GREATER BENDIGO BIODIVERSITY STRATEGY AND ACTION PLAN 2023-2033

This strategy was adopted by the Greater Bendigo City Council on September 25, 2023.

CITY OF GREATER BENDIGO

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ACKNOWLEDGEMENT OF COUNTRY

The City of Greater Bendigo lies within both Dja Dja Wurrung and Taungurung Country. We acknowledge and extend our appreciation for the Dja Dja Wurrung and Taungurung Peoples, the Traditional Owners of this land. We pay our respects to leaders and Elders past, present and emerging for they hold the memories, the traditions, the culture and the hopes of all Dja Dja Wurrung and Taungurung Peoples. We express our gratitude in the sharing of this land, our sorrow for the personal, spiritual and cultural costs of that sharing and our hope that we may walk forward together in harmony and in the spirit of healing.

We acknowledge that caring for Country in partnership with Traditional Owners is our privilege and our responsibility. This strategy supports Traditional Owners and Aboriginal Victorians' rights to practice their culture and enjoy the social, spiritual and economic benefits that flow from healthy ecosystems.

Glossary

Biocultural values: significant cultural connections of indigenous people to Country: knowledge, stories, songs, trade routes, traditions and relationships with ancestors, animals and places.

Biodiversity: the variety of all life on earth (animals, plants, fungi, microbes), their interactions and the natural patterns they form. This includes the variety (or diversity) of species, the variety within species (genetic diversity) and the variety of ecosystems.

Biolink/habitat corridor: geographical area that provides suitable conditions for animal and plant movement and dispersal through the landscape and is of sufficient area for species to live out their lifecycle.

Ecosystem: a unique community of living and non-living organisms interacting as a system.

Ecosystem services: the benefits provided to humans through the transformation of natural resources (including land, water, vegetation and atmosphere) into essential goods and services, such as clean air, water and food.

Flora: plants.

Fauna: animals.

Habitat patch: an area sufficient in size and with the right structure and composition of native vegetation to provide food, shelter and opportunities for breeding for a species so they may live out their lifecycle and provide future generations.

Habitat connectivity: the connections available in the landscape for flora and fauna to access resources and to retain natural patterns of movement and dispersal, including intergenerational dispersal.

Natural environment: all living and non-living things occurring naturally on Earth, including animals, plants, water, air, sunlight, and features like mountains, forests, and rivers.

Stepping stones: smaller areas of vegetation or habitat, such as large paddock trees or rocky outcrops, that provide species with (sometimes temporary) habitat or act as a connection to larger patches.

Acronyms

BARC	Bendigo Animal Relief Centre
BDEC	Bendigo and District Environment Council
BSUD	Biodiversity Sensitive Urban Design
CALP Act	Catchment and Land Protection Act
CASBE	Council Alliance for a Sustainable Built Environment
CFA	Country Fire Authority
CMA	Catchment Management Authority
COM	Committee of Management
CVACF	Central Victoria Australian Conservation Foundation Group
DEECA	Department of Energy, Environment and Climate Action
DELWP	(former) Department of Environment, Land, Water and Planning (now DEECA)
DJAARA	Dja Dja Wurrung Clans Aboriginal Corporation
DJANDAK	Dja Dja Wurrung Enterprises Pty Ltd
EPBC Act	Environment Protection and Biodiversity Conservation Act
ESD	Environmentally Sustainable Development
ESO	Environmental Significance Overlay
EVC	Ecological Vegetation Class
FFG Act	Flora and Fauna Guarantee Act
GBPS	Greater Bendigo Planning Scheme
LUAA	Land Use Activity Agreement
MPS	Municipal Planning Strategy
PE Act	Planning and Environment Act 1987
PV	Parks Victoria
RCS	Regional Catchment Strategy
RSA	Recognition and Settlement Agreement
SLO	Significant Landscape Overlay
TfN	Trust for Nature
VBA	Victorian Biodiversity Atlas
VPO	Vegetation Protection Overlay
WRES	Wildlife Rescue and Emergency Service
WRIN	Wildlife Rescue & Information Network
WWF	World Wildlife Fund

**City of Greater Bendigo is referred to as the City*

Image by John Walter.

Executive summary

Greater Bendigo has a wealth of natural environments that provide important habitat for flora and fauna and critical ecological functions such as fresh air, clean water and climate regulation. However, habitat destruction, pest plants and animals, land development, water pollution and climate change all threaten our natural environment. Greater Bendigo is currently home to 92 threatened plants and 67 threatened animal species. We are faced with a tremendous challenge over the next decade to protect, enhance and connect our natural landscapes, stop species extinctions and processes that threaten species survival and engage and inform the community to ensure a safe and resilient future for all.

The Greater Bendigo Biodiversity Strategy and Action Plan 2023-2033 seeks to set a vision for biodiversity conservation across the region, engaging and supporting actions by the City of Greater Bendigo (the City), land managers and the community to protect, enhance and connect natural values, and advocate on behalf of the environment. It was initiated as an action of Outcome 5 of the City of Greater Bendigo Council Plan *Mir wimbul 2021-2025*. It also builds on, reviews and revises goals set out in the Biodiversity and Regeneration section of the *Climate Change and Environment Strategy 2021-2026*.

The Strategy was produced with input from stakeholders and the community through two phases of consultation. Phase one (input into the draft Strategy) received over 500 individual responses given at forums, stakeholder workshops, focus groups, community group meetings, via our online platform Let's Talk (where there were 296 contributions) and through written submissions (11 in total). Phase two (feedback on the draft Strategy) saw over 1100 people attending community events and drop-in sessions and actively engage in dialogue and feedback. There were a further 32 survey responses and 10 written submissions. DJAARA and Taungurung Clans Aboriginal Corporation were provided extensive opportunity for input and engaged at several points in the drafting and consultation process. Discussions were also had with staff from across the organisation. A review of existing national, state and local legislation, plans and strategies was undertaken, along with data collection and collation, mapping and modelling of biodiversity values across Greater Bendigo.

This Strategy and 10-year Action Plan address the highest priority short-term actions to achieve a shared vision over the next decade and build strong foundations for biodiversity protection and enhancement into the future. We are on a long-term journey. It will take decades to redress biodiversity loss, but this is a big milestone in the City's leadership and commitment towards a renewed natural environment.

The 5 strategic pillars underpinning the Strategy are:

- **PROTECT** the existing natural values of Greater Bendigo
- **ENHANCE** native vegetation communities, habitats and species diversity
- **CONNECT** habitats and species through strategic linkages
- **ADVOCATE** on behalf of the community and environment
- **ENGAGE** the community in environmental stewardship

The Strategy includes 61 actions which seek to address the challenges faced. The top 12 key priorities for the City to implement are:

1. Establish a permanent Biodiversity Engagement Officer position to meet growing community needs.
2. Investigate options for establishing an Environmental Planner position.
3. Review the planning scheme provisions relating to biodiversity in the Greater Bendigo Planning Scheme (GBPS).
4. Develop and implement a detailed 'Habitat Connectivity Plan' to create biolinks across Greater Bendigo.
5. Ensure protection of mature native trees through the Greater Bendigo Planning Scheme or a Local Law which may include use of a Significant Tree Register.
6. Establish a biodiversity monitoring program that is representative, robust and strategic.
7. Develop and implement Environmental Management Plans for City managed natural reserves.
8. Continue and expand the Healthy Landscapes regenerative agriculture program.
9. Conduct a service review of the City's natural reserve management functions, considering implementation of this strategy and future environmental management plans.
10. Develop a local carbon offset program with stakeholders, ensuring sites align with priority areas for habitat enhancement and connectivity.
11. Support Djaara and Taungurung to increase connection to country and promote cultural practices that also benefit biodiversity.
12. Establish a community engagement program to increase community access to nature and to raise awareness about Greater Bendigo's natural values and how to protect and enhance them.

Purpose

The Biodiversity Strategy establishes a shared vision for the protection and enhancement of biodiversity and biocultural values across Greater Bendigo, including urban and rural environments. The strategy includes identifying policy and planning initiatives and priorities for Traditional Owner empowerment, community engagement and on ground action. It provides a framework for collaboration on region-wide questions and develops a clear set of management actions to help seek and allocate resources to implement a monitoring framework that is robust, deliberate and strategic.

Scope

This Strategy considers the biodiversity and biocultural values of the extensive natural, urban and rural environments across Greater Bendigo, the threats to these values, and actions the City can take to protect and enhance them, both directly and by working with others, including:

- Programs to encourage and facilitate conservation outcomes on private land
- Desktop review of existing biodiversity data for Greater Bendigo
- Recommendations for biolinks to aid landscape connectivity for flora and fauna
- The City's partnership opportunities with Dja Dja Wurrung and Taungurung Peoples
- The City's collaboration with land managers and community groups
- Establishment of a biodiversity monitoring plan to be implemented by the City in collaboration with land managers and the community
- Recommendations for biodiversity engagement activities and support for community groups
- Recommendations for the review of the City's natural environment plans, policies and strategies
- Recommendations for the review of existing environmental planning policies and provisions

Vision

Protected, enduring and connected natural landscapes, waterways and townships across Greater Bendigo, shared with healthy, abundant and diverse native plants and animals, creating a common home that is actively cared for by an engaged and informed community.

Images by John Walter.

Objectives

The objectives of the Biodiversity Strategy are to:

1. Establish a shared vision and strong partnerships for the conservation of biodiversity and biocultural values across Greater Bendigo between the City, land managers, external agencies, environment groups, private landholders and the community.
2. Establish a suite of prioritised and strategic land management and community engagement actions that promote diverse, thriving ecosystems and address the challenges of climate change.
3. Establish a biodiversity monitoring program to track the impact of the City's and the community's activities on the natural environment.
4. Embed biodiversity conservation at the core of the City's planning, policy, and business practices.

The Strategy's actions will aim to:

- Increase the diversity, connectivity and resilience of the natural environment and avoid further loss of species and communities
- Support urban and rural landowners, environment groups and the community to protect and enhance biodiversity
- Partner with land managers, including the Dja Dja Wurrung and Taungurung Peoples, to implement and monitor biodiversity and biocultural outcomes
- Connect people to nature, creating a common home for all
- Provide direction for conservation efforts in anticipation of further climate change
- Mitigate threatening processes in a strategic way

The Biodiversity Strategy will inform the review and / or development of the following City strategies:

- *Strategic Directions Urban Roadside Vegetation Management 2011-2015*
- *Strategic Directions Rural Roadside Conservation 2011-2015*
- Roadside Weed and Pest Animal Plan
- Implementation Plan for Reimagining Bendigo Creek (to be developed)
- *Invasive Plants and Animals Policy and Procedure*
- Planned Burn Policy (to be developed)
- Stormwater Management Strategy (to be developed)
- Environmental Management Plans for City managed nature and forestry reserves (to be developed)
- Review of environmental planning policies and overlays (to be undertaken)

PART 1: BACKGROUND REPORT

Background

Why is biodiversity important?

The term "biodiversity" describes the enormous variety of genes, species and ecosystems on Earth, including all the plants (trees, shrubs, forbs, mosses), animals (birds, mammals, invertebrates, frogs, and reptiles), fungi, and micro-organisms like bacteria. These form an intricate web, working together to maintain balance and support life.

Biodiversity is always changing, with the gradual addition and removal of species and genetic lineages over time. As such, all species alive today have evolved unique traits that make them distinct from other species. Countless species exist in a single ecosystem, such as a forest, grassland or river – plants, beetles, fish, snakes, birds, and butterflies, to name a few. Ecosystems are also home to thousands of species of bacteria and other tiny organisms that are vital to life on Earth.

We rely on healthy ecosystems for clean air and water, productive soils, natural pest control, pollination, flood mitigation, waste decomposition, detoxification and carbon sequestration. Biodiverse ecosystems also provide us with food, production materials (such as timber, pastures and fertilizers), genetic resources and pharmaceuticals. 'Ecosystem services' provide immeasurable value and replacing them would be impossible.

The Dja Dja Wurrung and Taungurung people also stress the importance of conserving and protecting their significant cultural connections to Country: knowledge, stories, songs, trade routes, traditions and relationships with ancestors, animals and places, collectively referred to as "biocultural diversity"[1] . They know that having people on Country means better stewardship of the land and creatures. We have a responsibility to support and partner with Traditional Owners to ensure their ongoing relationship with Country. Actions that support both biodiversity and biocultural protection and enhancement will likely achieve far greater benefits for the natural environment and fulfil cultural obligations to keep Country healthy, and by doing so, also heal people.

The danger of inaction

We are currently experiencing Earth's sixth mass extinction event[2] and a climate emergency[3] , both driven almost exclusively by human activities. A recent report by the World Wildlife Fund (WWF) found an average 69 per cent decline in global populations of mammals, fish, birds, reptiles, and amphibians since 1970[4] .

"Three-quarters of the land-based environment and roughly 66 per cent of the ocean environment have been significantly altered. More than a third of the world's land surface and nearly 75 per cent of freshwater resources are now devoted to crop or livestock production. Climate change worsens the impact of other stressors on nature and our well-being. Humans have overfished the oceans, cleared forests, polluted our water sources, and created a climate crisis. These actions are impacting biodiversity around the world, from the most remote locales to our own backyards[5]".

This and the national State of the Environment report[6] are sobering reading. If we do not act now with conviction, strategy and adequate resourcing, we will witness more species threatened with extinction and the continued collapse of ecosystems that support life as we know it.

We are deeply connected to nature. bushland, farmland, grasslands, urban parks and open spaces are places for people to observe nature, commune and relax in. Time spent in biodiversity-rich environments increases health benefits, such as stronger immunity and stress reduction. Around $80-$200M per annum is generated through active park visitation that reduces health costs for visitors[7]. It is therefore essential that Greater Bendigo maintains and enhances its network of parks, open spaces and nature reserves that connect people to their local places and improve quality of life. For instance, volunteering in Victoria's parks provides social benefits valued at $6M per annum.

[1] Victorian Traditional Owner Cultural Landscapes Strategy

[2] Strong evidence shows Sixth Mass Extinction of global biodiversity in progress -- ScienceDaily

[3] The Climate Emergency (unep.org)

[4] HOME | WWF (panda.org)

[5] What is biodiversity? | Pages | WWF (worldwildlife.org)

[6] Australia state of the environment 2021 (dcceew.gov.au)

[7] Parks Victoria DELWP 2015, Valuing Victoria's Parks: Accounting for ecosystems & valuing their benefitsVictoria

Image by Ian McBurney.

Greater Bendigo currently has far higher rates of obesity and chronic diseases than the state average[8]. More time spent in biodiverse environments could greatly reduce this cost.

Canopy trees in urban and rural environments also produce shade that reduces people's exposure to harmful UV rays by up to 75 per cent, limiting the incidence of heat related illness . Vulnerable sectors of the community, such as the young, frail, elderly and those with a pre-existing illness[9] will benefit most from urban shading[10] . On an individual level, the simple act of increasing tree cover by 10 per cent over a small building or house can significantly reduce power bills[11].

We are faced with a tremendous challenge over the next decade. Children raised in and around the abundant biodiversity values of Greater Bendigo and provided opportunities for nature-based play will grow to be a generation of healthy, happy people that respect the natural world and become its greatest advocates. Ensuring a safe, healthy, and liveable environment for them is our responsibility and privilege. How we choose to act, how bold we are in our actions and how adaptable we can be in the way we live on this planet will determine which biodiversity values we leave for future generations of life on Earth.

Regional and historical context

Pre-European colonisation

For millennia, the natural environment of Greater Bendigo existed in a state of balance, with natural cycles of life, death, growth, disturbance, hydrology and evolution shaping a range of ecosystems and an amazing diversity of species. When the first human inhabitants, the Dja Dja Wurrung and Taungurung peoples, arrived in the region thousands of years ago, they developed a deep connection with Country and were the first farmers, gardeners and custodians, caring for Country as Country cared for them. They lived with species not found anywhere else on Earth: The kangaroo, emu, platypus and wedge-tailed eagle, and hunted as they needed, knowing when and how much to take and when to leave it. They were the first land managers, using skills, knowledge and activities over thousands of generations in a system of relationships between humans, animals, plants, ancestors, song lines and other cultural connections to Country. The Box, Gum and Ironbark trees characteristic of Greater Bendigo not only provided abundant food and resources for animals, but the Dja Dja Wurrung and Taungurung people also enjoyed the shade, shelter and resources they provided. The incredibly hard wood was turned into spears and clubs and the bark was used for shields, canoes and homes. Reeds and grasses were weaved together to make products such as baskets. Nectar from Eucalypts and native shrubs such as Banksia, Callistemon and Melaleuca provided sweet drinks, while the large, nutrient rich tubers of Murnong (Yam Daisy) growing in the flat grassy plains bordering creeks provided mass produced food that was planted and harvested using digging sticks.

"Australia forms as a tapestry of interwoven cultural landscapes that are the product of the skills, knowledge and activities of Aboriginal land managers over thousands of generations. Cultural landscapes are reflections of how Aboriginal people engage with the world. The concept of a cultural landscape is a bridging tool, in this case one that aims to bridge the ontological differences between Indigenous and 'western' world views, between Natural Resource Management (NRM) and caring for Country. This is required to take steps towards preventing the ongoing ontological violence that is perpetuated by the dominance of 'western' approaches to managing Country. It enables a dialogue between Traditional Owners and government land managers within a framework that does not exclude one or the other world view. Traditional Owners actively managing Country must be able to strengthen their identity, individual and collective."

- Victorian Traditional Owner Cultural Landscapes Strategy

[8] Healthy Loddon Campaspe

[9] Parsons et al 1998, The shady side of solar protection, Queensland Cancer Fund Laboratories

[10] Norton et al, 2013, Planning for a cooler future: Green infrastructure to reduce urban heat, VCCCAR

[11] Parsons et al 1998, The shady side of solar protection, Queensland Cancer Fund Laboratories

Image by Mark Hall

At the time of European colonisation, the mix of dry forest and woodlands consisted of open stands of large trees with a diverse understory of grasses, forbs and shrubs. There were at least 1705 recorded species of plant and 811 species of animal (including birds, mammals, amphibians, reptiles, fish, and invertebrates)[12] and 23 distinct vegetation communities, or Ecological Vegetation Classes[13] (EVCs, listed in Appendix 1.3).

Since colonisation

The new inhabitants immediately began altering the landscape, removing trees, hunting animals and mining the land for its resources. Many of the tree species, including Red Stringy Bark, Red Box and Yellow Box were removed to promote more desirable timber species such as Red Ironbark, Grey Box and Yellow Gum. Pastoralists arrived in the 1830s and 1840s, turning forest into arable land, and the discovery of gold in the early 1850s generated a devastating period of development, broadscale clearing and urbanisation. Mining waste and removed topsoil produced sludge that left the waterways brown and turned the land into 'upside down Country'. Bendigo and surrounding towns soon became permanent settlements designed with wide malls, large lots and reserves for parks and gardens where people could meet and recreate[14]. A mix of native and exotic street trees were planted for shade and beautification[15]. Several areas were reserved as public parks and gardens in the 1860s including Rosalind Park, the Botanic Gardens in White Hills and Lake Weeroona. By the late 1920s, state forests in the Bendigo district covered more than 100,000 acres. Municipal open spaces gradually became more naturalised and bushland reserves were established.

Today, the Greater Bendigo covers an area of 3,048km^2, and includes Bendigo – Victoria's third largest city with a population of over 116,000 people – and the townships of Axedale, Elmore, Goornong, Heathcote, Marong, Raywood and Redesdale[16] (Fig. 1). In 2013, The Dja Dja Wurrung group of clans were recognised by the State of Victoria as the Traditional Owners of the land to the West of the Campaspe that the City occupies, and the land beyond the limits of Greater Bendigo in the North, West and South. The Taungurung Group were recognised by the State of Victoria in 2018 as the Traditional Owners of the land in the east of Greater Bendigo, Heathcote and beyond (Fig. 1).

[12] Victorian Biodiversity Atlas records for Greater Bendigo - Victorian Biodiversity Atlas (environment.vic.gov.au)

[13] Pre-1750 Ecological Vegetation Classes layer, NatureKit Victoria (biodiversity.vic.gov.au)

[14] Thematic Environmental History, final report, June 2013, Lovell Chen, Adopted by the City - July 31, 2013

[15] Inventing Traditions in Goldfields Society: Public Rituals and Town-building in Sandhurst, 1867-1885, 198, 200

[16] About Greater Bendigo, https://www.bendigo.vic.gov.au/About/About-Greater-Bendigo

The urban area is a 'City in a Forest', surrounded by 40,000 hectares of regional, state, and national parks and natural reserves. The largest of these is the Greater Bendigo National Park, which was created from several state and regional parks in 2002 and covers an area of 17,000 hectares[17]. The Greater Bendigo National Park is one of six Dja Dja Wurrung Parks handed over as part of the settlement package in the Recognition and Settlement Agreement with the State of Victoria, jointly managed by DJAARA, the Dja Dja Wurrung Aboriginal Clans Corporation, and Parks Victoria. These areas continue to provide important habitats for flora and fauna and critical ecological functions like fresh air, clean water, nutrient cycling and climate regulation.

The forests and bushland of Greater Bendigo are currently home to more than 200 species of birds, 44 species of mammals, 40 species of reptiles, 12 species of frogs and countless invertebrates, bacteria, and microbes[18]. However, today the 23 original (1750s) EVCs are greatly reduced in area and quality, with Box-Ironbark forests now only covering ~17 per cent of their original area across the state (Figs 8 and 9). Nearly all that remains of the native vegetation is significantly modified, including changed understory plants and multi-stemmed, more densely spaced trees. Biodiversity loss is an ongoing issue due to land clearing, mismanagement, fire, pest plants and animals, land development, river regulation, water pollution and climate change. Many 19th Century goldfields sites are yet to be remediated and soil and water quality remain poor.

Greater Bendigo is home to 92 threatened flora species, 48 threatened birds, five threatened

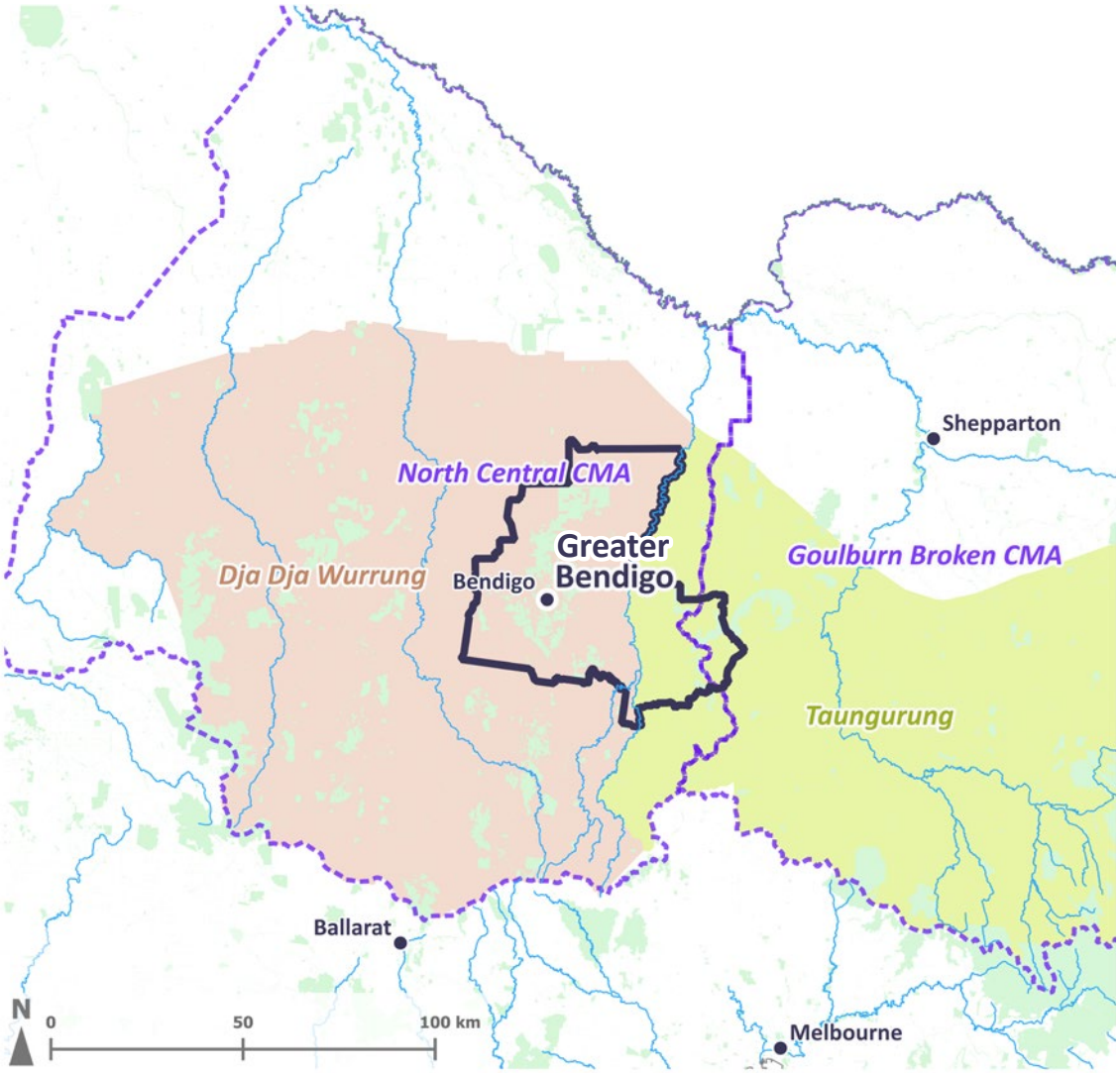

Fig. 1: Regional context
Regional context for the City of Greater Bendigo, which includes significant tracts of Crown reserves and lies on the lands of two Registered Aboriginal Parties and within two Catchment and Land Protection Regions).

[17] National Parks Information - Explore Bendigo (bendigoregion.com.au)

[18] Greater Bendigo snapshot | City of Greater Bendigo

mammals, four threatened fish, six threatened reptiles, two threatened amphibians and two threatened invertebrates (Appendix 1.1 listed under the FFG Act). Two ecological communities are also listed as threatened under the FFG Act: The Victorian temperate-woodland bird community and the Creekline Grassy Woodland (Goldfields) Community[19].

Collective efforts by the City, Landcare and Friends groups, land managers and organisations to redress decline include the restoration of Crownland reserve habitat (Case Study 1), increasing the genetic diversity of a species (Case Study 2), monitoring populations of Tuans (Brush-tailed Phascogale) and other arboreal mammals (Case Study 3), restoring habitat on degraded land (Case Study 4) and the reintroduction of native fish species into streams and lakes across Greater Bendigo (Case Study 6). Countless members of the community also support wildlife in their gardens or on larger properties through actions that support soil health, vegetation (particularly native species), retain large trees or provide other habitat values. However, it is difficult to fully assess the current health of local biodiversity due to limited resources for invasive species control, on-ground management and strategic data collection, monitoring and evaluation of actions.

Another critical component to the success of effective biodiversity conservation across Greater Bendigo is an informed and engaged community that can act as stewards for the land. The City, land management agencies and community groups currently offer a range of engagement activities and resources for the community, such as those on our pollinating insects (Case Study 5), a vital group for ecosystem health and renewal, and through emerging engagement techniques like 'eventing' (Case Study 7). A more sustained and dedicated effort is needed to engage the population in the critical issues surrounding biodiversity and spurring them into action and advocacy to ensure a vibrant natural environment and a healthy community long into the future.

Image by William Terry.

[19] Flora and Fauna Guarantee Act Threatened List (environment.vic.gov.au)

CASE STUDY 1: SPRING PLAINS WATERSHED REPAIR

Cameron O'Mara, Biolinks Alliance

Spring Plains Nature Conservation Reserve is located just south of Heathcote. It is the site of a restoration project currently being undertaken by Biolinks Alliance, a partnership and capacity building organisation supporting, coordinating, and amplifying large-scale community-driven conservation on public and private land in Central Victoria.

We chose Peters Gully as our treatment site and Whites gully as a control or comparison site. We have been gathering ecological data at both sites for the last four years. While Spring Plains has been protected under state legislation for its conservation values, it suffers from some common issues across box ironbark forests and woodlands. Historical land use practices - the harvesting of timber, grazing, gold mining and water manipulation -have left the site ecologically dysfunctional. The regrowth trees are dense and small, lack hollows and critical food sources, compete heavily for resources and limit ground cover diversity. The soil is hard and non-porous causing water to sheet off at high velocities leading to "leaky landscapes" and intensifying erosion.

To address these issues, Biolinks Alliance has drawn on evidence-based approaches applied in similar situations. We will be incorporating the use of ecological thinning, wherein 50 per cent of the basal area (DBHOB) of the entire 138Ha site will be felled and strategically placed along the contours. Placing the logs in this way helps to impede the sheeting effect, allows the build-up of organic matter, and replenishes soil health. Contour ripping will also be used to rip the soil sub-surface, allowing water to infiltrate deeper which helps to rehydrate the landscape. These rip lines will also be sown with seed collected from local native grasses. Gully pond creation will take place along the waterline in the form of a series of trickling ponds that will be ringed with native semi-aquatic plants. This will help to stabilise the soil, hold water in the landscape for longer and provide resources to native animals.

We have created a range of interesting opportunities for involvement in the project, appealing to many interests and capacities of the community. Currently people can help collect data on kangaroo populations, small arboreal mammals, invertebrates, and reptiles. We have also incorporated online tools so people can contribute from afar by helping us identify animals on our camera traps or wildlife images that are uploaded to a dedicated iNaturalist page. We have also posted promotional materials at key locations such as the local Heathcote library and information centre. We are exploring a partnership with the library to create a joint field day for school-aged kids to do some nest box monitoring. In 2019 we held a 'Walkshop' for Heathcote locals to visit and learn about the site. So far, we have engaged dozens of volunteers through the project at various levels. We have collected critical data which will be used to demonstrate the efficacy of the project to governments and other organisations. We have also very recently been granted final approval of works after two years of discussions with the relevant governing bodies that seek to protect these sites.

