Macedon Ranges Shire Council

Gisborne Racecourse Marshlands Reserve and Magnet Hill Environmental Management Plan

Adopted 19 December 2018

Acknowledgement of Country

Macedon Ranges Shire Council acknowledges the traditional custodians of the land in which the Gisborne Marshlands Racecourse Reserve and Magnet Hill are located

Contributors

The Macedon Ranges Shire Council would like to acknowledge and thank the following contributors to the EMP.

Contributor	Section
Michelle Wyatt	Project management and general editing Contribution to the following sections of the EMP: • Community consultation • Management history • Current management and governance • Adjoining uses • Cultural heritage • Recreation and tourism • Signage • Community Engagement • Strengths, weaknesses, opportunities and threats
William Terry	Native fauna surveys • Contribution to the following sections of the EMP: • Methodology • Native fauna
Beau Kent	Pest animal surveys Contribution to the following sections of the EMP: • Pest animals • Weeds • Fencing
Angus Duckmanton	Contribution to the following sections of the EMP: • Fire Management

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Visions

Gisborne Marshlands

Gisborne Marshlands will continue to be valued by the community for its natural beauty, views to the nearby ranges and ecological values. The Marshland will be actively managed by Council and the community to conserve and enhance its biodiversity values, including its state and nationally significant flora, and to provide resilience to the vegetation communities present. Local residents and visitors will be provided with the opportunity to learn and engage with the site's biodiversity values via strategically located tracks and visitor facilities.

The Steam Park

The eastern part of the Gisborne Marshlands Racecourse Reserve, often known as 'The Steam Park', will continue to support the activities of local community groups such as the Gisborne Vintage Machinery Society and the Macedon Ranges and District Car Club. This part of the reserve will be accessible to the community for passive recreation pursuits and will function as an open space link connecting New Gisborne to Gisborne.

Magnet Hill

The environmental values of Magnet Hill will be slowly restored through a long term program of rehabilitation and adaptive management. The recreation role of the site will be enhanced to support passive recreation activities such walking and picnicking with visitor infrastructure that provides community access to the site's panoramic views and rehabilitated natural values without impacting the reserve's scenic qualities and function as a natural gateway to Gisborne.

Part 1 Background Information

1. Introduction

1.1 Purpose

The purpose of this Environmental Management Plan is to:

- Identify the reserve's natural, cultural heritage and recreation values
- Establish a vision for the reserve's future use and management
- Identify threats to achieving this vision
- Identify a series of prioritised management actions aimed at mitigating any threats and achieving the vision for the reserve
- Establish a monitoring and evaluation program to assess changes in the reserve's biodiversity values and the success of the impact of this Management Plan

This Environmental Management Plan is for the Gisborne Marshlands Racecourse Reserve and Magnet Hill. The purpose of the Environmental Management Plan is to provide MRSC with a plan to manage these sites for the next 10 years. The plan is developed following a logical plan, do and review flow as illustrated in Figure 1.

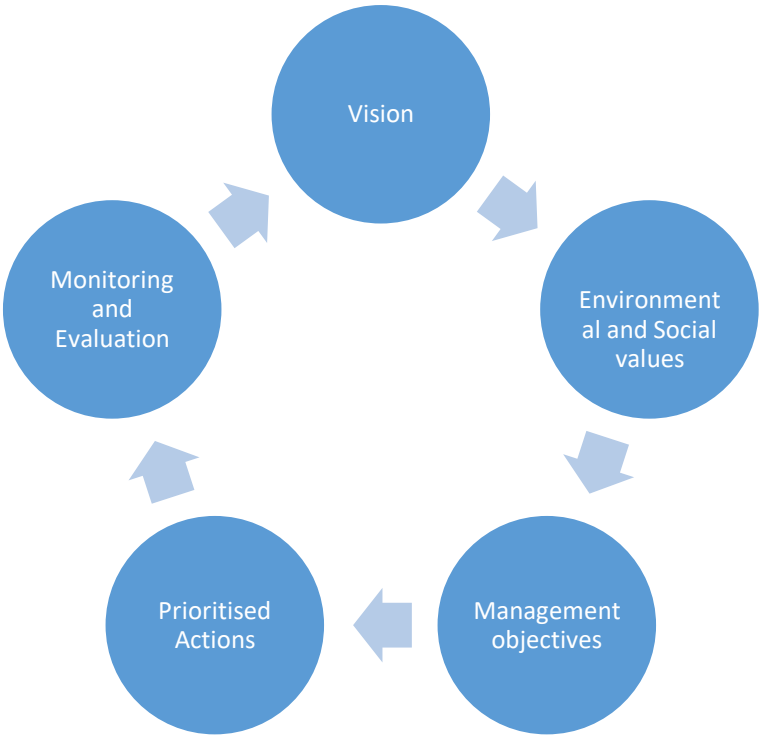

Figure 1 Planning, actions and review of the Management Plan

1.2 Scope

This management plan is for two reserves Gisborne Marshlands Racecourse Reserve and Magnet Hill.

For the purposes of this report, the two distinct parts of the Gisborne Marshlands Racecourse Reserve are sometimes referred to separately as the Gisborne Marshlands and the Steam Park and Compound.

286,000

287,000

5,850,000

Gisborne Marshland

Steam Park and Compound

Gisborne Marshland

Magnet Hill

A

B

C

D

Ross Watt Rd

Webb Cr

Station Rd

Octagonal Ct

Colwyn Ct

Lonhro Ct

Saunders Rd

Swinburne Av

Ormerod Ct

Magnet Lane

Thom St

Farrell St

Plummer St

Coleman Ct

Vernon Cl

Kiwi Ct

Mount Vista Cl

Barry Rd

Lim Ct

Wodalla

GISBORNE

SUNBURY

BACCHUS MARSH

MELTON

MELBOURNE

WERRIBEE

Paper Size A3

0 30 60 120 180 240

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

Cross section

A to B

C to D

Site boundaries

Freeway

Arterial

Collector

Proposed

Drain/Channel/Other

LGA outline

Macedon Ranges Shire Council

Gisborne Marshlands Racecourse Reserve and Magnet Hill Environmental Management Plan

Gisborne Marshlands and Magnet Hill Site Location

Job Number	31-34466
Revision	0
Date	05 Jul 2017

Figure 2

G:\31\34466\GIS\Maps\Deliverables\31_34466_000_KBM_A3L.mxd [KBM: 11]

Data source: DELWP, VicMap, 2016; MRSC, Imagery, 2016 Created by: lrsmith

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2. Methodology

2.1 Desktop research

A desktop review was undertaken to determine ecological values known or predicted to be present at the subject sites.

Background information was collected from the references listed at Section 10 (including background information and species lists where available) as well from:

- The Victorian Biodiversity Atlas (VBA) database (1 July 2016). Flora and fauna records within a 10 km buffer of the subject sites were extracted
- The *Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999* Protected Matters Search Tool (PMST) (Australian Government 2015) was used to provide a report that identifies any *Matters of National Environmental Significance (MNES)* listed under the EPBC Act that may occur within a 5 km buffer of the subject site (accessed 2 February 2017)
- NatureShare online database, (July 2016)
- Melbourne Water Bird census data (December 2016)
- *Macedon Ranges Environmental Report:* Conclusions and Recommendations, (1985), Macedon Ranges Conservation Society, prepared by C. Elkington, M. Higginson, I. Lunt B. Mangan and S. Thornton
- Ecological Assessment: Gisborne Racecourse Marshlands Reserve, (2008) SMEC Australia
- Biodiversity Interactive Maps1 (DEPI 2016) – which provides GIS mapping, maintained by DELWP, including:
  - Ecological Vegetation Classes (EVCs) – 1750 EVCs and 2005 EVCs
  - Modelled FFG2 communities
  - Native Vegetation Extent
  - Native Vegetation Site Condition
  - Native Vegetation Location Risk
  - Strategic Biodiversity Score
  - Ramsar sites
  - Important wetlands
  - Current wetlands

Discussions were also held with local wildlife organisations including the Woodend Bird Observers Group.

2.1.1 Fish

As part of the desktop assessment, a search of the following ecological databases was carried out on 16 January and May 2017:

- The Victorian Biodiversity Atlas (VBA) database for listed threatened fish species recorded within the local area

[1] http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/biodiversity-interactive-map

[2] Communities listed as threatened under Victoria's *Flora and Fauna Guarantee (FFG) Act 1988*

- The Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 199*9 Protected Matters Search Tool (PMST), which predicts the occurrence of Matters of National Environmental Significance (e.g. listed threatened communities and species of flora and fauna, including fish) under the *EPBC Act 1999*

The database searches were carried out on a 10 km radius from the Gisborne Marshlands and were aimed at identifying known and potential ecological values within the study area.

2.1.2 Hydrology

A desktop review was undertaken of available and related hydrological, hydrogeological and geological literature to gain an understanding and assess the groundwater conditions at the site. The tasks undertaken included:

- Review of previous hydrogeological reports pertaining to the site area:
  - Groundwater Assessment- Racecourse Reserve Marshlands- New Gisborne (Hyder 2009a)
  - Drainage Review Racecourse Reserve Marshlands- New Gisborne (Hyder 2009b)
  - Water Balance Analysis Racecourse Reserve Marshlands- New Gisborne (Hyder 2009c)
- Identification of the stratigraphic sequence of the area's geology and their relationship to aquifers on a local and regional scale which included the nature of confinement
- Collating groundwater bore data from various sources (to gain an understanding of aquifer yield, quality, water level and any seasonal fluctuations in the water table)
- Assessment of the groundwater flow direction based on groundwater levels and the area's morphology
- Identification of the groundwater segment and beneficial uses of groundwater under the State Environment Protection Policy (SEPP) *Groundwaters of Victoria (1997)*
- Identify groundwater users in the area and Groundwater Dependent Ecosystems (GDEs)
- Developing a conceptual model of the hydrology and hydrogeology of the study area

2.2 Field work

2.2.1 Fauna

The following fauna surveys were undertaken during 2016:

- Two bird surveys were completed during spring with experienced bird surveyors from Council and the Woodend Bird Observers Group. Surveys were conducted on 3 and 30 November 2016
- Frog surveys were conducted twice in late spring and early summer in an effort to target Growling Grass Frogs around the waterbodies. Surveys were conducted on 7 October and 8 December 2016
- Two field trips were conducted at Gisborne Marshland and Magnet Hill to record the numbers of Kangaroos and any other incidental observations on 13 and 17 July 2017
- Camera surveys were conducted between 13 and 27 July 2017
- Visual survey conducted to identify evidence of pest animal activity (e.g. scratchings, scats and burrows) in March 2017
- An inventory of all species encountered were recorded

A list of all field surveys is provided in Table 1.

Table 1 Fauna field survey locations and dates

Survey type	Location	Surveyor	Date
Bird survey	Gisborne Marshlands, Steam Park, Magnet Hill	Woodend Bird Observers Group Macedon Ranges Shire Council	6 September 2016
Bird survey	Gisborne Marshlands, Steam Park, Magnet Hill	Woodend Bird Observers Group Macedon Ranges Shire Council	3 November 2016
Incidental check of site including Kangaroos	Gisborne Marshlands, Magnet Hill	Macedon Ranges Shire Council	13 and 17 July 2017
Remote camera survey	Gisborne Marshlands, Magnet Hill	Macedon Ranges Shire Council	13 to 27 July 2017
Frog survey	Gisborne Marshlands	Macedon Ranges Shire Council	2 November 2016
Frog survey	Gisborne Marshlands	Macedon Ranges Shire Council	12 December 2016
Rabbit inspection	Gisborne Marshlands	Macedon Ranges Shire Council	14 March 2017
Fish surveys	Gisborne Marshlands	GHD	2 December 2016

2.2.2 Flora

Field investigations of the subject site was undertaken by a GHD botanist on 27 September (one hour) and 16 November 2016 (full day) to verify the results of the desktop review and confirm/ identify any ecological values and threatening processes that may be present at the site.

The flora field assessments of the subject site included:

- Recording all native and introduced flora species encountered
- Identifying and mapping patches of native vegetation (Ecological Vegetation Classes) and threatened ecological communities
- Describing the structure and composition of all patches of native vegetation (e.g. dominant species in each stratum, weed cover)
- Assessing the condition (good / moderate / poor) of all native vegetation patches
- Recording the location of threatened flora, where encountered

A species list of incidental native and introduced flora observations was compiled (Appendix A), and has been entered into the Victorian Biodiversity Atlas.

The *Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants* is a listed key threatening process under the Commonwealth EPBC Act. In addition, Invasion of native vegetation by *'environmental weeds'*, is a listed potentially threatening process under the Victorian FFG Act.

During the field surveys, a list of all flora species observed within the subject site was compiled (Appendix A). This includes environmental weeds, which are noxious weeds listed under the *Catchment and Land Protection Act 1994* and Weeds of National Significance.

All field investigations for flora were undertaken in accordance with GHD's FFG Act Permit to take Protected Flora (#10007505, expiry date 28 February 2018).

2.2.3 Fish

Fish surveys were completed on 2 December 2017 using a combination of backpack electrofishing and Fyke netting. Due to the depth of the Southern Dam, backpack electrofishing could not be carried out and six Fyke nets were deployed to survey fish instead. The Fyke nets were deployed during daylight hours for a six hour period.

In the Northern Dam, extensive backpack electrofishing was carried out over five hours throughout the system. The electrofishing was carried by a qualified GHD senior electrofisher operator using a Smith-Root LR-20B backpack electrofisher.

The fish survey was conducted in accordance with the stipulations outlined in the following research permits held by GHD:

- Fisheries Act 1995 General Research Permit (Permit No. RP1096 – Expiry 28 September 2018)
- Permit to Take Protected Fish / Research Permit (Permit No. 10007730 – Expiry 30 September 2018)
- Scientific Procedures Fieldwork Licence (Licence No. SPFL305 – Expiry 30 June 2017)
- GHD Animal Ethics Committee and Research Authority

All electrofishing was conducted in accordance with the Australian Code of Electrofishing Practice (SCFFA, 1997) and GHD's Fauna Survey Standard Operating Procedure (SOP).

2.2.4 Hydrology

A walkover of the site was undertaken on 16 November 2016 by a GHD Hydrogeologist. The purpose of the field investigation was to undertake a preliminary appraisal of the site, ground truthing data collated through regional mapping, the GDE Atlas (BOM, 2012) and reviewed existing reports.

Site layout and attributes were assessed during these surveys and recorded through the mapping of observed Groundwater Dependant Ecosystem features, surface water features and potential areas for groundwater interaction, where observed. Areas of likely interaction with urban drainage features, surface water flow direction and layout of surface water cells were considered with respect to potential groundwater interaction. Existing groundwater monitoring bores were identified and an attempt was made to access these assets, however security measures / locks precluded monitoring of these bores. Ownership of these bores and locks was not able to be established.

3. Knowledge gaps and recommendations

The following knowledge gaps and recommendations were observed during the development of this plan.

- Detail depth to groundwater and groundwater quality at the marshlands
- Recent amphibian, bat and reptile surveys of the site
- Water quality within the wetlands
- Cultural heritage surveys

4. Stakeholder engagement

4.1 Government stakeholder workshop

GHD facilitated a Stakeholder Workshop to help capture potential issues and opportunities to help inform this Environmental Management Plan.

Attendees at the 28 November 2016 session included various key officers from the Macedon Ranges Shire Council, Melbourne Water and the Department of Environment, Land, Water and Planning.

Key themes emerging from the Key Stakeholder workshop includes:

1. Flora and fauna values at the marshland reserve must be protected
2. Explore opportunities to develop the Steam Park site as a community-friendly recreational space for practical use by surrounding residents
3. Explore opportunities to help ensure urban development surrounding the marshland will not impact on the marshland into the future
4. Magnet Hill provides a range of opportunities to explore for increased public access and recreational uses

4.2 User group meetings

On 15 November 2016 Council staff met with representatives of the Gisborne Vintage Machinery Society and the Macedon Ranges and District Car Club at the Steam Park. Key outcomes of this discussion is summarised below.

<u>General</u>

- Rabbits are a concern under the sheds and in the banks of the mounds on the site. Baiting was conducted approximately 18 months prior, however the problem seems to be increasing

<u>Macedon Ranges and District Car Club</u>

- Desire to extend their club house and outdoor facilities
- Desire for additional toilets
- Desire to beautify the site – e.g. plant trees for visual amenity
- Car parking can be an issue for large car shows and events

<u>Gisborne Vintage Machinery Society</u>

- The biggest event held by the Society is their rally held one day per year
- There is need to asphalt Webb Crescent
- Desire to extend the existing train tracks to enable other machinery to utilise the site – e.g. mini steam engines
- Some fencing/barriers may be required near the tracks to meet safety compliance standards
- Desire to plant trees on the site to screen the Calder Freeway
- Desire for a new toilet block and external bbq to attract greater community use

4.3 Community consultation

In preparing the draft Environmental Management Plan, Council conducted the following preliminary community consultation:

- On-site meeting with the Gisborne Vintage Machinery Society and the Macedon Ranges Car Club Inc
- On-site meeting with Western Water about their facility north of Magnet Hill
- Numerous on-site meetings with Melbourne Water
- Community survey (online and hard copies)
- Promotion of the community survey via a direct mailout to over 700 surrounding residents, direct mail to key stakeholders, Facebook ads and posts and notices in the local papers

General survey outcomes

Altogether 158 surveys were received

- 26% of respondents were a member of the Macedon Ranges District Car Club, 4% were a member of the Gisborne Machinery Society and 9% were a member of a Landcare or Friends group
- 59% of respondents were over 46 years of age
- 57% of respondents reside in Gisborne, Bullengarook, South Gisborne (23%) or New Gisborne (34%)
- A high percentage of respondents wished to be involved in bird surveys (18%), frog surveys (17%), weed removal (13%) and flora monitoring (13%)

Gisborne Marshlands Reserve

- 20% of respondents visit the site more than once a week
- 30% of respondents never visit the site
- Most respondents use the reserve for walking (37%), dog walking (26%) and / or bird watching (17%)
- Most respondents value the reserve's open space, wildlife and natural beauty. More active leisure activities were secondary values
- The community's vision for the reserve focused on maintaining the site's natural qualities and improving walking and cycling opportunities

Steam Park and Compound

- 21% of respondents visit the site more than once a week
- 20% of respondents never visit the site
- Most respondents use the reserve for car club meetings and events (35%), walking (31%), dog walking (26%) or to ride the steam train (19%)
- Most respondents value the site's recreation values, including the stream train (39%) and open space (29%). Nature and wildlife were secondary values
- The community's vision for the reserve focused on maintaining the site's natural qualities and maintaining and enhancing its tourism function

Magnet Hill

- 5% of respondents visit the site more than once a week
- 51% of respondents never visit the site
- Most respondents use the reserve for walking (19%)
- Most respondents value the site's open space and scenic values. Nature and recreation were secondary values
- The community's vision for the reserve focused on maintaining the site's natural values and increasing public access through walking trails

5. Legislative and policy context

5.1 Legislation, policies and plans

The following section provides an overview of the legislation, policies and strategic plans relevant to reserved land and, in some cases, to the sites themselves.

Table 2 Legislative context

Legislation	Overview	Implications for the subject sites
Federal		
Environment Protection and Biodiversity Conservation Act 1999	The Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* promotes the conservation of biodiversity by providing protection for threatened species, threatened ecological communities, migratory and marine species and other protected matters. The Australian Government Department of the Environment and Energy (DOEE) administers the EPBC Act. Actions that have or are likely to have a significant impact on a Matter of National Environmental Significance (MNES) are subject to a rigorous assessment and approval process. A referral to the Australian Government Minister for the Environment (the Minister) is required where 'significant' impacts on MNES are expected or possible.	There are EPBC listed vegetation communities, flora species and fauna species that are present or likely to be present at the Marshlands. Refer Section 7.4.2, 7.4.4 and 7.5.1. It is not anticipated that any action recommended in this plan would have or is likely to have a significant impact.
State		
Planning and Environment Act 1987	The Act establishes a framework for planning the use, development and protection of land in Victoria, including removal of vegetation.	The site is subject to the provisions of the Macedon Ranges Planning Scheme (the planning scheme) as outlined in Section 5.2.
Flora and Fauna Guarantee Act 1988	The FFG Act is the primary overarching statute dealing with biodiversity conservation and sustainable use of native flora and fauna in Victoria. Approval under the FFG Act is required for removal of listed threatened and protected species on public land, or private land if works are undertaken by a State Government, public or statutory authority.	There are vegetation communities, flora and fauna species listed under this Act that are present or likely to be present at the Marshlands. Refer Section 7.4.2, 7.4.4 and 7.5.1. It is not anticipated that any action recommended in this plan would have or likely to have a significant impact.
Wildlife Act 1975	The *Wildlife Act 1975* requires a permit for the removal of fauna habitat, unless a permit is required for vegetation removal under the provisions of the *Planning and Environment Act 1987*.	There is no removal of fauna habitat proposed in this Plan.
Environment Protection Act 1970	The Act is the principal statute dealing with the protection of the environment from pollution and the management of wastes.	There are no activities proposed that would cause pollution of require management of wastes.

Legislation	Overview	Implications for the subject sites
Heritage Act 1995	A key purpose of the Act is to provide for the protection and conservation of places and objects of cultural heritage significance and the registration of such places and objects. Section 67 of the Act requires a permit from Heritage Victoria for any disturbance to a heritage place listed on the Victorian Heritage Register.	The subject sites do not contain any buildings or features listed on the Victorian Heritage Register.
Aboriginal Heritage Act 2006	One of the main purposes of the Act is to provide for the protection of Aboriginal cultural heritage and Aboriginal intangible heritage in Victoria. The Act and associated Regulations require preparation of a Cultural Heritage Management Plan (CHMP) for activities which are defined as a High Impact Activity (i.e. activities which cause significant ground disturbance) AND are within an Area of Cultural Heritage Sensitivity. Under the Act it is an offence to harm Aboriginal cultural heritage. If harm is likely, a Cultural Heritage Permit or approved CHMP must be obtained.	Gisborne Racecourse Marshlands Reserve is identified as a site of cultural heritage sensitivity. Therefore, any works resulting in "significant ground disturbance" as defined in the Act's regulations, unless explicitly exempt, will require preparation of a Cultural Heritage Management Plan.
Catchment and Land Management Act 1994	The purposes of the Catchment and Land Management Act 1994 include the establishment of a framework for the integrated management and protection of catchments, encouragement of community participation in the management of land and water resources, and establishment of a system of controls for listed noxious weeds and pest animals.	Under the Act Council is legally obliged to control declared noxious weeds and pest animals found on the sites.
Water Act 1989	The Act sets out requirements for managing water, both surface and groundwater.	Changes to the surface water drainage should be considered under this Act.
Land Act 1958	The Act sets out legislation that, amongst other things, sets out provisions relating to the management of Crown Land.	The Gisborne Racecourse Marshlands Reserve is Crown Land subject to the provisions of this Act.
Crown Land (Reserves) Act 1978	The Act sets out provisions relating to the reservation of Crown Land for specific purposes and the management of this land.	Council is the designated Committee of Management of the Gisborne Racecourse Marshland Reserve appointed under Section 14 of this Act. The site is reserved under the Act for "Public Recreation".
Native Title Act 1993	The Act recognises and protects native title. It also sets out the conditions for extinguishment of native title	The preparation of an Environmental Management Plan is classed as a "future act" under Section 24JA of the Action. DELWP notified the native title claimants on 20 September 2017 who were given 28 days to comment. On 19 October 2017 Council was advised that no comments were received and, therefore there are no further Native Title requirements and the activity may proceed.

Legislation	Overview	Implications for the subject sites
Traditional Owner Settlement Act 2010	The Act provides for out-of-court settlement of native title in Victoria.	The Gisborne Racecourse Marshland Reserve, as Crown Land, is subject to the provisions of this Act and any settlement agreements established under the Act.

Table 3 Policy and strategic plan context

Policy	Relevance
State	
Melbourne Area, District 1 Review, June 1987	This report recommends that the Gisborne Racecourse Marshlands Reserve be "used to preserve the marshland community".
Local	
Macedon Ranges Environment Strategy 2016	Council's Environment Strategy provides high-level objectives, policy statements and actions relating to climate change, biodiversity, catchment and land management and resource efficiency. The objectives relating to biodiversity seek to improve the health, connectivity and extent of ecosystems, improve Council's understanding of the Shire's biodiversity and to utilise best practice, evidence based conservation management techniques. Action B4 involves continuing to prepare, implement and evaluate environmental management plans for sites of conservation significance.
Macedon Ranges Open Space Strategy 2013	The purpose of the Macedon Ranges Open Space Strategy is to provide direction to Council for the planning and provision of open space within the Shire. The Steam Park and Magnet Hill are identified as priority sites in the Strategy given they represent important opportunities to provide open space for the future of New Gisborne. Development of a masterplan and funding for environmental management for these sites are identified in the Strategy.
New Gisborne Development Plan 2012	The New Gisborne Development Plan sets out the broad planning framework for the coordinated development of a new growth area to the west of Station Road, New Gisborne. Whilst the study area identified within the plan does not specifically include the sites, the plan references the importance of their natural values and contains various objectives that consider the sites in the context of future development covered in the study area. Specific recommendations relating to the interface with the Gisborne Marshland include: • Installation of a 2.5 m wide shared path and "large native street trees" on the Marshland side of the perimeter road adjoining the Marshland. • Retaining open views to parkland and encouraging passive surveillance along sensitive edges, such as adjoining the Marshland (p18)

Policy	Relevance
New Gisborne Development Plan Conservation Management Plan 2013	The purpose of the New Gisborne Development Plan Conservation Management Plan is to guide future development and protect environmental values during the planning, construction and post-construction phases. It provides a management framework to also protect the values of the adjacent Gisborne Racecourse Marshlands Reserve. It specifically references protection of habitat for Growling Grass Frog and Latham's Snipe in the reserve. The Conservation Management Plan recommends the following in relation to the interface with the Marshland: • 1.4 m high post and wire fencing that excludes pedestrians and vehicles • Indigenous landscaping for a distance of 5 metres adjoining the fence including 2 m high shrubs • Mown lawn containing interpretive signs for a distance of 2 metres adjoining the sealed road. • Timber bollards between the mown lawn and the indigenous shrubs. • No shared paths on the reserve side of the perimeter roads. Some of the directions set out in the Conservation Management Plan contradict the adopted Development Plan (e.g. the Development Plan recommends a shared path on the reserve side of the perimeter road). Other requirements have not been translated into the existing subdivision permit for the site, such as requirements for interpretive signage, permanent fencing or a 2 metre high shrub layer screening on the Marshland boundary. As the Conservation Management Plan has not been formally endorsed it has less statutory weight than the Development Plan and subdivision permit (PLN/2014/342).

Table 4 Previous Hydrological Assessments of the Gisborne Marshlands

Report	Details and findings
Bartley, J. (1996). *Groundwater Assessment - Racecourse Marshland, Gisborne,* Melbourne: Nolan-ITU Pty Ltd.	• Drilled three test bores within land to the north of Marshland • Tested salinity of ground water and surface water in the constructed northern dam. • States that the Marshland is 3 metres below the surrounding area at its lowest point • Found 1 to 2 metres of clay soil and then 5 meters of weathered basalt, then less weathered basalt. • Found a water table at between 0.99 and 2.7 metres below the surface. • States that there is no interaction between ground water and wetland. • States that recharge of the groundwater west of the marshland may affect groundwater under the marshland (presumably because of the direction of ground water flow), but concludes that since there is no interaction between the ground water and the wetland that this would not affect the wetland.

Report	Details and findings
Hyder (2009a) *Racecourse Reserve Marshlands – New Gisborne. Groundwater Assessment*. Report for Colanz Pty Ltd. 5 June 2009.	• Prepared for developer • Details and meaning of tests that were done is not well explained. • Adds three test bores, this time within marshland area. Samples these three new bores and the three previously drilled in adjoining land to the south • States that sampling suggests the perched water table has dried up yet includes a table showing the 'water table' as being at between 3.91 and 6.6 metres. As the regional water table is thought to be below 10 metres in less weathered basalt (Bartley 1996), it is assumed that the water table detected is a perched water table. • Finds ground water level is lower on land to the north than under the reserve • Concludes that the perched water table will flow very slowly from southwest to northeast.
Hyder (2009b) *Drainage Review. Racecourse Reserve Marshlands – New Gisborne.* Report for Colanz Pty Ltd. 3 June 2009. Report for Rogers Milne and Associates.	• Only considers the southern section of the reserve • Estimates the marshland to have a depth of 320 cm (3.2 metres). • States that surface water flows from south to north. • States that the marshland is within the Melbourne Water Drainage Scheme 6985
Hyder (1997). *Water Balance Analysis*. Racecourse Marshland Wetlands - New Gisborne. Melbourne: Hyder Consulting. Report for Rogers Milne and Associates.	• Estimates the amount of rainwater runoff into and storage within the marshland reserve on a month-by-month basis over 10 years of records. • Maps the rainwater catchment and predicts maximum and minimum water volumes by month in the wetland and potential for complete drying. • Estimates the variation in elevation over the Marshland to be 1 metre • States that cross drainage across the Calder Freeway is provided by a number of culverts under the road

Table 5 Previous Ecological Assessments and Reports for the Gisborne Marshlands

Report	Details and findings
Ecology Australia (1997) *Gisborne Marshlands Racecourse Reserve, Discussion of the Management Issues and Potential Impacts of Development of Cathlaw Estate,* for Hyder Consulting.	• Describes the vegetation community as Plains Sedgy Wetland. • Classifies the Marshland as being of national significance for vegetation and regional significance for fauna. • Identifies 10 management issues: 1. Prevention of further weed spread 2. Elimination of some weeds as specified 3. Re-instatement of the wetland vegetation in degraded areas 4. Establishment of Swamp Gums and other indigenous species, principally to ameliorate visual impacts of potential developments on surrounding land 5. Maintenance of the current hydrological regime 6. Protection of water quality 7. Control of introduced predators 8. Reduction of fire risk 9. Minimisation of human disturbance 10. Monitoring the effectiveness of management. • Identified four Lathams Snipe at the site

Report	Details and findings
Ecology Australia (2003) *Biodiversity Values of Gisborne Racecourse Reserve and Proposed Cathlaw Estate: Potential Impacts of Land Development*. For Colanz Pty Ltd.	• Identifies the Marshland as being Plains Sedgy Wetland EVC. • Notes 13 significant old (pre-European) Swamp Gums trees in Cathlaw Estate • Refers to a drain that drains northward from the swamp near Ferrier Road. • Recommends a buffer planting of Swamp Gums on the southern boundary of the reserve • Involved a field survey in 2003 and also incorporates data from Ecology Australia (1997) • Found 31 native birds, 3 frogs, 1 reptile during surveys • Also details the birds found in the survey that are classified as Migratory under the EPBC act and therefore considered a 'protected matter'
SMEC Australia (2008), *Ecological Assessment: Gisborne Racecourse Marshland Reserve.* Report prepared for SM Urban for BoxCart Pty Ltd, January 2008	• Notes presence of Plains Sedgy Wetland EVC. • Three threatened flora species recorded: Pale Swamp Everlasting, Plains Yam-daisy and Swamp Everlasting. • No threatened fauna species found. • States that the proposed Colwyn Estate should not affect the environmental values of the Marshland provided the, then current hydrological regime and water quality was maintained. • Four management issues / recommendations noted: 1. Recommends planting out the edges of the waterbodies to create habitat and improve water quality. 2. Recommends removal of all noxious weeds and general weed control, especially near where the Plains Yam Daisy was found. 3. Notes potential impacts of new residential developments proposed. 4. Recommends preparation of a management plan, including a monitoring program.
Brett Lane Associates (2008) *Ferrier Road New Gisborne, Flora and Fauna Assessment*. For Tomkinson & Associates Pty Ltd. May 2008	• Flora and fauna assessment of 145 ha parcel and Gisborne Marshland Reserve between Calder and Bendigo Railway Line drainage line to the east and Mount Macedon Road to the west • Involved field assessments for flora and fauna and species lists of what was found as well as desk top review
Brett Lane Associates (2009). *Gisborne Racecourse Marshlands Reserve, Biophysical Assessment*. For Colanz Pty Ltd. June 2009.	• Flora and fauna assessment of Cathlaw estate (Lot 18) and Gisborne Marshland Reserve. • Surveys road reserves - Ferrier Road • Incorporates Ecology Australia 1997, 2003 findings and draws on the hydrological studies. • Notes the presence of Plains Sedgy Wetland and Plains Grassy Wetland EVCs and at least one nationally threatened flora species • Reports that a targeted survey for Brown Toadlet was conducted in April-May 2009 north east of proposed development site (not at the Marshland Reserve) and none were detected.

Report	Details and findings
Ecology and Heritage Partners (2012a), *New Gisborne Development Plan: Conservation Management Plan for Growling Grass Frog* Litoria raniformis*, and Migratory Waterbirds, Ferrier Road New Gisborne*. Report for Hansen Partnership Pty Ltd, June 2012	• Was required by DSE to ensure no impact on 'Growling Grass Frog, migratory birds or their habitats' • Notes potential habitat for Growling Grass Frog but states no records in the Marshland • Notes records of Latham's Snipe and potential habitat for other migratory birds • Required developer to provide linkages through the development, buffer to the Marshland, monitoring and ongoing management. • Describes the location of a number of drains through the private property and <marshland.
Ecology and Heritage Partners Pty Ltd (2012b). *Targeted Growling Grass Frog surveys at the new Gisborne Development Plan area and Racecourse Marshland Reserve, New Gisborne, Victoria*. Letter on behalf of Hansen Partnership Pty Ltd	• No Growling Grass Frogs were detected.
Ecology and Heritage Partners Pty Ltd (2012c), *Re Targeted Brown Toadlet surveys at the New Gisborne Development Plan area New Gisborne, Victoria*. Letter on behalf of Hansen Partnership Pty Ltd, July 2012	• Nocturnal surveys conducted on 21 May and 11 June 2012. • Call playback to imitate males was used. • Surveys included the New Gisborne development land and the Gisborne Marshland Reserve. • Potential habitat such as ephemeral drainage lines, seeps and culverts were surveyed. • Temperate was 13-14 degrees. No mention of rain having fallen recently. • No Brown Toadlet *Pseudophryne bibroni* were detected. • Common species including Plains Froglet *Crinia Signifera*, Whistling Tree Frog *Litoria verreauxii* and Southern Brown tree Frog *Litoria ewingii* were detected.
Brett Lane Associates (2013), *New Gisborne Development Plan Conservation Management Plan.* December 2013 Report prepared for Collie Pty. Ltd for Council	• Accompanied the New Gisborne Development Plan for the proposed residential development area between the marshland reserve and the Bendigo Rail Line. • Summarises environmental values in the Marshland Reserve and on private land proposed for development • Assesses risks to environmental values • Proposes management actions to be implemented within development areas during and post development to manage risks. • Endorsed by Council 2014.

5.2 Macedon Ranges Planning Scheme

The three sites are subject to the provisions of the Macedon Ranges Planning Scheme. The relevant provisions of the planning scheme for the sites are outlined in the sections below.

