision, as the proposed lot boundaries along the eastern section of the development fall within 25-metres of the Merri River high tide mark. The Land Management Plan has been prepared with regard to the Warrnambool Coast Management Plan.

The area proposed for development is highly modified and dominated by exotic vegetation. The southern section of the site contains areas of Estuarine Wetland that supports habitat for several listed threatened species and also meets the criteria for the *Subtropical and Temperate Coastal Saltmarsh* ecological community, listed as Vulnerable under the *Environment Protection Biodiversity Conservation Act 1999*.

Site management issues include the presence of listed noxious and environmental weeds, stormwater management, the interface between the development and ecological values, and protection of native vegetation and fauna habitat.

Management measures include:

- Control of listed noxious weeds within the site to meet the requirements of the *Catchment and Land Protection Act 1994*.
- Ensuring stormwater collection and discharge from the development avoids areas of Estuarine Wetland.
- Installing appropriate fencing between the development boundary and the Merri River, and conservation reserve, to control access to these areas.
- Creating a conservation reserve to protect and enhance vegetation quality and habitat values.





1 Introduction

1.1 Background

Okologie Consulting was engaged by NFM Nominees Pty Ltd to prepare a Land Management Plan (LMP) for the property at 7 Stanley Street, Warrnambool, Victoria.

The site is proposed for a seven-lot residential subdivision and is covered by Design and Development Overlay – Schedule 10 (DDO10) under the City of Warrnambool planning scheme (DTPLI 2014). The Site Layout and Building Envelope provision of DDO10 states:

A setback of 25 metres applies to any boundary that abuts the high water mark of the Merri River or wetland areas, except where an agreed management plan provides appropriate management techniques to control any impact (DTPLI 2014).

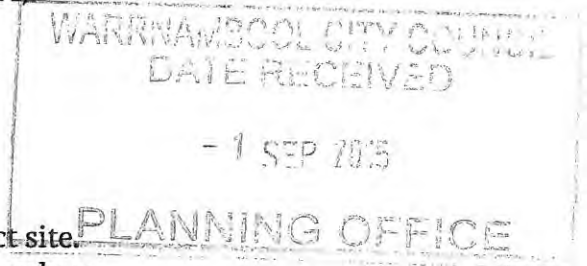
The LMP has been prepared to address this provision, as the lot boundaries on within the eastern section of the development fall within 25-metres of the Merri River high tide mark. The LMP has been prepared with regard to the Warrnambool Coast Management Plan (WCC 2013).

The site has been previously subject to ecological assessments by Belcher and Burns (2010) and CPG Australia (2011), and a Vegetation Assessment and Low Risk-based Pathway Application by Okologie Consulting (2014).

1.2 Objectives

The objectives of the LMP were to:

- Identify ecological values within the subject site.
- Demonstrate how the LMP will protect site values.
- Outline the management measures to address potential impacts.



1.3 Site Description

The site is located at 7 Stanley Street, Warrnambool, Victoria (Lots 1, 2 & 3 TP894997) (Figure 1). The site covers 0.73 hectares, which comprises 0.61 hectares proposed for development and 0.12 hectares as a conservation reserve. It is bounded by Stanley Street to the north, the Merri River to the east, crown land to the south and private property to the west. The location of the 25-metre setback from the high tide mark along the Merri River is shown on Figure 2.



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The Merri River is located immediately adjacent to the site, which comprises a constructed channel through the South Warrnambool Wetlands that extends through to Stringray Bay (CHP&EM 2005).

The majority of the area proposed for development is highly modified and dominated by exotic vegetation. Areas of native vegetation were limited to native shrubs, and an Estuarine Wetland community in the southern section of the site. The site topography is relatively flat to slightly undulating.

The site is located within the Glenelg Hopkins Catchment Management Authority and the City of Warrnambool municipality. The site is zoned General Residential Zone and is subject to DDO10 and partially subject Design and Development Overlay – Schedule 5 (DTPLI 2014).