Our project makes up only 0.019 per cent of the Goldfields bioregion. Biolinks Alliance plans to mobilise communities, governments, and organisations to help mitigate the impacts of climate change on these ecosystems and the already threatened species that call them home. Using advanced modelling techniques, we can stitch back together the fragmented landscapes and boost the overall resilience of ecological communities.

Image by James Peake.

Policy and legislative context

There are a range of international, national, state, regional and local policy, strategy and planning documents, including those supporting Traditional Owner rights and responsibilities, that the City is obliged to meet the requirements of or will use as guiding documents in the development and implementation of this strategy. These include (but are not limited to) the following list.

International

Convention on Biological Diversity

Australia is a party to the Convention on Biological Diversity. The "Kunming-Montreal Global Biodiversity Framework" (GBF)[20], adopted in 2022 by all parties includes four goals and 23 targets to be achieved by 2030. The broad goals are to:

- Increase the area of natural ecosystems by maintaining, enhancing and restoring their integrity, connectivity and resilience
- Halt species extinction and increase the abundance of native species to healthy and resilient levels
- Maintain genetic diversity within species to safeguard their adaptive potential
- Value, maintain and enhance sustainable use and management of ecosystem functions and services

United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)[21]

This UN Declaration, of which Australia is a signatory, outlines the rights of Indigenous peoples around the world and describes self-determination as the right of Indigenous peoples to 'freely determine their political status and pursue their economic, social and cultural development'.

Article 26 of the UNDRIP states Indigenous peoples' right to own, use, develop and control the lands, territories and resources that they possess.

Article 32 of the UNDRIP outlines Indigenous peoples' right to determine and develop priorities and strategies for the development or use of their lands or territories and other resources.

National

Environment Protection and Biodiversity Conservation (EPBC) Act 1999

This central piece of Commonwealth environmental legislation provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places defined in the Act as matters of national environmental significance.

Greater Bendigo has 27 flora and 17 fauna species currently listed under the EPBC Act (listed in Appendix 1.4)

Other national policy and legislation

- Australia's Strategy for Nature 2019-2030
- Water Act 2007
- Nature Positive Plan: better for the environment, better for business (2022)
- The Threatened Species Action Plan 2022-32

State

Flora and Fauna Guarantee (FFG) Act 1988

The FFG Act is the key piece of Victorian legislation for the conservation of threatened species and communities and for the management of potentially threatening processes (e.g., loss of hollow-bearing trees, hyper-aggressive species competing with native fauna) to ensure that more species do not become threatened in the future. The FFG Act also requires Action Statements to be prepared to guide the protection of threatened species or communities, and to address threatening processes[22].

[20] COP15: Final text of Kunming-Montreal Global Biodiversity Framework | Convention on Biological Diversity

[21] United Nations Declaration on the Rights of Indigenous Peoples

[22] Victoria's Framework for Conserving Threatened Species (environment.vic.gov.au)

The FFG Act requires the City to consider potential biodiversity impacts in planning applications (i.e., to determine whether the area planned for development could affect habitat for listed species). Greater Bendigo currently has 159 species listed under the FFG Act as occurring or likely to occur (Appendix 1.1).

Amendments that came into effect on June 1, 2020 [23] that are relevant to this strategy include:

- consideration of the rights and interests of Traditional Owners and the impacts of climate change
- consideration of biodiversity across government to ensure decisions and policies are made with proper consideration of the potential impacts on biodiversity (public authority duty)[24]
- a consistent national approach to assessing and listing threatened species using the Common Assessment Method (CAM)
- an enforcement framework with stronger penalties

Protecting Victoria's Environment - Biodiversity 2037

Protecting Victoria's Environment - Biodiversity 2037 is the Victorian Government's long-term plan to halt biodiversity decline and achieve overall biodiversity improvement over the next 20 years through specific priorities and targets. Progress reports are prepared each year along with a 5-yearly evaluation - Biodiversity Monitoring, Evaluation, Reporting and Improvement Framework – to track progress towards meeting the goals of Biodiversity 2037[25].

Catchment and Land Protection Act 1994 (CaLP Act)

The CaLP Act governs the management of invasive plants and animals in Victoria, specifying noxious weeds and pest animals that have the potential to become a serious threat to the environment, agriculture or community health. The Act applies to all public and private land in Victoria[26] and:

- regulates the management of noxious weeds and pest animals
- prohibits the movement and sale of noxious weeds
- regulates the importation, keeping, selling and releasing of declared pest animals

The Act requires landowners to take all reasonable steps to:

- eradicate regionally prohibited weeds
- prevent the growth and spread of regionally controlled weeds
- prevent the spread of established pest animals on their land

The City has an obligation to manage declared noxious weeds and established pest animals on City owned and managed land, waterways and roadsides.

Wildlife Act 1975

The Wildlife Act sets rules around:

- the protection and conservation of wildlife in Victoria
- the sustainable management and use of wildlife in Victoria

All wildlife in Victoria is protected under the Wildlife Act. It is illegal to disturb or destroy wildlife without an Authority to Control Wildlife (ATCW) . Breaches of this Act are prosecuted by the Department of Energy, Environment and Climate Action. A review of the Wildlife Act was recently undertaken to ensure it reflects contemporary values and expectations and continues to operate consistently with other wildlife legislation.

Other State policy and legislation:

- Planning and Environment Act 1987
- Local Government Act 2020
- Victorian Charter of Human Rights and Responsibilities Act 2006
- Victoria Traditional Owner Cultural Landscapes Strategy
- Victorian Traditional Owner Game Management Strategy
- The Victorian Traditional Owners Cultural Fire Strategy
- Managing Country Together Framework (Parks Victoria)
- Natural Environment Climate Change Adaptation Action Plan 2022-2026
- State of the Environment Biodiversity Update 2021 Report
- Environment Protection Act 2017
- Aboriginal Heritage Act 2006

[23] Victoria's Framework for Conserving Threatened Species (environment.vic.gov.au)

[24] Title (environment.vic.gov.au)

[25] Biodiversity 2037 (environment.vic.gov.au)

[26] Invasive species laws and the Catchment and Land Protection Act 1994 | Legislation, policy and permits | Protecting Victoria

[27] Wildlife management and control authorisations | Victorian Government (www.vic.gov.au)

Regional

North Central Regional Catchment Strategy 2021-2027

The 2021-27 North Central Regional Catchment Strategy (RCS) is the overarching strategy for collective land, water and biodiversity management within the north central region. It provides a roadmap for agencies, Traditional Owners and the community to care for catchments to protect and improve their health for future generations. It builds on achievements and considers future challenges and opportunities[28].

The strategy sets out four biodiversity priority areas in Greater Bendigo: Kamarooka, Wellsford, Eppalock and Mid Loddon and two biodiversity priority directions that specify local government as a key collaborator to:

- Improve the retention and restoration of native vegetation and habitat on private land through community education and community-based programs that support stewardship and permanent protection, leveraging government and market-based incentives.
- Collaborate to increase awareness of legal requirements for cultural heritage management, and the protection of threatened species and communities, and improve compliance.

Other Regional Policy and Legislation:

- Recognition and Settlement Agreement Dja Dja Wurrung
- Recognition and Settlement Agreement Taungurung
- Natural Resource Agreement Dja Dja Wurrung
- Natural Resource Agreement Taungurung
- Land Use Activity Agreement
- Joint Management Plan Strategy Dja Dja Wurrung
- Taungurung Buk Dadbagi - Taungurung Country Plan
- Dhelkunya Dja Country Plan 2014-2034
- Galk-galk Dhelkunya Forest Gardening Strategy 2022 -2034
- Trust for Nature Statewide Conservation Plan 2021-2030
- Loddon Mallee South Regional Growth Plan

Local

Greater Bendigo Council Plan 2021-2025 (Mir wimbul)

Relevant to the development of a biodiversity strategy, the Mir wimbul includes the following goal for Outcome 5: A climate resilient and healthy landscape: *"A regional community that enjoys a restored and thriving natural environment"*. Relevant actions include:

- Implement relevant priorities from the Greater Bendigo Public Space Plan
- Implement Greening Greater Bendigo.
- Develop and implement a Biodiversity Policy
- Develop and implement a management and monitoring plan for ecological restoration projects on City managed land
- Increase involvement of Traditional Owners in the management of public spaces
- Engage the wider community in actions to support our goal

Climate Change and Environment Strategy 2021-2026

The Climate Change and Environment Strategy 2021-2026 provides an overarching vision for biodiversity and regeneration across Greater Bendigo and sets out five broad goals:

- The City projects regenerate landscapes and ecosystems
- Native habitat and areas of important biodiversity are protected for future generations
- Connected and flourishing urban and rural landscapes and ecosystems
- Strong community connection to, awareness of, and care for our ecosystems and biodiversity
- Respectful and effective partnerships with Traditional Owners to regenerate ecosystems

The biodiversity strategy will review and / or progress the City actions listed in the Climate Change and Environment Strategy.

Other local policy and legislation

- Greening Greater Bendigo 2020-2070
- Greater Bendigo Public Space Plan (2019)
- Invasive Plants and Animals Policy
- Nature Strip Policy 2022
- Nature Strip Guidelines 2022
- Strategic Directions Rural Roadside Conservation 2011-2015
- Strategic Directions Urban Roadside Vegetation Management 2011-2015
- Barpangu "Build Together" - Reconciliation Plan 2021–2025
- Urban Tree Management Policy
- Municipal Fire Management Plan
- Reimagining Bendigo Creek (2020)
- Roadside Weed and Pest Animal Control Plan
- Healthy Greater Bendigo 2021-2025
- Baseline Ecological Assessment of the Crosbie Plantation – (2021)
- Landscape Design Guidelines for Subdivisions (2022)
- Waterway guidelines (in development)
- Managed Growth Strategy (in development)

[28] North Central Regional Catchment Strategy | North Central Catchment Management Authority (nccma.vic.gov.au)

Biodiversity and the planning scheme

The Greater Bendigo Planning Scheme

The Planning and Environment Act 1987 is the principal piece of state planning legislation and establishes a "framework for planning the use, development and protection of land in Victoria". One of the objectives of planning in Victoria is to "provide for the protection of natural and man-made resources and the maintenance of ecological processes and genetic diversity."[29]

The Greater Bendigo Planning Scheme (GBPS) contains State and local planning policies, zones, overlays and provisions that control land use and development in the municipality, following Victorian Planning Provisions (Fig. 2).

The Municipal Planning Strategy (MPS)[30] sets out the overarching strategic policy directions for environment and landscape values of Greater Bendigo to:

- Enhance the sense of the Bendigo urban area being 'A City in Forest' that is created by extensive forest areas and roadside vegetation
- Develop biolinks and habitat corridors to connect areas of environmental significance
- Protect and restore biodiversity and create new natural habitats
- Improve the health of streams and watercourses and land adjacent to develop their role as important community assets
- Protect gullies as an important part of the waterway network in providing habitat for flora and fauna
- Protect significant landscapes such as Big Hill, Mount Camel Range and Coliban and Campaspe Rivers

Victorian Planning Provisions
Ordinances - state and local content

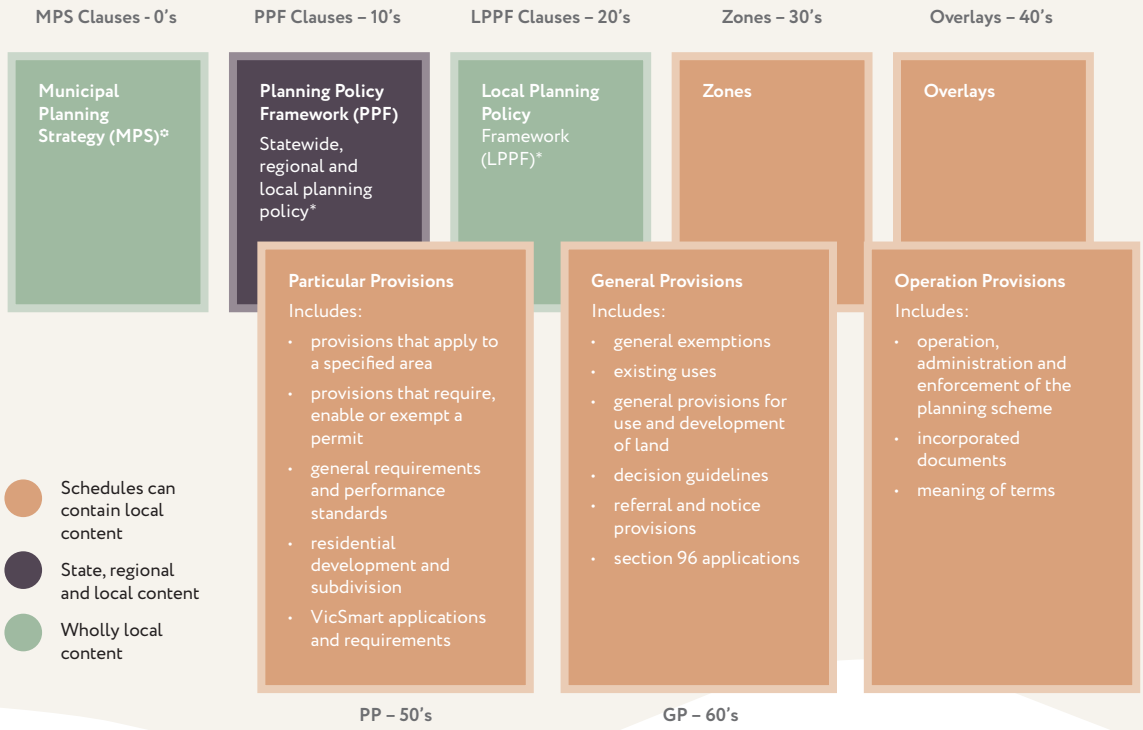

Fig. 2: Victorian Planning Provisions
Adapted from https://www.planning.vic.gov.au

[29] Planning for biodiversity (environment.vic.gov.au)

[30] Municipal Planning Strategy - Greater Bendigo Planning Scheme - Ordinance

There are numerous clauses within the Planning Policy Framework (PPF) that relate to environmental significance, including Cl 11 Settlement; Cl 12 Environmental and Landscape Values (esp. Cl 12.01-1S Protection of biodiversity and Cl 12.02-2S Native vegetation management); Cl 13 Environmental Risks; Cl 14 Natural Resource Management; Cl 16 Housing (rural residential); Cl 18 Transport. There are also Local Planning Policies interspersed (e.g., Cl 12.01-1L Biodiversity).

Zones set out what use and development can occur at a site. They can be used to facilitate the protection and conservation of biodiversity or to direct development away from areas of high value biodiversity. Zones where high biodiversity values may need to be considered include Farming (FZ), Public Conservation and Resource (PCRZ), Public Park and Recreation (PPRZ), Rural Conservation (RCZ) and Rural Living (RLZ) zones (Fig. 3).

There are three overlays which are primarily used to trigger permits where biodiversity values may be impacted (Fig. 4). These are:

1) Clause 42.01 – Environmental Significance Overlay (ESO), which aims to identify areas where development may be affected by environmental constraints and ensure it is compatible with environmental values. This could include protection of watercourses, groundwater recharge areas and remnant vegetation.

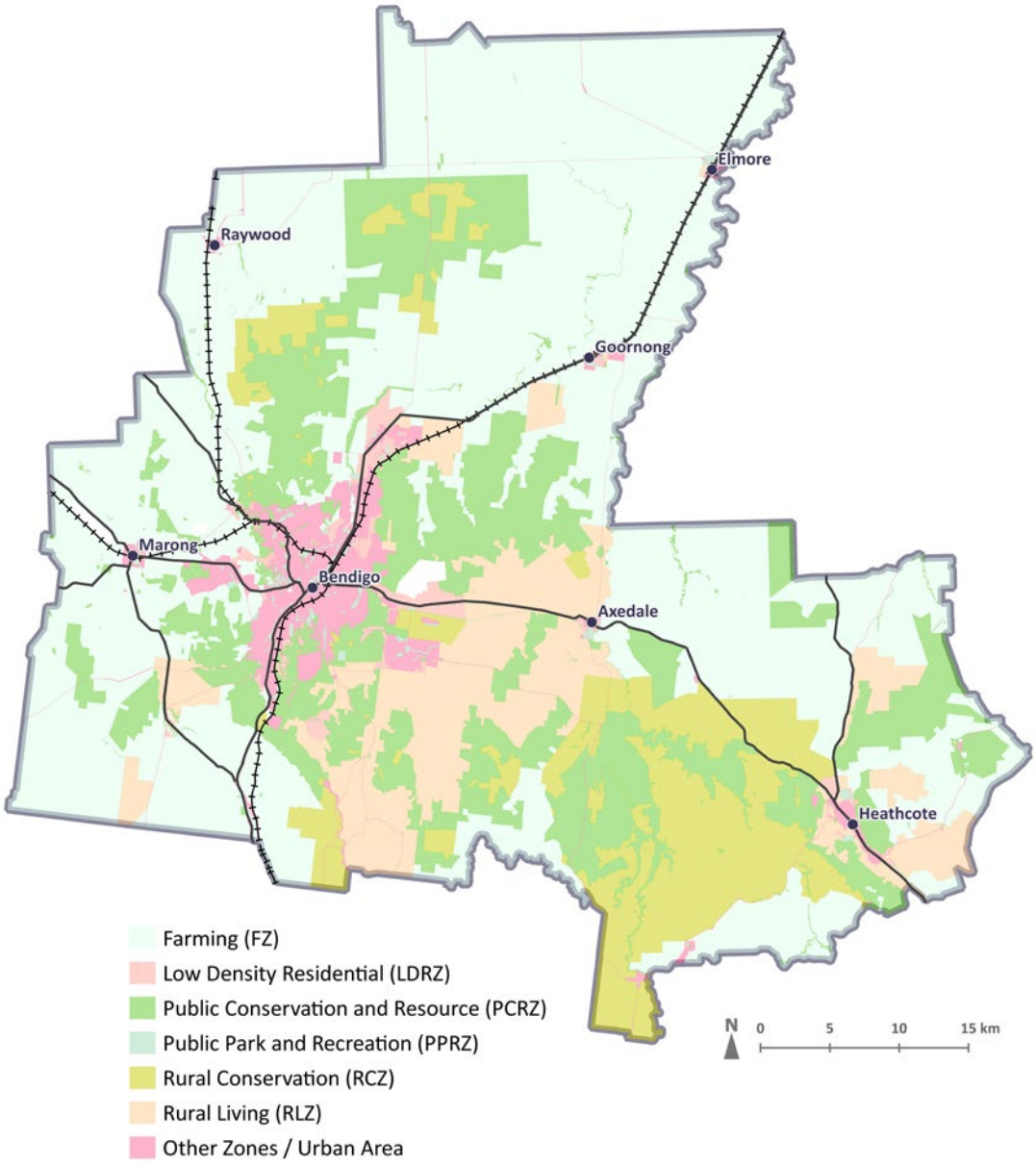

Fig. 3: Current Planning Zones
Primary planning Zones for Greater Bendigo where biodiversity values may be considered. Source: The City's database.

2) Clause 42.02 – Vegetation Protection Overlay (VPO), which aims to recognise, protect, preserve and encourage regeneration of areas of significant vegetation for their special significance, natural beauty, interest and importance, maintain and enhance habitat corridors and ensure that development minimises vegetation loss.

   The GBPS has three schedules to the VPO:

   - VPO1 – Wildlife Corridor Protection
   - VPO2 – Significant Vegetation
   - VPO3 – Roadside Remnant Vegetation

3) Clause 42.03 – Significant Landscape Overlay (SLO), which aims to identify, conserve and enhance the character of significant landscapes, including bush garden and semi-bush residential areas and those the Campaspe River.

There are some particular, general or operational provisions that also relate to biodiversity. Most notably, Clause 52.17 deals with the removal, destruction or lopping of native vegetation to ensure there is no net loss of biodiversity.

The City is the responsible authority and regulator for native vegetation removal under the Greater Bendigo Planning Scheme.

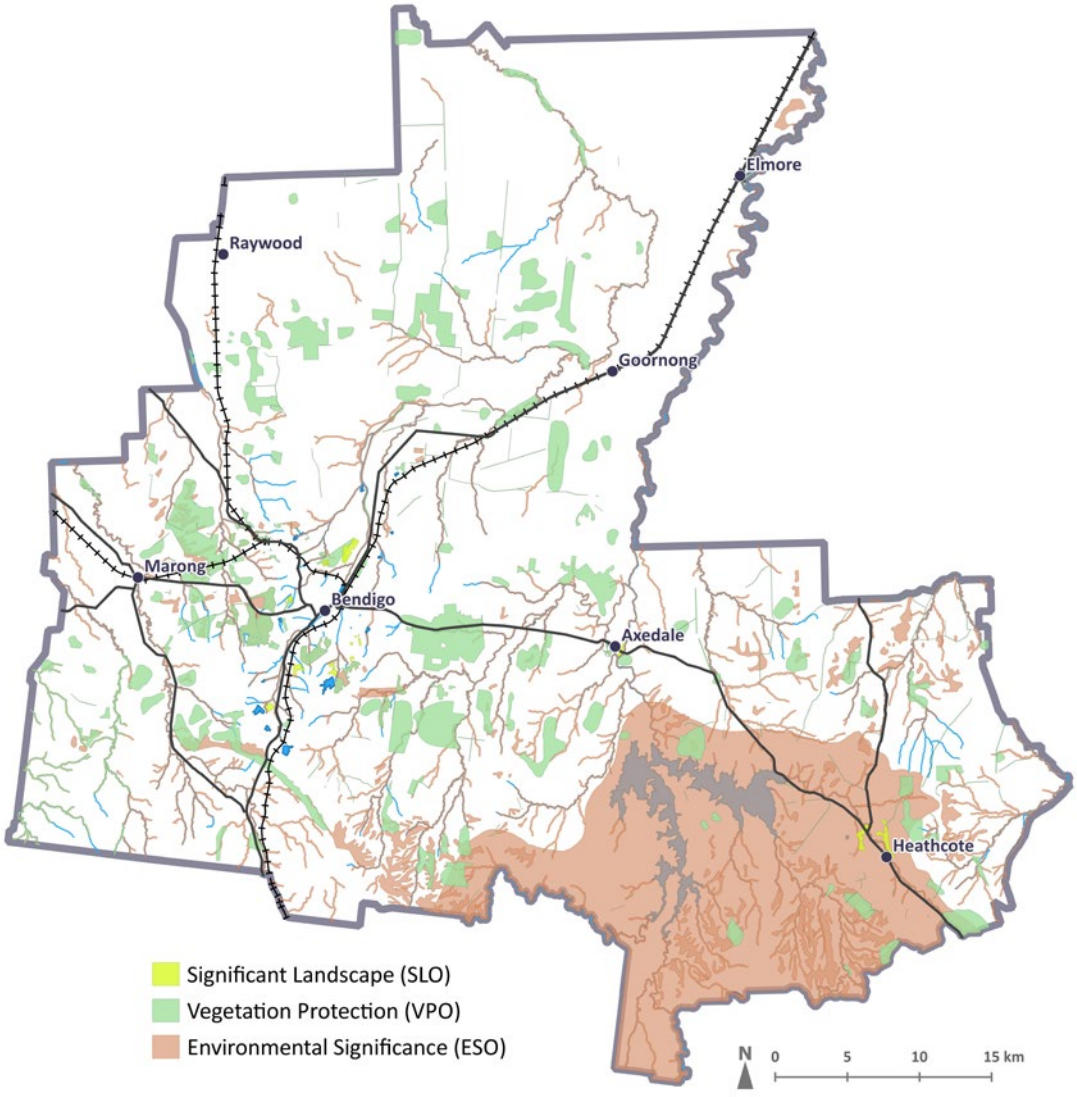

Fig. 4: Current Planning Overlays
Current Planning Overlays relevant to biodiversity conservation for Greater Bendigo. Source: The City's database.

Current challenges for biodiversity within the planning scheme

Many of the existing environmental overlays in the Greater Bendigo Planning Scheme (GBPS) are outdated, as they were translated from the pre-amalgamation schemes dating back to the 1990's. Community values have changed, planning scheme regulations and tools have evolved, more detailed information and mapping are available and there is increasing awareness of the impacts of climate change. The GBPS also refers to outdated documents and several schedules no longer comply with the requirements of the Ministerial Direction on the Form and Content of Planning Schemes[2]. Another key issue is the lack of protection for large trees and other native vegetation where the property size is less than 0.4 ha (Clause 52.17). There is currently no permit trigger that would require assessment of large trees and other potentially significant native vegetation on lots less than 0.4 ha prior to removal.

Other issues include a lack of specified high biodiversity values across the landscape, inadequate land management plans submitted with planning permit applications in farming zone (FZ) and rural conservation zone (RCZ) land that propose effective actions that support biodiversity, and vague wording of provisions within the GBPS.

A review of environmental controls in the GBPS will be conducted to ensure that they are up to date, align with state and local planning policy and better reflect community and stakeholder expectations of biodiversity protection, maintenance, health and recovery.

Theme
Land use planning

Biodiversity Action Plan #
1.1 - 1.5, 1.7, 1.8, 1.14 – 1.16, 1.19, 2.19, 4.2.

Key stakeholders

The City shares responsibility for the protection and enhancement of the environment with other State Government departments, agencies, water authorities, Traditional Owner groups, community environment groups, educational institutions and property owners. Cooperation and partnership across Greater Bendigo and beyond is essential to achieve the goals of this strategy, make the most of limited resources and to collectively enhance and protect our amazing biodiversity values. A list of stakeholders can be seen in Appendix 1.5

Current City action

City's role

Local government has several roles to play in the conservation of biodiversity and protection of threatened species. It can be:

- **Direct** – implementing on-ground action on City managed land (such as natural reserves, roadsides, and waterways)
- **Regulatory** – developing and implementing planning policy and local laws, including enforcement of infringements, including for native vegetation removal
- **Partnering** – facilitating environmental projects and supporting community groups and private landholders
- **Advocacy** – encouraging collaboration and coordination with other stakeholders and public land managers
- **Engagement** – providing nature-based activities, community education, training, and resources
- **Monitoring** – identifying biodiversity values, monitoring species and reporting changes over time

Image by Ian McBurney.

Local government regularly considers biodiversity in its day-to-day operations including:

- Assessing planning applications for developments that may have environmental impacts
- Managing public bushland and waterways (both City owned land and Crown Land for which the City is Committee of Management)
- Supporting other agencies, community groups and landholders
- Ensuring City operations do not damage the environment
- Providing information and advice on matters concerning the natural environment
- Acting on biosecurity issues

The City's impact on biodiversity

The City also delivers on infrastructure and other projects that sometimes impact the natural environment. For example, the City had 14 projects that resulted in native vegetation removal for the 2021/22 financial year, totalling 5.337 hectares removed, including 31 large trees. All projects were approved and obtained the required native vegetation offsets[31], which were all located within the Greater Bendigo local government area. As a standard when offsets are calculated, a multiplier of 1.5 is factored in to help remediate the loss when native vegetation is removed. Vegetation offsets (as well as carbon offsets) are one tool used for revegetation activities by the City to help remediate the impacts of vegetation loss and climate change, noting that there are considerable limitations with these particular approaches.[32,33] The greatest way to prevent biodiversity and climate collapse is by reducing vegetation loss and emissions. Greater focus is therefore placed on the protection and enhancement of City managed land through policy, targeted revegetation and monitoring and by supporting the community in biodiversity-related programs to better achieve biodiversity and climate outcomes.

Recent City achievements

The City has a range of existing programs to aid biodiversity conservation, including Greening Greater Bendigo, Reimagining Bendigo Creek, and the management of over 1000 hectares of nature reserves that contribute to regenerating landscapes and ecosystems.

City staff also manage a 1.2 ha area dedicated to seed production of *Banksia marginata*, a species which has declined considerably across the region. The team has collected seed from a large area across the state to ensure there is good genetic diversity to help the species adapt to a changing climate (Case Study 2).

During 2021/22, the City also established around 5 hectares (~50,000 plants) of natural vegetation on City managed land along with the equivalent of 10,000 aquatic plants. As part of Greening Greater Bendigo, an additional ~2700 trees were planted across urban areas in 2021/22. Over five years (2018-2022), tree loss or failure in this project was ~900 (~180 per year), so success has been good. In addition to tree and shrub restoration, the City sowed 9.9 hectares of native grass during 2021/22.

The 2022 National Tree Day event at Gold Leaf Reserve in Huntly jointly funded and run by the City, Northern Bendigo Landcare Group, Bendigo Northern District Community Enterprise and Planet Ark Environmental Foundation was attended by approximately 200 community members who planted 6,400 native seedlings.

Actions identified where the City can further aid biodiversity conservation in line with its legislative responsibilities and operations are outlined in following sections of this strategy.

Yilingga Marna

Yillingga Marna is a 12-month partnership agreement between the City and DJAARA which supports the implementation of the Local Area Agreement under DJAARA's Recognition and Settlement Agreement with the State of Victoria. Yilingga Marna commits the City to specified processes and outcomes that support healing of Dja Dja Wurrung Country and which achieve positive outcomes for Dja Dja Wurrung people. The agreement will be reviewed annually.

[31] Offsets for the removal of native vegetation (environment.vic.gov.au)

[32] Offsetting Native Vegetation Loss on Private Land | Victorian Auditor-General's Office

[33] Insider blows whistle on Australia's greenhouse gas reduction schemes - ABC News

CASE STUDY 2: CREATING CLIMATE-READY SPECIES - THE SILVER BANKSIA

Mark Toohey, Parks and Open Spaces Team

The Silver Banksia (*Banksia marginata*) was once a common sight across the Greater Bendigo region, providing a "nectar highway" for animals like the Swift Parrot and Regent Honeyeater on their winter and spring migrations through the region. In fact, it was so common that an 1853 geological survey of the area between Malmsbury and Bendigo by Alfred Selwyn provides several handwritten references to "honeysuckle" as it was then known.

But now there are very few Silver Banksia left, leaving fragmented populations with poor genetic diversity across Greater Bendigo. The lack of genetic diversity, combined with increasing climate change could spell the end of this species north of the Great Dividing Range.