Table 6 Summary of planning zones and overlays

Site	Gisborne Marshland	Steam Park and compound	Magnet Hill
Zone	Public Conservation and Resource Zone (PCRZ)	Public Park and Recreation Zone (PPRZ)	Rural Living Zone – Schedule 2 (RLZ2)
Overlays	Development Contributions Plan - Schedule 2: Gisborne Development Contributions Plan (DCPO2) Vegetation Protection Overlay – Schedule 2: Roadside Vegetation (VPO2)	Development Contributions Plan - Schedule 2: Gisborne Development Contributions Plan (DCPO2)	Development Contributions Plan - Schedule 2: Gisborne Development Contributions Plan (DCPO2) Significant Landscape Overlay - Schedule 2: Ridges and Escarpments (SLO2)

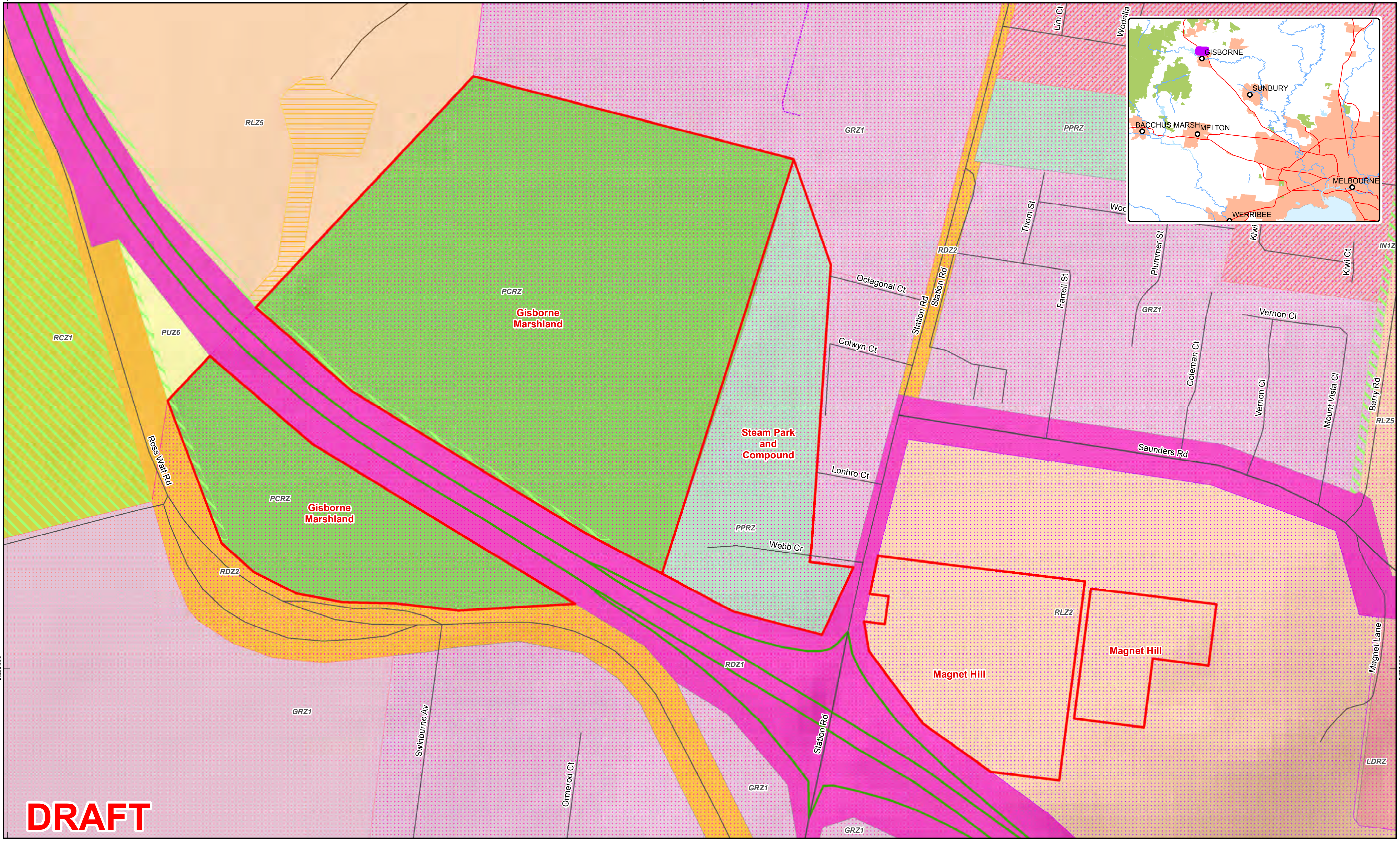
Relevant state and local planning polices for Gisborne include:

Clause 11.07-1 (Peri-urban areas)

- *Provide for development in established settlements that have capacity for growth having regard to complex ecosystems, landscapes, agricultural and recreational activities in the area. These settlements include … Gisborne.*

Clause 21.13-1 (Gisborne and New Gisborne)

- *Objective 1 – To protect and improve areas of remnant vegetation, fauna habitat, natural drainage corridors, Gisborne Racecourse Marshlands Reserve and the landscape and open space corridor along Jacksons Creek as essential elements of Gisborne and New Gisborne's natural setting.*
- *Objective 5 - To ensure future urban growth in New Gisborne respects the township's semi-rural character, heritage streetscapes, view lines to the Macedon Ranges and significant natural environmental assets, including Gisborne Racecourse Marshlands Reserve.*



Paper Size A3

0 30 60 120 180 240

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

- Site boundaries

Planning overlay

- Vegetation Protection
- Design And Development
- Development Plan
- Heritage
- Special Building
- Development Contributions Plan

Planning zone

- General Residential
- Industrial 1
- Low Density Residential
- Public Conservation & Resource
- Public Park and Recreation
- Public Use
- Rural Conservation
- Road – Category 1
- Road – Category 2
- Rural Living

GHD

Macedon Ranges Shire Council
Gisborne Marshlands Racecourse Reserve and Magnet Hill Environmental Management Plan

Job Number	31-34466
Revision	C
Date	05 Jul 2017

Gisborne Marshlands and Magnet Hill Planning Zones

Figure 3

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Data source: DELWP, VicMap, 2016 Created by: lrsmith

5.2.1 Planning zones

Public Conservation and Resource Zone

The purpose of the PCRZ at Clause 36.03 is:

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

Under this zone no planning permit is required for any use or development of the land conducted "by or on behalf of the public land manager" as enabled by various acts of parliament, including the *Crown Land (Reserves) Act 1978*. Exceptions comprise emergency services facilities, renewable energy facilities and wind energy facilities that require planning permission. Uses undertaken by other proponents not "by or on behalf of the public land manager" are generally prohibited. Buildings and works proposed by other proponents require a planning permit.

The purpose of the zone and its provisions are consistent with the intent of the Gisborne Marshland as land to be reserved for preservation of natural, cultural heritage and recreation values.

Public Park and Recreation Zone

The purpose of the PPRZ at Clause 36.02 is:

- To recognise areas for public recreation and open space
- To protect and conserve areas of significance where appropriate
- To provide for commercial uses where appropriate

Use of the land as the Steam Park and compound generally aligns with the purpose of the zone given that the site contains public open space as well as public recreation and community uses, such as the Gisborne Vintage Machinery Society and the Macedon Ranges and District Car Club.

Rural Living Zone

The purpose of the RLZ at Clause 35.03 is:

- To provide for residential use in a rural environment
- To provide for agricultural land uses which do not adversely affect the amenity of surrounding land uses
- To protect and enhance the natural resources, biodiversity and landscape and heritage values of the area
- To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision

The schedule to the zone generally relates to minimum areas of land for subdivision and permit requirements for a dwelling as well as earthworks.

Magnet Hill represents a valuable naturally elevated feature in a landscape that is generally flat. The site's public ownership and management, existing geological values and potential for environmental enhancement mean that the site is suitable for the Public Conservation and Resource Zone.

Recommendation

Rec 1. Rezone Magnet Hill from Rural Living Zone 2 (RLZ2) to the Public Conservation and Resource Zone (PCRZ).

5.2.2 Planning overlays

Development Contributions Plan Overlay Schedule 2: Gisborne development contributions plan

The DCPO2 at Clause 45.06 requires applicants proposing new residential, commercial and industrial developments to make a financial contribution to Council for community infrastructure and facilities as specified in the Schedule and the *Gisborne Development Contributions Plan 2013*.

This overlay has been applied across a large part of New Gisborne. As all the land subject to this Plan is owned or managed by Council, the provisions of this overlay are not applicable.

The Overlay does apply to the future residential area north of the Gisborne Marshlands. This area is within Open Space project area DIOS1 'New Gisborne open space system'. Infrastructure items listed for this project area comprise:

- Design and project management
- Open space system - landscaping, excavation works, grassing, planting, mulching etc
- Pedestrian and bike paths - construction of a 2.5 m wide shared pathway that partly follows the same route as a proposed drainage channel from the marshland to the railway line and the along the south of the railway line back to Station Road
- Equipment – seating, bike racks, signage, small playground
- Footbridge

Contingency: This list of items provides scope to facilitate installation of interpretive signs, buffer plantings and upgrades to the Marshland's northern boundary fencing as a part of the new residential development.

Significant Landscape Overlay Schedule 2: Ridges and Escarpments

The SLO2 overlay at Clause 42.03 seeks to conserve and enhance the character of significant landscapes in the area, including ridges and escarpments.

The schedule to the zone is generally related to ensuring certain landscape objectives are achieved, including:

- To ensure that the siting and design of buildings and works in rural areas (including the choice of building materials) is responsive to the landscape character of the Macedon Ranges Shire
- To maintain vegetation on escarpments and ridgelines for its landscape value
- To control the location and visual impact of buildings by requiring adequate setbacks from cliff tops, ridgelines and other prominent areas

The intent of Magnet Hill as reserved land containing naturally elevated and generally vegetated ground aligns with the purpose of the overlay and schedule. The siting and design of new buildings or features on the site should be consistent with the objectives of this overlay.

5.2.3 Particular provisions

Native vegetation

The purpose of the Native Vegetation clause at Clause 52.17 is to ensure permitted clearing of native vegetation results in no net loss in the contribution made by native vegetation to Victoria's biodiversity.

A permit is required to remove, destroy or lop native vegetation, including dead native vegetation (subject to specified exemptions).

The provisions of this clause will apply to the reserves in the event native vegetation is proposed to be removed.

6. Site context

6.1 Reserve location

Gisborne Racecourse Marshlands Reserve

Gisborne Racecourse Marshlands Reserve is located at 20 Webb Crescent New Gisborne, 2.5 kilometres north of Gisborne's retail centre. It is made up of two adjoining pieces of land with a total area of approximately 47 hectares. The location of the reserve in is Figure 2.

The reserve contains two distinct areas: the Marshlands to the west and the "Steam Park" and compound to the east. These two areas are on the same crown allotment but are subject to different planning zones.

The reserve is bisected by the Calder Freeway. The northern section is bound by open farmland to the west, with existing residential development to the east and vacant land to the north (proposed for future residential development). This northern residential development is planned in accordance with the *New Gisborne Development Plan*. The Calder Freeway cuts off a small portion of the southern section of the marshlands north of Ross Watt Rd.

The Steam Park and compound is accessed by Webb Crescent. The Steam Park and compound is leased to the Gisborne Vintage Machinery Society. The club rooms and surrounding curtilage within the compound are leased to the Macedon Ranges and District Car Club.

The recently named Burrungma Dalga waterway runs north from the Marshland through the adjoining development site.

Magnet Hill

Magnet Hill (sometimes known as Bald Hill) is approximately 10 hectares in area located in New Gisborne (see Figure 2). The reserve is bound by the Calder Freeway to the south, Station Road on the west and large residential allotments to the north.

Magnet Hill is an extinct volcanic cone eruption made up of scoria and basalt outcrops rising approximately 520 meters above sea level (Scott 1991). It is significantly modified and contains fill from the construction of the Calder Freeway.

6.2 Regional context

The marshlands are isolated from other large areas of native vegetation. It is 1.5 kilometres from the larger Rosslynne Reservoir to the west.

The marshlands and racecourse reserve is surrounded by the Calder Freeway as well as rural living and general residential developments.

Magnet Hill is bound by roads including the Calder Freeway and low density residential housing.

6.3 Climate

The closest locations for weather statistics is Macedon Forestry located 6.2 km from New Gisborne.

The Macedon Ranges local government area has a temperate climate characterised by cool and relatively wet winters and warm, dry summers. The average annual rainfall is 853 mm with the highest averages between June and October.

There has been an observed decline of rainfall of approximately 3 mm per decade over the last 110 years. During the millennial drought (2001-2008) there was a 24% reduction in rainfall compared to the average (1961-1990) (RMCG 2012).

6.3.1 Future climate predictions

The predicted changes in climate in the Macedon Ranges region are:

- Warmer and drier averages
- Increased frequency and severity of heatwaves and droughts
- Increased intensity of floods and storms

Under a median climate change scenario to 2030 the climate in Gisborne will likely see:

- An increase in the average temperature by 0.8ºC. This is similar to Ouyen's current temperatures which is located approximately 400 km to the north west.
- A reduction of between -11 to 1% winter rainfall. This is similar to Charlton's current rainfall, located approximately 200 km to the north west (RMCG 2012).

These climatic changes are likely to alter the composition and abundance of both native and introduced species. Changes in rainfall and run-off will most likely impact the marshland water dependent species and communities. Although they have recently recovered from the 13 year millennial drought, their resilience during longer and more frequent dry times is unknown.

The specific impact of climate change on species and communities is difficult to predict and manage. Of critical importance will be the maintenance of the water regime in the Marshlands where possible.

Specific impacts and management actions would require more detailed studies on species tolerances and resilience to the predicted climate change.

6.4 Land tenure

Macedon Ranges Shire Council is the land manager for all the land subject to this EMP.

Table 7 Land tenure

Site	Lot/Plan or Crown Description	Tenure	Current use
Gisborne Marshlands	PARISH OF GISBORNE Allot 19B Allot 19C Allot 19D Allot 61A Sec. 34	Crown Land. MRSC are Committee of Management. The current reservation status is "Public Recreation".	Marshlands and constructed water storages.
Steam park and compound			Gisborne Vintage Machinery Society and the Macedon Ranges and District Car Club Clubrooms.
Magnet Hill	Lot 1 PS348543 Lot 1 TP123699 Lot 1 TP124615 PARISH OF GISBORNE Allot. 62 Sec 34	MRSC freehold	Local amenity.

The extent of the Gisborne Racecourse Marshlands Reserve (Gisborne Marshlands and Steam Park and Compound) is reserved for “Public Recreation”. This reservation status was gazetted in 1940 and reflects the site’s history as a racecourse. Given the conservation significance of the Marshlands, it is recommended that this component of the site be gazetted as a “nature conservation reserve”. Given the ongoing use of the Steam Park for public recreation, retaining the status of this section of the site as a “public recreation reserve” is considered appropriate.

Recommendations

Rec 2. Support any State Government initiative to gazette the Gisborne Marshlands as a ‘nature conservation reserve’.

6.5 Bioregion

The reserves occur within the Victorian Volcanic Plain Bioregion (VVP) and the site sits within the Port Phillip and Westernport Catchment Management Authority (CMA) area.

6.6 Management history

Gisborne Marshlands

Trustees of Gisborne Racecourse managed the marshlands in the 1880s. At this time a series of drainage channels were constructed to form a racecourse, which operated until approximately 1933.

The Shire of Gisborne was appointed Committee of Management of the site on 1 June 1982.

The Gisborne Bypass was constructed through the site in the early to mid to late-1980s. The road was opened in 1989. The Marshland was used for soil and stockpiles, resulting in the construction of the northern water body. These works are also likely to have deepened the large southern water body (currently north of the Freeway).

The Land Conservation Council’s *Melbourne Area District 1 Review* dated June 1987 recommended that:

> *“The area (which was originally 53 hectares and reduced to 38 hectares by the Gisborne by-pass) is to be used to preserve the marshland community and associated flora including Native grasses such as Swamps and Wallaby Grasses”*

A Management Plan (date unknown) for the site was subsequently prepared which recommended that the Marshlands be used for “nature conservation purposes”. The Plan also recommended that an interpretation shelter be constructed in the car park, that a boardwalk be constructed through the inner marshland and that the Macedon Ranges Conservation Society play an advisory role in managing and monitoring the site. The Macedon Ranges Conservation Society has since disbanded and the infrastructure works referred to in the Management Plan were never completed.

In recent years, Macedon Ranges Shire Council has conducted regular weed control at the site. They also facilitated plantings up until 2012, including by local school groups.

Steam Park and Compound

The Gisborne Vintage Machinery Society and Macedon Ranges and District Car Club have been leasing the site for a number of years. Both groups are bound by the *Gisborne Steam - Park Joint Management Plan June 1997*. This Plan notes:

- The site was formally a swamp and was filled by the Road Construction Authority, presumably when the Gisborne Bypass was constructed
- The site comprises the former Road Construction Authority compound which is largely crushed rock, with the balance consisting of compacted clean fill
- The site is 2 metres above its natural ground level
- Tree planting commenced in the late 1980s
- A buffer was created between the conservation reserve and the subject site using mounded earth which have been planted out

The *Gisborne Steam - Park Joint Management Plan June 1997* also sets out a program of capital works for both lease areas until 2002.

Magnet Hill

Features such as the old stockyards, dry stone walls and other fencing, the absence of large old trees and the presence of pasture grasses suggests that Magnet Hill was formally used for grazing prior to acquisition by the Shire of Gisborne. The presence of fruit trees near the summit of the hill suggest that some parts of the site previously formed part of an orchard or garden.

A Development Plan for the site was prepared in 1991 which notes that large benches of fill from the construction of the Calder Freeway are located on the site's southern slopes. This Development Plan proposed vehicle access from Station Road leading to a car park at the base of the slope and then two subsequent car parking areas. The Plan proposed a range of developments including a "wayside stop" with a toilet and picnic facilities, walking paths, a "secret garden", installation of a water tank, scattered plantings and various development and picnic areas throughout the site. This Development Plan was not implemented, except for the installation of the water tank which is owned and managed by Western Water.

6.7 Current management and governance

Gisborne Marshlands

This Gisborne Marshlands is Crown Land currently managed by Macedon Ranges Shire Council who are the Committee of Management for the site. Council undertakes annual weed control that, in recent years, has been co-funded by Melbourne Water as a part of their Corridors of Green grants program.

Steam Park and Compound

The Steam Park and compound form part of the same Crown allotment as the Marshlands for which Macedon Ranges Shire Council are Committee of Management. The east portion of the Crown Land reserve, called the "Steam Park and compound" for the purposes of this report, is leased to two community groups.

The club rooms within the compound are leased to the Macedon Ranges and District Car Club Inc. A map showing their lease area is provided at Figure 4. This lease expires in 2019.

The remaining part of the site is leased to the Gisborne Vintage Machinery Society. A map showing their lease area is provided at Figure 5. Under this lease, the Society are responsible for maintaining the cleanliness of the site and undertaking all fire protection works. Schedule 3 of the lease enables public access through the site, other than on days agreed between Council and the Society. This lease expires in 2028.

Both the Car Club and the Vintage Machinery Society are bound by the *Gisborne Steam - Park Joint Management Plan June 1997*. This Plan stipulates that both clubs are responsible for grass slashing to reduce fire risk and weed spraying.

Magnet Hill

Magnet Hill is currently owned and managed by Macedon Ranges Shire Council. The site has been leased in the past for grazing. Council undertakes annual fire prevention slashing along the north, west and south boundaries and regular treatment of noxious weeds.

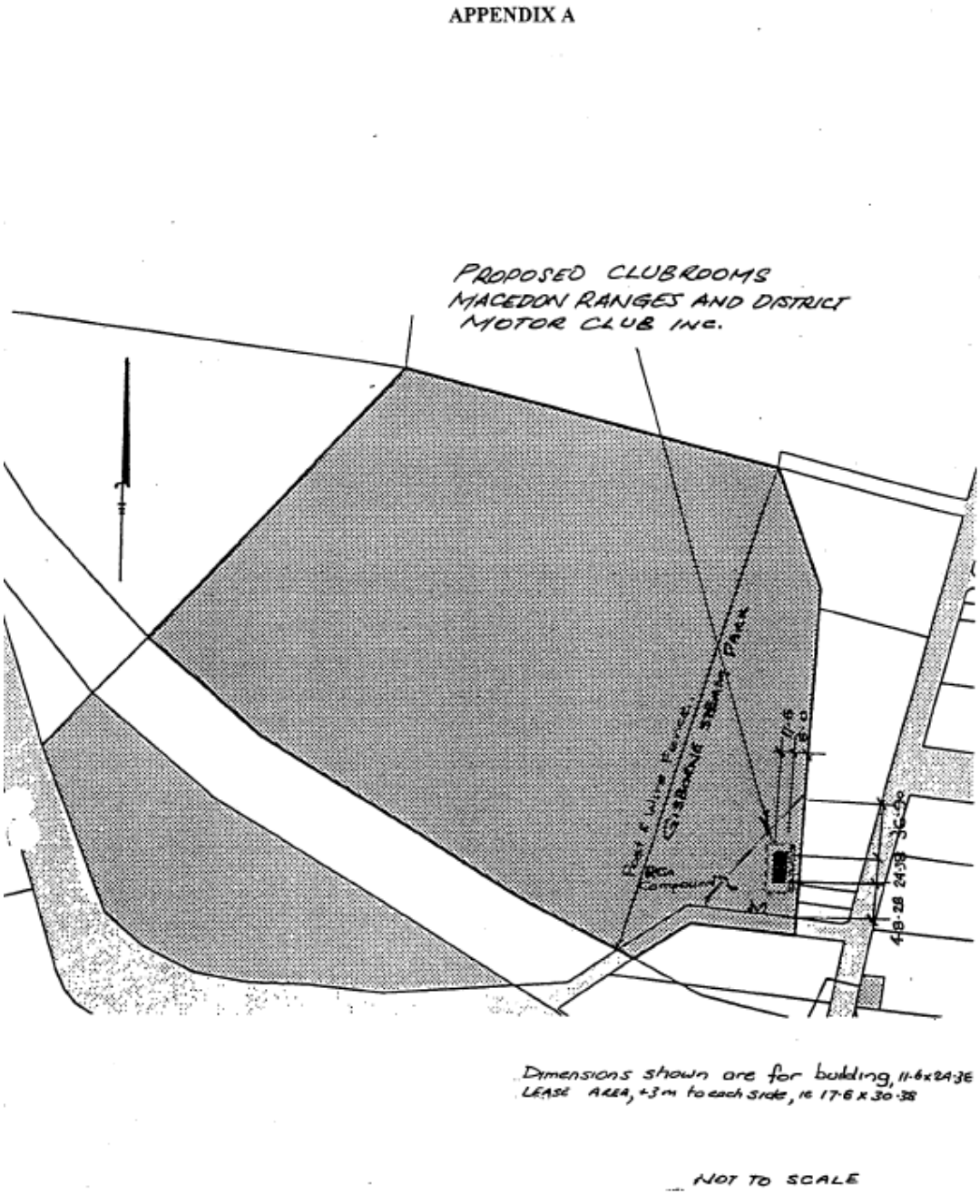


Figure 4 Macedon Ranges and District Car Club Lease Area

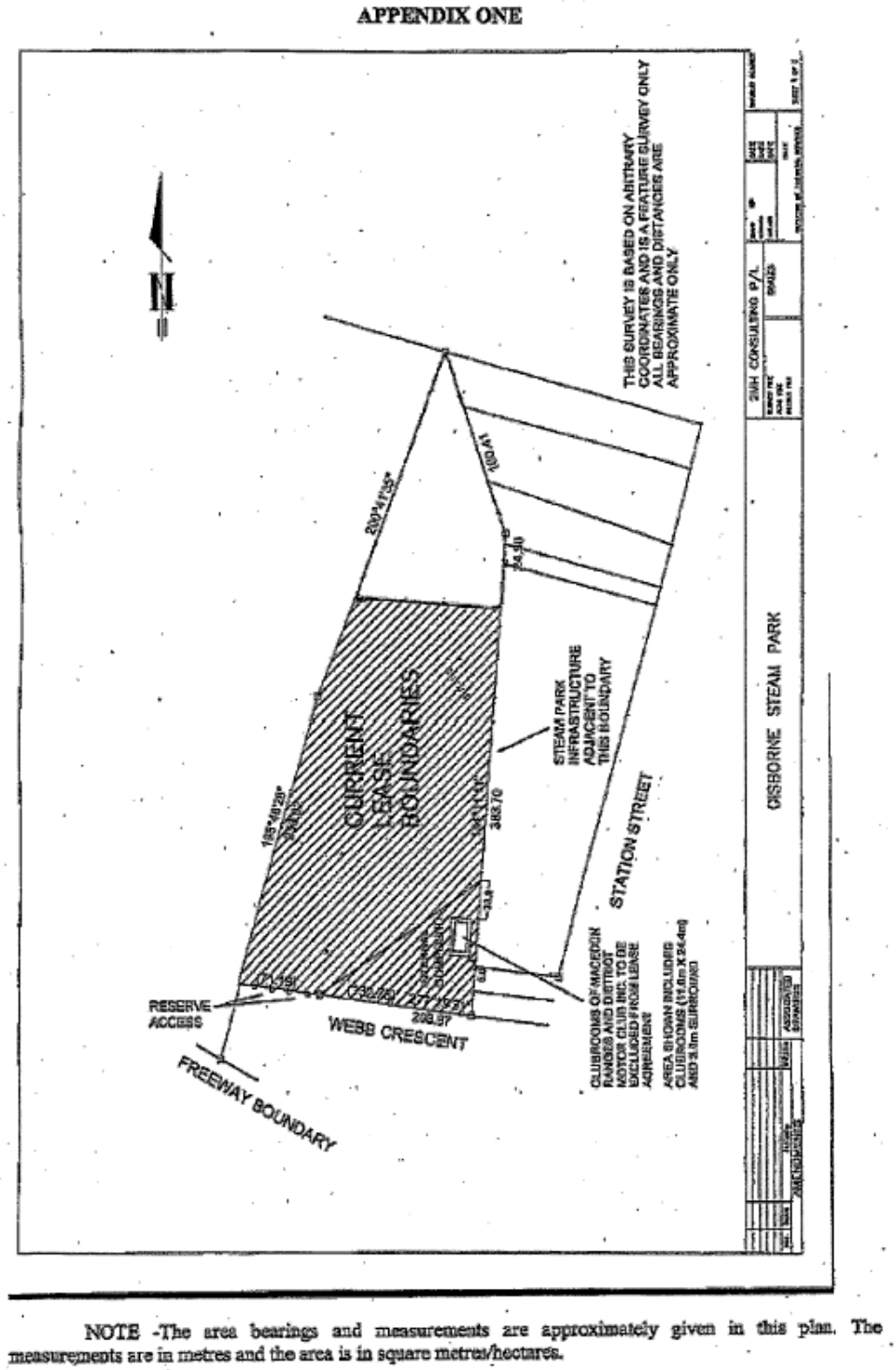


Figure 5 Gisborne Vintage Machinery Society lease area

6.8 Adjoining uses

Gisborne Marshlands

The marshland is bisected by the Calder Freeway. The consistent freeway traffic creates a low level “hum” which negatively impacts the amenity of the reserve and could impact on the ability of birds and frogs to call to each other. The visual impact of the freeway traffic also detracts from the site’s serenity.

The site adjoins a future residential subdivision to the north zoned General Residential 1. The Development Plan for this land was amended in January 2016. This Development Plan (Figure 6 and detail in Figure 7 and Figure 8) shows conventional suburban housing north of the reserve, separated from the marshlands by a road, a 2.5 m wide walking and cycling link and native street trees.. A north-south drainage and open space reserve is proposed which connects to the marshlands’ existing drainage line. This would include a shared path to facilitate walking and cycling connections through the marshlands and / or the Steam Park to the Colwyn Estate to the west and Webb Crescent.

The land to the west of the marshlands is zoned Rural Living 5. The site contains the area’s original homestead called “Cathlaw” which is subject to Heritage Overlay 269. This land is not identified for further development in the *Gisborne / New Gisborne Outline Development Plan 2012.*

The southern portion of the site is separated from existing housing and a proposed residential area by Ross Watt Road. The *Gisborne / New Gisborne Outline Development Plan 2012* identifies low density residential development immediately opposite the subject site as a buffer between proposed traditional residential development and the surrounding reserves and rural land uses. The western corner of this section of the marshlands adjoins land owned by VicRoads.

The Steam Park and Compound

The Steam Park and compound adjoins the marshlands to the west and the Colwyn residential estate to the west. Drainage for the Colwyn Estate runs through the Steam Park and discharges into the marshlands.

Magnet Hill

Magnet Hill is located on the north east corner of Station Road and the Calder Freeway. Magnet Hill is bisected by an unmade road reserve.

The land adjoins residential properties to the north and south and land owned by Western Water to the west. The Western Water land contains a water tank that supplies drinking water for Gisborne, New Gisborne, Macedon and Mount Macedon. Western Water inspect the site approximately twice a week and have no plans to change the site’s current use or management arrangements.

Figure 6 New Gisborne Development Plan as at April 2015

Figure 7 New Gisborne Development Plan, Landscape Concept Plan for proposed drainage reserve as at April 2015

Figure 8 Inset of the development north of Gisborne Marshlands

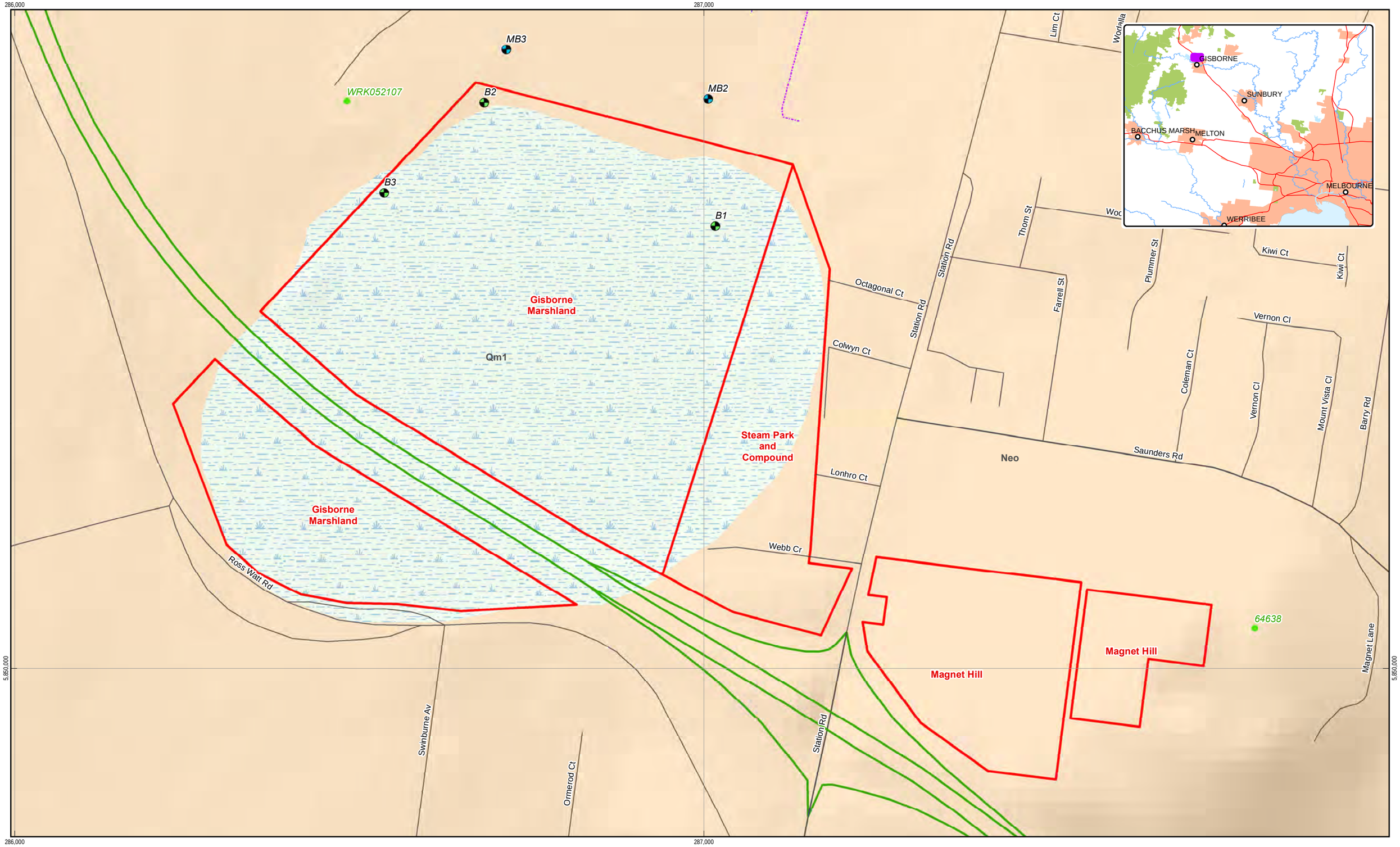
7. Themes

7.1 Topography and geology

The site lies within the Western Victorian Volcanics Province. Throughout this region, lava flows and scoria cones of the Upper Tertiary to Quaternary Newer Volcanics basalt occur at the ground surface (outcrops) (Figure 9). Where present, these flows range from 20 m to 100 m thick (around 25 m thick at the study area) and infill the previous river valleys. They significantly altered the pre-existing drainage network.

In some locations, a thin sequence of Quaternary deposits generally overlies the Newer Volcanics Basalt. At the study area, Quaternary sediments are less than 10 m thick and are typically associated with the weathering and erosion of Newer Volcanics Basalt and aeolian and overland flow deposition of clayey sediments into the marshland.

The region can be divided into three broad landscapes: hills, upper plains and lower plains, with the study area comprising both hills (i.e. Magnet Hill) and upper plains (Gisborne Racecourse Marshland Reserve). Hills lie above 450 m AHD (Magnet Hill is at 520 m AHD) and upper plains lie between 150 m and 450 m AHD, forming extensive flat to undulating basalt country. The outcropping Upper Tertiary to Quaternary age basalts (Newer Volcanics) have been weathered to form rounded hills that rise a few tens of metres from the plains.



Paper Size A3

0 30 60 120 180 240

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

- Site boundaries
- Approximate bore locations (Nolan ITU)
- Bore Locations (Hyder Consulting)

Bore use

- GROUNDWATER INVESTIGATION
- INDUSTRIAL
- STOCK AND DOMESTIC

Geological unit 50k

- Newer Volcanic Group - basalt flows (Neo)
- swamp and lake deposits (Qm1)

Macedon Ranges Shire Council

Gisborne Marshlands Racecourse Reserve and Magnet Hill Environmental Management Plan

Gisborne Marshlands and Magnet Hill Surface geology and bore locations

Job Number	31-34466
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Date	05 Jul 2017

Figure 9

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Data source: DELWP, VicMap, 2016; DELWP, WMIS bore data, 2016; GHD, approximate location of Nolan ITU bores B1-B3, 1996; Hyder Consulting, bores MB1-MB3, 2009 Created by: lrsmith

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7.2 Surface hydrology

7.2.1 Surface water features and drainage

The study area is situated at approximately 460 m above sea level and lies within the Maribyrnong catchment and the broader Port Phillip surface water catchment. Rosslynne Reservoir is located less than 1 km east of Gisborne Marshlands and Jackson Creek is located approximately 1.25 km south of Gisborne Marshlands.

The southern portion of the site represents a subtle surface water divide, represented approximately by the alignment of Ross Watt Road, Gisborne, which is elevated slightly above the surrounding land surface. Surface water approximately south of Ross Watt Road flows south towards Jacksons Creek, while surface water north of Ross Watt Road (including the Gisborne Marshlands) flows north. More specifically, surface water at the study area drains north-easterly via a series of engineered drainage lines. The site lies within Melbourne Water's catchment for the Drainage Services Scheme (DSS) 6985; Melbourne Water's DSS 6985 plan indicates that the site will drain via infiltration method to the Gisborne Marshland. Advice from MRSC suggests that water from the southern portion of the site does not appear to drain south beyond Ross Watt Road.

At the top of the catchment, accumulated surface water from Calder Freeway drains via culverts installed in the centre median of the freeway, draining beneath the freeway into the northern and southern sections of the marshland. The southern portion of the Gisborne Marshlands (south of the Calder Freeway) is hydraulically connected to the northern portion of the Gisborne Marshlands (north of the Calder Freeway) via two under-road drainage culverts.

From here, water is detained in the large (approximately 18 hectare) marshland, which represents a local topographic low point and includes two engineered dams (northern and southern dams), presumably excavated for fill material during construction of the Calder Freeway. The depth of these dams has been inferred through previous studies as two to three metres, however this is likely to be an estimate only. Anecdotal accounts from the users of the Steam Park who observed the excavation of the southern dam at the time of the Calder Freeway construction suggest that this water body could be a good deal deeper.