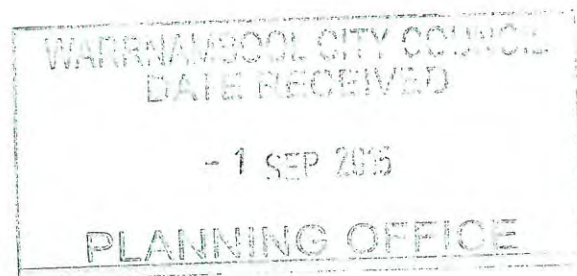




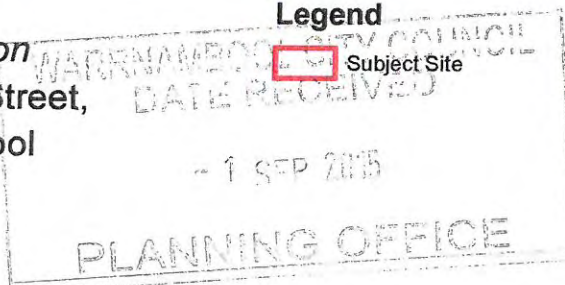
Figure 1

Site Location

7 Stanley Street,
Warrnambool

Legend

 Subject Site



0 5 10 20
Metres



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2 Ecological Values

2.1 Native Vegetation

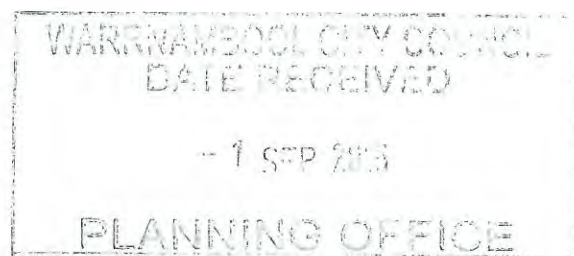
The area proposed for development comprises exotic dominated vegetation. Native vegetation was limited to areas of Estuarine Wetland in the southern section and along lower banks of the Merri River. A small patch of Coastal Dune Scrub occurs in the southwestern corner of the site, with areas dominated by Common Boobialla *Myoporum insulare* in the western section. Exotic species present included African Boxthorn *Lycium ferocissimum*, Spear Thistle *Cirsium vulgare*, Mirror Bush *Coprosma repens* and Cape Ivy *Delairea odorata* (Figure 2).

Areas of Estuarine Wetland in and to the southwest of the site meet the criteria and condition thresholds for the *Subtropical and Temperate Coastal Saltmarsh* listed ecological community, listed as Vulnerable under the under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

2.2 Threatened Species Habitat

The site has been previously subject to ecological assessments by Belcher and Burns (2010), CPG Australia (2011) and Okologie Consulting (2014). No listed threatened flora species were recorded within site during these surveys. Belcher and Burns (2010) recorded Latham's Snipe *Gallinago hardwickii*, on the site and identified suitable habitat for Sharp-tailed Sandpiper *Calidris acuminata*, Marsh Sandpiper *Tringa stagnatilis* and Orange Bellied Parrot *Neophema chrysogaster* within Estuarine Wetland habitat.

Latham's Snipe is a listed Migratory Wetland Species under the EPBC Act, and is listed as Near Threatened in Victoria (DSE 2013). Sharp-tailed Sandpiper and Marsh Sandpiper are listed Migratory Marine species under the EPBC Act. Orange Bellied Parrot is listed as Critically Endangered under the EPBC Act. The proposed development will avoid removal of any Estuarine Wetland on site. These areas have been identified as a conservation reserve (Figure 2).





3 Management Issues

3.1 Weeds

The majority of the site has been cleared and consists of predominantly introduced vegetation, dominated by exotic species (Figure 2). The history of disturbance within the site and surrounding land use are key factors in facilitating weed invasion. African Boxthorn *Lycium ferocissimum* and Spear Thistle *Cirsium vulgare* are listed noxious weeds in Victoria, and land managers are required to take all reasonable steps to prevent their growth and spread under the *Catchment and Land Protection Act 1994* (CaLP Act) (DPI 2010). African Boxthorn is known to invade watercourses and outcompetes native vegetation (DEPI 2014). Environmental weed species such as Yorkshire Fog-grass and Cat's Ear have the potential to impact Estuarine Wetland and control of these species is also considered necessary.

