



Banyule
CITY COUNCIL



Planet:

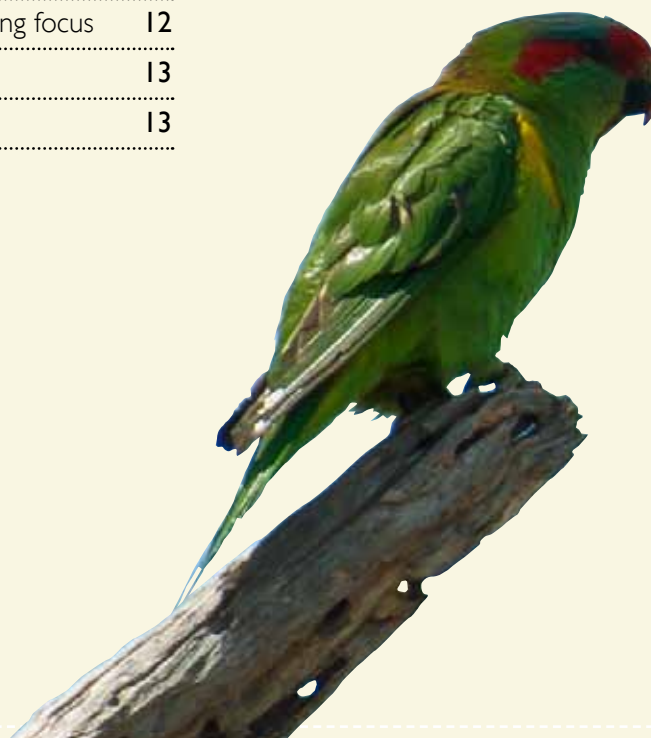
Biodiversity

Banyule Planet:
The Biodiversity Plan
2014-2017

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Banyule Planet: The Biodiversity Plan 2014-2017

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Executive summary

Biodiversity can be defined simply as the diversity of living things. It can be measured on a genetic level (diversity of genes within a species); on a species level (number of different species); and at an ecosystem level (number of functioning habitat types of different successional stages and ecological vegetation classes). All three levels of biodiversity are intertwined and must be protected.

This Biodiversity Plan provides an overview of Banyule's biodiversity assets and lists actions and indicators to justify, direct and monitor our management of biodiversity within the municipality.

It supports the objectives in Banyule's City Plan 2013-17, in particular the Planet: Environmental Sustainability objective:

"Conduct Council activities in a sustainable manner, and practice sound stewardship of the natural environment to ensure its protection, diversity and enhancement".

The Biodiversity Plan gives effect to the City Plan Planet key direction to 'Protect and enhance our natural environment' and also supports other key directions such as 'Encourage environmental stewardship'.

Banyule's Biodiversity Plan sits within the context of our Policy and Strategy documents alongside the other Plan level documents

The Biodiversity Plan has two parts – Part One is the core document containing Actions to be implemented, and Part Two contains supplementary technical documents in ten appendices.

"Conserving biodiversity is an essential part of safeguarding the biological life support systems on Earth. All living creatures, including humans, depend on these life support systems for the necessities of life. For example, we need oxygen to breathe, clean water to drink, fertile soil for food production and physical materials for shelter and fuel. These necessities can be described collectively as ecosystem services. They are fundamental to our physical, social, cultural and economic well-being."

Australia's Biodiversity Conservation Strategy 2010-2030

Banyule City Council Biodiversity Plan 2014



Introduction

Council defines Biodiversity as the diversity of living things. It can be measured on:

- a genetic level (diversity of genes within a species);
- a species level (number of different species);
- at an ecosystem level (number of functioning habitat types of different successional stages and ecological vegetation classes).

All three levels of biodiversity are intertwined and must be protected.

This Biodiversity Plan provides an overview of Banyule's biodiversity assets and lists actions and indicators to justify, direct and monitor our management of biodiversity within the municipality. This is set in the context of the City Plan 2013-17 and the Environmental Sustainability Policy and Strategy 2013-17.

What is Planet?

"Planet" is about the natural and formed environment and the ecosystems that sustain the community. Our community is an integral part of the environment and together we are the custodians of our shared home.

We need to ensure that what we consume and do in our community today does not disadvantage future generations. By developing strong partnerships with our community we can work together to become more sustainable.

The conservation of water and energy is a priority for the development of a sustainable community and will be a major focus for us in planning and delivering services and infrastructure. We will also continue to focus on other environmental issues including waste avoidance, preserving and enhancing areas of biodiversity and high conservation significance and promoting environmental stewardship.

We recognise the threat to all ecosystems and communities from climate change. We will address this by reducing greenhouse gas emissions in Council operations and working with the community to encourage further emissions reduction and eventual carbon neutrality.

We are also committed to the protection and restoration of biodiverse land and water-based ecosystems in Banyule, which will help to ensure a sustainable environment.

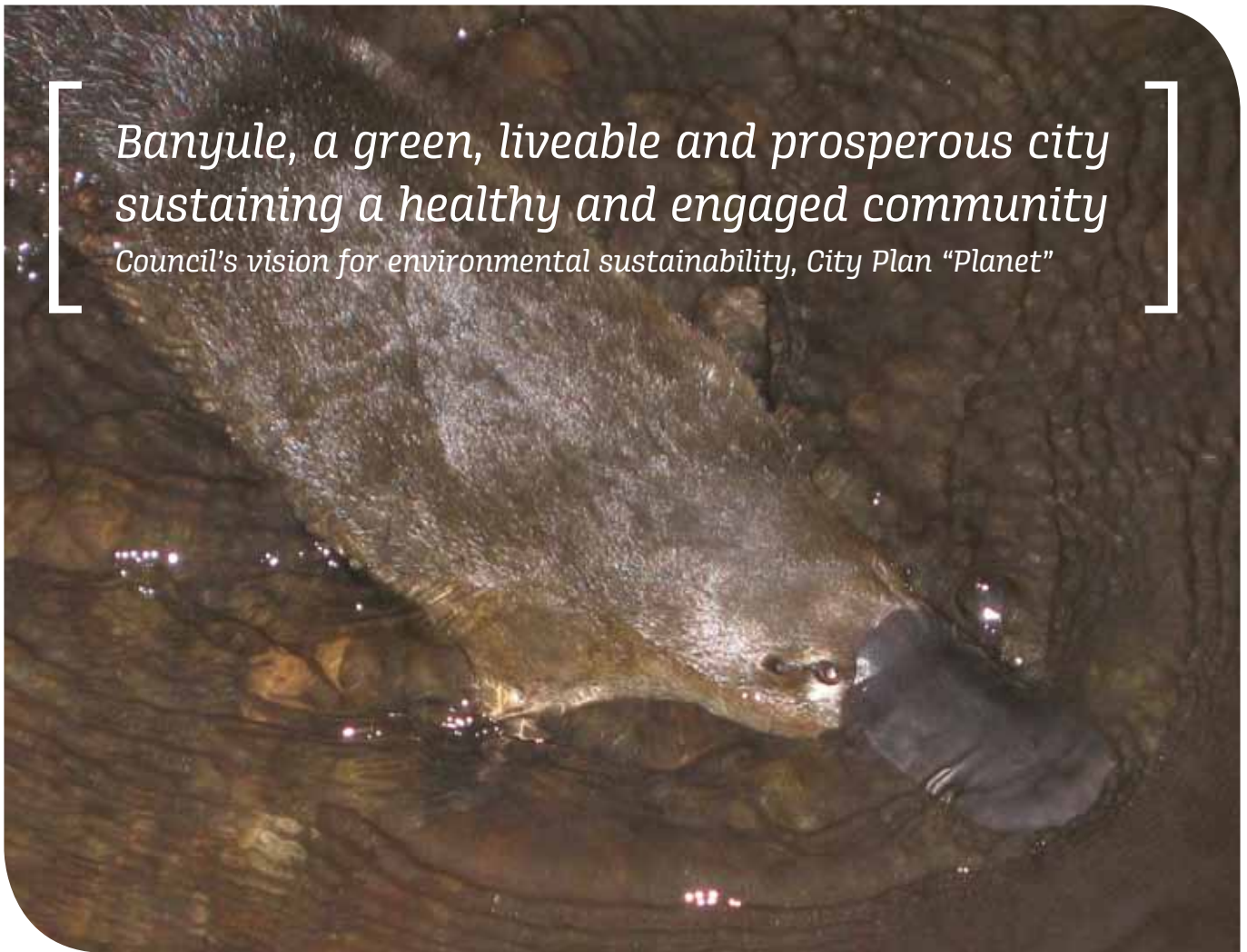
Banyule's passive and active open spaces, bushland reserves, and broad tree cover are key features of the municipality and are strongly supported by community values. The enhancement and maintenance of Banyule's parks, reserves and private gardens is paramount in contributing to sustainability and a sense of wellbeing in the community. We will explore innovative models for water and energy management in active and passive open spaces to meet community aspirations.