To help combat this, City staff, Deakin University in Warrnambool and several community groups came together in 2019 to create a 1.7 ha seed production area (SPA) at the Crosby Regenerative Forestry site, raising ~350 Silver Banksia plants. Plantings contain 12 different provenances (locations) of the species, ranging from Kangaroo island in South Australia east to Dimboola, Hamilton, and Benalla.

This will increase the genetic diversity of the species and improve climate readiness of future reintroductions of Silver Banksia across the region. Fortunately, three provenances are now in the second year of flowering and we hope the rest will flower in time and cross pollinate, allowing for seed harvesting and reintroduction back into the Bendigo area.

Current community action

Environment and conservation groups

Numerous environmental groups serve across Greater Bendigo. These include the Central Victorian Australian Conservation Foundation Group (CVACF), Biolinks Alliance, Bendigo District Environment Council (BDEC), Trust for Nature (TfN), Bendigo Field Naturalists Club, Farmers for Climate Action, Bendigo Climate Alliance, Bendigo Family Nature Club and Wildlife Rescue and Information Network (WRIN). The City works closely with at least 20 groups and/or networks (Fig. 5, see Appendix 1.5 for a list of stakeholders involved in biodiversity conservation across Greater Bendigo).

Landcare and Friends groups

Greater Bendigo residents have a strong connection to nature, with a wealth of community support through Landcare, various friends' groups, and active school programs. These groups participate in activities such as revegetation works on both public and private land (including often on their own properties), nest box installation, wildlife monitoring and control of threats such as weeds and pest animals like the Common Myna.

For instance, Axe Creek Landcare is restoring remnant understorey habitat and establishing biodiversity corridors to connect areas of public land including Pilchers Bridge Nature Conservation Reserve and roadside vegetation as part of their groups' activity. They have recorded several significant fauna species in their region, including Lace Monitor, Square-tailed Kite, Brush-tailed Phascogale (Tuan) and Swift Parrot.

The Longlea and District Landcare (LDL), Friends of Strathfieldsaye Streams and Land (FOSSALs), Northern Bendigo Landcare, Friends of Ironbark Gully Landcare and Mandurang Landcare (among others) have all engaged private landholders in eradicating weeds and revegetating along important creeks and rivers. Among the work of the Northern Bendigo Landcare group is a native fire-resistant display garden at the Huntly CFA that includes plant names and interpretive signage.

Meanwhile, the Friends of Crusoe Reservoir and No 7 Park have conducted monitoring programs, including nest box surveys for several years (Case Study 3), and the Friends of Riley Street Natural Reserve Landcare group have been restoring a degraded site close to Bendigo creek and the O-Keefe Rail Trail (Case Study 4).

Theme
Working with the community

Biodiversity Action Plan #
1.10 - 1.13, 1.17, 2.2, 2.3, 2.11 - 2.15, 3.2, 4.4 - 4.5, 5.1 - 5.6, 5.8 - 5.13.

Image by William Terry.

CASE STUDY 3: 'HOLLOWS FOR HABITAT' PROJECT 2018-22

Friends of Crusoe Reservoir and Number 7 Park Landcare group

A community driven conservation project which is showing some impressive results.

In 2017, Friends of Crusoe Reservoir and Number 7 Park Landcare group (FoCRN7P) received City funding to conduct a fauna survey within Crusoe Reservoir and Number 7 Park (Crusoe), a 220-hectare City managed nature conservation reserve, bordering the Greater Bendigo National Park. This community-focussed project enabled members of several local environment groups to assist an ecologist conduct both day and night-time surveys. The recommendation from this study was to install nest boxes to enhance habitat for two listed threatened species – Brush-tailed Phascogale (Tuan) and Powerful Owl. The nest boxes would provide much needed habitat for Tuan and other arboreal species such as Krefft's Glider and Ring-tailed Possum, while also providing a sustainable food source for Powerful Owl.

In 2018, the FoCRN7P was successful in obtaining a DELWP (Department Environment, Land, Water and Planning) 'On Ground Community Action' grant. The grant enabled the 'Hollows for Habitat' project to commence. The aim of the project was to construct 140 additional nest boxes within Crusoe and surrounding bushland. Construction of the boxes involved collaboration with local schools, Men's Shed groups, and retirement villages. Wildlife monitoring cameras were also purchased with grant money.

The FoCRN7P members and City staff initially visited schools to conduct wildlife presentations and once nest box construction was completed, the schools visited the park for further onsite educational activities and to assist in installation of the boxes. It was a great project, and a lot was learnt a lot from the experience.

Since 2019, the FoCRN7P members have assisted in monitoring 200 nest boxes and the results to date are very encouraging. In the first year, inspections found 53 Krefft's Glider, three Tuan and one possum inhabiting the boxes. In early 2022 results showed 160 Krefft's Glider, 20 Tuan and 11 possums. 2023 saw a small drop in Krefft's Glider numbers, but for good reason.

In 2022-3, in the Big Hill bushland area, a pair of Powerful Owl successfully bred two owlets in a 'deployed' hollow log. The deployed hollow was constructed and installed by City staff and has been monitored with the assistance of community birding specialists.

The breeding of Powerful Owl in a non-natural hollow is an exceptionally rare occurrence and had it not been for the sustainable food source made available to the owls, breeding may never have happened. Wildlife camera footage has captured the adult owls bringing food to the nest hollow up to three times a night. Survey results show the extra nest boxes are providing essential habitat in the area and enabling an abundant population of arboreal mammals to exist.

The adjoining Greater Bendigo National Park is also lacking in natural hollows and a future objective is to seek funding to collaborate with Parks Victoria to improve habitat, by installing several hundred more nest boxes throughout the National Park. We hope this will provide homes for many more native species.

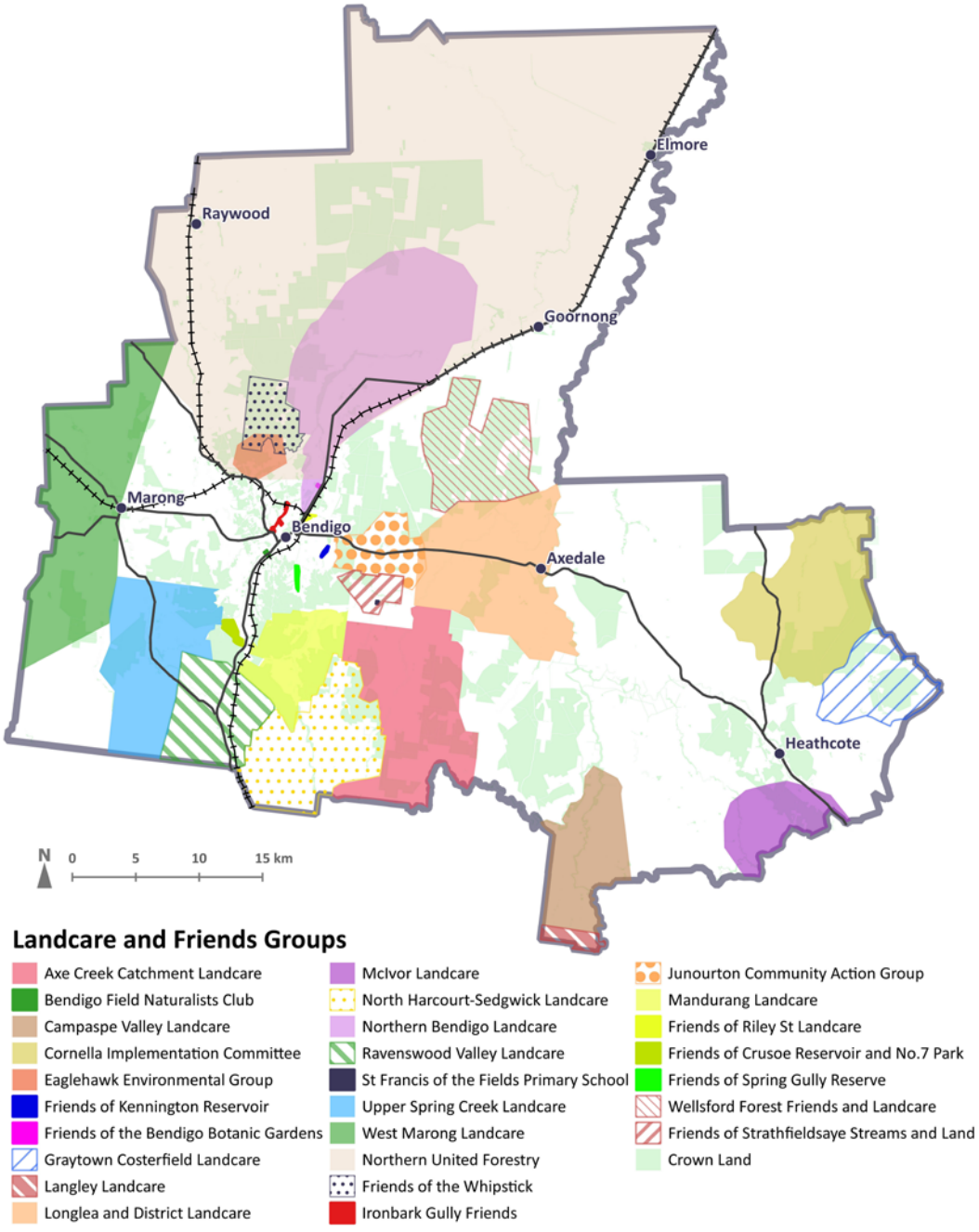

Fig. 5: Community Conservation
Community environment groups past and present working across Greater Bendigo. Source: The City's database.

Image by Mark Hall.

CASE STUDY 4: FRIENDS OF RILEY STREET NATURAL RESERVE LANDCARE GROUP

"When people came to Bendigo in search of gold, they found a line of flat-topped mesas which were soon famous as "The 7 White Hills of Bendigo". All seven were completely destroyed over the next 170 years, not by goldmining but by excavation to extract valuable gravels and sands. The holes were then used as garbage tips for many years. The hill in this reserve was the First White Hill, but it has all gone except for a few remnants. (John Lindner, one of our members).

We are a passionate group of volunteers who came together to protect our common home we call Earth. We are acutely aware of the dangers that we are all facing from the impacts of climate change and believe that trying to restore our bushland and create wildlife corridors is one step we can take to protect biodiversity.

Our story began when Ian, now president of our group, was walking through the area and saw there had been a lot of trees planted in Riley Street after the devastating fires of 2019. Ian was (and still is) a member of the Australian Conservation Foundation (Bendigo) who were launching a project called "Nature for Neighbourhoods". The concept was to encourage people to form local community groups to carry out projects of revegetation in their neighbourhoods and Ian and Jenny (our treasurer), who was also an CVACF member, raised Riley Street as a possibility. Ian researched the area and discovered that it was land (approximately 16 hectares) owned and managed by the City. Ami Greenfield, a park ranger with the City was invited to speak at an CVACF meeting about this site and Vyonne, now Secretary, happened to be there and saw the potential in this project. A committee was formed and grew. We now have 11 active members on the committee, 26 paid members and approximately 50 supporters. The committee decided to become a Landcare Group and now works closely with Mid-Loddon Sub Catchment Landcare. We also have a Memorandum of Understanding with the ACF.

The success of this project lies in continually networking with other community groups and the City to reach a common goal. The group is fortunate to have a diverse mix of people involved in many other community groups who bring a wealth of experience, knowledge and contacts. Education is a key goal. We work with the community and children to encourage them to protect our biodiversity and to develop a love for our natural environment.

Through the dedication of the City rangers and the Friends of Riley Street, the land is repairing. Many of the native plantings are now growing and a lot of natural recruitment is happening. For example, *Cassinia arcuata*, a pioneer plant, is emerging and will eventually be replaced with other natives over time. Many of the plants that the group have planted are spreading seed, so we are hopeful that eventually this reserve will be a thriving bushland for our wildlife to enjoy.

The group has successfully applied for grants, including one from the City to purchase 26 nest boxes which we have installed throughout the reserve. Another grant was obtained to purchase a monitoring camera to check the nest boxes. The camera is now being used with other "Friends of" groups to monitor fauna in nest boxes across Greater Bendigo. The good news is that the boxes are being used regularly and the birdlife in the reserve is increasing. Some of our members have specific roles to play, such as "bird monitoring", "orchid and flora monitoring", "frog monitoring" and "wildlife monitoring". Each member provides a report at our monthly meeting.

Our future goal is to create bushland corridors across Greater Bendigo to the outlying regions for our wildlife to survive and thrive. We also hope to engage City residents to develop their nature strips that could be used as part of these corridors.

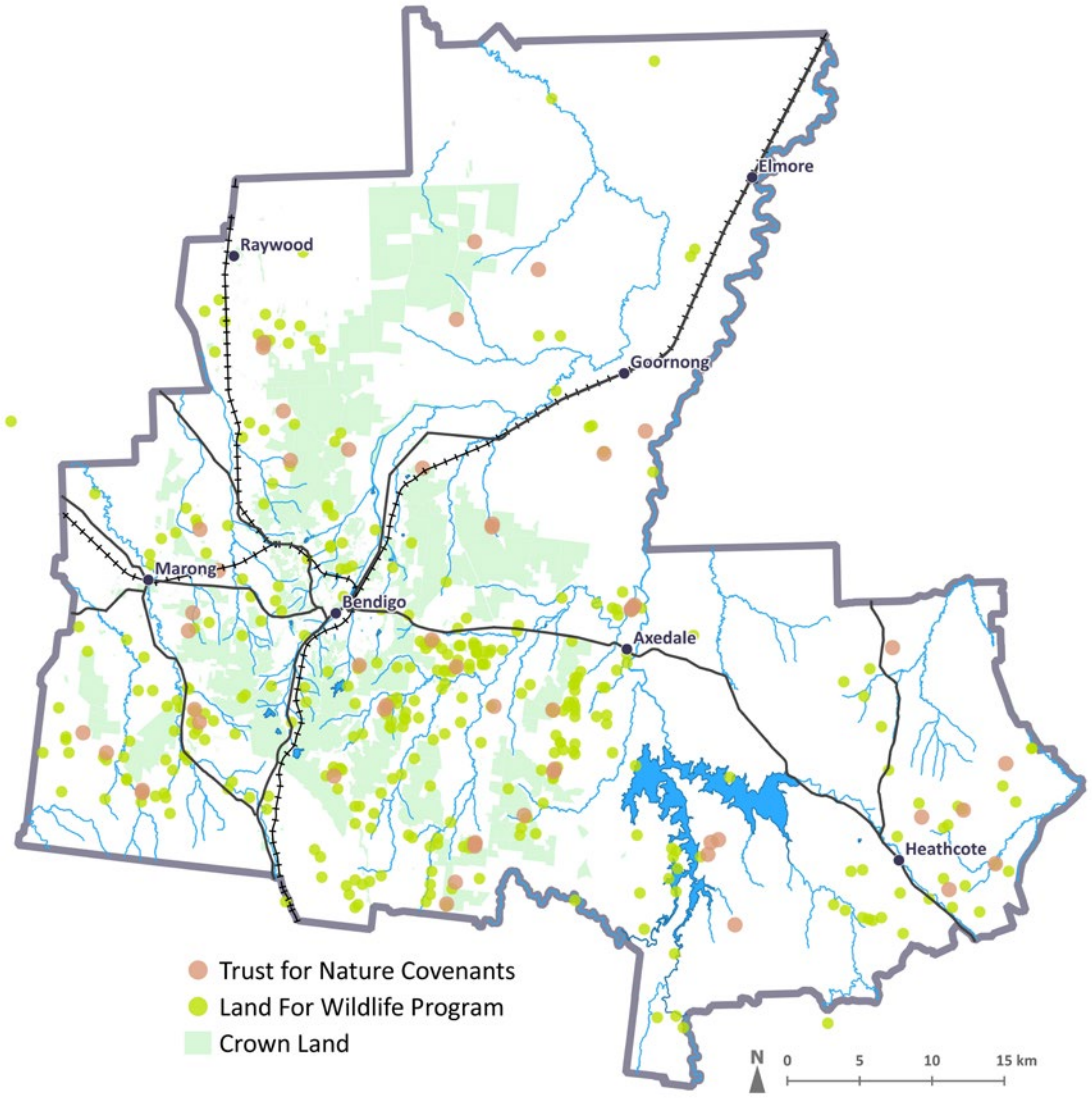

Fig. 6 – Private Land Conservation
Private land conservation across Greater Bendigo. Source: The City's database. Data supplied by DEECA and Trust for Nature.

Trust for Nature

Greater Bendigo currently has 52 properties (totalling 938.6 hectares) with a Trust for Nature conservation covenant on them (Fig. 6), protecting the biodiversity values of those properties in perpetuity. The City offers a rate rebate to landowners with conservation covenants through its Bushcare Incentive Program[34]. The Eastern Box-Ironbark region is one of 18 'focal landscapes' within Trust for Nature's State-wide Conservation Plan 2021-203.

Land for Wildlife

There are also 369 properties across Greater Bendigo that have registered with Land for Wildlife (Fig. 6), a voluntary wildlife conservation program developed and managed by the Victorian Government. These sites are often on private land, such as bush blocks and farmland, but can also be on public land such as schools. They protect important plants and animals and help connect biodiversity across Greater Bendigo.

The City will continue to actively promote voluntary conservation measures on private land and support the priorities of agencies undertaking this work.

Theme
Private land conservation

Biodiversity Action Plan #
2.12 – 2.14, 3.1 - 3.3, 4.5, 5.1, 5.2, 5.5.

[34] Environmental grants and rebates | City of Greater Bendigo

Image by Mark Hall.

Biodiversity values in Greater Bendigo

Vegetation and soils

Geology and soils

Healthy soils are fundamental to healthy, biodiverse ecosystems, and are typically characterised by good soil structure, a deep topsoil layer, many soil organisms and a good ground cover of plants[35]. Soils contain an amazing diversity of microbes, bacteria and invertebrates that create healthy, thriving systems.

Greater Bendigo is made up of a range of geographic landforms and soil types that shape ecosystems, vegetation communities and water retention across the landscape (Fig. 7).

There are six land systems (groups of soil components that have in common major features of climate, geology, bed rock, topography, and landscape) that occur across Greater Bendigo. The land systems to the north of Bendigo and Heathcote have a similar climate and their geological units include basalt, granite, and sedimentary calcareous bedrock. To the south, there are slates, sandstones, alluvium, granodiorite, and basalt. Soils are largely podosols (yellow to brownish yellow coloured upper subsoil horizons that are usually mottled due to variable and restrictive drainage conditions) in the south, and solodic in the north of the municipality, tending to be very dense soils with low permeability (e.g., clay)[36], including the red brown earths found in the wine growing areas around Heathcote.

Greater Bendigo has lost much of its topsoil in areas of intense historical mining activity, while other lands have been contaminated by mining waste and pollutants. This can make planning and implementation of habitat restoration challenging.

Vegetation communities

With a variety of environments created by different altitudes, aspects, hydrology and soils across Greater Bendigo, diverse plant communities have formed that each have a unique structure and support their own associated animals, fungi, and microorganisms. The Victorian Government has classified the different plant communities into Ecological Vegetation Classes (EVCs) based on vegetation structure and floristics, geology, aspect, slope, elevation, rainfall, fire frequency and ecological response to disturbance[37].

Greater Bendigo has 23 different EVCs represented across two bioregions (Victorian Riverina and Goldfields) that cover a range of broad vegetation types including woodlands, grasslands, forests, shrublands and wetlands (outlined in more detail below).

[35] North Central Catchment Management AuthoSoil Health Guide: North Central Victoria (3rd Ed.)

[36] Soils of the Bendigo district (agriculture.vic.gov.au)

[37] Bioregions and EVC benchmarks (environment.vic.gov.au)

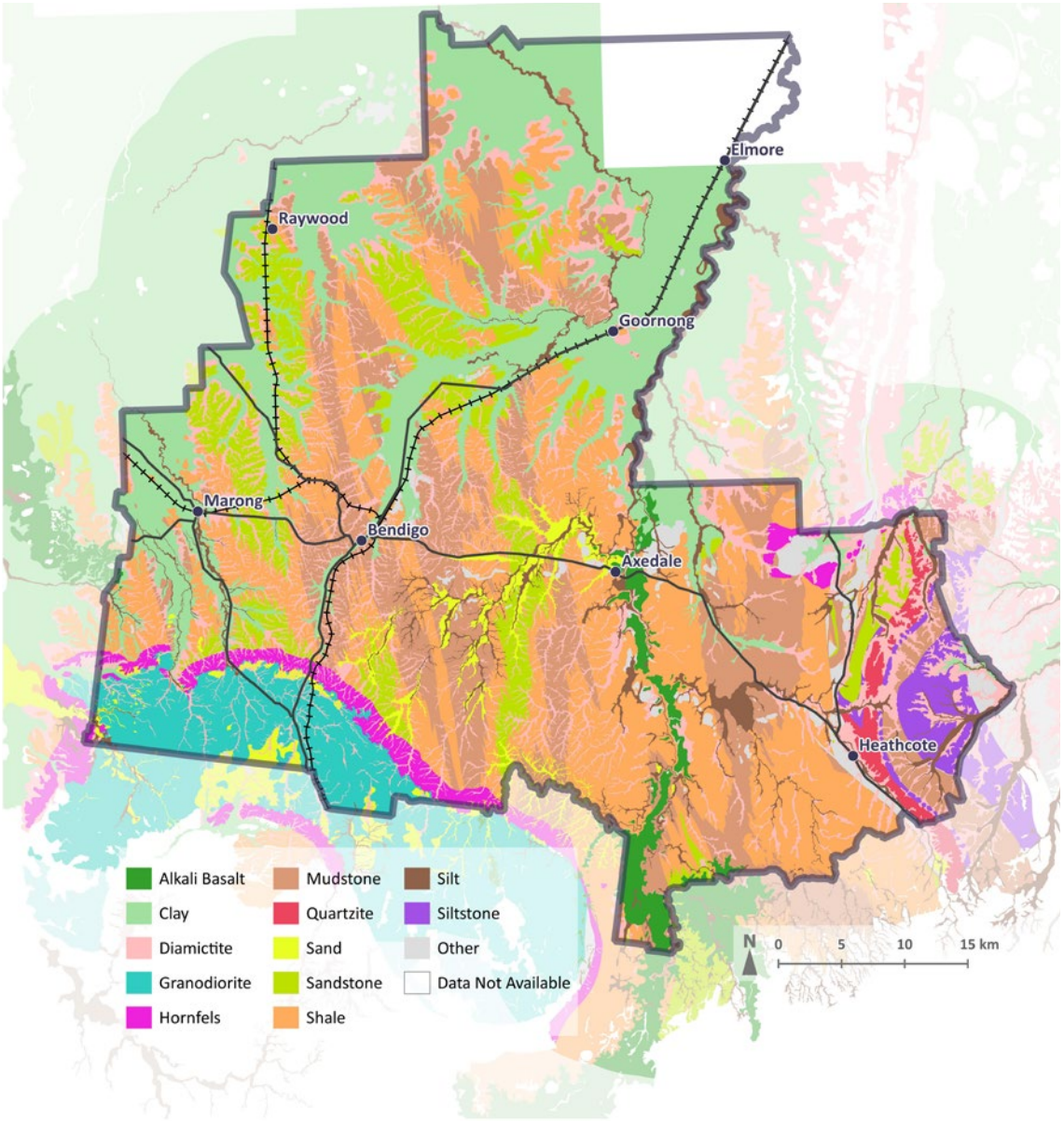

Fig. 7 – Soil Types
*Soil types across Greater Bendigo. Source: Data Vic - SG_GEOLOGICAL_UNIT_50K_*

The most extensive remnant vegetation persists where forests were set aside for timber harvesting or natural values or where soil is too poor for agriculture.

Prior to European colonisation, Greater Bendigo was dominated by Box-Ironbark Forest, Grassy Woodland, Plains Woodland, and Grassy Dry Forest EVCs (Fig. 8), but extensive clearing has left most EVCs greatly reduced across the municipality (Fig. 9). Heaviest hit was the Creekline Grassy Woodland (Goldfields) Community, which is FFG listed, while Plains Woodland, Grassy Woodland and Floodplain Riparian Woodland are among those most heavily modified, largely being converted to agricultural land. Due to this dramatic reduction in native grassy woodland communities, there has been a subsequent reduction in flora and fauna associated with these systems, many of which are now threatened in Victoria. A list of all EVCs found in Greater Bendigo and their conservation status is provided in Appendix 1.3.

Dry Forests

Encompasses the open, dry forests of the foothills. Taller Eucalypt dominated with understory of wattles, peas and grasses.

EVCs: Box Ironbark Forest, Heathy Dry Forest, Grassy Dry Forest, Valley Heathy Forest, Valley Grassy Forest.

Woodlands

Open Eucalypt areas on lower lying hills and alluvial areas with a rich understory of grasses, pea and herbs. Woodlands generally occur on fertile soils and have a grassy understory.

EVCs: Grassy Woodland, Hillcrest Herb-rich Woodland. Alluvial Terraces Herb-rich, Woodland/ Creekline Grassy Woodland Mosaic, Metamorphic Slopes Shrubby Woodland, Heathy Woodland, Plains Woodland, Granitic Hills Woodland, Alluvial Terraces Herb-rich Woodland

Grasslands

Grasslands with a species rich understory of shrubs, grasses and herbs and sparse Manna Gum and Swamp Gum. Most former grasslands have been cleared or degraded and are highly endangered.

EVCs: Plains Grassland, Plains Grassy Woodland, Grassy Woodland, Plains Woodland/Plains Grassland/Gilgai Wetland Mosaic

Riparian Grassy Woodlands

Found along smaller streams on the plains and lower slopes of foothills. Open woodlands with an overstorey usually dominated on the plains by River Red Gum. Manna Gum may be found on the lower slopes of the foothills.

EVCs: Lignum Swamp, Stream Bank Shrubland and Creekline Grassy Woodland, Sedge-rich Woodland, Floodplain Riparian Woodland.

Wetlands

Natural wetlands are not common, either because they have been drained/cleared or the terrain is too hilly.

EVCs: Wetland Formation

State listed ecological communities

As well as EVCs, the Victorian Government has several listed threatened ecological communities. Those that once occurred or are likely to occur in Greater Bendigo include Grey Box – Buloke Grassy Woodland Community, Creekline Grassy Woodland (Goldfields) Community, Northern Plains Grassland Community and Lowland Riverine Fish Community of the Southern Murray-Darling Basin. While this last community mainly occurs in the lowland river reaches, some species do occur in slope and upland Campaspe River reaches and there is concerted effort to reintroduce several species into waterways of Greater Bendigo.

Federally listed ecological communities

The Australian Government has also declared four broad threatened ecological communities under the EPBC Act that may occur within Greater Bendigo: Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia; White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland; Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions, and: Natural Grasslands of the Murray Valley Plains[38] (Appendix 1.4).

Theme
Protecting and enhancing native vegetation

Biodiversity Action Plan #
1.1- 1.4, 1.6-1.10, 1.14- 1.16, 1.19, 2.2 - 2.14, 2.16 - 2.18, 3.1 - 3.4, 4.1, 4.2, 5.3 - 5.5.