An additional engineered culvert (open drain) has been cut into the marshland and facilitates the drainage of water further north and downstream of the study area. From here, surface water is redirected through agricultural land via a network of open drains, potentially discharging towards Riddells Creek.

Surface water quality

Surface water quality within the standing water of the northern and southern dams (both situated within the northern portion of the Gisborne Marshland) has been measured both through previous studies and this current study. In situ water quality measured during the current study in included in Table 8. These values are generally within expected ranges for lotic waterways in the region based on the SEPP for Waters of Victoria (see Victorian Government, 2003) and ANZECC (2000) default trigger values. Turbidity was slightly elevated compared to the SEPP guidelines although they are more applicable to rivers and streams and are not directly relevant to the Gisborne Marshlands. The SEPP guidelines have been included as a general reflection of local waterway conditions only. It should be noted that the water quality represents conditions at the time of measurement only and do not reflect long-term patterns that are likely to be influenced by changes in weather conditions such as rainfall and air temperature.

Furthermore, the water quality parameters investigated in this study did not include other potential contaminants such as nutrients (e.g. phosphorus and nitrogen), heavy metals (e.g. mercury, arsenic, lead), petroleum products, or indicators of bacterial contamination (e.g. E. coli). All of these parameters, and others, have the potential to be delivered to the waterbodies within the Gisborne Marshlands through agricultural and urban runoff. This can occur indirectly through overland flow or directly through stormwater discharge points. Further development in the area and continued or increased agricultural land use may exacerbate any current water quality issues.

It is noted that the flush of introduced grasses such as *Holcus lanatus* (Yorkshire Fog) on the east side of the Marshlands where the urban storm water enters the site suggests that this storm water is high in nutrients. Further investigation is required into appropriate treatments and/or diversion systems to protect the Marshland's native vegetation and prevent further spread of invasive species. Some solutions could involve expanding the existing sediment ponds into a fully functioning wetland system and/or diverting the storm water around the Marshlands. This assessment would confirm the Marshland's water needs and ensure any solution is designed to maintain sufficient water flows to the Marshland and prevent any additional flows into the storm water system to the north. It is noted that any storm water diversion would be designed to be reversible if it is determined to result in adverse effects.

Other threats to the Marshland's water quality include run off from the Calder Freeway and the sediment run off from future construction activity associated with the development of the residential subdivision to the north. To mitigate against this later threat the planning permit for the subdivision (PLN/2014/342) includes a condition requiring implementation of measures such as installation of silt fencing. Mitigating the effects of runoff from the Calder Freeway would be difficult to achieve given the limited space available for water sensitive urban design treatments between the freeway discharge point and the Marshlands. The freeway runoff seems to be directed into the western end of the large dam through a swale drain, which localises the storm water impacts to the drainage line and prevents the nutrient loads and other contaminants affecting the rest of the Marshland vegetation.

It is noted that the water quality within the standing water bodies may not reflect the water quality across the rest of the marshland. Opportunity exists to measure the water quality of the standing water within the Marshland and at the outlet drain to gain a more holistic picture of water quality across the site.

Table 8 *In situ* water quality measured in the northern and southern dams of the Gisborne Marshlands

Waterbody	Date	Temperature (°C)	Electrical Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	pH	Turbidity (NTU)	Alkalinity (mg/L)
Northern Dam	4/11/16	21.5	202	7.6	91	7.7	44	65
Southern Dam	2/12/16	16.8	173	9.3	102	8.2	35	45
SEPP Objective1			≤ 1500		25th percentile ≥ 85 Max. 110	25th percentile ≥ 6.5 75th percentile ≤ 8.5	≤ 10	
ANZECC trigger value					90 to 100	6.5 to 8.0		

SEPP objective based on lowland rivers and streams of Barwon, Moorabool, Werribee, Maribyrnong, Curdies and Gellibrand catchments in the Cleared Hills and Coastal Plains segment.

ANZECC default trigger values based on freshwater lakes and reservoirs.

Recommendation

Rec 3. Undertake a storm water investigation and function design to confirm the best approach to protecting the Marshland vegetation community from the storm water entering the site from the Colwyn Estate. This investigation should confirm the water needs of the Marshland itself and identify suitable water sensitive urban design and / or storm water diversion options.

Rec 4. Other than possible diversion of the storm water from the Colwyn Estate, maintain the current hydrological regime for the Marshlands. Monitor the impact of the storm water diversion on the site's flora and fauna and implement management changes as required to protect and enhance the marshland's vegetation community.

Rec 5. Commission additional hydrological studies such as a water balance as required and / or as opportunity arises.

Rec 6. Implement a regular monitoring and maintenance regime for the storm water detention system / small wetland within the Steam Park to ensure it is functioning as intended.

7.3 Groundwater

7.3.1 Hydrogeological setting

One water table aquifer is relevant to the catchment (Figure 10) – the Upper Tertiary to Quaternary Newer Volcanics, which forms the Upper Tertiary Basalt Aquifer (UTB). While the Quaternary sediments technically comprise the Quaternary Aquifer (QA), their relatively limited thickness and spatial distribution renders the QA less pertinent in managing the hydrological regime at the study area. The QA and the UTB are both highly heterogeneous in nature and are likely to exhibit varied thicknesses.

A summary of the hydrogeological setting at the study area is provided in Table 9.

Table 9 Hydrogeological setting

Period	Sub Period	Geological Formation	Hydrostratigraphic Unit	Lithology	Indicative Depth (m)
Quaternary	Pleistocene to Holocene		Quaternary Aquifer	Sand, gravel, clay and silt	0 – 7
Tertiary	Pliocene	Newer Volcanic Group	Upper Tertiary / Quaternary Basalt (UTB)	Basalt (fractured rock)	7 – 18
	Miocene to Pliocene		Upper Tertiary Aquifer (fluvial) (UTAF)	Sand, gravel and clay	18 – 27
Palaeozoic		Castlemaine Group	Basement rocks Aquifer (BSE)	Sedimentary and igneous rocks	>27

7.3.2 Groundwater management arrangements

The principle management unit for groundwater resources in Victoria is the Groundwater Management Unit (GMU). A GMU may be a Groundwater Management Area (GMA), a Water Supply Protection Area (WSPA) or an Unincorporated Area (UA). Of these administrative boundaries, only WSPAs are declared under the *Water Act 1989*, to ultimately provide sustainable management of the groundwater resources.

The study area lies entirely within an Unincorporated Area; this means it is not within a GMA or WSPA. As such, there are no specific groundwater management requirements in place at Gisborne Marshlands.

The relevant groundwater licensing authority throughout the study area is Southern Rural Water (SRW).

7.3.3 Depth to water table

Available desktop information indicates the depth to groundwater in the area is likely to be less than 10 m below ground level (bgl) at both the Gisborne Marshland and the Steam Park (Figure 11). Previous studies (Hyder, 2009) suggest groundwater depths ranging from 3.9 m to 6.6 m bgl in both the Upper Tertiary Basalt and the residual basaltic clay soils overlying the Upper Tertiary Basalt. Current groundwater level data could not be obtained for use in this study and as such, data collected by Hyder (2009) has been applied to this conceptualisation. The currency of the depth to groundwater at the site is therefore a current data gap, and inferences have been made (including the likely water requirements of prevalent EVCs) to inform on potential depth to water table at the marshland. Given the Plains Sedgy Wetland EVC likely requires permanent water logging, which could not have been facilitated through rainfall or runoff during the Millennium Drought, there is the potential that groundwater levels in the northern portion of the site to exhibit a shallower water table resulting from local shallow groundwater in the hyporheic zone or from water perched on relatively impermeable residual basalt clays.

Deeper groundwater levels of between 20 m and 100 m are likely at Magnet Hill.

7.3.4 Groundwater quality

Under the *Environment Protection Act 1970*, and upon recommendation of the Environment Protection Authority, the State of Victoria enacted a State Environment Protection Policy (SEPP) *Groundwaters of Victoria 1997* (GoV), which has the objective to maintain and where possible, improve groundwater quality sufficient to protect existing and potential beneficial uses.

The policy forms the primary guide to determining existing impacts and risk of impacts to groundwater quality. It provides that groundwater is categorised into segments based on the groundwater salinity, with each segment having particular identified uses. The segments and their beneficial uses are summarised in Table 10.

Table 10 SEPP groundwater segments

Use	Segment (mg/L TDS)				
	A1	A2	B	C	D
	0 – 500	501 – 1,000	1,001 – 3,501	3,501 – 13,000	>13,000
Maintenance of Ecosystems	✓	✓	✓	✓	✓
Potable Water					
Desirable	✓				
Acceptable		✓			
Potable Mineral Water Supply	✓	✓	✓		
Agriculture, parks and gardens	✓	✓	✓		
Stock Watering	✓	✓	✓	✓	

Use	Segment (mg/L TDS)				
	A1	A2	B	C	D
	0 – 500	501 – 1,000	1,001 – 3,501	3,501 – 13,000	>13,000
Industrial water use	✓	✓	✓	✓	✓
Primary contact recreation (e.g. swimming / bathing)	✓	✓	✓	✓	
Buildings and structures	✓	✓	✓	✓	✓

*TDS- total dissolved solids

The EPA may determine that these beneficial uses do not apply to groundwater where:

- There is insufficient yield
- The background level of a water quality indicator other than TDS precludes a beneficial use
- The soil characteristics preclude a beneficial use
- A groundwater quality restricted use zone has been declared

The SEPP (GoV) also requires that occupational health and safety and odour and amenity be considered, due to the fact that vapours sourced from impacted groundwater may present a potential risk to workers, and that odours or discolouration may result in the degradation of the overall beneficial use.

Groundwater quality data obtained from the Department of Environment, Land, Water and Planning (DELWP) Victorian Aquifer Framework (VAF) Secure Allocation Future Entitlements (SAFE) project data has been used to appraise groundwater quality characteristics for the site (Figure 12).

Groundwater salinity in the Quaternary Aquifer is fresh to brackish, ranging from 1,001 mg/L to 3,500 mg/L TDS and falls under Segment B of the SEPP (Gov). Another source indicates a lower salinity range of 500 mg/L to 1,000 mg/L TDS and falls under Segment A2 of the SEPP (GoV).

The underlying Upper Tertiary Basalt Aquifer shows fresh groundwater quality, ranging from 501 mg/L to 1,000 mg/L TDS and falls under Segment A2 of the SEPP (GoV).

Given the fresh groundwater quality, all of the identified beneficial uses of groundwater are to be protected in the water table aquifer in closed catchments, including:

- Maintenance of ecosystems
- Potable water
- Agriculture, parks and gardens
- Stock watering
- Industrial water use
- Primary contact recreation (e.g. Swimming / bathing)
- Buildings and structures

7.3.5 Groundwater users

A search of the DELWP Water Measurement Information System (WMIS) database was undertaken to identify and characterise groundwater use in the region. The data shows approximately 31 bores within a 3 km radius of the site (Figure 9):

- Bore depths range from 33 m to 146 m, averaging as 62 m deep.
- Bores are screened over a range of lithologies, predominantly basalt with some screened in sandstone and clay.
- 81% (25 bores) of the bores are used for stock and domestic purposes, 16% (five bores) for groundwater investigation and 3% (one bore) for industrial use.
- There are no registered bores within the site boundary. The closest bores are stock and domestic bores WRK052107 and 64638, which are located approximately 130 m north west and 70 m east of the site respectively; with depths of 146 m and 85 m respectively. Five groundwater investigation bores (64684, 64683, 64681, 64682 and 115166) are also located approximately 1.2 km east of the site.
- Most groundwater investigation bores were drilled between 35 m and 45 m below ground level, with at least one bore indicating it screens the Upper Tertiary Basalt, thus indicating that all bores probably target the UTB.
- Groundwater abstraction does not occur within the study area, and related risks to managing the site are considered to be low.

Onsite groundwater monitoring bores

Six groundwater monitoring bores were identified through desktop review of previous studies (Hyder, 2009) and through onsite field surveys, however these were not recorded in the WMIS database. Bore construction records show that bores B1, B2 and B3 monitor residual soil of the UTB in the northern portion of Gisborne Marshlands, while bores MW1, MW2 and MW3 monitor the UTB to the north of Gisborne Marshlands.

7.3.6 Groundwater flow

Groundwater level information was not identified from the bores identified within the WMIS database.

As groundwater flow generally follows topography, flowing from areas of high elevation to areas of low elevation, it is likely that groundwater flows radially from Magnet Hill. Gisborne Marshlands is situated in a local topographic low point, with topography falling gently to the north. Groundwater water level previously inferred by Hyder (2009), which was based on groundwater level data from six groundwater monitoring bores at/near Gisborne Marshlands, indicated a north-easterly groundwater flow direction.

7.3.7 Potential for groundwater dependent ecosystems

A groundwater dependent ecosystem (GDE) is an ecosystem that has its species composition and natural ecological processes determined by groundwater. That is, GDEs are natural ecosystems that require access to groundwater to meet all, or some of their water requirements so as to maintain their communities of plants and animals, ecological processes and ecosystem services. GDEs can rely on either the *surface* or *subsurface* expression of groundwater.

A search of the Bureau of Meteorology GDE Atlas was undertaken, with a search radius of 3 km from the study area. This search identified two potential GDEs, each of which are considered reliant on the surface expression of groundwater (Figure 13). These sites include Gisborne Marshlands (a wetland) and Jacksons Creek (a river) which have a moderate and high potential for groundwater interaction respectively.

The inferred hydrological regime considers that Gisborne Marshlands is not hydraulically connected to Jacksons Creek.

7.3.8 Potential for interaction with surface water

Current groundwater level information is not available from the onsite groundwater monitoring bores identified at the Gisborne Marshlands. Based on historic groundwater level records (Hyder, 2009), surface water (dam) levels are some 4 m to 6 m shallower than the underlying groundwater table. This suggests limited interaction of groundwater with surface water at Gisborne Marshlands.

286,000

287,000

5,850,000

Gisborne Marshland

Gisborne Marshland

Steam Park and Compound

Magnet Hill

Magnet Hill

Lim Ct

Wodalla

Thom St

Station Rd

Farrell St

Plummer St

Kiwi Ct

Kiwi Ct

Octagonal Ct

Station Rd

Vernon Cl

Colwyn Ct

Coleman Ct

Vernon Cl

Mount Vista Cl

Barry Rd

Saunders Rd

Lonhro Ct

Webb Cr

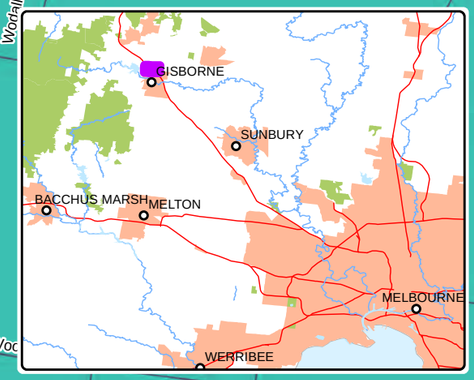
Ross Watt Rd

Swinburne Av

Ormerod Ct

Station Rd

Magnet Lane



Paper Size A3

0 30 60 120 180 240

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

Site boundaries

Aquifer intersected by watertable

Quaternary Aquifer (QA)

Upper Tertiary Aquifer (fluvial) (UTAF)

Upper Tertiary Basalts (UTB)

Macedon Ranges Shire Council
Gisborne Marshlands Racecourse Reserve and Magnet Hill Environmental Management Plan

Gisborne Marshlands and Magnet Hill Water table aquifers

Job Number	31-34466
Revision	0
Date	05 Jul 2017

Figure 10

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Data source: DELWP, VicMap, 2016; DELWP, SAFE layers, 2016 Created by: lrsmith

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286,000

287,000

5,850,000

Gisborne Marshland

Steam Park and Compound

Gisborne Marshland

Magnet Hill

Magnet Hill

Lim Ct

Wondalla

Thom St

Station Rd

Octagonal Ct

Farrell St

Plummer St

Kiwi Ct

Kiwi Ct

Vernon Cl

Colwyn Ct

Coleman Ct

Vernon Cl

Mount Vista Cl

Barry Rd

Saunders Rd

Lonhro Ct

Webb Cr

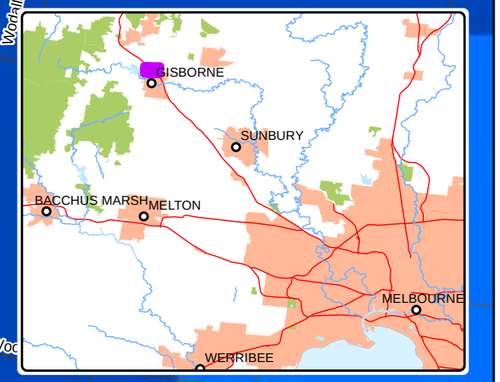
Ross Watt Rd

Swinburne Av

Ormerod Ct

Station Rd

Magnet Lane



Paper Size A3

0 30 60 120 180 240

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

Site boundaries

Water table depth (m)

5

10

20

50

100

Macedon Ranges Shire Council
Gisborne Marshlands Racecourse Reserve and Magnet Hill Environmental Management Plan

Gisborne Marshlands and Magnet Hill Depth to water table

Job Number	31-34466
Revision	0
Date	05 Jul 2017

Figure 11

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Data source: DELWP, VicMap, 2016; DELWP, SAFE layers, 2016 Created by: lrsmith

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286,000

287,000

5,850,000

Gisborne Marshland

Steam Park and Compound

Gisborne Marshland

Magnet Hill

Magnet Hill

Lim Ct

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Thom St

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Farrell St

Plummer St

Kiwi Ct

Kiwi Ct

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Vernon Cl

Mount Vista Cl

Barry Rd

Saunders Rd

Lonhro Ct

Webb Cr

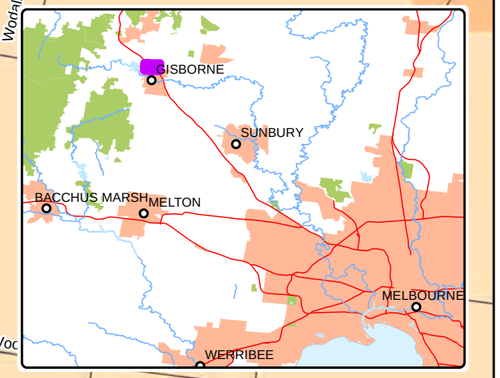
Ross Watt Rd

Swinburne Av

Ormerod Ct

Station Rd

Magnet Lane



Paper Size A3

0 30 60 120 180 240

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

Site boundaries

Water table - salinity (mg/L)

0 - 500

500 - 1000

1000 - 3500

3500 - 7000

7000 - 13000

13000 - 35000

35000 - 100000

Macedon Ranges Shire Council

Gisborne Marshlands Racecourse Reserve and Magnet Hill Environmental Management Plan

Gisborne Marshlands and Magnet Hill Groundwater salinity

Job Number	31-34466
Revision	0
Date	05 Jul 2017

Figure 12

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Data source: DELWP, VicMap, 2016; DELWP, SAFE layers, 2016 Created by: lrsmith

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286,000

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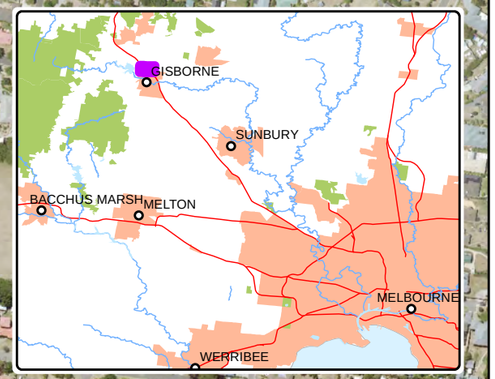

Paper Size A3

0 30 60 120 180 240

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

GDE Type

Ecosystems that rely on the surface expression of groundwater

Ecosystems that rely on Subsurface presence of groundwater

Macedon Ranges Shire Council
Gisborne Marshlands Racecourse Reserve and Magnet Hill Environmental Management Plan

Gisborne Marshlands and Magnet Hill Identified GDEs

Job Number	31-34466
Revision	0
Date	05 Jul 2017

Figure 13

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Data source: DELWP, VicMap, 2016; BOM, GDE data, 2016; MRSC, Imagery, 2016 Created by: lrsmith

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7.3.9 Eco-hydrological conceptual model

Gisborne Marshlands Racecourse Reserve and Magnet Hill have been represented in two conceptual models. Cross Section A-B (Figure 14) is a cross section running in a general west to east direction beginning at the Calder Freeway, intersecting the Gisborne Marshlands Racecourse Reserve, Station Street and Magnet Hill.

The conceptual cross-sections also include two insets which provides detail of the Plains Grassy Wetland and transition (Figure 15) and the Plains Sedgy Wetland (listed under Commonwealth EPBC Act) (Figure 16).

Cross section C-D (Figure 17) runs in a general south to north direction beginning at Swinburne Avenue, intersecting Ross Watt Road, the Calder Freeway and through the southern and northern dams in the Marshland Reserve.

7.3.10 Ecological groundwater dependence

Historic groundwater monitoring bore data shows shallow water tables. The existing dams at the marshlands (north and south dams) exhibit permanent free standing water, even during the Millennium Drought. The total depth of these dams is uncertain but likely to be in the order of three metres. Since the regional groundwater table shows deeper levels compared with the overlying dams, surface water at Gisborne Marshlands is unlikely to show significant groundwater dependence.

In these situations, while it is possible that vegetation roots may extend deep towards the aquifer, it is more likely that vegetation is using water draining towards the water table from rainfall runoff and/or rainfall infiltration. The permanence of surface water (i.e. the permanent dams) and areas of permanent water logging (i.e. surrounding the permanent dams) at Gisborne Marshland is more likely to be a function of the low permeability clay soils that outcrop at the site. These clay rich soils have a high water holding capacity, which is probably increased (compared to most clays) by the high organic content of the soil (swampy organic matter).

A

B

GISBOURNE MARSHLANDS

RACECOURSE RESERVE

MAGNET HILL

MAGNET HILL

PLANTED NATIVE TREES AND SHRUBS

PLAINS GRASSY WETLAND

PLAINS SEDGY WETLAND

PLAINS GRASSY WETLAND

Rainfall recharge

Rainfall recharge

Rainfall recharge

Ground surface typically inundated with surface water ~0.3m deep

- Likely to be groundwater dependent ecosystem (GDE)

Ground surface seasonally moist but drying out over summer

- Unlikely to be GDE; more dependent on local rainfall and surface water

Rocky outcrops

Infiltration of rainwater into fractured rock. Some deep percolation is inferred

Metres (AHD)

520
510
500
490
480
478
476
474
472
470
468
466
464
462
460
458
456
454
452
450
448

Refer to conceptual inset: Plains Grassy Wetland and transition

Refer to conceptual inset: Plains Sedgy Wetland

Calder Freeway

Soil stockpiles/mounding - not natural features

Existing groundwater monitoring bore (offset 200m to the north)

Existing groundwater monitoring bore (offset 350m to the north)

Southern pond, contains free standing water

Evaporation

Scattered basalt outcrops at ground surface

Existing urban development

Station Street

Runoff of surface water from freeway

Stormwater inflows from neighbouring urban developments

B2

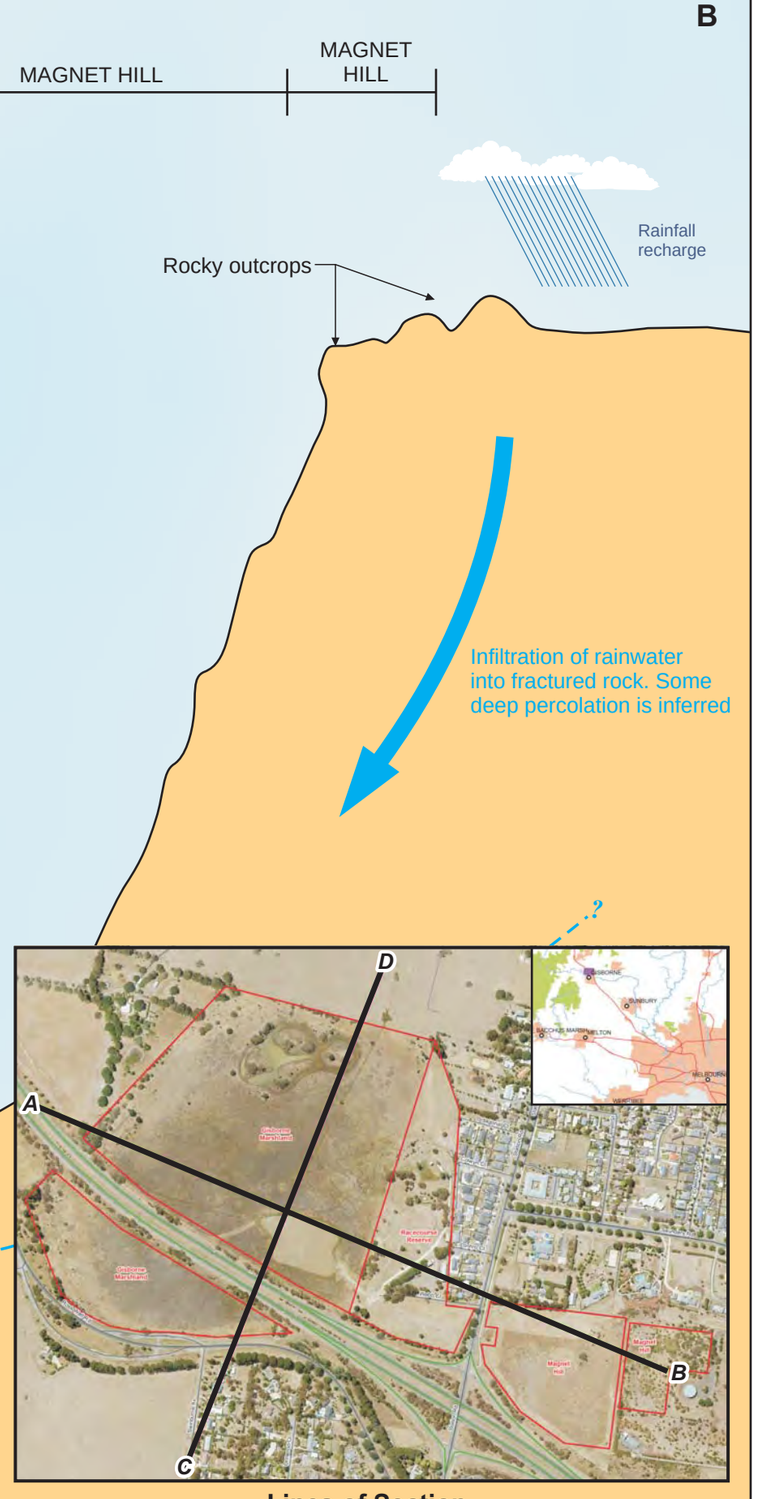
B3

Potential infiltration of surface water to groundwater

?

?

?



Lines of Section

GEOLOGY

- Unknown/fill material
- Quaternary Alluvium/Quaternary Aquifer
- Upper Tertiary Basalt Aquifer (UTB) - residual clay soils
- UTB - Newer Volcanics

LEGEND

- Depth to groundwater
- Direction of water movement

Conceptual diagram only - not to scale

MRSC
Gisborne Marshland

Eco-hydrological Model Cross Section A-B

Job Number 31-34466
Revision A
Date 18 Nov 2017

Figure 14

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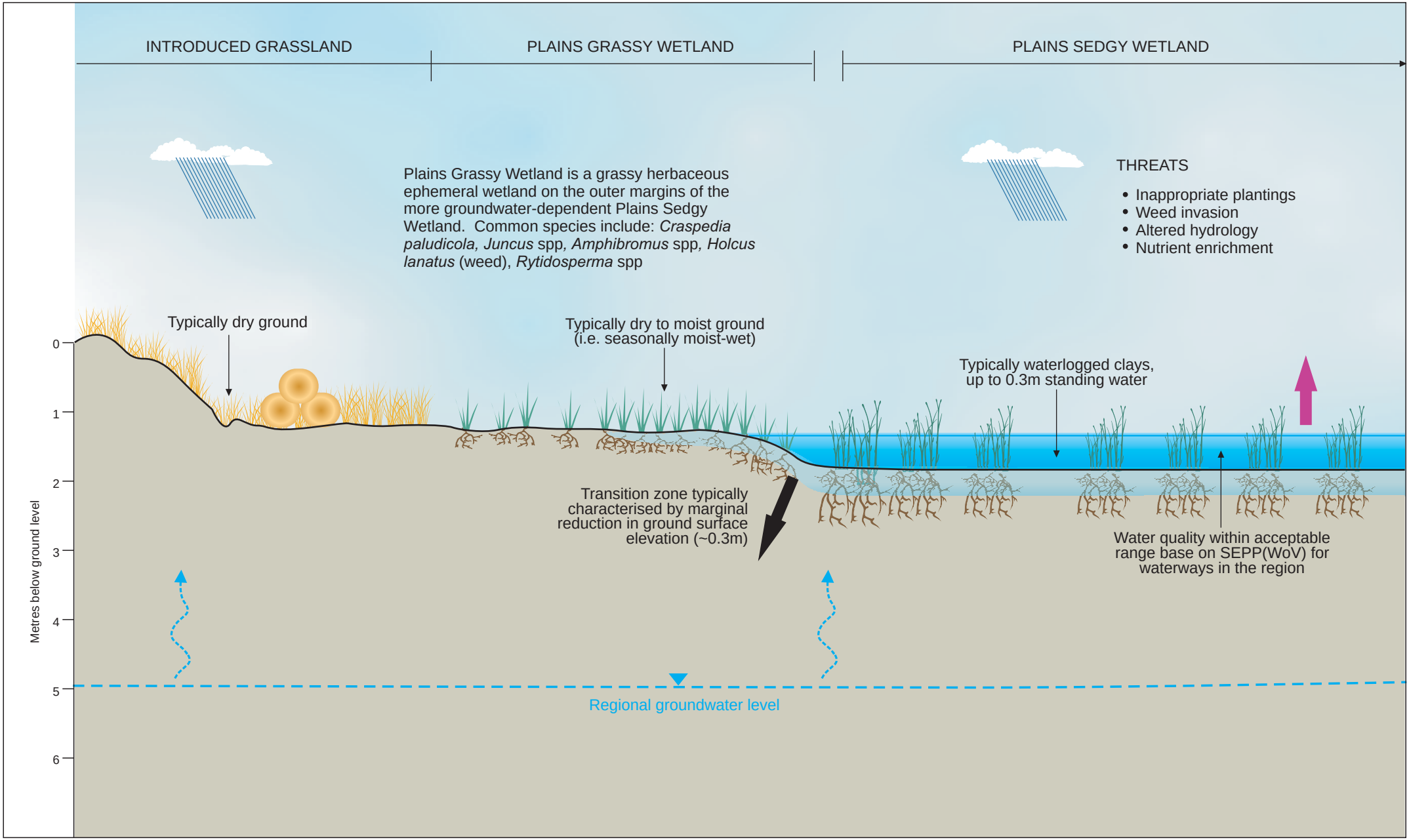

Conceptual diagram only

LEGEND

- Residual Basalt Soil
- Capillary movement of groundwater in vadose zone
- Rainfall runoff/overland
- Evaporation
- Rainfall

MRSC
Gisborne Marshland

Grassland and Transition to Plains Grassy Wetland

Job Number	31-34466
Revision	A
Date	21 Nov 2017

Figure 15

AU\Launceston\Projects\31\34466\3134466_LTN_04.cdr

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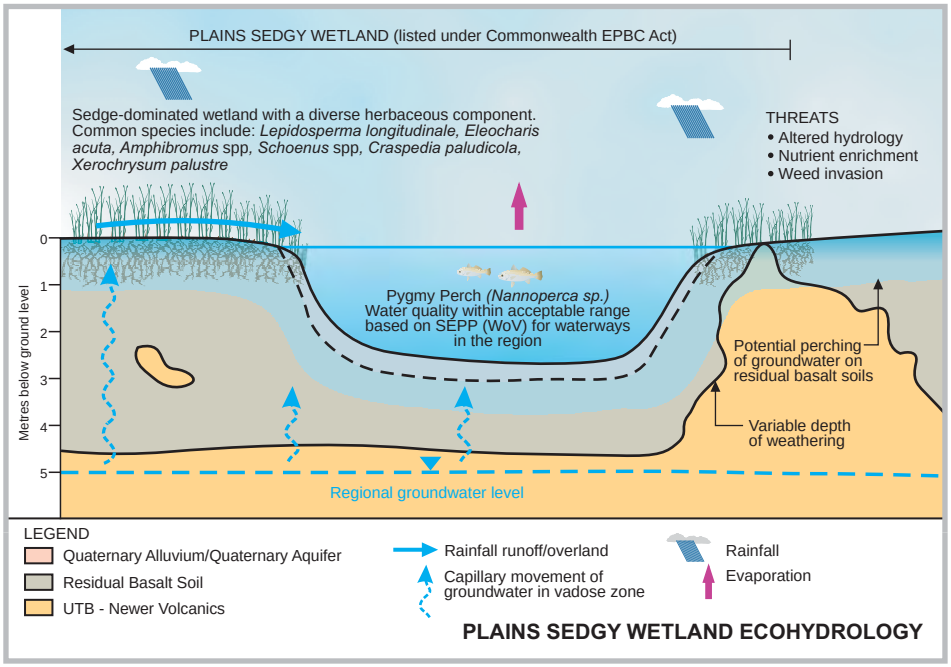


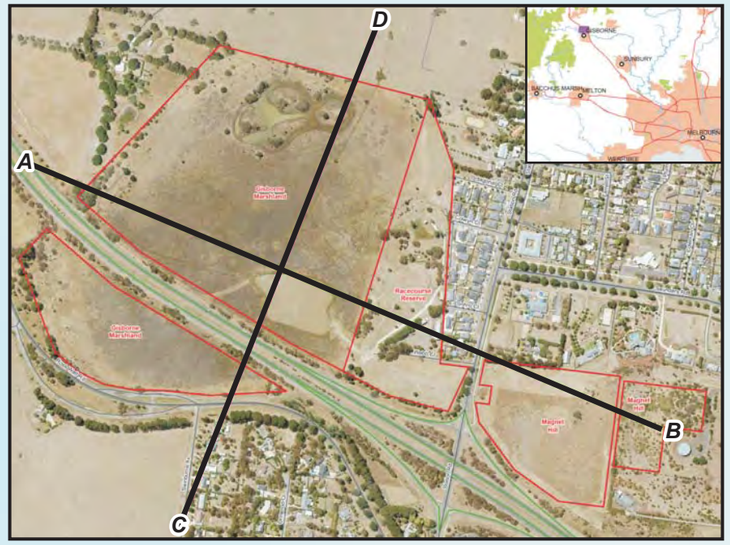
Figure 16 Insert Plains Sedgy Wetland

C

D

URBAN DEVELOPMENT

GISBORNE MARSHLANDS (SOUTH)



Lines of Section

GISBORNE MARSHLANDS (NORTH)

Rainfall recharge

Under Freeway drainage culvert. Free water flows from Southern Marshland to Northern Marshland

INTRODUCED PASTURE

INFERRED SURFACE WATER DIVIDE

PLANTED NATIVE TREES AND SHRUBS

PLAINS SEDGY WETLAND

INTRODUCED GRASSLAND

Ground surface typically inundated with surface water ~0.3m deep

- Likely to be groundwater dependent ecosystem (GDE)

Metres (AHD)

520
510
500
490
480
478
476
474
472
470
468
466
464
462
460
458
456
454
452
450
448

Swinburne Avenue

Ross Watt Road

Calder Freeway

Southern pond, contains permanent free standing water

Evaporation

Rainfall recharge

Existing groundwater monitoring bore (offset 60m to the east)

Existing groundwater monitoring bore

Stormwater inflows from adjacent urban development (~150m offset)

Northern Pond (contains permanent free standing water)

B3

MW2

2.7m

10m

4m

10m

Potential infiltration of standing surface water to subsurface soil

Potential infiltration of standing surface water to subsurface soil

Drainage from Freeway to the north marshlands

Groundwater flow direction

Conceptual diagram only - not to scale

GEOLOGY

- Unknown/fill material
- Quaternary Alluvium/Quaternary Aquifer
- Residual Basalt Soil
- UTB - Newer Volcanics
- Basalt floaters/outcrops

LEGEND

- Depth to groundwater
- Direction of water movement

MRSC
Gisborne Marshland

Eco-hydrological Model Cross Section C-D

Job Number 31-34466
Revision A
Date 18 Nov 2017

Figure 17

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7.4 Native flora

7.4.1 Ecological Vegetation Classes

DELWP's pre-1750 Ecological Vegetation Class (EVC) mapping suggests that prior to European settlement, the Gisborne Marshlands and the Steam Park supported Plains Sedgy Wetland, while Magnet Hill supported Plains Grassy Woodland (Figure 18).

