

# Hepburn

SHIRE COUNCIL

## HEPBURN SHIRE COUNCIL BIODIVERSITY STRATEGY

2018-2021



## ACKNOWLEDGEMENTS

This strategy was developed with the contributions of many people, including a large number who volunteered their time to contribute. The Hepburn Shire Council gratefully acknowledges the contributions of the following;

### COMMUNITY REFERENCE GROUP

Murray Ralph	Wombat Forestcare
Thomas Walsh	
Greg Pyers	
Dr John Cable	Glenlyon Upper Loddon Landcare Group
Barry Dimond	Molongghip
Ron Cosgrave	Friends of Smeaton, Ullina Landcare group

### DJA DJA WURRUNG GROUP

Nathan Wong	Djandak Staff – Trading as Dja Dja Wurrung Group
Uncle Ricky Nelson, Rebecca Phillips	DDW Descendent and member of DDWCAC

### LANDCARE NETWORK FACILITATORS

Simon Kirby	Blampied-Kooroocheang Consortium of Landcare groups
Chris Pollock	Upper Loddon and Avoca Landcare Network
Sandy Scheltema	Upper Campaspe Landcare Network

This Strategy was prepared for the Hepburn Shire Council with the assistance of the following

Justin Fiddes, Amanda Western, Rachel Palmer, Rob Ball, Paul Healy, Maria Abate	Hepburn Shire Council
Tanya Loos	Flora and fauna consultant
Brad Sharkey, Nathan MacDonald, Stewart Dekker	Makomap- GIS mapping and statistics DELWP- review of strategy

Also the many respondents to the Biodiversity Draft Strategy processes including attendees at the Biodiversity Strategy 2017-21 OurSay forum, Workshop and Road Show in November 2017 and to the participants in workshops on the Strategy in September 2018.

**Cover images** Silver Banksia (Sandy Scheltema), Common Brown tree-frog (Sandy Scheltema), Yam Daisy (Geoff Park).

**Images** Sandy Scheltema and Geoff Park as indicated. Other images Hepburn Shire (Brian Bainbridge)

## TRADITIONAL OWNER ACKNOWLEDGEMENT

The Hepburn Shire Council acknowledges the Djaara people, of Dja Dja Wurrung Country, and their rich culture and pays respect to their Elders past and present.

We acknowledge the Djaara people, of Dja Dja Wurrung Country as the Traditional Owners and custodians of the land on which the people of Hepburn Shire work and live.

Council acknowledges the fundamental disruption to Aboriginal and Torres Strait Islander's cultures, economies and wellbeing since first contact. This disruption has been met with incredible resilience, resistance and struggle. Hepburn Shire council recognises the resilience in Aboriginal and Torres Strait islander peoples across Australia whose descendents proudly survive today.

The landscapes of the Hepburn Shire hold memories, stories and practices from over thousands of generations of Djaara people and communities.

Hepburn Shire's vision for reconciliation is to promote unity, respect and understanding between Aboriginal and Torres Strait Islander peoples and other community members.

We commit to working positively today and in the future with Traditional Owners of Dja Dja Wurrung Country, to learn, acknowledge and move forward together with the whole Hepburn Shire community.

Council has adopted a Reconciliation Action Plan which recognises the need for collaborative projects where the objectives of the Dja Dja Wurrung for Country align with those of Council. This biodiversity strategy reflects this commitment.



Uncle Ricky Nelson an Elder of the Djaara People at Trentham Falls, Trentham.

(Photo © Scheltema and with permission of Ricky Nelson)

## TABLE OF CONTENTS

ACKNOWLEDGEMENTS .....	2
TRADITIONAL OWNER ACKNOWLEDGEMENT .....	3
TABLE OF CONTENTS.....	4
1 EXECUTIVE SUMMARY.....	6
1.1 What is Biodiversity?.....	6
1.2 Why is biodiversity important? .....	7
2 INTRODUCTION .....	9
2.1 Goal .....	10
2.2 Strategic Focus Areas .....	10
2.3 Roles and Scope.....	11
2.4 Principles .....	12
3 POLICY AND LEGISLATIVE CONTEXT .....	13
3.1 National policies and programs .....	13
3.2 state policies and programs .....	13
3.3 regional policies and programs.....	15
3.4 Hepburn Shire plans, policies.....	16
4 STAKEHOLDER GROUPS.....	17
5 ENVIRONMENTAL CONTEXT .....	19
5.1 Bioregions .....	20
5.2 Public Land Management.....	23
5.3 Conservation Significance .....	24
5.4 Threats to biodiversity .....	26
5.5 Reducing Threats .....	27
5.6 Climate change adaptation .....	28
5.7 Habitat corridors and biolink zones .....	29
6 ISSUES AND OPPORTUNITIES .....	31
7 ACTION PLAN.....	39

7.1	Action Plan.....	39
8	MONITORING AND EVALUATION PROGRAM.....	42
9	REFERENCES.....	44
10	APPENDICES.....	46
10.1	EPBC listed vegetation communities .....	46
10.2	List of rare and threatened flora and fungi in Hepburn Shire.....	47
10.3	List of rare and threatened Fauna in Hepburn Shire.....	53
10.4	Public Land Management in Hepburn Shire- ward scale maps.....	57
10.5	Maps of Ecological Vegetation Classes, Bioregional Conservation Status and Strategic Biodiversity Values.....	61
10.6	Mitigation hierarchy.....	72
10.7	Glossary of terms.....	74



In the agricultural areas of the Shire, shelterbelts of indigenous vegetation (background- left) can restore some degree of connectivity in the landscape while having benefits for production such as fostering populations of beneficial insects and birds. (Photo © Scheltema)

# 1 EXECUTIVE SUMMARY

The Hepburn Biodiversity Strategy and Action Plan 2017-2021 outlines the commitment of the Council to protect, enhance and restore biodiversity across the Shire. The Shire is fortunate in retaining a high proportion of native vegetation, as well as having a diverse and productive agricultural landscape and popular townships. The residents of the Shire have a history of retaining and enhancing biodiversity on their properties and on public land through their participation in Landcare, Friends of groups and individual endeavour and investment. Many recognise the value of conserving flora and fauna and of maintaining remnant vegetation as part of sustainable land management. The Dja Dja Wurrung People have for thousands of years exercised rights and responsibilities to Care for Country and also share this journey of healing the land.

Biodiversity is under significant threat from the legacy of mining and clearing, the introduction of invasive plants and animals as well as ongoing land use change and climate change. The strategy incorporates findings from the 'Future Landscapes' project, internal Council analyses as well as extensive community and stakeholder feedback through 2017 and 2018. Public comment was sought for two drafts of the strategy; there were four community forums and oversight by a community reference group. In the final stages of drafting Hepburn Shire commissioned a review by Dja Dja Wurrung enterprises trading as 'Djandak', which, together with a review by DELWP, supplied valuable insights and improvements.

There are three broad aims,

- To protect and enhance biodiversity,
- To increase Hepburn Shire Council's capacity to protect and enhance biodiversity
- To support community action and awareness

The strategy includes a four-year action plan with 13 strategic focus areas and 31 actions intended to provide on-ground protection and enhancement of biodiversity, support well informed decision making, increase community awareness and support partnerships to improve biodiversity for future generations.

## 1.1 WHAT IS BIODIVERSITY?

BIODIVERSITY is the term given to the *variety* of life on Earth. It is short for biological diversity.

It is the variety *within* and *between* all species of plants, animals, fungi and micro-organisms and the *ecosystems* within which they live and interact.

Biodiversity comprises all the millions of *different species* that live on our planet, as well as the *genetic differences* within species. It also refers to the multitude of *different ecosystems* in which species form unique communities, interacting with one another and the air, water and soil.

All species, including those introduced from elsewhere, potentially contribute to a place's biodiversity. However the *native* biodiversity of a region, being unique and irreplaceable, has a particular priority for

protection and is the predominant focus of this strategy. Definitions of other terms used in this strategy are available in Appendix 9.7 Glossary.

## 1.2 WHY IS BIODIVERSITY IMPORTANT?

Biodiversity is fundamental to ecological sustainability and provides ecosystems with resilience and adaptability. It is also critical to sustaining the assets that support and enhance human life such as water quality, agriculture, and open space amenity.

Hepburn Shire’s obligation to act to protect and enhance biodiversity arises from many sources, among them:

- humanity’s moral obligation to protect other species and ecosystems. This is summed up in the State government’s strategy ‘Biodiversity 2037’ which identifies: “Native plants and animals have an intrinsic right to exist, thrive and flourish. ... Victorians have a duty to protect biodiversity, regardless of whether it provides tangible benefits to humans” (The State of Victoria Department of Environment, Land, Water and Planning, 2017 p.6)
- the Shire’s legal responsibility to comply with laws to protect biodiversity including the national Environment Protection and Biodiversity Conservation (EPBC) Act and Victoria’s Flora and Fauna Guarantee Act
- the Shire’s role in demonstrating best practice (leading by example) and coordinating its actions with the strategies of state and federal governments and those of regional bodies such as the North Central Catchment Management Authority (see Policy, Legislative and Stakeholder Context)
- Dja Dja Wurrung People aspirations as per the Dja Dja Wurrung Country Plan:
  - Our Country is managed in a contemporary context, to generate benefits in circumstances where degradation or destruction can be avoided. Where damage has been done through past activities, a sustained effort will be made to heal our Country.
  - The conservation and protection of the environment, in particular where our culturally significant places and sites are located is paramount.
- the community’s expectation that the Shire will work within its powers to protect and enhance the following:
  - the contribution local biodiversity makes to maintaining life at regional, national and global scales,

- ecological services needed by all, including clean air, carbon sequestration, clean water, food, heating and medicines,
- ecological services that underpin local agriculture including clean air, clean water, soil conservation, pollination and pest control,
- natural environment that promotes spiritual, emotional and physical well-being through daily interaction and as an environment for recreation and childhood development (among other influences),
- landscape character that fosters a sense of connection to local landscape and 'sense of place' and,
- the aesthetics of landscapes that underpin economic activity such as tourism and recreation.



## 2 INTRODUCTION

Protecting and enhancing biodiversity is integral to maintaining healthy natural ecosystems for current and future generations. The benchmark for fostering biodiversity was set by the Dja Dja Wurrung Ancestors who lived here and cared for this Country in a sustainable way for over 30,000 years pre-colonisation.

Over the last 150 years, extensive areas of Victoria have been converted to agriculture, native and plantation forestry and urban development. In a Victorian context, Hepburn Shire is fortunate to retain a relatively high proportion of native vegetation (approximately 46%) along with much of the associated fauna and ecological processes. The remnant vegetation is unevenly distributed across the Shire and native vegetation on fertile soils of the volcanic plains and river valleys today consist of only small, highly fragmented remnants within a rich agricultural landscape. Much of the forested areas have been modified by cycles of clearing, logging and subsequent regrowth from past mining and forestry operations. Introduced pest plants and animals, incremental development and climate change threaten biodiversity in the Shire. Countering these trends have been the efforts of many residents to hold onto and enhance the biodiversity of their properties and of groups aiming to enhance the protection of public lands. At the time of writing this strategy, recommendations by Victorian Environmental Assessment Council (VEAC) that would see re-assignment of the large areas of State Forests in the east of the Shire as National, Regional and Conservation park. The outcome of this process is scheduled for March 2019 and is not anticipated to impact the actions outlined in this strategy. However re-assignment, should it occur, will present opportunities and pressures for council's management of biodiversity in the future. The VEAC process also supplies a rich source of information and public perspectives.

The strategy is designed to improve biodiversity values across Hepburn Shire. The council manages important areas of native vegetation on roadsides and other reserves. Council also plays a part in protecting biodiversity on private land through its role in applying the native vegetation protections under the Victorian State Government's Planning Act and in development and implementation of the State and local planning scheme. Council also has an important role in educating the community about the importance of biodiversity and providing information on how individuals can protect and enhance biodiversity.

The scale of action needed to protect the shire's biodiversity challenges Council's operational, management and planning capacity. Council can maximise biodiversity outcomes of its actions through partnering with other government organisations, Traditional Owners and community groups. It can also apply for, and advocate for increases in, the resources available for biodiversity protection from other levels of government.

## 2.1 GOAL

The Biodiversity Strategy seeks to improve biodiversity of the Hepburn Shire for current and future generations, support others in achieving the same aim and support well-informed decision making by Council.

## 2.2 STRATEGIC FOCUS AREAS

Thirteen strategic focus areas are identified for the biodiversity strategy; these are grouped below under three broad aims.

### AIM 1. PROTECT AND ENHANCE BIODIVERSITY

1. Weed management and strategic restoration
2. Pest animal management
3. Protection of large old trees

### AIM 2. INCREASE HEPBURN SHIRE COUNCIL'S CAPACITY TO PROTECT AND ENHANCE BIODIVERSITY

4. Strategic planning
5. Training and skill development
6. External government funding
7. Biodiversity compliance and enforcement
8. Fire management
9. Flood management
10. Data collection and mapping

### AIM 3. SUPPORT COMMUNITY ACTION AND AWARENESS

11. Community knowledge & awareness building
12. Community grants
13. Develop partnerships



Figure 1 Domino Trail, Trentham. Hepburn's biodiversity contributes to its amenity for tourists and locals. The contribution of nature to wellbeing is increasingly recognised, including in the State Governments biodiversity strategy; *Protecting Victoria's Biodiversity 2037* (Photo © Scheltema)

### 2.3 ROLES AND SCOPE

This strategy describes the scope of Hepburn Shire Council biodiversity stewardship between 2018 and 2021. Council exercises its stewardship of Hepburn Shire's natural environment via three roles, largely determined by land tenure:

#### Control & Management

Council exercises control and management where Council owns land and where it is the Committee of Management. Activities include developing and implementing planning policy, managing Council reserves and Council roadside vegetation, community education, and the delivery and support of specific environmental programs.

#### Influence

Council has an important role in influencing other land management agencies and organisations to achieve the best environmental outcomes. Council may also influence the land management practices of private land managers via programs that reward sustainable practices and through its role in writing and implementing planning policy that seeks to conserve the biodiversity of the Hepburn Shire

## Advocacy, Partnerships and Education

Council can advocate and promote information about the programs of other government organisations and community groups. Partnerships with other stakeholders can increase the reach of these programs and result in resource efficiencies. The protection of biodiversity is typically enhanced by coordinated action across a range of land tenures so partnership development is a priority for council.

### 2.4 PRINCIPLES

- Seek and respect the diversity of viewpoint, skill and experience that all stakeholders can bring to biodiversity issues and seek partnerships with key stakeholders for biodiversity projects.
- When considering proposals that impact biodiversity, explore mitigation options in the following order: avoid, minimise, improve and offset. See Appendix 10.6 Mitigation hierarchy
- Conduct biodiversity activities with a holistic approach to environmental protection by considering the range of environmental and social impacts and opportunities that may result from the proposed action.
- Employ an adaptive management approach, i.e. where significant unknowns exist, design actions such that it is possible to learn from the outcomes.



*Figure 2 Agriculture in Hepburn benefits from the services that biodiversity provide, including pollination and pest control.*

*Photo © Geoff Park.*

## 3 POLICY AND LEGISLATIVE CONTEXT

### 3.1 NATIONAL POLICIES AND PROGRAMS

#### **Environment Protection and Biodiversity Conservation Act (Commonwealth of Australia 1999)**

Provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. In Hepburn Shire we have three vegetation communities, fourteen plant and twelve animal species that are listed under the EBPC Act (see Appendices 10.1, 10.2 and 10.3. Proposed activities that will have a significant impact on these species are considered 'matters of national environmental significance'.

#### **Australia's Biodiversity Conservation Strategy 2010 – 2030 (Commonwealth of Australia 2010)**

Is a guiding policy framework for Australian, state, territory and local government and private sector approaches to biodiversity conservation.

Three national priorities for action are identified:

Engaging all Australians in biodiversity conservation through:

- mainstreaming biodiversity
- increasing Indigenous engagement
- enhancing strategic investments and partnerships.

Building ecosystem resilience in a changing climate by:

- protecting diversity
- maintaining and re-establishing ecosystem functions
- reducing threats to biodiversity.

Getting measurable results through:

- improving and sharing knowledge
- delivering conservation initiatives efficiently
- implementing robust national monitoring, reporting and evaluation.

#### **Native Title Act**

Provides a national system for the recognition and protection of native title and for its co-existence with the national land management system.

### 3.2 STATE POLICIES AND PROGRAMS

#### **Protecting Victoria's Environment – Biodiversity 2037 (Department of Environment, Land, Water and Planning, 2017)**

Is the Victorian Government's plan to stop the decline of biodiversity and achieve overall biodiversity improvement over the next 20 years. The plan establishes a long-term vision; 'Victoria's biodiversity is healthy, valued and actively cared for' and identifies two goals; 'Victorians value nature' and 'Victoria's natural environment is healthy'. Twenty priorities are listed in the plan.

#### **Flora and Fauna Guarantee Act 1988-**

Sets out Action Statements for threatened flora and fauna and potentially threatening processes listed under the Act. It provides a legal framework for the protection of Victoria’s native plants and animals and ecological communities. The Act requires all public authorities to be administered to have regard to flora and fauna conservation objectives. Twenty-nine plant species and 32 animal species that have been identified in the Shire are listed under the Flora and Fauna Guarantee act (See Appendices 10.2 and 10.3).

#### **Victorian Catchment and Land Protection (CaLP) Act 1994**

Is the main legislation covering noxious weed and pest animal management in Victoria.

One of the main objectives of the CaLP Act is to protect primary production, Crown land, the environment and community health from the effects of noxious weeds and pest animals.

The CaLP Act defines roles and responsibilities and regulates the management of noxious weeds and pest animals. Specifically, land owners must take all reasonable steps to eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds, and prevent the spread of - and as far as possible eradicate established pest animals on their land.

In 2013, amendments to the CaLP Act to introduced obligation for councils to manage declared noxious weeds and established pest animals on municipal roadsides.

#### **Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017)**

The purpose of the Guidelines is to set out, and describe the application of Victoria’s statewide policy in relation to assessing and compensating for the removal of native vegetation.

#### **Victorian Planning and Environment Act 1987**

Establishes a framework for planning the use, development and protection of land in Victoria and includes among its objectives ‘...to provide for the protection of natural and man-made resources and the maintenance of ecological processes and genetic diversity’. The Act requires municipalities to prepare and administer local planning schemes. Planning schemes can include targeted policies and provisions related to native vegetation removal and protection of the natural environment, species, and sites of high biodiversity value.

#### **Traditional Owner Settlement Act 2010**

The *Traditional Owner Settlement Act* provides for an out-of-court settlement of native title and delivery of land justice. A Recognition and Settlement Agreement is entered into by the Attorney-General and Traditional Owners under the *Traditional Owner Settlement Act*.

#### **Aboriginal Cultural Heritage Act 2006**

The main purpose of this Act is to provide for the protection of Aboriginal cultural heritage in Victoria.

### 3.3 REGIONAL POLICIES AND PROGRAMS

#### **2013-19 North Central Regional Catchment Strategy (NCCMA 2013)**

This plan by North Central Catchment Management Authority addresses land, water and biodiversity issues.

Under this strategy, priority biodiversity assets in Hepburn Shire included 'CVU 1 Daylesford-Wombat' G13 Upper Loddon'. The Mooloort Wetlands, including Middle Swamp near Clunes is identified as a priority wetland asset.

#### **North Central Catchment Management Authority Native Vegetation Plan (2005)**

The plan assists in the implementation of Victoria's Biodiversity Strategy by aiming to achieve a net gain in the extent and quality of native vegetation in this region and across Victoria. It identifies four strategic directions:

- protection of existing remnant vegetation,
- management and enhancement of Existing Remnants
- rebuilding the viability, connectivity and integrity of native vegetation
- community education and awareness

#### **Dhelkunya Dja: Dja Dja Wurrung Country Plan 2014-2034**

The plan describes the Dja Dja Wurrung vision for Country and a strategic framework of goals and objectives.

#### **Joint Management Plan for the Dja Dja Wurrung Parks: Strategy (Draft for consultation April 2018)**

The Plan is a guide for Joint Management of the Parks by Parks Victoria and the Dja Dja Wurrung People, through their representative entity, the Dja Dja Wurrung Clans Aboriginal Corporation (DDWCAC).

#### **Munganin Gadhaba – Achieve Together. DELWP Aboriginal Inclusion Plan 2016-2020**

This plan aims to increase Aboriginal employment and cultural wellbeing while bringing knowledge of country to resource management.

#### **Recognition and Settlement Agreement Dja Dja Wurrung 2013**

The RSA has obligations for State and local government to implement partnerships and recognising DDW People's right to DDW Country.

The **Land Use Area Agreement (LUAA)** is a part of the RSA and specifies the kinds of activities on Public land that are subject to a LUAA, the kind of liaison different activities warrant, and the manner of that liaison.

### 3.4 HEPBURN SHIRE PLANS, POLICIES

Key existing policies for biodiversity in the shire include:

#### Hepburn Shire Council Plan 2017-2021

This is Hepburn Shire's primary strategic planning document. Key Strategic Activity 9 is to:

"Take proactive steps to protect, maintain and enhance biodiversity including rare/endangered species and wildlife corridors, and reduction of weeds on Council land while minimising herbicide use. Partner with other stakeholders to achieve greater weed management outcomes shire-wide." Supporting actions are to:

9.1 Implement the Hepburn Shire Biodiversity Strategy Action Plan and

9.2 Implement actions to increase Council's weed control and management of noxious weeds on reserves and roadsides under Council management.

#### Hepburn Biodiversity Strategy and Action Plan 2016 background paper (Cunningham, Hemayet, & Harmen, 2016)

This Plan included results from a collaborative project with academic, community and council to evaluate biodiversity protection priorities in the shire under informed by climate change modelling for key ecosystems. It made a range of recommendations for biodiversity protection across multiple land tenures in the Shire. Some detail from this plan is included in Section 5.6 Climate change adaptation.

#### Hepburn Planning Scheme

The scheme sets out the planning policies and permit requirements for development and works in the shire, including those affecting biodiversity including clause 12.01 'Biodiversity' and Clause 21.09 'Environment and Heritage'. The scheme will be reviewed during the period of this strategy.

#### Reflect Reconciliation Action Plan July 2018-July 2019 (Hepburn Shire Council 2018)

This Plan provides a direction for reconciliation activities in the Shire.