We will maintain community assets to reduce our ecological impact by not having to replace or constantly add new assets.

The ecological footprint of a municipality is a measure of the 'load' on nature imposed by its population. Council and the community need to continue to work together to identify and address opportunities to reduce Banyule's footprint.

Background

The City Plan and the Planet policy and strategy context



*Banyule, a green, liveable and prosperous city
sustaining a healthy and engaged community*

Council's vision for environmental sustainability, City Plan "Planet"

Banyule City Council recognises the intrinsic value of the natural environment.

Humanity's survival and well-being depends on the natural environment's provision of clean water, air, food and shelter. Council recognises that environmental sustainability means using ecosystem services provided by the natural environment fairly and wisely to meet the needs of the present generation without compromising the ability of future generations to meet their own needs.

Banyule's City Plan 2013-17 therefore has the following "Planet: Environmental Sustainability" guiding objective:

“Conduct Council activities in a sustainable manner and practice sound stewardship of the natural environment to ensure its diversity, protection and enhancement.”

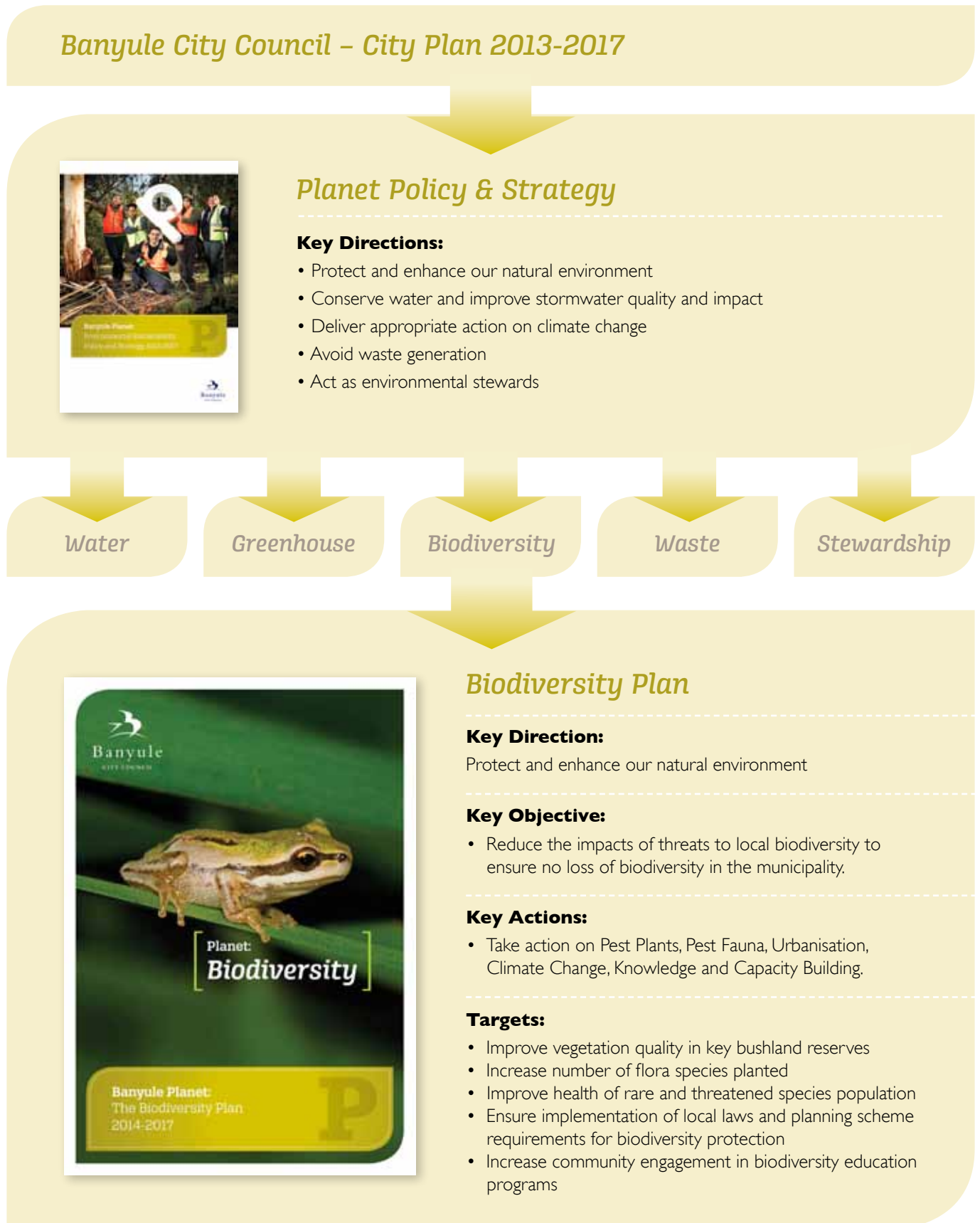
To achieve this objective for environmental sustainability, Council's City Plan has the following key directions for environmental sustainability under the Planet theme:

- 2.1 Protect and enhance our natural environment
- 2.2 Conserve water and improve stormwater quality
- 2.3 Deliver action on climate change
- 2.4 Avoid waste generation
- 2.5 Encourage environmental stewardship

The Biodiversity Plan gives particular effect to the City Plan Planet key direction 2.1 to 'Protect and enhance our natural environment' and also supports other key directions such as 2.5 'Encourage environmental stewardship'.

Banyule's Biodiversity Plan sits alongside our other Plan level documents. This policy and strategy context is shown in Figure 1 below. The Plan has two parts – Part One is the core document containing Actions to be implemented, and Part Two contains supplementary technical documents in ten appendices.

Figure 1: Policy and strategy context for the Biodiversity Plan



Biodiversity in Banyule - What we want to do

Council's objective is that Banyule suffers no net loss of biodiversity.
All three levels of Biodiversity are intertwined and must be protected to meet our goal.