Existing remnant native vegetation within the site has been mapped by DELWP at a scale of 1:25,0003 (Figure 19). Two Ecological Vegetation Classes (EVCs) have been modelled by DELWP as occurring across the site (Plains Grassy Woodland EVC 55 and Plains Sedgy Wetland EVC 647) (Table 11). Following a site inspection on 16 November 2016, an additional two EVCs, Plains Grassland (EVC 132) and Plains Grassy Wetland (EVC 125), were recorded and mapped at the site, while the modelled EVC, Plains Grassy Woodland, was deemed not to be present (Figure 20).

The majority of the study area's native vegetation values are centred on the **Gisborne Marshlands**, where Plains Sedgy Wetland is the dominant EVC, occupying the lowest section of the site where surface water is retained for longer than elsewhere on site and is most likely to exhibit shallow groundwater levels or local shallow perched groundwater systems (Figure 20; Plate 1). Plains Sedgy Wetland occurs on both sides of the Calder Freeway and there is a high likelihood that it is groundwater dependent to some degree. Plains Grassy Wetland fringes the east and north-western margins of the Plains Sedgy Wetland, in areas subject to shallow seasonal inundation due to local rainfall and runoff. Plains Grassland occurs in the north-east of the site where it fringes the wetland on ground susceptible to seasonal waterlogging. In addition to these EVCs, patches of 'planted native vegetation' and 'non-native vegetation' occur around the northern, western and southern margins of the Marshland (Figure 20).

Plate 1 Gisborne Marshland with *Craspedia paludicola* (Swamp Billy-buttons) in foreground

[3] http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/biodiversity-interactive-map

The **Steam Park** predominantly supports 'non-native vegetation' in the form of mown or slashed exotic grassland and 'planted native vegetation' (Plate 2), with a small area of Plains Grassy Wetland along the south-eastern margin, where the marshland influence crosses over into the Steam Park.

Plate 2 Steam Park, with planted native vegetation and mown introduced grassland

Apart from an abandoned orchard on the top of **Magnet Hill**, the remainder of the Magnet Hill area supports extensive areas of 'non-native vegetation', where perennial native understorey species comprise considerably less than 25% of the vegetative cover (i.e. the vegetation contained a very low cover of native species). While native species such as *Themeda triandra* (Kangaroo Grass) are present at Magnet Hill (Plate 3), particularly in and around the rocky outcrops (Figure 20; Plate 4), no areas support the required coverage of native perennial understorey species to qualify as a remnant patch of native vegetation. While DELWP's pre-1750 vegetation modelling includes the site within the surrounding Plains Grassy Woodland landscape, it is likely that Magnet Hill would have supported different species to the surrounding landscape on account of its elevation. Based on landscape position and native species recorded at Magnet Hill, Scoria Cone Woodland (EVC 894) is more likely the EVC that occupied this area prior to European settlement.

Plate 3 Clumps of *Themeda triandra* (Kangaroo Grass) and *Poa* sp. (Tussock Grass) at Magnet Hill along the rocky outcrops

Plate 4 Rocky outcrop near summit of Magnet Hill with *Acacia melanoxylon* (Blackwood) in background

Table 11 EVCs occurring on site and their Bioregional conservation status

Marshlands	Steam Park	Magnet Hill	EVC no.	EVC Name	Bioregional Conservation Status
x	x	x	55	Plains Grassy Woodland	Endangered
✓	✓	x	125	Plains Grassy Wetland	Endangered
✓	x	x	132_61	Heavier-soils Plains Grassland	Endangered
✓	x	x	647	Plains Sedgy Wetland	Endangered

Plains Sedgy Wetland (EVC 647)

Plains Sedgy Wetland is the most abundant EVC across the subject site. It grows on seasonally wet depressions on volcanic plains and is typically associated with fertile, silty, peaty, or heavy clay paludal soils with a more reliable water supply than Plains Grassy Wetland (EVC 125). At the time of assessment (mid-November 2016), the wetland supported standing water of variable depth up to 20 cm deep.

Within the site, Plains Sedgy Wetland is dominated by a dense sward of *Lepidosperma longitudinale* (Pithy Sword-sedge) to 1.2 m tall, in association with *Eleocharis acuta* (Common Spike-sedge) and *Craspedia paludicola* (Swamp Billy-buttons) (Plate 5). Other common or characteristic species include *Allitia cardiocarpa* (Swamp Daisy), *Amphibromus spp*. (Swamp Wallaby-grass), *Baumea arthrophylla* (Fine Twig-sedge), *Carex tereticaulis* (Poong'ort), *Epilobium billardierianum* (Variable Willow-herb), *Juncus spp*. (Rush), *Montia australasica* (White Purslane), *Ranunculus inundatus* (River Buttercup), *Senecio psilocarpus* (Swamp Fireweed), *Utricularia beaugleholei* (Purple Bladderwort) and *Xerochrysum palustre* (Swamp Everlasting).

This EVC is in relatively good condition and supports low weed cover (<5%), with the main occurrence of weeds being on the more disturbed margins of the wetland. The most common weed is *Holcus lanatus* (Yorkshire Fog), while other weeds such as *Aster subulatus* (Aster-weed), *Cotula coronopifolia (*Water Buttons) and *Rubus fruticosus* spp. agg. (Blackberry) are scattered throughout the wetland.

Plate 5 Plains Sedgy Wetland (EVC 647) looking toward Magnet Hill

Plains Grassy Wetland (EVC 125)

Plains Grassy Wetland occurs on the east and north-west margins of the main marshland. It is a grassy-herbaceous shallow seasonal wetland that grows on lowland plains. At the time of assessment (mid-November 2016), parts of the wetland supported shallow standing water to 5 cm deep. At the wetter end, Plains Grassy Wetland merges into Plains Sedgy Wetland, while at the drier end of the water availability continuum, it merges into Plains Grassland.

At the site, Plains Grassy Wetland is dominated by a diverse range of graminoids and forbs including *Allitia cardiocarpa* (Swamp Daisy), *Amphibromus* spp. (Swamp Wallaby-grass), *Centella cordifolia* (Centella), *Craspedia paludicola* (Swamp Billy-buttons), *Eleocharis acuta* (Common Spike-sedge), *Eryngium vesiculosum* (Prickfoot), *Haloragis heterophylla* (Varied Raspwort), *Juncus* spp. (Rush), *Lobelia pedunculata* (Matted Pratia), *Lythrum hyssopifolia* (Small Loosestrife), *Veronica gracilis* (Slender Speedwell) and *Xerochrysum palustre* (Swamp Everlasting) (Plate 6).

This EVC ranges from good to poor condition (<5% to >50% weed cover). The most common weed is *Holcus lanatus* (Yorkshire Fog), while other insidious weeds of ephemeral wetlands are scattered throughout. NOTE: The poor condition section of this EVC mapped on Figure 20 intergrades with Plains Sedgy Wetland, with the boundary between the two EVCs difficult to determine at this location due to the Yorkshire Fog invasion.

The eastern extent of this EVC extends into the adjoining Steam Park. It is recommended that bollards or star pickets be installed or the boundary fencing be re-aligned to facilitate the integrated management of this area with the rest of the Marshland reserve.

Plate 6 Plains Grassy Wetland (EVC 125) with abundant *Craspedia paludicola* (Swamp Billy-buttons) in the foreground and planted vegetation to the rear within the Steam Park

Plains Grassland (EVC 132)

Plains Grassland occurs in the north-east of the Gisborne Marshland reserve on heavy soils prone to seasonal waterlogging.

At the site, Plains Grassland is dominated by *Rytidosperma* spp. (Wallaby Grass) in association with the introduced grass, *Anthxanthum odoratum* (Sweet Vernal-grass) (Plate 7). The EVC is characterised by a range of graminoids and forbs including *Acaena echinata* (Sheep's Burr), *Anthosachne scabra* (Common Wheat-grass), *Asperula conferta* (Common Woodruff), *Dichondra repens* (Kidney-weed), *Drosera peltata* (Pale Sundew), *Lythrum hyssopifolia* (Small Loosestrife), *Oxalis perennans* (Grassland Wood-sorrel), *Schoenus apogon* (Common Bog-sedge) and *Veronica gracilis* (Slender Speedwell).

Within the Plains Grassland (in the north-eastern corner of the marshland reserve), scattered plantings of native shrubs and trees (e.g. *Acacia dealbata* Silver Wattle, *A. melanoxylon* Blackwood, *Bursaria spinose* Sweet Bursaria, *Eucalyptus ovata* Swamp Gum) have occurred over the past decade (Plate 7). These plantings have the potential to shade out native grassland, displace native grassland species and consequently reduce the quality of the grassland remnant. It should be noted that removal of some of these inappropriate plantings has already occurred in recent years.

This EVC is in moderate condition, mainly due to the prevalence of introduced species such as Sweet Vernal-grass, *Acetosella vulgaris* (Sheep Sorrel), *Agrostis capillaris* (Brown-top Bent), *Romulea rosea* (Onion Grass) and *Trifolium dubium* (Suckling Clover).

Plate 7 Plains Grassland (EVC 132) looking east toward Magnet Hill, with a darker patch of Plains Sedgey Wetland (EVC 647) on the right of the photograph and planted native shrubs in the background

Recommendations

Rec 7. Install bollards or star pickets in the short term and realign fencing in the long term to prevent mowing and degradation of Plains Grassy Wetland on the western edge of the Steam Park

Rec 8. Selectively remove inappropriate shrub and tree plantings that are not compatible with the area of Plains Grassland in the north-east corner of the Gisborne Marshland. NOTE: Native plantings around the western margin of the marshland and south of the freeway occur in areas already dominated by introduced vegetation; therefore, these plantings do not constitute a threat to the integrity of remnant grassland and wetland vegetation, and consequently, do not need to be removed.

7.4.2 Listed vegetation communities

Commonwealth EPBC Act

Two ecological communities listed under the *Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999* occur within the Marshland section of the reserve:

- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (Critically Endangered)
  - Corresponds to EVC 647 and EVC 125
- Natural Temperate Grassland of the Victorian Volcanic Plain (Critically Endangered)
  - Corresponds to EVC 132

Victorian FFG Act

One threatened community listed under the Victorian *Flora and Fauna Guarantee (FFG) Act 1988* occurs within the Marshland section of the reserve:

- Western (Basalt) Plains Grassland Community
  - Corresponds to EVC 132

Recommendations

NOTE: Recommendations associated with maintaining and improving the condition of the listed vegetation communities are contained within Sections 7.2.1 (diverting urban stormwater runoff, maintaining marshland hydrological regime), 7.4.1 (fencing, removal of inappropriate revegetation), Rec 14 (condition monitoring program for listed species and communities), 7.10.2 (ecological fire management) and 7.11 (weed eradication/control).

NatureKit

1750 Vegetation

Legend

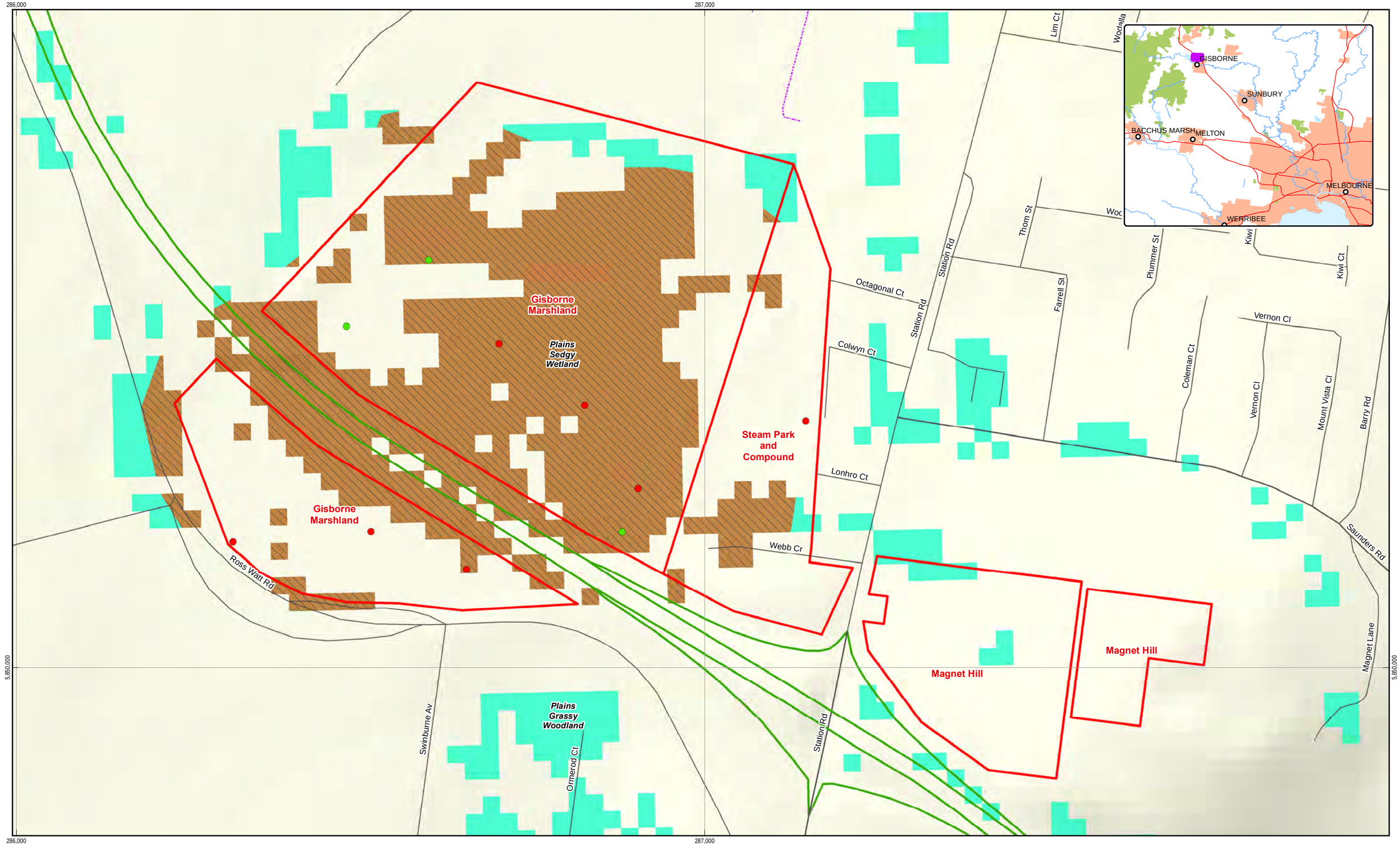
- Extend
- Hillshade
  - High : 254
  - Low : 1
- 1750 EVC Outlines
- 1750 EVC Groups
  - Coastal Scrubs Grasslands and Wc
  - Montane Grasslands, Shrublands o
  - Sub-alpine Grasslands, Shrublands
  - Plains Grasslands and Chenopod S
  - Plains Woodlands or Forests
  - Plains Woodlands or Forests (Semi
  - Riverine Grassy Woodlands or Fore
  - Herb-rich Woodlands
  - Heathlands
  - Mallee (Siliceous sands)
  - Mallee (Calcareous dunefields)
  - Mallee (Clay plains)
  - Mallee (Sandstone ridges and rises
  - Wetlands
  - Salt-tolerant and/or succulent Shrul
  - Heathy Woodlands
  - Rocky Outcrop or Escarpment Scru
  - Lowland Forests

Map Created on **11/21/17 4:00**

0.5 0 Distance / 2 0.5 Kilometers

GDA_1994_VICGRID94

VICTORIA State Government | Environment, Land, Water and Planning



Paper Size A3

0 30 60 120 180 240

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

Site boundaries

VBA Fauna

- Vic Advisory Listed
- FFG Listed
- EPBC Listed

VBA Flora

- Vic Advisory Listed
- FFG Listed
- EPBC Listed

EVC 2005

- 55 Plains Grassy Woodland
- 647 Plains Sedgy Wetland
- Land

Macedon Ranges Shire Council
Gisborne Marshlands Racecourse Reserve and Magnet Hill Environmental Management Plan

Gisborne Marshlands and Magnet Hill Ecological Vegetation Classes (EVCs)

Job Number	31-34466
Revision	0
Date	05 Jul 2017

Figure 19

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Data source: DELWP, VicMap, 2016 Created by: lrsmith

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286,000 286,500 287,000 287,500

5,850,500 5,850,000

Ross Watt Rd
Groundwater monitoring bore
>25
Outlet drain
>20
10
Culvert - stormwater drain from urban area
Inlet channel
2
>20
1
1
4
Hundreds
>15
>30
>20
Webb Cr
Freeway construction sediment trap
Station Rd
Chessy Park Dr
Lim Ct
Dalray Cr
Woodworth St
Thom St
Farrell St
Kiwi Ct
Octagonal Ct
Plummer St
Colwyn Ct
Mount Vista Ct
Coleman Ct
Saunders Rd
Vernon Ct
Lonhro Ct
Barry Rd
Old stone wall at ground level
Rocky outcrop / Pinus radiata
Stone wall
Rock wall
1
Magnet Lane
Swinburne Av
Ormerod Cr
Station Rd

Paper Size A3

0 25 50 100 150 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

Native Vegetation - EVCs
- 647 Plains Sedgy Wetland
- 132 Plains Grassland
- 125 Plains Grassy Wetland

Condition of Native Vegetation
- High
- Medium
- Low
- Scattered tree (native)
- Blackberry
- Incidental Point

Threatened species
- Senecio psilocarpus
- Xerochrysum palustre

Non-Native vegetation
Orchard (abandoned)
Planted Native vegetation
Blackberry
Carpark
Water body
Rec reserve sheds and parking
Rocky outcrops with scattered native flora

GHD

Macedon Ranges Shire Council
Gisborne Marshlands, Racecourse Reserve and Magnet Hill EMP

Job Number 31-34466
Revision C
Date 18 Aug 2017

Fieldwork results

Figure 20

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Data source: MRSC, Aerial Imagery, 2016; VicMap, DELWP, 2016. Created by:mjahanshahi

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7.4.3 Flora species

A total of 138 vascular flora species (69 native, 69 introduced) was recorded across the Gisborne Marshland, the Steam Park and Magnet Hill on 16 November 2016 (Appendix A). It should be noted that this list is an incidental species list and a formal vegetation survey was not undertaken. Additional records have been recently documented from the Marshland and are available on the 'Natureshare' website[4].

7.4.4 Listed threatened flora species

Rare, threatened or poorly known flora are species listed under one or more of the following Acts or lists: EPBC Act, FFG Act or *Advisory List of Rare or Threatened Plants in Victoria – 2014* (DEPI 2014).

A total of 37 rare, threatened or poorly known flora species have been either recorded on site during the current study and previous surveys (three species), recorded from the VBA (26 additional species) or predicted to occur by the PMST (eight additional species) within 10 km of the study site (Table 12).

Due to the presence of suitable marshland (Gisborne Marshland and Steam Park), grassland (Gisborne Marshland) and rocky knoll (Magnet Hill) habitat, it is possible that other listed flora species may occur within the study site.

Two flora species listed under the Commonwealth EPBC Act occur within the marshland reserve:

- *Senecio psilocarpus* (Swamp Fireweed) – listed as vulnerable (EPBC Act), listed as vulnerable (DELWP Advisory List)
- *Xerochrysum palustre* (Swamp Everlasting) – listed as vulnerable (EPBC Act), listed as threatened under Victorian FFG Act, listed as vulnerable (DELWP Advisory List) (Plate 8)

The population of Swamp Fireweed occurs within the Gisborne Marshland section of the site on the northern side of the Calder Freeway; however, it is also likely to occur on the southern side of the Freeway and possibly within the swampy section of the Steam Park. It is estimated that the population comprises over 500 plants and quite possibly over 1,000 plants.

The population of Swamp Everlasting occurs within the Gisborne Marshland section of the site on both the northern and southern sides of the Calder Freeway; however, it is also likely to occur within the swampy section of the Steam Park. It is estimated that the population comprises over 1,000 plants and quite possibly up to 5,000 plants.

[4] http://natureshare.org.au/collections/53b3981ae35eb129840001da/species_items

Plate 8 *Xerochrysum palustre* (Swamp Everlasting)

One flora species listed on the *Advisory list of rare or threatened plants in Victoria* (DEPI 2014) occurs within the marshland reserve:

- *Coronidium gunnianum* (Pale Swamp Everlasting)

The population of Pale Swamp Everlasting occurs within the Gisborne Marshland section of the site on the northern and southern side of the Calder Freeway; however, it is also likely to occur within the swampy section of the Steam Park. It is estimated that the population comprises over 1,000 plants and quite possibly up to 5,000 plants.

Individual point locations for the distribution of the three known listed species are shown in Figure 20; however, it should be noted that the distribution of these species covers most of the Plains Sedgy Wetland and Plains Grassy Wetland.

It is noted that the Plains Yam Daisy, *Microseris scapigera* was previously found at the Gisborne Marshlands on the fringes of the stormwater outflow area now dominated by Yorkshire Fog (SMEC 2008). This species is listed as "vulnerable" on the *Advisory list of rare or threatened plants in Victoria* (DEPI 2014). The species may still be present and may re-emerge once the storm water outflow is diverted.

Recommendation

Rec 9. Undertake a targeted survey in November for listed threatened flora to obtain an accurate estimate of population size for each species. Follow up surveys should be undertaken annually or biannually to determine how the species are tracking over time

7.4.5 Revegetation and natural regeneration

The Society for Ecological Restoration's *National Standards for the Practice of Ecological Restoration in Australia (March 2016)* recommend facilitating natural regeneration prior to undertaking revegetation. This approach ensures any future reconstruction based activities (such as planting) is informed by an assessment of the site's natural capacity to recover and site specific characteristics.

Any revegetation activities on site should use a mix of locally indigenous species appropriate to the relevant EVC in the landscape.

Given the presence of Kangaroos at the three sites, incorporating tree guards or Kangaroo exclusion fencing into regeneration and revegetation projects is likely to be required to ensure survival of juvenile plants.

In principle, planting of trees in ecological vegetation communities where trees are not usually present should not occur in order to preserve the integrity of the vegetation community.

Gisborne Marshlands

At the Gisborne Marshland, revegetation opportunities include:

- The disturbed mound in the south-west corner of the site. It is recommended that this mound be removed if possible (potentially by requesting permission to access the site via the neighbouring property) and the site rehabilitated with indigenous species.
- The islands within the northern dams.
- The western side of the area south of the Calder Freeway which contains primarily non-native and planted species.
- The Yorkshire Fog infested area near the storm water drain outlet on the eastern boundary of the site if the site does not naturally regenerate following re-alignment of the storm water.

Plate 9 *Holcus lanatus* (Yorkshire Fog) infestation within the marshland

Other areas mapped as non-native vegetation on Figure 20 could also be rehabilitated in the future if desired.

Revegetation should not occur within the patches of remnant native vegetation (except within the Yorkshire Fog infested area).

As a first priority, this area should be allowed to naturally regenerate following intensive weed control, and only revegetated as a back-up if natural regeneration is unsuccessful. Natural regeneration within the native grassland patch in the north-east corner of the Marshland could be facilitated via the introduction of an ecological burning regime, as outlined in Section 7.10.2.

Steam Park

The dam/bio-retention system at the Steam Park is currently in poor condition, with minimal fringing vegetation and no floating or emergent aquatic vegetation. The margins of the dam should be revegetated with indigenous sedges/rushes to help improve water quality, reduce turbidity, enhance fauna habitat and improve general visual amenity. It is also recommended that once the drainage line extending from the Colwyn Estate is redirected, that this new drainage line be revegetated as appropriate.

Magnet Hill

Limited opportunities for natural regeneration exist at Magnet Hill, owing to the existing high cover of weeds. Some opportunity for natural regeneration exists in and around the rocky outcrops, which support a variety of native grasses and forbs.

Slowly rehabilitating the site with indigenous species would enhance its value as a habitat for native fauna while creating a pleasant environment for passive recreation. This could take the form of planting of scattered individuals of canopy species or revegetation patches using a mix of shrubby species. Opportunity also exists to enhance the condition of the rocky outcrop areas if the walking path passes through or nearby this area.

While the site is modelled by DELWP as part of the surrounding Plains Grassy Woodland EVC, this EVC is generally found on “flat or gently undulating plans at low elevations” rather than steep rocky outcrops (*EVC / Bioregion Benchmark for Vegetation Quality Assessment, Central Victorian Uplands bioregion, EVC 55: Plains Grassy Woodland*, DSE, 2004). Based on landscape position and native species recorded at Magnet Hill, Scoria Cone Woodland (EVC 894) is more likely the EVC that occupied this area prior to European settlement.

Perimeter plantings are recommended in the concept plan for the site (Appendix D) to maintain the privacy of surrounding properties and screen views of the surrounding housing. To minimise fire risk, it is recommended that these perimeter plantings minimise fine fuel loads. This involves choosing species that produce limited bark and leaf litter and minimising plantings of shrubs and high fuel load ground story species.

Recommendation

Rec 10. Gisborne Marshlands - Remove the mound of fill from the south-west corner of the Gisborne Marshland (north of the Highway) if possible and rehabilitate / revegetate using a mix of locally indigenous tree, shrub and robust ground cover species appropriate to Plains Grassy Woodland (EVC 55).

Rec 11. Gisborne Marshlands - Following control of Yorkshire Fog in the vicinity of the stormwater drain outlet, allow natural regeneration of native wetland species. If natural regeneration fails after one year, consider revegetating this area using a suite of robust Plains Sedgy Wetland and Plains Grassy Wetland species that occur in adjacent areas of the marsh.

Rec 12. Steam Park - Revegetate the margins of the Steam Park dam using a mix of locally indigenous wetland species to improve environmental values and its water filtering capacity.

Rec 13. Magnet Hill - Prepare a Revegetation Plan for Magnet Hill that sets out planting locations, species and densities appropriate to Scoria Cone Woodland EVC. Ensure the revegetation plan maintains views to the surrounding landscape and is consistent with the pathway network and other infrastructure proposed in the concept plan included in this EMP (Appendix D).

Rec 14. Magnet Hill – Rehabilitate the site through the staged implementation of the Revegetation Plan. Monitor success and adjust species and techniques as required.

Rec 15. All reserves - ensure any revegetation that occurs include plant guards to prevent browsing by rabbits and kangaroos.

7.4.6 Monitoring of threatened flora species and the listed wetland community

The Gisborne Marshlands are nationally significant, owing to the good condition of the *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains* (Critically Endangered), and the large populations of two nationally vulnerable plant species, Swamp Fireweed and Swamp Everlasting. Given that there are a number of threatening processes operating at the marshland and in the immediate vicinity (e.g. potential for altered hydrology, adjacent urban subdivision, weed invasion), it is imperative that the Macedon Ranges Shire Council implement a monitoring program so that the condition of the marshland vegetation, and the health of the threatened flora populations within the marshland, can be monitored over time. This will provide important data on the health of this nationally significant asset, and enable the Council to implement evidence-based remedial management actions if vegetation condition appears to be deteriorating over time.

Issues to consider in the development of a monitoring program include the following:

- Sampling to focus on patches of the listed wetland community and the two species of national significance.
- Sampling to be undertaken at a minimum of eight small quadrats or transects for each of the listed species and the wetland community, in order to pick within site variability in vegetation condition and population health.
- Sampling of the vegetation community needs to include variables that are sensitive to fine-scale change. For example, implementation of habitat hectares as a monitoring approach would be too course to pick up small-scale change in vegetation condition over time. Variables to monitor could include health (e.g. vigour, height, stem density, cover) of the dominant sedge species, native species richness and soil moisture or water depth.
- Sampling of the listed species could include variables such as health (e.g. vigour, height, stem density, cover), number of plants or size of patch if individual plant numbers cannot be estimated, number of flowering or fruiting individuals, and soil moisture or water depth.
- Sampling should be conducted annually, with November the most appropriate time of year to conduct the survey, while the listed species are flowering and readily observable.

Recommendations

Rec 16. Prepare and implement a Flora Monitoring Plan to track change over time in the condition of the listed wetland community and health of the threatened flora populations.

Rec 17. Consider use of tools such as the Index of Wetland Condition and Wetland Monitoring and Assessment Program to monitor the overall health of the marshland.

Rec 18. Encourage sightings of threatened flora species to be reported to Council for inclusion in Council's database and / or the Victorian Biodiversity Atlas.

NOTE: Recommendations associated with maintaining and improving the health of the listed species populations are contained within Sections 7.2.1 (diverting urban stormwater runoff, maintaining marshland hydrological regime) and 7.11 (weed eradication/control).

Table 12 Listed flora species recorded or predicted to occur within 10 km of Gisborne Marshland Reserve

Scientific Name	Common Name	Source	EPBC	FFG	VICAD	Count of Sightings	Last Record
Pimelea spinescens var. *spinescens*	Spiny Rice-flower	PMST	CR	L	en	NA	NA
Ballantinia antipoda	Southern Shepherd's Purse	VBA	EN	L	en	1	01/01/1770
Caladenia tensa	Rigid Spider-orchid	PMST	EN		vu	NA	NA
Dianella amoena	Matted Flax-lily	VBA, PMST	EN	L	en	25	1/12/2011
Lepidium hyssopifolium	Basalt Peppercress	PMST	EN	L	en	NA	NA
Leucochrysum albicans var. *tricolor*	White Sunray	PMST	EN	L	en	NA	NA
Prasophyllum frenchii	Maroon Leek-orchid	PMST	EN	L	en	NA	NA
Caladenia versicolor	Candy Spider-orchid	PMST	VU	L	en	NA	NA
Eucalyptus aggregata	Black Gum	VBA, PMST	VU	L	en	1	9/06/2015
Glycine latrobeana	Clover Glycine	PMST	VU	L	vu	NA	NA
Senecio psilocarpus	**Swamp Fireweed**	**VBA, PMST**	**VU**		**vu**	**2**	**11/11/2003**
Thelymitra matthewsii	Spiral Sun-orchid	PMST	VU	L	vu	NA	NA
Xerochrysum palustre	**Swamp Everlasting**	**VBA, PMST**	**VU**	**L**	**vu**	**8**	**12/09/2011**
Acacia rostriformis	Bacchus Marsh Wattle	VBA		L	vu	6	21/11/2011
Diuris punctate	Purple Diuris	VBA		L	vu	10	26/10/2001
Geranium sp. 1	Large-flower Crane's-bill	VBA		L	en	4	26/02/2010
Stylidium armeria subsp. *pilosifolium*	Hairy-leaf Triggerplant	VBA		L	en	8	26/04/2011
Coronidium gunnianum	**Pale Swamp Everlasting**	**VBA**			**vu**	**5**	**18/05/2011**
Geranium solanderi var. *solanderi* s.s.	Austral Crane's-bill	VBA			vu	1	26/03/2003
Microseris scapigera s.s.	Plains Yam-daisy	VBA			vu	2	1/12/1999

Scientific Name	Common Name	Source	EPBC	FFG	VICAD	Count of Sightings	Last Record
Acacia leprosa var. *uninervia*	Large-leaf Cinnamon-wattle	VBA			r	1	25/05/2011
Acacia nano-dealbata	Dwarf Silver Wattle	VBA			r	40	5/01/2012
Bossiaea cordigera	Wiry Bossiaea	VBA			r	4	5/09/2011
Calochilus imberbis	Naked Beard-orchid	VBA			r	8	1/12/1953
Dianella callicarpa	Swamp Flax-lily	VBA			r	1	28/06/2005
Eucalyptus brookeriana	Brooker's Gum	VBA			r	1	13/12/2011
Eucalyptus yarraensis	Yarra Gum	VBA			r	4	19/04/1994
Euphrasia collina subsp. *trichocalycina*	Purple Eyebright	VBA			r	2	30/10/2007
Grevillea repens	Creeping Grevillea	VBA			r	1	18/05/1932
Prostanthera saxicola var. *bracteolata*	Slender Mint-bush	VBA			r	2	2/12/1996
Pultenaea reflexifolia	Wombat Bush-pea	VBA			r	3	1/11/1984
Pultenaea weindorferi	Swamp Bush-pea	VBA			r	5	6/11/2001
Tetratheca stenocarpa	Long Pink-bells	VBA			r	2	2/12/1996
Platylobium montanum subsp. *prostratum*	Mountain Flat-pea	VBA			k	1	5/09/2011
Pleurosorus subglandulosus	Glandular Blanket-fern	VBA			k	1	07/07/1895
Racomitrium rupestre	Rock Fringe-moss	VBA			k	1	28/01/1900
Thelymitra exigua	Short Sun-orchid	VBA			k	1	25/10/1935

7.5 Fauna

7.5.1 Listings and significance

Likelihood of occurrence of threatened fauna assessment

The likelihood of occurrence of listed threatened species was assessed on a 4-tier scale. Species considered unlikely or highly unlikely to be present have been excluded but are listed in Appendix B.

Present - individuals recorded within the study site during the current assessment or any previous assessment within the boundaries of the study site.

Possible - potentially suitable habitat occurs within the site, species' known range encompasses the study area, and species recorded historically within 10 km of the study area.

Unlikely - i) species' known range encompasses the study area, but suitable habitat does not occur within the study area, or occurs within the study area but with generally low quality and quantity. Species recorded historically within 10 km of the study area, but generally not within the last 30 years; OR

ii) No historical records of the species exist within 10 km of the study area and/or no suitable habitat exists within the study area.

Highly Unlikely - suitable habitat not known to occur within the study site, and species not recorded for over 30 years within 10 km of the site.

Table 13 Significant fauna previously recorded within the local area (10 km) and likelihood of being present

Common Name	Scientific Name	Type	EPBC	FFG	DELWP	Likelihood
Tussock Skink	*Pseudemoia pagenstecheri*	Reptile			V	Possible
Brown Toadlet	*Pseudophryne bibronii*	Amphibian		L	EN	Possible
Southern Toadlet	*Pseudophryne semimarmorata*	Amphibian			V	Possible
Growling Grass Frog	*Litoria ranformis*	Amphibian				Possible
Brush-tailed Phascogale	*Phascogale tapoatafa*	Mammal		L	V	Unlikely
Common Dunnart	*Sminthopsis murina murina*	Mammal			V	Unlikely
Greater Glider	*Petauroides volans*	Mammal	VU		V	Highly Unlikely
Leadbeater's Possum	*Gymnobelideus leadbeateri*	Mammal	CR	L	EN	Highly Unlikely
Spot-tailed Quoll	*Dasyurus maculatus maculatus*	Mammal	EN	L	EN	Highly Unlikely
Native Pygmy Perch[1]	*Nannoperca sp.*	Fish	?[1]	?[1]	V	Present – Southern Dam of Gisborne Marshlands

Common Name	Scientific Name	Type	EPBC	FFG	DELWP	Likelihood
Golden Perch	*Macquaria ambigua*	Fish			NT	Possible
Australian Painted Snipe	*Rostratula australis*	Bird	EN	L	CR	Possible
Australian Pied Cormorant	*Phalacrocorax varius*	Bird	-	-	Listed	Present - Gisborne Marshlands
Brown Treecreeper (south-eastern ssp.)	*Climacteris picumnus victoriae*	Bird			NT	Unlikely
Curlew Sandpiper	*Calidris ferruginea*	Bird	CR			Possible
Latham's snipe	*Gallinago hardwickii*	Bird	Listed migratory species	Nominated	Near threatened	Present - Gisborne Marshlands
Nankeen Night Heron	*Nycticorax caledonicus hillii*	Bird			NT	Likely
Powerful Owl	*Ninox strenua*	Bird		L	V	Possible
Spotted Quail-thrush	*Cinclosoma punctatum*	Bird			NT	Unlikely
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	Bird		L	V	Present
White-throated Needletail	*Hirundapus caudacutus*	Bird			V	Possible
Little Egret	*Egretta garzetta nigripes*	Bird		CR		Present – Gisborne Marshlands

Legend
Type: Invertebrate, Fish, Amphibian, Reptile, Bird, Mammal
EPBC Act status: EXtinct, CRitically endangered, ENdangered, VUlnerable, Conservation Dependent, Not Listed
FFG Act status: Listed as threatened, Nominated, Delisted, Never Listed, Ineligible for listing
DELWP Advisory status: presumed EXtinct, Regionally Extinct, Extinct in the Wild, CRitically endangered, ENdangered, Vulnerable, Rare, Near Threatened, Data Deficient, Poorly Known, Not Listed

1. Only juvenile specimens recorded which makes identification to species level difficult. Confirmation of the species was made through consultation with specialists at DELWP. The species is most likely Southern Pygmy Perch (*Nannoperca australis*) which is listed as Vulnerable under the DELWP Advisory List although this is for the Murray-Darling lineage from the upper Murray to the Avoca River.