3.2 Stormwater Management

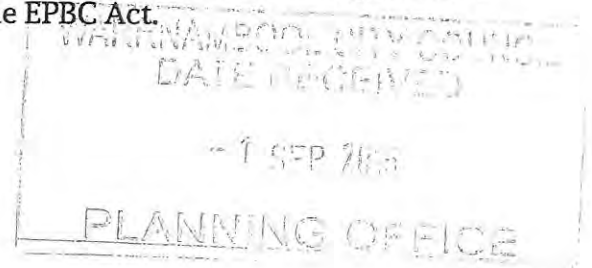
Stormwater management is required to manage the potential impacts of freshwater runoff on areas of saltmarsh (Estuarine Wetland) within and adjacent to the site. An increase in freshwater discharge can result in a reduction in soil salinity, which has been identified as a key threat to saltmarsh communities (CHP&EM 2005).

3.3 Interface between the Development and Ecological Values

The Merri River and the Estuarine Wetland community require protection from potential disturbance associated with the development. Direct impacts may result from construction activities (polluted runoff, sedimentation). Indirect impacts to ecological values (i.e. fauna disturbance by human movement) may result from an increase in human activity along the banks of the Merri River and areas of Estuarine Wetland.

3.4 Native Vegetation and Fauna Habitat

The EPBC Act listed *Subtropical and Temperate Coastal Saltmarsh* ecological community and habitat for EPBC Act listed fauna species within the site (i.e. Estuarine Wetland) are identified as Matters of National Environmental Significance. An action resulting in a significant impact on Matters of National Environmental Significance may trigger the requirement for a referral under the EPBC Act.



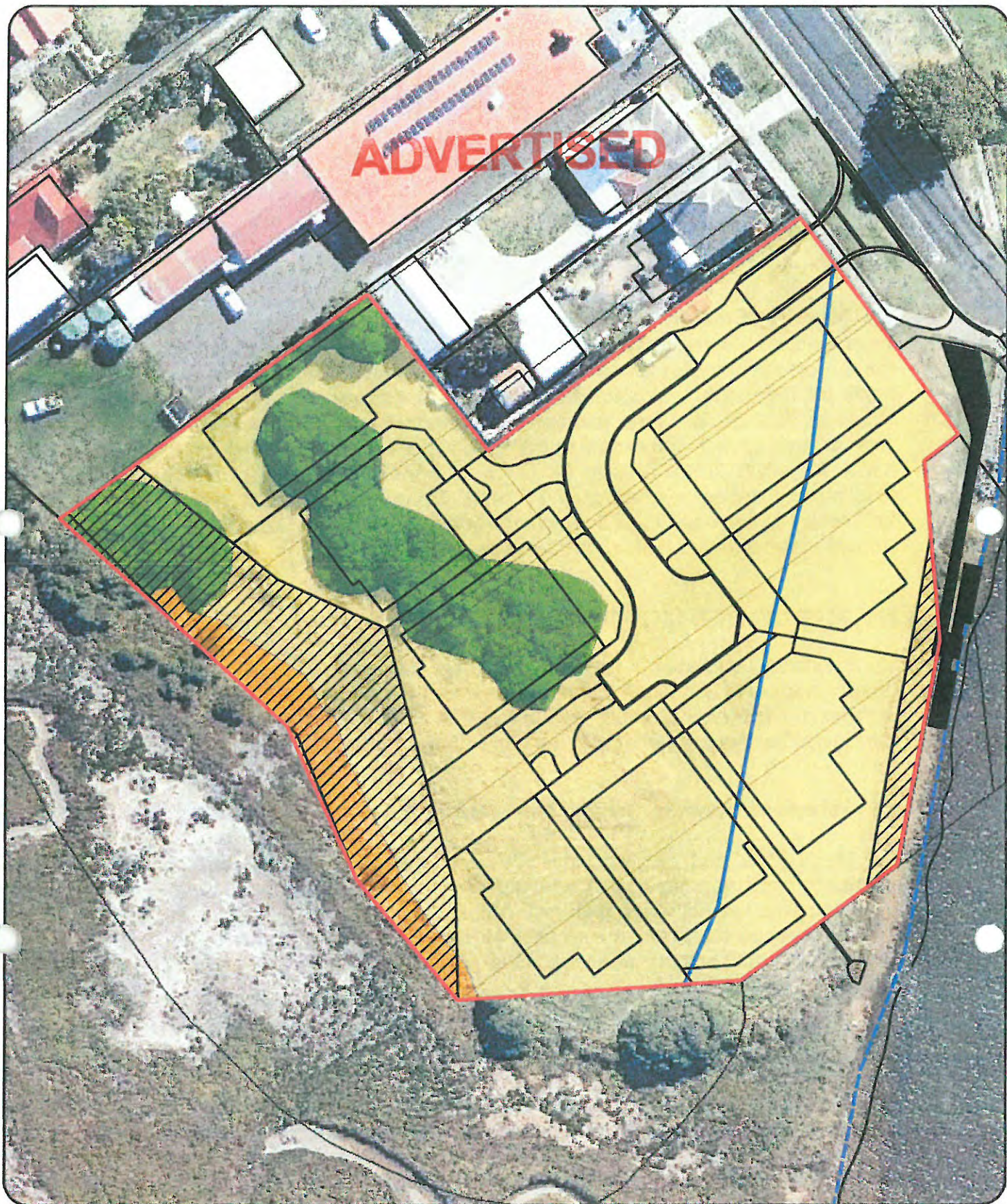
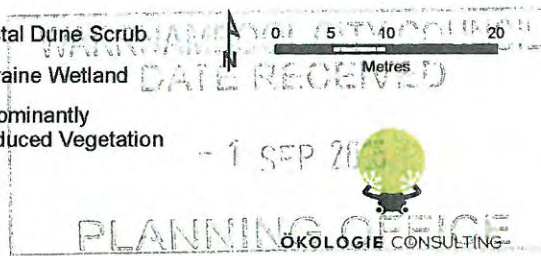