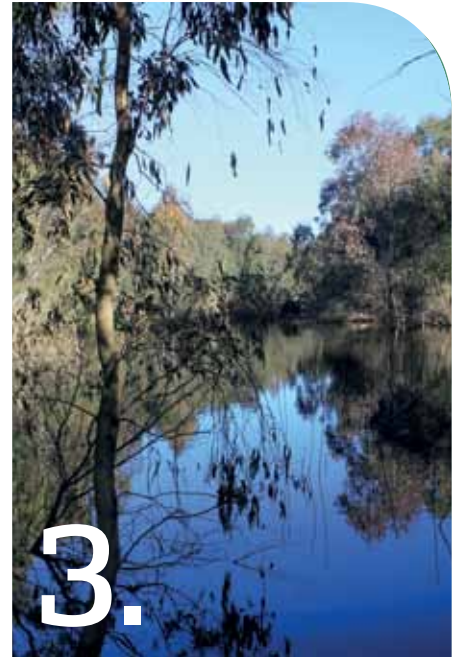
1.

Diversity of
Genes



2.

Number of
different species



3.

Functioning
Ecosystem



“Conserving biodiversity is an essential part of safeguarding the biological life support systems on Earth. All living creatures, including humans, depend on these life support systems for the necessities of life. For example, we need oxygen to breathe, clean water to drink, fertile soil for food production and physical materials for shelter and fuel. These necessities can be described collectively as ecosystem services. They are fundamental to our physical, social, cultural and economic well-being.”

Australia's Biodiversity Conservation Strategy 2010-2030

How we will achieve 'no net loss' of biodiversity

Once genes, species and ecosystems are lost, we cannot create new ones, so we must protect what we've got. We can do that by reducing the threats that have a negative impact on biodiversity.

How we live affects the natural environment and can diminish the habitat of plant and animal species, including :

- the rate at which we use non-renewable resources
- creation of waste and pollution
- modes of travel

Our primary mechanism for protecting biodiversity is to reduce the threats to biodiversity to facilitate regeneration. Threatening processes include:

- competition from weeds
- predation by and competition from pest animals
- habitat fragmentation through urbanisation
- climate change

These threats are often linked and a prioritised and integrated approach is required to adequately manage them.

Key strategies to managing threatening processes include:

- advocacy
- public education
- liaison with neighbouring land managers (particularly liaison where threatening processes are not confined to Council land)

Success of these strategies will ideally show;

- an increase in biodiversity values
- improved quality of bushland in Council's reserves
- increased indigenous vegetation cover on privately managed land.

Due to the complexities of biodiversity, we will only be able to measure indicators of biodiversity health so it is vital that monitoring is done strategically and actions that may impact negatively on biodiversity are undertaken with caution.

Why is this a valuable goal?

This is a valuable goal because:

- high levels of biodiversity within ecosystems and within species allows for better adaptation to change
- ecosystems and biological processes that are capable of persisting will remain
- Healthy biodiversity in Banyule will support conservation measures in neighbouring municipalities through transfer of genetic material.

Protection requires active management to maintain genetic diversity and to maintain the integrity and functionality of wetlands, waterways and wildlife corridors.

Without healthy ecosystems, the world will be less suitable for human habitation due to the many resources and services that living organisms provide, such as;

- shade,
- soil stability
- clean air and water
- pest and disease control

Action at a local level can have regional and global benefits.

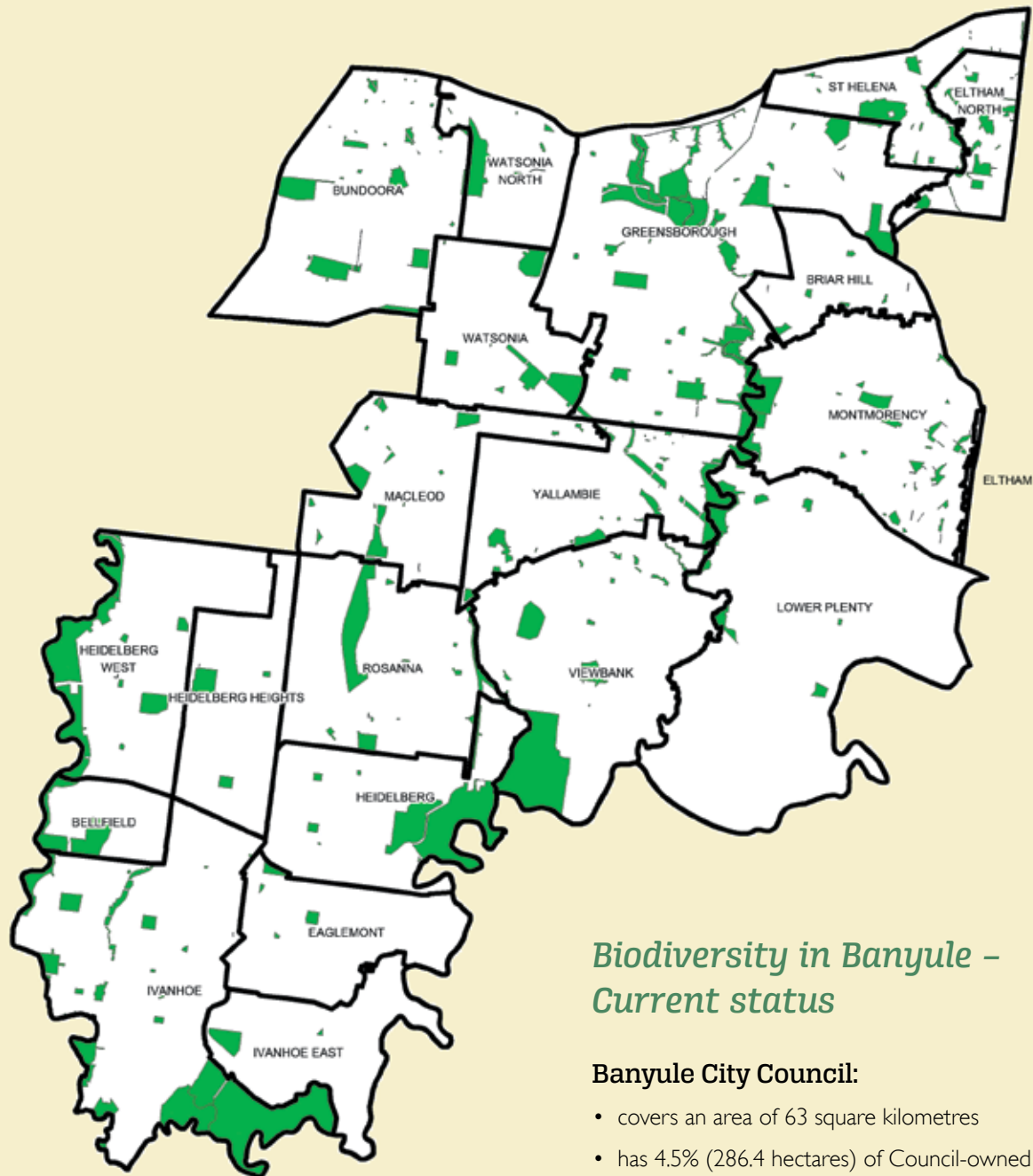
Protecting and enhancing our natural environment:

- improves our sense of place
- provides local character to our neighbourhoods
- provides people with an opportunity to connect with nature
- supports mental and emotional wellbeing
- draws people from their homes into the landscape and community.

As population density increases, well maintained public open space will become ever more important to liveability.