None of the fish species were collected during the survey of the Gisborne Marshlands.

7.5.2 Birds

Water birds

A number of waterbirds have been sighted at the Gisborne Marshlands which include the Australian White Ibis, Australian Shelduck, Pacific Black Duck, Maned Duck, White-necked Heron and White Faced Heron. Latham's Snipe and the Little Egret have also been observed, which are listed as threatened taxa in Victoria. Local residents have also observed White-bellied Sea Eagles hovering over the reserve.

Other birds

Two bird surveys were completed in spring of 2016 at the Gisborne Marshlands and Magnet Hill by Macedon Ranges Shire Council and the Woodend Bird Observers Group. Thirty-four species of bird were recorded at these sites.

Table 14 Bird species recorded at Gisborne Marshlands

Common	Scientific
Australian Magpie	*Gymnorhina tibicen*
Australian Pipit	*Anthus australis*
*Australian Pied Cormorant	*Phalacrocorax varius*
Australian White Ibis	*Threskiornis moluccus*
Australian Shelduck	*Tadorna tadornoides*
Common Blackbird	*Turdus merula*
Common Myna	*Acridotheres tristis*
Common Starling	*Sturnus vulgaris*
Crimson Rosella	*Platycercus elegans*
Eurasian Skylark	*Alauda arvensis*
Fairy Martin	*Petrochelidon ariel*
Galah	*Eolophus roseicapilla*
Golden-headed Cisticola	*Cisticola exilis*
Grey-shrike Thrush	*Colluricincla harmonica*
Laughing Kookaburra	*Dacelo novaeguineae*
*Latham's Snipe	*Gallinago hardwickii*
*Little Egret	*Egretta garzetta nigripes*
Little Raven	*Corvus mellori*
Magpie-lark	*Grallina cyanoleuca*
Maned Duck	*Chenonetta jubata*
Masked Lapwing	*Vanellus miles*
Nankeen Kestrel	*Falco cenchroides*
Pacific Black Duck	*Anas superciliosa*
Red Wattlebird	*Anthochaera carunculata*
Red-rumped Parrot	*Psephotus haematonotus*
Sulphur-crested Cockatoo	*Cacatua galerita*
Superb Fairywren	*Malurus cyaneus*
Welcome Swallow	*Hirundo neoxena*
White-faced Heron	*Egretta novaehollandiae*
White-plumed Honeyeater	*Ptilotula penicillata*
White-necked Heron	*Ardea pacifica*

*Threatened species

Table 15 Bird species recorded at Magnet Hill spring

Common	Scientific
Nankeen Kestrel	*Falco cenchroides*
Australian Magpie	*Gymnorhina tibicen*
Common Myna	*Acridotheres tristis*
Crimson Rosella	*Platycercus elegans*
Little Raven	*Corvus mellori*
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*
Scarlet Robin	*Petroica boodang*
Common Blackbird	*Turdus merula*
Wedge-tailed Eagle	*Aquila audax*

Wetland bird species will often migrate to various waterbodies in search of resources and social opportunities. There is opportunity for other wetland bird species to utilise the site. Providing wetland nesting boxes and floating perches may also attract wetland birds to the reserve.

The increasing development around the Gisborne Marshland and Magnet Hill will likely place greater pressure on wildlife. There are increased risks from loss of habitat, litter, pollution, loud and / or sustained noises, increased movement and artificial and moving light. Domestic cats and dogs will also pose a serious concern for wildlife.

The consequences of increased noise and disturbance include distraction of adults from protecting their nests and increased energy expenditure associated with avoiding predators and perceived threats, leading to reduced survival of young and reduced breeding success.

The impact of human activity on the site's birds is evidenced by the diversity and abundance of birds observed during the surveys further away from the freeway. This was likely a consequence of the decreased traffic noise.

Installation of shrub vegetation on the artificial islands at the back lake at the Marshland may reduce some of the edge effects from the development and provide protection from predators. Any vegetation planted needs to be consistent with the EVC and will unlikely be able to seed or regenerate away from the planted location. Planting these areas with native species may also suppress some of the weed growth.

A vegetated buffer along the north side of the Marshland within the new estate, as recommended in the *New Gisborne Development Plan Conservation Management Plan*, will also contribute to protecting the site's birdlife.

Monitoring the bird species at the reserves is essential for measuring changes. Surveys should be conducted annually in spring and utilise the same transects used each year (Figure 21 and Figure 22). The transects used for the bird surveys in 2016 are provided below.

Annual monitoring for Latham's Snipe is also recommended to detect any changes to this threatened species' presence and/or abundance.

Plate 10 Island at back of Gisborne Marshland where planting could be used to buffer light and sound and provide a screen for native birds

Plate 11 Scarlet Robin at Magnet Hill

Figure 21 Bird transects used for surveys in 2016 of Gisborne Marshland Reserve

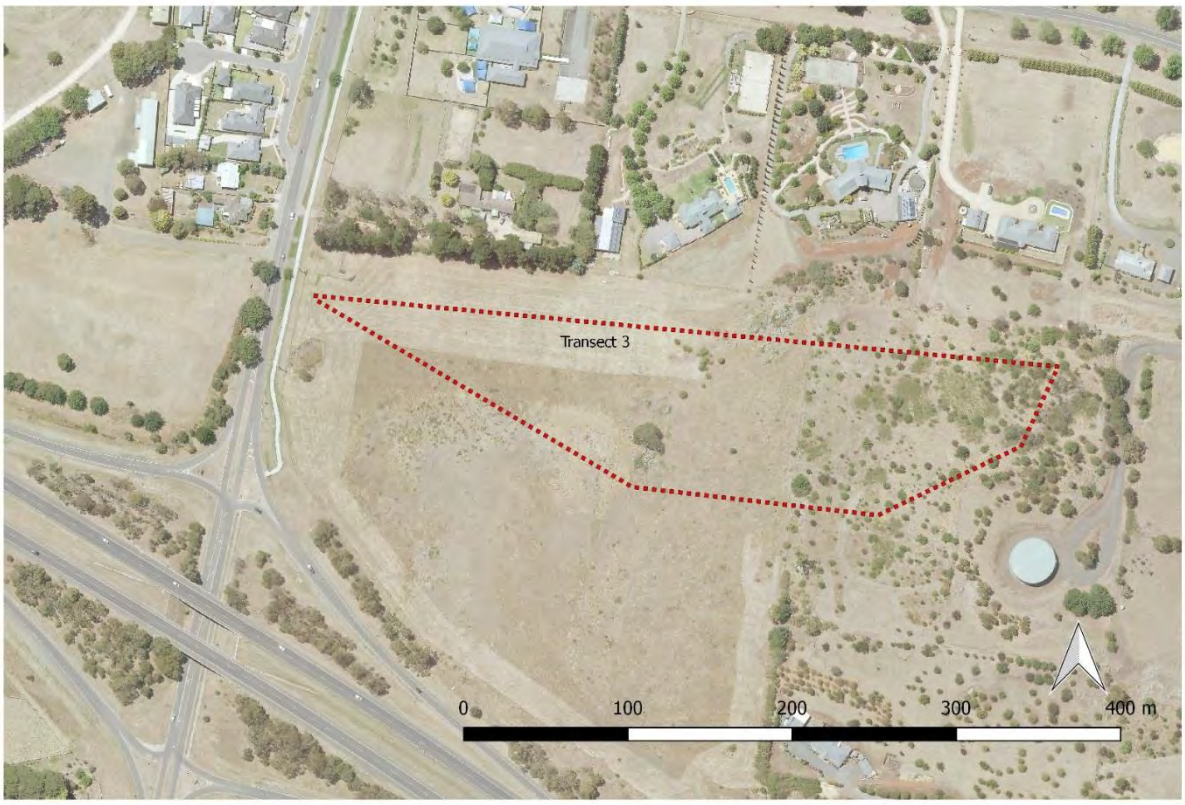


Figure 22 Bird transects used for surveys in 2016 of Magnet Hill

Rec 19. Install bird nesting and roosting habitat boxes and barges at the Gisborne Marshlands aimed at providing further habitat and breeding opportunities that support wetland birds.

Rec 20. Revegetate the artificial islands in the back lake at the Gisborne Marshlands to provide a buffer and enhanced habitat for wetland birds and frog species.

Rec 21. Install nest boxes in the treed areas of the Gisborne Marshland and Steam Park to provide nesting opportunities for bird species that require hollow bearing trees. Nest boxes should be checked annually to ensure that they are being used by target species and to record activity.

Note: See Section 7.5.7 for recommendations relating to preparing and implementing a Fauna Monitoring Plan, including activities to monitor for birds.

7.5.3 Frogs

The Marshland Reserve has excellent habitat for a variety of frog species. Surveys conducted during 2016 recorded eight species of frog. While Growling Grass Frogs were not observed during the surveys, the conditions were not ideal and future surveys to document the frog species would be recommended.

The detection of the Eastern Dwarf Tree Frog was an unusual discovery. The Victorian Biodiversity Atlas shows that the nearest record exists in the Melton region. This frog has likely been introduced by local residents. These frogs are sometimes found amongst bananas imported from the northern states. The population of these introduced frogs should be monitored to ensure that they are not increasing which could have potential to impact on native species.

Another frog species which was not detected was the Brown Toadlet. This species is known for being difficult to record. While the species has not been recorded previously, recent surveys of this threatened species in the Macedon Ranges have found the Brown Toadlet to be abundant in small pockets of available habitat. While surveys for most frogs are undertaken in the warmer months, surveys for Brown Toadlets should be undertaken in autumn immediately after rain. Surveys in Kyneton have shown that artificial refuges are excellent ways to monitor for the species.

No frog surveys were undertaken at Magnet Hill.

Threats to the frogs at the Gisborne Marshland and the Steam Park include vehicles damaging habitat, the introduction of Chytrid Fungus and pollutants from adjoining uses. Opportunities to support and enhance frog populations include supporting safe migration to adjoining habitat zone through use of mechanisms such as drift fencing.

It is recommended that annual frog surveys be undertaken each year which the aim to detect threatened species and measure changes in abundances of common species. These surveys will also facilitate monitoring of the introduced Eastern Dwarf Tree Frog and determine if the species may be having a negative impact on native species.

Plate 12 Small dam at Gisborne Marshland with extensive frog habitat

Table 16 Frog species recorded during surveys in 2016

Common name	Scientific name
Eastern Banjo Frog	*Limnodynastes dumerilii*
Common Spadefoot Toad	*Neobatrachus sudelli*
Striped Marsh Frog	*Limnodynastes peronii*
Spotted Marsh Frog	*Limnodynastes tasmaniensis*
Common Froglet	*Crinia signifera*
Plains Froglet	*Crinia parinsignifera*
Southern Brown Tree Frog	*Litoria ewingii*
*Eastern Dwarf Tree Frog	*Litoria fallax*

*An introduced species from northern Australia. Call confirmed by Andrew Hamer of Melbourne University

Rec 22. Install tiles around waterbodies at the Gisborne Marshlands and Steam Park to provide additional habitat and to facilitate monitoring of frog and reptile species.

Rec 23. Implement vehicle hygiene procedures for management vehicles and contractors entering the Gisborne Marshlands to prevent the spread of weeds and pathogens, including the Chytrid Fungus. Ensure materials entering the site are also free of weeds and pathogens.

Rec 24. Investigate installation of drift fencing adjoining the proposed drainage channel aimed at encouraging positive migration of frogs across the two habitat zones.

Note: See Section 7.7 for recommendations regarding preventing vehicle access to the Marshland to provide existing frog and reptile habitat. See Section 7.5.7 for recommendations relating to preparing and implementing a Fauna Monitoring Plan, including activities to monitor for frogs.

7.5.4 Reptiles

While no reptiles were encountered during development of the Environmental Management Plan, a colony of Cunningham's Skink were found during subsequent site visits. It is also likely that there are a number of reptiles that utilise the site including the Lowland Copperhead Snake, Tiger Snake and Garden Skinks.

It is recommended that further surveys be conducted to confirm what reptile species are utilising the site. These could include the use of pitfall traps, rock rolling and tiling.

Threats to the site's reptile population include damage or removal of habitat through removal of rocks and fallen timber, unauthorised vehicles, visitors wandering off designated paths, slashing and fire.

Interpretive and cautionary signs are also recommended to discourage visitors from wandering into potential habitat for snakes and other reptiles.

Rec 25. Ensure fallen timber and rocks remain scattered across the site to provide habitat opportunities for small reptiles.

Rec 26. Where possible, avoid use of large slashing equipment around rocky outcrops and fallen timber. Smaller, ride on and pedestrian slashers may be employed to reduce biomass and promote native grass regeneration in strategic locations such as is in and around rocky outcrops

Rec 27. Conduct reptile surveys as a part of any preparation for ecological burns and implement appropriate measures to mitigate harm to reptiles and their habitat.

Note: See Recommendation Rec 52 in Section 7.8 regarding installation of interpretive and cautionary signs. See Section 7.5.7 for recommendations relating to preparing and implementing a Fauna Monitoring Plan, including activities to monitor for frogs.

7.5.5 Mammals

There have been few recorded sightings of native mammals in the study area.

Kangaroos

The main native mammals present are two separate mobs of Eastern Grey Kangaroos: one at the Gisborne Marshlands (n=31) and one at Magnet Hill (n=12). The increasing urban development in the area may increase the Kangaroo presence at the Gisborne Marshlands, potentially increasing grazing pressure at the site and resulting in possible road safety and animal welfare issues associated with Kangaroo collisions. There is a need to monitor Kangaroo numbers and their impacts and determine appropriate population control measures if required. This monitoring could include Kangaroo counts conducted while completing annual bird counts to track any changes in the size of the population.

The land immediately adjoining Magnet Hill is not likely to be further developed and, therefore, the site's Kangaroo population is likely to remain relatively stable in the short term. However, the mob's response to increased recreation activity is unknown. The Kangaroos could modify their behaviour and adjust to the increased human presence or they could disperse further afield. It is recommended that the population be monitored as the use of the site changes.

Given the presence of Kangaroos at the sites, any revegetation undertaken will need to incorporate tree guards or exclusion fencing to ensure survival.

Bats

There is potential for several bat species to occur in the reserves. A large rocky outcrop at Magnet Hill may contain appropriate nesting sites for bat species with many cracks and holes in the rock.

It is recommended that further monitoring of bat populations at all three sites occur, including use of bat nest boxes and active bat recording devices.

Plate 13 Rocky outcrops at Magnet Hill, which could provide nesting opportunities for bats

Rec 28. Install nest boxes on Magnet Hill to provide additional habitat for birds and mammals and to provide for passive monitoring of arboreal mammals.

Rec 29. Undertake bat monitoring at both sites, which includes the use of bat nest boxes and active bat recording devices.

See Section 7.5.7 for recommendations relating to preparing and implementing a Fauna Monitoring Plan, including activities to monitor for Kangaroos and bats.

7.5.6 Fish

Survey methods

Due to the depth of the Southern Dam, backpack electrofishing could not be carried out. Therefore, six fyke nets were deployed to survey fish instead.

In the Northern Dam, extensive backpack electrofishing was carried out over five hours throughout the system. Redfin and Mosquitofish were retrieved from both dams while Pygmy Perch were retrieved from the Southern Dam only. The presence of Brown Trout in the Southern Dam was based on anecdotal evidence from a community member.

Fish species found at the Marshlands

The fish species retrieved from the Gisborne Marshlands using both electrofishing and Fyke netting techniques were Pygmy Perch (*Nannoperca* sp.), Mosquitofish (*Gambusia holbrooki*) and Redfin Perch (*Perca fluviatilis*). Of the three species only Pygmy Perch (*Nannoperca* sp.) was native. As the Pygmy Perch collected was a juvenile, identification to species level was difficult and even through consultation with specialists at DELWP, the specimen was not in a good enough condition to identify conclusively. It is most likely that it was a Southern Pygmy Perch (*Nannoperca australis*). A brief outline of the habitat requirements of the fish species found in the Gisborne Marshlands are included below.

Pygmy Perch – Southern Pygmy Perch inhabit a wide range of environments including still or gently flowing streams, billabongs, drains, dams, swamps and ephemeral creeks and wetlands (Bray and Thompson 2011). They form small groups usually amongst aquatic vegetation (Bray and Thompson 2011). The species has a patchy distribution and has undergone population declines in recent years (Bray and Thompson 2011). They are carnivores that feed on small crustaceans, insects and insect larvae (Bray and Thompson 2011).

Mosquitofish – Prefer warm, slow flowing or still water usually amongst aquatic vegetation or in littoral zone (Bray and Gomon 2011). Extremely tolerant to a wide range of environmental conditions including temperatures from freezing to 38°C, low dissolved oxygen and salinities from freshwater to fully marine (Bray and Gomon 2011). Breeding usually occurs during warmer months (Bray and Gomon 2011).

Redfin Perch – Redfin can be found inhabiting freshwater lakes, dams, billabongs, swamps and the slower-flowing reaches of rivers and streams (Gomon and Bray 2011a). They prefer areas of abundant aquatic vegetation or other cover such as rocks and woody debris (Gomon and Bray 2011a). They avoid fast-flowing areas of waterways, are absent from high-altitude areas, and have an optimum temperature range of 8-27°C (Gomon and Bray 2011a). Redfin are usually solitary and although they prefer areas with cover in rivers, they may also be pelagic in lakes (Gomon and Bray 2011a). They are usually sedentary fishes living near the bottom of waterways but can also undertake seasonal movements (Bray and Gomon 2011a). Although popular with recreational anglers, these introduced predators are not good for smaller native fishes that they consume (Gomon and Bray 2011a).

Brown Trout – Brown Trout prefer to inhabit cool, well oxygenated waters in gravelly streams with moderate to swift flow (Gomon and Bray 2011b). However, they are also found in cool, clear lakes and reservoirs (Gomon and Bray 2011b). Individuals inhabiting coastal streams occasionally migrate seawards, and it is reported that anglers in Port Phillip Bay, Victoria have caught sea-run Brown Trout (Gomon and Bray 2011b). Brown Trout are one of the most sort after recreational angling species although they are voracious predators and often consume smaller native Australian fishes (Gomon and Bray 2011b).Possible fish species found at the site.

The preferred habitat of the listed aquatic species potentially found at the Gisborne Marshlands are briefly discussed below with a brief comment on the suitability of the waterbodies to support each species. This is not to say that the species would not survive within the waterbodies associated with the Marshlands should they be introduced, but rather the likelihood of them currently living there. In fact, with the exception of the migratory Australian Grayling, there is potential for the listed fish below to tolerate the conditions in the Marshlands.

Flathead Galaxias – Occurs in a variety of habitats ranging from estuaries to freshwater lakes and can often be found in turbid waters (Kuiter, 2013). The species is generally found mid-water in still and gently moving waters of small streams, lakes, lagoons, billabongs and backwaters. It is often found in stream margins with rock or sand bottoms and sometimes amongst vegetation (Allen 1989). This species is not expected to be found within the Gisborne Marshlands.

Dwarf Galaxias – Prefer low latitude habitats with still of slow flowing water and abundant aquatic plants throughout or on side of waterbody (Kuiter, 2013). A mid-water, free swimming species with its entire life spent in freshwater (Sadlier et al., 2010). Typically, they occur in slow flowing and still, shallow, permanent and temporary, freshwater habitats including swamps, drains and backwaters that often contain dense stands of aquatic macrophytes and emergent plants (Cadwaller & Backhouse, 1983). Although they typically prefer swampy floodplain habitats, they can also occur in creeks and streams (Bray 2016). In larger pools individuals are usually found amongst marginal vegetation (Sadlier et al., 2010). Temporary wetland habitats rely on seasonal flooding and connectivity to other sites where the species occur for habitat and population replenishment (Sadlier et al., 2010). Provided there is connectivity to local waterways, there is some opportunity for this species to exist in the Gisborne Marshlands.

Murray Cod – This species usually inhabits slow flowing and turbid rivers where it spends most time in deep holes, often amongst submerged tress and flood debris (Allen 1989). However, they can utilise a diverse range of habitats from clear rocky streams, such as those found in the upper western slopes of NSW and the ACT, to slow-flowing, turbid lowland rivers and billabongs (McDowall 1996). They are frequently found in main channels of rivers and larger tributaries and considered to be a main-channel specialist. They are not expected to occur in the Gisborne Marshlands.

Australian Grayling – Occur in coastal rivers and streams in south-eastern Australia from the Shoalhaven River in NSW through to the Hopkins River in Victoria (Backhouse et al., 2008). Usually prefer cool, clear waters with a gravel substrate and alternating pool and riffle habitats (Bishop and Bell, 1978; Berra, 1982) but can also occur in turbid water (Jackson and Koehn 1988). They often occur in pools with gravelly substrates, and may form large schools, especially before spawning periods (Gomon & Bray, 2016). Adults prefer moderate to fast-flowing water, usually in cool clear waters below altitudes of 200 m, although in Victoria they have been recorded above 1000 m (Gomon & Bray, 2016). This species is not expected to be found in the Gisborne Marshlands.

Golden Perch – Occurs throughout the Murray-Darling system at low latitudes but mainly in warm slow flowing rivers and floodplain lakes (Allen, 1989; Kuiter, 2013). They can tolerate high temperatures and are often found in turbid conditions (Kuiter, 2013). Golden Perch are not expected to live in the Gisborne Marshlands.

Macquarie Perch – This species natural occurrence is along a large section of the Murray River and associated lowland areas in Victoria (Kuiter, 2013). It has now been introduced into several other waterways including the Yarra River (Kuiter, 2013). The species usually prefers deep holes although spawning occurs through the release of eggs just upstream of riffles in rivers before setting amongst boulders and pebbles further downstream (Allen 1989). For this reason, this species is not expected to live in the Gisborne Marshlands.

Fish introductions

It is recommended that further fish introductions be avoided to protect existing native fish and frog species. Fish such as Brown Trout are known to consume native frogs, small bodied native fish and tadpoles.

Yarra Pygmy Perch introduction project

Melbourne Water have been investigating opportunities to utilise the northern wetland dam as a drought refuge for the Yarra Pygmy Perch which are listed as vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and threatened under the Victorian *Flora and Fauna Guarantee Act 1988* . Yarra Pygmy Perch are found in Deep Creek which is not connected to the subject site. If implemented, this introduced population would ensure Deep Creek can be re-stocked with the species should severe drought impact the existing population.

Implementation of the project would involve minor excavation works and revegetation to improve the site's habitat. Works to the drainage channel that discharges to the north may also be required to reduce outflow / maintain sufficient water in the northern dam. Options also exist to install interpretive signage to raise public awareness about the species.

Implications for visitors would comprise restrictions to fishing in the northern dam.

This project would be funded and managed by Melbourne Water.

Recommendation

Rec 30. Support Melbourne Water's proposal to develop the northern dam as a drought refuge for the Yarra Pygmy Perch

Rec 31. Avoid any further fish introductions for recreational angling

Threats from surrounding residential areas

As discussed above, various threats exist to wildlife across the three sites from the existing and proposed residential areas. These threats include noise from existing and proposed roads, movement from vehicles and people, increased lighting from street lights and nearby houses, predation by domestic cats, vandalism, weed invasion from gardens and garden refuse and damage to sensitive vegetation and habitat areas from inappropriate vehicle and pedestrian access.

It is recommended that the following measures be investigated to mitigate against the impacts of adjoining residential development:

- Minimise street lighting adjoining the Gisborne Marshlands and investigate light fittings that are low emitting and direct the spread of the light away from the reserve. Consider lights embedded in the ground if required along the proposed shared path.
- Incorporate an indigenous vegetation buffer between the new residential development north of the Marshlands and the reserve, including shrubs and ground cover that provide a visual and acoustic buffer for ground dwelling wildlife.
- Using wildlife friendly fencing on all boundaries, including minimising use of barbed wire.
- Installation of regulatory and interpretive signs.
- Prevention of vehicle access to the Gisborne Marshland.
- Information brochures to surrounding residents about responsible pet ownership, including confining cats to minimise predation.
- Investigation of a local cat curfew in the area surrounding the Gisborne Marshlands.

Rec 32. Investigate opportunities to require the residential area north of the Gisborne Marshlands to minimise impacts of the development on wildlife. This could occur as a part of the approval of the Engineering and Landscape Plans, which are required to be submitted to satisfy the existing subdivision permit (PLN/2014/342). This may include use of wildlife friendly lighting and fencing, incorporation of an appropriate vegetation buffer adjoining the Marshland and installation of regulatory and interpretive signs.

Rec 33. Investigate opportunities to implement a local cat curfew in the residential areas surrounding the Gisborne Marshlands as a part of implementation of Council's Domestic Animal Management Plan.

7.5.7 Monitoring of fauna species

A range of fauna monitoring activities are recommended as discussed above. It is recommended that a Fauna Monitoring Plan be prepared that sets out a program of monitoring activities and any standard methods to be employed. This will ensure all monitoring activities are consistent with best practice and are consistent with any necessary ethics approvals.

It is recommended that sightings of native species be recorded and submitted to the Victorian Biodiversity Atlas. This will help ensure the data collected is accessible to future land managers, consultants, researchers and the community.

Recommendation

Rec 34. Prepare and implement Fauna Monitoring Plans, particularly for the Gisborne Wetlands and Magnet Hill, which include monitoring activities for birds, frogs, reptiles, Kangaroos, bats, fish and pest animals.

Rec 35. Encourage sightings of native fauna species to be recorded and reported to Council for inclusion in the Victorian Biodiversity Atlas.

7.6 Cultural heritage

7.6.1 Aboriginal cultural heritage

The Registered Aboriginal Party for the three sites is the Wurunjderi Tribe Land Compensation and Cultural Heritage Council Incorporated.

Preservation of Aboriginal cultural heritage is regulated by the *Aboriginal Heritage Act 2006*. This act requires preparation of Cultural Heritage Management Plans for works that impact areas of cultural heritage sensitivity. The Act also requires cultural heritage permits to be obtained to "*carry out an activity that will, or is likely to, harm Aboriginal cultural heritage*", amongst other things.

Revisions to the Act in 2016 introduced the ability for public land managers to enter into a land management agreement with Registered Aboriginal Parities. These agreements are designed to facilitate a proactive, holistic approach to managing and protecting Aboriginal cultural heritage and cultural landscapes during land management activities within a specific area, for an agreed duration. Use of a land management agreement may be useful for the three sites as a means to facilitate engagement with the Traditional Owners and to minimise the risk of disturbing or damaging artefacts or sites of significance.

In order to enter into a land management agreement, a survey of the site's cultural heritage significance would be required.

Gisborne Marshlands and Steam Park

There are no sites of aboriginal cultural heritage significance registered at the site, however the whole of the reserve is identified as a site of cultural heritage sensitivity according to the *Aboriginal Heritage Act 2006* (including the Steam Park and Compound) (Figure 23). This means that any works that meet the definition of "significant ground disturbance" require preparation of a Cultural Heritage Management Plan. Works that are likely to trigger a Cultural Heritage Management Plan include:

- Walking or cycling tracks over 100 metres in length
- Construction of boardwalks
- Ripping of rabbit warrens
- Construction of buildings such as a bird hide, toilets or BBQ shelters
- Water sensitive urban design treatments and/or re-alignment of the storm water drain that discharges into the Marshlands from the Colwyn Estate
- Construction or extension of car parking
- Installation of new gates and fencing

Figure 23 Areas of cultural heritage sensitivity, Aboriginal Victoria, 9 August 2016

Magnet Hill

There are no registered sites of Aboriginal cultural heritage significance at Magnet Hill and the reserve is not identified as an area of cultural heritage sensitivity. This means that a Cultural Heritage Management Plan would not be required for works within the reserve. Even so, as discussed above, completion of an Aboriginal heritage assessment of the site would help build relationships with the Traditional Owners, would help raise community awareness of the area's cultural heritage significance and would minimise any risks of disturbing or damaging culturally significant features during construction works.

Recommendation

Rec 36. Investigate entering into Land Management Agreements with the Wurundjeri Tribe Land Compensation and Cultural Heritage Council Incorporated for the three sites as required and appropriate.

Rec 37. Ensure a Cultural Heritage Management Plan is prepared for works that result in "significant ground disturbance" at the Gisborne Marshlands and Steam Park as required by the Aboriginal Heritage Act 2006. Ensure these CHMPs are broad enough to include a general Aboriginal cultural heritage assessment and recommendations relevant to all foreseen infrastructure works.

Rec 38. Commission an Aboriginal heritage assessment of Magnet Hill.

7.6.2 European cultural heritage

There are no State or locally listed heritage sites in the study area.

Gisborne Marshlands and Steam Park

The site was once used as a racecourse from the 1880s until approximately 1933. No features remain from this historic use, other than evidence of the drainage ditches traversing the site.

The property adjoining the Gisborne Marshlands to the west contains Cathlaw House which was constructed in 1919 and is subject to Heritage Overlay 269. Cathlaw is within a landscaped setting of Monterey Pines, mature oaks and other exotic species.

Magnet Hill

Little information exists about the history of Magnet Hill. It is assumed that the site was used for grazing. Notable features at the site include the stockyards in the north-west corner of the reserve and dry stone walls extending north-south through part of the site.

Plate 14 Dry stone wall at Magnet Hill with barbed wire fencing

Recommendation

Rec 50, Rec 51, Rec 52 and Rec 53 regarding installation of interpretive signs, including signs that provide information about the European history of the sites as appropriate.

7.7 Recreation and tourism

Gisborne Marshlands

The Marshlands are currently used by local residents for fishing, swimming and bird watching. Dog walkers also utilise the drier edges of the Marshlands on occasions. Four wheel drive vehicles have been observed in the Marshlands which have caused damage to the site's vegetation. This activity damages the vegetation and can scar the earth, resulting in the introduction and spread of weeds. To prevent this type of activity in the future, it is recommended that suitable gates and signs be installed to prevent unauthorised vehicles accessing the site.

Walking infrastructure

Opportunity exists to enhance the site's recreational opportunities through introduction of sensitively sited and designed infrastructure such as walking paths, a board walk and landing to the southern wetland and potentially a bird hide or similar structure. This infrastructure would facilitate activities such as nature walks and bird watching while protecting the site's *sensitive wetland vegetation.*

It is noted that the *New Gisborne Development Plan – Conservation Management Plan* recommended excluding pedestrian access from the new estate into the reserve and not constructing walking paths within the reserve. The intent of this recommendation was to protect the Latham Snipe habitat. This approach isolates the new adjoining community from the site which can generate resentment and escalate perceived concerns about the site's threats such as fire and snakes. In addition, without high fencing, it is likely that future residents will seek to enter the site by climbing over fencing. A preferred approach involves facilitating controlled community access to the non-sensitive areas in order to instil a sense of community connection with and ownership of the site. Given that the vegetation along the northern and west perimeter of the site is degraded, a low key walking path in this location would not damage existing native vegetation and would facilitate greater community appreciation of the site's environmental and scenic qualities. The artificial dams at the north end of the site and the Sedgy Wetland's marshy conditions also act as natural barriers to walkers.

While the community suggested installation of extensive board walks around and through the site, this infrastructure shades out vegetation and generates significant disturbance during installation. Consequently, it is recommended that any pedestrian infrastructure be limited to a crushed rock walking track. An indicative plan showing proposed walking tracks is provided at Appendix D**.**

Fishing

Although Pygmy Perch were collected from the southern dam, they are not a fish targeted for recreational fishing and it is not anticipated that they would be impacted due to this. In fact, the larger bodied exotic species such as Redfin Perch and Brown Trout that have known to inhabit the southern dam would more likely be the target species. The removal of these species through recreational fishing could benefit the native Pygmy Perch by the removal of the predatory Redfin Perch and Brown Trout.

Bird watching

A simple bird hide could be placed on the northern side of the marshlands facing south The style of hide is basically a fence like screen about 2.4 m high and as long as is needed at the site. The hide may include an optional small lean to roof. The hiding side of the screen is regularly spaced with basic bench seats and horizontal bird viewing slots. The wall space between viewing slots could be used to post interpretative signs about the birds found there. Therefore, it can function as a bird hide and interpretation display. The choice of construction materials should be in keeping with the site. When placing the bird hide, the access trail should be located so it does not directly pass by the bird hide. The bird hide should be accessed using a curved spur trail. Signs encouraging walkers to be as quiet as possible should be placed at the approach to the bird hide.

Dogs walking

Dogs within the Marshlands can discourage native species as a result of their scent, increase nutrient loads to the wetlands and waterway from their excrement and can chase native wildlife (if off lead).

It is recommended that dogs be restricted to the Steam Park area only and be prohibited from the Marshlands.

Water based recreation activities

It is recommended that the following activities not be permitted at the Marshlands as they cause disturbance to wildlife and could be a public liability risk to Council:

- Boating (motorised or non-motorised)
- Canoeing
- Fishing from boats
- Swimming

The following activities are considered acceptable:

- Fishing from designated areas on the shore and / or proposed jetty

While fishing from the shore / jetty is considered low impact, stocking of the dams with non-indigenous fish should not be permitted to prevent further compromising native fish populations down-stream

Car parking and vehicle access

The existing car park is accessed from Webb Crescent, off Station Road. The section of Webb Crescent adjoining Station Road is constructed. The remaining half is gravel, leading to an informal gravel car park. To improve access to the site, it is recommended that the full length of Webb Crescent be constructed and the car park re-graded and formalised with bollards

Events

Due to the sensitive vegetation present at the Marshlands, the site is not considered to be suitable for public events other than small scale nature tourism or educational activities such as bird walks or environmental workshops.

Recommendation

Rec 39. Install a locked gate with "no unauthorised vehicle" signs at the end of the car parking off Webb Crescent preventing unauthorised vehicle access into the Marshlands.

Rec 40. Improve pedestrian access to the southern wetland, for example via installation of a short board walk and landing that minimises environmental impacts such as disturbance to existing native vegetation.

Rec 41. Install a bird hide on the northern side of the Marshlands, accessed from the new road to be constructed on the site's northern boundary within the adjoining new subdivision.

Rec 42. Seal the extent of Webb Crescent.

Rec 43. Formalise the car park at the end of Webb Crescent and install bollards and other infrastructure as required. Consider sealing the car park if considered warranted.

Rec 44. Investigate opportunities to increase Council officer / ranger presence at the Marshland to facilitate implementation of the "no dogs" regulation at the Marshland.

Rec 45. Do not permit public events at the Gisborne Marshland other than small scale nature tourism or educational activities.

Rec 46. Do not permit boating (motorised or non-motorised), canoeing or swimming at the Gisborne Marshlands. Allow fishing from designated areas.

NOTE: Recommendations associated with fencing and gates to prevent dogs and unauthorised vehicles accessing the Marshlands are at Section 7.9. Recommendations associated with signs informing visitors of allowed and prohibited activities are listed at Section 7.8.

Steam Park and Compound

The compound

The Macedon Ranges and District Car Club use the compound for their club rooms which contains a vehicle inspection area and indoor meeting facilities. The compound also contains a small shed used by a local running club. The club hosts regular car displays on the vacant land adjoining Station Street.