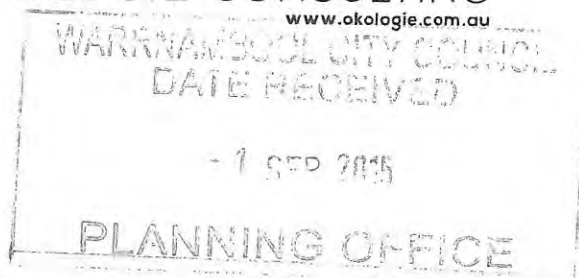
Figure 2
Ecological Features
7 Stanley Street,
Warrnambool

Legend

- Subject Site
- Conservation Reserve
- Proposed Development Plan
- 25 Metre Setback Area
- Indicative High Tide Mark

- Coastal Dune Scrub
- Estuarine Wetland
- Predominantly Introduced Vegetation





4 Management Measures

4.1 Weed Management

The control of noxious and environmental weed species is a key management action within the site. A suitably qualified weed contractor should undertake weed control works. Contractors must be able to determine indigenous species and exotic species within the area, and have knowledge of the most appropriate methods of weed control. A list of relevant weed species and management measure is outlined in Table 1.

Table 1. Weed Management Measures

Target Weed	Aim	Work Plan	Timing	Control Method	Comments
Listed Noxious Weeds					
African Boxthorn	Eliminate the population from the site within 5 years	- Cut to stumps and apply herbicide - Spot spray with appropriate herbicide	Sept-May	CS & SS	Several mature plants are present on the site
Spear Thistle	Control existing population by removing all existing plants to <1% cover within 5 years	- Hand-hoe individual plants and small patches. Ensure the growing point and top of taproot is removed. - Spot spray with Glyphosate	Sept-April	CH & SS	Approximately 5% cover of this species was observed on site
Environmental Weeds					
Woody Weeds: Cape Ivy and Mirror Bush	Control existing population by removing all existing plants to <1% cover within 5 years	- Cut to stumps and apply herbicide - Spot spray with appropriate herbicide	All year	CS & SS	Several mature plants are present on the site
Grassy weeds: Yorkshire Fog and Cocksfoot	Control to <1% cover by suppressing growth and spread within 5 years	- Spot spray smaller areas with Glyphosate. - Slash where possible to reduce biomass	All year	SS, M	Approximately 20% cover of grassy weed species was observed within areas of remnant vegetation
Herbaceous weeds: Ribwort, Cat's Ear & Cape Weed	Control to <1% cover by suppressing growth and spread within 5 years	- Hand-hoe individual plants and small patches. Ensure the growing point and top of taproot is removed. - Spot spray with Glyphosate	All year	CH, SS & M	Approximately 5% cover of herbaceous species was observed within areas of remnant vegetation