## 4 STAKEHOLDER GROUPS

Partnerships are critical to the successful implementation of many of the actions within the Biodiversity strategy. A list of key stakeholders is included in Table 1 Key Stakeholders of the Biodiversity Strategy

*Table 1 Key Stakeholders of the Biodiversity Strategy*

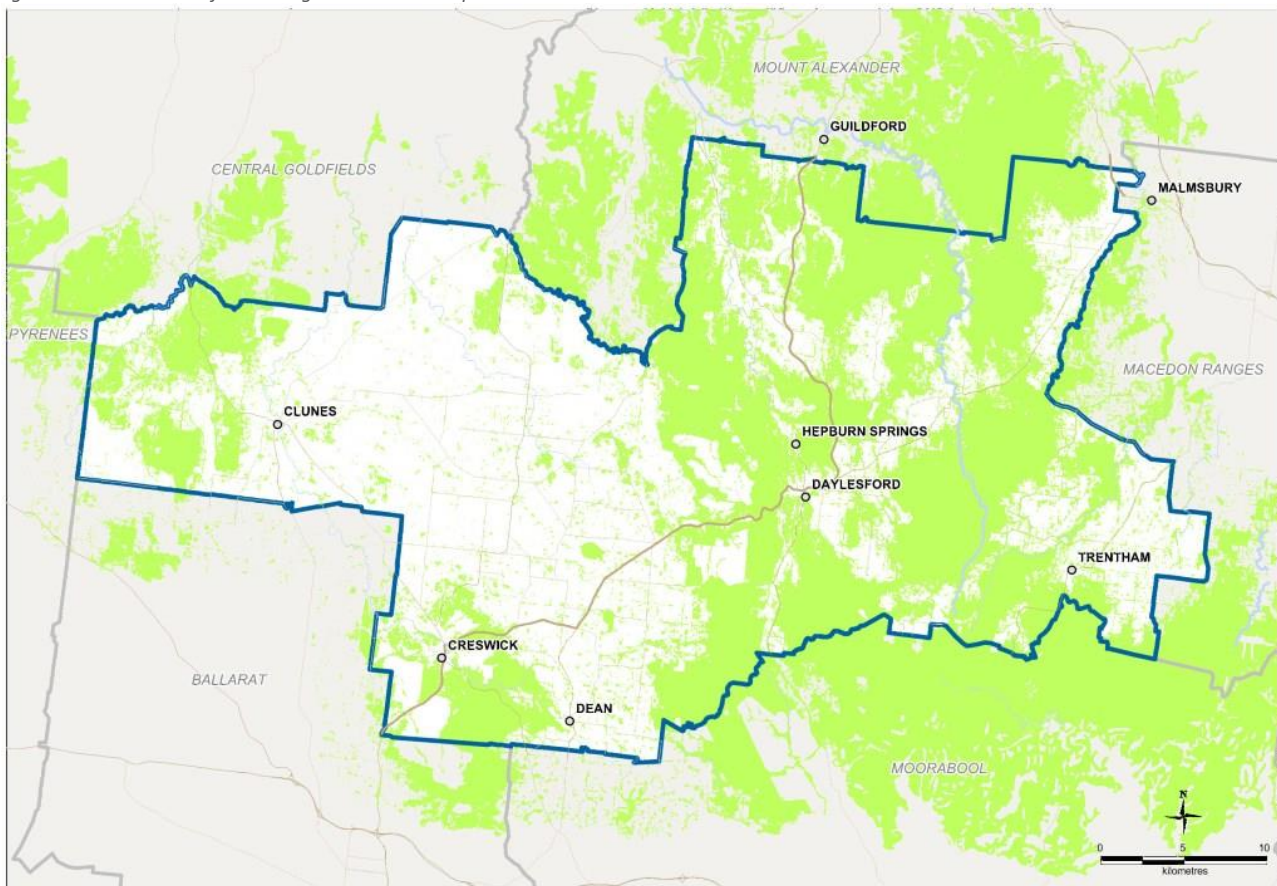
Stakeholder group	Stakeholder name
Community	<ul style="list-style-type: none"> <li><b>General Community</b>- community action and advocacy, individual voluntary action and investment.</li> </ul>
Indigenous Community	<ul style="list-style-type: none"> <li><b>Dja Dja Wurrung Clans Aboriginal Corporation</b> Hepburn Shire recognises the Dja Dja Wurrung People as the Traditional Owners of the land on which the Shire is predominately located. Hepburn Shire acknowledges that, alongside Dja Dja Wurrung, we hold joint responsibility of public lands, Dja Dja Wurrung Country and other significant Aboriginal and Torres Strait Islander sites. Council also works under state legislation that requires consultation with the traditional Owners of the Shire in environmental and statutory planning and natural resource management. This legislation includes the Traditional Owner Settlement Act 2010 and the Recognition and Settlement Agreement 2013 between the State of Victoria and the Dja Dja Wurrung Clans Aboriginal Corporation. (Hepburn Shire Council, 2018). There are ongoing processes for the implementation of joint management and Land Use Area Agreements (Dhelkunya Dja Land Management Board, 2018)</li> <li><b>Djandak</b> – Trading as Dja Dja Wurrung – has a range of environmental and cultural services that could be engaged in contracting works to collaboratively implement with the shire, such as: pest plant spraying, cultural burning, revegetation and cultural Heritage Awareness through the DDWCAC Registered Aboriginal Party (RAP).</li> </ul>
Government departments and agencies	<ul style="list-style-type: none"> <li><b>Department of Environment, Land, Water and Planning</b>- coordinates planning, local government, environment, energy, suburban development, forests, emergency management, climate change and water functions.</li> <li><b>Parks Victoria</b> – Manager of public lands in regional parks and other reserves.</li> <li><b>VicRoads</b> – Management of public land on non-municipal roadsides</li> </ul>
Community-and industry - based groups and	<ul style="list-style-type: none"> <li><b>Country Fire Authority</b> – fire protection and preparedness</li> </ul>

Stakeholder group	Stakeholder name
organisations	<ul style="list-style-type: none"> <li>• <b>Landcare groups &amp; Landcare networks</b> Coordinated action on-ground in public and private land.</li> <li>• <b>Friends groups</b> - coordinated action on-ground, predominantly on public lands</li> <li>• <b>Environment Groups</b> – on-ground action and advocacy</li> <li>• <b>Victorian Farmers Federation</b> – advocacy and support on behalf of agriculture sector</li> <li>• <b>Victorian Gorse taskforce, Victorian Serrated Tussock Working party, Victorian Blackberry Taskforce</b></li> </ul>
Catchment management Authorities	<ul style="list-style-type: none"> <li>• <b>North Central Catchment Management Authority</b> -is engaged in landscape scale projects for biodiversity protection on public and private lands and waterways.</li> </ul>
Water Authorities	<ul style="list-style-type: none"> <li>• <b>Goulburn-Murray Water, Central Highlands Water, Coliban Water</b> Carry out works for improving environmental values and health of water ecosystems and control of water movements</li> </ul>
Local Government	<ul style="list-style-type: none"> <li>• <b>Hepburn Council Departments</b> includes the following functions that frequently engage with biodiversity matters <ul style="list-style-type: none"> <li>○ <i>Community and Economic Development</i> – includes the biodiversity and sustainability, economic development, youth, cultural and community development and community partnerships</li> <li>○ <i>Strategic Project Delivery</i>- includes works and maintenance and parks and open spaces</li> <li>○ <i>Development and Community Safety</i>- includes planning and building, emergency management and compliance</li> <li>○ <i>Aged and disability services</i> (via biodiversity's contribution to health and wellbeing)</li> </ul> </li> <li>• <b>Adjoining Councils</b> may coordinate on biodiversity-related projects such as coordinated weed control and habitat corridors and education programs.</li> </ul>

## 5 ENVIRONMENTAL CONTEXT

The Shire contains approx. 67,754 ha of native vegetation, or 46% of the Shire, see Figure 3 Current extent of native vegetation across Hepburn Shire. This is a high proportion of native vegetation cover compared with many other regions in Victoria. The native vegetation characterises the area, is valued by the community, and attracts visitors and new residents. Where native vegetation has been replaced, it is predominantly by mixed farming and grazing, with large areas of plantation forestry and limited cropping and urbanisation and low density 'lifestyle' properties. Of the 67,754 ha of native vegetation, over half, 54% occurs on private property.

Figure 3 Current extent of native vegetation across Hepburn Shire



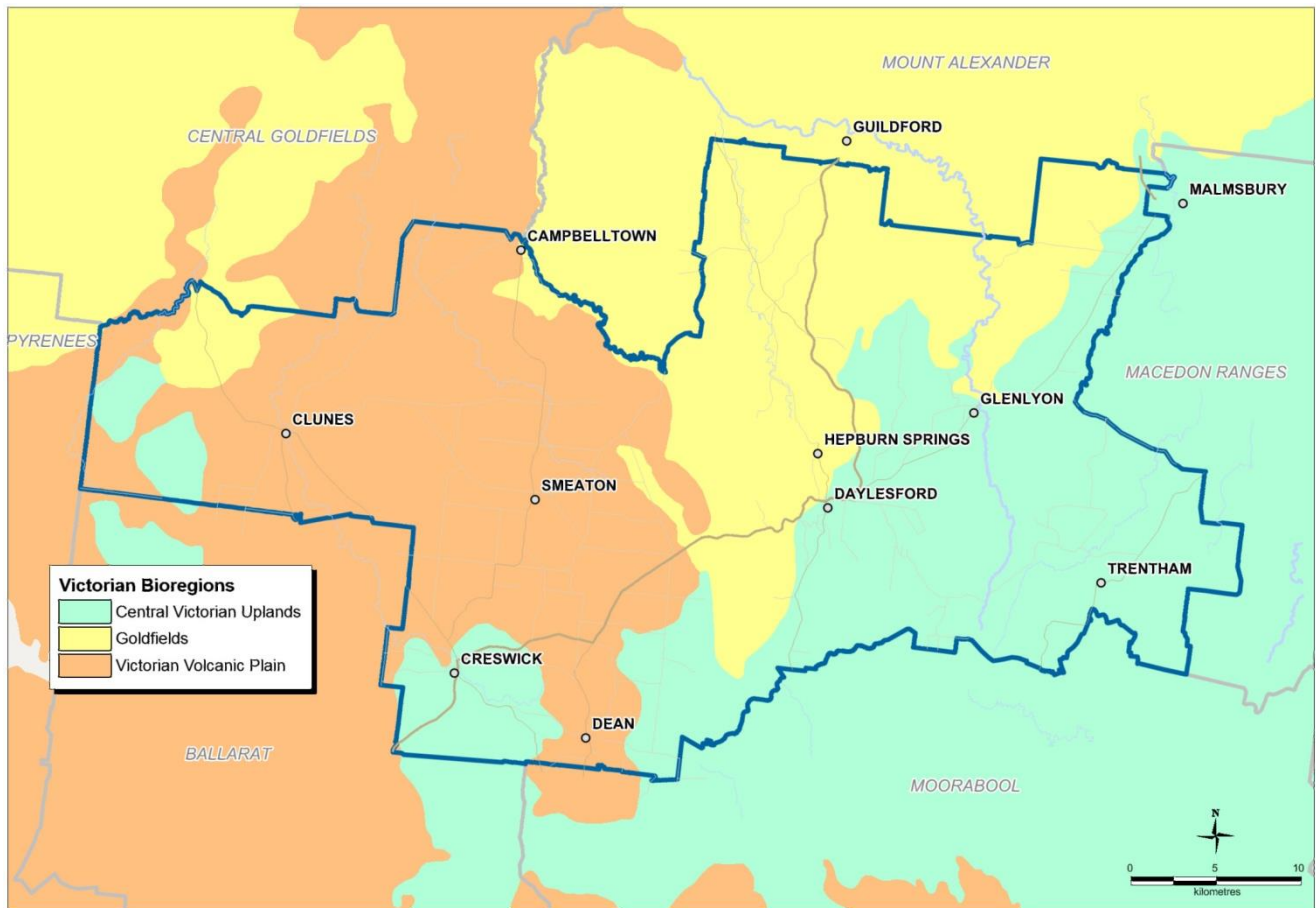
The native vegetation of the Shire supports rich biodiversity. There is an estimated total of 707 native plant species and 252 native animal species (Viridans, 2016), with many more likely to be found with further survey. Of these species, 41 plant and 37 animal species are rare or threatened. There are at least 29 eucalypts, 27 acacias, 63 orchids, 74 peas, 110 daisy species, 122 grasses, 38 mammals, 206 birds, 17 reptiles and 11 amphibians. Significant species include the endangered spiny rice-flower (*Pimelea spinescens subsp. spinescens*), the threatened brush-tailed phascogale (*Phascogale tapoatafa*), powerful owl (*Ninox (Rhabdoglaux) strenua*) and

the striped legless lizard (*Delma impar*), and the rare Yarra gum (*Eucalyptus yarraensis*). Rare species unique to the region include the Wombat Leafless Bossiaea and the Wombat Bush-pea. A list of threatened species developed from the Victorian Biodiversity Atlas is included as Appendix 10.2 and 10.3. The native species compete with around 266 weeds and 20 introduced animals.

### 5.1 BIOREGIONS

Bioregions classify the land based on a combination of climate, geology, soils and vegetation. They are key divisions used in Victoria for biodiversity conservation and align closely with land capability for agriculture, forestry etc. and so influence where people live and work. Hepburn Shire spans three bioregions; Goldfields, Victorian Volcanic Plains and Central Victorian Uplands. See Figure 4 Bioregions of the Hepburn Shire

Figure 4 Bioregions of the Hepburn Shire



### Central Victorian Uplands Bioregion

This bioregion of the higher rainfall areas was dominated by Herb-rich Foothill Forest and Valley Grassy Forest. The flatter more fertile areas have been extensively cleared for agriculture while hilly areas on Ordovician sediments remain as native vegetation. The Central Victorian Uplands covered approximately 53869 ha,

(37%) of the Shire. Of this, 31824 ha (59%) is considered to retain its original vegetation. Forty-six percent of this is found in public land.

### Goldfields Bioregion

This bioregion was originally a mixture of drier forest and woodland on relatively poor soils and includes the core of the Box-Ironbark ecosystem.

Locally this bioregion was

dominated by Heathy Dry Forest, Grassy Dry Forest and Valley Grassy Forest. The Goldfields Bioregion covers approximately 40365 ha (27%) of the Shire. Of this, 29329 ha (73%) is considered to retain its original vegetation and 53 % of this is found on public land.

Clearing has been extensive in the interspersed areas of Valley Grassy Woodlands. The Box-Ironbark Forests were felled for fuel and timber for the mines during the gold rush era and the forests were then heavily cut for firewood. Despite this, today's forests often retain a diverse flora including orchids and small shrubs.



Figure 5. Sedgy Riparian Woodland – Wombat Forest, Trentham



Figure 6 Grassy Dry Forest, Porcupine Ridge

### Victorian Volcanic Plain Bioregion

This bioregion occupies 52973 ha (36%) of the Shire and was characterised by Plains Grassy Woodland on the plains with Scoria cone Woodland on the peaks of extinct volcanoes and scattered wetlands in low-lying areas.

The woodlands were characterised by low density tree cover, scattered shrubs and a diverse and rich herbaceous layer often dominated by Kangaroo Grass.



Figure 7 Plains Grassy Woodland roadside remnant, Clunes.

Today, the major land use is agriculture, especially sheep and cattle grazing and cropping due to the fertile soil and favourable climate with only 5592 (12%) is considered to remain as native vegetation. Only about 6 per cent of native vegetation remains in the wider bioregion (North Central Catchment Management Authority, 2005). Of the area remaining as native vegetation, 90% is on private land.

The low surviving extent means remnants of this bioregion score highly in the Bioregional Conservation Status mapping and, conversely, the small size and low connectivity of the fragments means they score poorly in Strategic biodiversity values mapping (See 10.5 Maps of Ecological Vegetation Classes, Bioregional Conservation Status and Strategic Biodiversity Values).

Roadside remnants in Hepburn Shire retain populations of the threatened species including Spiny Rice-flower and Button Wrinklewort. The endangered Golden sun moth is one of the significant fauna species.

Some of the original flora and fauna of the bioregion, has adapted to the agricultural landscape, however; expansion of cropping and exotic pasture establishment into areas of native pasture, tree dieback and incremental tree loss are serious threats to remaining assets. Weeds and other introduced pests are also significant threats. The exotic stipoid weeds, Chilean Needle Grass, Serrated tussock and Broad-kernel Espartillo are emerging weeds in the Shire that threaten both agricultural production and the survival of remnant vegetation in this bioregion.

## 5.2 PUBLIC LAND MANAGEMENT

Approximately 26% of Hepburn Shire, 37,814.5 hectares, is public land.

Public land management categories across the Shire are included in Figure 8 Public Land Management in Hepburn Shire below and more detailed maps are included as Appendix 10.4.

Figure 16. Powerful owl nest with owlet. Large old trees are critical to the habitat of this vulnerable species and to the possums it hunts.

*Photo © Scheltema*

Public Land Management in Hepburn Shire- ward scale maps.

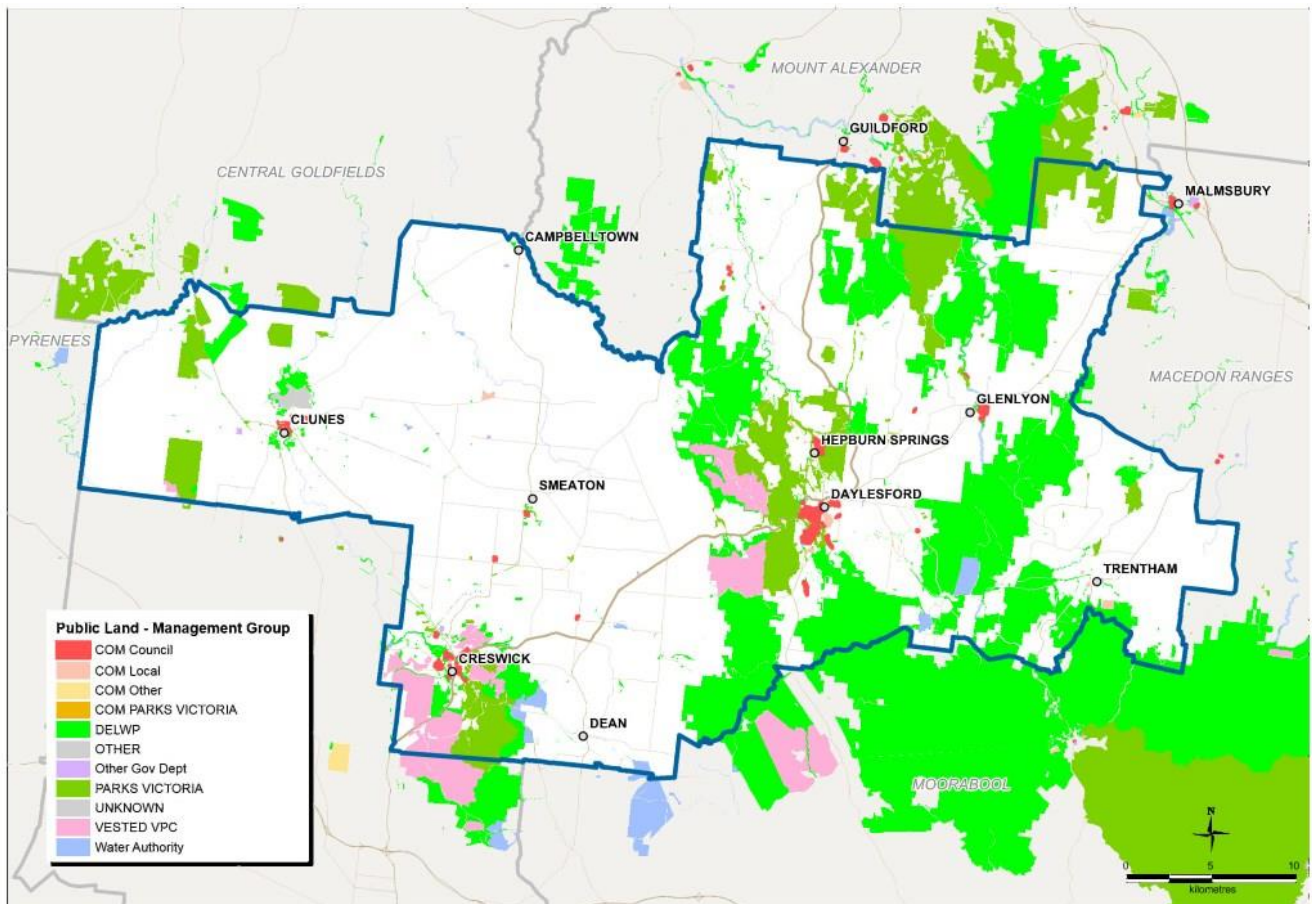


Figure 8 Public Land Management in Hepburn Shire

### 5.3 CONSERVATION SIGNIFICANCE

Two methods of assessing biodiversity significance have been mapped for the Hepburn Shire based on data available from the State Government. Each method has strengths for identifying areas that are important for protecting and enhancing biodiversity. Maps of Strategic Biodiversity Values and Bioregional Conservation Status the ward scale are included as Appendix 10.5 Maps of Ecological Vegetation Classes, Bioregional Conservation Status and Strategic Biodiversity Values.

#### Biodiversity Conservation Status

The combination of Ecological Vegetation Class (EVC) and bioregion is used to determine the bioregional conservation status (BCS) of an EVC. This is a measure of the current extent and quality for each EVC, when compared to its original (pre-1750) extent and condition. On this basis an EVC will have a BCS of endangered, vulnerable, depleted, least concern or rare. (Victorian State Government Department of Environment, Land, Water and Planning, 2018)



### Strategic Biodiversity Value

Strategic Biodiversity Values (SBV) is a model to show relative values for biodiversity that has been developed by DELWP and is currently at version 4. This mapping combines information on areas important for threatened flora and fauna and vegetation types, connectivity, levels of depletion and condition to provide a view of relative biodiversity importance across Victoria. The information provided by SBV is potentially useful for informing conservation decision-making processes, such as native vegetation permitted clearing and offsetting, prioritising areas for protection and raising awareness of the breadth of biodiversity values across Victoria.