The compound is valuable as a secure enclosure for community groups to meet and / or store equipment. Opportunity exists to facilitate greater access to the site for other community groups by applying leases to the individual buildings and facilities only rather than the site as a whole. This would mean that Council would take over responsibility for maintaining the common property and facilities, unless otherwise agreed to with the relevant groups.

The Steam Park

The Steam Park is used by the Gisborne Vintage Machinery Society to showcase their steam engines and other equipment. They host regular events at the site, including a large rally once a year, and, in the past, have made the space available for children's birthday parties. Dog walkers also frequently utilise this area outside of the Society's event days.

The Steam Park is an important open space reserve which will become more important for recreation once the residential development north of the Marshlands occurs. While the public can currently access the site, additional pedestrian gates and improved public infrastructure would enhance the site's passive recreation values.

In the future, opportunity exists to transition the Gisborne Vintage Machinery Society from a lease which applies to the whole site all year round, to a license and lease arrangement which would provide the Society with a lease over their club rooms and specified infrastructure as agreed between Council and the Society (e.g. their tracks) and license to use the rest of site at specified times. This would enable Council to landscape the site and upgrade infrastructure accordingly with improved walking paths and appropriate public park infrastructure. Under this arrangement the Society would be responsible for maintaining their leased buildings, infrastructure and equipment and Council would be responsible for maintaining the rest of the site. To facilitate this change the Society's infrastructure would need to be made safe – e.g. with appropriate fencing.

The Society's lease expires on 1 July 2028. Any change to tenure can be negotiated at this time if the Society do not wish to modify their tenure arrangements beforehand.

It is noted that playground equipment is available at Ross Watt Reserve on the east side of Station Road. Consequently additional playground equipment at the Steam Park is not considered essential, but could be developed by the user groups or community if desired.

Dog walking

Given the limited natural values at the site, dogs are not considered a high threat at the Steam Park. Allowing dogs off lead is considered acceptable provided suitable fencing is installed on the boundary with the Marshlands to minimise the chance of dogs accessing this sensitive wetland ecosystem.

It is noted that, as of November 2018, Council was investigating suitable locations for dog on and off lead areas. If the site is designated as an off-lead area, suitable fencing between the Steam Park and the Marshlands will be important. Even if the site is not designated as an off-lead area, it is recommended that the existing fencing still be replaced given that dogs are currently walked off lead at the Steam Park and considering that this practice is not likely to change in the near future, regardless of the regulations applicable to the site. Given the risk presented by dogs to the Marshland's flora and fauna, a precautionary approach is recommended. Should the existing fencing between the two sites be removed and not replaced, it is recommended that the Steam Park be gazetted as a dog prohibited area.

Events

Given the recreation focus of the Steam Park and its minimal natural values, hosting public events at the site such as car displays and markets would be acceptable provided consideration is given to minimising impacts to wildlife at the Marshlands – e.g. events at night should be avoided and, if proposed, should be carefully managed to minimise loud noises, light spillage and moving light

Recommendation

Rec 47. Maintain the compound as a securely fenced site, however facilitate greater community group access to the compound by applying the user group leases to the individual buildings and any associated land and facilities rather than the site as a whole. Retain any common land or facilities as common property managed by Council.

Rec 48. Consider transitioning the Gisborne Vintage Machinery Society's lease over the Steam Park grounds to a licence and lease arrangement, which provides the group with exclusive use of the whole site at specified times under a licence (i.e. for events). Maintain and continue the Society's lease over their buildings and potentially other infrastructure (i.e. rail tracks) as agreed to between Council and the Society. Consider this change once the Society's lease expires in 2028 unless agreed between the Society and Council beforehand. If and when these changes occur, Council would maintain the licensed areas and the Society would be responsible for their leased infrastructure. Council would work with the Society to make their leased infrastructure and equipment safe for public access.

Rec 49. Allow public events at the Steam Park subject to an environmental assessment and implementation of conditions as appropriate to minimise impacts on nearby wildlife.

Magnet Hill

Magnet Hill is not easily accessible to the community and, therefore, is rarely used for recreation purposes.

Opportunity exists to increase public access to the site with walking paths to the summit, interpretive signs, picnic facilities and car parking off Station Road. A concept plan has been prepared (Appendix D) that shows the indicative location for these facilities.

Dog walking

It is recommended that the site be maintained as an area where dogs are allowed on lead. Further environmental assessments and additional community consultation would be required, to determine whether it is an appropriate site for dogs off lead.

7.8 Signage

In 2015 Council adopted the Bushland Reserves Signage Template that provides standardised templates for place identification and interpretive signs for Council managed conservation reserves. It is recommended that all future signs within the subject reserves utilise these adopted templates.

Gisborne Marshlands

Current signage at the Marshlands comprises a timber sign facing the Calder Freeway with the name of the reserve engraved. No other place identification signs are present to indicate who managers the site or what activities are permitted and prohibited.

It is recommended that additional place identification signs be installed in strategic locations (such as at the Webb Street car park and any future northern access point) indicating the following:

- Dogs prohibited
- Horses prohibited
- Take home your rubbish
- No unauthorised vehicles
- Fires prohibited
- Snakes present
- No boats

- No canoeing
- No swimming
- Fishing allowed from designated areas

It is also recommended that interpretive signs be installed at strategic locations that provide visitors with information about the site's natural values and cultural heritage significance as relevant.

Steam Park

If and when the lease arrangements are changed for the Steam Park to confer greater management and maintenance responsibility to Council , it is recommended that the site's place identification signs be updated to be consistent with Council's other recreation reserves.

Magnet Hill

No place identification or interpretive signs currently exist at Magnet Hill.

It is recommended that, once the reserve is accessible to the community, place identification signs be installed at strategic locations (such as facing Station Road and at any other main access point) indicating the following:

- Dogs on lead
- Take your rubbish home

Once visitor infrastructure has been installed such as walking paths, it is recommended that interpretive signs be installed about the site's natural values and cultural heritage significance as relevant.

In the meantime, while the site is being rehabilitated, it is recommended that interpretive signs be installed (e.g. on Station Road) that inform the community about the rehabilitation program underway.

Recommendation

Rec 50. Ensure all new signs at the Gisborne Marshlands and Magnet Hill are consistent with Council's Bushland Reserves Signage Template.

Rec 51. Install place identification signs for the Gisborne Marshlands at the Webb Crescent entrance and other strategic locations. Include icons that indicate:
Dogs prohibited,
Horses prohibited,
Take home your rubbish,
No unauthorised vehicles,
Fires prohibited,
Snakes present,
No boats,
No canoeing,
No swimming,
Fishing allowed from designated areas

Rec 52. Install interpretive signs at the Gisborne Marshlands at strategic locations that provide information about the site's natural values, history and cultural heritage significance.

Rec 53. Once Magnet Hill is developed to be more accessible to the community, install place identification and interpretive signs as appropriate.

Rec 54. Install interpretive signs at Magnet Hill while the site is being rehabilitate that inform the community about the rehabilitation works underway.

Rec 55. If and when the lease arrangements at the Steam Park change to make Council responsible for management and maintenance of the site (other than the areas leased to relevant user groups), install place identification signs consistent with Council's other recreation reserves.

Rec 56. Install signs where relevant advising visitors to protect and not interfere with the flora and fauna in the reserves

7.9 Fencing

Gisborne Marshlands

The Marshlands is currently separated from the Steam Park with post and wire farm fencing which extends around the extent of the site's boundaries. Some of this fencing is in disrepair.

The objectives for fencing at the site is to:

- Delineate the public and private land
- Restrict access to unauthorised vehicles, dogs, horses, trail bikes and mountain bikes
- Maintain passive surveillance of the site
- Complement and not detract from the scenic qualities of the locality
- Facilitate the safe passage of Kangaroos and arboreal mammals
- Minimise rabbit migration to the site from adjoining properties
- Minimise opportunities for rubbish from the northern subdivision to intrude into the Marshland during construction of the estate

It is noted that the Conservation Management Plan for New Gisborne recommends post and wire fencing along the northern boundary of the Marshland up to 1.4 metres.

To achieve the objectives listed above, it is recommended that:

- The fencing adjoining the Steam Park and the new residential estate to the north to be upgraded to minimise opportunities for dogs to access the Marshland while still providing for the passage of wildlife below, e.g. through the use of timber posts and rail with a sufficient underpass for ground dwelling mammals, or farm fencing with elevated ring lock.
- Any replacement fencing be low (no higher than 1.4 metres).
- Any replacement fencing incorporate highly visible top wires to provide for the safe passage of Kangaroos and arboreal mammals.
- Any replacement fencing that does not need to be rabbit or dog proof to incorporate a gap between the ground and the bottom wire to enable animals to pass underneath.
- No barbed wire be used on any of the fencing due to the serious risks it poses to wildlife.
- That all existing barbed wire be progressively removed and replaced when fencing upgrades occur.

- That rabbit proof skirts be investigated for the fencing along the west boundary with the Cathlaw Estate and the south boundary of the southern wetland adjoining Ross Watt Road (see Section 7.12 for further information about pest animal control). Investigate localised rabbit fencing in select locations as appropriate to enable ground dwelling mammals to travel around.
- That all pedestrian entrances incorporate a double gate or chicane to prevent access to horses, trail bikes and mountain bikes.
- Temporary fencing or barriers be considered during construction of the Cathlaw Estate and the Marshlands to minimise rubbish intrusion into the Marshlands during construction of the new residential estate.

Plate 15 Existing farm fencing with barbed wire and mesh along the northern boundary of the Marshlands

Plate 16 Existing farm fencing in disrepair between the Steam Park and the Marshlands

Magnet Hill

The boundary fencing at Magnet Hill is in disrepair in parts and contains gaps. Internal fencing extends north-south on the ridge line, presumably delineating the former Orchard. A plan showing proposed fencing changes is provided below.

In addition to the fencing changes recommended above, installation of vehicle or pedestrian access from the road reserve off Magnet Lane is recommended to facilitate maintenance. Vegetation management and some earth works may be required to enable access.

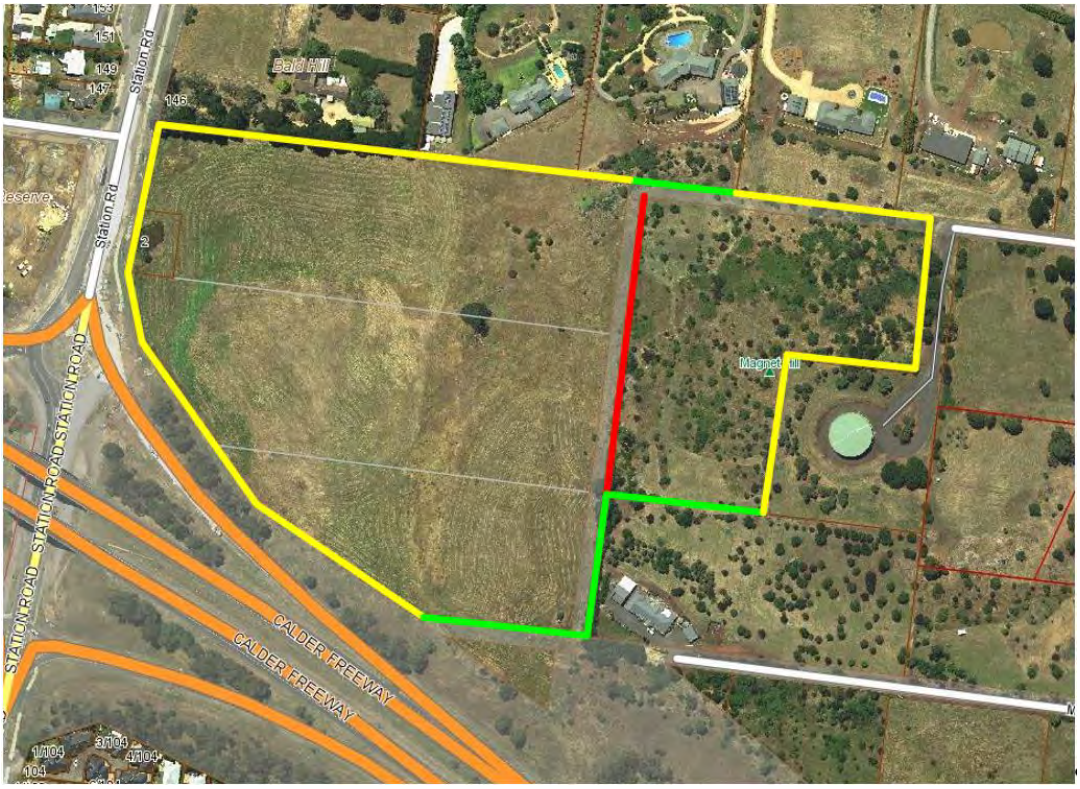
The objectives for fencing at Magnet Hill are to:

- Delineate the public and private land
- Restrict access to unauthorised vehicles, horses, trail bikes and mountain bikes
- Maintain passive surveillance of the site
- Complement and not detract from the scenic qualities of the locality
- Facilitate the safe passage of ground dwelling and arboreal mammals

To achieve the objectives listed above, it is recommended that:

- Any replacement fencing consist of low (no higher than 1.4 metres) post and wire or post and timber fencing
- Any replacement fencing incorporate highly visible top wires to provide for the safe passage of Kangaroos and arboreal mammals
- Any replacement incorporate a gap between the ground and the bottom wire to enable animals to pass underneath
- No barbed wire be used on any of the fencing due to the serious risks it poses to wildlife
- That all existing barbed wire be progressively removed and replaced when fencing upgrades occur
- That all pedestrian entrances be designed to prevent access to horses, trail bikes and mountain bikes

These fencing objectives and design parameters would need to be reviewed should the need for dog or rabbit proof fencing be required in the future.



Key **RED -** Remove **GREEN –** Erect **YELLOW –** Improve/maintain

Figure 24 Fencing recommendations for Magnet Hill

Recommendation

Rec 57. ***Upgrade the fencing between the Gisborne Marshlands and the Steam Park to minimise the opportunity for dogs to access the Marshlands while still allowing for the passage of wildlife. Should this fencing be removed and not replaced, modify the regulations for the Steam Park to prohibit dogs.***

Rec 58. ***Incorporate double gates or chicanes at pedestrian entrances to the Marshlands to prevent access to horses, trail bikes and mountain bikes.***

Rec 59. ***Ensure any new or replacement fencing at all three sites incorporate highly visible top wires or palings to facilitate the safe movement of Kangaroos and arboreal mammals. Where a rabbit proof skirt is not required, ensure all bottom wires are elevated to enable wildlife to pass underneath.***

Rec 60. ***Progressively remove and upgrade the fencing at Magnet Hill in accordance with Figure 24 and in consultation with adjoining landowners as required.***

Rec 61. ***Progressively remove all barbed wire at all sites as fences are upgraded or as opportunity arises.***

Rec 62. ***Install a vehicle gate at Magnet Hill off the road reserve accessed from Magnet Lane to facilitate maintenance. Conduct any vegetation management and earth works required to enable access. If vehicle access is not feasible, install a pedestrian gate.***

7.10 Fire management

7.10.1 Fire risk management

The goals for fire management for the three sites are:

- To reduce the risk of fire to life and property
- To reduce the risk of fire impacting critical infrastructure such as the Calder Freeway and Western Water's water tank adjoining Magnet Hill
- To reduce the risk of fire impacting the environmental assets at the reserves
- To promote biodiversity through the use of fire as a management tool

To achieve this, it is important to ensure:

- Fire fighting vehicles are able to access the sites should a fire start in the reserves or should a fire be approaching the reserves. This involves ensuring fire access tracks are available in strategic locations where existing roads do not fulfil this function.
- The biomass along property boundaries is maintained to a low level where possible to slow the spread of fire and facilitate fire-fighting should it be required.

Gisborne Marshlands and Steam Park

Fire is likely to impact the site in an arc from the north to the south west. There is a risk of ignition from the adjoining roadsides, including the Calder Freeway and from any adjoining agricultural works.

Within the reserve the risk of ignition is highest from human induced sources such vehicles or cigarettes.

Existing and planned fire breaks and fire access roads:

- Calder freeway (maintained by VicRoads)
- New road along the north of the reserve associated with the new residential estate (to be maintained by Council)
- Ross Watt Road (maintained by Council)

Existing biomass reduction works include:

- Mowing / slashing of the Steam Park by the Gisborne Vintage Machinery Society

Additional fire management actions recommended include:

- Creation of a fire access track along the eastern boundary of the Steam Park (within the Steam Park) connecting the new road associated with the proposed estate to the north with to Webb Crescent and Station Road to the south. This could be a gravel track or shared trail as shown in Council's Open Space Strategy 2013 or a slashed break.
- Maintenance of grass adjoining residential properties (Colwyn Estate) to no more than 75 mm in height
- Inclusion of the vacant land adjoining Station Road south of Webb Crescent in Council's yearly township protection slashing program
- Should Council take over maintenance of the Steam Park, inclusion of the northern grassed are in Council's yearly township protection slashing program

Magnet Hill

Fire is likely to affect the site from the south west.

Within the reserve the risk of ignition is highest from human induced sources such vehicles or cigarette butts being disposed of from adjoining roads.

Current fire breaks and fire access roads comprise:

- Station Road (maintained by Council)
- Calder Freeway on ramp (maintained by VicRoads)

Existing biomass reduction works include:

- Yearly slash across the site as a part of Council's township protection program. In practice, due to the terrain, only the flatter slopes of the hill are slashed which occur on the western side of the site.
- Mowing on top of the hill, presumably by the adjoining owner from 40 Magnet Lane.

In the short term it is recommended that the existing slashing regime is maintained.

In the longer term it is recommended that:

- Any perimeter plantings minimise fine fuels both through the planting densities and species selected. This may involve choosing canopy species that shed minimal bark and generate limited leaf litter as well as minimising understorey plantings that may contribute to fuel loads.
- Any new walking paths aim to be at least 1.5 m wide to provide access for fire vehicles.
- The slashing regime be reviewed once the site is used by the community with the aim of reducing the biomass adjoining neighbouring properties and protecting any remnant or planted native understorey.
- A Fire Management Plan be prepared if and when required.

Recommendations

Rec 63. Create and maintain a fire access track along the eastern edge of the Steam Park adjoining the Colwyn Estate. This could be a gravel track or shared trail or a slashed break. Maintain the grass levels adjoining the residential estate to no more than 75 mm.

Rec 64. Include the vacant land south of Webb Crescent in Council's township protection slashing program.

Rec 65. Should Council take over maintenance of the Steam Park, include the northern grassed area in Council's township protection slashing program.

Rec 66. Continue to implement a yearly slash across the accessible parts of Magnet Hill as a part of Council's township protection slashing program.

Rec 67. Ensure any perimeter plantings minimise fine fuels and fuel loads.

7.10.2 Ecological fire management

Areas of Plains Grassland (EVC 132) in the north-eastern corner of the Gisborne Marshlands are likely to benefit from the reintroduction of prescribed fire, which would promote the germination of species from the soil-stored seed bank and reduce the cover of introduced species. In order to prevent an increase in weed cover following fire, it is recommended that a late spring burn be initially implemented prior to the dominant weed species, Sweet Vernal-grass and Brown-top Bent, reaching reproductive maturity and setting seed. This will serve to promote native species germination and minimise regeneration of undesirable grassy weeds. Essential to any proposed ecological burn program is intensive follow-up weed control in the 12 months following fire.

To obtain maximum benefit, prescribed fire should be applied as frequently as possible in native grasslands of the volcanic plain. Bearing in mind the small size of the native grassland patch, a prudent approach would be to undertake an ecological burn two to three times per decade. This would be consistent with the "Tolerable Fire Intervals" for Ecological Vegetation Divisions (EVDs) which, for Plains Grassland EVD 20: Basalt Grasslands, stipulate a minimum interval of two years for low intensity burns, three years for high intensity burns and a maximum of seven years. Once the grassy weed levels have been reduced, consider varying the burn season to include an early autumn burn.

It is noted that introducing an ecological burn program to the site will need to be investigated taking into account the ability to establish appropriate fire breaks and control methods to protect the rest of the Marshlands and surrounding residential area.

Opportunity exists to invite Wurundjeri to participate in future ecological burns and demonstrated traditional burning practices.

Recommendations

Rec 68. Investigate introduction of an ecological burn program for the area of Plains Grassland in the north-east corner of the Gisborne Marshlands. Key considerations: a) burn in late spring (initially) to minimise grassy weed germination, b) undertake intensive post-fire weed control, c) burn two to three times per decade, and d) consider involvement of Wurundjeri and to demonstration of traditional burning techniques.

Rec 69. Undertake surveys for small terrestrial wildlife prior to any planned burn. Develop mitigation measures where potential threats to species exist.

7.11 Weeds

A total of 69 introduced flora were identified within the Gisborne Marshland, Steam Park or Magnet Hill during the site assessment on 16 November 2016. Of these introduced species, 11 are listed under the *Catchment and Land Protection Act 1994* as noxious within the Port Phillip and Westernport CMA area (Table 17). In addition, three of these species are also listed by the Australian government as Weeds of National Significance (WONS)[5].

Table 17 Noxious weeds and Weeds of National Significance at Gisborne Marshlands Racecourse Reserve and Magnet Hill

Status	Scientific Name	Common Name	GM	SP	MH
C	*Cirsium vulgare*	Spear Thistle	P	P	P
C	*Crataegus monogyna*	Hawthorn	P		P
C	*Cynara cardunculus* subsp. flavescens	Artichoke Thistle			P
C	*Echium plantagineum*	Paterson's Curse			P
R	*Foeniculum vulgare*	Fennel		P	
WONS, C	*Genista monspessulana*	Montpellier Broom		P	P
C	*Marrubium vulgare*	Horehound			P
C	*Rosa rubiginosa*	Sweet Briar	P		P
WONS, C	*Rubus fruticosus* spp. agg.	Blackberry	P	P	P
C	*Silybum marianum*	Variegated Thistle		P	
WONS, C	*Ulex europaeus*	Gorse			P

GM Gisborne Marshland

SP Steam Park

MH Magnet Hill

C Regionally controlled weeds in the Port Phillip and Westernport CMA area

R Restricted weeds in the Port Phillip and Westernport CMA area

WONS Weeds of National Significance

Gisborne Marshlands Racecourse Reserve

The Gisborne Marshland is generally in good condition, with a relatively low cover of introduced species. The most pronounced area of introduced species is near the eastern boundary, where urban stormwater runoff enters the marshland via an outlet drain. This area is dominated by *Holcus lanatus* (Yorkshire Fog) with a cover greater than 50%.

Apart from ubiquitous weeds such as *Aster subulatus* (Aster Weed) and Yorkshire Fog, the incidence of high threat weeds is low. Concerted efforts have obviously been made to control *Rubus fruticosus* spp. agg. (Blackberry) throughout the marshland, with only scattered individuals now remaining.

The Plains Grassland area of the Gisborne Marshland reserve is characterised by moderate weed cover, mainly comprised of common grassy weeds such as *Anthoxanthum odoratum* (Sweet Vernal-grass).

[5] http://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html

There are some scattered Pine trees, *Pinus radiata* in the north east and north west corners of the reserve. These Pine trees are considered a low level threat that are not in need of urgent removal. These Pines should be removed prior to the installation of any pathways in the vicinity to minimise inconvenience to the public. Alternatively, they could be removed prior if they are considered a safety risk or if funding or opportunity arise. Alternatively should Pine wildings emerge, these should be treated or removed to prevent further spread. Consideration should be given to replacing the bird habitat provided by these Pine trees prior to their removal.

The portion of the site south of the Freeway contains a row of fruit trees on the perimeter of the site. These trees are also considered a low threat and only in need of removal if funding and opportunity arises. As with the Pine trees north of the freeway, any wildings should be removed to minimise any potential future impacts.

Magnet Hill

The Magnet Hill section of the site supports only a few small areas of native vegetation which do not qualify as a "remnant patch". Instead the site supports two main zones of introduced species. First, the west-facing slopes support introduced pasture characterised by a range of common pasture grasses and forbs. Second, the upper slopes support an abandoned orchard with an understorey of common pasture grasses and forbs.

The following prioritised weed control and rehabilitation program is recommended:

Upper slopes (former Orchard)

1. Treatment of the Blackberry and Gorse and other listed noxious weeds should take priority.
2. The staged removal of the self-seeded fruit trees which are prevalent on the upper slopes. This could be undertaken using cutting and painting technique. Woody debris could be chipped and removed if required or burnt if conditions are suitable. This could be followed by herbicide application in subsequent years to treat any regrowth. Retention of original and / or large specimens could be considered to maintain a connection with the site's European heritage.
3. Spray patches containing no native vegetation and follow up with indigenous plantings.
4. Brush-cut or slash areas of exotic grass cover to reduce the biomass and competition for native species.

Lower slopes (west facing)

1. Planting of scattered indigenous canopy species and selective patches of indigenous shrubs to suppress the existing pasture grasses and establish the conditions for rehabilitation of the site.
2. Where native grasses and herbs are persisting (e.g. along the rocky escarpment), undertake targeted treatment of introduced species. Techniques to be explored could include careful herbicide application, hand cutting of introduced species and / or small "box" burns.

Recommendation:

Rec 70. Gisborne Marshland - Continue the existing weed control program at the Gisborne Marshlands with the primary focus on eradicating declared noxious weeds, particularly Blackberry.

Rec 71. Gisborne Marshland - Following the implementation of measures to redirect the flow of urban stormwater entering the Marshland from residential land to the east, implement an intensive weed control program for Yorkshire Fog in the area of Plains Grassy Wetland currently heavily infested by this species. Conduct follow-up weed control for two to three years to allow natural regeneration of native species to occur in this area.

Rec 72. Gisborne Marshlands – Remove existing pine trees in the north-east and north-west corners of the site prior to the installation of any new pathways. Remove them beforehand if they are assessed to present a safety risk or if funding or opportunity arises.

Rec 73. Gisborne Marshlands - Remove existing fruit trees south of the Calder Freeway if funding or opportunity arises.

Rec 74. Gisborne Marshlands – Remove pine and fruit tree wildings as they emerge.

Rec 75. Steam Park – Incorporate maintenance of the Steam Park into Council's parks and gardens maintenance regime if and when the site's lease arrangements are altered to confer maintenance responsibility to Council.

Rec 76. Magnet Hill – Treat the listed noxious weeds on the site as a priority – e.g. Blackberry and Gorse.

Rec 77. Magnet Hill – Treat the self-seeded fruit trees, retaining selective original and / or mature specimens to retain a connection with the site's European heritage.

Rec 78. Magnet Hill – Implement targeted weed control in and around the patches of native grasses and herbs on the site.

Note: Recommendations relating to the rehabilitation of Magnet Hill are included at Rec 13 and 14 in Section 7.4.5.

7.12 Pest animals

Rabbits, cats and foxes are the main pest animals known to be active at the reserves. Deer have also been sighted in the area and, as such, their presence at the sites should be monitored.

Gisborne Marshlands

European Rabbits and Hares

Observations were taken from the grassland area that acts as a buffer around the west, north and east perimeter of the native rush dominated marshland. Rabbit activity was noted in the north east and south west corners of the area north of the freeway (Zones B and C in Figure 25) but not in the core wetland area in Zone A. Scratching's and dung heaps were found at the base of planted woody species in the north east corner and also on the northern fence line where the channel meets the fence. Blackberry infestations throughout Zones B and C are providing harbour for rabbits, however the dense stand of rushes throughout Zone A also provides cover and habitat opportunities.

Access to the islands may prove difficult during wetter months, inhibiting movement of rabbits in these areas, however there may be a warren network that links the islands. The Blackberry infestations on the islands may also be providing harbour.

The south west corner is highly degraded and has a large mound of fill from the construction of the Calder Freeway. This mound may also be providing harbour for rabbits.

The area south of the freeway (Zones D and E) is yet to be assessed.

Regular monitoring of the site is required to determine an appropriate rabbit control plan for the site. Some beneficial actions may include:

- Installation of rabbit proof fencing along the west boundary adjoining of Zone B and along the south boundary with Ross Watt Road to prevent rabbit movements.
- Removal of the mound in the south west corner of the reserve north of the freeway to remove this potential harbour.
- Treatment of the Blackberry infestations to remove this potential harbour.
- Fumigation and collapse of identified rabbit warrens. It is noted that any deep ripping will require preparation of a Cultural Heritage Management Plan as the reserve is a site of Aboriginal cultural heritage sensitivity under the Aboriginal Heritage Act 2006.

Red Fox

Foxes are present throughout the local landscape and present a real threat to native fauna

A Fox den was sighted in the low quality patch south west corner of the north area and appeared to be in active. A largish scat was also observed, which looked moderately recent and contained remnants of blackberry seeds.

No spotlight surveys have been undertaken at the site to date. Further surveys would be beneficial in determining the scale of the fox problem and developing an appropriate response.

While poison baiting could be considered if foxes are considered a problem, this would need to be undertaken in accordance with Agricultural Victoria's "*Directions for the use of 1080 and PAPP pest animal bait products in Victoria*". Use of poison baiting would require substantial community engagement to mitigate against the risk of impacting off target consumption, particularly by domestic dogs.

It is recommended that the presence of foxes at the site be monitored on an annual basis and that these survey outcomes inform any control actions if required.

Cats

Cats are known to prey on native birds, frogs, marsupials and other fauna. Evidence of cat predation on native birds has been encountered at five locations at the Gisborne Marshland (Plate 17). Cats may be an issue at the site due to the proximity of adjoining residences. They may become more of an issue with the residential development planned to the north.

Plate 17 Remains of suspected Crimson Rosella at Gisborne Marshland

Further monitoring is required to determine whether cats regularly access the Marshlands and, if so, what impact they are having. This could include use of remote cameras and cat trapping as appropriate.

It is recommended that the presence of cats at the site be monitored on an annual basis and that these survey outcomes inform any control actions if required.

It is noted that the *Conservation Management Plan – New Gisborne Development Area* recommends promoting the importance of keeping cats inside at night. This was included as a community engagement initiative and was not translated into any restriction on the titles of the residential lots. It is recommended that Council work with the relevant developer/s to raise awareness about the site's natural values and the importance of responsible pet ownership via newsletters, brochures and other forms of communications as appropriate.

It is also noted that cats are currently not allowed within the Colwyn Estate which is east of the Gisborne Marshlands. This is implemented via a restriction on Title required when the original subdivision was approved.

Use of cat traps and, potentially, a localised cat curfew could be investigated to minimise the impact of cats on migratory birds and other native wildlife at the site.

Black Rats

This species was detected via remote cameras at both Gisborne Marshland and Magnet Hill. This aggressive introduced rodent is known to predate on small native birds and their nests. While the Black Rat may never be able to be removed from the site, ongoing monitoring to determine potential impacts should be investigated.

Zone A – North Wetland Area ; Zone B – North Grassed Area ; Zone C – North Dams; Zone D – South Wetland Area
Zone E – South Grassed Area

Figure 25 Pest Animal Management Zones

Steam Park

The Gisborne Vintage Machinery Society raised concerns about the number of rabbits harbouring at the site. It is recommended that Council assist the Gisborne Vintage Machinery Society to assess pest animal activity at the site and provide advice and support with control actions as appropriate.

Magnet Hill

A formal survey for pest animals was not undertaken at Magnet Hill, however evidence of Rabbits has been noted on the adjoining property to the west. European Hares have also been seen at the top of Magnet Hill and evidence of cat predation.

It is recommended that the presence of pest animal activity at the site be monitored on an annual basis and that these survey outcomes inform any control actions if required.

Recommendations

Rec 79. Investigate the need for rabbit proof fencing along the western boundary of the Marshlands adjoining Cathlaw Estate and along the southern boundary of the southern Marshlands adjoining Ross Watt Road.

Rec 80. Undertake annual pest animal surveys at the Gisborne Marshlands and Magnet Hill to monitor for the presence of rabbits, foxes and cats. Utilise this information to determine appropriate pest animal control actions as required.

Rec 81. Work with the Gisborne Vintage Machinery Society to assess pest animal activity at the Steam Park. Provide advice and support with pest animal control actions as required.

Note: See Rec 82 about developing targeted brochures and other engagement tools as required to raise awareness about the importance of responsible pet ownership for residents adjoining the Marshlands. See Rec 33 about investigating implementation of a local cat curfew surrounding the Gisborne Marshlands as a part of implementing Council's Domestic Animal Management Plan.

7.13 Community engagement

Friends Groups

Currently none of the reserves has an active Friends group.

Friends groups can play an important role in raising community awareness about a site's natural values, representing the community's interests and assisting with management and monitoring activities. Some opportunities for Friends group's activities include:

- Assisting with fauna monitoring such as bird surveys and frog surveys
- Monitoring water quality, including through Melbourne Water's Water Watch program
- Undertaking weed control
- Hosting events such as walks and talks
- Assisting with revegetation

Community interest in assisting with conservation activities was tested via the preliminary community survey. Overall between 11% and 18% of respondents stated that they would be interested in assisting with bird surveys (18%), frog surveys (17%), flora monitoring (13%), weed removal (13%) and water quality monitoring (11%). This equates to between 18 and 27 people, indicating relatively strong interest from local residents in participating in activities often hosted by Friends groups.

Council supports Friends groups in a range of ways including:

- Providing annual small grants for administration and other activities, including weed control
- Assisting with the organisation and promotion of Friends groups activities
- Providing training in species ID and weed control techniques
- General information and advice about governance and land management

It is recommended that Council support formation of a Friends group for Magnet Hill and the Gisborne Marshlands if sufficient community interest exists.

In the absence of a Friends group, it is recommended that Council keep interested and local community members informed of opportunities to participate in monitoring and conservation activities conducted by Council.

General Community Engagement

Opportunity exists to raise awareness about the natural and cultural values of the Gisborne Marshlands and Magnet Hill amongst existing and future residents. This could include information about resident obligations such as responsible pet ownership and respectful use of the three sites. This awareness raising could take the form of brochures and fact sheets distributed to the existing community and new residents.

Recommendations

Rec 82. Develop brochures, fact sheets and other communications materials for local residents and the general public as appropriate that raise awareness about the natural values of the Marshlands and Magnet Hill and resident obligations, including responsible pet ownership.

Rec 83. Support the establishment of Friends groups for Magnet Hill and the Gisborne Marshlands if sufficient community interest exists.

Rec 84. Where possible, involve the community in wildlife surveys.

8. Strengths, weaknesses, opportunities and threats

The following table summarizes the strengths, weaknesses, opportunities and threats identified during the background research and stakeholder and community consultation.

Gisborne Marshlands

Strengths	Weaknesses
• Federally listed vegetation communities and species (under EPBC Act) • Good diversity of native fauna and flora • Generally low weed coverage • Relatively minimal impacts from pest animals • Views to the Macedon Ranges and surrounds	• Lack of suitable place identification and regulatory signs, including at the Webb Street car park and for part of the reserve south of the freeway • Visual and noise impacts from the Calder Freeway • Lack of formal walking paths for passive recreation activities • Introduced plantings in some areas undermine integrity of the vegetation community • Aboriginal cultural heritage values unknown and un-acknowledged • Lack of a Friends Group to assist with managing the site
Opportunities	**Threats**
• Use of the northern dam as a drought refuge / backup population for the Yarra Pygmy Perch • Review the inclusion of “racecourse” in the name given that no racecourse exists at the site anymore • Install additional recreation infrastructure such as walking paths and potentially a bird hide / wall, to provide for passive recreation while still protecting the site’s natural values • Ensure sufficient buffers are in place between the Marshland and adjoining residential developments • Consider buffer / screen plantings as a part of new residential developments • Consider diverting the Colwyn Estate storm water around the marshland and / or install treatment measures to improve the quality of water entering the site • Installation of additional place identification, regulatory and interpretive signs	• Nutrient loads and other contaminants from storm water inflow from adjoining Colwyn Estate • Four wheel drive vehicles damaging vegetation • Spread of weeds and pathogens from recreation and management vehicles • Impacts from adjoining residential development such as domestic animals, visual impact of new housing, changes to hydrology and lighting and noise from adjoining roads • Dogs off lead leaving their scent and chasing wildlife • Spread of weeds if current treatment program ceases • Increased impacts from rabbits, foxes and cats if unchecked / controlled • Impacts to wildlife from recreation users such as boating and canoeing.