[38] Threatened ecological communities in Victoria - DCCEEW

Image by Mark Hall

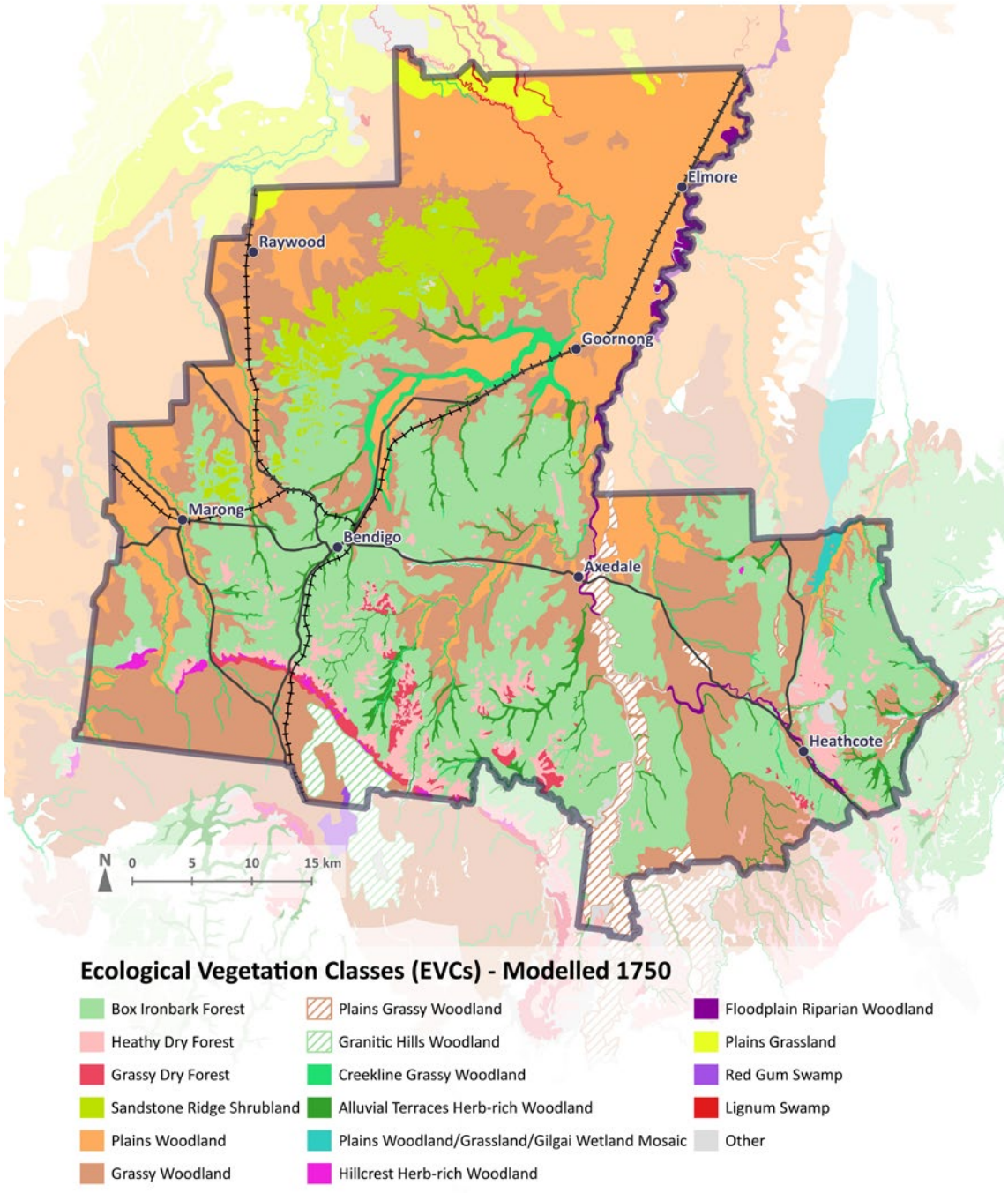

Fig. 8 – Pre-Colonial Vegetation
1750s EVCs: natural vegetation communities prior to European colonisation. Source: Data Vic - Modelled 1750 Ecological Vegetation Classes

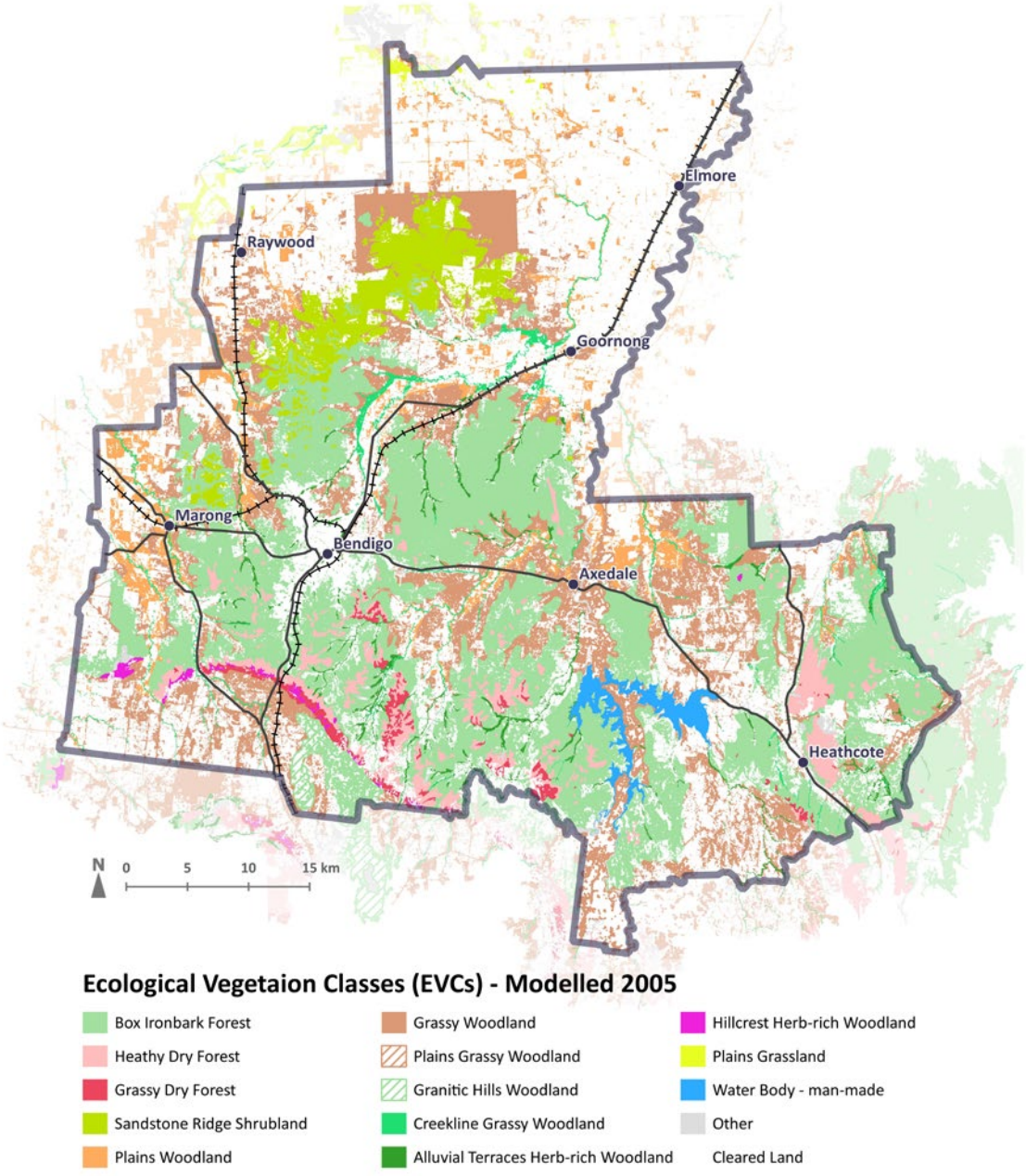

Fig. 9 – Current Vegetation
Extent of EVCs in 2005. Source: Data Vic - Native Vegetation Modelled 2005 EVC

Threatened plants and animals

Greater Bendigo currently has 92 plant and 67 animal species, and two ecological communities listed under the FFG Act (Fig. 10; full list and conservation status in Appendix 1.1).

The Australian Government's Environment Protection and Biodiversity Conservation Act (EPBC Act) also lists 20 plant and 15 animal species as being threatened nationally that have been recorded in Greater Bendigo (Appendix 1.4).

Greater Bendigo is also home to many species that may be considered common, including Kangaroo, Grey Box, New Holland Honeyeater or Common Froglet. Many others are poorly known, such as our countless invertebrate species, fungi and soil microbes. These are all critical to biodiversity and ecosystem function, so we cannot neglect these and focus solely on threatened species, or they may too become threatened with extinction over time. Research shows that while focussing on threatened species, or any single species, can generate improve natural values, it may be less effective than a multi-species or habitat approach[39,40,41] in increasing overall biodiversity.

Local extinctions

Numerous native plants and animals appear to have disappeared from Greater Bendigo, with 20 plants species and 14 animals not being recorded in the region since 1990[42]. These include the Plains Wanderer (last recorded in 1981), Maroon Leek-orchid (last recorded in 1990) and Spot-tailed Quoll (last recorded in 1972). There were also records of Rufous Bettong from 1760, but this species has been declared locally extinct.

With increasing pressures, urgent action needs to be taken to ensure the remaining native plants and animals of Greater Bendigo do not also face extinction.

Threatened animals

Threatened fauna include iconic and significant species such as Brush-tailed Phascogale (Tuan), Growling Grass Frog, Spiny Rice Flower, Pink-tailed Worm Lizard, Golden Sun Moth Macquarie Perch, Grey-headed Flying-fox, Platypus, Common Dunnart, Lace Monitor and Powerful Owl.

Arboreal hollow dependent species

Hollow-bearing trees and logs are critical habitat for many arboreal (tree-dwelling) species and support some of our threatened species. The Brush-tailed Phascogale *(Phascogale tapoatafa)* is a small carnivorous marsupial that occurs in and Box-Ironbark forests and grassy and shrubby woodland.

The combination of species-ecological factors (i.e., large home range, low density and synchronous annual male die-off), habitat loss and fragmentation and predation by foxes and cats has resulted in their decline and listing on the FFG Act. Other threatened arboreal species include Lace Monitor, Powerful Owl.

Woodland birds

Woodland birds are typically associated with woodlands and forests of temperate southern Australia. The continuing decline of species within this group is of significant concern, principally due to the loss, fragmentation and degradation of habitat. The critically endangered Swift Parrot migrates from its breeding grounds in Tasmania to feed on the rich nectars of Greater Bendigo's Box-ironbark forests each winter. This is a critical resource for this species, which is teetering on the edge of extinction. While we cannot directly affect the threats occurring to this species in its breeding grounds (logging and predation by the introduced Krefft's Glider), protecting, enhancing and connecting the forests of Greater Bendigo will benefit this and many other species.

Other threatened woodland species include Bush Stone-curlew, Diamond Firetail, Grey-crowned Babbler, Hooded Robin.

Aquatic species

Aquatic species are under threat from altered waterways and flow regimes, pollution, habitat loss, disease, predation and climate change. The Southern Purple-spotted Gudgeon is one of several small-bodied fish that has become threatened in the waterways of Greater Bendigo due to introduced Redfin Perch and Eastern Gambusia and the loss of permanent floodplain wetlands. Other threatened aquatic species include Platypus, Macquarie Perch, Blue-billed Duck, Broad-shelled Turtle, Brown (Bibron's) Toadlet.

[39] High focus on threatened species and habitats may undermine biodiversity conservation: Evidence from the northern Baltic Sea - Diversity and Distributions

[40] Species-based versus habitat-based evaluation for conservation status assessment of habitat types in the East Aegean islands (Greece) - ScienceDirect

[41] Single species conservation as an umbrella for management of landscape threats | PLOS ONE

[42] Victorian Biodiversity Atlas (environment.vic.gov.au) - records for Greater Bendigo

Grassland species

Grasslands are one of the most extensively altered habitats in Victoria, now only occupying 1-2 per cent of their former range. As a result, many grassland species are also threatened with extinction through habitat loss, overgrazing, rock removal, use of non-native pastures, predation and fire. The threatened Pink-tailed Worm Lizard inhabits grassland dominated by Kangaroo Grass (*Themeda triandra*) with sparse rock cover and is known to occur within Greater Bendigo. Other threatened grassland species include Plains-wanderer, Striped Legless-lizard.

Pollinators

Many species of invertebrates, mammals, birds and lizards pollinate the flowering plants of Greater Bendigo, including the threatened Grey-headed Flying-fox. There has been great concern over recent years about the apparent decline of many insect species, including those we rely on for pollination. While many insect species are not yet listed as threatened under federal or state legislation, two species are: Eltham Copper Butterfly (*Paralucia pyrodiscus lucida*) and Golden Sun Moth (*Synemon plana*).

Golden Sun Moth habitat is characterised by the presence of native grasses, especially Wallaby grasses (*Rytidosperma spp.*) Many suitable grassland habitats for this species have been lost or modified by stock management and Golden Sun Moth is particularly threatened by the influx of invasive pasture grasses into these systems.

Other pollinating insects (Case Study 5) requiring monitoring are native solitary bees, of which one species, the Green Carpenter Bee (*Xylocopa aerata*), no longer occurs in Victoria and its populations are under threat in South Australia (particularly on Kangaroo Island) and in New South Wales.

Threatened plants

Many plant species are threatened due to land conversion (i.e., for agriculture or human development) which disturb and fragment populations, leaving them vulnerable to further loss through drought, fire, herbivory and loss of ecosystem function (e.g., pollinators).

The Erect Pepper-cress *(Lepidium pseudopapillosum)* grows in grassy woodlands of Grey Box *(Eucalyptus microcarpa)* or Buloke *(Allocasuarina luehmannii)* on heavy grey loam or clay soils and has been recorded in Kamarooka Forest. Its small population size and restricted, fragmented distribution make it very susceptible to loss regionally.

Other threatened plant species include Whirrakee Wattle, Goldfields Grevillea, Pale Flax-lily, Small-flower Wallaby-grass, Whipstick Crowea.

Survey gaps

It is apparent from mapping of threatened species records from the VBA that most occur within Crown land parcels, with few records from other public and private land. This likely reflects survey effort and data management than being a true reflection of where threatened species are located across Greater Bendigo. Certainly, greater effort is required to identify, record and map species occurrence on City managed and private land, which will be a priority as part of the Monitoring and Evaluation plan. Another priority is to verify potential local extinctions of species to ensure any remaining populations are recorded and protections put in place to conserve them.

Monitoring

We will establish or continue a monitoring program for a range of threatened species and communities across Greater Bendigo, as well as other species or groups of concern, to act as flagship species and indicators of broader ecosystem health (some outlined below). The monitoring program will focus on identifying populations of these species, surveying them, assessing and mitigating risks, and reporting on trends in their populations and conservation status against actions taken. See Monitoring and Evaluation section for more details.

Theme
Threatened plants and animals

Biodiversity Action Plan #
1.7, 1.8, 1.10, 1.17, 2.6, 2.8, 2.9,3.1, 4.1 - 4.3, 5.3, 5.4, 5.10 - 5.13.

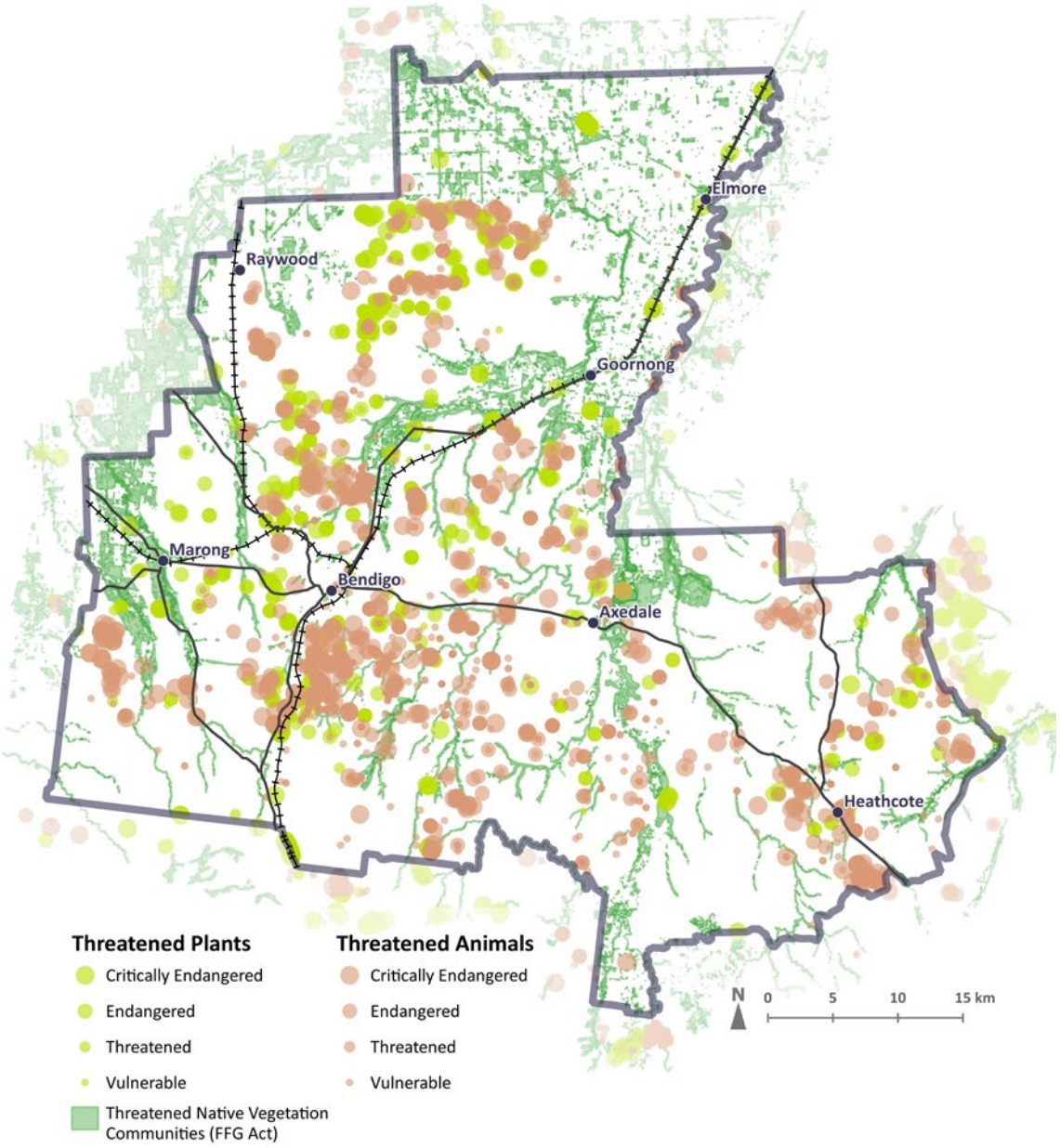

Fig. 10 – Threatened Species and Communities

Threatened flora, fauna and communities listed under the FFG Act. Source Data Vic – VBAFLORA25, VBAFAUNA25 and NV2005FFGCOMM

CASE STUDY 5: LOOKING FOR THE LITTLE THINGS

Mark Hall, Climate Change and Environment Team

Insects come in a stunning array of colours, shapes and sizes, they live in every habitat imaginable and provide ecosystem services that we could not survive without. But despite being an amazingly abundant and diverse group of animals, they are often overlooked in biodiversity surveys and in our estimation of biodiverse habitats. So, we need to look harder for them and start to appreciate the little things living alongside us.

And what better group to explore than our insect pollinators. These little beauties are responsible for helping many of our native plants and food crops reproduce and can be found from grasslands and woodlands to backyards and school veggie gardens. And with stories from around the world warning of global pollinator declines, there has never been a more important time to monitor populations and ensure their survival.

Staff at the City have been raising the profile of the little things we live with through community walks and information sessions, supporting groups with small grants for school education programs and community activities, and helping to create and publish *Your Guide to the Insects of Central Victoria*, a free booklet for the community to identify and understand the lives of the insects of our region.

We launched the guide at the Bendigo Library in October 2022 as part of our Spring in the Bendigo Bush program, followed by a pollinator walk along the Goldfield's track at Soloman's Gully, where we saw many bees, butterflies, beetles flies and wasps feeding on the abundant flowering and supporting this important urban ecosystem.

Our hope is that residents across Greater Bendigo will help us to better understand our insect communities through recording observations as part of the Australian Pollinator Count, assisting in strategic monitoring of local populations and engaging in habitat restoration programs that seek to bring back some of the important ground cover plants and shrubs that support our pollinator communities.

Image by William Terry.

Image by John Walter.

Landform, water and transport networks

Landform

The City has a range of landforms, from the sloping ranges of the Greater Bendigo and Heathcote-Graytown National Parks to the low-lying plains of agricultural lands around Goornong and Elmore (Fig. 11). These provide for a range of habitat types and ecosystems and the varied recreation, such as bird watching, mountain biking, bushwalking and orienteering, enjoyed by the community.

Water

Greater Bendigo has a wealth of waterbodies and lies within the catchments of the Loddon and Campaspe Rivers (Fig. 11). The Upper Coliban, Coliban and Malmsbury Reservoirs, as well as Lake Eppalock provide domestic water supply to residents, industry, agriculture and manufacturing, and enable the City to maintain local parks, sporting fields and public gardens. Smaller creeks like Bendigo Creek and McIvor Creek form important urban waterways for nature and recreation. The Reimagining Bendigo Creek Plan sets out the vision for the creek's enhancement which will be implemented by the City in conjunction with the Djaara and other stakeholders.

The waterways and floodplains of Greater Bendigo and the vegetation within and around them provide valuable habitat and movement pathways for both terrestrial and aquatic life across the landscape. There are regular surveys of macro invertebrates and water quality undertaken by the North Central CMA and volunteers to determine the health of waterways. Surveys of Bendigo Creek show varying, but generally poor health along urban and rural stretches[43].

There are currently 20 active WaterWatch volunteers regularly monitoring 30 sites on waterways within Greater Bendigo. Djandak monitor a further three sites along Bendigo Creek. In addition, there are 14 primary and secondary schools participating in the River Detectives program within Greater Bendigo, eight of which are affiliated with the 'Reimagining Bendigo Creek' project.

Annually, the City is constructing and/or maintaining 10 - 12 waterbodies in preparation for fish release. The preparation includes either digging a new basin or desilting an old basin, then planting aquatic vegetation and installing woody debris. Plants need two years to flourish and create enough habitat for fish to hide and breed in. To date, at least 300 Southern Pygmy Perch, 300 Southern Purple-spotted Gudgeon and 100 Olive Perchlet have been re-introduced to City managed basins (Case Study 6).

With ongoing pollution of soil and water from industry and housing, climate forecasts and a growing population, we need to ensure there is sufficient safe, clean water to maintain the ecological functioning of waterways across the region.

Predicted extreme downpours will lead to an increase in the incidence of flooding events, particularly in urbanised areas. The City must ensure that existing infrastructure can withstand future flooding and that these events and mitigation measures do not impact biodiversity values.

Theme
Waterways

Biodiversity Action Plan #
1.12, 2.3, 2.6, 2.12, 2.13, 2.16, 2.19, 3.1, 4.4.

Image by Felicity Johnson

[43] North Central Waterwatch: River Health Snapshot Report Bendigo Creek Citizen Science Project

Roadsides

The City manages most roadsides in the municipality for their natural values, including performing weed control and fire prevention works (Figs 11 and 12).

Roadsides provide some of the oldest and most significant vegetation across Greater Bendigo, often containing old Grey Box, Yellow Box and Red Gum trees. However, management of roadsides for perceived risk (e.g., fire, visibility) often leaves them lacking sufficient understorey species which are vital for animal habitat and movement. Mowing equipment can also spread environmental weeds that displace native species. This is inevitably complex, requiring a considered and balanced approach to decision making. However, with careful consideration and planning, practices like woody weed control and slashing can help meet goals for both fuel reduction and biodiversity protection.

The City is also responsible for road improvement projects (e.g., road widening, grading) that may impact native vegetation on roadsides and seeks to do so responsibly to avoid negative impacts. Further training on the importance of native vegetation and how to identify it would assist this work.

The City has several plans relating to roadside management: *Roadside Weed and Pest Animal Control Plan, Strategic Directions Rural Roadside Conservation 2011-2015*, and *Strategic Directions Urban Roadside Vegetation Management 2011-2015*, however these may need review.

In 2009, roadside conservation values were mapped across Greater Bendigo (Fig. 12). This continues to inform where priority action is undertaken on roadsides across the municipality to best protect and enhance significant roadside vegetation and habitat for species.

VicRoads manages major roads which can also have conservation values.

Theme
Roadside management

Biodiversity Action Plan #
1.15, 1.16, 2.10, 2.18, 3.1, 3.2, 5.7.

VicTrack and V/Line

Several rail corridors support both intact and fragmented native vegetation, including along the rail line that stretches from Big Hill to Elmore (Fig. 11). These sites often support grassland species and wildflowers, including important habitat for threatened species like the Eltham Copper Butterfly, but are under threat from woody weeds and the potential for frequent management that would reduce diversity.

Image by Ian McBurney.

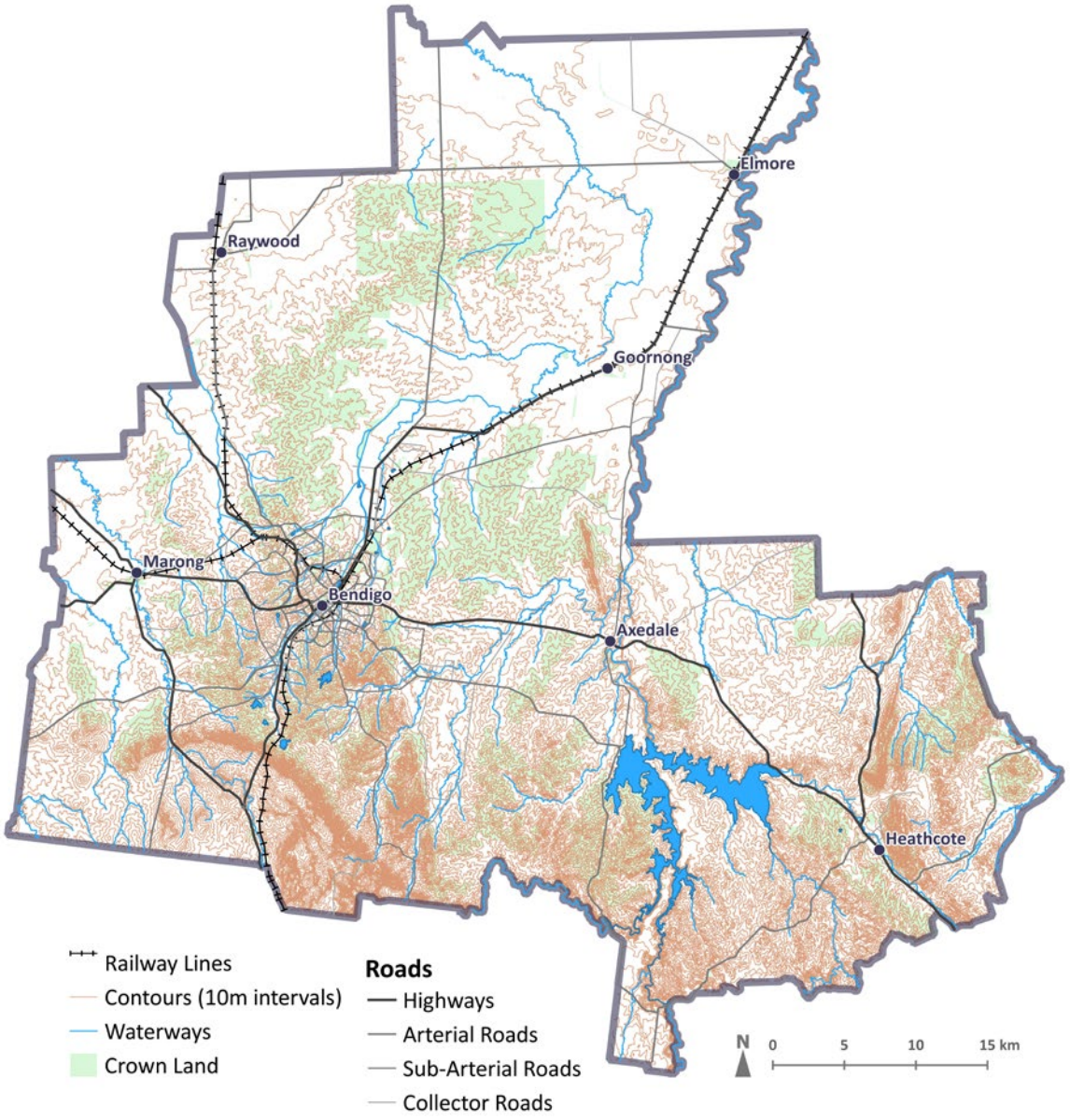

Fig. 11 – Topology and Transport
Contours, waterways, and major transport routes across Greater Bendigo. Source: The City's database.

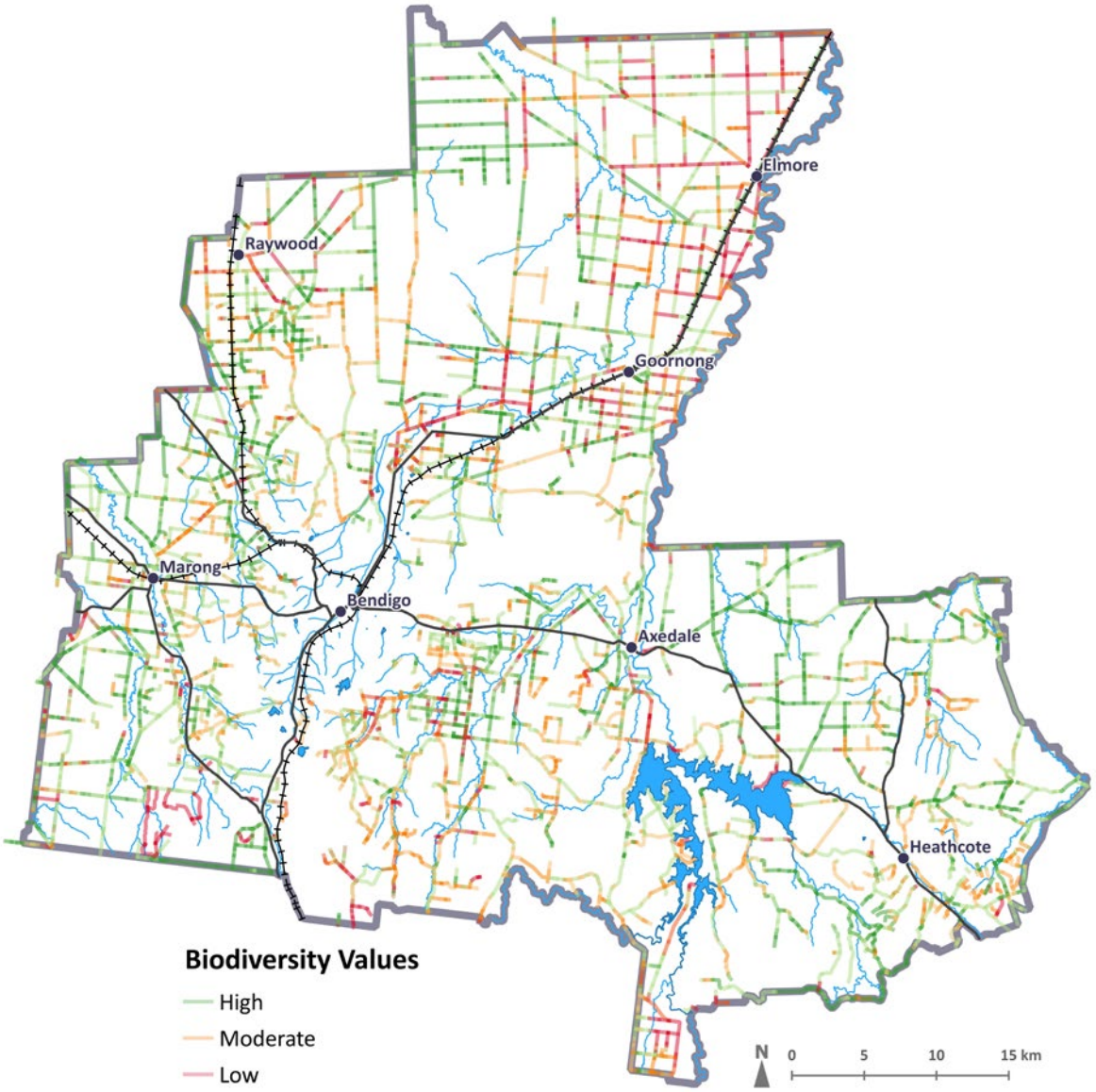

Fig. 12 – Roadside Conservation
Ranking of biodiversity values based on a 2009 survey of all roadsides across Greater Bendigo. Source: The City's database.