The community strongly values the natural environment, identifying it as a major reason for attraction to Banyule and wanting it to be protected for future generations. Banyule residents can take an active role in protecting and enhancing biodiversity through:

- planting indigenous species in their gardens (2 for 1 plant offer available for residents)
- joining a parks "friends of" group and controlling pest species on their property



Biodiversity in Banyule – Current status

Banyule City Council:

- covers an area of 63 square kilometres
- has 4.5% (286.4 hectares) of Council-owned open space
- includes more than 30 sites designated as bushland reserves which means they are the responsibility of staff trained to care for biodiversity values (see Appendix 1)
- has 22 'Biosites' (sites of regional, state or national environmental significance) identified within Banyule and adjoining areas (see Appendix 2).

Biosites within Banyule are managed as bushland reserves where they are Council owned. There are also areas of revegetated bushland that are both ecologically and culturally important to Banyule where significant resources are applied to the protection and enhancement of biodiversity.





Banyule has:

- 401 species of indigenous vascular plant species (recorded through surveys between 1995 and 2000, Beardsell, 2000, see Appendix 3) some common and some found only in isolated patches
- 170 species that are likely to have been present in Banyule but have not been recorded here
- many non-vascular plants and other non-vascular life forms such as fungi and lichens that have not been surveyed but which add value to the ecosystems in which they are found through their interactions with plants, animals, water and soils

Remnant vegetation

Remnant flora describes stands of vegetation that has persisted on site continuously since before European settlement. Banyule retains less than 10% of its original vegetation cover (Beardsell, 2000).

Indigenous canopy cover contributes to Banyule's culture by:

- helping to identify the municipality and enhance a sense of place
- being a significant contributor to the community's positive feelings about living in the area
- providing greater recognition and planning control over large remnant trees of age, size, habitat or landscape value by recording them through Banyule's Significant Tree Register
- remnant bushland areas supporting a diverse range of middle and understorey plants, including many flowering herbs, lilies and terrestrial orchids

Banyule City Council commissioned a study to locate vegetation sub-communities in 1999. This study identified 34 vegetation sub-communities (listed with map in Appendix 5.) This study has provided data used in developing species lists for revegetation projects.



Case Study: Remnant Vegetation - River Red Gum Woodlands

Many of the older River Red Gums that characterise this vegetation type contain natural hollows which provide habitat for a range of birds and other animals that rely on them for shelter and nesting sites. Some of the oldest trees are considered to be over 600 years old.

The River Red Gums provide feeding habitat for many birds, including honeyeaters and parrots, which feed on nectar from their flowers, insects in their foliage and also on their seeds. Where indigenous under storey vegetation has not been disturbed, it supports a variety of native grasses, lilies and herbs, and provides habitat for small ground-dwelling animals such as lizards.

River Red Gum Woodlands occur across the Yarra River flood plain and extend into the Lower Plenty area. The Simpson Army Barracks in Watsonia retains substantial River Red Gum Woodland areas and remnant trees are scattered over residential areas in the western half of Banyule, particularly within Macleod, Watsonia and Yallambie. Harry Pottage Reserve in Macleod is a great place to see this type of vegetation.



Indigenous vertebrate animal species recorded in Banyule include:

- 214 birds
- 20 mammals
- 23 reptiles
- 12 frogs
- 9 freshwater fish (see Appendix 6)

Many of these species will also utilise habitat outside Banyule which means that wildlife corridors that facilitate the safe movement of species from one area of suitable habitat to another are of key importance.

The good cover of indigenous trees plays an important role in providing food and shelter for:

- possums
- bats
- birds including parrots, owls, kookaburras and honeyeaters. (For example, flowering Yellow Gums found around Greenhills provide a valuable source of food for vulnerable Swift Parrots visiting from Tasmania over winter.)

Remnant bushland areas provide habitat for ground-dwelling animals particularly when they link to extensive wildlife corridors. Insects, including the vulnerable Eltham Copper Butterfly, also rely heavily on indigenous species and some have pollinating relationships to local plants that they do not have with introduced species.

Community surveys show that trees are extremely important to Banyule's human inhabitants. Canopy trees that provide an urban forest across our landscape are highly valued for their contribution to the liveability of the municipality. Volunteers have formed fifteen community and friends groups in the municipality that take an active role in protecting biodiversity in local bushland reserves.



Programs supporting Biodiversity

Wildlife Corridors

Many areas of natural habitat occur within Banyule and adjacent land, providing important refuges for indigenous plants and animals. Substantial loss and fragmentation of natural habitat has occurred over time due to:

- clearing for agriculture
- urban development

This has disturbed the ecosystem dynamic and places ongoing pressure on remaining habitat. Ecosystem functioning is impeded by fragmentation as normal species range is restricted and genetic flow reduced. Interactions between species that have evolved over millennia may be blocked through fragmentation. For example:

- orchids in an isolated bushland reserve may not be found by their pollinators leading to lack of seed set and decline in the population.
- eucalypts may come under insect attack as insectivorous birds lack the vegetation cover to access those trees,
- grasses may grow dense without large herbivores and restrict the growth of seedlings

Wildlife corridors or habitat links (Appendix 7):

- provide links between fragmented and otherwise isolated areas of natural habitat
- play a key role in maintaining resilience of Banyule's ecosystem functions
- allow the movement and dispersal of indigenous animals and plants thus enhancing genetic diversity

Major wildlife corridors identified incorporate the extensive networks of parklands and reserves along the:

- Yarra River
- Plenty River
- Darebin Creek

These form important links between areas of natural habitat within and near Banyule. They also extend throughout the region to the north and east of Melbourne.

A number of Local Habitat Links between areas of natural habitat have also been identified within Banyule. They include substantial residential areas throughout much of the municipality, which either contain remnant indigenous vegetation, or are of importance because of their location between sites of environmental significance, such as Sweetwater Creek in Greensborough.



Wetlands

The Yarra River flood plain incorporates a number of important wetlands. Within Banyule, these include