Steam Park and Compound

Strengths	Weaknesses
• Views to the Macedon Ranges and surrounds • Active user groups who take good care of the site	• General community access only available from the Webb Street car park. Lack of access from adjoining Colwyn Estate residential area • Rabbits present
Opportunities	**Threats**
• Review the lease arrangements applicable to the Steam Park to transfer management and maintenance responsibility for the site to Council (other than areas leased to the user groups), alleviating this burden on the GVMS and facilitating public infrastructure upgrades as appropriate. • Review the lease arrangements applicable to the compound to facilitate greater access to community groups, while retaining it as a securely locked site. • Provide pedestrian access from the north (as part of development of the new residential estate) and east (e.g. from Colwyn Court and Octagonal Court) • Provide additional recreation infrastructure such as walking paths and picnic facilities to facilitate greater community use • Facilitate additional community events at the Steam Park and on the vacant land south of the compound, off the Station Road • Possible suitable dog off-lead area given the lack of sensitive ecosystems	• Increased community access could increase theft and vandalism to existing user group facilities

Magnet Hill

Strengths	Weaknesses
• Views to the Macedon Ranges and surrounds • Possible European cultural heritage values associated with the dry stone walls and orchard • Remaining rocky outcrops and associated remnant native vegetation, including native grasses which provide insight into the site's natural heritage as well as habitat for local fauna.	• Lack of public access • Limited natural values – predominantly introduced grasses, self-seeded fruit trees and other weeds such as Blackberry and Gorse • Limited opportunities for future car parking due to proximity to Station Road round-about • Views into adjoining residential properties could cause privacy concerns for adjoining residents • Aboriginal cultural heritage values largely unknown and unacknowledged • Poor connectivity to adjoining public open space areas due to Station Road • Lack of a Friends Group to assist with managing the site
Opportunities	**Threats**
• Installation of recreation infrastructure such as walking paths to the top of the hill, benches and picnic facilities • Installation of interpretive signs to inform the community about the site and its context • Consider possible use of part of the site for festivals and events, including activities such as a fun run • Installation of screen planting to protect privacy of adjoining residences • Investigate use of the site for a native seed orchard • Rehabilitation of the site through revegetation and weed control	• Lack of clear vision and direction could result in loss of public open space and sale or lease of some land for commercial activities

Part 2 Environmental Management Plan

8.1 Visions

Three distinct management areas were identified in the project area based on the unique values, functions and management requirements. These areas are Gisborne Marshlands, the Steam Park and Magnet Hill.

Gisborne Marshlands

Gisborne Marshlands will continue to be valued by the community for its natural beauty, views to the nearby ranges and ecological values. The Marshland will be actively managed by Council and the community to conserve and enhance its biodiversity values, including its state and nationally significant flora, and to provide resilience to the vegetation communities present. Local residents and visitors will be provided with the opportunity to learn and engage with the site's biodiversity values via strategically located tracks and visitor facilities.

The Steam Park

The eastern part of the Gisborne Marshlands Racecourse Reserve, often known as 'The Steam Park', will continue to support the activities of local community groups such as the Gisborne Vintage Machinery Society and the Macedon Ranges and District Car Club. This part of the reserve will be accessible to the community for passive recreation pursuits and will function as an open space link connecting New Gisborne to Gisborne.

Magnet Hill

The environmental values of Magnet Hill will be slowly restored through a long term program of rehabilitation and adaptive management. The recreation role of Magnet Hill will be enhanced to support passive recreation activities such walking and picnicking with visitor infrastructure that provides community access to the site's panoramic views and rehabilitated natural values without impacting the reserve's scenic qualities and function as a natural gateway to Gisborne.

8.2 Management objectives

The Management objectives for each site are:

8.2.1 Gisborne Marshlands

- Protect threatened species and communities
- Preserve the site's natural values including management of threats and by not planting non-indigenous and inappropriate native species
- Maintain or improve the natural water regime and water quality of the marshland
- Increase knowledge of the species and communities within the reserve and how the site responds to management interventions
- Facilitate passive recreation such as walking and bird watching, while ensuring community use does not negatively impact the reserve's natural values
- Raise community awareness about the site's natural values through interpretive signs, citizen science and well-planned community activities and events

8.2.2 Steam Park

- Continue to support the existing activities of the Gisborne Vintage Machinery Society and Macedon Ranges and District Car Club
- Improve community access to the site and facilitate greater community use for passive recreation activities such as walking, dog walking and picnicking
- Protect threatened species and communities
- Enhance the quality of water that enters the marshlands by exploring improvements to local storm water management through enhanced water sensitive urban design treatments and/or diversion of storm water around the Marshlands.

8.2.3 Magnet Hill

- Provide community and visitor access to the top of the hill to capitalise on the site's views to the surrounding area
- Provide improved basic visitor facilities without impacting the overall aesthetics of the hill
- Maintain the natural landscape by avoiding any commercial uses
- Enhance the natural values through strategic revegetation

8.3 Gisborne Marshlands scheduling

Timeframe	Theme	Action
Year 1	Weed control	Continue woody weed control
	Monitoring	Conduct targeted threatened flora survey in November
	Infrastructure	Install a locked gate to prevent access to non-authorised vehicles
	Signage	Install a place identification sign at the Webb Crescent entrance
	Flora and fauna monitoring	Prepare flora and fauna monitoring plans
	Pest animals	Commence annual pest animal surveys to inform future control actions
	Storm water management	Undertake a Storm Water Investigation and Function Design aimed at protecting the Marshland's vegetation from the negative impacts of the storm water entering the site from the Colywn Estate.
Year 2	Weed control	Commence removal of inappropriate shrub and tree plantings in the north east corner of the site
	Weed control	Commence removal of Pine and Poplar wildlings as required
	Cultural heritage	Commission a Cultural Heritage Management Plan for the Gisborne Marshlands and the Steam Park for all infrastructure works planned that trigger a CHMP under the Aboriginal Heritage Act.
	Revegetation	Commence revegetation of the artificial islands in the north part of the site
	Fauna and flora monitoring	Commence implementation of Fauna Monitoring Plan, including installation of tiles for frogs and reptiles

Timeframe	Theme	Action
	Ecological burn	Prepare a burn plan for the Plains Grassland area in the north-east corner of the site, including relevant flora and fauna assessments
Year 3	Storm water management	Implement storm water treatment improvements as recommended following further assessment.
	Ecological burn	Commence implementation of ecological burns of the Plains Grassland area in the north-east corner of the site in accordance with the approved burn plan
Year 4	Weed control	Conduct targeted control of Yorkshire Fog if required following re-direction / improved treatment of the storm water
Year 5	Revegetation	Revegetate area currently subject to Yorkshire Fog if natural regeneration fails
As required following development of northern subdivision	Signage and infrastructure	Install place identification signs at the northern end of the reserve. Replace the north boundary fencing as required, including gates from the northern street network
Prior to installation of pathways	Weed control	Remove existing pine trees in the north-east and north-west corners of the site unless they present a safety risk or funding / opportunity arises earlier
As opportunity arises	Revegetation	Remove mound in south west corner
	Infrastructure and fauna monitoring	Install board walk, pathways, bird nesting boxes, drift fencing, nest boxes and bird hide. Seal Webb Crescent and formalise the existing car park
	Pest animals	Investigate local cat curfew
	Weed control	Removal of fruit trees south of the Calder Freeway
	Community engagement	Develop brochures, fact sheets and other communication materials about the site's natural values

8.4 Steam Park and Compound scheduling

Timeframe	Theme	Action
Year 1	Infrastructure	Install bollards around the Plains Grassy Wetland vegetation to prevent mowing
	Fire prevention	Include the vacant land south of Webb Crescent in Council's township protection slashing program
	Storm water investigation and functional design	Undertake a Storm Water Investigation and Function Design aimed at protecting the Marshland's vegetation from the negative impacts of the storm water entering the site from the Colywn Estate.
Year 2	Cultural heritage	Commission a Cultural Heritage Management Plan for the Gisborne Marshlands and Steam Park for all works that trigger a CHMP under the Aboriginal Heritage Act.
Year 3	Storm water management	Implement storm water treatment improvements as recommended following further assessment.
	Fauna monitoring	Install nest boxes

Timeframe	Theme	Action
As opportunity arises / as appropriate	Administration and governance	Transition the Gisborne Vintage Machinery Society's lease over the Steam Park to a licence and lease whereby the Society lease their club rooms and other infrastructure (such as the tracks) and have a license to use the rest of the site on specified days.
	Administration and governance	Reduce the extent of Gisborne Vintage Machinery Society's lease over the compound to apply to specific buildings and facilities only rather than the compound as a whole (minus the car club house, which is leased to the Macedon Ranges and District Car Club). Enter into leases with other community groups for their buildings and facilities as appropriate. Maintain the remaining land as common property managed by Council.
	Fire prevention	If / when Council takes over management of the Steam Park, include the site in Council's township protection slashing program
	Recreation maintenance	If / when Council takes over management of the Steam Park, include the site in Council's parks and gardens maintenance program
	Infrastructure	If / when Council takes over management of the Steam Park, install pathways, signage, toilets, replacement fencing and pedestrian gates from the adjoining streets
	Fencing	Upgrade the boundary fencing to minimise the opportunity for dogs to access the Marshland while still allowing for the passage of wildlife.

8.5 Magnet Hill scheduling

Timeframe	Theme	Action
Year 1	Fencing	Install access gate from the road reserve off Magnet Lane
	Paths	Create an access path / maintenance track accessed from the road reserve off Magnet Lane
	Weed control	Commence treatment of listed noxious woody weeds and fruit trees
	Planning	Prepare Revegetation Plan
	Planning	Prepare flora and fauna monitoring plans
	Fire prevention	Continue to maintain the site as a part of Council's township protection slashing program
	Pest animals	Commence annual pest animal surveys to inform future control actions
Year 2	Revegetation	Commence implementation of Revegetation Plan with planting of canopy plantings and patches of shrubs and ground cover
	Weed control	Targeted weed control in and around patches of native vegetation
	Fire prevention	Commence brush-cutting / slashing of upper slopes if required

Timeframe	Theme	Action
Year 3	Weed control	Continue weed control
	Revegetation	Continue revegetation
Year 4 onwards	Infrastructure and signage	Consider installation of paths, recreation facilities and place identification and interpretive signage
Prior to increased community access	Infrastructure	Install or replace boundary fencing in consultation with adjoining land owners
As opportunity arises	Planning	Rezone the land from RLZ2 to PCRZ
	Flora and fauna monitoring	Install nest boxes
	Cultural heritage	Complete assessment of Aboriginal cultural heritage values
	Infrastructure	Progressively remove existing internal fencing and barbed wire
	Community engagement	Develop brochures, fact sheets and other communication materials about the site's natural values

8.6 Management recommendations/actions

8.6.1 Status

Each management recommendation is listed along with the management priority, responsibility and the resources required. An outline of the priority is provided below:

Current and On-going Actions

Works guidelines or operational actions that do not require any specific funding.

New High Priority Actions – Separate Funding (one to three years)

Priority management actions that need to be resourced specifically. These actions will be staged over the next one to three years.

New Medium Priority Actions – Separate Funding (three to 10 years)

Priority management actions that need to be resourced specifically. These actions will be staged over the next three to 10 years.

New Aspirational Actions

These actions have not been prioritised. They will occur as opportunity arises.

The timing of all actions will be subject to staff and budget resource availability.

8.6.2 Resources required

With regard to the resources required, the following categories have been applied:

- Internal staff resources
- None required
- $: $1-5K
- $$: $5-10K
- $$$: $10-20K
- $$$$: $20K+

Table 18 Management Actions

Number	Theme	Reserve	Actions	Priority	Resources required
Rec 1	Conservation	MH	*Rezone Magnet Hill from Rural Living Zone 2 (RLZ2) to the Public Conservation and Resource Zone (PCRZ).*	Aspirational / as opportunity arises	$$
Rec 2	Conservation	GM	*Support any State Government initiative to gazette the Gisborne Marshlands as a 'nature conservation reserve'.*	Aspirational / as opportunity arises	Existing resources
Rec 3	Infrastructure	SP&C	*Undertake a storm water investigation and function design to confirm the best approach to protecting the Marshland vegetation community from the storm water entering the site from the Colwyn Estate. This investigation should confirm the water needs of the Marshland itself and identify suitable water sensitive urban design and / or storm water diversion options.*	High	$$$
Rec 4	Maintenance	GM	*Other than possible diversion of the storm water from the Colwyn Estate, maintain the current hydrological regime for the Marshlands. Monitor the impact of the storm water diversion on the site's flora and fauna and implement management changes as required to protect and enhance the marshland's vegetation community.*	Current and ongoing	Existing resources
Rec 5	Monitoring	GM	*Commission additional hydrological studies such as a water balance as required and / or as opportunity arises.*	As required / as opportunity arises	$$$
Rec 6	Monitoring	SP	*Implement a regular monitoring and maintenance regime for the storm water detention system / small wetland within the Steam Park to ensure it is functioning as intended.*	Current and ongoing	Existing resources
Rec 7	Infrastructure	SP	*Install bollards or star pickets in the short term and realign fencing in the long term to prevent mowing and degradation of Plains Grassy Wetland on the western edge of the Steam Park*	High	$$
Rec 8	Weed control	GM	*Selectively remove inappropriate shrub and tree plantings that are not compatible with the area of Plains Grassland in the north-east corner of the Gisborne Marshland. NOTE: Native plantings around the western margin of the marshland and south of the freeway occur in areas already dominated by introduced vegetation; therefore, these plantings do not constitute a threat to the integrity of remnant grassland and wetland vegetation, and consequently, do not need to be removed.*	High	$
Rec 9	Flora monitoring	GM	*Undertake a targeted survey in November for listed threatened flora to obtain an accurate estimate of population size for each species. Follow up surveys should be undertaken annually or biannually to determine how the species are tracking over time*	High	$$

Number	Theme	Reserve	Actions	Priority	Resources required
Rec 10	Revegetation	GM	*Gisborne Marshlands - Remove the mound of fill from the south-west corner of the Gisborne Marshland (north of the Highway) if possible and rehabilitate / revegetate using a mix of locally indigenous tree, shrub and robust ground cover species appropriate to Plains Grassy Woodland (EVC 55).*	Aspirational / as opportunity arises	$$
Rec 11	Revegetation	GM	*Gisborne Marshlands - Following control of Yorkshire Fog in the vicinity of the stormwater drain outlet, allow natural regeneration of native wetland species. If natural regeneration fails after one year, consider revegetating this area using a suite of robust Plains Sedgy Wetland and Plains Grassy Wetland species that occur in adjacent areas of the marsh.*	Medium	$$
Rec 12	Revegetation	SP	*Steam Park - Revegetate the margins of the Steam Park dam using a mix of locally indigenous wetland species to improve environmental values and its water filtering capacity*	Medium	$$
Rec 13	Revegetation	MH	*Magnet Hill - Prepare a Revegetation Plan for Magnet Hill that sets out planting locations, species and densities appropriate to Scoria Cone Woodland EVC. Ensure the revegetation plan maintains views to the surrounding landscape and is consistent with the pathway network and other infrastructure proposed in the concept plan included in this EMP (Appendix D).*	High	$$
Rec 14	Revegetation	MH	*Magnet Hill – Rehabilitate the site through the staged implementation of the Revegetation Plan. Monitor success and adjust species and techniques as required.*	High	$$
Rec 15	Revegetation	All	*All reserves - ensure any revegetation that occurs include plant guards to prevent browsing by rabbits and kangaroos.*	Current and ongoing	$
Rec 16	Flora and fauna monitoring	GM	*Prepare and implement a Flora Monitoring Plan to track change over time in the condition of the listed wetland community and health of the threatened flora populations.*	High	$
Rec 17	Monitoring	GM	*Consider use of tools such as the Index of Wetland Condition and Wetland Monitoring and Assessment Program to monitor the overall health of the marshland.*	Aspirational / as opportunity arises	$$
Rec 18	Flora and fauna monitoring	All	*Encourage sightings of threatened flora species to be reported to Council for inclusion in Council's database and / or the Victorian Biodiversity Atlas.*	Current and ongoing	Existing resources
Rec 19	Flora and fauna monitoring	GM	*Install bird nesting and roosting habitat boxes and barges at the Gisborne Marshlands aimed at providing further habitat and breeding opportunities that support wetland birds.*	Medium	$$

Number	Theme	Reserve	Actions	Priority	Resources required
Rec 20	Revegetation	GM	*Revegetate the artificial islands in the back lake at the Gisborne Marshlands to provide a buffer and enhanced habitat for wetland birds and frog species.*	Medium	$$
Rec 21	Flora and fauna monitoring	GM and SP	*Install nest boxes in the treed areas of the Gisborne Marshland and Steam Park to provide nesting opportunities for bird species that require hollow bearing trees. Nest boxes should be checked annually to ensure that they are being used by target species and to record activity.*	Medium	$
Rec 22	Flora and fauna monitoring	GM and SP	*Install tiles around waterbodies at the Gisborne Marshlands and Steam Park to provide additional habitat and to facilitate monitoring of frog and reptile species.*	High	$
Rec 23	Vehicle hygiene	GM	*Implement vehicle hygiene procedures for management vehicles and contractors entering the Gisborne Marshlands to prevent the spread of weeds and pathogens, including the Chytrid Fungus.*	Current and ongoing	Existing resources
Rec 24	Infrastructure	GM	*Investigate installation of drift fencing adjoining the proposed drainage channel aimed at encouraging positive migration of frogs across the two habitat zones.*	Medium	$$
Rec 25	Conservation	GM	*Ensure fallen timber and rocks remain scattered across the site to provide habitat opportunities for small reptiles.*	Current and ongoing	None required
Rec 26	Conservation	MH	*Where possible, avoid use of large slashing equipment around rocky outcrops and fallen timber.*	Current and ongoing	None required
Rec 27	Flora and fauna assessments	GM	*Conduct reptile surveys as a part of any preparation for ecological burns and implement appropriate measures to mitigate harm to reptiles and their habitat.*	As required	$$
Rec 28	Flora and fauna monitoring	MH	*Install nest boxes on Magnet Hill to provide additional habitat for birds and mammals and to provide for passive monitoring of arboreal mammals.*	Medium	$
Rec 29	Flora and fauna monitoring	GM and MH	*Undertake bat monitoring at both sites, which includes the use of bat nest boxes and active bat recording devices.*	Aspirational	$$
Rec 30	Planning and reporting	GM	*Support Melbourne Water's proposal to develop the northern dam as a drought refuge for the Yarra Pygmy Perch*	Current and ongoing	Existing resources
Rec 31	Pest animal control	GM	*Avoid any further fish introductions for recreational angling*	Current and ongoing	None required

Number	Theme	Reserve	Actions	Priority	Resources required
Rec 32	Planning and reporting	GM	*Investigate opportunities to require the residential area north of the Gisborne Marshlands to minimise impacts of the development on wildlife. This could occur as a part of the approval of the Engineering and Landscape Plans, which are required to be submitted to satisfy the existing subdivision permit (PLN/2014/342). This may include use of wildlife friendly lighting and fencing, incorporation of an appropriate vegetation buffer adjoining the Marshland and installation of regulatory and interpretive signs.*	As required	Existing resources
Rec 33	Pest animal management	GM	*Investigate opportunities to implement a local cat curfew in the residential areas surrounding the Gisborne Marshlands as a part of implementation of Council's Domestic Animal Management Plan.*	Aspirational	$$
Rec 34	Flora and fauna monitoring	GM	*Prepare and implement Fauna Monitoring Plans, particularly for the Gisborne Wetlands and Magnet Hill, which include monitoring activities for birds, frogs, reptiles, Kangaroos, bats, fish and pest animals.*	High	$
Rec 35	Flora and fauna monitoring	All	*Encourage sightings of native fauna species to be recorded and reported to Council for inclusion in the Victorian Biodiversity Atlas.*	Current and ongoing	Existing resources
Rec 36	Aboriginal cultural heritage	All	*Investigate entering into Land Management Agreements with the Wurundjeri Tribe Land Compensation and Cultural Heritage Council Incorporated for the three sites as required and appropriate.*	Medium	$$$$
Rec 37	Aboriginal cultural heritage	GM and SP	*Ensure a Cultural Heritage Management Plan is prepared for works that result in "significant ground disturbance" at the Gisborne Marshlands and Steam Park as required by the Aboriginal Heritage Act 2006. Ensure these CHMPs are broad enough to include a general Aboriginal cultural heritage assessment and recommendations relevant to all foreseen infrastructure works.*	As required	$$
Rec 38	Aboriginal cultural heritage	MH	*Commission an Aboriginal heritage assessment of Magnet Hill.*	Aspirational	$$
Rec 39	Infrastructure	GM	*Install a locked gate with "no unauthorised vehicle" signs at the end of the car parking off Webb Crescent preventing unauthorised vehicle access into the Marshlands.*	High	$
Rec 40	Infrastructure	GM	*Improve pedestrian access to the southern wetland, for example via installation of a short board walk and landing that minimises environmental impacts such as disturbance to existing native vegetation.*	Medium	$$$$
Rec 41	Infrastructure	GM	*Install a bird hide on the northern side of the Marshlands, accessed from the new road to be constructed on the site's northern boundary within the adjoining new subdivision.*	Aspirational	$$$

Number	Theme	Reserve	Actions	Priority	Resources required
Rec 42	Infrastructure	GM	*Seal the extent of Webb Crescent.*	Medium	$$$
Rec 43	Infrastructure	GM	*Formalise the car park at the end of Webb Crescent and install bollards and other infrastructure as required. Consider sealing the car park if considered warranted.*	Medium	$$$
Rec 44	Pest animal control	GM	*Investigate opportunities to increase Council officer / ranger presence at the Marshland to facilitate implementation of the "no dogs" regulation at the Marshland.*	Medium	$
Rec 45	Governance	GM	*Do not permit public events at the Gisborne Marshland other than small scale nature tourism or educational activities. Investigate opportunities to increase Council officer / ranger presence at the Marshland to facilitate implementation of the "no dogs" regulation at the Marshland.*	High	Existing resources
Rec 46	Governance	GM	*Do not permit boating (motorised or non-motorised), canoeing or swimming at the Gisborne Marshlands. Allow fishing from designated areas.*	High	Existing resources
Rec 47	Governance	SP	*Maintain the compound as a securely fenced site, however facilitate greater community group access to the compound by applying the user group leases to the individual buildings and any associated land and facilities rather than the site as a whole.*	High	Existing resources
Rec 48	Governance	SP	*Consider transitioning the Gisborne Vintage Machinery Society's lease over the Steam Park grounds to a licence and lease arrangement, which provides the group with exclusive use of the whole site at specified times under a licence (i.e. for events). Maintain and continue the Society's lease over their buildings and potentially other infrastructure (i.e. rail tracks) as agreed to between Council and the Society. Consider this change once the Society's lease expires in 2028 unless agreed between the Society and Council beforehand. If and when these changes occur, Council would maintain the licensed areas and the Society would be responsible for their leased infrastructure. Council would work with the Society to make their leased infrastructure and equipment safe for public access.*	High	Existing resources
Rec 49	Governance	SP	*Allow public events at the Steam Park subject to an environmental assessment and implementation of conditions as appropriate to minimise impacts on nearby wildlife.*	High	Existing resources
Rec 50	Signage	GM and MH	*Ensure all new signs at the Gisborne Marshlands and Magnet Hill are consistent with Council's Bushland Reserves Signage Template.*	Current and ongoing	None required

Number	Theme	Reserve	Actions	Priority	Resources required
Rec 51	Signage	GM	*Install place identification signs for the Gisborne Marshlands at the Webb Crescent entrance and other strategic locations. Include icons that indicate:* *Dogs prohibited,* *Horses prohibited,* *Take home your rubbish,* *No unauthorised vehicles,* *Fires prohibited,* *Snakes present,* *No boats,* *No canoeing,* *No swimming,* *Fishing allowed from designated areas*	High	$
Rec 52	Signage	GM	*Install interpretive signs at the Gisborne Marshlands at strategic locations that provide information about the site's natural values, history and cultural heritage significance.*	Medium	$$
Rec 53	Signage	MH	*Once Magnet Hill is developed to be more accessible to the community, install place identification and interpretive signs as appropriate.*	Medium	$$$
Rec 54	Signage	MH	*Install interpretive signs at Magnet Hill while the site is being rehabilitate that inform the community about the rehabilitation works underway.*	High	$
Rec 55	Signage	SP	*If and when the lease arrangements at the Steam Park change to make Council responsible for management and maintenance of the site (other than the areas leased to relevant user groups), install place identification signs consistent with Council's other recreation reserves.*	High	$
Rec 56	Signage	GM and MH	*Install signs where relevant advising visitors to protect and not interfere with the flora and fauna in the reserves*	High	$
Rec 57	Fencing	GM and SP	*Upgrade the fencing between the Gisborne Marshlands and the Steam Park to minimise the opportunity for dogs to access the Marshlands while still allowing for the passage of wildlife.*	High	$$
Rec 58	Fencing	GM	*Incorporate double gates or chicanes at pedestrian entrances to the Marshlands to prevent access to horses, trail bikes and mountain bikes.*	Medium	$$
Rec 59	Fencing	All	*Ensure any new or replacement fencing at all three sites incorporate highly visible top wires or palings to facilitate the safe movement of Kangaroos and arboreal mammals. Where a rabbit proof skirt is not required, ensure all bottom wires are elevated to enable wildlife to pass underneath.*	As required	$
Rec 60	Fencing	MH	*Progressively remove and upgrade the fencing at Magnet Hill in accordance with Figure 24 and in consultation with adjoining landowners as required.*	Medium	$$$

Number	Theme	Reserve	Actions	Priority	Resources required
Rec 61	Fencing	All	*Progressively remove all barbed wire at all sites as fences are upgraded or as opportunity arises.*	As opportunity arises	$
Rec 62	Infrastructure	MH	*Install a vehicle gate at Magnet Hill off the road reserve accessed from Magnet Lane to facilitate maintenance. Conduct any vegetation management and earth works required to enable access. If vehicle access is not feasible, install a pedestrian gate.*	High	$$
Rec 63	Risk management	SP	*Create and maintain a fire access track along the eastern edge of the Steam Park adjoining the Colwyn Estate. This could be a gravel track or shared trail or a slashed break. Maintain the grass levels adjoining the residential estate to no more than 75 mm.*	High	$
Rec 64	Risk Management	GM	*Include the vacant land south of Webb Crescent in Council's township protection slashing program.*	High	$
Rec 65	Risk Management	SP	*Should Council take over maintenance of the Steam Park, include the northern grassed area in Council's township protection slashing program.*	As required	$
Rec 66	Risk Management	MH	*Continue to implement a yearly slash across the accessible parts of Magnet Hill as a part of Council's township protection slashing program.*	Current and ongoing	Existing resources
Rec 67	Revegetation	MH	*Ensure any perimeter plantings minimise fine fuels and fuel loads.*	As required	None required
Rec 68	Environmental burns	GM	*Investigate introduction of an ecological burn program for the area of Plains Grassland in the north-east corner of the Gisborne Marshlands. Key considerations: a) burn in late spring (initially) to minimise grassy weed germination, b) undertake intensive post-fire weed control, c) burn two to three times per decade, and d) consider involvement of Wurundjeri and to demonstration of traditional burning techniques.*	Medium	$
Rec 69	Flora and fauna monitoring	GM	*Undertake surveys for small terrestrial wildlife prior to any planned burn. Develop mitigation measures where potential threats to species exist.*	As required	$
Rec 70	Weed control	GM	*Gisborne Marshland - Continue the existing weed control program at the Gisborne Marshlands with the primary focus on eradicating declared noxious weeds, particularly Blackberry.*	Current and ongoing	Existing resources
Rec 71	Weed control	GM	*Gisborne Marshland - Following the implementation of measures to redirect the flow of urban stormwater entering the Marshland from residential land to the east, implement an intensive weed control program for Yorkshire Fog in the area of Plains Grassy Wetland currently heavily infested by this species. Conduct follow-up weed control for two to three years to allow natural regeneration of native species to occur in this area.*	As required	$

Number	Theme	Reserve	Actions	Priority	Resources required
Rec 72	Weed control	GM	*Gisborne Marshlands – Remove existing pine trees in the north-east and north-west corners of the site prior to the installation of any new pathways. Remove them beforehand if they are assessed to present a safety risk or if funding or opportunity arises.*	As required	$$
Rec 73	Weed control	GM	*Gisborne Marshlands - Remove existing fruit trees south of the Calder Freeway if funding or opportunity arises.*	Aspirational	$$
Rec 74	Weed control	GM	*Gisborne Marshlands – Remove pine and fruit tree wildings as they emerge.*	High	Existing resources
Rec 75	Maintenance	SP	*Steam Park – Incorporate maintenance of the Steam Park into Council's parks and gardens maintenance regime if and when the site's lease arrangements are altered to confer maintenance responsibility to Council.*	As required	$
Rec 76	Weed control	MH	*Magnet Hill – Treat the listed noxious weeds on the site as a priority – e.g. Blackberry and Gorse.*	High	$
Rec 77	Weed control	MH	*Magnet Hill – Treat the self-seeded fruit trees, retaining selective original and / or mature specimens to retain a connection with the site's European heritage.*	High	$
Rec 78	Weed control	MH	*Magnet Hill – Implement targeted weed control in and around the patches of native grasses and herbs on the site.*	High	$
Rec 79	Pest animal control	GM	*Investigate the need for rabbit proof fencing along the western boundary of the Marshlands adjoining Cathlaw Estate and along the southern boundary of the southern Marshlands adjoining Ross Watt Road.*	Medium	$$$
Rec 80	Pest animal control	GM and MH	*Undertake annual pest animal surveys at the Gisborne Marshlands and Magnet Hill to monitor for the presence of rabbits, foxes and cats. Utilise this information to determine appropriate pest animal control actions as required.*	Current and ongoing	Existing resources
Rec 81	Pest animal control	SP	*Work with the Gisborne Vintage Machinery Society to assess pest animal activity at the Steam Park. Provide advice and support with pest animal control actions as required.*	High	Existing resources
Rec 82	Education and promotion	GM and MH	*Develop brochures, fact sheets and other communications materials for local residents and the general public as appropriate that raise awareness about the natural values of the Marshlands and Magnet Hill and resident obligations, including responsible pet ownership.*	Medium	$$
Rec 83	Community support	MH and GM	*Support the establishment of Friends groups for Magnet Hill and the Gisborne Marshlands if sufficient community interest exists.*	As required	$
Rec 84	Education and promotion	All	*Where possible, involve the community in wildlife surveys.*	As opportunity arises	$

9. Monitoring and evaluation

A robust monitoring and review program is required to ensure this management plan continues to be relevant and responds to climatic changes and emerging issues and opportunities. This includes reviewing the ecological condition of the reserve in terms of weed coverage and native species diversity.

Gaining a better understanding of what native and pest animals inhabit the reserve would also be of benefit to ensure management actions protect and enhance the site's habitat values. This could occur in collaboration with community groups through the continued visit to the site by the local bird observer groups and more formal council managed monitoring programs.

To facilitate monitoring and evaluation, it is recommended that Council prepare a Monitoring Plan for the reserves. The following ecological and biophysical parameters are recommended.

9.1 Evaluation and review

It is recommended that this EMP be reviewed at least every 10 years to ensure its principles and actions are still relevant. It is recommended that this review comprise an audit of the Plan's actions as well as an evaluation of the Plan's objectives utilising the data collected as part of the implementation of the Monitoring Plan.

This EMP has considered current known management issues and concerns, and made appropriate recommendations with regards to these. It is acknowledged the EMP may require some adjustments to continue the effective management of the reserves, and that some issues may not have been apparent at the time of preparing the EMP. Consequently, more regular internal reviews and updates may be required throughout the plan's implementation.