Figure 9 shows the SBV mapping for Hepburn Shire

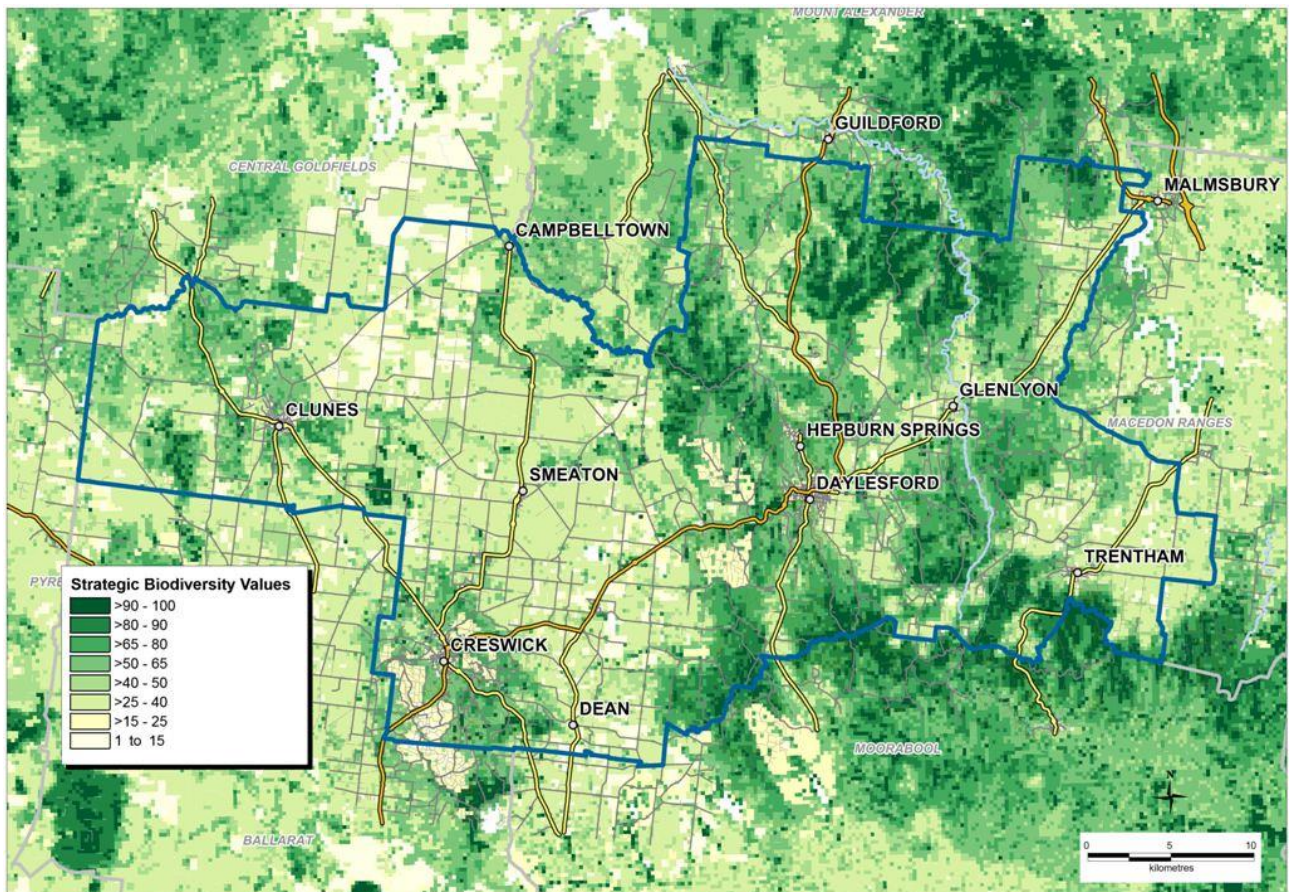


Figure 9 DELWPs modelled Strategic Biodiversity Values

#### 5.4 THREATS TO BIODIVERSITY

The 2013-19 North Central Regional Catchment Strategy, (NCCMA, 2013) identifies loss of habitat through clearing of native vegetation as the key past and ongoing threat to biodiversity across the North Central region which includes the Hepburn Shire. The list of threats to biodiversity in this strategy include;

- Clearing for agriculture, urban or other uses
- Global warming/rapid climate change
- Invasive plants and animals
- Over-grazing by stock, feral animals and native herbivores
- Soil disturbance
- Habitat fragmentation and isolation
- Alterations to natural fire regimes
- Altered hydrology
- Inappropriate timber and firewood harvesting practices
- Off-site effects of nearby land-uses
- Predation by foxes, feral cats and wild dogs

Impacts on biodiversity of these threats include; loss of ecological resources, reduction in species richness and diversity, decline in habitat quality and condition, decline in water quality, loss of landscape function, decline in soil health and decline in landscape amenity and intrinsic value.

Another list of threats is included in the recently developed DELWP Strategic Management Prospects tool available on the NatureKit site which models threats based on known occurrences, (e.g. deer or rabbits) and characteristics of the environment (e.g. terrain, climate). Using this tool, high scoring threats across the whole Shire include feral cats, red foxes and domestic stock grazing. Rabbits and 'transformer weeds' (weeds capable of invading and altering the ecology of native vegetation) scored more highly in the more cleared areas of the Shire while feral deer, native forest harvesting, fuel reduction burning and Cinnamon fungus (*Phytophthora cinnamomi*) score more highly in the forested areas. Land clearing was identified as a threat wherever remnant vegetation occurs on private land. The Strategic Management Prospects tool is intended to direct priorities for State biodiversity funding.

Fuel reduction burning is a contentious issue locally. The scale and intensity of risk/fuel reduction burn programs in public reserves are a raised by community members owing to their immediate impact on wildlife habitat and assumed long-term impact on the structure and composition of native vegetation. Cultural Burning conducted and led by Djandak Cultural Burns Team, practice cool mosaic burns with less intensity and protection measures are high priority to protect environmental and cultural values. The issues and decision making for the CFA, Djandak cultural burns team and land managers (primarily DELWP) around this are

complex. Council have a role to play in the engagement with community via their role on the Community Based Bushfire management program and their own fuel reduction activities.

Water is another complex issue with the quantity, seasonality and quality of water in the landscape all impacting on biodiversity, especially of aquatic ecosystems. Alterations to hydrology of creeks, wetlands and other waterbodies have arisen from impoundments in dams and lakes, drainage and extraction of mineral waters. Changes to the surrounding vegetation alter the quality of the water. The altered landscape includes features such as small dams and lakes that may develop important refuges for biodiversity. Through altering rainfall and evaporation, climate change has a powerful effect on the drivers for water use. Locally, Goulburn

Murray Water (GMW) manages both regulated and unregulated river systems and administers groundwater. The riparian areas along waterways and public land within the catchment areas of Coliban Water's three Coliban River storages is critical to protecting raw water quality; both for reducing the amount of treatment that is required to produce water of a drinking water standard, and to ensure high quality raw water for domestic and stock, and commercial purposes.



Figure 10 Water quality monitoring Photo ©Scheltema

Stakeholders contributing to this strategy expressed interest in extraction limits to ensure biodiversity function and in limiting water extraction for non-essential uses. Council may play a role in advocating for improved biodiversity protection with GMW and partnering on land management activities.

### 5.5 REDUCING THREATS

We can protect significant areas for biodiversity by managing urbanisation, protecting and enhancing biodiversity on public and private land and reducing the intensity of disturbance within native ecosystems. Restoring areas to native ecosystems is a solution to biodiversity decline. Revegetation that increases the size of individual patches and improves connectivity among patches is the primary method for mitigating the effects of habitat fragmentation.

We cannot expect eradication for well established pest plants and animals from the Shire but we can manage their numbers and their impact on native species. Detection and treatment of newly established and emerging pest plants and animal species is an important priority for avoiding further degradation of biodiversity.

### 5.6 CLIMATE CHANGE ADAPTATION

Climate change is identified in The Hepburn Biodiversity Strategy and Action Plan 2016 Background paper (Future Landscapes) (Cunningham, Hemayet, & Harmen, 2016) assessed climate change impact in different vegetation types across the Shire and identified a number of measures for facilitating climate adaptation. In this study, modelling predicted that future climates will be adverse for Dry Forests. A band of forest from Creswick to Malmsbury were the least impacted- and thus being a *focal* areas for higher protection through their potential to act as ‘refugia’ for current biodiversity. The more impacted ‘high quality’ dry forests were identified as *strategic*, meaning they were priorities for measures to help them adapt through such as planting with species or genotypes better suited to the projected climate. Areas of fragmented vegetation where climate impacts were modelled as less severe, such as the Plains grassy Woodland in the west of the Shire, were identified as ‘favourable’ for revegetation along current lines. Poorer quality vegetation in areas with the most severe projected climate impacts were regarded as ‘marginal’ and potential candidates for landscape conversion. See Figure 11.

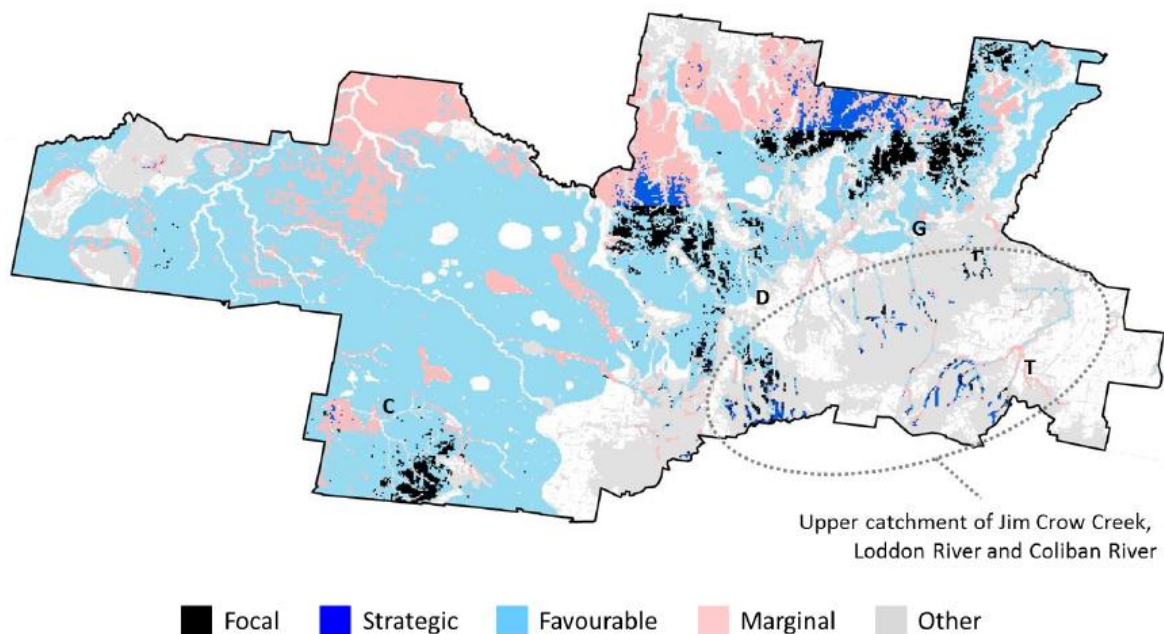


Figure 11 Areas of target ecosystems based on their strategic value for biodiversity conservation and the suitability of predicted climate. Ecosystems not modelled are indicated in grey. Source (Cunningham, Hemayet, & Harmen, 2016)

Important threats that need to be managed to improve the chances of maintaining biodiversity under climate change include habitat fragmentation, land-use change, pest plants and animals, altered fire regimes and changed hydrology. Improved monitoring is fundamental to assessing threats and evaluating conservation approaches in a changing environment.

The Future Landscapes project provides a reference for identifying priority areas for protection and zones for improving landscape connectivity. It also identifies adaptation needs (for example by changing species planting guidelines) for restoration works in areas facing adverse impacts. However the analysis is incomplete and opportunities to fill gaps in developing the climate adaptation needs of the Shire’s biodiversity need to be pursued.

### 5.7 HABITAT CORRIDORS AND BIOLINK ZONES

Habitat fragmentation and isolation is one of the threats for the region identified by the North Central Catchment Management Authority (NCCMA, 2013). Connectivity of landscapes is a priority in Victoria’s Biodiversity Strategy which includes a target for 200,000 hectares of revegetation in priority areas for connectivity between habitats. (The State of Victoria Department of Environment, Land, Water and Planning, 2017).

Measures to protect and enhance habitat connectivity via habitat corridors across multiple land tenures of the Shire have been proposed by several groups working in and adjacent to the Shire eg. Upper Campaspe Landcare Network (Upper Campaspe Landcare Network, 2016).

In recent years the related concept of ‘biolinks’ for adaptation to climate change has developed. These are zones of native vegetation that form linkages across the landscape that facilitate wildlife and plant dispersal and adaptation. Some are proposed in Biodiversity Strategy and Action Plan 2016 background paper (Cunningham, Hemayet, & Harmen, 2016).

The scale of these biolinks calls for collaboration across local government and agency boundaries. An example is the Upper Coliban biolink which takes in the major waterways of the upper Coliban catchment and covers an area of approximately 27,750 ha within various public and private lands. The plan calls for measures that protect both biodiversity and the water quality entering the major water storages immediately to the east of the Shire. The restoration of waterways component is led by the NCCMA and Coliban Water, via the 20-year Upper Coliban Integrated Catchment Management plan (‘Healthy Coliban Catchment’). The Upper Campaspe Landcare Network’s ‘Coliban Connections Conservation Action Plan (Upper Campaspe Landcare Network, 2017). Hepburn Shire is a stakeholder in this project. Other partners in the project include the DELWP, Macedon Ranges Shire Council, Upper Campaspe Landcare Network, Parks Victoria, Dja Dja Wurrung and the Biolinks Alliance. The Biolinks Alliance was established in 2010 to support and link organisations in Central Victoria conducting ‘connectivity conservation’ (Biolinks Alliance, 2013).

There are a number of opportunities for council to support existing connectivity conservation (corridors and biolinks) through its planning, advocacy and education roles. During the life of this strategy it is proposed under Action 23 to assess the various available connectivity analyses to identify which are well supported, address gaps in analyses and the appropriate measures to secure and enhance the function of corridors and biolink zones.

## 6 ISSUES AND OPPORTUNITIES

The Hepburn Shire Biodiversity Strategy outlines thirteen strategic focus areas within three broad Aims.

### AIM 1. PROTECT AND ENHANCE BIODIVERSITY

**Weed Management and strategic restoration** – Weeds are one of the greatest threats to biodiversity in the Shire through their effect of outcompeting native vegetation, altering habitat structure and fire regimes. Relatively high soil fertility and rainfall in many parts of the Shire encourages high biomass weed growth. Councils have been responsible for most weed management of municipal roadsides (i.e. not arterial roads or forest roads) since 2012. Council manages vegetation within council owned land and where council is the Committee of Management. Council also has a role in influencing and advocating for weed management on private land and with other landholders. Fire hazard reduction is a co-benefit of effective weed control of high biomass weeds such as Gorse, Broom and Canary Grass.

Weed management requires strategic approaches and follow up to achieve lasting benefit for biodiversity and this may include strategic restoration/revegetation to increase a site's resilience to reinfestation. Strategic approaches are also required to target resources where they will have the most impact, such as preventing establishment of newly emerging weed species. A draft Weed Management Strategy for Hepburn has been commenced and will be further developed in 2018 in conjunction with biodiversity protection recommendations. Data collection on weed infestations is an important tool for both management and for advocacy to governments for resourcing.

Integration with the programs of adjoining landholders presents the opportunities for efficiencies and reduced reinfestation rates. Partnerships with Parks Victoria, DELWP, VicRoads, DDWCAC/Djandak and Goulbourn Murray Water will be essential for increasing the effectiveness of council's weed control program. Weed control has the potential to achieve other desired outcomes such as reduced fire risk, removal of feral animal harbour and increased amenity.

Weed control has the potential for negative biodiversity impacts through for example, off-target herbicide application and destruction of weeds that provide habitat for native animals. Herbicide application has other environmental and potential health impacts which makes it desirable to minimise their use where feasible alternatives are available. A spray minimisation report has been committed to take place in 2018 to identify the measures council can take to minimise its use of herbicides.



*Figure 12 The emerging weed, Broad-kernel Espartillo on a roadside in Clunes*

**Pest Animal Management** Both exotic naturalised (feral) animals and roaming pet animals have the potential to impact biodiversity in the Shire. Native animals may also come into conflict with human activities, including those activities such as revegetation that aim to enhance biodiversity. As with weeds, pest animal management requires strategic and collaborative approaches for the effective control of pest animal species to protect sensitive biodiversity assets. An additional obligation of pest animal management is to conduct works in ways that consider animal welfare.

Opportunities for pest animal management include collaborations with adjoining landholders conducting pest animal works for other purposes, and the integration of weed control for harbour removal.

**Protection of large old trees** The high contribution that large old trees make to biodiversity and amenity in the shire makes them a focus for protection on private and council-managed land. In 2017, changes to the State native vegetation removal regulations increased the importance of large old trees in the assessment of biodiversity value (The State of Victoria. Department of Environment, Land, Water and Planning, 2017b).

A number of land management activities conducted by the Shire have the potential to impact on large old trees on roadsides and land it controls. These include felling and lopping of trees deemed hazardous, compaction over roots and damage to tree bases. Training and awareness raising of staff on the significance of large old tree values will assist in ensuring appropriate measures are taken to protect them. The Shire can also

influence and advocate for large old tree protection elsewhere. The Shire's has a significant tree register that includes both indigenous and exotic trees that is referenced in the planning scheme. This is the opportunity to develop this registration process for ensuring mapping of biodiversity assets is more comprehensive.

**AIM 2. INCREASE HEPBURN SHIRE COUNCIL'S CAPACITY TO PROTECT AND ENHANCE BIODIVERSITY**

**Strategic Planning** - Planning controls, including appropriate zoning, policies and other controls are a key means for Council to safe-guard biodiversity.

The Hepburn Planning Scheme is being reviewed as required under the Planning and Environment Act 1987. The current planning scheme will be reviewed and audited to see how it currently performs. Extensive consultation will take place with the community and key stakeholders such as state government authorities, authorities, Dja Dja Wurrung Clans Aboriginal Corporation etc, to determine if the planning scheme meets the expectations of these groups and to seek submissions into what or how the scheme may be improved.

Depending on the nature of submissions received controls may be introduced to protect significant vegetation, further protect agriculture, heritage or other matters. Such changes can only be approved through an extensive consultation process.

Native vegetation significance can be broadly identified by reference to State databases. Two examples of mapping of conservation significance have been included in this Strategy, Bioregional Conservation Status and the more recently developed Strategic Biodiversity Values modelling (See Appendix 10.5 Maps of Ecological Vegetation Classes, Bioregional Conservation Status and Strategic Biodiversity Values). Climate change adaptation analysis provides a further layer for considering vegetation significance. The report *Hepburn Biodiversity Strategy and Action Plan 2016 Background paper*, (Cunningham, Hemayet, & Harmen, 2016) includes a partial analysis of the Shire's vegetation under climate change. It suggests broad areas of the Shire that may warrant additional consideration for protection owing to their capacity to act as refuge, or as 'biolink zones' (see glossary) under projected climate change scenarios.

The opportunity to facilitate biodiversity incomes through engaging with the native vegetation offset market is another possible direction for council to pursue. In Victoria, an offset is generally required when an approval or permit to remove native vegetation is granted. Offset owners secure and manage offset sites to improve native vegetation condition. This can be a mechanism for landholders to be paid to permanently protect and enhance biodiverse areas of their property.

**Training and skill development** - Council can ensure that our staff are aware of biodiversity matters to ensure best practice and compliance on matters such as the Environment Protection and Biodiversity Conservation Act. This includes being capable of communicating, and ensuring contractors also comply with, best practice. This training needs to be conducted regularly to ensure skills and knowledge are consistently maintained. Key areas for training include staff conducting or supervising road maintenance, weed



management works and planning. Raised awareness of biodiversity matters among all levels of the council has the potential to improve the Shire’s engagement with community on biodiversity matters. There is an opportunity to coordinate biodiversity training with cultural awareness training as well as with Cultural Heritage inductions for any on-ground works. Plans for cultural awareness training and inductions are identified in Council’s Reconciliation Action Plan Action 8 (Hepburn Shire 2018). Stakeholder feedback identified the importance of internal ‘champions’ to maintain and embed new processes arising from training.

**External Government funding-** The capacity to achieve actions within this biodiversity strategy will be enhanced by accessing funding through external government grants. Actions 4, 3, 5, 6 and 26 in the Action Plan are among the actions that could be enhanced with external funding and were identified as high priorities for attendees a community workshops to finalise this Strategy in September 2018. Alignment of the Shire’s strategic directions with current national and state strategies has the potential to streamline grant submission and acquittal. State government funding on biodiversity matters will be directed by the Protecting Victoria’s Environment – Biodiversity 2037 (The State of Victoria Department of Environment, Land, Water and Planning, 2017) and the Strategic Management Prospects tool (The State of Victoria Department of Environment, Land, Water and Planning, 2018).

**Biodiversity Compliance and Enforcement** – Hepburn Shire has a primary role in assessing permit applications and monitoring compliance with the regulations and the permits they issue in relation to protection of native vegetation. Preventing illegal clearing by promoting compliance is preferable to enforcement action, which can be costly and time consuming to undertake. A Compliance and Enforcement Strategy for Native vegetation removals (The State of Victoria Department of Environment, Land, Water and Planning, 2017) includes guidance for Local Government to develop their processes.

**Fire Management**–Fire management in the Shire includes the activities of council on council-managed land, the activities of other public land managers (including fuel reduction burning by DELWP and Cultural burning led by Djandak) and the activities of private landholders. Fuel reduction works such as slashing have the potential to impact negatively on biodiversity values through removal of native vegetation, destruction of hollow logs and through soil disturbance and spread of weeds. Positive biodiversity impacts may result where fuel reduction is achieved through sensitive treatment of high-biomass weeds. It is important that measures to avoid and minimise impacts on biodiversity are considered in developing works programs for fire preparation. An important opportunity for considering biodiversity impacts is the annual assessment of fire preparedness on council-controlled land undertaken with CFA and Council officers and the Community Bushfire Management Program.

**Flood Management** – Council has a role in flood preparedness and flood repair, in particular through vegetation management of creek-lines near structures, road maintenance and repair. As with fire management, the works have the potential to impact negatively on biodiversity values through destruction of in-stream

habitat or present the opportunity to improve biodiversity values such as through the removal of woody weeds on creek-lines that exacerbate flood impacts and replacement with appropriate indigenous vegetation. It is important that biodiversity impacts are considered in developing works for flood mitigation and repair. As with fire management, protection of biodiversity of waterways are frequently linked to cultural issues and there may be opportunities to coordinate evaluation of these. *“Aboriginal Australians have managed land and water sustainably over many thousands of generations. Incorporating this knowledge into Victoria’s water management approach represents an opportunity for all governments to recognise Aboriginal water issues and improve the sustainable management of our water systems”* Munganin – Gadhaba ‘Achieve Together’ Page 9.(The State of Victoria Department of Environment, Land, Water and Planning, 2015). Dja Dja Wurrung Group has a Water Advisory Board called Kapa Gatjin who do Aboriginal Water Assessments for the Rivers, creeks and water bodies on DDW Country and provide recommendations.