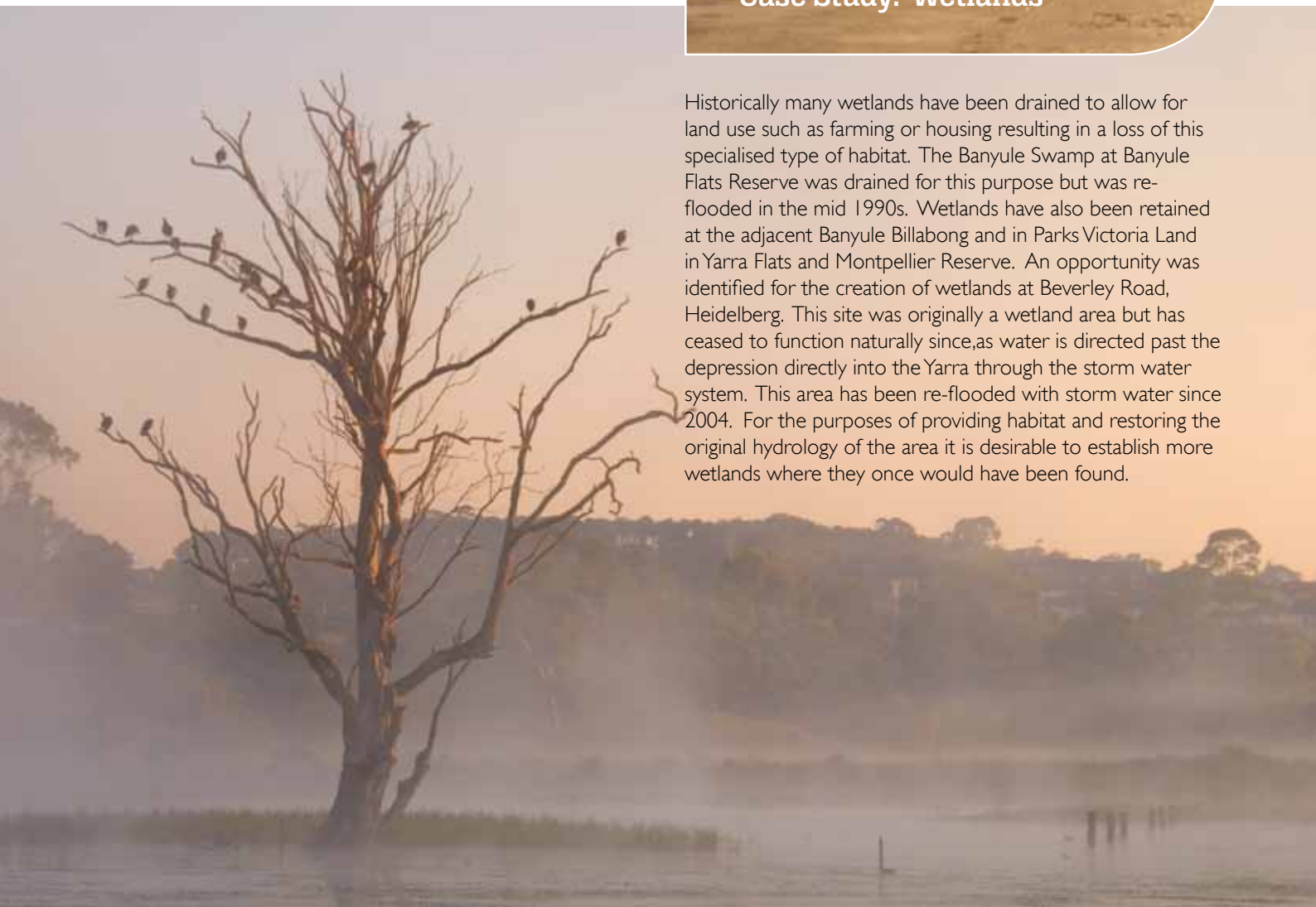
- the Banyule Flats wetlands
- Warringal Swamplands
- billabongs within Yarra Flats Park
- billabongs around Wilson Reserve
- wetland areas occur or have been re-established along the Plenty River, Darebin Creek and at Binnak Park in Watsonia.

Wetlands within Banyule provide habitat for a diverse range of plants and animals whose habitat has largely been depleted elsewhere in the region around Melbourne. They include a variety of waterbirds, such as pelicans, spoonbills, herons, ducks and crakes. Wetlands also provide the ecosystem service of filtering and improving storm water quality and slowing stormwater velocity.



Case Study: Wetlands

Historically many wetlands have been drained to allow for land use such as farming or housing resulting in a loss of this specialised type of habitat. The Banyule Swamp at Banyule Flats Reserve was drained for this purpose but was re-flooded in the mid 1990s. Wetlands have also been retained at the adjacent Banyule Billabong and in Parks Victoria Land in Yarra Flats and Montpellier Reserve. An opportunity was identified for the creation of wetlands at Beverley Road, Heidelberg. This site was originally a wetland area but has ceased to function naturally since, as water is directed past the depression directly into the Yarra through the storm water system. This area has been re-flooded with storm water since 2004. For the purposes of providing habitat and restoring the original hydrology of the area it is desirable to establish more wetlands where they once would have been found.



Threats to Biodiversity

Pest plants - Weeds

Flora that is not indigenous to Banyule may be a weed species. Weeds found in Banyule have been listed in Appendix 9 and categorised on the basis of their invasiveness and method of spread. The report lists

- 240 plant species which are established in Banyule
- includes 25 noxious weed species as defined by the Catchment and Land Protection Act of 1994 (CaLP Act)
- includes 58 regional priority weeds.

Weeds are a serious threat to biodiversity and community values in the City of Banyule because weeds:

- Outcompete local and desirable species leading to biodiversity loss
- Reduce regeneration rates of indigenous species
- Contribute to water degradation through leaf drop and shading
- Displace the habitat of local animal species including the threatened Eltham Copper Butterfly
- Can contribute to increased pollen loads affecting hay fever sufferers
- Can reduce the amenity value of parkland due to fruit fall, seed, thorns and appearance
- Can increase fuel loads resulting in more severe fires.

Noxious weeds are plants that have a legal status as pest plants for economic, social and environmental reasons under the CaLP Act. Under the CaLP Act landowners must take all reasonable steps to eradicate regionally prohibited weeds and prevent the growth and spread of regionally controlled weeds. The State Government is responsible for taking all reasonable steps to eradicate State Prohibited weeds from all land in the State. The CaLP Act also has provisions to prevent the spread of declared noxious weeds, including by banning the sale or trade of them.

Control of weeds can allow:

- an increase in local species numbers through increased opportunities for regeneration
- prevention of loss to agricultural productivity

Loss in Agricultural productivity in Australia was estimated at \$4 billion in 2003 (Weeds CRC 2008) indicating the degree to which weeds can alter a landscape and impact on its function.

It is not feasible to remove all weeds from the municipality. Therefore a risk based process of prioritisation needs to be applied to weed management. Weeds are prioritised considering:

- severity of impact on biodiversity and amenity assets
- density and cover
- resources required for control
- weed species legislative and regional policy status
- dispersal mechanisms
- potential for spread

The prioritisation of weed species mostly relates to the impacts on indigenous vegetation in public open space. However, some infestations that have little capacity to spread but are highly visible may be prioritised for control, as may small infestations of highly invasive species in high quality bushland. The allocation of resources to weed control is therefore a highly complex and subjective process.

The invasion of environmental weeds into public open space, including reserves supporting indigenous vegetation, from adjoining properties is expected to be the major problem in weed control management. Major sources of weed infestation on Council land include:

- dumping of garden refuse in open space areas
- poor maintenance of private urban blocks
- Properties supporting weeds capable of being dispersed long distances by animals (particularly birds)
- Grasses spread via vehicles and machinery
- Other processes such as nutrient enrichment, disturbance, and erosion



Case Study: Weed control shifting focus

Initially, Banyule City Council focussed on removing established, high impact weeds from bushland reserves such as Blackberry and Hawthorn. As these are now largely controlled, focus has shifted to emerging weeds such as Mexican Feather Grass. This weed has the potential to spread but is not yet established.

Weed removal may have broader impacts on fauna as some species, native and introduced, rely on weed species for food and shelter. For example, this Gang Gang feeding on Cotoneaster (a weed) would rely on a staged removal and revegetation plan to compensate for habitat loss.