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Appendices

Appendix A – Flora Species List

Status	Scientific Name	Common Name	Lundt 1985	Scott 1991	Ecology Aust. 1996	SMEC 2008	GHD and MRSC 2016/17/18		
			GM	MH	GM	GM	GM	SP	MH
	Acacia dealbata	Silver Wattle					P		
	Acacia mearnsii	Black Wattle						P	P
	Acacia melanoxylon	Blackwood		P				P	P
	Acacia pravissima	Ovens Wattle				P			
	Acaena echinata	Sheep's Burr	P		P	P	P		
	Acaena novae-zelandiae	Bidgee-widgee	P		P	P	P		P
	Acaena ovina	Australian Sheep's Burr					P		P
*	*Acetosella vulgaris*	Sheep Sorrel					P	P	P
*	*Agrostis capillaris*	Brown-top Bent	P		P		P		P
*	*Aira* spp.	Hair Grass					P		
	Allittia cardiocarpa	Swamp Daisy	P		P		P		
*	*Alopecurus pratensis*	Meadow Fox-tail					P	P	
	Amphibromus archeri	Pointed Swamp Wallaby-grass			P				
	Amphibromus macrorhinus	Long-nosed Swamp Wallaby-grass			P				
	Amphibromus nervosus	Common Swamp Wallaby-grass			P	P	P		
	Amphibromus spp.	Swamp Wallaby-grass					P		
	Anthosachne scabra	Common Wheat-grass					P		P
*	*Anthoxanthum odoratum*	Sweet Vernal-grass	P		P	P	P	P	P
*	*Aphanes arvensis*	Parsley Piert						P	
*	*Arctotheca calendula*	Cape weed						P	P
	Asperula conferta	Common Woodruff					P	P	P
	Asperula scoparia	Prickly Woodruff				P			
	Asperula subsimplex	Water Woodruff			P				

Status	Scientific Name	Common Name	Lundt 1985	Scott 1991	Ecology Aust. 1996	SMEC 2008	GHD and MRSC 2016/17/18		
			GM	MH	GM	GM	GM	SP	MH
*	*Aster subulatus*	Aster weed				P			
	Austrostipa aristiglumis	Plains Grass				P			
	Austrostipa scabra	Rough Spear Grass							P
*	*Avena barbata*	Bearded Oat							P
*	*Avena* spp.	Oat						P	
	Baumea arthrophylla	Fine Twig-sedge			P	P	P		
*	*Bellis perennis*	English Daisy						P	
*	*Briza minor*	Lesser Quaking-grass	P						
*	*Briza maxima*	Large Quaking-grass			P				
*	*Bromus catharticus*	Prairie Grass							P
*	*Bromus diandrus*	Great Brome						P	P
*	*Bromus hordeaceus*	Soft Brome	P		P		P	P	P
	Callistemon sp.	Bottlebrush				P			
*	*Callitriche stagnalis*	Common Water-starwort					P		
	Calocephalus lacteus	Milky Beauty-heads			P				
	Carex appressa	Tall Sedge					P	P	
	Carex gaudichaudiana	Fen Sedge			P				
	Carex inversa	Sedge			P				
	Carex spp.	Sedge					P		
	Carex tereticaulis	Poong'ort					P		
	Cassinia aculeata	Common Cassinia				P			
	Centella cordifolia	Centella			P	P	P		
*	*Centaurium erythraea*	Common Centaury			P				

Status	Scientific Name	Common Name	Lundt 1985	Scott 1991	Ecology Aust. 1996	SMEC 2008	GHD and MRSC 2016/17/18		
			GM	MH	GM	GM	GM	SP	MH
*	*Centaurium pulchellum*	Lesser Centaury	P						
*	*Centaurium* sp.	Centaury			P				
*	*Centaurium tenuiflorum*	Slender Centaury				P			
*	*Cerastium glomeratum* s.s.	Sticky Mouse-ear Chickweed						P	
*	*Chamaemelum nobile*	Common Chamomile			P	P			
*	*Cichorium intybus*	Chicory					P		
* C	*Cirsium vulgare*	Spear Thistle	P		P	P	P	P	P
	Convolvulus spp.	Bindweed							P
v	*Coronidium gunnianum*	Pale Swamp-everlasting					P		
	Coronidium monticola	Pale Swamp-everlasting (Lowland Swamps)			P	P			
	Craspedia glauca	Common Billy-buttons	P						
	Craspedia paludicola	Swamp Billy-buttons			P	P	P	P	
	Crassula decumbens var. *decumbens*	Spreading Crassula						P	
	Crassula sieberiana	Sieber Crassula						P	P
* C	*Crataegus monogyna*	Hawthorn			P	P	P		P
	Cyanicula caerulea	Blue Fairy			P				
* C	*Cynara cardunculus* subsp. *flavescens*	Artichoke Thistle							P
	Cynoglossum australe	Australian Hound's-tongue							P
*	*Cynosurus echinatus*	Rough Dog's-tail			P				
*	*Cyperus eragrostis*	Drain Flat-sedge			P	P	P		
*	*Cyperus tennellus*	Tiny Flat-sedge	P		P				
*	*Cytisus scoparius*	English Broom			P				

Status	Scientific Name	Common Name	Lundt 1985	Scott 1991	Ecology Aust. 1996	SMEC 2008	GHD and MRSC 2016/17/18		
			GM	MH	GM	GM	GM	SP	MH
*	*Dactylis glomerata*	Cocksfoot	P		P	P	P	P	P
	Dianella revoluta	Black-anther Flax-lily							
	Dichondra repens	Kidney-weed	P		P		P	P	P
	Drosera peltata subsp. *peltata* spp. agg.	Pale Sundew					P		
* C	*Echium plantagineum*	Paterson's Curse							P
	Eleocharis acuta	Common Spike-sedge	P		P	P	P		
	Eleocharis pusilla	Small Spike-sedge			P				
	Eleocharis sphacelata	Tall Spike-sedge			P				
	Epilobium billardierianum ssp. *cinereum*	Grey Willow-herb	P		P	P	P		
	Epilobium billardierianum ssp. *intermedium*	Robust Willow-herb			P				
	Epilobium hirtigerum	Hairy Willow-herb			P				
	Epilobium sp.	Willow Herb							P
	Eragrostis sp.	Love Grass				P			
*	*Erigeron bonariense*	Flaxleaf Fleabane				P			
	Eryngium vesiculosum	Prickfoot	P		P	P	P	P	
	Eucalyptus ovata var. *ovata*	Swamp Gum			P	P			
	Eucalyptus radiata subsp. radiata	Narrow-leaf Peppermint				P			
	Eucalyptus viminalis subsp. *viminalis*	Manna Gum		P		P			P
	Euchiton involucratus s.s.	Star Cudweed					P		
*	*Festuca arundinacea*	Tall Fescue					P		P
* R	*Foeniculum vulgare*	Fennel						P	

Status	Scientific Name	Common Name	Lundt 1985	Scott 1991	Ecology Aust. 1996	SMEC 2008	GHD and MRSC 2016/17/18		
			GM	MH	GM	GM	GM	SP	MH
*	*Fraxinus* spp.	Ash					P		
*	*Fumaria muralis* subsp. *muralis*	Wall Fumitory							P
*	*Galenia pubescens* var. *pubescens*	Galenia							P
*	*Galium aparine*	Cleavers					P		P
	Galium gaudichaudii	Rough Bedstraw	P						
*	*Gaudinia fragilis*	Fragile Oat	P		P		P		
* WONS, C	*Genista monspessulana*	Montpellier Broom			P			P	
*	*Geranium dissectum*	Cut-leaf Crane's-bill					P	P	P
	Geranium retrorsum	Grassland Crane's Bill	P		P	P			
	Geranium spp.	Crane's Bill		P			P		P
	Glyceria australis	Australian Sweet-grass	P		P		P		
*	*Glyceria declinata*	Reed Sweet-grass	P		P				
	Gonocarpus tetragynus	Common Raspwort							P
	Haloragis heterophylla	Varied Raspwort	P		P	P	P	P	
*	*Helminthotheca echioides*	Ox-tongue			P	P		P	
*	*Hesperocyparis macrocarpa*	Monterey Cyprus				P			
*	*Holcus lanatus*	Yorkshire Fog	P			P	P	P	P
*	*Hordeum* spp.	Barley Grass						P	
	Hypericum gramineum	Small St John's Wort			P				
	Hydrocotyle laxiflora	Stinking Pennywort			P				
	Hydrocotyle sibthorpioides	Shining Pennywort			P		P		
*	*Hypochaeris radicata*	Flatweed / Cat's Ear	P		P	P	P	P	P

Status	Scientific Name	Common Name	Lundt 1985	Scott 1991	Ecology Aust. 1996	SMEC 2008	GHD and MRSC 2016/17/18		
			GM	MH	GM	GM	GM	SP	MH
	Isoetes drummondii subsp. *drummondii*	Plain Quillwort			P				
	Isolepis fluitans	Floating Club-sedge			P				
	Isolepis hookeriana	Grassy Club-sedge			P				
*	*Isolepis levynsiana*	Tiny Flat-sedge						P	P
	Isolepis platycarpa	Flat-fruit / Broad-fruit Club-sedge			P				
*	*Juncas articulatus*	Jointed Rush			P				
	Juncus australis	Austral Rush	P		P				
	Juncus bufonius	Toad Rush	P		P		P	P	
*	*Juncus capitatus*	Capitate Rush			P			P	
	Juncus filicaulis	Thread Rush				P			
	Juncus gregiflorus	Green Rush			P				
	Juncus holoschoenus	Joint-leaf Rush	P		P		P		
	Juncus planifolius	Broad leaf Rush			P	P			
	Juncus sarophorus	Broom Rush			P				
	Juncus subsecundus	Finger Rush	P		P	P			
	Juncus spp.	Rush			P		P	P	P
	Lachnagrostis aemula	Blown Grass				P			
	Lachnagrostis filiformis	Blown Grass	P		P	P			
*	*Leersia oryzoides*	Rice Cut-grass				P			
*	*Leontodon saxatilis* subsp. *saxatilis*	Hairy Hawkbit	P		P	P	P		
	Lepidosperma longitudinale	Pithy Sword-sedge				P			
	Lepyrodia muelleri	Common Scale-rush			P	P			

Status	Scientific Name	Common Name	Lundt 1985	Scott 1991	Ecology Aust. 1996	SMEC 2008	GHD and MRSC 2016/17/18		
			GM	MH	GM	GM	GM	SP	MH
	Linum marginale	Native Flax	P		P	P			
	Lobelia pedunculata	Matted Pratia					P	P	
	Lobelia pratiodes	Poison Lobelia	P		P	P			
*	*Lolium perenne*	Perennial Ryegrass				P			
*	*Lolium* spp.	Rye Grass					P	P	P
	Lomandra filiformis	Wattle Mat-rush							P
*	*Lotus* spp.	Trefoil					P		P
*	*Lysimachia arvensis*	Pimpernel	P		P		P	P	
	Lythrum hyssopifolia	Small Loosestrife	P		P		P	P	
*	*Malus* spp.	Apple					P		
* C	*Marrubium vulgare*	Horehound							P
*	*Medicago polymorpha*	Burr Medic							P
	Melaleuca squarrosa	Scented Paperbark				P			
	Melicytus dentatus	Tree Violet		P					P
	Mentha diemenica	Slender Mint			P	P			
*	*Mentha pulgium*	Penny Royal			P	P			
	Mentha spp.	Mint					P		
	Microseris lanceolata	Plains Yam-daisy (Basalt Plains)			P	P			
	Microseris scapigera	Yam Daisy	P						
	Microtidium atratum	Yellow Onion-orchid					P		
*	*Modiola caroliniana*	Red-flower Mallow						P	
	Montia australasica	White Purslane	P		P		P		
	Myriophyllum crispatum	Water Milfoil			P				

Status	Scientific Name	Common Name	Lundt 1985	Scott 1991	Ecology Aust. 1996	SMEC 2008	GHD and MRSC 2016/17/18		
			GM	MH	GM	GM	GM	SP	MH
	Myriophyllum spp.	Water Milfoil	P				P		
	Ornduffia reniformis	Running Marsh-flower	P		P				
	Ottelia ovalifolia	Swamp Lily				P			
	Oxalis corniculata	Yellow Wood-sorrel	P					P	
	Oxalis exilis	Shade Wood-sorrel			P				
	Oxalis perennans	Grassland Wood-sorrel					P		P
	Oxalis spp.	Wood Sorrel						P	
*	*Paspalum dilatatum*	Paspalum				P	P	P	
	Pelargonium spp.	Stork's Bill						P	
	Pentapogon quadrifidus	Five-awned Spear-grass	P		P	P			
*	*Phalaris aquatica*	Toowoomba Canary-grass			P	P	P	P	
*	*Phalaris minor*	Lesser Canary-grass							P
*	*Phleum pratense*	Timothy Grass			P				
*	*Pinus radiata*	Radiata Pine	P		P	P	P		P
*	*Piptatherum miliaceum*	Rice Millet				P			
*	*Plantago coronopus*	Buck's-horn Plantain				P	P	P	
	Plantago aff. *gaudichaudi*	Swamp Plantain			P				
*	*Plantago lanceolata*	Ribwort	P		P	P	P	P	P
	Poa spp.	Tussock-grass				P			
	Poa labillardierei	Common Tussock-grass							P
*	*Poa pratensis*	Kentucky Blue-grass			P				
*	*Polygonum aviculare* s.s.	Hogweed						P	
*	*Populus* sp.	Poplar				P			

Status	Scientific Name	Common Name	Lundt 1985	Scott 1991	Ecology Aust. 1996	SMEC 2008	GHD and MRSC 2016/17/18		
			GM	MH	GM	GM	GM	SP	MH
	Portulaca oleracea	Pigweed / common Purslane	P		P				
	Potamogeton spp.	Pondweed					P		
	Potamogeton tricarinatus	Floating Pondweed	P		P	P			
*	*Prunella vulgaris*	Self-heal			P	P	P		
*	*Prunus cerasifera*	Cherry-plum			P	P			
*	*Prunus* spp.	Prunus					P		
	Pteridium esculentum	Austral Bracken		P					P
	Ranunculus inundatus	River Buttercup			P		P		
	Ranunculus lappaceus	Australian Buttercup			P				
	Ranunculus spp.	Buttercup					P	P	
*	*Raphanus raphanistrum*	Wild Radish							P
*	*Romulea rosea*	Onion Grass	P		P		P	P	P
* C	*Rosa rubiginosa*	Sweet Briar	P		P	P	P		P
* WONS, C	*Rubus fruticosus* spp. agg.	Blackberry	P		P	P	P	P	P
	Rumex bidens	Mud Dock						P	
	Rumex brownii	Slender Dock	P		P	P	P		
*	*Rumex conglomeratus*	Clustered Dock	P		P		P		P
*	*Rumex crispus*	Curled Dock	P		P	P	P	P	P
	Rumex dumosus	Wiry Dock	P		P	P			
	Rumex spp.	Dock						P	
	Rytidosperma caespitosum	Common Wallaby-grass			P				P
	Rytidosperma duttonianum	Brown-back Wallaby-grass			P				
	Rytidosperma laeve	Smooth Wallaby-grass			P				

Status	Scientific Name	Common Name	Lundt 1985	Scott 1991	Ecology Aust. 1996	SMEC 2008	GHD and MRSC 2016/17/18		
			GM	MH	GM	GM	GM	SP	MH
	Rytidosperma longifolium	Long-leaf Wallaby-grass				P			
	Rytidosperma geniculatum	Kneed Wallaby-grass							P
	Rytidosperma indutum	Tall Wallaby-grass / Shine Wallaby-grass			P	P			
	Rytidosperma racemosum var. racemosum	Stiped Wallaby-grass			P				P
	Rytidosperma semiannulare	Wetland Wallaby-grass / Tasmanian Wallaby-grass			P				
	Rytidosperma spp.	Wallaby Grass		P			P	P	P
*	*Salix* spp.	Willow				P			
*	*Salix cinerea*	Grey Sallow			P				
*	*Salix matsudana 'Tortuosa'*	Tortured Willow			P				
	Schoenus apogon	Common Bog-sedge	P		P		P	P	
	Schoenus spp.	Bog Sedge					P		
	Schoenus tesquorum	Soft Bog-rush			P	P			
	Scirpus fluitans	Floating Club-rush	P						
	Senecio biserratus	Jagged Fireweed			P				
	Senecio glomeratus	Annual Fireweed					P		
VU, v	*Senecio psilocarpus*	Swamp Fireweed			P		P		
	Senecio quadridentatus	Cotton Fireweed				P	P		P
* C	*Silybum marianum*	Variegated Thistle						P	
*	*Sisyrinchium iridifolium*	Striped Rush-leaf / Blue Pigroot	P		P	P			
*	*Sonchus asper*	Rough Sow-thistle			P				
*	*Solanum nigrum*	Blacknightshade	P		P				
*	*Sonchus asper*	Rough Sow-thistle				P			

Status	Scientific Name	Common Name	Lundt 1985	Scott 1991	Ecology Aust. 1996	SMEC 2008	GHD and MRSC 2016/17/18		
			GM	MH	GM	GM	GM	SP	MH
*	*Sonchus oleraceus*	Common Sow-thistle				P	P		P
*	*Symphyotrichum subulatum*	Aster-weed			P				
	Taraxacum officinale	Dandelion	P						
	Taraxacum sp.	Dandelion			P				
	Themeda trianda	Kangaroo Grass			P				P
*	*Tragopogon porrifolius*	Salsify			P	P			
*	*Trifolium arvense*	Hare's Foot Clover				P			
*	*Trifolium angustifolium*	Narrow-leaved Clover	P		P				
*	*Trifolium dubium*	Suckling Clover			P		P	P	P
*	*Trifolium glomeratum*	Cluster Clover	P		P				
*	*Trifolium repens* var. *repens*	White Clover	P		P	P	P	P	
*	*Trifolium* spp.	Clover						P	
*	*Trifolium subterraneum*	Subterranean Clover					P		P
	Typha domingensis	Narrow-leaf Cumbungi					P		
* WONS, C	*Ulex europaeus*	Gorse	P			P			P
	Utricularia beaugleholei	Purple Bladderwort			P		P		
	Utricularia dichotoma	Fairies' Aprons	P						
	Veronica calycina	Hairy Speedwell						P	
	Veronica gracilis	Slender Speedwell			P		P	P	P
*	*Vicia sativa*	Common Vetch					P		P
*	*Vulpia bromoides*	Squirrel-tail Fescue						P	P
	Wahlenbergia spp.	Bluebell		P					P
VU, L, v	*Xerochrysum palustre*	Swamp Everlasting			P	P	P		

GM	Gisborne Marshland
SP	Steam Park
MH	Magnet Hill
VU	Vulnerable – Commonwealth EPBC Act
L	Listed – Victorian FFG Act
v	vulnerable – Victorian Advisory List
*	Introduced
C	Regionally controlled weeds in the Port Phillip and Westernport CMA area
R	Restricted weeds in the Port Phillip and Westernport CMA area
WONS	Weeds of National Significance
P	Present (surveyed by Tim Wills, GHD, 16/11/2016)

Appendix B – Fauna VBA Search (10 km radius)

Common Name	Scientific Name	FFG	EPBC	DELWP	Last Record
	BIRDS				
Australasian Bittern	*Botaurus poiciloptilus*	L	EN	EN	1975
Australasian Grebe	*Tachybaptus novaehollandiae*				2008
Australasian Pipit	*Anthus novaeseelandiae*				2011
Australasian Shoveler	*Anas rhynchotis*			V	1975
Australian Hobby	*Falco longipennis*				2007
Australian King-Parrot	*Alisterus scapularis*				2008
Australian Magpie	*Cracticus tibicen*				2017
Australian Owlet-nightjar	*Aegotheles cristatus*				1990
Australian Pelican	*Pelecanus conspicillatus*				1979
Australian Raven	*Corvus coronoides*				2010
Australian Shelduck	*Tadorna tadornoides*				1988
Australian Spotted Crake	*Porzana fluminea*				1975
Australian White Ibis	*Threskiornis molucca*				2011
Australian Wood Duck	*Chenonetta jubata*				2011
Azure Kingfisher	*Alcedo azurea*			NT	1976
Baillon's Crake	*Porzana pusilla palustris*	L		V	1975
Banded Lapwing	*Vanellus tricolor*				1975
Barking Owl	*Ninox connivens connivens*	L		EN	1975
Bassian Thrush	*Zoothera lunulata*				2000
Bell Miner	*Manorina melanophrys*				2005
Black Falcon	*Falco subniger*	L		V	1975
Black Swan	*Cygnus atratus*				1997
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*				2008
Black-fronted Dotterel	*Elseyornis melanops*				1975
Black-shouldered Kite	*Elanus axillaris*				2011

Common Name	Scientific Name	FFG	EPBC	DELWP	Last Record
Black-winged Stilt	*Himantopus himantopus*				1975
Blue-winged Parrot	*Neophema chrysostoma*				2008
Brown Falcon	*Falco berigora*				2010
Brown Goshawk	*Accipiter fasciatus*				2006
Brown Songlark	*Cincloramphus cruralis*				1980
Brown Thornbill	*Acanthiza pusilla*				2013
Brown Treecreeper (south-eastern ssp.)	*Climacteris picumnus victoriae*	L		NT	2006
Brown-headed Honeyeater	*Melithreptus brevirostris*				2008
Brush Bronzewing	*Phaps elegans*				1993
Brush Cuckoo	*Cacomantis variolosus*				1990
Buff-banded Rail	*Gallirallus philippensis*				1975
Buff-rumped Thornbill	*Acanthiza reguloides*				2008
Bush Stone-curlew	*Burhinus grallarius*	L		EN	1800
Cattle Egret	*Ardea ibis*				1978
Chestnut Teal	*Anas castanea*				1998
Clamorous Reed Warbler	*Acrocephalus stentoreus*				1999
Collared Sparrowhawk	*Accipiter cirrhocephalus*				2006
*Common Blackbird	*Turdus merula*				2017
Common Bronzewing	*Phaps chalcoptera*				2008
*Common Myna	*Acridotheres tristis*				2011
*Common Starling	*Sturnus vulgaris*				2017
Cox's Sandpiper	*Calidris melanotus X ferruginea*				1986
Crescent Honeyeater	*Phylidonyris pyrrhoptera*				2008
Crested Bellbird	*Oreoica gutturalis gutturalis*	L		NT	1917
Crested Pigeon	*Ocyphaps lophotes*				2011

Common Name	Scientific Name	FFG	EPBC	DELWP	Last Record
Crested Shrike-tit	*Falcunculus frontatus*				2011
Crimson Rosella	*Platycercus elegans*				2017
Darter	*Anhinga novaehollandiae*				1976
Dollarbird	*Eurystomus orientalis*				1907
Dusky Moorhen	*Gallinula tenebrosa*				1999
Dusky Woodswallow	*Artamus cyanopterus*				1999
Eastern Great Egret	*Ardea modesta*	L		V	1979
Eastern Rosella	*Platycercus eximius*				2011
Eastern Spinebill	*Acanthorhynchus tenuirostris*				2011
Eastern Yellow Robin	*Eopsaltria australis*				2017
Eurasian Coot	*Fulica atra*				2000
*Eurasian Tree Sparrow	*Passer montanus*				2000
*European Goldfinch	*Carduelis carduelis*				2011
*European Greenfinch	*Chloris chloris*				2007
*European Skylark	*Alauda arvensis*				2007
Fairy Martin	*Petrochelidon ariel*				2008
Fan-tailed Cuckoo	*Cacomantis flabelliformis*				2011
Flame Robin	*Petroica phoenicea*				2010
Fork-tailed Swift	*Apus pacificus*				1977
Fuscous Honeyeater	*Lichenostomus fuscus*				1978
Galah	*Eolophus roseicapillus*				2010
Gang-gang Cockatoo	*Callocephalon fimbriatum*				2005
Gilbert's Whistler	*Pachycephala inornata*				1998
Golden Whistler	*Pachycephala pectoralis*				2011
Golden-headed Cisticola	*Cisticola exilis*				2011
Great Cormorant	*Phalacrocorax carbo*				1988

Common Name	Scientific Name	FFG	EPBC	DELWP	Last Record
Grey Butcherbird	*Cracticus torquatus*				2010
Grey Currawong	*Strepera versicolor*				2010
Grey Fantail	*Rhipidura albiscapa*				2013
Grey Shrike-thrush	*Colluricincla harmonica*				2011
Grey Teal	*Anas gracilis*				1980
Hardhead	*Aythya australis*			V	1978
Horsfield's Bronze-Cuckoo	*Chrysococcyx basalis*				2011
Horsfield's Bushlark	*Mirafra javanica*				1975
*House Sparrow	*Passer domesticus*				2011
Intermediate Egret	*Ardea intermedia*	L		EN	1975
Jacky Winter	*Microeca fascinans*				1999
Latham's Snipe	*Gallinago hardwickii*			NT	2016
Laughing Kookaburra	*Dacelo novaeguineae*				2013
Leaden Flycatcher	*Myiagra rubecula*				1999
Little Black Cormorant	*Phalacrocorax sulcirostris*				1979
Little Corella	*Cacatua sanguinea*				2011
Little Eagle	*Hieraaetus morphnoides*				1977
Little Egret	*Egretta garzetta nigripes*	L		EN	2018
Little Grassbird	*Megalurus gramineus*				2011
Little Lorikeet	*Glossopsitta pusilla*				1975
Little Pied Cormorant	*Microcarbo melanoleucos*				2011
Little Raven	*Corvus mellori*				2011
Little Wattlebird	*Anthochaera chrysoptera*				2011
Long-billed Corella	*Cacatua tenuirostris*				2011
Magpie-lark	*Grallina cyanoleuca*				2011
Masked Lapwing	*Vanellus miles*				2011

Common Name	Scientific Name	FFG	EPBC	DELWP	Last Record
Masked Owl	*Tyto novaehollandiae novaehollandiae*	L		EN	1975
Masked Woodswallow	*Artamus personatus*				2003
Mistletoebird	*Dicaeum hirundinaceum*				2000
Musk Duck	*Biziura lobata*			V	1976
Musk Lorikeet	*Glossopsitta concinna*				2008
Nankeen Kestrel	*Falco cenchroides*				2011
Nankeen Night Heron	*Nycticorax caledonicus hillii*			NT	2014
New Holland Honeyeater	*Phylidonyris novaehollandiae*				2011
Noisy Miner	*Manorina melanocephala*				2005
*Northern Mallard	*Anas platyrhynchos*				1999
Olive Whistler	*Pachycephala olivacea*				1978
Olive-backed Oriole	*Oriolus sagittatus*				2000
Pacific Barn Owl	*Tyto javanica*				1975
Pacific Black Duck	*Anas superciliosa*				2010
Painted Button-quail	*Turnix varia*				1988
Pallid Cuckoo	*Cacomantis pallidus*				2011
Peregrine Falcon	*Falco peregrinus*				2004
Pied Cormorant	*Phalacrocorax varius*			NT	2008
Pied Currawong	*Strepera graculina*				2017
Pink Robin	*Petroica rodinogaster*				2008
Pink-eared Duck	*Malacorhynchus membranaceus*				1975
Plains-wanderer	*Pedionomus torquatus*	L	V	CR	1900
Powerful Owl	*Ninox strenua*	L		V	2008
Purple Swamphen	*Porphyrio porphyrio*				2011
Purple-crowned Lorikeet	*Glossopsitta porphyrocephala*				2005
Rainbow Bee-eater	*Merops ornatus*				2004

Common Name	Scientific Name	FFG	EPBC	DELWP	Last Record
Red Wattlebird	*Anthochaera carunculata*				2017
Red-browed Finch	*Neochmia temporalis*				2010
Red-browed Treecreeper	*Climacteris erythrops*				2015
Red-rumped Parrot	*Psephotus haematonotus*				2004
Regent Honeyeater	*Anthochaera phrygia*	L		CR	1975
Restless Flycatcher	*Myiagra inquieta*				2008
*Rock Dove	*Columba livia*				2010
Rose Robin	*Petroica rosea*				2011
Royal Spoonbill	*Platalea regia*			NT	1975
Rufous Fantail	*Rhipidura rufifrons*				2007
Rufous Songlark	*Cincloramphus mathewsi*				1999
Rufous Whistler	*Pachycephala rufiventris*				2008
Sacred Kingfisher	*Todiramphus sanctus*				2011
Satin Bowerbird	*Ptilonorhynchus violaceus*				1975
Satin Flycatcher	*Myiagra cyanoleuca*				2004
Scarlet Robin	*Petroica boodang*				2011
Shining Bronze-Cuckoo	*Chrysococcyx lucidus*				2011
Silver Gull	*Chroicocephalus novaehollandiae*				2007
Silvereye	*Zosterops lateralis*				2013
*Song Thrush	*Turdus philomelos*				2005
Southern Boobook	*Ninox novaeseelandiae*				2017
Spotted Pardalote	*Pardalotus punctatus*				2013
Spotted Quail-thrush	*Cinclosoma punctatum*			NT	1993
*Spotted Turtle-Dove	*Streptopelia chinensis*				2011
Straw-necked Ibis	*Threskiornis spinicollis*				2011
Striated Pardalote	*Pardalotus striatus*				2011

Common Name	Scientific Name	FFG	EPBC	DELWP	Last Record
Striated Thornbill	*Acanthiza lineata*				2011
Stubble Quail	*Coturnix pectoralis*				2011
Sulphur-crested Cockatoo	*Cacatua galerita*				2017
Superb Fairy-wren	*Malurus cyaneus*				2017
Superb Lyrebird	*Menura novaehollandiae*				1856
Swamp Harrier	*Circus approximans*				1980
Tawny Frogmouth	*Podargus strigoides*				2017
Tree Martin	*Petrochelidon nigricans*				2005
Varied Sittella	*Daphoenositta chrysoptera*				2008
Wedge-tailed Eagle	*Aquila audax*				2017
Weebill	*Smicrornis brevirostris*				1999
Welcome Swallow	*Hirundo neoxena*				2011
Whiskered Tern	*Chlidonias hybridus javanicus*			NT	1975
Whistling Kite	*Haliastur sphenurus*				1978
White-backed Swallow	*Cheramoeca leucosternus*				2010
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	L		V	2010
White-browed Scrubwren	*Sericornis frontalis*				2011
White-browed Woodswallow	*Artamus superciliosus*				2004
White-eared Honeyeater	*Lichenostomus leucotis*				2011
White-faced Heron	*Egretta novaehollandiae*				2011
White-fronted Chat	*Epthianura albifrons*				1989
White-naped Honeyeater	*Melithreptus lunatus*				2011
White-necked Heron	*Ardea pacifica*				2011
White-plumed Honeyeater	*Lichenostomus penicillatus*				2011
White-throated Gerygone	*Gerygone olivacea*				2011
White-throated Needletail	*Hirundapus caudacutus*			V	2004

Common Name	Scientific Name	FFG	EPBC	DELWP	Last Record
White-throated Nightjar	*Eurostopodus mystacalis*				1990
White-throated Treecreeper	*Cormobates leucophaeus*				2013
White-winged Chough	*Corcorax melanorhamphos*				2008
White-winged Triller	*Lalage sueurii*				1999
Willie Wagtail	*Rhipidura leucophrys*				2011
Yellow Thornbill	*Acanthiza nana*				2008
Yellow-billed Spoonbill	*Platalea flavipes*				2005
Yellow-faced Honeyeater	*Lichenostomus chrysops*				2011
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*				2011
Yellow-tailed Black-Cockatoo	*Calyptorhynchus funereus*				2011
Yellow-tufted Honeyeater	*Lichenostomus melanops*				2001
MAMMALS					
Agile Antechinus	*Antechinus agilis*				2000
*Black Rat	*Rattus rattus*				1993
Black Wallaby	*Wallabia bicolor*				2004
Brush-tailed Phascogale	*Phascogale tapoatafa*	L		V	2016
Bush Rat	*Rattus fuscipes*				2000
*Cat	*Felis catus*				2010
Chocolate Wattled Bat	*Chalinolobus morio*				1990
Common Brushtail Possum	*Trichosurus vulpecula*				2015
Common Dunnart	*Sminthopsis murina murina*			V	1995
Common Ringtail Possum	*Pseudocheirus peregrinus*				2017
Common Wombat	*Vombatus ursinus*				2004
*Dog	*Canis lupus familiaris*				2010
Dusky Antechinus	*Antechinus swainsonii*				1997
Eastern Barred Bandicoot	*Perameles gunnii*	L	EN	XW	1846

Common Name	Scientific Name	FFG	EPBC	DELWP	Last Record
Eastern False Pipistrelle	*Falsistrellus tasmaniensis*				1999
Eastern Grey Kangaroo	*Macropus giganteus*				2011
Eastern Quoll	*Dasyurus viverrinus*	L		RX	1900
*European Hare	*Lepus europeaus*				2010
*European Rabbit	*Oryctolagus cuniculus*				2011
Fat-tailed Dunnart	*Sminthopsis crassicaudata*			NT	1967
Feathertail Glider	*Acrobates pygmaeus*				2000
*Goat (feral)	*Capra hircus*				1995
Gould's Long-eared Bat	*Nyctophilus gouldi*				1999
Gould's Wattled Bat	*Chalinolobus gouldii*				1999
Greater Glider	*Petauroides volans*	L	V	V	1993
*House Mouse	*Mus musculus*				2010
Inland Broad-nosed Bat	*Scotorepens balstoni*				1991
Koala	*Phascolarctos cinereus*				2017
Large Forest Bat	*Vespadelus darlingtoni*				1999
Leadbeater's Possum	*Gymnobelideus leadbeateri*	L	EN	EN	1995
Lesser Long-eared Bat	*Nyctophilus geoffroyi*				1999
Little Forest Bat	*Vespadelus vulturnus*				1988
Mountain Brushtail Possum	*Trichosurus cunninghami*				2017
Platypus	*Ornithorhynchus anatinus*				1977
*Red Fox	*Vulpes vulpes*				2010
*Sheep (feral)	*Ovis aries*				1995
Short-beaked Echidna	*Tachyglossus aculeatus*				2013
Southern Brown Bandicoot	*Isoodon obesulus obesulus*	L	EN	NT	1760
Southern Forest Bat	*Vespadelus regulus*				1999
Spot-tailed Quoll	*Dasyurus maculatus*	L	EN	EN	1992

Common Name	Scientific Name	FFG	EPBC	DELWP	Last Record
Sugar Glider	*Petaurus breviceps*				2017
Swamp Rat	*Rattus lutreolus*				1993
Tasmanian Devil	*Sarcophilus harrisii*			DBT	1760
Water Rat	*Hydromys chrysogaster*				1993
White-striped Freetail Bat	*Tadarida australis*				2017
REPTILES					
Black Rock Skink	*Egernia saxatilis intermedia*				1905
Blotched Blue-tongued Lizard	*Tiliqua nigrolutea*				1990
Bougainville's Skink	*Lerista bougainvillii*				1981
Common Blue-tongued Lizard	*Tiliqua scincoides*				2001
Coventry's Skink	*Niveoscincus coventryi*				1999
Cunningham's Skink	*Egernia cunninghami*				2018
Eastern Brown Snake	*Pseudonaja textilis*				1846
Eastern Small-eyed Snake	*Rhinoplocephalus nigrescens*				1760
Eastern Three-lined Skink	*Acritoscincus duperreyi*				2003
Garden Skink	*Lampropholis guichenoti*				2007
Large Striped Skink	*Ctenotus robustus*				2007
Little Whip Snake	*Parasuta flagellum*				1981
Lowland Copperhead	*Austrelaps superbus*				1988
McCoy's Skink	*Anepischtos maccoyi*				1990
Mountain Dragon	*Rankinia diemensis*				2004
Red-bellied Black Snake	*Pseudechis porphyriacus*				1988
Southern Grass Skink	*Pseudemoia entrecasteauxii*				1990
Southern Water Skink	*Eulamprus tympanum tympanum*				1999
Tiger Snake	*Notechis scutatus*				1990
Tree Dragon	*Amphibolurus muricatus*				1846

Common Name	Scientific Name	FFG	EPBC	DELWP	Last Record
Tussock Skink	*Pseudemoia pagenstecheri*			V	2003
Weasel Skink	*Saproscincus mustelinus*				1990
White-lipped Snake	*Drysdalia coronoides*				1990
White's Skink	*Liopholis whitii*				1999
FROGS					
Brown Toadlet	Pseudophryne bibronii	L		EN	1980
Common Froglet	Crinia signifera				2011
Common Spadefoot Toad	Neobatrachus sudellae				1989
Growling Grass Frog	Litoria raniformis	L	V	EN	1988
Lesueur's Frog	Litoria lesueuri				1967
Pobblebonk Frog	Limnodynastes dumerilii dumerilii				2011
Southern Brown Tree Frog	Litoria ewingii				2011
Southern Brown Tree Frog SOUTHERN	Litoria ewingii SOUTHERN				2005
Southern Bullfrog (ssp. unknown)	Limnodynastes dumerilii				2010
Southern Toadlet	Pseudophryne semimarmorata			V	1989
Spotted Marsh Frog (race unknown)	Limnodynastes tasmaniensis				2011
Spotted Marsh Frog SCR	Limnodynastes tasmaniensis SCR				2005
Striped Marsh Frog	Limnodynastes peronii				1990
Verreaux's Tree Frog	Litoria verreauxii verreauxii				2011
Victorian Smooth Froglet	Geocrinia victoriana				2004
FISH					
Australian Grayling	Prototroctes maraena	L	V	V	1846
Brown Trout	Salmo trutta				2007
Common Galaxias	Galaxias maculatus				1979

Common Name	Scientific Name	FFG	EPBC	DELWP	Last Record
*Eastern Gambusia	Gambusia holbrooki				2010
*European Carp	Cyprinus carpio				2007
Flathead Gudgeon	Philypnodon grandiceps				1982
Golden Perch	Macquaria ambigua			NT	1988
*Goldfish	Carassius auratus				2010
Macquarie Perch	Macquaria australasica	L	EN	EN	1970
Murray Cod	Maccullochella peelii	L	V	V	1974
*Rainbow Trout	Oncorhynchus mykiss				1760
*Redfin	Perca fluviatilis				2007
River Blackfish	Gadopsis marmoratus				1981
Southern Pygmy Perch	Nannoperca australis				2001
Southern Pygmy Perch (Murray-Darling lineage)	Nannoperca australis (Murray-Darling lineage)	Vulnerable		V	1997
Southern Shortfin Eel	Anguilla australis				2010
*Tench	Tinca tinca				2010
INVERTEBRATES					
Common Freshwater Shrimp	Paratya australiensis				2006
Common Yabby	Cherax destructor destructor				1999
Golden Sun Moth	Synemon plana	L	CR	CR	1908
Upland Burrowing Crayfish	Engaeus lyelli				1999

EPBC Act status: EXtinct, CRitically endangered, ENdangered, Vulnerable, Conservation Dependent, Not Listed

FFG Act status: Listed as threatened, Nominated, Delisted, Never Listed, Ineligible for listing

DELWP Advisory status: presumed EXtinct, Regionally Extinct, Extinct in the Wild, CRitically endangered, ENdangered, Vulnerable, Rare, Near Threatened, Data Deficient, Poorly Known, Not Listed

***Introduced**

Appendix C – Example bird hide

Appendix D – Concept Plans for Gisborne Marshlands, Steam Park and Magnet Hill

PATCH DESIGN+PLAN

PLEASE NOTE: THIS IS PLAN IS CONCEPTUAL ONLY & SHOULD NOT BE USED AS A TECHNICAL DRAWING OR FOR CONSTRUCTION PURPOSES.

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DATE: 13.06.17
VERSION: 03
CHECKED: AB

SITE ANALYSIS PLAN
GISBORNE MARSHLANDS, STEAM PARK & MAGNET HILL
MACEDON RANGES SHIRE COUNCIL

PATCH DESIGN+PLAN

CONCEPT PLAN
MAGNET HILL
MACEDON RANGES SHIRE COUNCIL

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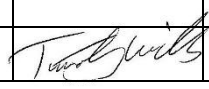
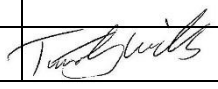
Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
REVO	F Deans	T Wills		T Wills		21.11.2017
REV1	F Deans	T Wills		T Wills		23.11.2017
REV2	F Deans	T Wills		T Wills		14.02.2019

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