Image by Doug Gimesy.

CASE STUDY 6: BRINGING BACK 'THE MAGNIFICENT SIX'

Peter Rose, North Central Catchment Management Authority

The 'magnificent six' are a group of threatened floodplain specialist fish on the brink of extinction in the southern Murray-Darling basin. Species include Southern Pygmy Perch (SPP), Southern Purple-spotted Gudgeon (SPSG), and Flat-headed Galaxias which would have been historically present in waterways and wetlands in the Greater Bendigo Region. Key threats to the species include loss of floodplain habitat (permanent and semi-permanent wetlands), altered flow regimes, habitat destruction (particularly aquatic plants), introduced pest fish such as European Carp, Mosquitofish, and Redfin Perch, and climate change. Floodplain wetlands drying out through the Millennium drought substantially impacted remaining populations of these species.

In 2018, North Central CMA partnered with the City, Australia New Guinea Fishes Association and Native Fish Australia (NFA) to collect threatened Southern Pygmy Perch broodstock to start a captive breeding program with Middle Creek Farm in Gippsland. Motivated by the City's aspiration to recover threatened fish in Bendigo Creek, partners engaged with private landholders, Landcare/Friends groups, developers, and businesses to enhance farm dams and urban wetlands through revegetation and addition of habitat to act as surrogate sites (permanent, predator free 'natural hatcheries' with high quality habitat for the fish to thrive). The project was a success with large recruiting populations of SPP established in the first year and the beginning of an enduring partnership. Southern Pygmy Perch populations have now also established in natural waterways downstream of the 'surrogate sites' including Sheepwash Creek in Strathfieldsaye.

Next on the group's radar was the Southern Purple-spotted Gudgeon, which until 2019 was thought to be extinct in Victoria. The group worked alongside government agencies, researchers, and private hatcheries to collect broodstock for a breeding program, while the City worked with landholders and Landcare groups to create surrogate sites around Bendigo by enhancing riparian and in-stream habitat in urban wetlands, as well as rehabilitating local waterways to re-wild the fish. There are now at least three populations of breeding SPSG in the Bendigo area, and community and school education opportunities have been created through native fish displays and events by Melbourne Sealife Aquarium, Goldfields Library Corporation, NFA and the North Central CMA's River Detectives program. More recently, Olive Perchlet (another species thought to be extinct in Victoria) has been reintroduced into a wetland in Harcourt dog park in Strathdale.

The project now involves 10 groups and 20+ landholders and businesses working towards a common goal. Connecting with community groups, landholders, businesses, developers, and researchers has led to genuine partnerships. There are now groups who are leading their own waterway restoration efforts to contribute to the recovery of threatened small-bodied fish in and around Bendigo. Project outcomes extend beyond recovery of threatened fish, to education and the creation of natural urban spaces for improved health and wellbeing and waterway stewardship.

Future aspirations of the group are to improve waterway and wetland health in the region and establish further populations of these overlooked species, and to reintroduce the EPBC Critically Endangered Flat-headed Galaxias into waterways across Greater Bendigo.

Public land

There is an extensive network of National, State and Regional Parks and reserves within Greater Bendigo that provide important ecological functions and habitat for plant and animals. Most native vegetation is located on Crown land (~69,512 ha) and is managed by the Victorian Government (DEECA and Parks Victoria) and Traditional Owner groups, with the City contributing several smaller parcels for biodiversity conservation and human health and recreation (~1100 ha; Fig. 14). The City's natural reserves contribute roughly 1.6 per cent of all bushlands in Greater Bendigo, which may seem inconsequential, but research shows that many small patches of native vegetation (or habitat) can have high biodiversity value and aid species survival. The City also acts as the Committee of Management (COM) for several parcels of Crown Land, including the O'Keefe Rail trail and several waterways.

Dja Dja Wurrung and Taungurung

Dja Dja Wurrung Country covers a large area of Greater Bendigo extending west from the Campaspe River, and out to the northern, western, and southern boundaries of the municipality. Taungurung Country covers the area to the east of the Campaspe River extending past Heathcote.

Dja Dja Wurrung and Taungurung Peoples have a long and deep connection to Country, a profound understanding of biodiversity conservation and a desire to work in partnership to enhance biodiversity and biocultural values.

More recently, they were recognised and given rights to land and to continue cultural practices and care for Country as legitimate land managers. The Recognition and Settlement Agreements and Natural Resource Agreements outline their rights. The Dja Dja Wurrung Country Plan expresses Cultural Heritage objectives seeking to:

- Strengthen our understanding of what significant sites and artefacts exist on Dja Dja Wurrung Country
- Secure the right and means to effectively protect and manage cultural landscapes and sites.

All of the waterways in Greater Bendigo and some of the remaining forested lands are recognised as sites with important cultural heritage values that the City needs to be aware of when implementing the actions of this Strategy (Fig. 13).

The City works in close partnership with Traditional Owner Groups to jointly manage lands and assist in their desire to build self-determination. This strategy outlines specific actions that further strengthen those partnerships over the next ten years, while recognising that the intent of all actions of the strategy is to align as much as practicable with Traditional Owner rights, responsibilities, customs and needs.

Theme
Traditional Owner values, priorities and partnerships

Biodiversity Action Plan #
1.13, 1.17, 1.18, 2.2, 2.3, 2.6 - 2.9, 2.11 - 2.13, 2.17, 2.18, 3.1, 3.3, 3.4, 4.1, 5.2.

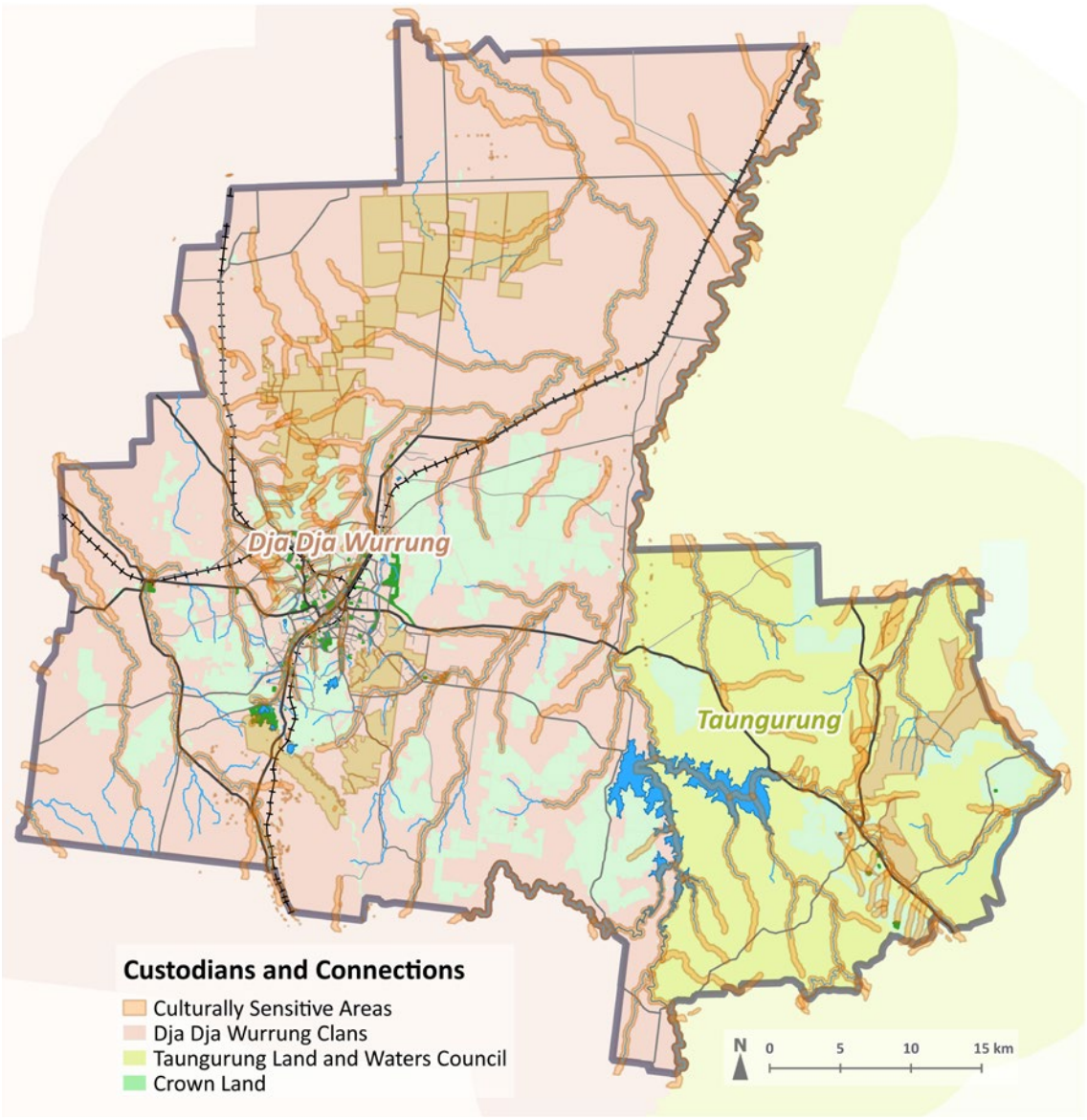

Fig. 13– Traditional Owner Connection to Country
Registered Aboriginal Parties and areas with Cultural heritage values across Greater Bendigo. Source Data Vic - SENSITIVITYPUBLIC

State parks and forests

Greater Bendigo National Park

This 17,020-hectare national park was created from the former Whipstick State Park, Kamarooka State Park, One Tree Hill Regional Park, Mandurang State Forest, and the Sandhurst State Forest in 2002. The park spans areas of Box-ironbark forest, Grassy Woodlands and Mallee. It supports a diversity of native wildflowers and animals and is home to Swift Parrots and other woodland birds. Much of the park is within Birdlife International's Important Bird Area for the Box-Ironbark Region. Greater Bendigo National Park is one of six Aboriginal Title parks in Central West Victoria, jointly managed by the Dja Dja Wurrung Clans Aboriginal Corporation and Parks Victoria.

Wellsford State Forest

This site is home of some of the region's largest old ironbark trees, known to locals as "The Big Trees", two of which have been listed on the National Trust's Significant Trees Register. These provide important habitat for Lace Monitors, Tuans and woodland birds. The site is also one of the best places to see wildflowers in spring. Bendigo and District Environment Council and action group Wellsford Watch have been fighting to have this area declared a National Park over the last 25 years. Previous applications have had the City's support.

Heathcote-Graytown National Park

The Heathcote-Graytown National Park (12,833 ha) is located to the north-east of Heathcote. The site became a national park in 2002 to protect Victoria's diminishing Box-ironbark forests, crucial in retaining Victoria's biodiversity. This park also forms part of the Rushworth Box-Ironbark Region Important Bird Area.

Other

Other important public land within Greater Bendigo includes Shelbourne Nature Conservation Reserve, Pilchers Bridge Nature Conservation Reserve, Crosbie Nature Conservation Reserve Mount Sugarloaf Nature Conservation Reserve and Spring Plains Nature Conservation Reserve.

City managed natural reserves

The City's natural reserves play a key role in protecting biodiversity and providing habitat for wildlife along with passive human recreational activities, managing a number or urban parks, regenerative forestry and native vegetation offset sites.

While some have an Environmental Management Plan in place to provide direction for protecting and enhancing the conservation values of the reserves and managing threats, most need review and others are lacking these. This will be addressed in the implementation of this strategy.

Sites managed by the Parks and Open Spaces Unit include Kennington Reservoir, Crusoe Reservoir and No. 7 Park, Victoria Hill Diggings, Bendigo Creek (south of Howard St), and the O'Keefe Rail Trail. Other City reserves on more degraded land (often with a mining history) are being managed and enhanced for their biodiversity value. For instance, Riley Street Reserve is an old quarry site being rehabilitated by the City and a local Friends Group (Case Study 4).

Theme
Public land management

Biodiversity Action Plan #
1.6, 1.9, 1.10, 1.12, 1.13, 1.15, 2.1 - 2.8, 2.10, 2.11, 2.16 - 2.19, 3.1 - 3.4, 4.1, 4.4, 4.5, 5.1, 5.2, 5.7, 5.10 – 5.13.

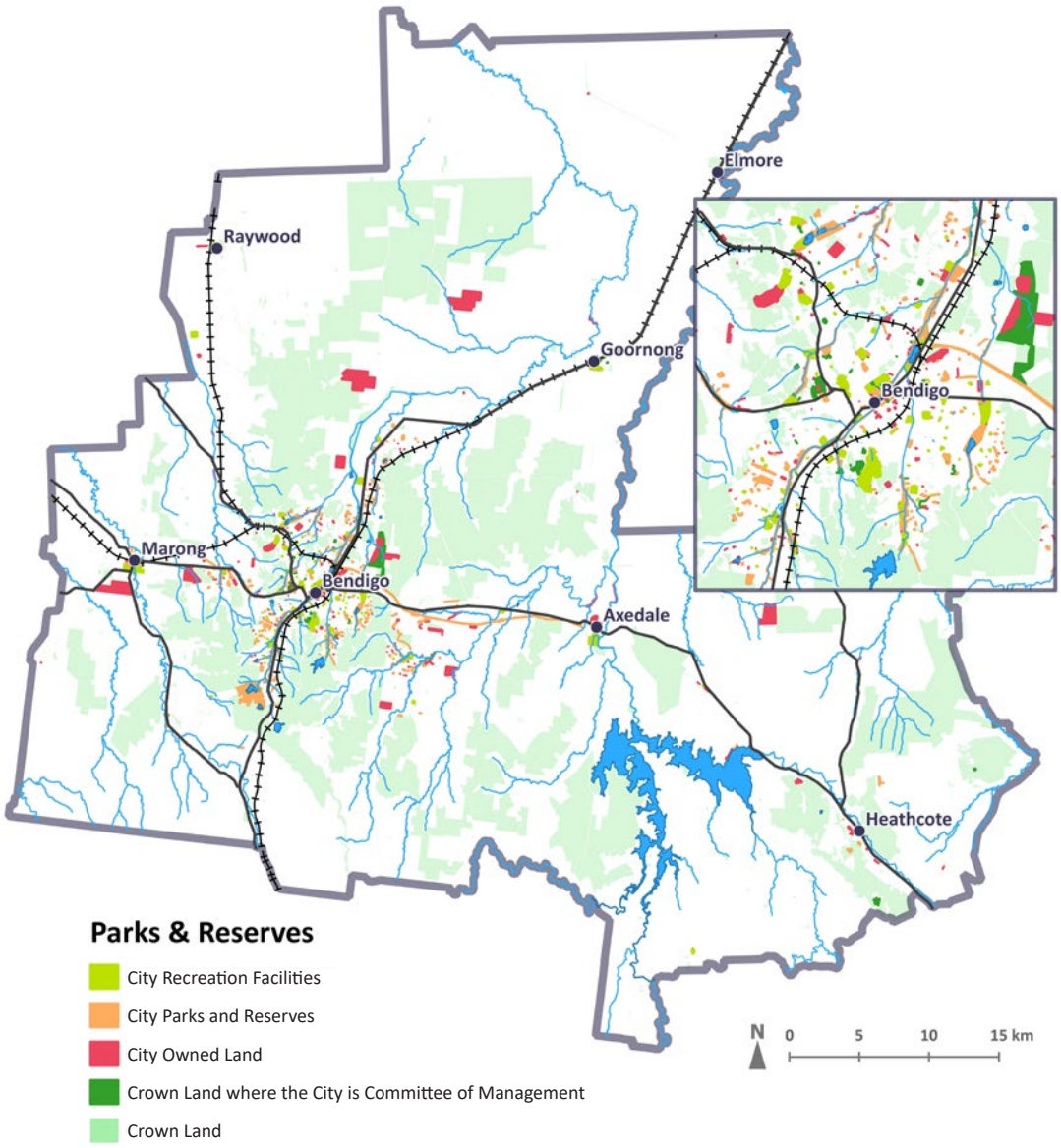

Fig. 13 – Public Land
Land tenure across Greater Bendigo. Source: The City's database.

CASE STUDY 7: AXE CREEK 'EVENTING' SERIES - LOVE YOUR LAND

Kristie Smith, Nature Network Facilitator

While volunteering in Australia was declining due to the COVID-19 pandemic, Axe Creek Landcare experienced a boom in 2022. The group engaged with 200 new people, typically from younger and more diverse backgrounds, who all expressed their love for nature. The audience growth came through 'eventing' - an event series named *Love Your Land*, where Axe Creek Landcare engaged "non-traditional" audiences with different ways of environmental volunteering - from sharing photos of nature on social media, sightings in an app, or building native bee hotels with kids, to enhance appreciation of the environment.

The series targeted females aged 28-50 interested in gardening/hobby-farming, art, nature, health and wellbeing. Time and extra-curricular commitments are barriers to participation for this audience, so events were structured to overcome these. First, the group acknowledged that volunteers are attracted to flexible, event-based and short-term opportunities, that virtual volunteering could attract new audiences and that motivation to contribute comes through a personal connection to the environment. So, they offered an achievable and enjoyable short-term commitment to participants and created a buzz in the community.

Activities like planting trees and education activities had featured highly in feedback as something non-traditional audiences would personally participate in. From this, Axe Creek Landcare developed an event program, including:

- Indigenous Cooking and Conversation with Peta Hudson (online)
- Nature Journaling
- Environmental Photography with Alison Pouliot
- Fungi Foray with Alison Pouliot
- Nature Photography and birdwatching with Chris Tzaros
- Watercolour in the Forest with Terry Jarvis
- Leaf Litter Art with Myf
- Build a Native Bee Hotel (online)

Axe Creek Landcare ensured these events reflected the audience's interests and that barriers to participation were removed, by hand-delivering pre-cut bee hotel kits and posting native ingredients to online cooking participants. All events were free and did not require participants to prepare anything. Events were relaxing and easy, where people could participate on weekends and feel like they were still taking a break from their busy lives. Understanding that this particular target audience was most accessible through Facebook, Axe Creek put effort into social media sharing and online advertising. This allowed the group to be very targeted with their budget and to easily link in with advertising partners to extend their reach.

The indigenous cooking demonstration, native bee hotel construction and photography with Alison Pouliot was picked-up online by the National Sustainability Festival. Attendees joined from across the country and internationally. People from Melbourne followed the Love Your Land program and some even travelled to Bendigo to participate in events. By the end of the program Axe Creek Landcare event releases were being watched by hundreds of younger people, were booked out almost too quickly and there was pressure to pre-release tickets to members. One of the most valuable things to come out of these events was nine months of continuous feedback to ensure future events could be tailored to changing community needs.

Threats

Undoubtedly, humans have shaped Earth to meet their ever-expanding needs. But with increasing pressure on landscapes and the consumption of more resources, ecosystem balance has been disrupted and biodiversity loss continues at an alarming rate.

In Greater Bendigo, we have a range of threats to biodiversity that need urgent and sustained resources if we are to adequately address them and protect our unique biodiversity values. While common human land-uses and activities do not always impact biodiversity conservation (e.g., small-scale agriculture, fishing, house construction, fire), the scale at which these occur and the interaction between them often results in multiplying threats to biodiversity.

This means that every small action we take, thinking there are little to no impacts can collectively have huge impacts over time. And if too many negative actions occur too often, then it can lead to species extinction and ecosystem collapse, and we could lose the plants and animals we share this land with. The major current and historical threats to biodiversity across Greater Bendigo are outlined below and in the list of FFG Act Threatening Processes (Appendix 1.2).

Climate change

Greater Bendigo had a stable climate and thriving ecosystems for thousands of years with regular seasons for plant growth and food production and natural cycles supporting abundant biodiversity. It is now characterised by hot, dry summers and cooler, wetter winters with some frosts and a long-term average annual rainfall of 510 mm.

Climate projections for the region by the end of this century indicate increased temperatures, more frequent and extreme heatwaves, less rainfall, and more intense storm events[44]. Hotter, drier conditions will result in a greater number of heat-related illnesses and deaths of animals and humans, more challenging conditions for plant establishment and survival and increased bushfire risk.

Climate change is also causing compositional change in communities (e.g., loss or re-ordering of species and interactions), particularly in ecosystems already under stress. While mean annual rainfall will decline, incidents of storm events and flooding are predicted to increase. Simply put, the climate is changing faster than wildlife and ecosystems can adapt. Many species will suffer in a warmer and drier Bendigo, while the impacts of some weeds, pests and diseases may increase.

We need to act now to reduce human impacts to climate whilst also protecting and restoring our ecosystems. We need urgent interventions, well above our current rate, to halt and reverse species declines exacerbated by climate change, as well as long-term monitoring to detect changes in the biodiversity of our region if we are to prevent further local species extinctions. We must identify biodiversity adaptation priorities, including refuges to protect, areas to build climate resilience and a strategic approach to climate-wise connectivity[45].

Under the Local Government Act 2020, it is a requirement that all local governments embed mitigation and planning for climate risks across their services, strategies, policies, and processes. The City must continue to lead on climate action and invest in making our environment and communities more resilient to climate change. While there are only a few specific actions that explicitly mention climate change and its impacts, all actions listed in this strategy implicitly help the City tackle this issue through protection, enhancement and connectivity of healthy, natural environments, and community engagement that promotes awareness and action to combat the pressures of the changing climate. Those actions where climate mitigation measures may be more tangible are listed below.

Theme
Climate change

Biodiversity Action Plan #
1.1 - 1.6, 1.9, 1.10, 1.12, 1.15, 1.16, 1.18, 2.2, 2.3, 2.6 - 2.14, 2.16 - 2.19, 3.1 - 3.4, 4.1, 4.2, 4.4, 4.5, 5.3, 5.5, 5.7, 5.8.

Image by Mark Hall.

[44]Clarke JM, et al., 2019. Loddon Campaspe Climate Projections 2019, Melbourne Australia: CSIRO

[45]Climate Change | North Central Regional Catchment Strategy (rcs.vic.gov.au)

Mining

Greater Bendigo has a long mining history. It has brought prosperity, but at an environmental and biocultural cost. Mining wastes have long contaminated our land and waters, removed huge tracts of vegetation, and turned soils upside down.

"The landscapes of the goldfields had changed very quickly. Just a few years earlier the Bendigo valley was carpeted with green grass and dotted with beautiful gum trees, while its wattle-shaded creek banks sloped down to waterholes full of sweet, clear water…but sludge bought an end to all that[46]".

There are gold mines still in operation across Greater Bendigo today near important waterways like the Campaspe River. While regulations are in place to minimise the impacts to the natural environment, mining activities continue to threaten and degrade native bushland and waterways. Effects can be cumulative or immediate and long-lasting. For instance, if tailings dams that hold mining wastes were to fail, the pollution to lands and waterways of Greater Bendigo would be devastating and remain in the system for years. The Bendigo and District Environment Group (BDEC) has been actively campaigning for changes to mining activities to abate the threat to biodiversity for over twenty years and continues to advocate to the City and other levels of government on mining matters.

Managing rehabilitation of sites post-mining is time consuming and costly, with mining companies sometimes failing in their obligations. For instance, Earth Resources Regulation is using rehabilitation bonds totaling $5.9M to rehabilitate former mine sites - Kangaroo Flat, New Moon, Eaglehawk mining and Woodvale Evaporation Ponds sites, following cessation of a mining license[47]. There is also an Environmental Effects Statement being considered for an application to extend current mining operations[48].

Gold panning, fossicking, or prospecting, typically involving metal detectors, hand tools, pans or sluices is allowed within the Greater Bendigo National Park with an appropriate permit. However, this activity can disrupt biodiversity values if not done responsibly – by avoiding vegetation removal, replacing soils and leaf litter, and keeping to marked tracks.

[46] Sludge: Disaster on Victoria's Goldfields. By Susan Lawrence and Peter Davies

[47] Kangaroo Flat, New Moon, Eaglehawk mining and Woodvale Evaporation Ponds - Earth Resources

[48] Fosterville Gold Mine - Earth Resources

[49] Regional City of Bendigo - Regional Development Victoria (rdv.vic.gov.au)

Urban development

Greater Bendigo continues to grow, with an expected population expansion of ~33,900 people by 2036, from over 121,000 people in 2021 to 155,175 in 2036, a growth rate of 1.7 per cent per annum[49]. This brings with it a need for greater housing and community infrastructure. While all developments must meet relevant regulations, the challenge for biodiversity is that any individual development may not cause a 'significant impact on a local population or community', and therefore is allowed to proceed. However, significant losses to biodiversity occur through cumulative impacts from developments; incremental habitat fragmentation through direct vegetation removal, timber collection, domestic gardens, bushfire regulations and fuel management on roadsides and adjoining bushland. Weed encroachment from urbanised landscapes, road collision with animals and predation of native animals by cats can cause long-term damage and are much harder to regulate and control. Thus, both the immediate threats to biodiversity from development and the ongoing threats to biodiversity in the landscape require careful consideration and stronger protections. A move toward greater infill development within the current urban growth boundary would provide the greatest protection to biodiversity values, while individual landholders could continue to support urban biodiversity by providing healthy garden environments with a diversity of flowering plants and native grasses, in keeping with the natural environment of Greater Bendigo.

Theme
Removal and modification of native vegetation

Biodiversity Action Plan #
1.1 - 1.8, 1.14 - 1.16, 1.19, 2.5 - 2.8, 2.10 - 2.13, 2.16 - 2.18, 3.1 - 3.4, 4.1 - 4.5, 5.2 – 5.4.

Agricultural expansion

Agricultural practices in Greater Bendigo vary from large-scale grazing and cropping to smaller lifestyle properties and urban market gardens. Managing farms for both productivity and biodiversity values is important, as inappropriate land management practices can result in weed and pest animal invasion, over grazing by stock on native vegetation, severe gully erosion and nutrient input into waterways.

With topsoil lacking across the region, poor pasture management (e.g., relying solely on annual grasses that are shallow rooted) can impact biodiversity values and agricultural productivity. Fortunately, many landholders in Greater Bendigo are motivated to improve the management of their land through participation in programs like the Healthy Landscapes project[50], run collaboratively with Macedon Ranges Shire Council and others. The North Central CMA and Agriculture Victoria run other agricultural programs across Greater Bendigo, including Regenerative Agriculture and Digging Deeper into Soils.

Pollution

Pollution from development, industry, mining, and agriculture continues to impact the land and waterways of Greater Bendigo. Most notably, the legacy of arsenic from mining activities contaminates land and rivers, impacts the local groundwater, endangers the health of wildlife and humans, and jeopardises restoration activities.

Contaminated groundwater is rising within parts of Bendigo and interventions of groundwater extraction and treatment are costly.

Firewood collection

Inappropriate and illegal firewood collection can lead to biodiversity loss through removal of vital food and habitat for insects and native animals. With an increasing population and continued reliance on fuel heating, firewood collection continues in state forests and along roadsides, often illegally.

Djaara have rights to firewood collection and do so to appropriately manage sites through cultural thinning to heal forests and return them to a pre-colonial state where they were more open and diverse. Resources resulting from this practice, including firewood as well as alternative sources, such as plantation timber could be promoted as sustainable products to protect and even increase biodiversity.

Pest animals

Pest animals threaten the biodiversity values of an area. They can be species introduced into Victoria or native species that have become overabundant, aggressive, or invasive. Key threats to biodiversity posed by pest animals are predation, habitat destruction and competition for resources.

Predation of native animals occurs by species such as foxes and cats (feral and domestic). Foxes are very efficient predators of native animals, and an agricultural pest, taking young lambs and calves and spreading weeds. Domestic and feral cats are a particularly dangerous predator to birds and smaller marsupials such as Krefft's Gliders and Tuans and are instinctive hunters, killing animals regardless of hunger. Combined, these two predators are responsible for killing more than 2.6 billion mammals, birds, and reptiles across Australia every year[51]. Pet cats can stray widely, day and night, so the Cityl is introducing a strict cat curfew that requires cats to be contained within a property 24 hours a day and not allowed to roam[52]. Dingoes are efficient hunters of these pest species and can help regulate numbers, however they have been removed from the landscape over time due to their own perceived status as a threat to livestock.

The City actively removes fox dens and harbour as part of a control program in City reserves but does not bait. The City also works with other government agencies and private landholders to manage this threat across Greater Bendigo.

Grazing by feral animals, including goats, pigs, deer, hares and rabbits and some abundant native species such as kangaroos and wallabies, limits the regeneration of native vegetation and puts pressure on agricultural systems. More than two rabbits per hectare can virtually eliminate the regeneration potential of plant species, so grazing pressure is a major impediment to restoring depleted ground cover plants across Greater Bendigo.

[50] Healthy Landscapes - Macedon Ranges Shire Council (mrsc.vic.gov.au)

[51] Foxes and cats are knocking out Australia's wildlife with a devastating one-two punch - ABC News

[52] Cat curfew in Bendigo more strict, councillors unanimous on limiting cats to properties 24/7 - ABC News

Competition for resources by abundant or aggressive species can also impact populations of native wildlife and alter plant community structure. Feral swarms of honeybees entering bushland can take over tree hollows, displacing birds and mammals reliant on this scarce resource. Honeybees may also outcompete other pollinators for nectar and pollen due to their numbers and longer foraging period, particularly where resources are scarce[53]. The Common (or Indian) Myna is an aggressive introduced bird often found in urban and open rural landscapes, while the native Noisy Miner is an aggressive bird that excludes other small birds from its large territory, displacing and fragmenting bird populations. As such, it has been declared a key threatening process under the FFG Act (Appendix 1.2) and should be considered in biodiversity monitoring and conservation. There is an active Common Myna control group in Greater Bendigo, run by volunteers.

Rats and mice are common in both urban and rural areas and can lead to species decline due to their massive numbers and voracious appetites. They are often controlled through chemical baiting, however the inappropriate use of these can affect native species that may feed on them, such as owls, falcons and kookaburras. Birdlife Australia is actively campaigning against the use of some of these baits to ensure the safety of native bird species (and other native animals that feed on dead or injured rodents)[54].

Weeds

Invasive plants threaten the biodiversity of Greater Bendigo by changing and destroying habitat; by outcompeting and smothering indigenous vegetation, providing harbor to vermin, choking waterways, and offering few resources for native animals.