Figure 2 – Pest Plant Actions

No.	Action	Objectives	Outcomes	Responsible Department
BP-PP1	Develop and implement environmental management plans for natural habitat areas and key reserves.	To ensure council prioritise protection of high value biodiversity hot spots	Resources are used effectively	Parks Environmental Sustainability
BP-PP2	Where no specific management plans exist follow established best practice management techniques for the removal of weeds and restoration of indigenous vegetation.	To ensure weeds are managed effectively	Resources are used effectively	Parks
BP-PP3	Remove/ reduce weeds on council land prioritising weeds that pose the greatest threat due to their effect on biodiversity and their capacity to spread.	To reduce weed cover and spread and promote biodiversity	Cover of weeds is reduced and negative impacts reduced.	Parks
BP-PP4	Reduce the spread of weeds on council land through appropriate management practices including contractor management.	To reduce weed cover and spread and promote biodiversity	New infestations become infrequent, existing infestations reduced.	Parks
BP-PP5	Provide education and information to residents to facilitate a reduction in the cover and spread of weed species.	To ensure residents are not inadvertently planting weed species	Fewer incidences of spread from private land.	Parks Environmental Sustainability Communications

What you can do

- Learn to identify common weeds using Banyule's Weeds Booklet
- Remove weeds from your garden
- Avoid spreading weeds into bushland by keeping to paths
- Don't dump garden waste into parkland
- Join a bushland friends group



Pest animals

Pest animals (fauna) can have a highly damaging effect on the biodiversity of Banyule. The NEROC report lists 31 introduced vertebrate pest species active in the Banyule area (see Appendix 8). Pest animals cause harm to biodiversity by:

- Predating on local plants and animals
- Competing with local animals for breeding sites
- Competing with local animals for food resources
- Spreading diseases to local animals and people
- Spreading weeds which may reduce suitable habitat for local plants and animals

Pest animals can also have a negative effect on the amenity value of public and private open space by damaging turf and other vegetation including ornamental plants and fruit and vegetables.

Rabbits

The most problematic vertebrate pest in Australia is the rabbit (*Oryctolagus cuniculus*). Rabbits are established along the Plenty and Yarra Rivers and parts of the Darebin Creek and move from these sites into adjacent neighbourhoods. Just as these waterways provide wildlife corridors for indigenous animals, they are also utilised by pest species. Rabbits can:

- cause vegetation loss through feeding behaviour
- cause soil erosion through burrowing
- favour the germination of weed species by creating soil disturbance

Foxes

Foxes (*Vulpes vulpes*) are common in Banyule as they are in all of Melbourne's suburbs. Foxes:

- prey on local species and pet animals
- spread disease to domestic dogs including worms and mange
- have the potential to rapidly spread rabies should it come to Australia

Birds

Several introduced bird species are also established in Banyule. These include

- Indian or Common Mynas (*Acridotheres tristis*)
- Starlings (*Sturnus vulgaris*)
- Blackbirds (*Turdus merula*)

The main threat they pose is competition with local bird species for resources such as food and breeding sites. Being highly mobile creatures they can spread rapidly and any gaps created by the removal of individuals will be quickly filled.

Fish

Introduced fish compete with and feed on local fish species, frogs and invertebrates. They include:

- European Carp (*Cyprinus carpio*)
- Red Fin (*Perca fluviatilis*)
- Mosquito Fish (*Gambusia spp.*)

Control within waterways is not feasible but control within wetlands and ponds maybe if they are isolated from other populations.

Frogs

One introduced frog species is known to have become established in Banyule. The Dwarf Green Treefrog (*Litoria fallax*) likely came to Banyule Flats from Queensland or New South Wales through accidental release and now appears to be the dominant frog species in that wetland.


No survey of pest invertebrates and their impact on local ecosystems has been conducted. It is possible that further introductions of pest species may occur in the future such as deer and pigs that are already established along the Plenty River corridor to our north.

Figure 3 – Pest Fauna Actions

No.	Action	Objectives	Outcomes	Responsible Department
BP-PF1	Control pest animal species on council land where there is a reasonable cost benefit expected.	To reduce threat to fauna and flora by pest animals	Surveys show reduction in density and/ or damage.	Parks
BP-PF2	For species that freely move across large areas such as rabbits, participate in any regional control programs where a reasonable cost benefit is expected.	To reduce threat to fauna and flora by pest animals	Surveys show reduction in density and/ or damage.	Parks
BP-PF3	Consider the implementation of a cat curfew to reduce the predatory impact of domestic cats at night.	To prevent the threat and impact of domestic cats on native fauna	Local Laws adopted and enforced.	Governance
BP-PF5	Survey pest animal species present in Banyule and quantify their impact on local species.	To analyse the extent of pest animal threat in Banyule	Survey data allows better expenditure of resources.	Parks Environmental Sustainability
BP-PF6	Provide education and information to residents to facilitate a reduction in the number of and damage caused by pest animals.	To improve residents understanding of the impact of domestic pets on wildlife and the impact of pest animals on flora and fauna	Community knowledge allows for a reduction in pest species densities.	Environmental Sustainability Communications

What you can do

- Ensure pests aren't feeding on left over or poorly stored pet food
- Ensure compost and rubbish bin lids are securely closed
- Ensure small pets don't become victims to foxes using secure enclosures
- Provide water for birds only, never bread scraps
- Control rabbits as outlined in Banyule's rabbit control flyer



Biodiversity and Climate Change

Did you know that :

- Atmospheric carbon dioxide has risen from 280ppm in pre-industrial times to 440ppm in 2014
- has reached its highest level for 650 000 years (IPCC)
- The CSIRO predicts that this increase will result in a temperature rise by 3-4oC
- The CSIRO predicts a reduction in rainfall of 10-20% in southern Australia by 2070
- This represents a threat to biodiversity by altering the environmental conditions to which local species are adapted more quickly than they can evolve.

To cope with changed conditions sensitive species may experience a shift in their range closer to the poles or to higher altitudes. It has been estimated that this move will occur at a rate of:

- 6.1 km per decade south or
- 2m per decade in altitude (Graeme Newell Arthur Rylah Institute)
- Corridors to allow this movement of species are vital to prevent extinction

Climate change will also alter the way pest species function in Banyule's landscapes.

- some pest species are likely to become less effective at reproduction, such as the drought sensitive Bridal Creeper (*Asparagus asparagoides*)
- some pest species will be better able to dominate, such as the rabbit (*Oryctolagus cuniculus*) which is well adapted to drier climates

Climate change will lead to more extreme weather events including:

- heavier rain and flooding events
- increased erosion to creek and river banks as they become inundated with higher volumes of fast flowing water
- reduced habitat value of creeks and rivers

Wetlands and other measures that slow the rate of runoff will be important in mitigating these effects.

Bushfires

Climate change may also increase the risk of bushfires. Bushfires, which have been a long standing feature of our ecosystems, are not acceptable in urbanised areas where property damage or loss of life may result. Without the frequent fires to which they are adapted, bushland can:

- experience a build-up of fuel
- experience intense fires if this fuel is not reduced
- experience fires that are difficult to control
- experience loss of local species that are not adapted to this intensity

Low intensity controlled burns can:

- reduce fuel load in bushland reserves
- be used as a tool for weed control

For some indigenous plant species, fire is a crucial part of their reproduction. Without regenerative fires, those species can become locally extinct, so well managed fire is a vital tool for maintaining biodiversity.