**Data Collection and Mapping** – The council needs ready access to up-to-date biodiversity information for the land it manages and for projects on other land where it needs to consider biodiversity significance. It also needs to ensure it submits significant data it gathers as a part of planning to managed databases- ensuring this data is available for future planning and for scientific purposes. There is the opportunity to increase the Council’s efficiency in interacting with biodiversity databases such as the Victorian Biodiversity Atlas and the Atlas of Living Australia through ensuring staff are trained in their use. Data managers also need to understand and follow the processes to protect sensitive data on the location of vulnerable species.

Accessible and reliable databases are an opportunity to increase knowledge about biodiversity and are essential to monitoring the state of biodiversity in the shire. This will allow for better planning and decision making by council staff and improved compliance with biodiversity protection regulations.

### AIM 3. SUPPORT COMMUNITY ACTION AND AWARENESS

**Community knowledge & awareness building** – Council has a role to promote public awareness around biodiversity, outlining the responsibilities and requirements of individuals under the relevant legislation and provide information to assist the community in meeting these responsibilities. For instance, accessible messages on the requirements of the Native vegetation clearance guidelines can potentially avoid biodiversity degradation and costly enforcement measures. There is an increasing need to support groups, including Landcare groups, to become aware of their responsibilities under cultural legislation including the *Recognition and Settlement Agreement Dja Dja Wurrung 2013* and Land Use Area Agreements (LUAA) under the *Traditional Owner Settlement Act 2010 (Vic)*.

Raising the profile of Hepburn Shire’s biodiversity among politicians, councillors, community leaders and council staff could encourage concerted action on biodiversity protection.

Stakeholder meetings identified the opportunity to stimulate interest in local biodiversity through use of indigenous plants in council landscaping. However, feedback also identified the importance of

recognising public appreciation for the aesthetics and historical associations of existing exotic plantings. Historical societies, local nurseries and gardening groups could be engaged to help design and build support for appropriately placed indigenous plantings. Promotion of gardening for wildlife was also raised as an avenue for engaging community, especially in townships.

Eliciting diverse viewpoints can improve the Shire’s capacity to engage a wider audience.

Community forums, new resident welcomes, information sheets, websites and bulletins are among the tools available to raise awareness. The reach of Council’s messaging may be strengthened through sharing with the bulletins and newsletters of allied organisations such as Coliban Water. The council’s ‘Frequently Asked Questions’ database accessed by the Shire’s frontline staff can be reviewed and enhanced to improve the usefulness of biodiversity information being provided to callers. Workshops based at Neighbourhood houses were identified as an important venue for skills raising locally during stakeholder meetings.

Citizen science projects can engage community while also resourcing monitoring for biodiversity. Council can promote the programs that groups such as the Upper Campaspe Landcare Network, Connecting Country and Victorian Gorse Taskforce already run in the Shire, as well as state and national programs such as the Aussie Backyard Bird Count.

During stakeholder meetings, a number of strategic audiences for targeted awareness campaigns were identified including; new residents, CFA volunteers, residents with properties along waterways, proprietors of local plant nurseries, school teachers and council works crew members.



*Figure 13 Eastern Yellow Robin, Clydesdale. The leg bands indicate it is part of a study into the genetics of this species. Citizen Scientists can play a role in similar studies.*

*Photo Geoff Park*

**Community Grants (Council Assistance)** - The Shire can acknowledge and support the biodiversity work of the more than twenty Landcare and Friends of Groups operating in the Shire through provision of accessible grants. The Shire has provided small flexible grants for such groups for several years and this is expected to continue (see Action 28). Small grants need to have minimal application and acquittal requirements to ensure they are not an onerous administrative burden on voluntary groups. There is an opportunity to make the process simpler through use of online applications. Advice on adapting the grant process to meet group needs has been sought from the groups in 2018. Funding for a second grant program for groups conducting biodiversity works has been secured for 2018. Guidelines from this grant need to be developed and will be based on an assessment of need, based on consultation with relevant groups. There is an opportunity to incorporate Climate Change Adaptation considerations into the grant application process. (see Action 27)

**Partnership** – Council’s capacity to protect and enhance biodiversity on council controlled and managed land relies on the partnerships it develops with adjoining land managers, Dja Dja Wurrung CAC, and with community. Ultimately all biodiversity projects rely on coordinated action at a landscape scale where councils influence and advocacy roles may play a part. Hepburn Shire will seek partnerships with other organisations and groups to allow for biodiversity actions to be undertaken on private and public land. Through the Strategic Planning process, offers to partner on community engagement have been made by several groups including Coliban Water.

Stakeholder feedback highlighted the issue of an aging volunteer base within local Landcare groups and landholders under financial stress having limited resources to engage in voluntary activities for biodiversity conservation. Respondents urged council to consider options for the promotion of additional incentives ahead of developing further fines. The value of council offering timely and accurate advice on land management responsibilities and neighbour’s responsibilities was also highlighted during consultations.

The natural environment of the Hepburn Shire is a potential venue for recreation, education, social connection, and even career development for local youth. These are priority areas identified in the Shire’s Youth Strategy 2016-2021. This potential may be realised though fostering appreciation and a sense of care for local environment among young people via targeted engagement programs.

The State Government’s Biodiversity Strategy 2037 includes a focus on the well-being benefits of the community engaging with nature (The State of Victoria Department of Environment, Land, Water and Planning, 2017). The implementation of this strategy includes opportunities to build engagement programs with community sectors with special needs including the elderly.

**Partnership with Traditional Owners** – Hepburn Shire recognises the Dja Dja Wurrung People as the Traditional Owners of the land on which the Shire is predominately located. Hepburn Shire acknowledges that,

alongside Dja Dja Wurrung, we hold joint responsibility of public lands, Dja Dja Wurrung Country and other significant Aboriginal and Torres Strait Islander sites.

Council works under state legislation that requires consultation with the traditional Owners of the Shire in environmental and statutory planning and natural resource management. This legislation includes the Traditional Owner Settlement Act 2010 and the Recognition and Settlement Agreement 2013 between the State of Victoria and the Dja Dja Wurrung Clans Aboriginal Corporation. (Hepburn Shire Council, 2018).

The State Government's Biodiversity 2037 strategy identifies that all stakeholders and partners in the biodiversity sector have much to learn from each other. One of the priorities is to 'Engage with Traditional Owners and Aboriginal Victorians to include Aboriginal Values and Traditional ecological knowledge in biodiversity planning and management' (The State of Victoria Department of Environment, Land, Water and Planning, 2017). The State government's Biodiversity 2037 Strategy also identifies opportunities to partner with Aboriginal Victorians in biodiversity planning, policy development, service delivery, governance and through representation on Boards and committees (The State of Victoria Department of Environment, Land, Water and Planning, 2017).

Council is committed under legislation to engaging with processes to establish joint management and Land Use area agreements with Traditional Owners. The Shire's Reconciliation Action Plan Action 6 (Hepburn Shire Council, 2018 pge. 10) demonstrates a commitment by Council to identify and acknowledge overlaps between biodiversity strategy actions and those in the Dja Dja Wurrung Country Plan 2014-2034.

Council acknowledges that partnership development will require resources and time. We have adopted a 'Reflect' Reconciliation Action Plan, which is the first of four phases as described by Reconciliation Australia's Framework. This involves scoping how Council can collaborate with Traditional Owners. Meanwhile we aspire to align with the principles for consulting with Dja Dja Wurrung Traditional Owners as included in Appendix 2 of the Dja Dja Wurrung Country Plan 2014-2034. (Dja Dja Wurrung Clans Aboriginal Corporation, 2017). The State's Biodiversity Strategy 2037 also includes a chapter on working with Traditional Owners and Aboriginal Victorians that will continue to inform the Shire's processes.

## 7 ACTION PLAN

### 7.1 ACTION PLAN

The Action Plan consists of the proposed action, who will lead the action and the costs where already allocated in the current (18/19) budget. An indicative cost and timeframe has been included for later actions (\$=<\$10000, \$\$ = \$10000-\$50,000, \$\$\$ = >\$50,000). 'Operational' items are those conducted as part of regular duties of the relevant department. 'Ongoing' actions are expected to require recurrent commitment. The plan will be implemented over three years from its adoption in 2018 through to 2021. The proposed actions are contained in Table 1 below:

Table 2 Action Plan

	Action Summary	Responsible Department	2018 budget	Future costs	Timeframe
<b>PROTECT AND ENHANCE BIODIVERSITY</b>					
<b>Weed Management and strategic restoration</b>					
1.	Implement roadside and reserve weed management program – Biodiversity officer to work with Infrastructure team to finalise Weed Management Strategy.	Infrastructure /Biodiversity	\$108,000	\$\$\$	ongoing
2.	Investigate weed spray minimisation options (including identifying potential of strategic revegetation) and conduct training in chosen options	Infrastructure /Biodiversity	\$20,000	\$	18/19
3.	If indicated by above investigation, pursue revegetation projects on roadsides and reserves in partnership with local groups	Biodiversity	-	\$\$	19/20
<b>Pest animal management</b>					
4.	Consider cat curfews in accordance with the Domestic Animal Management Plan	Community Safety / Biodiversity	-	operational	19/20
5.	Develop pest animal species plan	Biodiversity	-	\$\$	19/20
<b>Protection of Large old trees</b>					
6.	Encourage protection of large old trees on private and council managed land within the shire	Biodiversity	-	\$\$	20/21
<b>INCREASE HEPBURN SHIRE COUNCIL'S CAPACITY TO PROTECT AND ENHANCE BIODIVERSITY</b>					
<b>Strategic Planning</b>					
7.	Review the Hepburn Planning Scheme and Municipal Strategic Statement in order to balance future growth with the preservation of our heritage and environment.	Strategic Planner	\$80000		19/20
8.	Incorporate Flood Overlays – Creswick/Clunes into Hepburn Planning Scheme	Strategic Planning	\$30,000	-	19/20
<b>Training and skill development</b>					

	Action Summary	Responsible Department	2018 budget	Future costs	Timeframe
9.	Training of council statutory planners in biodiversity including provisions of Victoria's revised Native Vegetation Clearance regulations.	Strategic Planning	\$5,000	-	18/19
10.	Training of council works department in biodiversity including relevant measures needed for brief development, selection and supervision of contractors	Infrastructure	\$6000	\$	18/19 + ongoing
11.	Deliver annual briefing to keep Councillors and staff informed about biodiversity matters and the implementation of the Biodiversity Strategy Action Plan	Biodiversity	operational	-	Ongoing
<b>External Government Funding Attraction</b>					
12.	Pursue funding opportunities to accelerate and leverage Council and community investment	Biodiversity	operational	-	ongoing
<b>Biodiversity Compliance and Enforcement</b>					
13.	Develop, and make accessible, information on the public's legal obligations relating to biodiversity protection including clearing regulations.	Biodiversity / Planning Compliance	-	\$\$	19/20
14.	Council review policies and procedures on enforcement regarding biodiversity protection	Biodiversity / Planning Compliance	-	\$\$	19/20
15.	Present an annual enforcement update to council	Planning Compliance	operational		ongoing
<b>Fire Management</b>					
16.	Prepare and implement vegetation management in identified high risk areas as defined by CFA assessment. for fire preparedness program. Biodiversity officer to ensure program considers measures to avoid and minimise impacts of on biodiversity.	Council Parks and Asset Management / Biodiversity	\$25,000	\$\$	18/19 ongoing
<b>Flood Management</b>					
17.	Prepare strategy to understand flood-risks and prioritise works, including waterways obstruction removal, maintenance of flood mitigation infrastructure and advocate for community-supported protection measures. Biodiversity officer to ensure program considers measures to avoid and minimise impacts of on biodiversity.	Infrastructure /Biodiversity	\$30,000	-	19/20
<b>Data Collection and Mapping</b>					
18.	Supply significant biodiversity data gathered as part of council activities and projects to State government biodiversity databases. This will include data developed through the roadside vegetation mapping finalisation and reserve biodiversity audits.	Biodiversity	operational		ongoing
19.	Develop and implement vegetation management plans on Council managed land, including roadside vegetation	Biodiversity	\$10,000	\$\$	18/19, 19/20

	Action Summary	Responsible Department	2018 budget	Future costs	Timeframe
20.	Complete data collection and mapping of roadside vegetation. Update and conduct signage of critical habitat.	Biodiversity	\$10,000	\$\$	18/19, 19/20
21.	Develop and implement a Monitoring and Evaluation Program and present an annual report on Biodiversity Strategy Actions for council and public.	Biodiversity	operational	-	Ongoing-annual
<b>SUPPORT COMMUNITY ACTION AND AWARENESS</b>					
<b>Community knowledge &amp; awareness building</b>					
22.	Organise and run an annual Biodiversity forum in collaboration with partners	Biodiversity	\$1,000	\$	ongoing
23.	Provide specialist advice to community – biodiversity and Statutory planners- including on State native vegetation planning regulations.	Biodiversity	operational	-	ongoing
24.	Prepare and advertise Biodiversity information sheets.	Biodiversity	\$2,000	\$	18/19, 19/20
25.	Develop Council's webpage - Biodiversity Tips/Tools/Information and review and enhance the biodiversity messages of council FAQ system (used by frontline staff to answer caller's queries).	Biodiversity	\$1000	\$	18/19, 19/20
26.	Promote biodiversity conservation activities on council land.	Biodiversity	operational		ongoing
<b>Community Grants (Council Assistance)</b>					
27.	Develop guidelines for and implement a new grants program for groups conducting biodiversity actions.	Council/ Biodiversity	\$24000	\$\$	Ongoing STCA
28.	Implement Landcare -community grants program	Biodiversity	\$20,000	\$\$	ongoing
29.	Advertise grants update/newsletter to community	Biodiversity	operational	-	ongoing
<b>Partnership</b>					
30.	Have Dja Dja Wurrung cultural priorities recognised in biodiversity management decision making.	Biodiversity	\$2000	\$\$	18/19 + ongoing
31.	Liaise with the Hepburn Youth Engagement Officer to identify ways to engage young people with environment in the Shire via education, projects and leadership opportunities.	Biodiversity	\$1000	\$\$	18/19 + Ongoing



## 8 MONITORING AND EVALUATION PROGRAM

A monitoring and evaluation program will be developed for all actions within the Action Plan as per Action 21. This program will define outcomes, data collection methods and timeframe for actions in the Biodiversity Strategy. Opportunities to align outcomes with those in CMA and the State Government Biodiversity 2037 Monitoring, Evaluation and Reporting framework (The State of Victoria. Department of Environment, Land, Water and Planning, 2018) will be identified.

Progress on implementation of the Biodiversity Strategy will be reported annually during budget planning before the end of each financial year as per Action 21

An example of the Outcomes Framework for the Aim 'Protect and enhance biodiversity' is included below.

*Table 3 Draft Outcomes Framework- Protect and Enhance Biodiversity*

AIM: PROTECT AND ENHANCE BIODIVERSITY			
LONG-TERM OUTCOME	ACTION	INTERMEDIATE OUTCOMES	IMMEDIATE OUTCOMES
Impact of weeds on biodiversity reduced	1.	Reduce coverage of targeted weeds in key management areas (including sensitive high quality biodiverse areas)	<ul style="list-style-type: none"> <li>• 2018 roadside weed program implemented</li> <li>• Weed Management Strategy finalised and used to develop subsequent programs. Strategy to include:               <ul style="list-style-type: none"> <li>○ monitoring program – including baselines</li> <li>○ prioritisation of new and emerging weeds</li> <li>○ procedures for protecting significant biodiversity values</li> <li>○ measures for maximising collaboration with programs of adjoining landholders</li> <li>○ Incorporation of spray minimisation report recommendations</li> </ul> </li> </ul>
	2.	Use of herbicides minimised while maintaining acceptable levels of weed control and overall reduction in impact of weeds on biodiversity	<ul style="list-style-type: none"> <li>• Spray minimisation report completed</li> <li>• Implementation of recommended options for spray minimisation included in Standard Operating procedures.</li> </ul>
	3.	Reduced ongoing weed maintenance on roadsides and reserves through establishing competitive cover of indigenous vegetation via promotion of natural regeneration and revegetation	<ul style="list-style-type: none"> <li>• Requisites for effective revegetation that contributes to reduced weed maintenance identified, including partnership arrangements</li> <li>• Guidelines for joint restoration projects on council managed land developed</li> </ul>
Impact of pest animals on native biodiversity reduced	4.	Incentives and compliance measures for responsible cat ownership resourced and implemented	<ul style="list-style-type: none"> <li>• Measures to reduce impact of domestic and feral cat predation on native wildlife assessed.</li> <li>• Recommendations for cat management in Shire developed</li> </ul>

	5.	Reduce pest fauna activity of certain pest animal species in key management areas- including sensitive biodiversity areas.	<ul style="list-style-type: none"> <li>• Pest animal species plan developed including: <ul style="list-style-type: none"> <li>○ monitoring program, including baselines</li> <li>○ procedures for protecting significant biodiversity values</li> <li>○ measures for maximising collaboration with programs of adjoining landholders</li> </ul> </li> </ul>
Large old trees retained on public and private land	6.	Appropriate large old tree protection measures being implemented across the shire by council works and planning staff. Raised awareness of compliance measures for protection of large old trees among public. An effective database of large old trees on council maintained land being maintained and referenced	<ul style="list-style-type: none"> <li>• Disseminate information on changes to State native clearing regulations regarding large trees within council and to public</li> <li>• Ensure Shire parks and road management staff are trained in measures to protect large old trees</li> <li>• Identify appropriate mapping tool/databases for large old trees for planning purposes, including assessing utility of council's existing Significant tree register</li> </ul>



Figure 14 Red Fox- one of the key threats to biodiversity in the Shire. Photo: © Geoff Park

## 9 REFERENCES

Biolinks Alliance. (2013, May 18). *Biolinks Alliance*. Retrieved September 19, 2018, from Biolinks Alliance: <https://centralvicbiolinks.org.au/>

Cunningham, S., Hemayet, H., & Harmen, R. (2016). *Hepburn Biodiversity Strategy and Action Plan 2016 Background paper*. Unpublished report for Hepburn Shire Council.

Dhelkunya Dja Land Management Board. (2018). *Draft joint Management Plan for the Dja Dja Wurrung Parks: Strategy*. Draft Strategy for consultation.

Dja Dja Wurrung Clans Aboriginal Corporation. (2017). *Dhelkunya Dja: Dja Dja Wurrung Country Plan 2014-2034 (2nd Ed.)*. Dja Dja Wurrung Clans Aboriginal Corporation.

Haslem, A., Leonard, S. W., Bruce, M., Christie, F., Holland, G. J., Kelly, L. T., et al. (2016). Do multiple fires interact to affect vegetation structure in temperate eucalypt forests? *Ecological Applications*, 2414-2423.

Hepburn Shire Council. (2018). *Reflect Reconciliation Action Plan July 2018-July 2019*.

North Central Catchment Management Authority (2005). *North Central Vegetation Plan*. Huntley: North Central Catchment Management Authority

North Central Catchment Management Authority (2013). *2013-19 North Central Regional Catchment Strategy*. Huntley: North Central Catchment management Authority.

Ralph, M. (2018, February 25). *Conservation values of the Wombat Forest and Macedon Region. An assessment by Wombat Forestcare*. Retrieved September 19, 2018, from Wombat Forestcare Inc.: <https://www.wombatforestcare.org.au/documents/WFMRDraft2.pdf>

The Economics of Ecosystems and Biodiversity. (2013, September 21). *Glossary of terms*. Retrieved September 11, 2018, from The Economics of Ecosystems & Biodiversity: <http://www.teebweb.org/resources/glossary-of-terms/>

The State of Victoria Department of Environment, Land, Water and Planning. (2015). *Munganin – Gadhaba 'Achieve Together' DELWP Aboriginal Inclusion Plan 2016-2020*. Melbourne: The State of Victoria.

The State of Victoria Department of Environment, Land, Water and Planning . (2017). *Compliance and Enforcement Strategy. Native vegetation removal regulations*. Melbourne: The State of Victoria Department of Environment, Land, Water and Planning .

The State of Victoria Department of Environment, Land, Water and Planning. (2016). *Outcomes report. Review of the native vegetation clearing regulations*. Melbourne: The State of Victoria Department of Environment, Land, Water and Planning.

The State of Victoria Department of Environment, Land, Water and Planning. (2017). *Protecting Victoria's Environment – Biodiversity 2037*. Melbourne: The State of Victoria Department of Environment, Land, Water and Planning.

The State of Victoria Department of Environment, Land, Water and Planning. (2016). *Outcomes report. Review of the native vegetation clearing regulations*. Melbourne: The State of Victoria Department of Environment, Land, Water and Planning.

The State of Victoria Department of Environment and Primary Industries(2017 , September 25). *Advisory list of rare or threatened plants in Victoria - 2014*. Retrieved September 12, 2018, from Environment: [https://www.environment.vic.gov.au/\\_\\_data/assets/pdf\\_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf](https://www.environment.vic.gov.au/__data/assets/pdf_file/0021/50448/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf)

The State of Victoria. Department of Environment, Land, Water and Planning. (2017, December 12). *Summary of changes to the native vegetation removal regulations*. Retrieved September 18, 2018, from Environment: [https://www.environment.vic.gov.au/\\_\\_data/assets/pdf\\_file/0019/90523/Key-Changes-Overview.pdf](https://www.environment.vic.gov.au/__data/assets/pdf_file/0019/90523/Key-Changes-Overview.pdf)

The State of Victoria Department of Environment, Land, Water and Planning (2018, March 14). *Strategic Management Prospects overview and approach*. Retrieved September 12, 2018, from Environment: [https://www.environment.vic.gov.au/\\_\\_data/assets/pdf\\_file/0033/82995/4-NaturePrint-Strategic-Management-Prospects-overview-and-approach.pdf](https://www.environment.vic.gov.au/__data/assets/pdf_file/0033/82995/4-NaturePrint-Strategic-Management-Prospects-overview-and-approach.pdf)

The State of Victoria Department of Environment, Land, Water and Planning. (2018, March 26). *Biodiversity Response Planning*. Retrieved September 2018, from Environment: <https://www.environment.vic.gov.au/biodiversity/biodiversity-response-planning>

The State of Victoria. Department of Environment, Land, Water and Planning. (2018). *Biodiversity 2037 Monitoring, Evaluation and reporting Framework*. Melbourne: The State Government of Victoria. Department of Environment, Land, Water and Planning.