Many Weeds of National Significance[55] are found across Greater Bendigo. These and other environmental weeds are plant species that are a priority to control due to their invasiveness and environmental, social, and economic impacts and include Chilean Needle Grass, Blackberry, Gorse, Broom, Bridal Creeper and Boneseed.

The City has several policies and procedures to combat the threat of weeds, including the Invasive Plants and Animals Policy and Roadside Weed and Pest Animal Plan. Future updates to these should consider new and emerging weeds that could threaten biodiversity values.

[53] European honeybees outcompete native pollinators, concerning experts and traditional owners - ABC News

[54] BirdLife Australia - Act for Birds: Rat Poison. https://www.actforbirds.org/ratpoison

[55] Weed profiles - Weeds Australia

Legislative responsibilities for managing invasive species

Both public and private landholders have a responsibility under the Catchment and Land Protection Act 1994 (CaLP Act) to control pest plants and animals. Working collaboratively with other land management agencies and supporting volunteers is vital to controlling these threats to our region's biodiversity.

While weeds listed under the CaLP Act must be controlled, other environmental weeds can impact biodiversity by competing for resources with native plants. These are often 'garden escapees', which are spread by clothing, dumped garden waste, vehicles, stock, wind and water. For example, species like Gazania are spreading rapidly, mainly along roadsides, across Greater Bendigo. These environmental weeds should also be given adequate resourcing to address in a strategic manner, but currently do not. We all have a responsibility to select appropriate garden plants that benefit biodiversity and provide aesthetic and cultural value.

Theme
Pest plants and animals

Biodiversity Action Plan #
1.9, 1.11, 1.13, 2.2 - 2.4, 2.13, 2.15, 4.3, 4.5, 5.3, 5.7, 5.10, 5.13.

Wildlife and human interactions

While many interactions with native wildlife can be positive experiences that connect us with the natural world and increase our appreciation and respect for the plants and animals living with us, some interactions are less positive for us and for the species encountered. The City will continue to act to increase connection with nature while limiting the impacts of negative wildlife/human interactions where possible.

Roadkill

Increasing urbanisation brings people into contact with nature in ways that do not benefit either. Providing permanent water sources and infrastructure around developments, such as roadsides, lead to more vehicle collisions with animals such as birds, wombats, snakes, and lizards. This can lead to a reduction in animal populations, with some species disappearing from parts of the landscape they were once abundant in. Collision with kangaroos is a major threat to human safety, as kangaroo numbers have increased through human land-use change (more water sources and abundant grass to forage on) and they often cross roads to find new resources.

Animal collision data suggests Greater Bendigo, particularly the Heathcote area, has one of the highest animal collision rates in Australia[56]. There is currently a lack of accurate data on animal collisions in Australia, with only one database available for recording roadkill in Tasmania[57]. Wildlife Victoria are currently working with the City and other councils on programs to reduce the impacts of vehicle collision on wildlife.

Image by John Walter.

[56] AAMI Data - Animal Collision Hotspots

[57] Animals | The Australian Roadkill Reporting Project—Applying Integrated Professional Research and Citizen Science to Monitor and Mitigate Roadkill in Australia (mdpi.com)

[58] Wildlife Victoria concerned about non-compliance as duck hunting season opens | Bendigo Advertiser

Hunting and fishing

Hunting and fishing are popular activities in Greater Bendigo. Hunting generally focusses on wildfowl as well as pest species like foxes, while several lakes and waterways are stocked with both native and introduced angling fish species. While these activities can impact biodiversity and further threaten species if not conducted under strict adherence to regulations[58], there is potential to engage this community in nature stewardship, and local groups associated with these activities are generally supportive of, and actively engaged in, conservation activities. Djaara and Taungurung also have rights to hunt and use it to care for Country. Supporting this right could improve biodiversity and biocultural values of landscapes.

Theme
Wildlife and human interactions

Biodiversity Action Plan #
1.1, 1.4, 1.5, 1.12, 1.15, 1.16 – 1.18, 2.2, 2.3, 2.7, 3.1, 3.2, 4.1, 5.1 – 5.6, 5.10, 5.13.

Fire regimes

Greater Bendigo is a high-risk area for fire, particularly at the urban forest interface of Bendigo, in woodlands, broad acre cropping and grazing landscapes. Very high fuel levels occur across parts of the region and the average fire season lasts 126 days (about four months) . Bushfire risk is set to increase with the warmer, drier climate predicted under climate change, impacting already threatened native species. There is also increasing demand to reduce the risk of fire through habitat clearing on private land and fuel-reduction burns on public land.

However, fire is also an important part of the evolutionary history of the natural environment, with some plants and ecosystems requiring specific fire regimes. The Dja Dja Wurrung and Taungurung Peoples have used fire as a tool to manage landscapes for thousands of years and continue to conduct cultural burns. Fuel reduction burns are carried out by land managers to reduce bushfire risk to communities but can burn too hot to achieve real ecological benefits. The impacts of large-scale burns can include interruption to species' life cycles, fewer hollow-bearing trees, changes in floral composition, death of native animals (including threatened species), loss of food resources for wildlife and harm to biocultural values.

The City currently engages in vegetation management where appropriate on City managed land and along roadsides but does not currently conduct planned burns. Private landholders often "tidy up" understorey plants, leaf litter and logs to reduce risk, however this impacts biodiversity through a reduction in soil nutrients, food and habitat for native species and often simplifies ecosystems and encourages weed invasion. The challenge is to balance the need to protect life and property and to provide an appropriate fire regime or other appropriate management action for different ecosystems to promote biodiversity and functioning ecosystem processes. Better community education could mitigate much of the unnecessary impacts.

Theme
Fire

Biodiversity Action Plan #
1.1 - 1.5, 1.9, 1.15, 1.16, 1.19, 2.2, 2.7, 2.18, 5.2, 5.7.

PART 2: STRATEGIC DIRECTIONS AND BIODIVERSITY ACTION PLAN

Setting priorities

Greater Bendigo is a unique regional landscape, with its major centres surrounded by high value native forests and many towns with areas where human dwellings interact with forest, grasslands or waterways. We are also fortunate to have a community that is passionate about conserving the natural environment and many City managed reserves that protect important plant and animal communities. While large natural areas provide key habitat and require increased protection and on-going management, it is the places in-between that will provide opportunities for the City and the community to protect, enhance and connect habitats across the landscape.

Combined, the remaining areas of native vegetation along waterways, transport routes and scattered trees on private land, can provide habitat and movement pathways, including as stepping stones, and allow species to respond to environmental change. It is important to protect, enhance, and continue to connect vegetation along these corridors and within the urban and rural environment, particularly where they can close gaps between significant larger patches of vegetation.

Mapping and modelling

Victorian Government Strategic Biodiversity Values mapping

The Department of Energy, Environment and Climate Adaptation (DEECA - formerly DELWP) have modelled 'Strategic Biodiversity Values' across Victoria, where they will focus energies to protect and restore biodiversity values (Fig. 15 shows values within the City). The darker green areas show higher value. These values occur most often in Crown reserves (e.g., National Parks) and along some waterways. This and other statewide maps provide some valuable insights into where high biodiversity values occur on public land and where effort to maximise biodiversity values could occur based on a set of data and predictors, but on its own is perhaps less informative for where the City should prioritise local strategic actions across its land tenure and on private land.

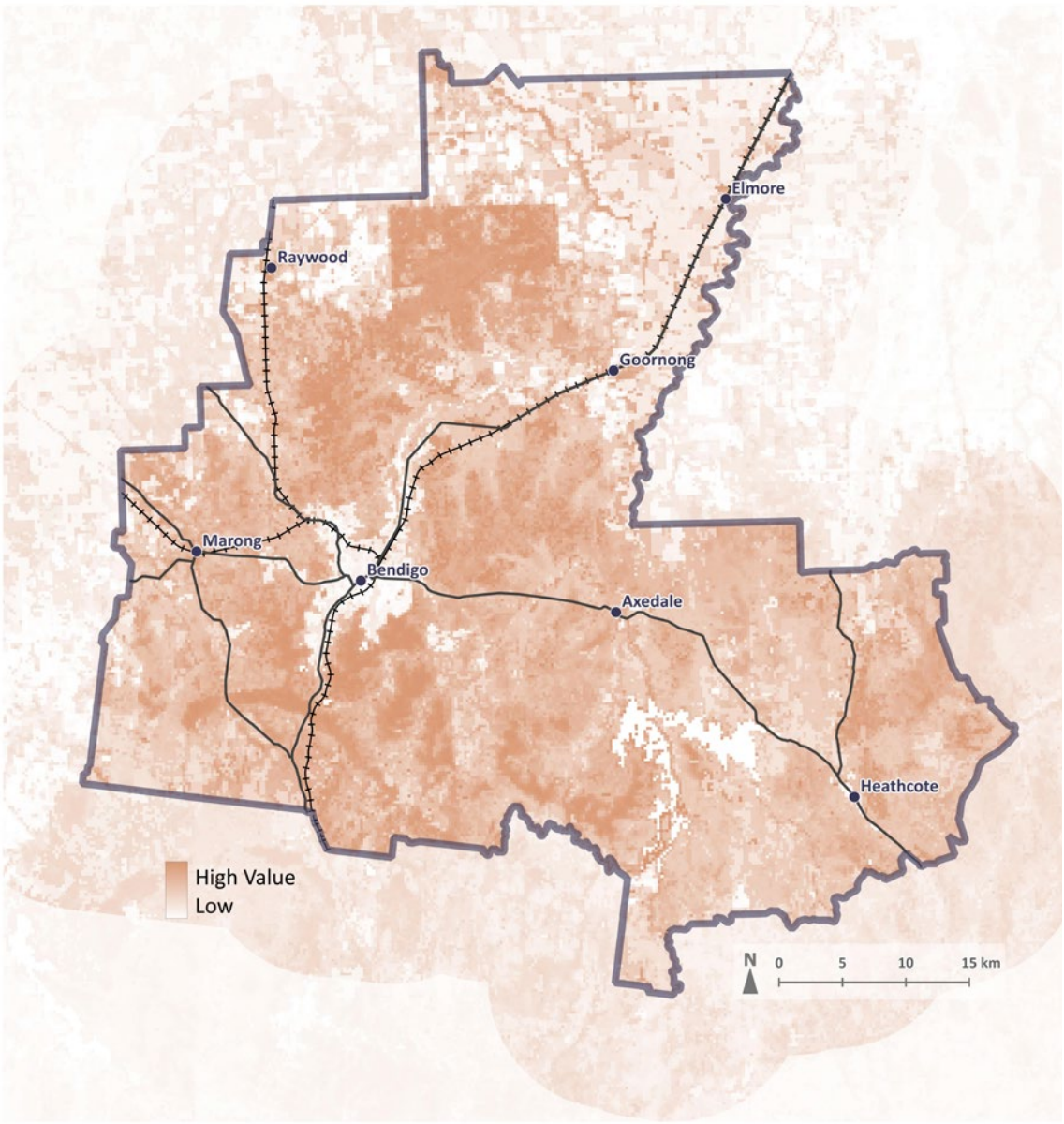

Fig. 15 – State Government Strategic Biodiversity Values
DEECA strategic biodiversity values. Source: Data Vic - NATUREPRINT_4_0

Biodiversity hot spot map

Building on the Strategic Biodiversity Values concept above, we established a 'Biodiversity Hot Spot' map specifically for Greater Bendigo, incorporating available map layers that contained a range of ecological and community values we felt would most appropriately help us establish where time and resources are prioritised for biodiversity protection and enhancement (Fig. 16). Colours represent areas that scored highly in modelling based on the data available (most cumulative points across modelled themes - set out in Table 1).

These sites will need to be further investigated on the ground to verify their high strategic value for biodiversity conservation and, along with further modelling of both spatial and functional connectivity, will be incorporated into a habitat connectivity study.

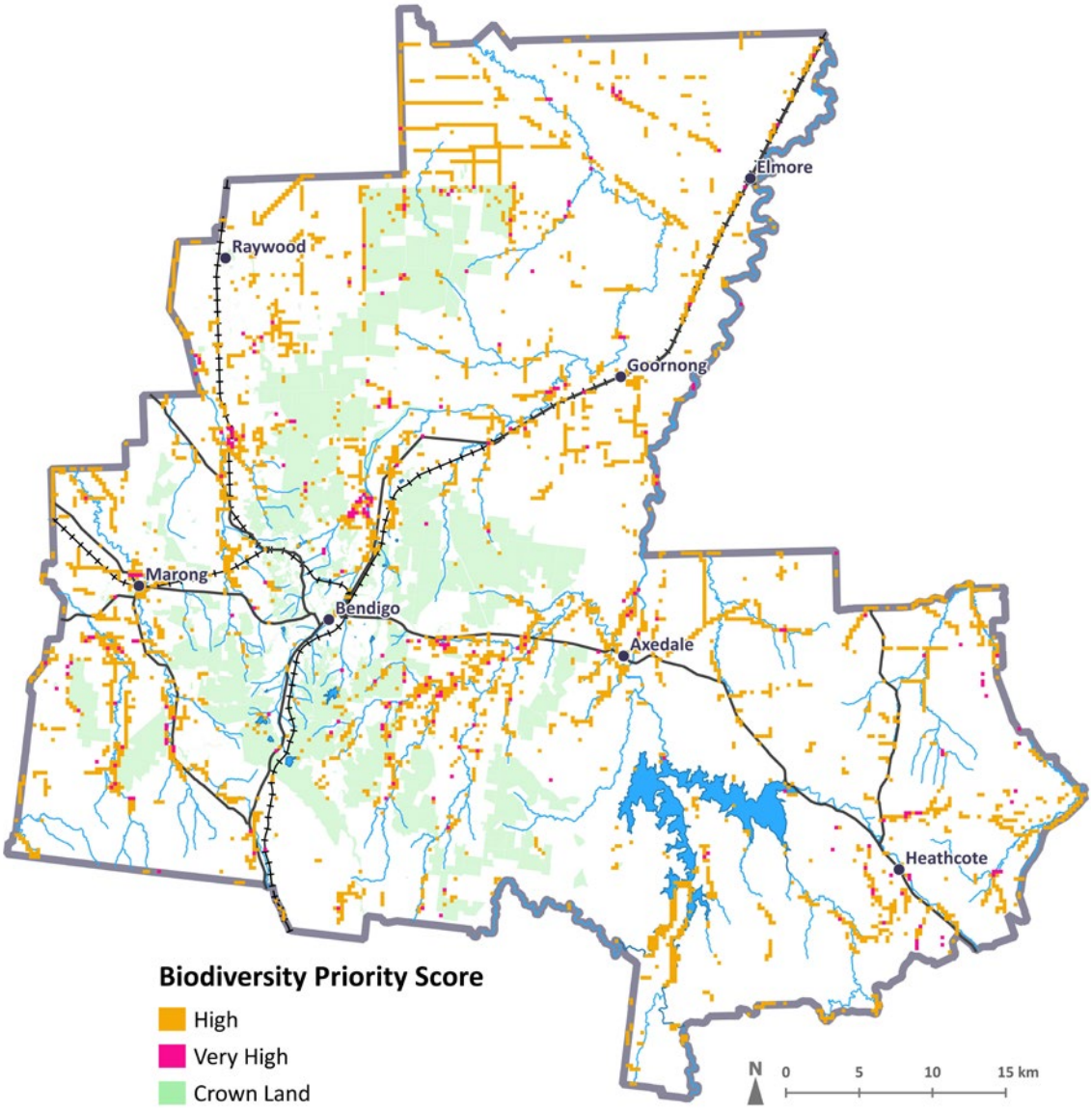

Fig. 16 – Priority Areas
Modelled biodiversity hot spot areas

Table 1: Biodiversity Hot Spot Map modelling framework

Theme	Justification	Value	Points given
City owned or managed land	Feasibility for action, biodiversity value and connectivity potential. Data source: The City's spatial database	City Owned Land (e.g., parks, recreation)	1
		Crown Land where the City is COM	1
Current Ecological Vegetation Class (EVC) status (under FFG Act)	Habitat importance. **We only included the highest threat categories to improve specificity of target areas.* Data source: 1750s EVCs and 2005 EVC layers, DEECA	Endangered	3
		Vulnerable	2
Threatened species (flora and fauna listed under the FFG Act)	Threatened flora and fauna require greater protection to ensure they do not become extinct. They often reflect important sites and values, and their conservation can improve connectivity across the landscape. **The presence of species reflects survey effort as well as habitat value.* Data source: Victorian Biodiversity Atlas records	Critically Endangered	3
		Endangered	3
		Threatened	2
		Vulnerable	2
Roadside conservation status	Roadsides which ranked highly for conservation status support significant biodiversity values, require protection and enhancement, and can improve connectivity across a landscape. Data source: The City's spatial database	Rank of 4	2
		Rank of 3	1
DEECA bushbank biorank	This is a strategic program of the Victorian Government to help allocate resources for biodiversity conservation. This sets strategic target areas for project funding and aids the feasibility of meeting state priorities. Data source: DEECA's Bushbank layer (BUSHBANKBIORANK - from NatureKit)	Rank of 4 or 5	2
		Rank of 3	1
Private land conservation	These provide important habitat protection and help connect sites across private land. Prioritising actions around these sites will consolidate and extend biodiversity values. Data source: The City's spatial database, using records from Bushcare Incentive program and DEECA supplied LfW data.	Conservation covenant on land (through Bushcare Incentive rate rebate for TfN properties)	1
		Land for Wildlife registered property	1
Cultural Heritage Sensitivity	Preservation of Traditional Owner connection to Country, important biodiversity values and connectivity. Data source: Aboriginal Cultural Heritage Sensitivity layer, DEECA.	Areas of recognised cultural heritage	1

Biolinks

The Biodiversity Hot Spots map has helped inform the identification of potential biolink areas that would connect high value sites and build on existing community and agency efforts across Greater Bendigo.

In March 2023, we conducted a workshop with 35 participants representing 19 agencies and community environmental groups from across Greater Bendigo, including DJAARA, DEECA, Parks Victoria, North Central CMA, Coliban Water, Trust for Nature, Biolinks Alliance, Central Victoria ACF, Bendigo Climate Alliance, Nature Network and several Landcare, Friends and other special interest groups. Collectively, we identified several areas where biolinks have been proposed, works have begun, or where high values are known to exist, to try to connect habitat both within and across local government boundaries to support biodiversity and species movement and dispersal. From this discussion and the Biodiversity Hotspots map, we have indicated the types of potential biolinks that could occur across Greater Bendigo to connect significant sites of biodiversity value or where values could be enhanced (Fig.17). This exercise was an important first step to set some initial direction, however a comprehensive connectivity plan needs to be developed in conjunction with these partners (Action 3.1) before prioritising and implementing a strategic biolinks program across Greater Bendigo. Such a plan would identify key priority areas to enhance spatial and functional connectivity, resistance areas for movement, where current community effort occurs and will aid future community planning to ensure high value biodiversity and cultural sites and those connecting them (which can be enhanced to provide even greater value) are considered and impacts to them minimised.

Implementation

Creating linkages to meet the goals of the potential biolinks / habitat connectivity plan can be achieved through continuing to work on City managed land, including roadsides, and on private land by working with landholders, Landcare and other stakeholders.

Along with City resources and grant programs, there are several funding streams that could help deliver habitat connectivity, including the Victorian Government's Bushbank program or the North Central CMA's local carbon offsets pilot program that would provide additional benefits to landholders. Community-led programs and those of other conservation organisations will also be important in achieving municipality-wide connectivity. Local Landcare groups and networks will play a role here, as outlined in the Nature Network's recent Blueprint for Action, found here: Landcare (nccma.vic.gov.au).

Public acquisition of land is a more expensive approach and is only necessary if a) the site has very high biodiversity values which may otherwise be lost if retained in private ownership, b) if aiming to create a contiguous public open space corridor which provides additional recreation opportunities, and / or c) if aiming to create a contiguous waterway reserve where public ownership enables coordinated and strategic mitigation of threats such as weed spread and urban flooding.

Theme
Habitat connectivity

Biodiversity Action Plan #
1.1, 1.4 - 1.6, 1.8, 1.12, 1.15, 1.16, 2.6 – 2.8, 2.10 - 2.14, 2.18, 3.1 - 3.4, 4.1, 4.4 - 4.5, 5.5.

Image by Michael Keogh

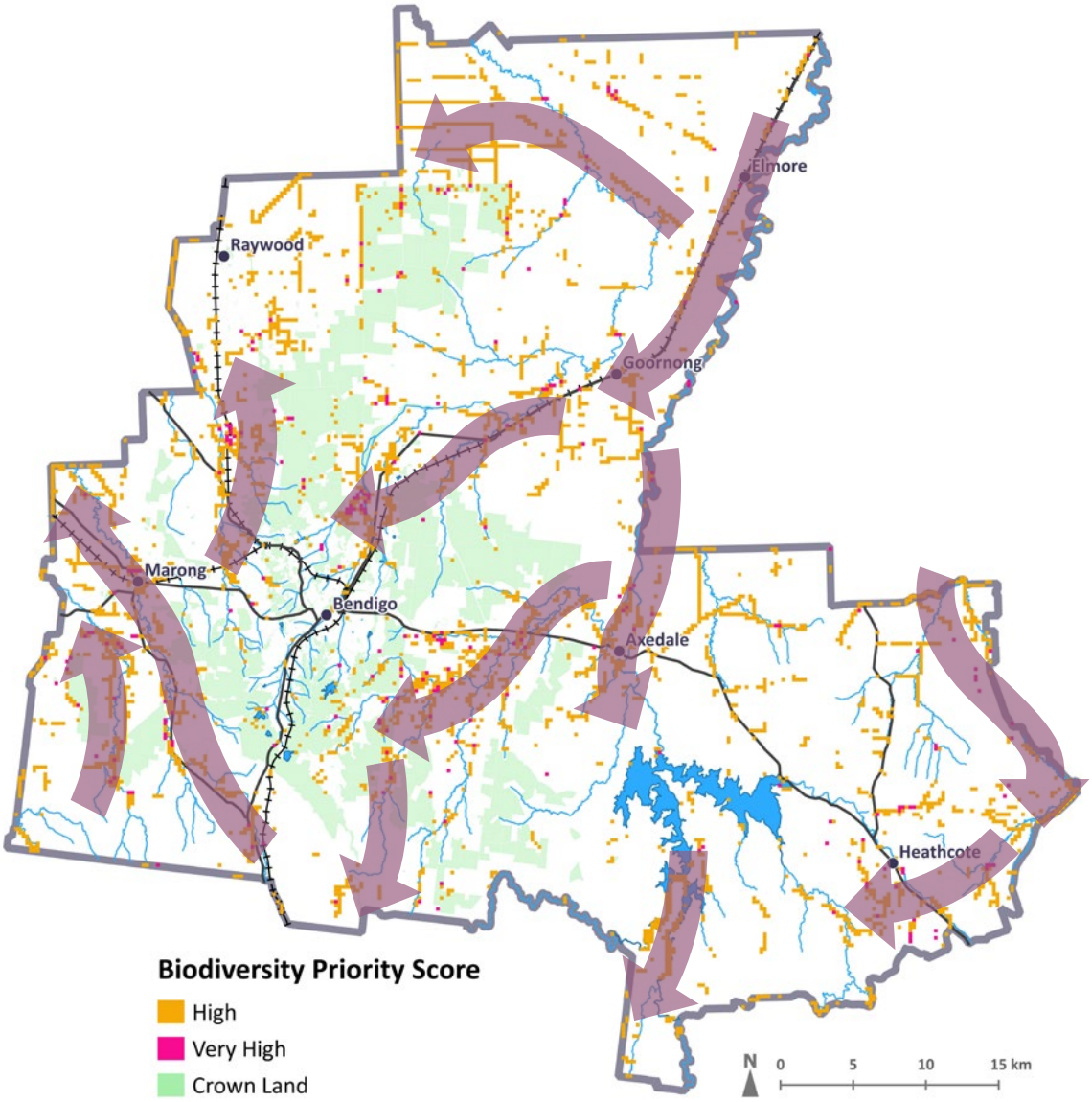

Fig. 17– Biolinks

Indicative biolinks across Greater Bendigo connecting high biodiversity value areas, with the potential for linkages to extend beyond the local government boundary. Lines are for illustrative purposes and should be used as a guide.

Image by Daryl Fleay.

Biodiversity Action Plan – 2023-2033

This 10-year action plan addresses the highest priority short-term actions to achieve the strategy's vision over the next decade and build strong foundations for biodiversity protection and enhancement into the future.

The 5 strategic pillars underpinning this strategy are:

1. **PROTECT** the existing natural values of Greater Bendigo
2. **ENHANCE** native vegetation communities, habitats and species diversity
3. **CONNECT** habitats and species through strategic linkages
4. **ADVOCATE** on behalf of the community and environment
5. **ENGAGE** the community in environmental stewardship

Actions are grouped under these five pillars. Following extensive community, agency and staff engagement, all actions have been assigned a priority level, time limit to commencement and estimated resource requirements (Table 2).

The lead City department(s) have also been specified to ensure progress of the action.

The overarching goal is also to ensure the strategy meets Traditional Owner, federal, state, and local obligations, and fits with best practice global targets, as set out in previous sections.

A monitoring and evaluation framework will track progress and assess the impact of the actions (see Monitoring and Evaluation section).

Table 2: Codes used in Action Tables

Priority	City resources required (estimate)	Commencement timeframe	Lead Department
Very High High Medium	Existing = undertaken with existing staff and / or operational resources. FTE – Full time equivalent TBC – To be confirmed based on current budget $ = <$5000 $$ = $5,000-$25,000 $$$ = $25,000-$50,000 $$$$ = $50,000-$100,000 $$$$$ = >$100,000	Commenced <2 yrs <5 yrs Ongoing	CC&E = Climate Change and Environment P&OS = Parks and Open Spaces S&HE = Safe and Healthy Environments StcP = Strategic Planning StyP = Statutory Planning ENG = Engineering

Priority actions

Extensive community engagement, stakeholder workshops and City departmental meetings identified twenty-two key actions for this strategy (of 61 total actions) that are the highest priority for resourcing (of both time and money) and without which, many subsequent actions will not be possible, or will be made more difficult to achieve. Twelve of these are outlined in Table 3, with more detailed actions set out in below sections under each of the five pillars.

Image by Mark Hall.

Table 3: Twelve of the highest priority actions to meet the objectives of this strategy.

Action Plan #	Description	Pillar	Resources
5.1	Establish a permanent Biodiversity Engagement Officer position to meet growing community needs.	Engage	FTE
1.2	Investigate options for establishing an Environmental Planner position.	Protect	FTE
1.1	Review the planning scheme provisions relating to biodiversity in the Greater Bendigo Planning Scheme (GBPS)	Protect	$$$$
3.1	Develop and implement a detailed 'Habitat Connectivity Plan' to create biolinks across Greater Bendigo.	Connect	Existing
2.1	Conduct a service review of the City's natural reserve management functions, considering implementation of this strategy and future environmental management plans.	Enhance	Existing
1.8	Ensure protection of mature native trees through the Greater Bendigo Planning Scheme or a Local Law which may include use of a Significant Tree Register.	Protect	$$$$
2.2	Develop and implement Environmental Management Plans / Action Plans for City managed natural reserves.	Enhance	TBC
3.3	Develop a local carbon offset program with stakeholders, ensuring sites align with priority areas for habitat enhancement and connectivity.	Connect	Existing + 2023/24 Council budget
1.18	Establish a biodiversity monitoring program that is representative, robust and strategic.	Protect	Existing + 2023/24 Council budget
2.13	Increase participation of Bendigo landholders in the Healthy Landscapes project in partnership with Djaara.	Enhance	$$$$ from 2024/25
2.7	Support Djaara and Taungurung to increase connection to country and promote cultural practices that also benefit biodiversity.	Enhance	$$
5.3	Establish a community engagement program to increase community access to nature and to raise awareness about Greater Bendigo's natural values and how to protect and enhance them.	Engage	Existing (subject to employment of a Biodiversity Engagement Officer)

1. PROTECT

Goal: Ensure there is adequate protection of Greater Bendigo's unique natural environment into the future

Measures of success:

- No net tree loss of native vegetation on City managed land or through City activities across Greater Bendigo
- Better protection of remnant native vegetation and biodiversity values, especially large old trees and grasslands
- No new species added or elevation of status in the FFG and EPBC Acts Threatened Species Lists
- Reduced impacts to wildlife from domestic and wild pest animals
- Increase in protected land area, through covenants and reclassification of crown land

#	Actions	Priority	Resources	Start	Lead
1.1	Review the planning scheme provisions relating to biodiversity in the Greater Bendigo Planning Scheme (GBPS). This should include a review of the effectiveness of current planning policies and overlays and implementation of necessary changes, considering (amongst other things): · Potential policy gaps · Protecting urban vegetation · The preliminary 'Potential Biolink Areas' mapping (Fig. 17) and proposed habitat connectivity plan (Action 3.1) · The degree to which the Urban Forest Interface Policy achieves its goals.	Very High	$$$$	Commenced	StcP
1.2	Investigate all available options for establishing an Environmental Planner position responsible for providing internal and external education, advice and assessments of planning applications and projects which have environmental impacts, including compliance for native vegetation removal.	Very High	TBC – could review or repurpose existing FTE	<2 yrs	CC&E
1.3	Ensure land management plans are submitted with planning permit applications in the farming zone (FZ) and rural conservation zone (RCZ) that propose effective actions that support biodiversity values and limit impacts to them.	High	Existing	Ongoing	StyP
1.4	In City's Managed Growth Strategy, direct new development toward areas that avoid unacceptable biodiversity outcomes.	Very High	Existing	Commenced	StcP
1.5	Explore development of Biodiversity Sensitive Urban Design (BSUD) principles for Greater Bendigo.	High	$$	<5 yrs	CC&E, StcP, ENG

#	Actions	Priority	Resources	Start	Lead
1.6	Review the City's implementation of planning provisions related to native vegetation removal, including compliance processes and the City's in-house native vegetation offsets program.	Medium	Existing	Commenced	P&OS, CC&E, StcP
1.7	Continue to provide input into Environmental Effects Statements as appropriate to minimise and manage biodiversity impacts from mining and other activities.	High	Existing	Ongoing	StyP, StcP, CC&E, P&OS
1.8	Ensure large native trees are properly protected through the GBPS or local laws, potentially through the implementation and promotion of a Significant Tree Register. Investigate integration of data collected in the Large Old Tree Project across Greater Bendigo.	High	$$$$ annually to implement and enforce	<2 yrs	P&OS
1.9	Conduct regular condition / health assessments of native vegetation in City managed land and along waterways, potentially incorporating citizen scientists, and report the outcomes in City's Annual Environment Report.	High	Existing	Ongoing	CC&E, P&OS
1.10	Support the establishment of a threatened plant collection at Bendigo Botanic Gardens.	High	Existing	<2 yrs	CC&E, P&OS
1.11	Increase awareness of the City's domestic cat policy (i.e., 24 hr curfew) and ensure adequate enforcement to protect native wildlife.	High	Existing	Ongoing	S&HE
1.12	Develop an agreed service level for water levels in City managed waterbodies (e.g., Crusoe Reservoir) to best protect native species and processes while balancing the community's desire for passive recreation.	Medium	Existing	<2 yrs	CC&E, P&OS
1.13	When developing Environment Management Plans for City managed reserves, work with Traditional Owners, agencies, and the community to support and strengthen strategic and coordinated pest plant and animal control programs across land tenures in the vicinity.	High	$	<5 yrs	P&OS, CC&E
1.14	Review approval processes for biodiversity enhancement projects that trigger permit applications under the GBPS and explore opportunities to streamline and simplify it.	High	Existing	<5 yrs	CC&E, StyP
1.15	Ensure precinct planning undertaken as part of Greening Greater Bendigo adequately promotes the retention and connection of native vegetation to support urban biodiversity.	High	Existing	Commenced	P&OS, CC&E

#	Actions	Priority	Resources	Start	Lead
1.16	Continue to collaborate with other local government areas including the Council Alliance for a Sustainable Built Environment (CASBE) to incorporate native vegetation and biodiversity outcomes into new developments and subdivisions via planning scheme mechanisms including: · Elevating Environmentally Sustainable Design (ESD) targets Planning Scheme Amendment and · Advancing the Sustainable Subdivisions Framework documentation for Planning Scheme Amendment consideration	High	Existing	Commenced	CC&E, StcP
1.17	Collaborate with groups and agencies to determine the completeness and adequacy of existing biodiversity data, extend existing programs across Greater Bendigo (e.g., nestboxes, bird surveys, waterbugs, large 'hero' trees project), and identify additional monitoring and evaluation needs.	Very High	Existing	Ongoing	CC&E, P&OS
1.18	Establish a monitoring program that is representative, robust, and strategic in the species and communities it monitors closely to measure against actions taken to protect and enhance biodiversity and biocultural values.	Very High	2023/24 Council budget	<2 yrs	CC&E, P&OS
1.19	Review current enforcement procedures for infringements related to biodiversity and identify potential pathways to increase compliance (e.g., vegetation removal, firewood collection, rubbish dumping and pollution).	High	Existing	<2 yrs	StyP, P&OS
1.20	Reduce the number of displaced, injured and killed wildlife through human activities (e.g., vehicle strikes) through: · Partnering with Wildlife Victoria, wildlife rescue and care agencies, other councils and transport authorities on education and mitigation programs · Assisting in reviewing the Greater Bendigo Road Safety Action Plan (as necessary) to incorporate wildlife strikes	Medium	Existing	Commenced	CC&E

2. ENHANCE

Goal: Improve the quality of native vegetation and enhance habitat and structures that support species and ecosystem diversity.