Figure 4 – Climate change and biodiversity actions

No.	Action	Objectives	Outcomes	Responsible Department
BP-CC1	Reduce our contribution to climate change through achieving carbon neutrality	To set target date for Carbon Neutrality	Council is carbon neutral in its operations	All
BP-CC2	Ensure genetic diversity through reintroductions of plant material and maintenance of wildlife corridors.	Create and maintain wildlife corridors to ensure genetic diversity	Number and range of species stable or increased	Parks
BP-CC3	Support community action on climate change through education and grants.	To empower community action on climate change	Program provided	Environmental Planning
BP-CC4	Support community uptake of cycling and walking through lobbying and infrastructure.	To make cycling and walking safer and an appealing transport option for residents	Increased cycling and walking throughout the community	Engineering Services
BP-CC5	Maintain/ implement a regime of cool burning to reduce fuel and promote regeneration of local species.	To reduce fuel loads and control weeds	Bushland burnt and species regenerate	Parks
BP-CC6	Continue to use fire as a management tool in bushland reserves and monitor its effect.	To reduce fuel loads and control weeds	Fuel load is reduced, weed cover is reduced and regeneration is apparent.	Parks
BP-CC7	Identify suitable locations for the restoration of wetlands and billabongs and seek funding for appropriate works.	To ensure aquatic habitat is restored and stormwater flows are reduced and cleaned	Sites restored, aquatic habitat provided.	Parks Environmental Planning

What you can do

- Reduce your carbon footprint at home, work and through transport
- Install a raingarden to capture runoff from your roof

Urbanisation

Fragmentation

Banyule is an urban municipality with residential properties dominating the landscape. In the process of Urbanisation, elements of the natural environment have been removed, leading to a loss of connectivity between remaining areas of bushland. This process is sometimes referred to as fragmentation. Some species are able to move between these bushland islands but many are not, leading to a loss of diversity as genetics become isolated. Maintaining connectivity where it still exists along wildlife corridors is a priority but reconnecting isolated areas is also crucial. Indigenous vegetation in:

- private gardens
- school grounds
- roadsides, can provide a connection between bushland islands.

It is likely that an increase in population in Banyule over time will lead to:

- increased infill development
- a further reduction in the space occupied by indigenous vegetation and trees.

Planning controls will be vital to ensuring that connectivity across urban areas is retained.

Connectivity is particularly important for ground dwelling animals such as echidnas because fenced property boundaries and roads prevent their movement across the suburbs, confining them to the wildlife corridors running along the three main waterways.

No net loss

The Department of Environment and Primary Industries manages vegetation clearance and biodiversity impacts at the State level in Victoria. The Permitted clearing of native vegetation – Biodiversity assessment guidelines outline how impacts on Victoria's biodiversity are assessed when an application to remove native vegetation is lodged. Under these guidelines a reduction in the following two elements is considered a loss

- Area covered by native vegetation
- Quality of native vegetation.

The Guidelines are an incorporated document in all Victorian planning schemes, including Banyule City Council's. Local planning provisions such as Environmental Significance and Vegetation Protection Overlays are then applied across the municipality to address vegetation loss.

Urban Forests

The urban forest describes the canopy of vegetation that exists both on private and public land. It is a useful concept to help planners manage the urban character and liveability of a suburb. The urban forest can include:

- indigenous trees that are of high biodiversity value
- native trees that provide habitat to local species
- introduced trees that may have a positive, neutral or negative impact on biodiversity.

Aerial surveying conducted in 2008 recorded a 31% cover in vegetation greater than 2 metres in height across the municipality. Successful urban forestry management will result in an increase in this cover.

Stormwater run off

Another area of concern is the increase in the area of hard surfaces linked to storm water drainage systems. This has led to an increase in the rate of flow of water reaching rivers and creeks after a rain event. This causes:

- erosion of the banks of waterways
- a reduction in habitat for those species that require healthy banks.
- a reduction in the volume of water left in the landscape in the form of wetlands, billabongs and bogs, reducing the diversity of habitat types

Water sensitive urban design may alleviate some aspects of changed hydrology where water is retained for longer in the landscape in which it falls.

Deciduous exotic trees

Leaf fall from deciduous trees impacts on water quality in creeks as the drainage system efficiently moves leaf fall from street trees into the waterways. This has further impacts on water quality downstream from Banyule including in the Yarra River and in Port Philip Bay.

What you can do

- Retain and care for trees on your property
- Plant indigenous vegetation on your property
- Install nesting boxes in your garden
- Install lot scale water sensitive urban design

Figure 5 - Urbanisation and Biodiversity Actions

No.	Action	Objectives	Outcomes	Responsible Department
BP-U1	Develop, implement and enforce planning controls where appropriate which provide protection for indigenous vegetation and habitat remnants.	Protect indigenous vegetation and habitat remnants.	More vegetation is protected; Significant Tree Register records a gradual increase	Strategic Planning Environmental Sustainability Statutory Planning GIS
BP-U2	Update the Significant Tree Register by seeking new nominations to ensure assets are being adequately recognised and protected.	Protect significant trees and keep register updated	Good knowledge exists of Banyule's significant trees	Environmental Sustainability Strategic Planning Statutory Planning GIS
BP-U3	Develop an urban forest plan to act as a companion to the Street Tree Management Plan to record and manage changes to Banyule's urban forest.	Manage the urban character and liveability of suburbs, reduce heat island effect and increase canopy cover to over 31%	Increase in canopy cover as measured through aerial surveys	Parks Environmental Sustainability
BP-U4	Develop and enforce local laws for the protection of wildlife and natural habitat.	Develop laws and protect wildlife and natural habitat	Enforcement of local laws	Governance
BP-U5	Implement programs for the enhancement of priority revegetation sites on public and private land to strengthen genetic flow through wildlife corridors.	Prevent fragmentation and connect isolated areas	Increase of plantings across wildlife corridors	Environmental Planning Parks Strategic Planning
BP-U6	Develop strategic guidelines for the establishment of nest boxes after analysis of take up rates and hollows required.	Make and install nesting boxes as a result of the analysis	Increase in habitat for hollow dependant species	Environmental Planning Parks

Figure 5 - Urbanisation and Biodiversity Actions (cont.)

No.	Action	Objectives	Outcomes	Responsible Department
BP-U7	Prepare maps indicating the current extent of indigenous vegetation and vegetation communities within Banyule to identify changes compared with the former distribution patterns and cover.	To show changes over time, improvements in canopy cover and vegetation	Data collected allows for better species selection in new plantings	Environmental Sustainability GIS
BP-U8	Develop cooperative programs with other land managers in the re-establishment of wildlife corridors through revegetation and pest species control.	Liase and cooperate with other land managers to extend and establish wildlife corridors in and outside of Banyule	Wildlife corridors become more resilient as they cross property boundaries	Parks Environmental Sustainability
BP-U9	Implement specific revegetation and restoration measures for enhancing habitat for rare or threatened species and including providing linkages between sites of environmental significance.	To protect populations of rare and threatened species	Populations of rare or threatened species increase	Parks Environmental Sustainability Strategic Planning GIS
BP-U10	Ensure where possible that no net loss offsets occur within the municipality on Council land if it's not feasible to offset on private land.	Ensure canopy cover increases over 31% from the 2008 survey and Urban forestry is established	Canopy losses are offset within the local area and habitat hectare values increase	Statutory Planning
BP-U11	Support the creation and maintenance of local 'Friends' groups and land care groups through information, grant allocations, promotion and on ground assistance where appropriate.	To ensure community involvement in biodiversity improvement and maintenance	Biodiversity is improved through increased community knowledge and effort	Parks

Figure 5 - Urbanisation and Biodiversity Actions (cont.)