Upper Campaspe Landcare Network. (2016, March 3). *Upper Campaspe Landcare Network 2015 Strategic Plan*. Retrieved September 19, 2018, from Upper Campaspe Landcare Network: <http://www.uppercampaspelandcare.org.au/wp-content/uploads/UCLN-strategic-plan3.pdf>

Upper Campaspe Landcare Network. (2017, February 26). *Coliban Connections Conservation Action Plan*. Retrieved October 30, 2018, from UpperCampaspe Landcare Network: [https://www.uppercampaspelandcare.org.au/wp-content/uploads/Coliban-Connections-Action-PlanV1\\_Final-Dec-2016.pdf](https://www.uppercampaspelandcare.org.au/wp-content/uploads/Coliban-Connections-Action-PlanV1_Final-Dec-2016.pdf)

Victorian Government Department of Environment, Land, Water and Planning (2018). (Draft). *Dja Dja Wurrung Clans Aboriginal Corporation Land Use Area Agreement assessment manual*. Melbourne: Victorian Government Department of Environment, Land, Water and Planning

Victorian Government Department of Natural Resources and Environment. (2002 (reprinted 2011)). *Victoria's native vegetation management. A framework for action*. Melbourne: The State of Victoria Department of Sustainability and Environment.

Victorian State Government Department of Environment, Land, Water and Planning. (2018). *Bioregions and EVC benchmarks*. Retrieved September 3, 2018, from Environment: <https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks>

Viridans. (2016). Local Government. Viridians Flora and Fauna Information Systems. Bentleigh East.

## 10 APPENDICES

### 10.1 EPBC LISTED VEGETATION COMMUNITIES

The following vegetation communities are listed under the Commonwealth EPBC act 1999. Proposals that significantly impact on these vegetation communities trigger the provisions under the Act.

EPBC listed vegetation communities	EPBC status	Remnant Ecological Vegetation Classes in Hepburn Shire that may correspond to this community
Grey Box ( <i>Eucalyptus microcarpa</i> ) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	EVC 55 Plains Grassy Woodland EVC 67 Alluvial Terraces Herb-rich Woodland EVC 175 Grassy Woodland
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Critically Endangered	EVC 647 Plains Sedgy Wetland EVC 125 Plains Grassy Wetland + complexes
Grassy Eucalypt Woodland of the Victorian Volcanic Plains	Critically Endangered	EVC 55 Plains Grassy Woodland.

### 10.2 LIST OF RARE AND THREATENED FLORA AND FUNGI IN HEPBURN SHIRE

The following table has been derived from the State Government’s Victorian Biodiversity Atlas. It identifies species listed under three different systems;

- **Conservation Status in Victoria (Advisory List)** There are no direct legal requirements that flow from inclusion of a species in this advisory list, however taxa assessed as rare, vulnerable or endangered in this list are considered through native vegetation planning permit approval and offset processes under Victoria’s Native Vegetation Regulations (The State of Victoria Department of Environment and Primary Industries , 2017).
- **Conservation Status in Australia** outlines the national conservation status of the taxon under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).
- **The Flora and Fauna Guarantee Act.** Taxa listed as threatened if it has been nominated, assessed by the Scientific Advisory Committee and approved by the Minister for Environment.

FLORA Common name	Scientific name	Victorian Advisory List	FFG	EPBC List
<i>Acacia deanei subsp. paucijuga</i>	Deane's Wattle	Rare		
<i>Acacia nanodealbata</i>	Dwarf Silver-wattle	Rare		
<i>Acacia williamsonii</i>	Whirrakee Wattle	Rare		
<i>Allocasuarina luehmannii</i>	Buloke	Endangered	Listed	
<i>Alternanthera sp. 1 (Plains)</i>	Plains Joyweed	Poorly known		
<i>Amphibromus fluitans</i>	River Swamp Wallaby-grass			Vulnerable
<i>Amphibromus pithogastrus</i>	Plump Swamp Wallaby-grass	Endangered	Listed	
<i>Austrostipa hemipogon</i>	Half-bearded Spear-grass	Rare		
<i>Ballantinia antipoda</i>	Southern Shepherd's Purse	Endangered	Listed	Endangered
<i>Billardiera scandens s.s.</i>	Velvet Apple-berry	Rare		
<i>Bossiaea cordigera</i>	Wiry Bossiaea	Rare		
<i>Bossiaea riparia</i>	River Leafless Bossiaea	Rare		
<i>Caladenia amoena</i>	Charming Spider-orchid	Endangered	Listed	Endangered
<i>Caladenia australis</i>	Southern Spider-orchid	Poorly known		
<i>Caladenia clavescens</i>	Castlemaine Spider-orchid	Vulnerable	Listed	

FLORA Common name	Scientific name	Victorian Advisory List	FFG	EPBC
<i>Caladenia concolor</i>	Crimson Spider-orchid	Endangered	Listed	Vulnerable
<i>Caladenia magnifica</i>	Magnificent Spider-orchid	Presumed extinct	Listed	
<i>Caladenia sp. aff. concolor</i>	Midlands Spider-orchid	Vulnerable		
<i>Calochilus therophilus</i>	Slender Beard-orchid	Poorly known		
<i>Calotis anthemoides</i>	Cut-leaf Burr-daisy		Listed	
<i>Calotis cuneifolia</i>	Blue Burr-daisy	Rare		
<i>Cardamine papillata</i>	Forest Bitter-cress	Vulnerable		
<i>Cassinia ozothamnoides</i>	Cottony Cassinia	Vulnerable		
<i>Chenopodium desertorum</i> <i>subsp. desertorum</i>	Frosted Goosefoot	Rare		
<i>Chenopodium desertorum</i> <i>subsp. virosum</i>	Frosted Goosefoot	Poorly known		
<i>Comesperma polygaloides</i>	Small Milkwort	Vulnerable	Listed	
<i>Convolvulus angustissimus</i>	Slender Bindweed	Poorly known		
<i>Coronidium gunnianum</i>	Pale Swamp Everlasting	Vulnerable		
<i>Correa aemula</i>	Hairy Correa	Rare		
<i>Cullen parvum</i>	Small Scurf-pea	Endangered	Listed	
<i>Cullen tenax</i>	Tough Scurf-pea	Endangered	Listed	
<i>Cymbonotus lawsonianus</i>	Bear's-ear	Rare		
<i>Cyperus concinnus</i>	Trim Flat-sedge	Vulnerable		
<i>Desmodium varians</i>	Slender Tick-trefoil	Poorly known		
<i>Dianella amoena</i>	Matted Flax-lily	Endangered	Listed	Endangered
<i>Dianella sp. aff. longifolia</i> (Benambra)	Arching Flax-lily	Vulnerable		
<i>Dipodium pardalinum</i>	Spotted Hyacinth-orchid	Rare		
<i>Dipodium variegatum</i>	Blotched Hyacinth-orchid	Rare		
<i>Discaria pubescens</i>	Australian Anchor Plant	Rare	Listed	

FLORA Common name	Scientific name	Victorian Advisory List	FFG	EPBC
<i>Diuris gregaria</i>	Clumping Golden Moths	Endangered	Listed	
<i>Diuris punctata</i>	Purple Diuris	Vulnerable	Listed	
<i>Diuris X palachila</i>	Broad-lip Diuris	Rare		
<i>Duma horrida subsp. horrida</i>	Spiny Lignum	Rare		
<i>Encalypta vulgaris</i>	Common Extinguisher-moss	Rare		
<i>Entolasia stricta</i>	Upright Panic	Poorly known		
<i>Eucalyptus aggregata</i>	Black Gum	Endangered	Listed	Vulnerable
<i>Eucalyptus brookeriana</i>	Brooker's Gum	Rare		
<i>Eucalyptus conferta</i>	Fryers Range Scentbark	Endangered		
<i>Eucalyptus globulus subsp. globulus</i>	Southern Blue-gum	Rare		
<i>Eucalyptus polybractea</i>	Blue Mallee	Rare		
<i>Eucalyptus yarraensis</i>	Yarra Gum	Rare		
<i>Euphrasia scabra</i>	Rough Eyebright	Endangered	Listed	
<i>Geranium solanderi var.</i>	Austral Crane's-bill	Vulnerable		
<i>Geranium sp. 1</i>	Large-flower Crane's-bill	Endangered	Listed	
<i>Geranium sp. 3</i>	Pale-flower Crane's-bill	Rare		
<i>Glycine latrobeana</i>	Clover Glycine	Vulnerable	Listed	Vulnerable
<i>Grevillea dryophylla</i>	Goldfields Grevillea	Rare		
<i>Grevillea floripendula</i>	Ben Major Grevillea	Vulnerable	Listed	Vulnerable
<i>Grevillea micrantha</i>	Small-flower Grevillea	Rare		
<i>Grevillea obtecta</i>	Fryerstown Grevillea	Rare	Nominate	
<i>Grevillea repens</i>	Creeping Grevillea	Rare		
<i>Grevillea rosmarinifolia</i>	Rosemary Grevillea	All infraspecific taxa included in Advisory List		



FLORA Common name	Scientific name	Victorian Advisory List	FFG	EPBC
<i>Grevillea rosmarinifolia</i> <i>subsp. rosmarinifolia</i>	Rosemary Grevillea	Rare		
<i>Haloragis glauca f. glauca</i>	Bluish Raspwort	Poorly known		
<i>Hibbertia incana s.s.</i>	Mount Hope Guinea-flower	Presumed extinct		
<i>Hovea asperifolia subsp.</i> <i>spinosissima</i>	Rough Hovea	Rare		
<i>Isoetes drummondii subsp.</i> <i>anomala</i>	Plain Quillwort	Poorly known		
<i>Isotoma tridens</i>	Hypsela	Poorly known		
<i>Lachnagrostis punicea</i>	Purple Blown-grass	Rare		
<i>Lepidium hyssopifolium s.s.</i>	Basalt Peppercross	Endangered	Listed	Endangered
<i>Leucochrysum albicans</i>	White Sunray	Endangered	Listed	Endangered
<i>Leucopogon microphyllus</i>	Hairy Beard-heath	Rare		
<i>Levenhookia sonderi</i>	Slender Stylewort	Rare		
<i>Lomandra micrantha subsp.</i> <i>tuberculata</i>	Small-flower Mat-rush	Rare		
<i>Microseris scapigera s.s.</i>	Plains Yam-daisy	Vulnerable		
<i>Myoporum montanum</i>	Waterbush	Rare		
<i>Nematolepis squamea</i>	Satinwood	Rare		
<i>Olearia speciosa</i>	Netted Daisy-bush	Poorly known		
<i>Pauridia vaginata var.</i>	Yellow Star	Poorly known		
<i>Pellaea calidirupium</i>	Inland Sickle-fern	Poorly known		
<i>Pimelea spinescens subsp.</i> <i>spinescens</i>	Spiny Rice-flower	Endangered	Listed	Critically Endangered
<i>Platylobium rotundum</i>	Penny-leaf Flat-pea	Vulnerable		
<i>Pleurosorus subglandulosus</i>	Glandular Blanket-fern	Poorly known		
<i>Podolepis linearifolia</i>	Basalt Podolepis	Endangered		Endangered
<i>Prasophyllum lindleyanum</i>	Green Leek-orchid	Vulnerable		

FLORA Common name	Scientific name	Victorian Advisory List	FFG	EPBC
<i>Prasophyllum sp. aff. validum A</i>	Woodland Leek-orchid	Endangered		
<i>Prasophyllum suaveolens</i>	Fragrant Leek-orchid	Endangered	Listed	Endangered
<i>Pterostylis aciculiformis</i>	Slender Ruddyhood	Poorly known		
<i>Pterostylis agrestis</i>	Sutton Grange Greenhood	Endangered		
<i>Pterostylis lustra</i>	Small Sickle Greenhood	Endangered	Listed	
<i>Pterostylis multiflora</i>	Mountain Brown-tip	Rare		
<i>Pterostylis rubescens</i>	Inland Red-tip Greenhood	Rare		
<i>Pterostylis sp. aff. plumosa</i>	Woodland Plume-orchid	Rare		
<i>Ptilotus erubescens</i>	Hairy Tails	Vulnerable	Listed	
<i>Pultenaea graveolens</i>	Scented Bush-pea	Vulnerable	Listed	
<i>Pultenaea reflexifolia</i>	Wombat Bush-pea	Rare		
<i>Pultenaea weindorferi</i>	Swamp Bush-pea	Rare		
<i>Ranunculus sessiliflorus var. pilulifer</i>	Annual Buttercup	Poorly known		
<i>Rumex crystallinus s.s.</i>	Glistening Dock	Vulnerable		
<i>Rumex stenoglottis</i>	Tongue Dock	Poorly known		
<i>Rutidosis leptorhynchoides</i>	Button Wrinklewort	Endangered	Listed	Endangered
<i>Scleranthus brockiei</i>	Brock Knawel	Rare		
<i>Senecio campylocarpus</i>	Floodplain Fireweed	Rare		
<i>Senecio cunninghamii var.</i>	Branching Groundsel	Rare		
<i>Stylidium ecorne</i>	Foot Triggerplant	Poorly known		
<i>Swainsona behriana</i>	Southern Swainson-pea	Rare		
<i>Thelymitra exigua</i>	Short Sun-orchid	Poorly known		
<i>Thelymitra luteocilium</i>	Fringed Sun-orchid	Rare		
<i>Thelymitra X macmillanii</i>	Crimson Sun-orchid	Vulnerable		
<i>Utricularia uniflora</i>	Single Bladderwort	Poorly known		

FLORA Common name	Scientific name	Victorian Advisory List	FFG	EPBC
<i>Viola seppeltiana</i>	Tiny Violet	Rare		
<i>Vittadinia cuneata</i> var.	Fuzzy New Holland Daisy	Ra		



Figure 15. The Basalt Peppercross , a nationally endangered plant that has been the subject of conservation projects in the Shire. Photo ©Scheltema

10.3 LIST OF RARE AND THREATENED FAUNA IN HEPBURN SHIRE

FAUNA Common Name	Scientific Name	Victorian Advisory List	FFG	EPBC
Grey Goshawk	<i>Accipiter novaehollandiae novaehollandiae</i>	Vulnerable	Listed	
Australasian Shoveler	<i>Anas rhynchotis</i>	Vulnerable		
Regent Honeyeater	<i>Anthochaera phrygia</i>	Critically endangered	Listed	Critically Endangered
Eastern Great Egret	<i>Ardea modesta</i>	Vulnerable	Listed	
Australian Bustard	<i>Ardeotis australis</i>	Critically endangered	Listed	
Hardhead	<i>Aythya australis</i>	Vulnerable		
Musk Duck	<i>Biziura lobata</i>	Vulnerable		
Bush Stone-curlew	<i>Burhinus grallarius</i>	Endangered	Listed	
Chestnut-rumped Heathwren	<i>Calamanthus pyrrhopygius</i>	Vulnerable	Listed	
Curlew Sandpiper	<i>Calidris ferruginea</i>	Endangered		Critically Endangered
Long-toed Stint	<i>Calidris subminuta</i>	Near threatened		
Eastern Snake-necked Turtle	<i>Chelodina longicollis</i>	Data deficient		
Whiskered Tern	<i>Chlidonias hybridus javanicus</i>	Near threatened		
Black-eared Cuckoo	<i>Chrysococcyx osculans</i>	Near threatened		
Speckled Warbler	<i>Chthonicola sagittatus</i>	Vulnerable	Listed	
Spotted Quail-thrush	<i>Cinlosoma punctatum</i>	Near threatened		
Spotted Harrier	<i>Circus assimilis</i>	Near threatened		
Brown Treecreeper (south-eastern ssp.)	<i>Climacteris picumnus victoriae</i>	Near threatened		
Striped Legless Lizard	<i>Delma impar</i>	Endangered	Listed	Vulnerable
Emu	<i>Dromaius novaehollandiae</i>	Near threatened		

FAUNA Common Name	Scientific Name	Victorian Advisory List	FFG	EPBC
Latham's Snipe	<i>Gallinago hardwickii</i>	Near threatened		
Gull-billed Tern	<i>Gelochelidon nilotica</i>	Endangered	Listed	
Painted Honeyeater	<i>Grantiella picta</i>	Vulnerable	Listed	Vulnerable
Brolga	<i>Grus rubicunda</i>	Vulnerable	Listed	
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	Vulnerable	Listed	
White-throated Needletail	<i>Hirundapus caudacutus</i>	Vulnerable		
Swift Parrot	<i>Lathamus discolor</i>	Endangered		Critically
Growling Grass Frog	<i>Litoria raniformis</i>	Endangered	Listed	Vulnerable
Square-tailed Kite	<i>Lophoictinia isura</i>	Vulnerable	Listed	
Murray Cod	<i>Maccullochella peelii</i>	Vulnerable	Listed	Vulnerable
Macquarie Perch	<i>Macquaria australasica</i>	Endangered	Listed	Endangered
Hooded Robin	<i>Melanodryas cucullata cucullata</i>	Near threatened	Listed	
Common Bent-wing Bat (eastern ssp.)	<i>Miniopterus schreibersii oceanensis</i>	Vulnerable	Listed	
Elegant Parrot	<i>Neophema elegans</i>	Vulnerable		
Barking Owl	<i>Ninox connivens connivens</i>	Endangered	Listed	
Powerful Owl	<i>Ninox strenua</i>	Vulnerable	Listed	
Nankeen Night Heron	<i>Nycticorax caledonicus hillii</i>	Near threatened		
Crested Bellbird	<i>Oreoica gutturalis gutturalis</i>	Near threatened	Listed	
Blue-billed Duck	<i>Oxyura australis</i>	Endangered	Listed	
Greater Glider	<i>Petauroides volans</i>	Vulnerable	Listed	Vulnerable
Pied Cormorant	<i>Phalacrocorax varius</i>	Near threatened		
Brush-tailed Ph	<i>Phascogale tapoatafa</i>	Vulnerable	Listed	

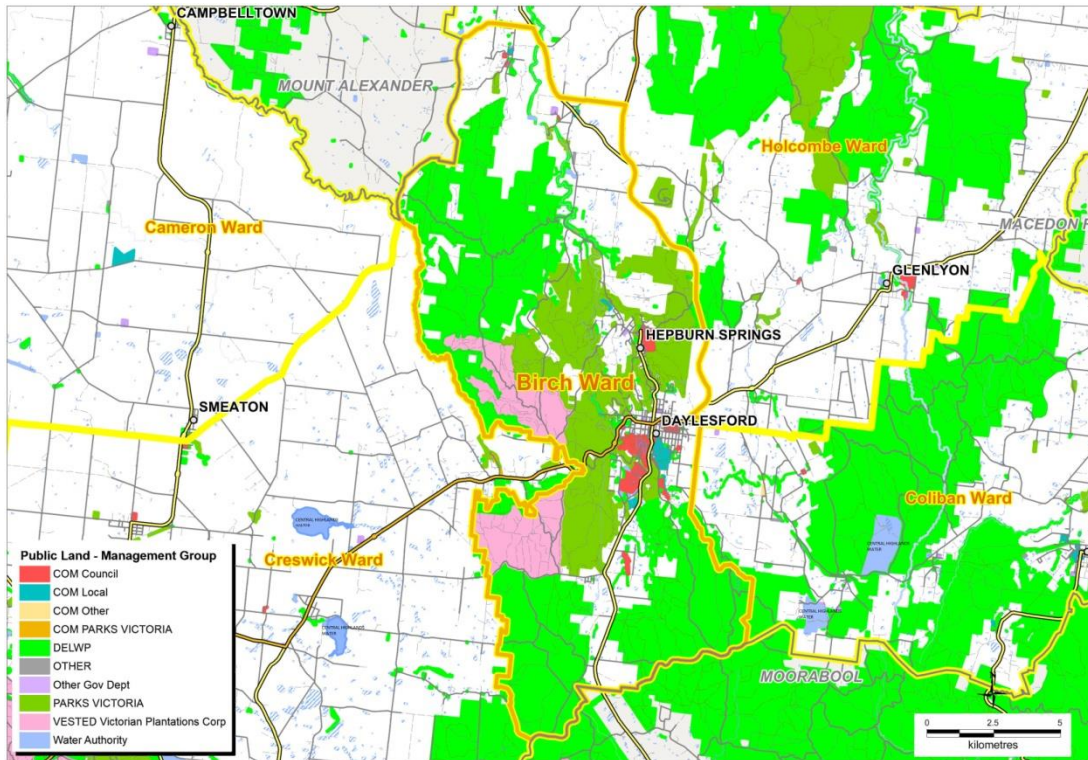
FAUNA Common Name	Scientific Name	Victorian Advisory List	FFG	EPBC
Royal Spoonbill	<i>Platalea regia</i>	Near threatened		
Glossy Ibis	<i>Plegadis falcinellus</i>	Near threatened		
Brown Toadlet	<i>Pseudophryne bibronii</i>	Endangered	Listed	
Southern Toadlet	<i>Pseudophryne semimarmorata</i>	Vulnerable		
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Vulnerable	Listed	Vulnerable
Australian Painted Snipe	<i>Rostratula australis</i>	Critically endangered	Listed	Endangered
Fat-tailed Dunnart	<i>Sminthopsis crassicaudata</i>	Near threatened		
Diamond Firetail	<i>Stagonopleura guttata</i>	Near threatened	Listed	
Freckled Duck	<i>Stictonetta naevosa</i>	Endangered	Listed	
Golden Sun Moth	<i>Synemon plana</i>	Critically endangered	Listed	Critically Endangered
Wood Sandpiper	<i>Tringa glareola</i>	Vulnerable		
Little Button-quail	<i>Turnix velox</i>	Near threatened		
Masked Owl	<i>Tyto novaehollandiae novaehollandiae</i>	Endangered	Listed	
Sooty Owl	<i>Tyto tenebricosa tenebricosa</i>	Vulnerable	Listed	