Measures of success

- Increase in habitat quality at the City's managed natural reserves to achieve a conservation value of 'high' or 'very high'
- Increase in species abundance and diversity, particularly of priority species and communities and culturally significant plants and animals
- Increased self-determination of Djaara and Taungurung, including increased indigenous cultural landscape management practices incorporated across public and private land
- Increase in the number of significant roadside vegetation sites

#	Actions	Priority	Resources	Start	Lead
2.1	Conduct a service review of the City's natural reserve management functions taking into account implementation of this strategy and future environmental management plans.	Very High	Existing	<2 yrs	P&OS, CC&E
2.2	Work with Traditional Owners, agencies, groups and the community to develop and implement Environmental Management Plans / Action Plans for City managed nature reserves, including an assessment of conservation values and threats and a set of actions to enhance their natural, recreation and cultural values, including water quality and flood and erosion control. Align these with Traditional Owner rights, obligations, and priorities. Prioritise plans for: · Kennington Reservoir · Crusoe Reservoir · Crosbie Regenerative Forest · Huntly Regenerative Forest · Victoria Hill	Very High	TBC	Ongoing	P&OS, CC&E
2.3	Work with Traditional Owners, agencies, groups (particularly Landcare) and the community to develop and implement waterway restoration plans that promote biodiversity and cultural values and supports the rights and obligations of first nations peoples (e.g., restoring chain-of-ponds). Prioritise a review the Implementation Plan for Reimagining Bendigo Creek to help inform the sequencing and scheduling of conservation works.	High	Existing	<2 yrs	CC&E, P&OS

#	Actions	Priority	Resources	Start	Lead
2.4	Continue to conduct strategic pest plant and animal management works within City managed reserves in accordance with the requirements of the CALP Act, the City's Invasive Plants and Animals Policy and Procedure and any site-specific management plans.	High	Existing	<2 yrs	P&OS, CC&E
2.5	Complete an audit of all City owned and managed nature reserves, ensuring each has been adequately classified according to their primary purpose.	Very High	TBC	Ongoing	CC&E, P&OS
2.6	Maximise opportunities to restore diverse groundcover and shrub vegetation on council owned and managed land and waterways and through council programs (e.g., Greening Greater Bendigo), including increasing populations of threatened plant species or communities and Traditional Owner priority species.	Very High	Existing	<2 years	P&OS, CC&E
2.7	Support Djaara and Taungurung to increase connection to country and cultural practices (e.g., food and fibre plants, cultural burns), working towards sole management of public land where appropriate and partnering in stewardship across multiple land tenures where biodiversity values can also be enhanced through joint action.	Very High	Existing	Ongoing	CC&E, P&OS
2.8	Increase populations of all species, with particular attention on threatened species and communities, on City managed land, through targeted habitat restoration, enhancement and monitoring of populations, in line with Traditional Owner, federal, state, and regional priorities.	Very High	Existing	Ongoing	CC&E, P&OS
2.9	Work with other local government areas, agencies, Traditional Owner Groups and commercial native nurseries to prepare a feasibility study for establishment of an additional native nursery and indigenous seed collection and propagation program, targeting locally rare species to increase genetic diversity, bolster resistance and resilience to climate change and meet growing demand for indigenous plants.	Very High	$$$	<2 yrs	CC&E, P&OS
2.10	Increase and improve significant roadside vegetation across Greater Bendigo through strategic management. Review: · *Strategic Directions Urban Roadside Vegetation Management 2011-2015* · *Strategic Directions Rural Roadside Conservation 2011-2015* · *Roadside Weed and Pest Animal Plan*	Very High	Existing	<5 years	CC&E, P&OS

#	Actions	Priority	Resources	Start	Lead
2.11	Create a series of "Tiny Forests" on City managed land at key locations in urban areas and townships across Greater Bendigo that align with Djaara's Forest Gardening priorities to restore important native and cultural habitat and engage the community in their conservation value.	High	$$ for initial pilot/s.	<5 yrs	CC&E, P&OS
2.12	Support habitat restoration on private land by: · Promoting local carbon offset projects, including the program being developed by the North Central CMA · Connecting landholders with funding streams such as the Victorian Government's Bushbank Program and others as appropriate · Connecting landholders with Landcare and other groups · The City's Sustainable Land Management Grants program* · Applying for funding to implement the Habitat Connectivity Plan (Action 3.1). · Collaborating with Djaara to integrate actions from Galk-galk Dhelkunya Forest Gardening Strategy 2022 -2034 **included in the 2023/24 Council budget*	Very High	Existing	Ongoing	CC&E
2.13	Increase participation of Bendigo landholders in the Healthy Landscapes project and seek to extend the program to the cropping and horticulture industries. Aim to include Djaara as a partner and to expand the program to other local government areas.	Very High	$$$$ from 2024/25, including for continuation of the Agribusiness Officer position.	Commenced	CC&E
2.14	Increase the number of properties with conservation covenants, particularly in potential biolink areas, by actively promoting the City's applicable Bushcare Incentive rate rebate.	Medium	Existing	Ongoing	CC&E
2.15	Explore options to support the current community run Common Myna control program.	High	Existing	<5 yrs	CC&E
2.16	Track the effectiveness of programs such as the Spring Plains Watershed Repair project and, if highly effective, support similar programs to restore ecological function at appropriate strategic sites.	High	Existing	Ongoing	CC&E

#	Actions	Priority	Resources	Start	Lead
2.17	Review the management plans for Crosbie and Huntly Regenerative Forestry programs with the aim of maximising biodiversity outcomes while achieving financial co-benefits from forestry products. Investigate opportunities to collaborate with Djaara to integrate Forest Gardening principles into the management of these sites.	Medium	CC&E	<2 yrs	CC&E
2.18	Develop a planned burn policy with Traditional Owner Groups to enhance the natural and cultural values of City managed nature reserves and roadsides where appropriate and investigate the need for additional resources to deliver an ecological and cultural burn program.	Medium	Existing	<2 yrs	CC&E, P&OS
2.19	Finalise preparation of a Storm Water Management Strategy that, amongst other things, aims to enhance the quality of water entering Greater Bendigo's creeks and rivers through sediment and pollution control.	Medium	$$$	Commenced	CC&E

Image by Mark Hall.

3. CONNECT

Goal: Connect vegetation communities, habitats and species through strategic linkages

Measures of success

- Improved habitat connectivity across Greater Bendigo to aid species movement
- All native vegetation surrounding Bendigo is connected
- More connected urban greenspaces, including enhancement of nature strips through indigenous plantings

#	Actions	Priority	Resources	Start	Lead
3.1	Develop and implement a detailed 'Habitat Connectivity Plan' based on the Potential Biolink Areas Plan (Fig. 17) included in this strategy. The plan will be developed in partnership with Traditional Owners and land management agencies and incorporate current conservation efforts, interrogate modelled biodiversity and cultural values (Fig. 16), build adaptive capacity to climate change, and engage local landholders to help create a series of biolinks to aid species diversity and movement on land and in waterways across Greater Bendigo.	Very High	Existing	<2 yrs	CC&E
3.2	Develop a program that supports re-naturalisation of nature strips, particularly in urban areas and townships, to increase mostly ground cover and shrubby native plant species diversity, improve habitat for wildlife and neighborhood character (e.g., pollinator corridors project). Encourage the community to apply for a community grant or partner with a corporate sponsor that would support its implementation.	Very High	Existing	<2 yrs	CC&E
3.3	Work with North Central Catchment Management Authority and other stakeholders on a local carbon offset program, ensuring offset sites align with priority areas for habitat enhancement and connectivity.	High	Pilot program funding included in 2023/24 Council budget.	Commenced	CC&E, P&OS
3.4	Explore opportunities to utilise regenerative forestry on council managed land to improve habitat and cultural connectivity across the landscape and provide opportunities for more sustainable firewood practices – i.e., in addition to Crosby and Huntly Regenerative Forestry programs. Integrate Djaara's Forest Gardening principles where possible and appropriate.	Medium	Existing	Ongoing	CC&E, P&OS

4. ADVOCATE

Goal: Advocate for and support the Greater Bendigo community on matters of environmental stewardship.

Measures of success

- The City, in collaboration with other organisations as appropriate, raises awareness amongst other levels of government of policy, legislation and funding changes needed to enhance biodiversity in Greater Bendigo and the wider region.

#	Actions	Priority	Resources	Start	Lead
4.1	Advocate for 1) the return of land to Djaara and Taungurung for sole management; and 2) for the extension of protected land, through the state purchase and registration of significant bushland areas not currently protected (e.g., application for National Park classification for the Wellsford Forest).	High	Existing	Ongoing	CC&E
4.2	Advocate for stronger biodiversity controls in state and federal legislation as appropriate.	High	Existing	Ongoing	CC&E
4.3	Advocate for Victorian and Australian listing of threatened species, pest plants and animals and threatening processes as needed. Support delisting of species that have recovered and are no longer threatened as appropriate.	High	Existing	Ongoing	CC&E
4.4	Advocate for a review of funding to catchment management authorities (CMAs) to allow them to actively protect and restore riparian habitats.	High	Existing	Ongoing	CC&E
4.5	Advocate for Victorian and Australian government funding programs that are long term, support scaling of existing successful program and approaches and, where possible, are aligned to state, regional and local priorities and, therefore, are non-competitive.	High	Existing	Ongoing	CC&E

5. ENGAGE

Goal: Engage the community in environmental stewardship and increase biodiversity awareness

Measures of success

- Increased awareness of, and connection with, the unique natural environment of Greater Bendigo and threats to its survival
- Strong collaborative partnerships with other agencies and groups to conduct region-wide projects, better resource community environment programs, coordinate data collection and management and incorporate all values and needs
- Increased participation in community, school, and environment group (inc. conservation, Landcare and Friends groups) events and citizen science activities

#	Actions	Priority	Resources	Start	Lead
5.1	Establish a permanent Biodiversity Engagement Officer position to meet growing community needs for support, citizen science activities and education (e.g., assistance to community environment groups and supporting the establishment of new groups and programs).	Very High	Included in 2023/24 Council budget	Commenced	CC&E
5.2	Work collaboratively with Djaara and Taungurung, environmental groups and agencies, businesses, farmers, and individuals to increase and share environmental storytelling and bring Traditional Owner voices back to the landscape (e.g., historical accounts, on-country yarns, art installations, greater media coverage of environmental stewardship).	Very High	$$	<5 yrs	CC&E
5.3	Establish a program to increase community access to nature and to raise awareness about Greater Bendigo's natural values and how to protect and enhance them (e.g., school program, nature activities, planting, clean-up days, dead tree detectives, weed busters, stormwater education).	Very High	Existing	<2 yrs	CC&E
5.4	Continue to develop guides on the natural values of Greater Bendigo and how best to support them on private land (e.g., weeds guide, species guides).	Medium	TBC	<5 yrs	CC&E, P&OS
5.5	Consider establishing community environment programs that fall under the "Gardens for Wildlife" banner (e.g., pollinator plantings on nature strips and in schools, tiny forests, backyard biodiversity, wilderhoods).	Medium	$$	<5 yrs	CC&E

#	Actions	Priority	Resources	Start	Lead
5.6	Assist in the development, promotion and distribution of a bushwalking guide to Bendigo (tracks and trails) with other groups and agencies (e.g., CVACF, Spring Plains Steering Committee), including the Bendigo Bushland Trail, outlined for reinstatement in the Greater Bendigo Public Space Plan.	Medium	Existing	Commenced	CC&E, P&OS
5.7	Increase environmental awareness of City staff, including training on significant natural values of Greater Bendigo. Provide specific training for on-ground staff on natural values protection when conducting work.	High	Existing	<2 yrs	CC&E
5.8	Investigate implementing the Nature Stewards program run by the Victorian National Parks Association to help build capacity amongst interested individuals and environmental groups across Greater Bendigo.	Medium	Existing	<5 yrs	CC&E
5.9	Celebrate and recognise the contribution community groups make to the environment and biodiversity conservation.	Medium	Existing	Commenced	CC&E
5.10	Utilise citizen science programs to train the community to help deliver the Biodiversity Monitoring Program included in this Strategy.	Very High	Included in 2023/24 Council budget.	<2 yrs	CC&E
5.11	Provide education and support to the community for online data recording and management tools (e.g., Fulcrum, iNaturalist, Victorian Biodiversity Atlas).	Very High	Existing	<2 yrs	CC&E
5.12	Increase inter-agency and community group data sharing across Greater Bendigo (e.g., use of shared platforms such as iNaturalist and the Victorian Biodiversity Atlas) and ensure data is effectively managed to allow for appropriate analysis of trends.	High	Existing	Ongoing	CC&E
5.13	Establish an annual BioBlitz across Greater Bendigo, engaging relevant land management agencies, groups, Landcare, and the public.	Medium	Existing	Ongoing	CC&E

Monitoring and evaluation

Monitoring program

A Biodiversity Monitoring Program has been designed to assess how the City is tracking against each of the five pillars of the strategy. This will form the basis for how we detect changes in species and communities and measure impacts of actions taken to protect, enhance and connect biodiversity values, and engage the community in environmental stewardship. A summary of the proposed approach is presented in Table 4.

Note that this monitoring program is the minimum, base level of study required to understand the biodiversity values of Greater Bendigo and does not preclude other surveys and monitoring activities which will also increase our knowledge and understanding.

Image by William Terry.

Table 4: Summary of the proposed monitoring program

Pillar	Protect	Enhance	Connect	Advocate	Engage
Monitoring question	What changes to biodiversity are occurring across Greater Bendigo?	What improvements to biodiversity are occurring on City owned and managed land, including roadsides, across Greater Bendigo?	Has the extent and connectivity of native vegetation changed across Greater Bendigo?	What advocacy has the City undertaken aimed at achieving structural changes at the state and federal level?	Are the City, the community and environmental groups more engaged in environmental education and stewardship?
What is being monitored	Presence and abundance of indicator species or communities to monitor ecosystem health.	Habitat structure and health assessments of City managed land.	Native vegetation cover across Greater Bendigo, including within potential biolink areas.	Development of submissions and proactive advocacy statements to state and national governments as appropriate.	Health and activity of Landcare and Friend groups. Number of participants at environment events. Number of partnership programs and activities with Djaara and Taungurung. Engagement in citizen science activities.

Pillar	Protect	Enhance	Connect	Advocate	Engage
Data sources	Victorian Biodiversity Atlas iNaturalist Atlas of Living Australia Ebird.org/Birdlife databases On-ground surveys and observations (recorded in the above three databases)	Habitat health assessments database (to be developed for Greater Bendigo)	Relevant DEECA GIS layers (including lidar) City managed database of landholder and agency involvement in biolinks projects across Greater Bendigo – e.g., grants allocated etc.	Number of submissions and advocacy statements.	North Central CMA Landcare Health Check. City managed database of event participants. City managed data of number and type of Traditional Owner collaborations. Species records uploaded to iNaturalist and the Victorian Biodiversity Atlas.
Measures of Success	Reduction in removal of native vegetation from the City's operations Better protection of remnant native vegetation and biodiversity values, especially large old trees and grasslands. No new species or elevation of status in the FFG and EPBC Acts Threatened Species Lists. Reduced impacts to wildlife from domestic and wild pest animals. Increase in protected land area, through covenants and reclassification of crown land.	Increase in habitat quality at City managed natural reserves to achieve a conservation value of 'high' or 'very high'. Increase in species abundance and diversity, particularly of priority species and communities and culturally significant plants and animals. Moving toward self-determination of Traditional Owners groups, including increased first nation management practices incorporated across public and private land. Increase in the number of significant roadside vegetation sites.	Improved habitat connectivity across Greater Bendigo to aid species movement. All native vegetation surrounding Bendigo is connected. More connected urban greenspaces, including enhancement of nature strips through indigenous plantings.	The City, in collaboration with other organisations as appropriate, raises awareness amongst other levels of government of policy, legislation and funding changes needed to enhance biodiversity in Greater Bendigo and the wider region.	Increased awareness of, and connection with, the unique natural environment of Greater Bendigo and threats to its survival. Strong collaborative partnerships with other agencies and groups to conduct region-wide projects, better resource community environment programs and incorporate all values and needs. Increased participation in community, school, Landcare and Friends groups, events and citizen science activities. Data gathering, collation and management is shared between agencies and the community to better understand biodiversity needs and trends

Designing the monitoring program

A detailed monitoring program will be prepared which sets out:

- Verification of possible local extinctions (e.g., species not recorded since 1990) through targeted surveys.
- A suite of terrestrial monitoring sites across a range of priority ecological vegetation communities to be used to monitor both common and threatened species (e.g.,):
  - Annual woodland bird surveys (visual and auditory)
  - Annual arboreal mammal spotlight surveys
  - Installation of nest boxes and annual nestbox surveys
  - Annual pollinator surveys
- A suite of aquatic monitoring sites to be used for (e.g.,):
  - Annual Platypus and small-bodied native fish surveys (visual and possible eDNA)
  - Waterwatch and River Detectives programs (where possible)
- A suite of sites that qualify as Creekline Grassy Woodland (FFG listed) and Grey Box Grassy Woodland (EPBC listed) for:
  - Annual threatened flora surveys

Indicator species

Proposed indicator species and communities comprise (but are not limited to):

Systematic annual surveys

- Brush-tailed Phascogale (Tuan) Woodland birds, including the Swift Parrot
- Colletid bees
- Southern Purple-spotted Gudgeon
- Spiny Rice Flower
- Erect Pepper-cress

Opportunistic and site-specific surveys

- Potential locally extinct species
- Pink-tailed Worm Lizard
- Growling Grass Frog
- Striped Legless Lizard
- Eltham Copper Butterfly
- Grey-headed Flying-fox
- Silver Banksia

These species or communities were selected using the following broad criteria:

- The presence and abundance of the species/community is an indicator of broader ecosystem health
- The species/community is known to occur within Greater Bendigo
- The species/community is listed as threatened within Victoria or is regionally significant
- The species/community possesses one or more traits that would appeal to the local community and stimulate conservation awareness and action.
- The species can be readily surveyed by the City and/or the local community
- The species may already be surveyed by local Landcare and Friends groups or be part of targeted management by land-managers

Key actions related to monitoring. (see Biodiversity Action Plan section)

1.8, 1.10, 1.11, 1.15, 1.17, 1.20, 1.21, 2.2, 2.3, 2.4, 2.5, 2.7, 2.8 – 2.14, 2.16, 2.17, 3.1, 3.2, 4.1, 5.1 - 5.3, 5.5, 5.6, 5.8 – 5.14.

Image by William Terry.

Evaluation and reporting

Ensure regular evaluation of, and reporting on, actions to determine and communicate their effectiveness in achieving the strategy's goals.

The City is committed to accountability and reporting on program outcomes. Adaptive management is especially important for biodiversity conservation to ensure actions are tailored to meet any new information gathered. For instance, new populations of a threatened species may be discovered at a site, raising the priority level of that site. Therefore, as we learn more about the biodiversity values across Greater Bendigo the monitoring program will need to change to incorporate this population and some on ground works may occur at the site to ensure the species survival. Those on ground works would be evaluated to determine if they achieved the desired outcome of a healthy self-sustaining population of the threatened species. This cyclical and interrelated process of Monitoring, Evaluation and Learning (MEL) is a simple framework to help us understand what is being achieved and guide our decision making to improve projects and programs. This MEL framework will be used to assess the short-term and long-term outcomes and impact of each action in meeting the goals of this strategy.

Monitoring: is the ongoing collection of data about progress/performance toward goals (inc. the collection of species-specific data).

Evaluation: is setting out questions and using data and evidence to answer them. Based on this data, informed judgements can be made about the success of a project or program and where improvements can be made.

Learning: is reflecting on, sharing and using findings from monitoring and evaluation.

As part of the MEL process, we will also conduct:

- Annual reporting on strategic actions (set out in Table 5)
- Detailed 5-yr reporting to show trends and impact and determine future measures of success.

Image by William Terry.

Table 5: Annual Environment Report reporting framework.

Measure of success	Indicator	2026 Target or trend	2033 Target	Reporting timeframes
PROTECT: Ensure there is adequate protection of Greater Bendigo's unique natural environment into the future				
Reduction in removal of native vegetation from the City's operations	General Habitat Units of native vegetation removed due to City operations*.	150% net increase in biodiversity value based on the General Habitat Score of the offset compared to the vegetation removed.	150% net increase in biodiversity value based on the General Habitat Score of the offset compared to the vegetation removed.	Annually From 22/23
	Total General Habitat Score of native vegetation offsets secured on City managed land to compensate for removals*			Annually From 22/23
	Ha of native vegetation removed from City operations*	Declining	Declining	Annually From 22/23
	# medium and large trees removed from City operations* **Includes permitted and exempted removal under the planning scheme*	Declining	Declining	Annually From 22/23
Increase in habitat quality at City managed natural reserves to achieve a conservation value of high or very high.	Ha weed control on City managed land.	N/A	N/A	Annually From 22/23
	% of City managed Natural Reserves subject to weed control	Declining	Declining	Annually From 22/23
	Ha revegetation on City managed land.	N/A	N/A	Annually From 22/23
	Ha of enhancement plantings on City managed land.	N/A	N/A	Annually From 22/23
	Habitat quality / condition scores for selected City managed natural reserves	Baseline assessments complete	Increase in habitat quality scores of all assessed reserves to "high" or "very high"	Every 3 years From 23/24

Measure of success	Indicator	2026 Target or trend	2033 Target	Reporting timeframes
Better protection of remnant native vegetation and biodiversity values, especially large old trees and grasslands.	Application of environmental overlays where needed	Completion of the review of environmental planning overlays	Implementation of the environmental overlays planning review – i.e., completion of the planning scheme amendment	Annually From 22/23
Reduced impacts to wildlife from domestic and wild pest animals	# cats brought into BARC	Declining	Declining	Annually From 22/23
	# cats and foxes sighted in City reserves.	Declining	Declining	Annually From 23/24
Increase in protected land area through covenants and reclassification of crown land	# properties accessing the rate reduction for Trust for Nature covenants.	Increasing	Increasing	Annually From 22/23
No new species or elevation of status in FFG and EPBC Acts Threatened Species Lists	Number and status of endangered species in Greater Bendigo listed under the FFG or EPBC Acts	No increase in number or status of listed species	No increase in number or status of listed species	Annually From 22/23
ENHANCE: Improve the quality of native vegetation and enhance habitat and structures that support species and ecosystem diversity				
Increase in species abundance and diversity, particularly of priority species and communities and culturally significant plants and animals	Presence and abundance of indicator species, including fish	Increase from baseline condition assessment at each City managed natural reserve	Increase from 2026 records	Annually From 23/24
Increase in the number of significant roadside vegetation sites	Number of "significant roadsides"	Increase from last survey in 2009	Increase in number since 2026	Every 3 years From 24/25
Increased self-determination of Djaara and Taungurung, including increased indigenous cultural landscape management practices incorporated across public and private land	# reserves managed by Traditional Owners	Two additional reserves (from 2021 baseline)	Four additional reserves (from 2021 baseline)	Annually From 22/23

Measure of success	Indicator	2026 Target or trend	2033 Target	Reporting timeframes
CONNECT: Connected vegetation communities, habitats and species through strategic linkages				
Improved habitat connectivity across Greater Bendigo to aid species movement.	Number of disconnected patches of native vegetation over 20ha in area.	Declining	All patches are connected.	Every 3 years From 23/24
All native vegetation surrounding Bendigo is connected	As above	As above	As above	N/A
More connected urban greenspaces, including enhancement of nature strips through indigenous plantings.	% tree cover in urban areas	23% increase from 2019 baseline	28% increase from 2019 baseline	Every 5 years From 23/24
	% tree cover across Greater Bendigo	Increasing	35% increase from 2016 baseline year	When DEECA GIS layers are updated From 23/24
	Fish populations in Bendigo Creek??		Greater number and abundance of species.	Every 3 years From 23/24
ENGAGE: Engage the community in environmental stewardship and increase biodiversity awareness				
Increased awareness of and connection with the unique natural environment of Greater Bendigo and threats to its survival	# attendees at environment events (City run events only until additional data is available) # new participants	Increasing	Increasing	Annually From 22/23
Strong collaborative partnerships with other agencies and groups to conduct region-wide projects, better resource community environment programs, coordinate data collection and management and incorporate all value and needs	# collaborative projects underway.	N/A - Relevant collaborations underway	N/A - Relevant collaborations underway	Annually From 22/23

Measure of success	Indicator	2026 Target or trend	2033 Target	Reporting timeframes
Increased participation in community, school, Landcare and Friends groups, events and citizen science activities.	# people who are members of Landcare or Friends groups # Number of school programs/events on biodiversity	Increasing	Increasing	Annually From 22/23
ADVOCATE: Advocate for and support the Greater Bendigo community on matters of environmental stewardship				
The City in collaboration with other organisations as appropriate raises awareness amongst other levels of government of policy, legislation and funding changes needed to enhance biodiversity in Greater Bendigo and the wider region.	# advocacy submissions, letters, and other initiatives			Annually From 22/23

Image by Bird Brains.