No.	Action	Objectives	Outcomes	Responsible Department
BP-U12	Provide support through plant subsidies to individuals, community groups and schools undertaking revegetation activities within Banyule.	Increase indigenous plantings on private land and connect wildlife corridors	Biodiversity is supported through increased cover of local plants on non-Council land	Environmental Sustainability
BP-U13	Promote the availability of indigenous plants from local nurseries.	Increase indigenous plantings on private land and connect wildlife corridors	Biodiversity is supported through increased cover of local plants on non-Council land	Environmental Sustainability
BP-U14	Identify suitable locations for the construction of water sensitive urban design features to reduce the flow of runoff from Council owned sites and seek funding for appropriate works.	To reduce the erosion of stream banks, decrease loss of stream bank habitat and increase water in wetlands	Increase in Water Sensitive Urban Design (WSUD) features. E.g. raingardens, tree pits	Engineering Environmental Sustainability
BP-U15	Ensure that street tree planting is sympathetic to the surrounding landscape with regards to both species and density of planting. All new street trees should be evergreen except where an avenue planting already exists.	To reduce leaf and nutrient flow into waterways	Storm water quality improved with less autumn leaf contamination.	Parks
BP-U16	Develop, implement and enforce planning controls that require appropriate water sensitive urban design and minimisation of hard surfaces in new developments.		Stabilisation of volume and rate of flow into storm water systems.	Engineering Strategic Planning Environmental Sustainability Statutory Planning

Knowledge and capacity building

Ecosystems involve complex relationships between a variety of biotic and abiotic factors. To effectively support biodiversity values actions need to be based on strong scientific models applied to sound data.

Pest animals are an example of the type of threat to biodiversity that is not manageable without a strategic and integrated approach from multiple land managers. Common Mynas, foxes and rabbits are highly mobile so any populations removed can be quickly replaced by neighbouring populations.

Private homes are often a source of pest species spreading to parkland and other backyards. Residents require an awareness of the problem and knowledge of the solution to effectively manage these threats. Education is vital to achieve this goal.

A coordinated approach

A coordinated effort from multiple land managers is particularly important in Banyule where many of our bushland reserves have long boundaries with Parks Victoria and Melbourne Water and with many private landholders. Coordination requires relevant data on the precise location and severity of threats and best control methods. Council therefore has an obligation to stay up to date with our knowledge of our local environment and current best practices and to disseminate that knowledge to our partners and our community.



What you can do

- Subscribe to Banyule’s Greenwrap newsletter to keep up to date with sustainability initiatives.
Email: environment@banyule.vic.gov.au
- Report unusual flora and fauna sightings to Council. Email: environment@banyule.vic.gov.au
- As a community group, apply for grants to improve biodiversity under the Banyule Environmental Grants program

Figure 6 - Knowledge and Capacity Building Actions

No.	Action	Objectives	Outcomes	Responsible Department
BP-KCB1	Prepare and make available information brochures and other publications, including web based publications on protecting and enhancing biodiversity and reducing threats to biodiversity.	To ensure information is readily available for community members	Community knowledge regarding biodiversity is improved.	Environmental Sustainability Communications
BP-KCB2	Arrange and promote community and school activities and educational programs to increase awareness of the requirements for protecting and enhancing biodiversity and reducing threats to biodiversity.	To ensure activities are linked to the Australian curriculum to increase uptake by schools and improve delivery of key biodiversity and water quality messages	Community knowledge regarding biodiversity is improved.	Environmental Sustainability

Figure 6 - Knowledge and Capacity Building Actions (cont.)

No.	Action	Objectives	Outcomes	Responsible Department
BP-KCB3	Liaise with adjacent land managers and land management authorities to maintain best practice in the control of new and emerging pest animals and pest plants. Ensure new information is disseminated to community and internal staff.	To create and maintain a coordinated, partnership approach to protecting biodiversity	Land management practices adapt with new information.	Parks Environmental Sustainability
BP-KCB4	Seek funding and partnership opportunities to increase the resources we have available to protect and enhance biodiversity.	To finance a coordinated, partnership approach to biodiversity protection.	Resources are increased.	Environmental Sustainability Parks
BP-KCB5	Monitor and evaluate the effectiveness and extent of delivery of Banyule's education programs to ensure best use of resources.	To ensure continual improvement and determine effectiveness of delivery methods	Education programs are effective	Environmental Sustainability
BP-KCB6	Undertake inventories and maintain local GIS linked databases of plants and animals occurring within natural habitat areas, and especially monitor populations of rare or threatened species and highly invasive weeds.	To constantly monitor the state of the environment in Banyule	Data leads to better allocations of resources	Parks GIS Environmental Sustainability
BP-KCB8	Consider biodiversity outcomes under our existing grants programs.	To encourage more community involvement in improving and protecting biodiversity	More biodiversity related projects are undertaken.	Environmental Sustainability

Appendices:

Part Two	Appendices:
Appendix 1	Bushland Managed Reserves
Appendix 2	Biosites
Appendix 3	Indigenous Plants List
Appendix 4	Ecological Vegetation Classes
Appendix 5	Vegetation Communities of Banyule
Appendix 6	Vertebrate Fauna List
Appendix 7	Habitat Links – Wildlife Corridor Map
Appendix 8	Pest Fauna List
Appendix 9	Weed Species
Appendix 10	Biodiversity Plan Actions



How to contact your council

For all enquires please call

9490 4222

Fax: 9499 9475

Email: enquiries@banyule.vic.gov.au

Website: www.banyule.vic.gov.au

If your hearing or speech is impaired, you can call us through the National Relay Service on 133 677 (TTY) or 1300 555 727 (ordinary handset) and ask for 9490 4222.

All correspondence to:

PO Box 51, Ivanhoe, 3079
DX 97904 Ivanhoe

Council Service Centres:

Ivanhoe - 275 Upper Heidelberg Road
Rosanna - 44 Turnham Avenue
Greensborough - 9-13 Flintoff Street

All offices are open:

Monday to Friday 8.30am-5pm

Rosanna - Wednesday night until 7pm
Greensborough - Saturday 9am - 12noon

Interpreter service:

If you need an interpreter, please contact TIS National on 131 450 and ask to be connected to Banyule Council on 9490 4222.

إذا كنتم بحاجة إلى مترجم، الرجاء الاتصال بالخط القومي لخدمة الترجمة الهاتفية TIS على الرقم 131 450، واطلبوا إيصالكم ببلدية بانويل على الرقم 9490 4222.

若你需要口譯員，請致電131 450聯絡TIS National，要求他們為你致電9490 4222接通Banyule市政廳。

Ako vam je potreban tumač, molimo vas, nazovite TIS National na broj 131 450 i zatražite da vas se spoji sa Vijećem općine Banyule na broj 9490 4222.

Αν χρειάζεστε διερμηνέα τηλεφωνήστε στην Εθνική Υπηρεσία Διερμηνέων Μεταφραστών στον αριθμό 131 450 και ζητήστε να σας συνδέσουν με τη Δημαρχία Banyule στο 9490 4222.

Se hai bisogno di un interprete chiama TIS National al numero 131 450 e chiedi di essere messo in comunicazione con il Comune di Banyule al numero 9490 4222.

Ако ви треба преведувач ве молиме јавете се на TIS National на 131 450 и замолете да ве поврзат со Banyule Council на 9490 4222.

如果你需要一名翻译，请打电话到国家电话翻译服务处(TIS National) 131 450，再转接到Banyule市政府9490 4222

Haddii aad u baahan tahay mutarjum wac khadka qaranka oo ah TIS 131 450 weydiina in lagugu xiro Degmada Banyule tel: 9490 4222.

Nếu cần thông dịch, xin gọi cho TIS Toàn Quốc qua số 131 450 rồi nhờ họ gọi cho Hội Đồng Thành Phố Banyule theo số 9490 4222 giúp quý vị.



Banyule
CITY COUNCIL