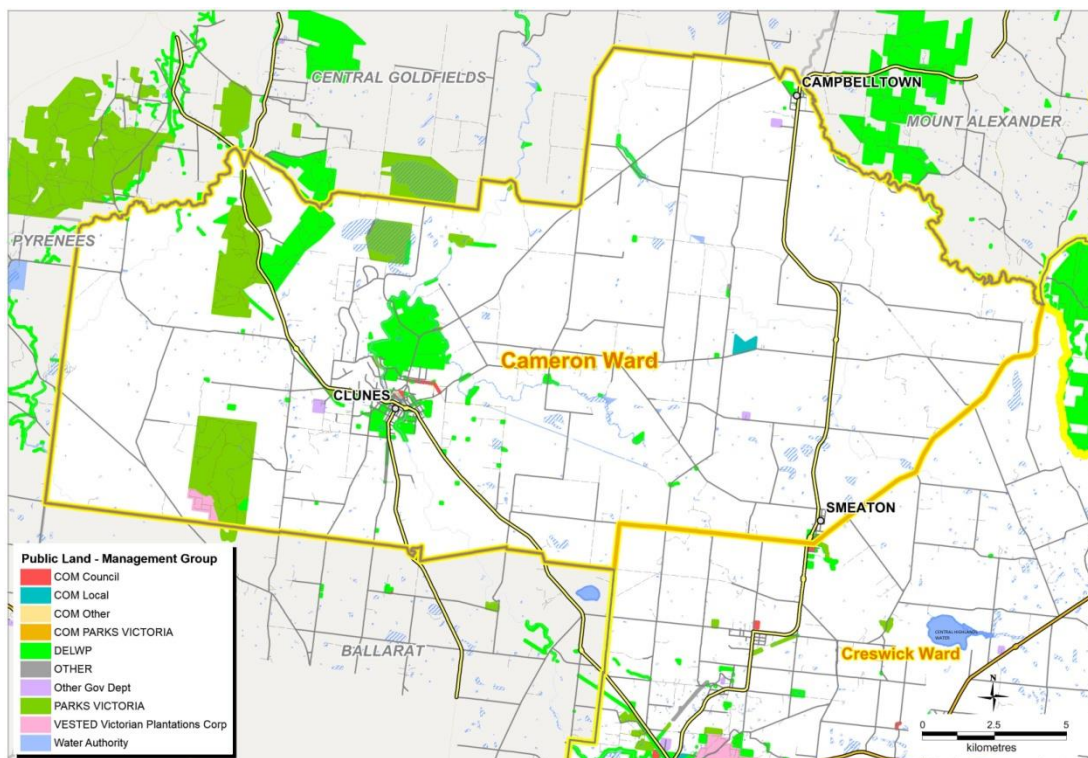
*Figure 16. Powerful owl nest with owlet. Large old trees are critical to the habitat of this vulnerable species and to the possums it hunts.*  
Photo © Scheltema

## 10.4 PUBLIC LAND MANAGEMENT IN HEPBURN SHIRE- WARD SCALE MAPS

Public Land Management- Birch Ward

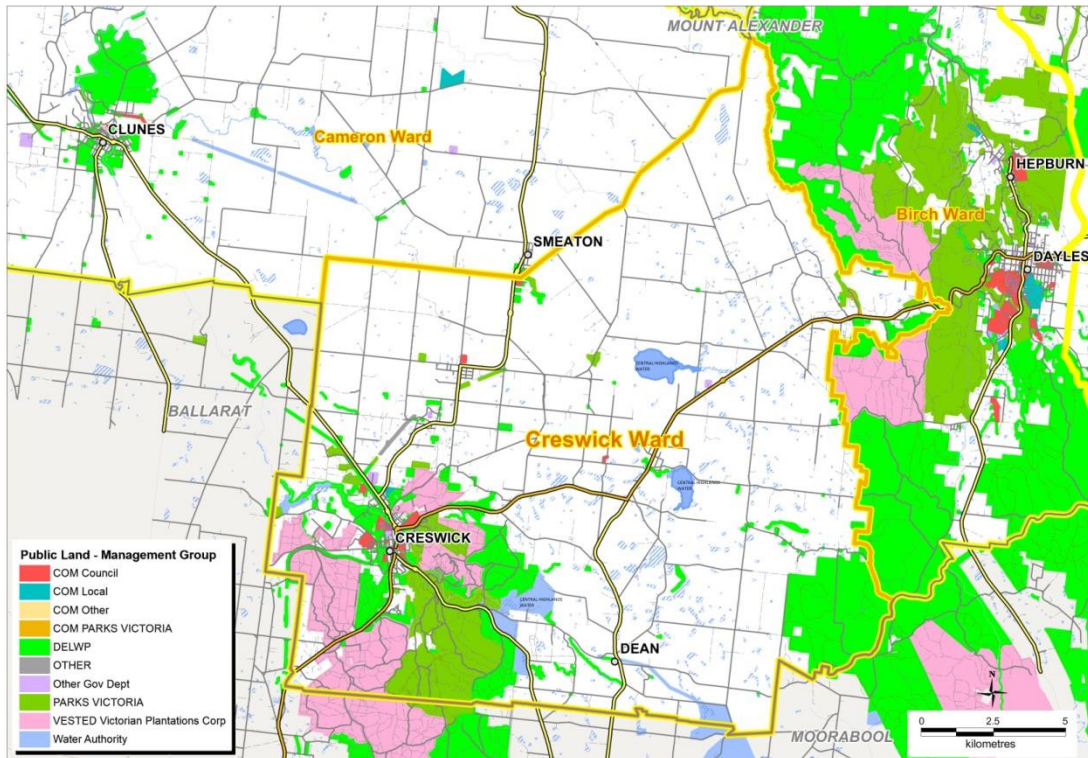


Public Land Management- Cameron Ward

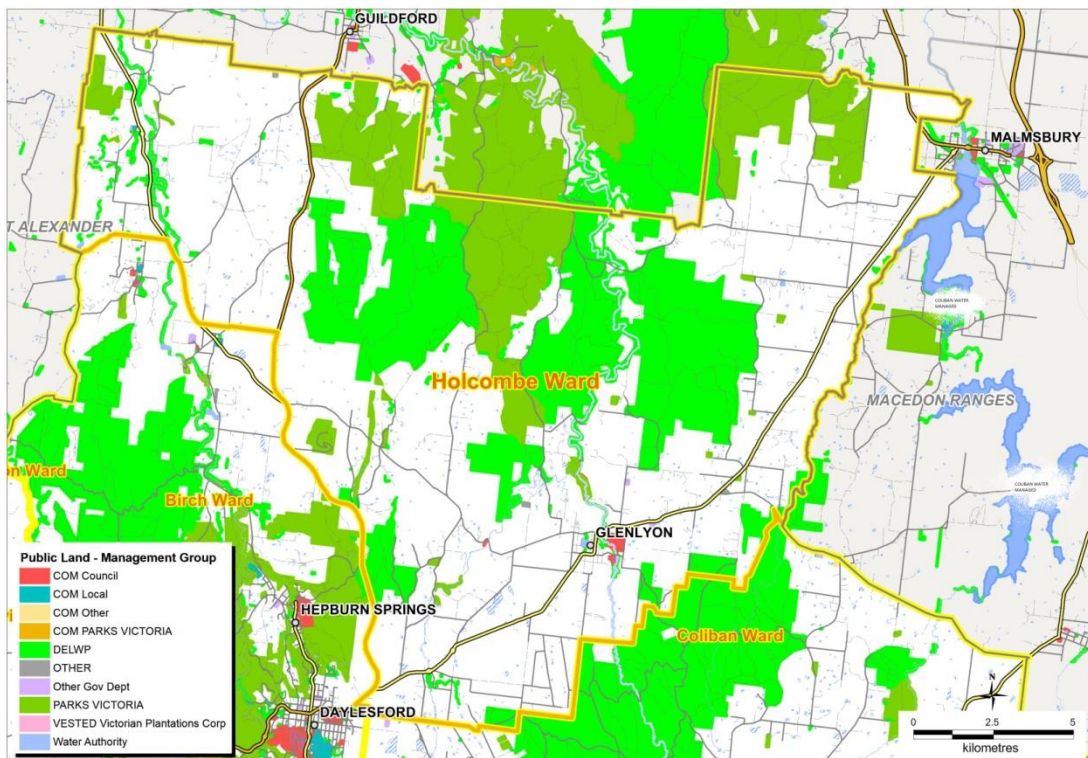




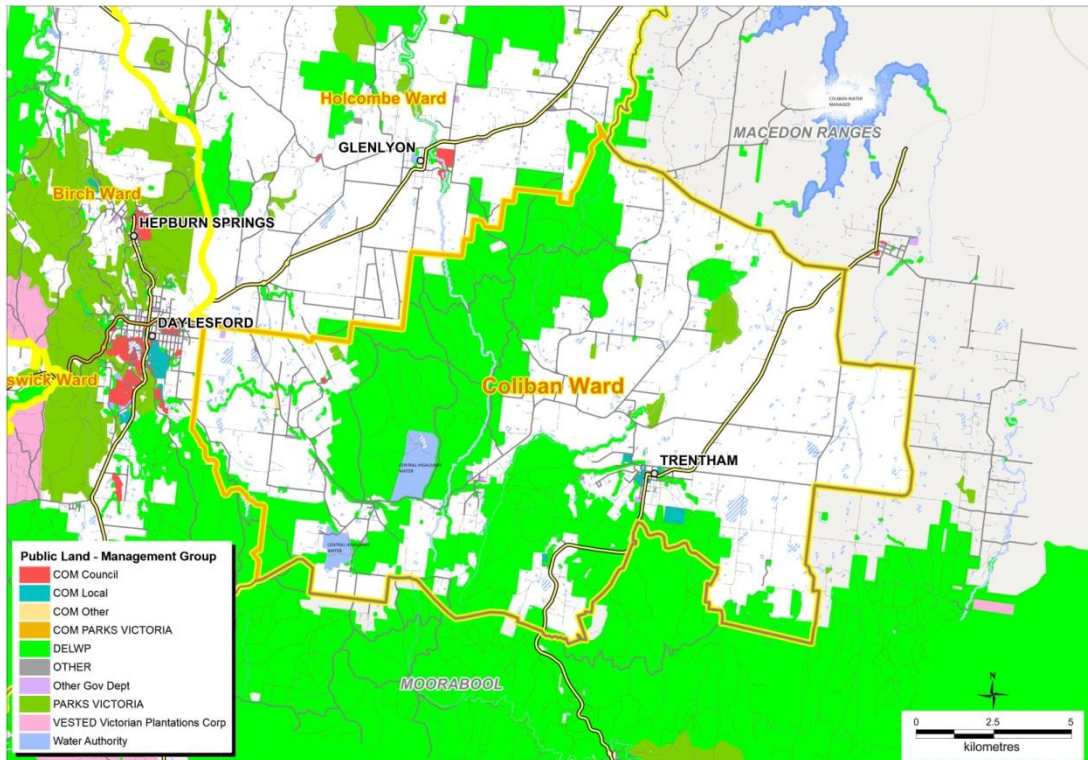
Public Land Management- Creswick Ward



Public Land Management- Holcombe Ward



Public Land Management- Coliban Ward





Volcanic Plains Native Grassland, Clunes Common, Clunes

## 10.5 MAPS OF ECOLOGICAL VEGETATION CLASSES, BIOREGIONAL CONSERVATION STATUS AND STRATEGIC BIODIVERSITY VALUES

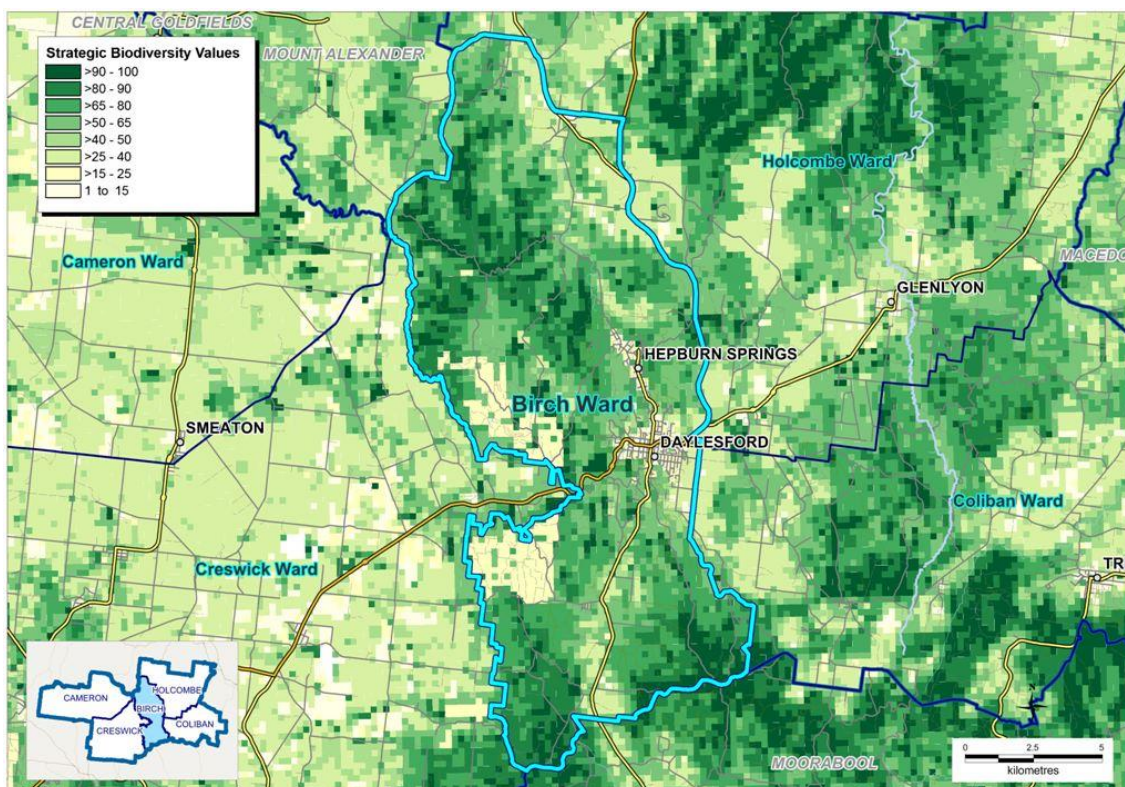
The map at left shows the remnant vegetation of Birch ward in Hepburn Shire identified by different Ecological Vegetation Classes (a classification for different types of vegetation). Maps below show different ways of considering conservation status.

Strategic Biodiversity Values (below) depicts relative importance of vegetation based on a range of characters while the Bioregional Conservation Status (opposite- below) measures rarity of the different vegetation within their respective Bioregions. The Department of Environment, Land, Water and Planning have developed further Strategic Management Planning tools for considering biodiversity significance in planning. (The State of Victoria Department of Environment, Land, Water and Planning , 2018a).

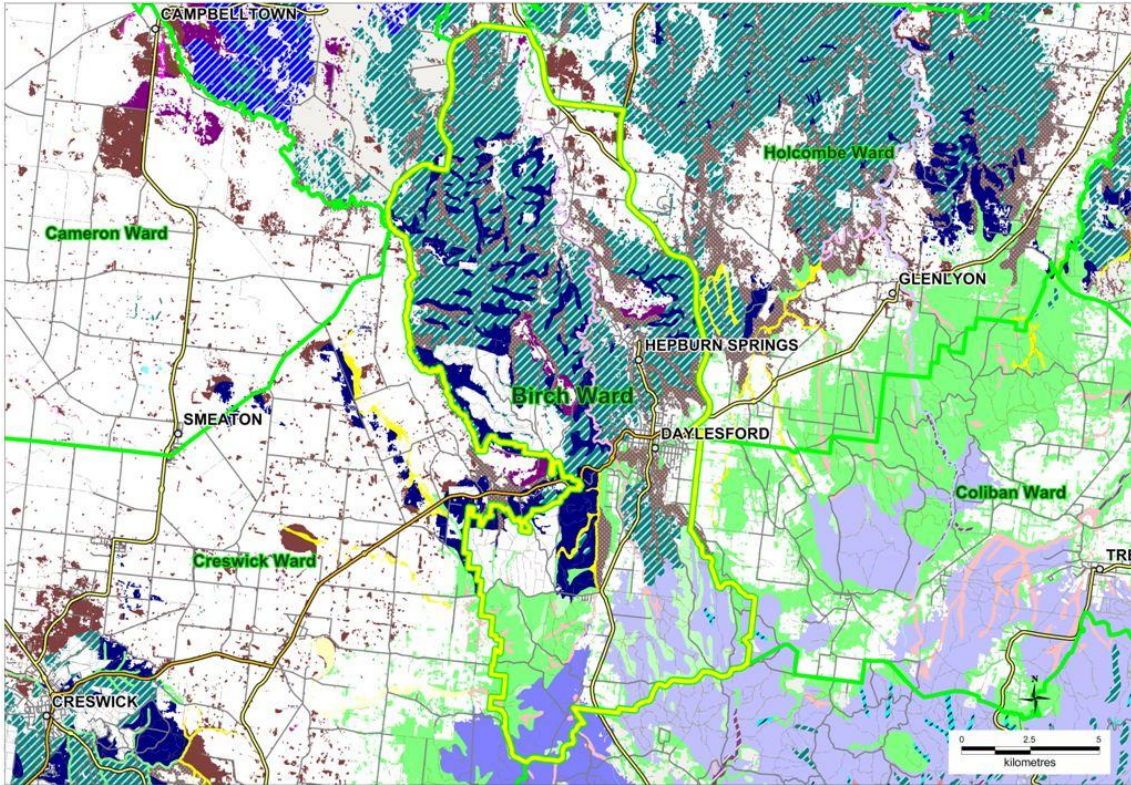
### Birch Ward

These maps show that Birch Ward retains a high proportion of remnant vegetation. The north of Birch Ward (in the Goldfields Bioregion) is characterised by Heathy Dry Forest and Grassy Dry Forest and the southern third (in the Central Victorian Uplands Bioregion) has Shrubby Foothill and Forest Herb-rich Foothill Forest. In terms of Bioregional conservation status Streambank Shrubland along the Jim Crow Creek and patches of Plains Grassy Woodland in the north of the Ward are Endangered with other vegetation types being of lower concern. However, in terms of Strategic Biodiversity Values, the larger and more intact areas of forest in the north and south score highly.

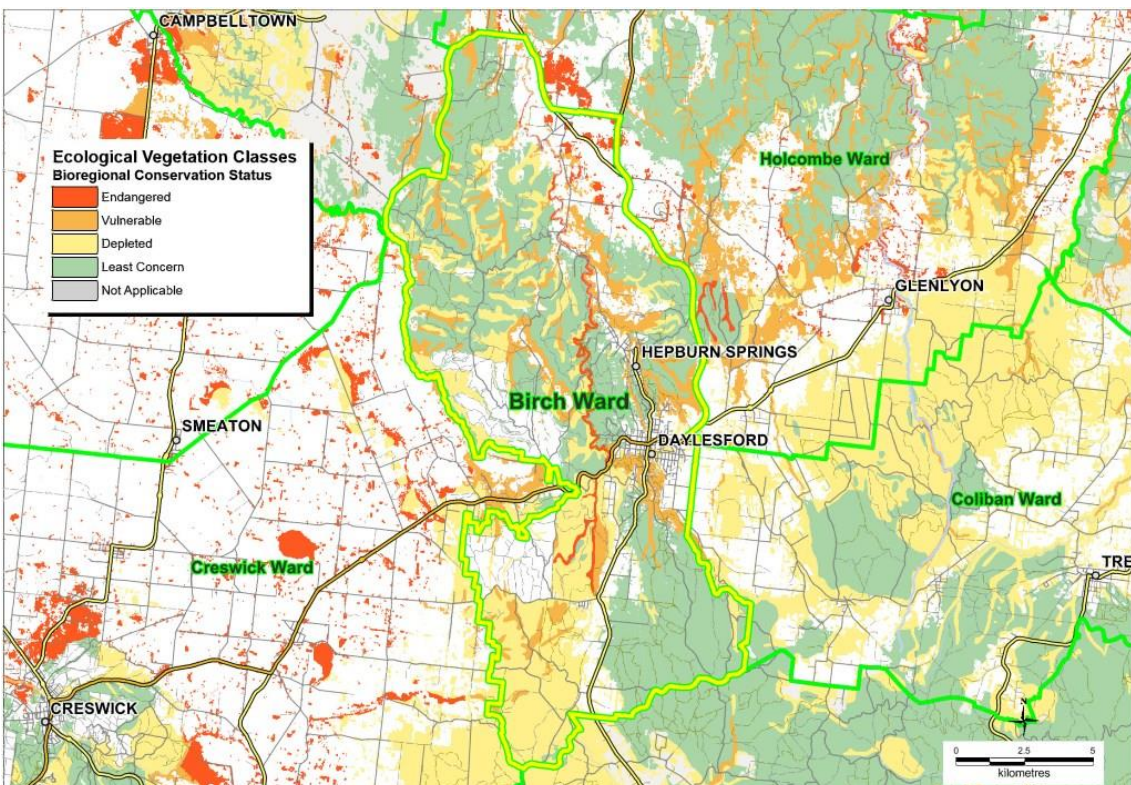
### Strategic Biodiversity Values - Birch Ward



Ecological Vegetation Classes Extant 2005 - Birch Ward



Bioregional Conservation Status - Birch Ward



## Cameron Ward

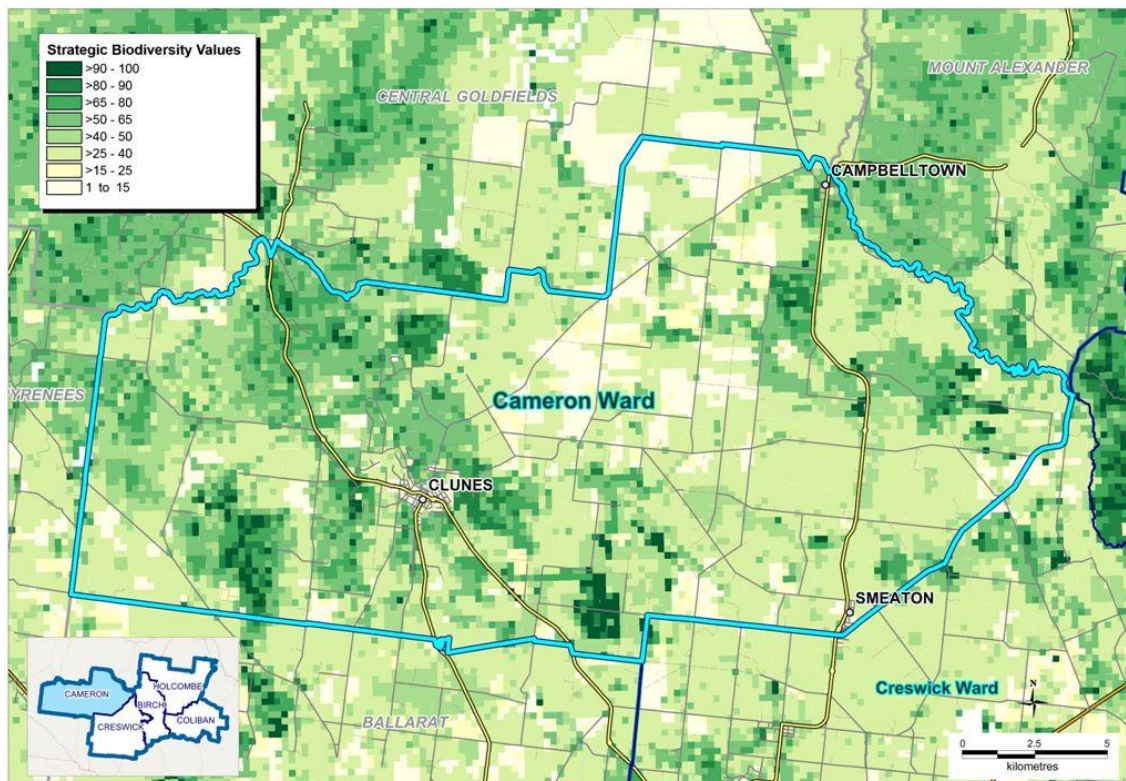
The EVC map shows that Cameron Ward, in common with most of the Victorian Volcanic Plains has retained only fragments of its original plains grassy woodland remnant vegetation. The inliers of Goldfields and Central Victorian bioregions: largely within the Dunach and Mt Beckworth Reserves respectively, have retained large intact remnants.