Appendices

1.1 LIST OF THREATENED SPECIES AND COMMUNITIES (FFG ACT)

PLANTS

Common name	Scientific name	Status
Annual Buttons	*Leptorhynchos orientalis*	EN
Arching Flax-lily	*Dianella sp. aff. longifolia (Benambra)*	CR
Ausfeld's Wattle	*Acacia ausfeldii*	EN
Austral Crane's-bill	*Geranium solanderi var. solanderi*	EN
Australian Broomrape	*Orobanche cernua var. australiana*	EN
Bear's-ear	*Cymbonotus lawsonianus*	EN
Bent-leaf Wattle	*Acacia flexifolia*	EN
Blue Burr-daisy	*Calotis cuneifolia*	EN
Blue Mallee	*Eucalyptus polybractea*	EN
Blunt-leaf Pomaderris	*Pomaderris helianthemifolia subsp. minor*	EN
Branching Groundsel	*Senecio cunninghamii var. cunninghamii*	EN
Bristly Greenhood	*Pterostylis setifera*	EN
Broom Bitter-pea	*Daviesia genistifolia*	EN
Buloke	*Allocasuarina luehmannii*	CR
Button Immortelle	*Leptorhynchos waitzia*	EN
Cane Spear-grass	*Austrostipa breviglumis*	EN
Castlemaine Spider-orchid	*Caladenia clavescens*	CR
Clover Glycine	*Glycine latrobeana*	VU
Coccid Emu-bush	*Eremophila gibbifolia*	VU
Common Sour-bush	*Choretrum glomeratum var. glomeratum*	EN
Cottony Cassinia	*Cassinia ozothamnoides*	EN
Crimson Sun-orchid	*Thelymitra X macmillanii*	VU
Cut-leaf Burr-daisy	*Calotis anthemoides*	CR
Dainty Phebalium	*Phebalium festivum*	EN
Dargile Bush-pea	*Pultenaea dargilensis*	CR
Diosma Rice-flower	*Pimelea flava subsp. dichotoma*	EN
Dookie Daisy	*Brachyscome gracilis subsp. gracilis*	EN
Dwarf Cassinia	*Cassinia diminuta*	EN
Dwarf Swainson-pea	*Swainsona phacoides*	EN
Emerald-lip Greenhood	*Pterostylis smaragdyna*	EN
Erect Peppercress	*Lepidium pseudopapillosum*	CR
Flat-leaf Bush-pea	*Pultenaea platyphylla*	EN
Floodplain Fireweed	*Senecio campylocarpus*	EN
Fuzzy New Holland Daisy	*Vittadinia cuneata var. morrisii*	EN
Giant Honey-myrtle	*Melaleuca armillaris subsp. armillaris*	EN
Globe-hood Sun-orchid	*Thelymitra X chasmogama*	EN
Golden Sour-bush	*Choretrum glomeratum var. chrysanthum*	EN
Goldfield Boronia	*Boronia anemonifolia subsp. aurifodina*	EN
Goldfields Grevillea	*Grevillea dryophylla*	EN
Grey Grass-tree	*Xanthorrhoea glauca subsp. angustifolia*	CR

Common name	Scientific name	Status
Hairy Tails	*Ptilotus erubescens*	CR
Half-bearded Spear-grass	*Austrostipa hemipogon*	VU
Inland Pomaderris	*Pomaderris paniculosa subsp. paniculosa*	EN
Jericho Wire-grass	*Aristida jerichoensis var. subspinulifera*	CR
Kamarooka Mallee	*Eucalyptus froggattii*	CR
Lanky Buttons	*Leptorhynchos elongatus*	EN
Large Rustyhood	*Pterostylis maxima*	CR
Late-flower Flax-lily	*Dianella tarda*	CR
Long Eryngium	*Eryngium paludosum*	EN
Maroon Leek-orchid	*Prasophyllum frenchii*	EN
Melbourne Yellow-gum	*Eucalyptus leucoxylon subsp. connata*	EN
Midlands Spider-orchid	*Caladenia sp. aff. concolor (Midlands)*	EN
Oval-leaf Pseudanthus	*Pseudanthus ovalifolius*	VU
Pale Flax-lily	*Dianella sp. aff. longifolia (Riverina)*	CR
Plump Swamp Wallaby-grass	*Amphibromus pithogastrus*	CR
Purple Diuris	*Diuris punctata*	EN
Purple Eyebright	*Euphrasia collina subsp. muelleri*	EN
Rayless Daisy-bush	*Olearia tubuliflora*	EN
Red Swainson-pea	*Swainsona plagiotropis*	EN
Rising Star Guinea-flower	*Hibbertia humifusa subsp. humifusa*	EN
Sand Rush	*Juncus psammophilus*	EN
Sarcozona	*Sarcozona praecox*	EN
Sikh's Whiskers	*Pterostylis boormanii*	EN
Silver Snow-daisy	*Celmisia tomentella*	VU
Slender Club-sedge	*Isolepis congrua*	EN
Slender Mint-bush	*Prostanthera saxicola var. bracteolata*	EN
Slender Water-ribbons	*Cycnogeton dubium*	EN
Small Milkwort	*Comesperma polygaloides*	CR
Small Scurf-pea	*Cullen parvum*	EN
Small-flower Mat-rush	*Lomandra micrantha subsp. tuberculata*	VU
Small-flower Wallaby-grass	*Rytidosperma monticola*	EN
Small-leaf Goodenia	*Goodenia benthamiana*	EN
Small-leaf Wax-flower	*Philotheca difformis subsp. difformis*	EN
Smooth Minuria	*Minuria integerrima*	VU
Snowy Mint-bush	*Prostanthera nivea var. nivea*	VU
Southern Swainson-pea	*Swainsona behriana*	EN
Spiny Rice-flower	*Pimelea spinescens subsp. spinescens*	CR
Spotted Gum	*Corymbia maculata*	VU
Sutton Grange Greenhood	*Pterostylis agrestis*	CR
Swamp Diuris	*Diuris palustris*	EN
Tan Leek-orchid	*Prasophyllum erythrocommum*	CR
Tough Scurf-pea	*Cullen tenax*	EN
Umbrella Wattle	*Acacia oswaldii*	CR
Velvet Daisy-bush	*Olearia pannosa subsp. cardiophylla*	EN
Waterbush	*Myoporum montanum*	EN
Western Golden-tip	*Goodia medicaginea*	EN

Common name	Scientific name	Status
Whipstick Crowea	*Crowea exalata subsp. revoluta*	CR
Whipstick Westringia	*Westringia crassifolia*	EN
Whirrakee Wattle	*Acacia williamsonii*	VU
Winged Water-starwort	*Callitriche umbonata*	EN
Woodland Leek-orchid	*Prasophyllum sp. aff. Validum*	EN
Yellow-tongue Daisy	*Brachyscome chrysoglossa*	EN

MAMMALS

Common name	Scientific name	Status
Brush-tailed Phascogale	*Phascogale tapoatafa*	VU
Common Dunnart	*Sminthopsis murina murina*	VU
Grey-headed Flying-fox	*Pteropus poliocephalus*	VU
Platypus	*Ornithorhynchus anatinus*	VU
Spot-tailed Quoll	*Dasyurus maculatus maculatus*	EN

BIRDS

Common name	Scientific name	Status
Australasian Bittern	*Botaurus poiciloptilus*	CR
Australian Bustard	*Ardeotis australis*	CR
Australian Painted Snipe	*Rostratula benghalensis australis*	CR
Australasian Shoveler	*Anas rhynchotis*	VU
Barking Owl	*Ninox connivens*	CR
Black Falcon	*Falco subniger*	CR
Blue-billed Duck	*Oxyura australis*	VU
Brolga	*Grus rubicunda*	EN
Bush Stone-curlew	*Burhinus grallarius*	CR
Caspian Tern	*Hydroprogne caspia*	VU
Chestnut-rumped Heathwren	*Hylacola pyrrhopygia*	VU
Common Sandpiper	*Actitis hypoleucos*	VU
Common Greenshank	*Tringa nebularia*	EN
Crested Bellbird	*Oreoica gutturalis*	EN
Curlew Sandpiper	*Calidris ferruginea*	CR
Diamond Dove	*Geopelia cuneata*	VU
Diamond Firetail	*Stagonopleura guttata*	VU
Eastern Curlew	*Numenius madagascariensis*	CR
Eastern Great Egret	*Ardea modesta*	VU
Freckled Duck	*Stictonetta naevosa*	EN
Grey-crowned Babbler	*Pomatostomus temporalis*	VU
Grey Falcon	*Falco hypoleucos*	VU
Grey Goshawk	*Accipiter novaehollandiae novaehollandiae*	EN
Ground Cuckoo-shrike	*Coracina maxima*	EN
Hardhead	*Aythya australis*	VU
Hooded Robin	*Melanodryas cucullata*	VU
Inland Dotterel	*Charadrius australis*	VU
Lewin's Rail	*Rallus pectoralis*	VU

Common name	Scientific name	Status
Little Eagle	*Hieraaetus morphnoides*	VU
Little Egret	*Egretta garzetta*	EN
Magpie Goose	*Anseranas semipalmata*	VU
Malleefowl	*Leipoa ocellata*	VU
Marsh Sandpiper	*Tringa stagnatilis*	EN
Masked Owl	*Tyto novaehollandiae novaehollandiae*	CR
Musk Duck	*Biziura lobata*	VU
Painted Honeyeater	*Grantiella picta*	VU
Plains-wanderer	*Pedionomus torquatus*	CR
Plumed Egret	*Ardea intermedia plumifera*	CR
Powerful Owl	*Ninox strenua*	VU
Purple-gaped Honeyeater	*Lichenostomus cratitius*	VU
Regent Honeyeater	*Xanthomyza phrygia*	CR
Speckled Warbler	*Chthonicola sagittata*	EN
Square-tailed Kite	*Lophoictinia isura*	VU
Swift Parrot	*Lathamus discolor*	CR
Turquoise Parrot	*Neophema pulchella*	VU
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	EN
White-throated Needletail	*Hirundapus caudacutus*	VU
Wood Sandpiper	*Tringa glareola*	EN

REPTILES AND AMPHIBIANS

Common name	Scientific name	Status
Bearded Dragon	*Pogona barbata*	VU
Broad-shelled Turtle	*Chelodina expansa*	EN
Brown Toadlet	*Pseudophryne bibronii*	EN
Growling Grass Frog	*Litoria raniformis*	VU
Murray River Turtle	*Emydura macquarii*	CR
Pink-tailed Worm-Lizard	*Aprasia parapulchella*	EN
Striped Legless Lizard	*Delma impar*	EN
Lace Monitor	*Varanus varius*	EN

INVERTEBRATES

Common name	Scientific name	Status
Eltham Copper Butterfly	*Paralucia pyrodiscus lucida*	CR
Golden Sun Moth	*Synemon plana*	VU

FISHES

Common name	Scientific name	Status
Freshwater Catfish	*Tandanus tandanus*	EN
Murray Cod	*Maccullochella peelii*	EN
Macquarie Perch	*Macquaria australasica*	EN
Southern Purple-spotted Gudgeon	*Mogurnda adspersa*	CR

THREATENED COMMUNITIES OF FLORA AND FAUNA

Victorian temperate-woodland bird community
Creekline Grassy Woodland (Goldfields) Community
Lowland Riverine Fish Community of the Southern Murray-Darling Basin
Northern Plains Grassland Community
Grey Box – Buloke Grassy Woodland Community

1.2 POTENTIALLY THREATENING PROCESS IN GREATER BENDIGO

The FFG Act defines a potentially threatening process as 'a process which may have the capability to threaten the survival, abundance or evolutionary development of any taxon or community of flora or fauna[60]'

Listed below are threatening processes for Biodiversity in Greater Bendigo along with a measure of the likelihood of the threat.

Flora and Fauna Guarantee Act 1988 - Potentially Threatening Processes List (as of July 2022)	**Likelihood in Greater Bendigo**
Alteration to the natural flow regimes of rivers and streams	High
Alteration to the natural temperature regimes of rivers and streams	High
Collection of native orchids	Moderate
Degradation and loss of habitats caused by feral Horses *(Equus caballus)*	Low
Degradation of native riparian vegetation along Victorian rivers and streams	High
Habitat fragmentation as a threatening process for fauna in Victoria	High
High frequency fire resulting in disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	Moderate
Human activity which results in artificially elevated or epidemic levels of Myrtle Wilt within Nothofagus-dominated Cool Temperate Rainforest	Low
Inappropriate fire regimes causing disruption to sustainable ecosystem processes and resultant loss of biodiversity	Moderate
Incidental catch (or bycatch) of seabirds during longline fishing operations	Low
Increase in sediment input into Victorian rivers and streams due to human activities	High
Infection of amphibians with Chytrid Fungus, resulting in chytridiomycosis	Moderate
Input of organotins to Victorian marine and estuarine waters	Low
Input of petroleum and related products into Victorian marine and estuarine environments	Low
Input of toxic substances into Victorian rivers and streams	High
Introduction and spread of Spartina to Victorian estuarine environments	Low
Introduction of live fish into waters outside their natural range within a Victorian river catchment after 1770	High
Invasion of native vegetation by Blackberry *Rubus fruticosus* L. agg	Moderate
Invasion of native vegetation by 'environmental weeds'	High
Invasion of native vegetation communities by Tall Wheat-grass *Lophopyrum ponticum*	Low

[60] FFG-Threatening Processes List-July-2022 (environment.vic.gov.au)

Flora and Fauna Guarantee Act 1988 - Potentially Threatening Processes List (as of July 2022)	**Likelihood in Greater Bendigo**
Loss of biodiversity as a result of the spread of Coast Wattle (*Acacia longifolia subsp. sophorae*) and Sallow Wattle (*Acacia longifolia subsp. longifolia*) into areas outside its natural range	Low
Loss of biodiversity in native ant populations and potential ecosystem integrity following invasion by Argentine Ants (*Linepithema humile*)	Low
Loss of coarse woody debris from Victorian native forests and woodlands	High
Loss of hollow-bearing trees from Victorian native forests	High
Loss of terrestrial climatic habitat caused by anthropogenic emissions of greenhouse gases	High
Predation of native wildlife by the cat, Felis catus	High
Predation of native wildlife by the introduced Red Fox Vulpes vulpes	High
Prevention of passage of aquatic biota as a result of the presence of instream structures	High
Reduction in biodiversity of native vegetation by Sambar (*Rusa[1] unicolor*)	Moderate
Reduction in biodiversity resulting from Noisy Miner (*Manorina melanocephala*) populations in Victoria	High
Reduction in biomass and biodiversity of native vegetation through grazing by the Rabbit *Oryctolagus cuniculus*	High
Removal of wood debris from Victorian streams	High
Soil and vegetation disturbance resulting from marble mining	Low
Soil degradation and reduction of biodiversity through browsing and competition by feral goats (*Capra hircus*)	Moderate
Soil erosion and vegetation damage and disturbance in the alpine regions of Victoria caused by cattle grazing	Low
Spread of *Pittosporum undulatum* in areas outside its natural distribution	Low
The discharge of human-generated marine debris into Victorian marine or estuarine waters	Low
The introduction and spread of the Large Earth Bumblebee *Bombus terrestri*s into Victorian terrestrial environments	Low
The introduction of exotic organisms into Victorian marine waters	Low
The spread of *Phytophthora cinnamomi* from infected sites into parks and reserves, including roadsides, under the control of a state or local government authority	Low
Threats to native flora and fauna arising from the use by the feral honeybee *Apis mellifera* of nesting hollows and floral resources	Moderate-High
Use of Phytophthora-infected gravel in construction of roads, bridges and reservoirs	Low
Wetland loss and degradation as a result of change in water regime, dredging, draining, filling and grazing	High

1.3 EVC'S IN GREATER BENDIGO

Current Ecological Vegetation Classes (EVC's) within Greater Bendigo	2005 Conservation status
127: Valley Heathy Forest (Goldfields)	EN
132: Plains Grassland (Victorian Riverina)	EN
175: Grassy Woodland (Victorian Riverina)	EN
273: Plains Woodland/Plains Grassland/Gilgai Wetland Mosaic (Victorian Riverina)	EN
55: Plains Grassy Woodland (Goldfields)	EN
56: Floodplain Riparian Woodland (Goldfields)	EN
65: Sedge-rich Woodland (Goldfields)	EN
67: Alluvial Terraces Herb-rich Woodland (Goldfields)	EN
68: Creekline Grassy Woodland (Victorian Riverina)	EN
72: Granitic Hills Woodland (Goldfields)	EN
74: Wetland Formation (Victorian Riverina)	EN
803: Plains Woodland (Victorian Riverina)	EN
851: Stream Bank Shrubland (Goldfields)	EN
104: Lignum Swamp (Victorian Riverina)	VU
47: Valley Grassy Forest (Goldfields)	VU
81: Alluvial Terraces Herb-rich Woodland/Creekline Grassy Woodland Mosaic (Goldfields)	VU
22: Grassy Dry Forest (Goldfields)	DEP
48: Heathy Woodland (Goldfields)	DEP
61: Box Ironbark Forest (Goldfields)	DEP
69: Metamorphic Slopes Shrubby Woodland (Goldfields)	DEP
70: Hillcrest Herb-rich Woodland (Goldfields)	DEP
20: Heathy Dry Forest (Goldfields)	LC
93: Sandstone Ridge Shrubland (Goldfields)	LC

Image by John Walter.

1.4 EPBC LISTED SPECIES AND COMMUNITIES WITHIN GREATER BENDIGO

ANIMALS

Common name	Scientific name	National status	Threats
Australian Painted Snipe	*Rostratula australis*	EN	Changed surface and groundwater regimes; Disrupted ecosystem and population processes; Climate change and severe weather; Invasive species and diseases
Australasian Bittern	*Botaurus poiciloptilus*	EN	Adverse fire regimes; Changed surface and groundwater regimes; Climate change and severe weather; Habitat loss, fragmentation, and degradation; Invasive species and diseases
Eltham Copper Butterfly	*Paralucia pyrodiscus lucida*	EN	Adverse fire regimes; Habitat loss, fragmentation, and degradation
Golden Sun Moth	*Synemon plana*	VU	Habitat loss, fragmentation, and degradation
Grey Falcon	*Falco hypoleucos*	VU	Disrupted ecosystem and population processes; Invasive species and diseases
Grey-headed Flying-fox	*Pteropus poliocephalus*	VU	Habitat loss, fragmentation, and degradation; Overexploitation and other direct harm from human activities
Growling Grass Frog	*Litoria raniformis*	VU	Changed surface and groundwater regimes; Climate change and severe weather; Habitat loss, fragmentation, and degradation; Invasive species and diseases
Macquarie Perch	*Macquaria australasica*	EN	Adverse fire regimes; Changed surface and groundwater regimes; Climate change and severe weather; Habitat loss, fragmentation, and degradation; Invasive species and diseases; Overexploitation and other direct harm from human activities
Murray Cod	*Maccullochella peelii*	VU	Changed surface and groundwater regimes; Disrupted ecosystem and population processes; Climate change and severe weather; Habitat loss, fragmentation, and degradation; Overexploitation and other direct harm from human activities
Painted Honeyeater	*Grantiella picta*	VU	Climate change and severe weather; Invasive species and diseases; Habitat loss, fragmentation, and degradation
Pink-tailed Worm-lizard	*Aprasia parapulchella*	VU	Invasive species and diseases; Habitat loss, fragmentation, and degradation
Plains-wanderer	*Pedionomus torquatus*	CR	Climate change and severe weather; Habitat loss, fragmentation, and degradation; Disrupted ecosystem and population processes; Invasive species and diseases; Overexploitation and other direct harm from human activities; Pollution
Regent Honeyeater	*Anthochaera phrygia*	CR	Climate change and severe weather; Habitat loss, fragmentation, and degradation; Disrupted ecosystem and population processes; Invasive species and diseases
Spot-tailed Quoll	*Dasyurus maculatus maculatus*	EN	Adverse fire regimes; Habitat loss, fragmentation, and degradation; Invasive species and diseases; Overexploitation and other direct harm from human activities; Pollution
Striped Legless Lizard	*Delma impar*	VU	Adverse fire regimes; Habitat loss, fragmentation, and degradation; Disrupted ecosystem and population processes; Invasive species and diseases

PLANTS

Common name	Scientific name	National status	Plans
Brilliant Sun-orchid	*Thelymitra mackibbinii*	VU	https://bit.ly/3LsEU8o
Clover Glycine	*Glycine latrobeana*	VU	https://bit.ly/3Pqf5sE
Erect Peppercress	*Lepidium pseudopapillosum*	VU	https://bit.ly/3MtqG8A
Fragrant Leek-orchid	*Prasophyllum suaveolens*	EN	https://bit.ly/3PoQQek
Green-striped Greenhood	*Pterostylis chlorogramma*	VU	https://bit.ly/3yJ6nzW
Large-fruit Fireweed	*Senecio macrocarpus*	VU	https://bit.ly/3yHHyEc
Maroon Leek-orchid	*Prasophyllum frenchii*	EN	https://bit.ly/3FTgxPP
Matted Flax-lily	*Dianella amoena*	EN	https://bit.ly/3PsSEmI
McIvor Spider-orchid	*Caladenia audasii*	EN	https://bit.ly/3NftG8k
Ornate Pink Fingers	*Caladenia ornata*	VU	https://bit.ly/3a5udeR
Plains Rice-flower	*Pimelea spinescens subsp. spinescens*	CR	https://bit.ly/3wk9eO5
Red Darling-pea	*Swainsona plagiotropis*	VU	https://bit.ly/3LmX5Mm
Ridged Water-milfoil	*Myriophyllum porcatum*	VU	https://bit.ly/3Ng9Vxx
River Swamp Wallaby-grass	*Amphibromus fluitans*	VU	https://bit.ly/3yGIl8p
Slender Darling-pea	*Swainsona murrayana*	VU	https://bit.ly/39pJeYw
Southern Shepherd's Purse	*Ballantinia antipoda*	EN	https://bit.ly/37R4je5
Sturdy Leek-orchid	*Prasophyllum validum*	VU	https://bit.ly/3leWhyE
Trailing Hop-bush	*Dodonaea procumbens*	VU	https://bit.ly/3sEvgsH
Turnip Copperburr	*Sclerolaena napiformis*	EN	https://bit.ly/3wzsNAK
Whipstick Westringia	*Westringia crassifolia*	EN	https://bit.ly/3lhM4S7

COMMUNITY

Community	National status	Plans
Grey Box *(Eucalyptus microcarpa)* Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	EN	https://bit.ly/403QspG
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	EN	https://bit.ly/3Uz5zqf
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	CR	https://bit.ly/3o7oMmL
Natural Grasslands of the Murray Valley Plains	CR	https://bit.ly/3GAe6TZ

Image by Blair Venn

1.5 STAKEHOLDERS GROUPS INVOLVED IN BIODIVERSITY CONSERVATION

Stakeholder	Relevant area of responsibility and available policies/plans
Land managers	
Dja Dja Wurrung	Manage the Greater Bendigo National Park with Parks Victoria through the *Joint Management Plan for the Dja Dja Wurrung Parks Strategy* which was returned to Djaara as Aboriginal title and is no longer held by the Crown. Have rights that acknowledge their obligations for caring for Country, generally under Victoria's Charter of Human Rights and specifically under the Recognition and Settlement Agreement with the State of Victoria that acknowledge their obligations for caring for Country as public land managers of land in the municipality west of the Campaspe River. All Crown land on Djandak (Dja Dja Wurrung Country) is Aboriginal Title and Djaara has a goal to be the sole managers. Under the Recognition and Settlement Agreement (RSA) and Land Use Activity Agreement (LUAA) means that Dja Dja Wurrung People have procedural rights over what happens on Crown Land. Caring for Country through delivery of many strategies including, Galk-galk Dhelkunya – forest gardening, including Djandak Wi (fire) cultural burns to manage fire risk and support healthy country, revegetation and rehabilitation, regenerative practices, cultural thinning and water management. **Strategies/plans:** · *Recognition and Settlement Agreement* · *Natural Resource Agreement* · *Dhelkunya Dja Country Plan 2014-2034* · *Joint Management Plan for the Dja Dja Wurrung Parks Strategy* · *Galk-galk Dhelkunya (Forest Gardening Strategy) 2022-2034* · *Climate Change Strategy 2023-2034*
Taungurung	Caretakers and custodians of land to the east of the Campaspe River within the municipality boundary. **Strategies/plans:** · *Taungurung Buk Dadbagi - Taungurung Country Plan*
Parks Victoria (PV)	Jointly manage Greater Bendigo National Park with DJAARA and several other crown land reserves. Responsible for management plans and strategies associated with parks and reserves within their management, beekeeping and firewood collection.

Stakeholder	Relevant area of responsibility and available policies/plans
Department of Energy, Environment, and Climate Action (DEECA)	Manages crown land reserves. Manages the Victorian Biodiversity Atlas and the online platform, NatureKit. Land for Wildlife program across private land. Funding for Victorian Landcare Program, including Victorian Landcare Grants & Landcare Facilitator positions (at least two positions hosted by Landcare networks in Greater Bendigo). State-wide planning policies and modelling regarding native vegetation. Assist regulators (such as the City) to ensure compliance with Acts such as the Planning and Environment Act 1987, particularly in relation to native vegetation removal and offsets. Funding for biodiversity conservation projects and on-ground works, e.g., Biodiversity Response Planning and Bushbank. **Strategies/plans:** · *Protecting Victoria's Environment – Biodiversity 2037* · *Flora and Fauna Guarantee Act 1988*
North Central Catchment Management Authority	Manages landscape scale projects for biodiversity protection on private land and Landcare programs including funding (both Australian and Victorian Government) for Landcare and friends group projects. Manage waterways and flood impacts, regulatory role in waterway permits. **Strategies/plans:** · *Regional Catchment Strategy 2021-2027*
Country Fire Authority (CFA)	Fire management, including planned burns for fuel reduction.
Coliban Water	Manage land at sites of water supply and treatment. **Strategies/plans:** · *Biodiversity Benefits Strategy (in development)*
VicTrack	Manage rail reserves and tramways.
Regional Roads Victoria (Loddon mallee)	Manage a range of roadsides across the municipality, including multiple road improvement projects.
Community and not-for-profit organisations	
Biolinks Alliance	Engaged in large-scale restoration to achieve connectivity across regions. Current local projects include the Heathcote Local 2 Landscape project and Spring Plains Watershed Repair project. **Strategies/plans:** · *Framework for Action for Connecting Landscapes in Central Victoria*

Stakeholder	Relevant area of responsibility and available policies/plans
Trust for Nature (TfN)	Promote long-term conservation on private land, through conservation covenants. A 100% rate rebate is provided to those properties that have a conservation covenant in the City. **Strategies/plans:** · *Strategic Plan 2021-2025* · *Statewide Conservation Plan 2021-2030*
Wilderlands	Provide an opportunity for individuals and organisations to purchase Biological Diversity Units', representing 1sqm of land protected in-perpetuity to help achieve 30% protection of nature by 2030. **Strategies/plans:** · *Wilderlands Whitepaper*
Landcare and Friends groups	On-ground action through grant funded local projects and regular working bees. Community education through walks and talks, land management workshops and the development of brochures and information. Monitoring programs, including nest boxes. The local knowledge and action of these groups is vital for the development and implementation of the biodiversity strategy. **Strategies/plans:** · *Honeyeater Bushland Reserve Management Plan 2021-2026* · *Ironbark Gully Trail Concept Plan - December 2016*
Spring Plains Steering Committee	This group formed to guide the management actions of the Spring Plains Habitat Enhancement Project, undertaken by Biolinks Alliance. They are also actively engaged in multiple biodiversity projects around Heathcote.
Bendigo and District Environment Council	Environmental advocacy group affiliated with Environment Victoria who campaign on climate, sustainability and nature protection issues.
Bendigo Sustainability Group	Community organisation focused on increasing access to renewable energy and supporting the community to minimise waste and act on climate change.
Field Naturalist Club of Bendigo	This club encourages the exchange of knowledge, stimulates interest in naturalist activities and encourages the protection of the natural environment. They hold monthly meetings, workshops and excursion for people to engage with nature. **Strategies/plans:** · *Whirrakke (monthly members newsletter with wildlife observations)*
Wellsford Forest Conservation Alliance	Group seeking the protection of the Wellsford Forest, particularly from the devastating effects of on-going logging.
La Trobe Environmental Action Forum (LEAF)	A network of people from La Trobe University, Bendigo with a common interest in the environment, social justice, animal rights and indigenous values.

Stakeholder	Relevant area of responsibility and available policies/plans
Bendigo Climate Alliance	A group working to connect, support and promote community groups, organisations and businesses in Bendigo that are actively working to combat the climate emergency.
Central Victoria Australian Conservation Foundation Group (CVACF)	Community group supporting the work of the Australian Conservation Foundation and co-ordinating local conservation programs and projects.
Bendigo Family Nature Club	A volunteer organisation helping families in Bendigo to discover more of their environment. Presented in partnership with Bendigo Sustainability Group and the Bendigo Field Naturalists Club.
Australian Plant Society (Victoria) – Bendigo and Heathcote Branches	Bendigo and Heathcote District Groups dedicated to promoting Australian native plants.
Wildlife rescue Information Network (WRIN)	A volunteer-run organisation dedicated to the rescue and rehabilitation of native fauna found injured, sick or orphaned.
Wildlife Rescue Emergency Service (WRES)	WRES rescue, rehabilitate and release wildlife back to their native habitat following emergencies such as bushfire or flooding, impacting on Victorian native wildlife.
Birdlife Australia (Bendigo-Echuca)	Ongoing observations and recording of bird species across Greater Bendigo.
Victorian National Parks Association	Non-profit nature conservation organisation seeking to protect Victoria's unique natural environment and biodiversity through the establishment and effective management of national parks and conservation reserves. **Strategies/plans:** · *Living Next to Nature: Being a Good Neighbour to Bendigo's Bushland*
City of Greater Bendigo	
Climate and Environment Unit	Environmental policies, strategies and plans Community engagement **Strategies/plans:** · *Climate and Environment Strategy 2021-2026* · *Reimagining Bendigo Creek June 2020*
Parks and Open Space Unit	Manage parks and open space, including natural, recreation, passive and heritage reserves Management of roadsides **Strategies/plans:** · *Greening Greater Bendigo 2020-2070* · *Invasive Plants and Animals Policy* · *Nature Strip Policy* · *Roadside Management Policy* · *Urban Tree Management Policy* · *Municipal Fire Management Plan*

Stakeholder	Relevant area of responsibility and available policies/plans
Active and Healthy Communities Unit	Strategic planning for public open spaces **Strategies/plans:** · *Greater Bendigo Public Space Plan*
Strategic Planning Unit	Develops land use strategies and plans for implementation through the Greater Bendigo Planning Scheme. **Strategies/plans:** · *Managed Growth Strategy (in progress)* · *Review of Environmental Overlays (in progress)*
Safe and Healthy Communities Unit	Local laws, domestic animal management.
Greater Bendigo Environment Partnership (formerly SEAC)	Works together to coordinate and collaborate on environmental initiatives across Greater Bendigo.
Farm and Agribusiness Advisory Committee	Provides strategic advice to the City about farming and agribusiness matters.
Public Open Space Advisory Committee	Provides high level strategic advice to the City about Public Space matters.
Youth Council	Provides advice and input into the City's projects from a youth perspective.
Other	
Wood4Good	Currently a City contractor, trialling sustainable, biodiversity-driven carbon offset programs in City reserves. **Strategies/plans:** · *Baseline Ecological Assessment of the Crosbie Plantation – May 2021*

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