Notes: SS = Spot-spray; CH = Chip Out or Hand Pull; M = Mowing/Slashing; CS = Cut stump (DEWHA 2009).



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4.1.1 Key Objectives

The key objectives for weed management include:

- Meeting the requirements of the CaLP Act in relation to control of listed noxious weeds within the site.
- Achieving control of target environmental weed species as outlined in Table 1.
- Minimising impacts of weeds to surrounding environmental values.

4.2 Stormwater Management

Stormwater management has been designed to allow flows directly into the Merri River, and will avoid stormwater discharge impacting areas of Estuarine Wetland. Stormwater generated by the development will be collected in a drain along the eastside of the entry road, and will be stored in retention swales prior to discharge. The detailed design of stormwater management is provided in the Sewerage Concept Plan (Brain Consulting 2009).

4.2.1 Key Objectives

The key objectives for stormwater management includes:

- Ensure stormwater collection and discharge from the development avoids areas of Estuarine Wetland.
- Ensure that the quality of stormwater discharge meets Council and Glenelg Hopkins CMA minimum standards and requirements.

4.3 Interface between the Development and Ecological Values

A conservation reserve is proposed to protect ecological values within the area of Estuarine Wetland and along the Merri River (Figure 2). A 1.2 metre cyclone mesh fence will be installed along the boundary of these areas to prevent public access and protect fauna habitat.

A jetty is proposed for construction from the bank of the Merri River to enable recreational fishing. The jetty will be accessed from the bridge on Stanley Street, which will also prevent the public from accessing the conservation reserve and adjacent areas of Crown Land.

The Merri River and conservation reserve requires protection from potential impacts associated with construction of the development. Management measures to be implemented during the construction phase of the project include:



- Areas of native vegetation/fauna habitat adjacent to construction areas should be identified as 'no go' zones to avoid any disturbance or damage.
- Construction stockpiles, machinery, and other infrastructure should be located away from native vegetation/fauna habitat.
- Inform contractors about the ecological values within and adjacent to the site.
- Sedimentation and pollution control measures should follow EPA guidelines (EPA 1991) to avoid and minimise impacts to drains and watercourses.

4.3.1 Key Objectives

The key objectives for interface management includes:

- Install appropriate fencing between the development boundary and the conservation reserve to control public access.
- Construct a jetty to the Merri River for recreational fishing.
- No impacts to ecological values resulting from construction activities.

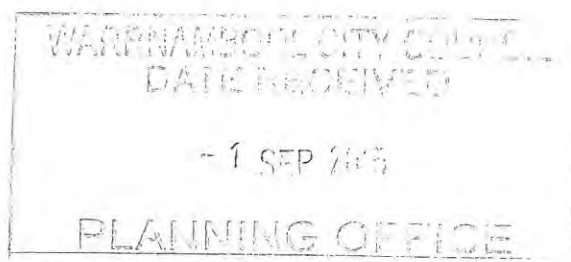
4.4 Native Vegetation and Fauna Habitat

The aim of the conservation reserve will be to protect and enhance the ecological values within the site (i.e. fauna habitat and vegetation condition). The conservation reserve is located in the south of the site and along the bank of the Merri River (Figure 2), and will be managed by Council following registration of the plan of subdivision.

4.4.1 Key Objectives

The key objectives for native vegetation and fauna habitat include:

- Protect and enhance vegetation quality and fauna habitat values through future management of the reserve.
- Control access to minimise impacts and disturbance by human movement.





5 References **ADVERTISED**

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