In terms of Bioregional conservation status the fragments of Grassy Woodland and Plains Grassy Woodland are regarded as Endangered, as is the wetland formation of Middle Swamp. Other remnants have lower conservation status.

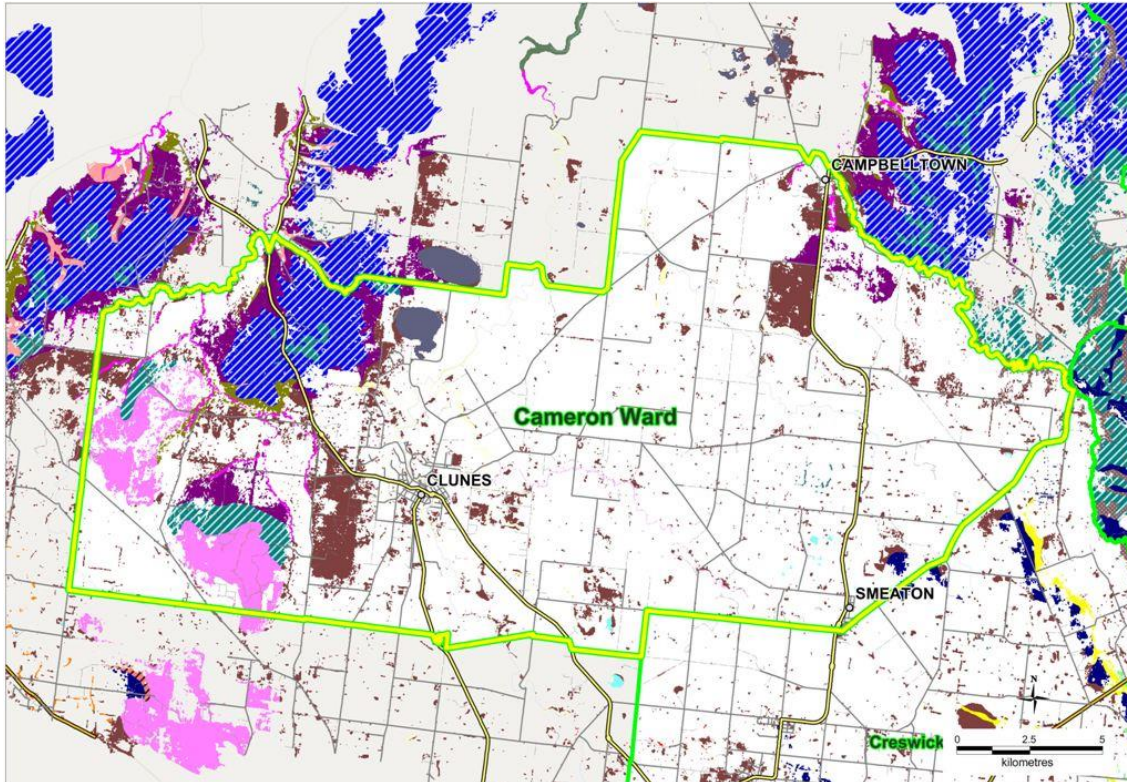
The Strategic Biodiversity values scoring shows expected higher values at Dunach and Mt Beckworth. A zone of very high scoring vegetation encompasses fragments near Merrifield Rd south-east of Clunes including a number of council managed roadsides that contain several rare species of the Victorian Volcanic Plains.



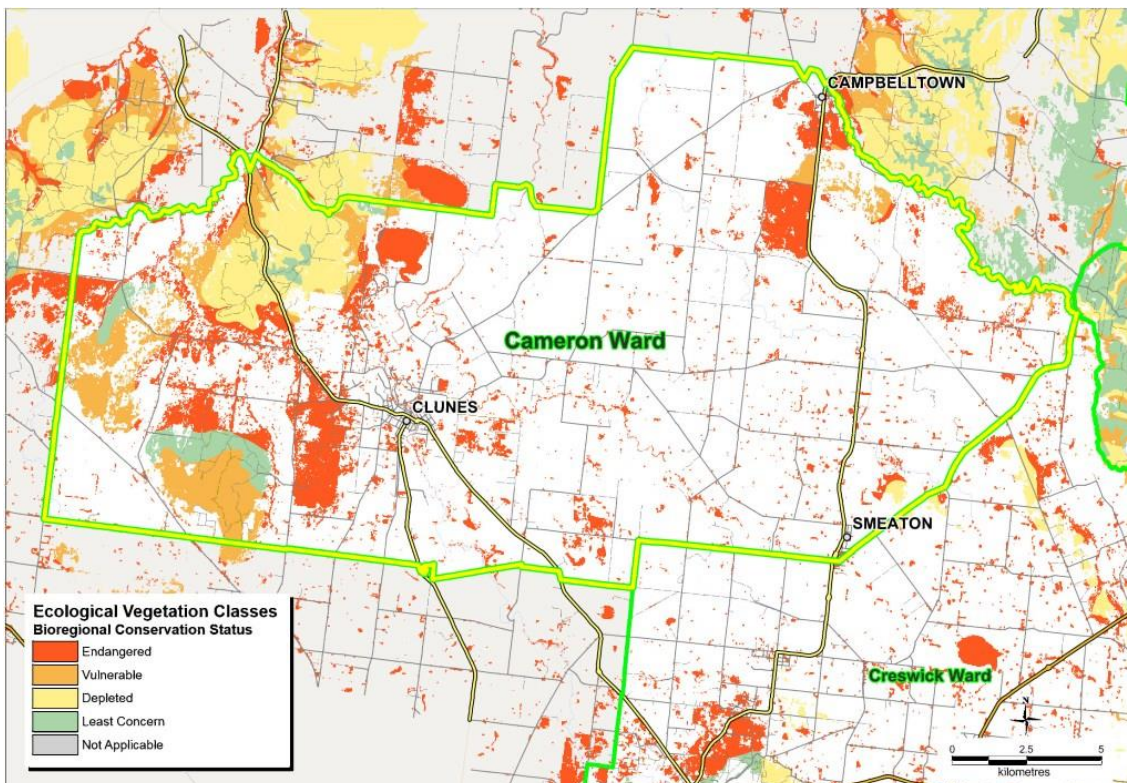
## Strategic Biodiversity Values - Cameron Ward



Ecological Vegetation Classes Extant 2005- Cameron Ward



Bioregional Conservation Status – Cameron Ward



## Creswick Ward

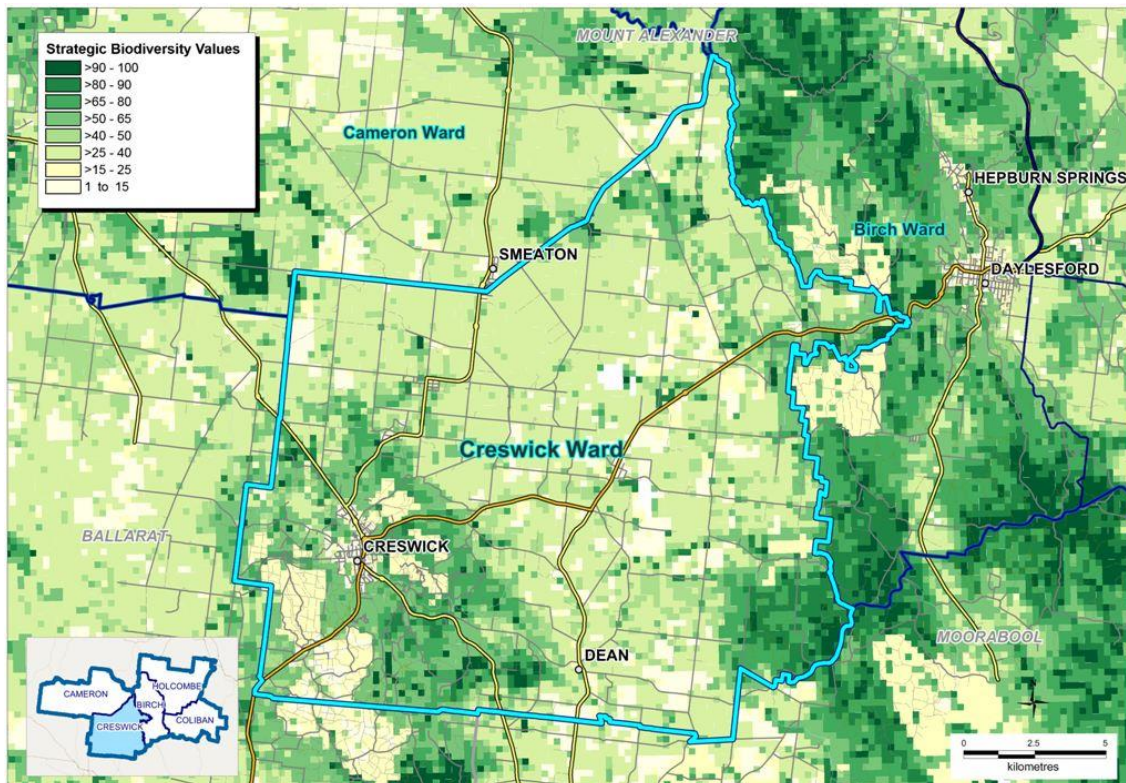
Creswick Ward in common with Cameron Ward, retains only fragments of the original Victorian Volcanic Plains where Plains Grassy woodland once dominated most of the area. Some significant Plains Grassy Woodland remnants remain north of Creswick and towards Dean. A zone of Central Victorian Uplands bioregion around Creswick is dominated by Heathy Dry Forest, Grassy Dry Forest and Valley Grassy forest. South of Rocklyn is a zone of Herb-rich Foothill Forest and herb-rich Foothill Forest/Shrubby Foothill forest Complex. A tongue of Goldfields Bioregion east of the Blampied -Kooroocheang Road retains a chain of Creekline Herb rich Woodland and Grassy Dry forest remnants, predominantly on private land.

In terms of Bioregional conservation status the fragments of Plains Grassy Woodland are regarded as Endangered, other vegetation types having a lower conservation status.

The Strategic Biodiversity Values scoring shows high values in the forests around Creswick and in the Wombat Forest south of Rocklyn. The remnants parallel to Blampied-Kooroocheang Road also score relatively highly.

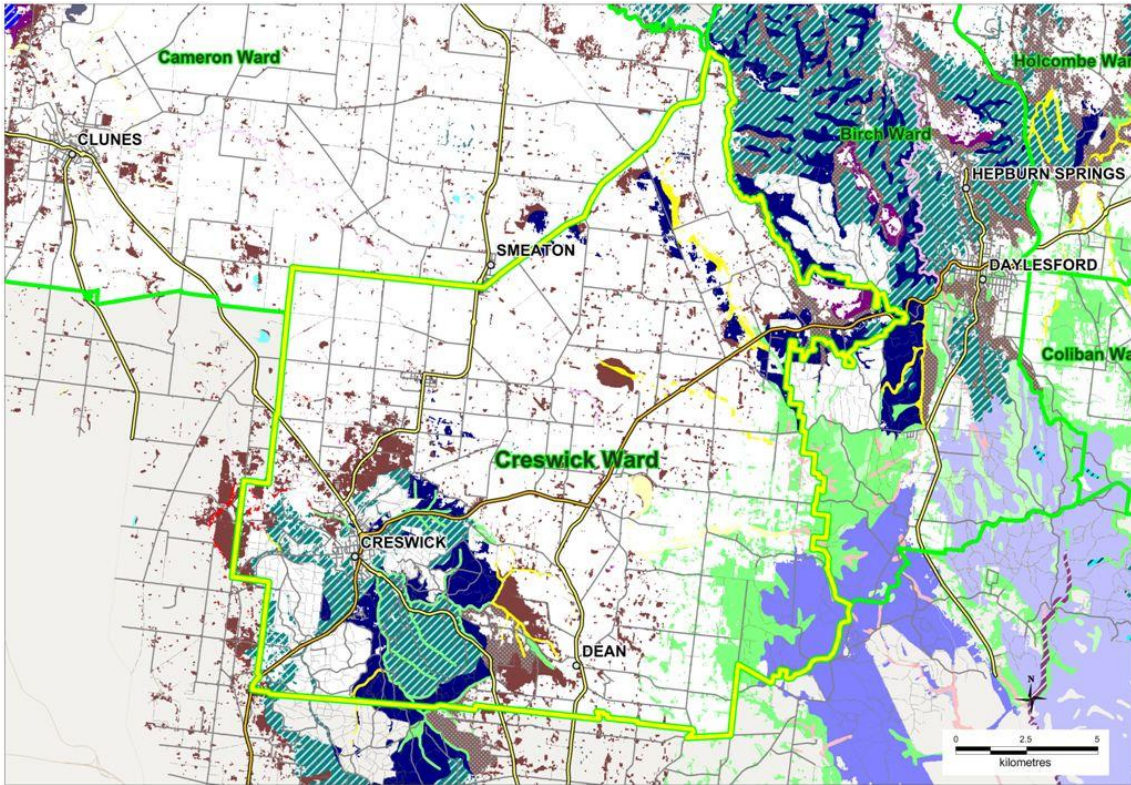
Ecological Vegetation Classes	
EVC Name	
	Alluvial Terraces Herb-rich Woodland
	Alluvial Terraces Herb-rich Woodland/Creekline Grassy Woodland Mosaic
	Box Ironbark Forest
	Creekline Grassy Woodland
	Creekline Herb-rich Woodland
	Damp Forest
	Damp Sands Herb-rich Woodland
	Floodplain Riparian Woodland
	Grassy Dry Forest
	Grassy Woodland
	Grassy Woodland/Alluvial Terraces Herb-rich Woodland Mosaic
	Heathy Dry Forest
	Heathy Woodland
	Herb-rich Foothill Forest
	Herb-rich Foothill Forest/Shrubby Foothill Forest Complex
	Hills Herb-rich Woodland
	Plains Grassland
	Plains Grassy Wetland
	Plains Grassy Woodland
	Plains Sedgy Wetland
	Red Gum Swamp
	Riparian Forest
	Riparian Woodland
	Scoria Cone Woodland
	Sedgy Riparian Woodland
	Shrubby Dry Forest
	Shrubby Foothill Forest
	Stream Bank Shrubland
	Swamp Scrub
	Swampy Riparian Woodland
	Valley Grassy Forest
	Water Body - man-made
	Wetland Formation

## Strategic Biodiversity Values - Creswick Ward

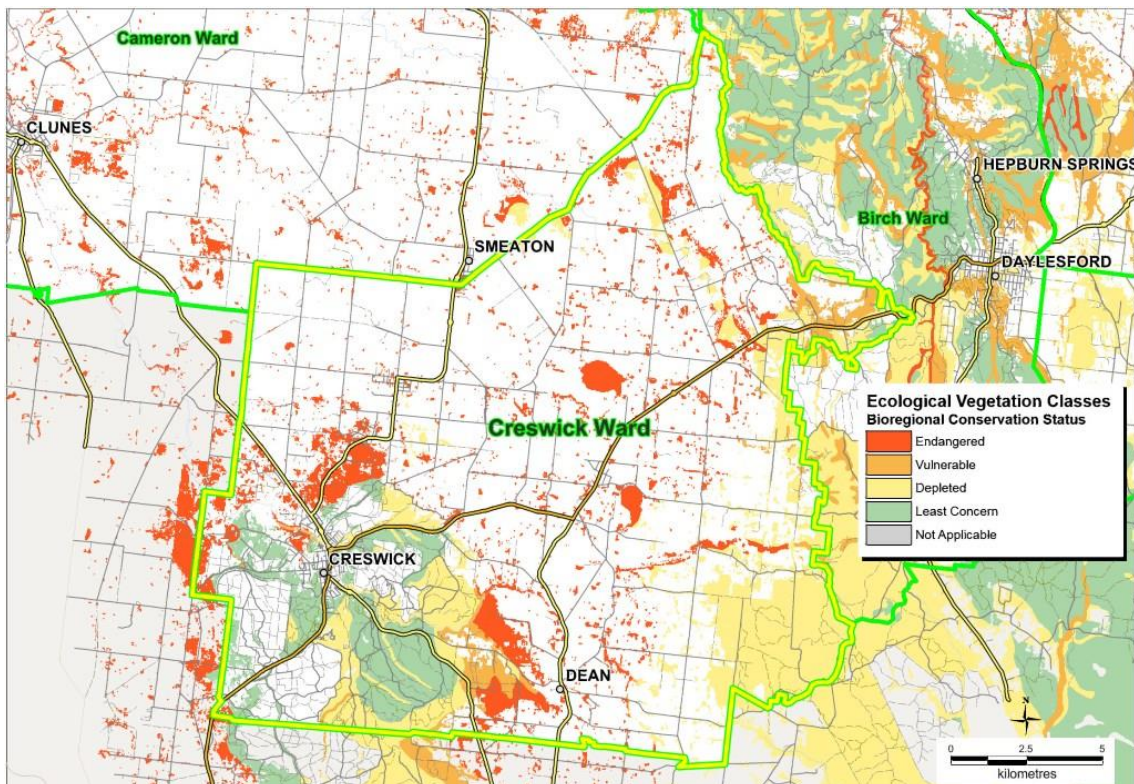




Ecological Vegetation Classes Extant 2005- Creswick Ward



Bioregional Conservation Status – Cameron Ward



## Holcombe Ward

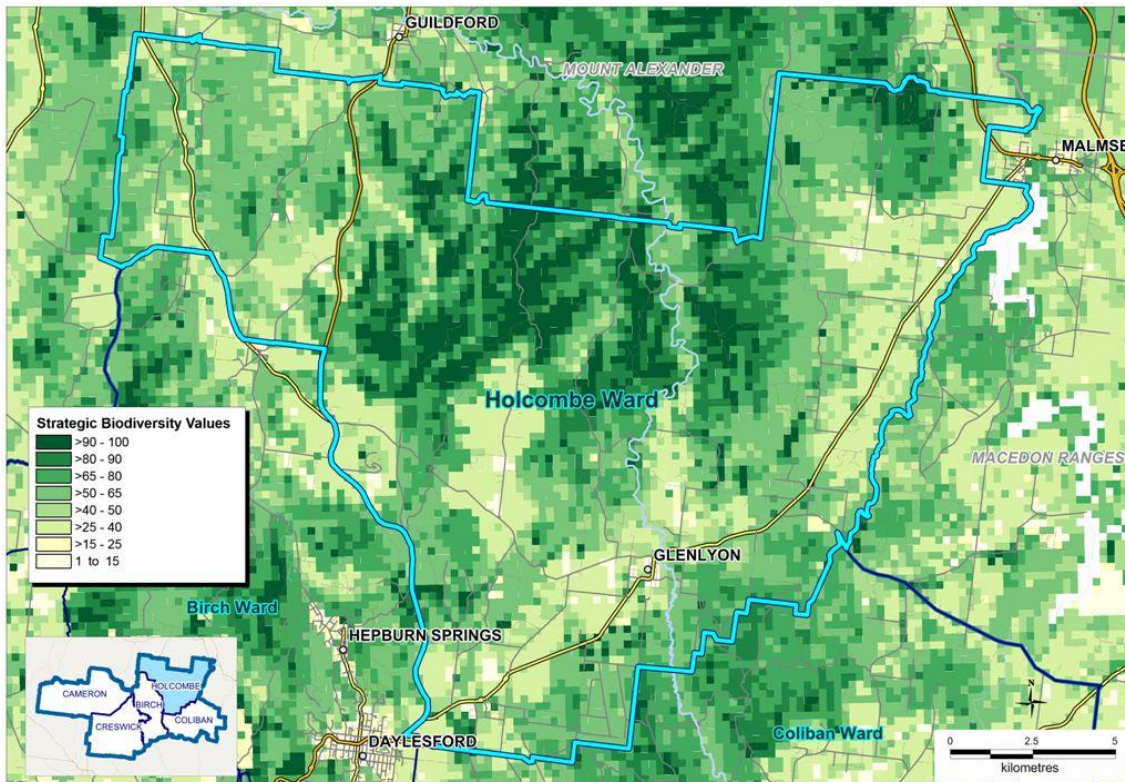
Holcombe Ward retains a very high proportion of remnant vegetation, mainly Heathy Dry forest in the Goldfields Bioregion north of Glenlyon and Herb-rich Foothill Forest of the Central Victorian Uplands mainly south of the Daylesford-Malmesbury Road.

In terms of Bioregional conservation status the tiny fragments of Plains Grassy Woodland associated with Volcanic soils are regarded as Endangered. This reflects the high agricultural values of these soils and their early selection and clearance. Some remnants of Creekline Herb-rich Woodland to the east of Hepburn also stand out up as endangered.

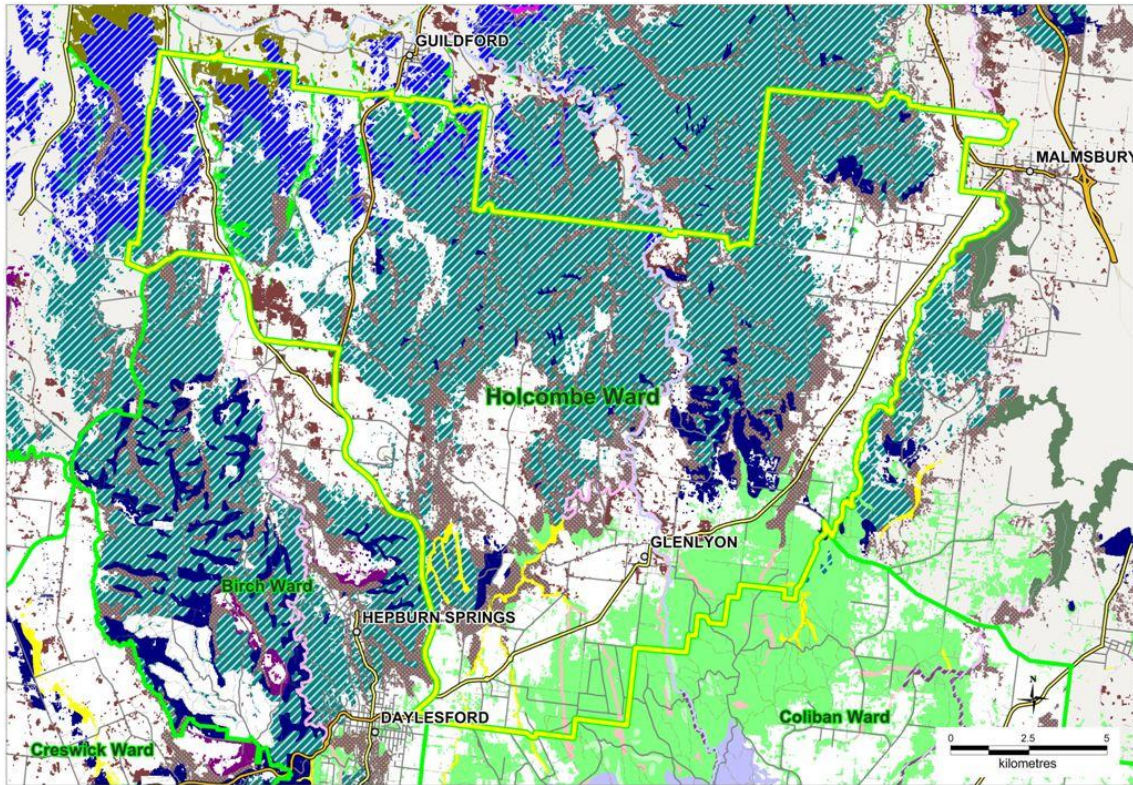
The Strategic Biodiversity Values scoring shows high values in several parts of the ward with particularly high scoring zones in the southern end of the Castlemaine Diggings Heritage Park and the Fryers Range Conservation Reserve near Drummond.

Ecological Vegetation Classes	
EVC Name	
	Alluvial Terraces Herb-rich Woodland
	Alluvial Terraces Herb-rich Woodland/Creekline Grassy Woodland Mosaic
	Box Ironbark Forest
	Creekline Grassy Woodland
	Creekline Herb-rich Woodland
	Damp Forest
	Damp Sands Herb-rich Woodland
	Floodplain Riparian Woodland
	Grassy Dry Forest
	Grassy Woodland
	Grassy Woodland/Alluvial Terraces Herb-rich Woodland Mosaic
	Heathy Dry Forest
	Heathy Woodland
	Herb-rich Foothill Forest
	Herb-rich Foothill Forest/Shrubby Foothill Forest Complex
	Hills Herb-rich Woodland
	Plains Grassland
	Plains Grassy Wetland
	Plains Grassy Woodland
	Plains Sedgy Wetland
	Red Gum Swamp
	Riparian Forest
	Riparian Woodland
	Scoria Cone Woodland
	Sedgy Riparian Woodland
	Shrubby Dry Forest
	Shrubby Foothill Forest
	Stream Bank Shrubland
	Swamp Scrub
	Swampy Riparian Woodland
	Valley Grassy Forest
	Water Body - man-made
	Wetland Formation

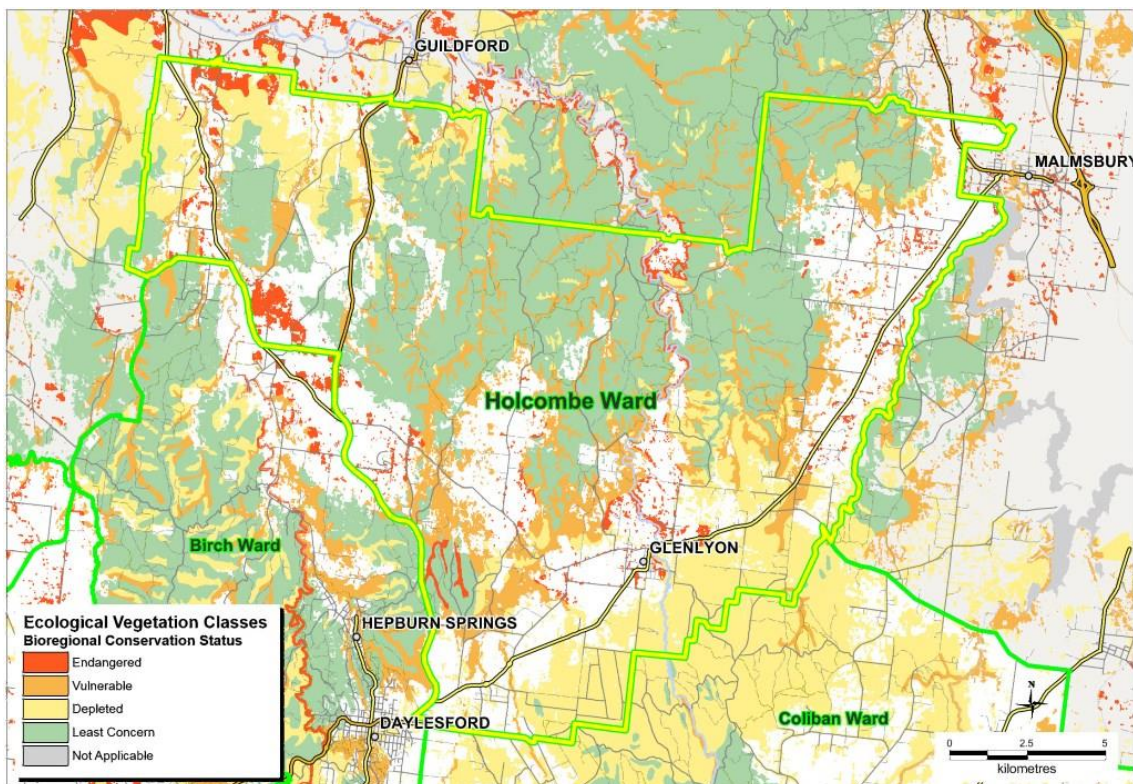
Strategic Biodiversity Values - Holcombe Ward



Ecological Vegetation Classes Extant 2005- Holcombe ward



Bioregional Conservation Status – Holcombe Ward



## Coliban Ward

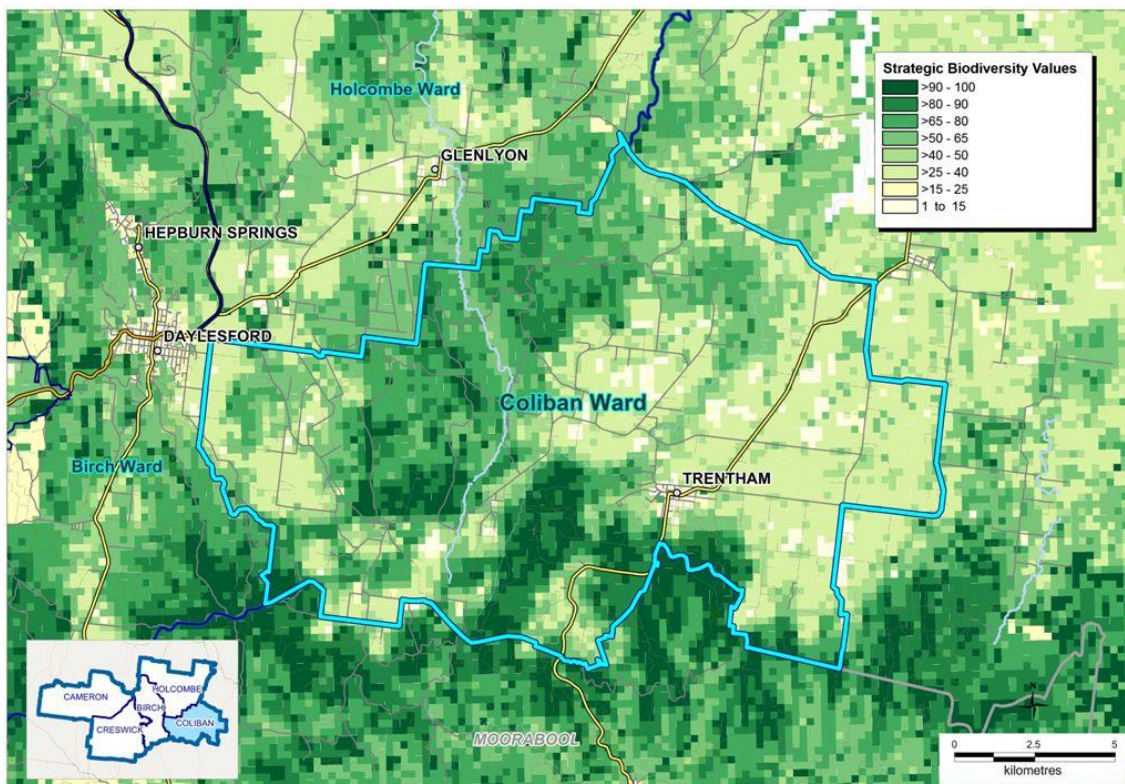
Coliban Ward is the only Ward entirely within a single Bioregion, the Central Victorian Uplands. It has a high proportion of remnant vegetation, characterized by Herb-rich Foothill Forest, Shrubby Foothill Forest with Sedgy Riparian Woodland with Riparian Forest along drainage lines.

In terms of Bioregional conservation status most of the vegetation types are regarded as relatively secure being Depleted or of Least concern. A remnant of Swamp Scrub along the Little Coliban River in the east of the ward shows up as an endangered EVC.

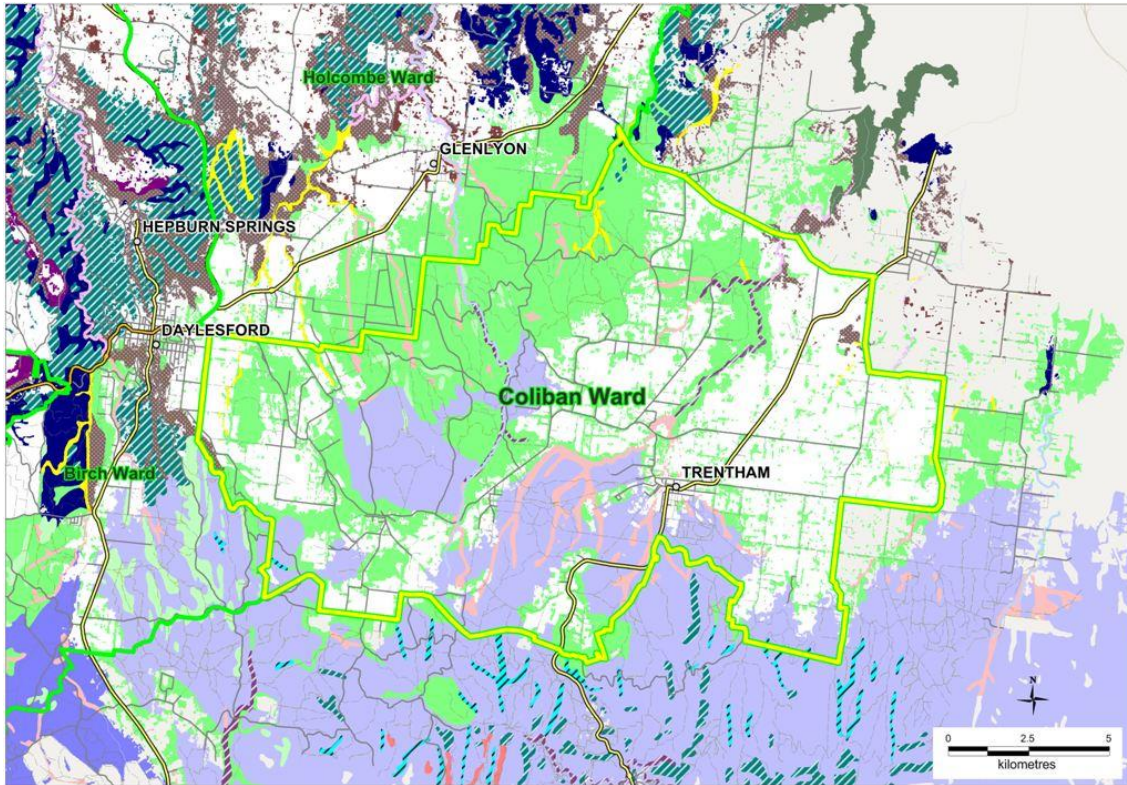
The Strategic Biodiversity Values scoring shows high values are widespread through this ward and especially in the Wombat Forest west of Trentham and north of Bullarto.

Ecological Vegetation Classes	
EVC Name	
	Alluvial Terraces Herb-rich Woodland
	Alluvial Terraces Herb-rich Woodland/Creekline Grassy Woodland Mosaic
	Box Ironbark Forest
	Creekline Grassy Woodland
	Creekline Herb-rich Woodland
	Damp Forest
	Damp Sands Herb-rich Woodland
	Floodplain Riparian Woodland
	Grassy Dry Forest
	Grassy Woodland
	Grassy Woodland/Alluvial Terraces Herb-rich Woodland Mosaic
	Heathy Dry Forest
	Heathy Woodland
	Herb-rich Foothill Forest
	Herb-rich Foothill Forest/Shrubby Foothill Forest Complex
	Hills Herb-rich Woodland
	Plains Grassland
	Plains Grassy Wetland
	Plains Grassy Woodland
	Plains Sedgy Wetland
	Red Gum Swamp
	Riparian Forest
	Riparian Woodland
	Scoria Cone Woodland
	Sedgy Riparian Woodland
	Shrubby Dry Forest
	Shrubby Foothill Forest
	Stream Bank Shrubland
	Swamp Scrub
	Swampy Riparian Woodland
	Valley Grassy Forest
	Water Body - man-made
	Wetland Formation

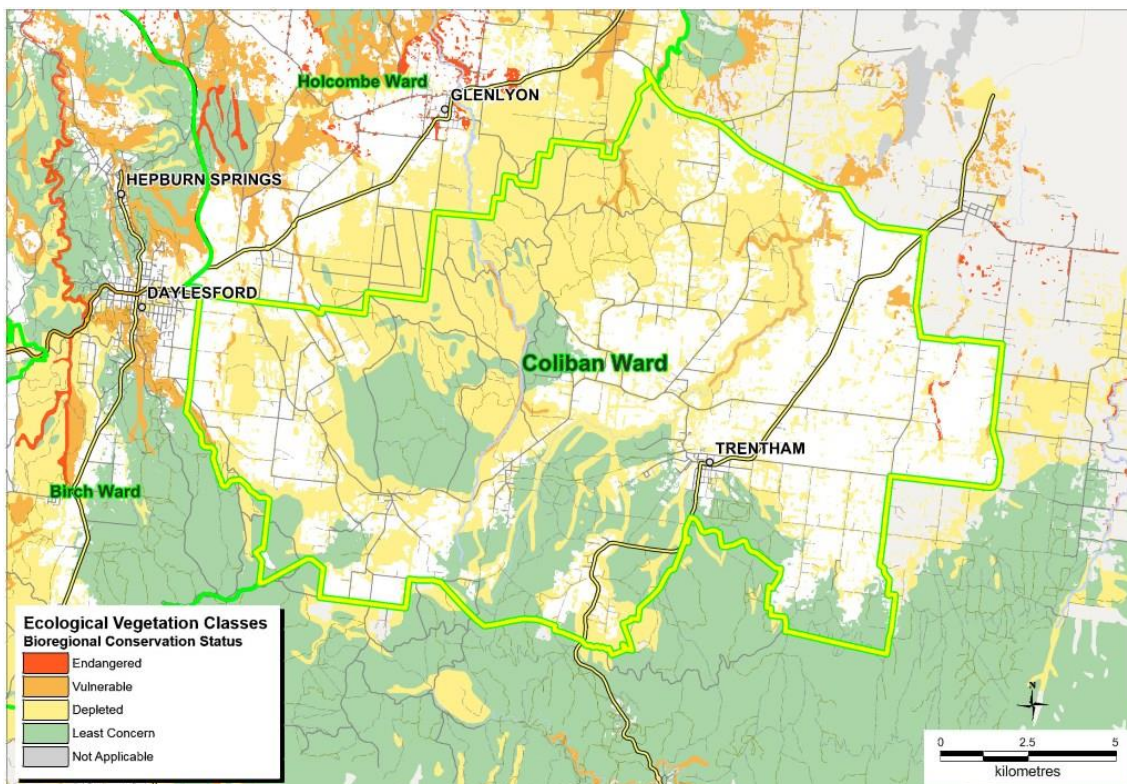
Strategic Biodiversity Values - Coliban Ward



Ecological Vegetation Classes Extant 2005 – Coliban ward



Bioregional Conservation Status – Coliban Ward



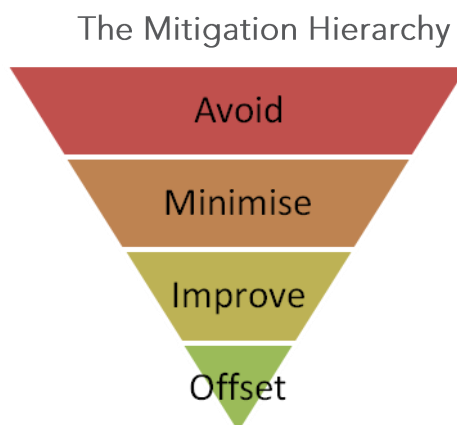
### 10.6 MITIGATION HIERARCHY

The Mitigation hierarchy is a tool primarily for decision-making around proposals to protect or clear land with biodiversity assets. It consists of a series of steps taken in order to limit any negative impacts on biodiversity. It is closely aligned with the hierarchy described in Victoria’s native Vegetation Framework which includes three steps,

1. *To avoid adverse impacts, particularly through vegetation clearance,*
2. *If impacts cannot be avoided, to minimise impacts through appropriate consideration in planning processes and expert input to project design or management.*
3. *Identify appropriate offset options.*

(Victorian Government Department of Natural Resources and Environment, 2002 (reprinted 2011), p. 23)

The hierarchy of decision making consists of four steps, Avoid, Minimise, Improve and Offset. The application of the hierarchy of decision making will be applied by considering what Council is practically and reasonably able and expected to achieve given resources, constraints and community expectations.



#### **Avoid**

The first step of the mitigation hierarchy comprises measures taken to avoid creating impacts. Avoidance is the easiest, cheapest and most effective way of reducing potential negative impacts on biodiversity. For example this could include the placement of infrastructure to avoid impacting on biodiversity, the placement of roads outside of rare habitats or the scheduled timing of works to avoid breeding seasons.

#### **Minimise**

Minimisation measures are those taken to reduce the duration, intensity and impact of works when the impacts cannot be completely avoided. Minimisation can eliminate some of the negative impacts of activities on biodiversity.

#### **Improve**

Improvement measures are taken to improve degraded or affected ecosystems following exposure to works and other impacts. This hierarchy of decision making is triggered when works that impact on biodiversity cannot be completely avoided or minimised. Improvement measures include:

1. Restoration which tries to return an area to its original state before it was impacted and;
2. Rehabilitation which aims to restore basic ecological functions to an impacted area. (e.g. through the planting of trees to stabilise soil or other erosion control measures).

### Offset

These are measures taken to compensate for any adverse impacts if the three previous steps of hierarchy mitigation cannot be met.

Two main types of biodiversity offsets are:

1. Restoration offsets that aim to rehabilitate or restore degraded habitat. This may be at the location where the impact has occurred.
2. Averted loss offsets. This aims to reduce or stop biodiversity loss occurring. This type of offset may be in an area that is identified as being at risk of future impact to biodiversity.

Offsets are complex and expensive, the three previous steps in the mitigation hierarchy are preferable when planning for works that may impact on biodiversity.

### 10.7 GLOSSARY OF TERMS

**Adaptive management:** A systematic process for continually improving management policies and practices by learning from the outcomes of previously employed policies and practices. In active adaptive management, management is treated as a deliberate experiment for purposes of learning. (The Economics of Ecosystems and Biodiversity, 2013)

**Biodiversity** The variety of all life forms; the different plants, animals and microorganisms, the genes they contain and the ecosystems of which they form a part.

**Biolink Zones** - Biolink zones are identified parts of the landscape where the functional ecological connectivity for biodiversity is enhanced and / or restored to provide space for species (and consequently ecological communities) to self adapt their distributions and abundances under changing climates through natural processes including: dispersal; re-colonisation; regeneration and restoration of ecological function (Mansergh and Cheal 2007).

**Bioregion** - Bioregions are a landscape-scale approach to classifying the environment using a range of attributes such as climate, geomorphology, geology, soils and vegetation. There are 28 bioregions identified within Victoria. Hepburn spans three Bioregions; the Central Victorian Uplands, the Victorian Volcanic Plain and Goldfields.

**Bioregional Conservation Status** – is an assessment of the conservation status of the native vegetation type in the context of a particular bioregion. It takes into account how commonly it originally occurred and the current level of depletion due to clearing. There are six categories of Bioregional Conservation Status: Presumed Extinct, Endangered, Vulnerable, Depleted, Rare and Least Concern. Maps of Bioregional Conservation Status are included

**Community Engagement** - Community engagement is more than a single activity, it is a way of working. It is about inclusion, involvement and influence. Hepburn Shire Council recognises that engaging also comes with a need for responsibility, accountability and a willingness to collaborate to reach common goals. (Hepburn Shire Community Engagement Policy, October 2015)

**Ecosystem** - Ecosystems comprise natural components and include plants, animals, water, soil, air and their interactions. Functioning ecosystems are the foundation of human wellbeing and most economic activity. (The Economics of Ecosystems and Biodiversity, 2013)

**Exotic plants or animals**- Plants or animals from outside of Australia.



**Ecological Vegetation Class (EVC)** Ecological Vegetation Classes are groupings of vegetation communities based on floristic, structural, and ecological features. This system has been developed in Victoria since 1994 and over 300 EVCs have been defined and mapped.

**Habitat Corridor** Habitat Corridors are pathways of natural or created habitat, the corridors occurs within larger areas that have been developed by humans through farming or urban development. Habitat corridors attract wildlife and act as safe passages for wildlife between neighbouring natural areas. These are often along creek riparian zones that run through urban areas, however can be road reserves, railway lines and other linear easements. Habitat Corridors are generally planned at a more local scale than 'biolink zones'.

**Indigenous Plants** - Plants (including trees, shrubs, herbs, and grasses) that come from the local area, a local native plant.

**Indigenous** (of plants and animals) native to a specific area. Indigenous plants and animals may show adaptations to local climate, soils and other environmental conditions.

**Invasive** (plants or animals) species that consistently reproduce and invade native vegetation. This can include exotic and native species

**Native** (of plants or animals) species native to Australia

**Offset** Any works, or other actions to make reparation for the loss of native vegetation. The gains achieved must be permanent and ongoing, and linked to a specific clearing site.

**Regeneration** Restoration of natural ecosystems through the natural cyclic processes of renewal and self maintenance of species and their populations.

**Rehabilitation** Any attempt to restore elements of structure or function to an ecological system without necessarily attempting complete restoration to any specific prior condition.

**Restoration** The return of a community to its pre-disturbance or natural state in terms of abiotic (non-living) conditions, community structure and species composition.

**Revegetation** Replanting or re-seeding vegetation in either restoration or rehabilitation