



City of
KINGSTON



Biodiversity STRATEGY 2018-2023

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REVIEW	Strategy to be reviewed by 2023
RESPONSIBLE EXECUTIVE	General Manager City Assets and Environment
STRATEGY OWNER	Manager Parks and Recreation

Cover images, left to right: Nodding Greenhood *Pterostylis nutans*, adult Pardalote removing rubbish from its nest at the Grange, Tiger Orchid *Diuris sulphurea*.



ACKNOWLEDGEMENTS

It is acknowledged that the City of Kingston is on traditional lands of the Yalukit-willam clan of the Bunurong people, other clans of the Bunurong people, and the Wurundjeri-baluk clan of the Woiworong people. We offer our respect to the Elders of these traditional lands, and through them all to Aboriginal and Torres Strait Islander people.

Technical data compiled by Dr Jeff Yugovic, Biosis Pty Ltd, Melbourne.

All photos courtesy of Mick Connelly (Friends of the Grange) except European Fox by Noni Hyett and Caruana Woodland Reserve by NRA staff.

Caruana Woodland Reserve, Dingley dominated by River Red Gum *Eucalyptus camaldulensis*.
Plains Grassy Woodland (EVC 55) and Plains Swampy Woodland (EVC 651)

MESSAGES

City of Kingston/Mayor

The City of Kingston is pleased to present its Biodiversity Strategy 2018–2023. This key document outlines how Council's ongoing commitment and responsibility is going to protect the wonderful natural assets in our municipality, to ensure they are preserved for future generations to enjoy.

Kingston is fortunate to have a diverse range of biodiversity including wetlands, heathland, woodlands, grasslands and the Port Phillip Bay coastline.

About the Strategy

The City of Kingston Biodiversity Strategy sets out goals and strategic objectives for protecting, preserving and improving our biodiversity within Council's Natural Resource Areas (NRA). It also takes the next step, by incorporating an action plan to be implemented over time to ensure these goals and objectives are met.

Another significant aspect of the strategy is education. Through the strategy we aim to increase our residents' awareness, appreciation and understanding of biodiversity, and encourage them to actively participate in managing biodiversity in their local community.

In recent years Council has been concerned that some of Kingston's unique natural assets have been under constant pressure and some 'indigenous' flora, fauna and vegetation communities have already been lost.

However there are still many areas that are surviving and others that can be restored. This strategy provides the direction to help us to preserve these areas and introduce broader biodiversity initiatives across the Kingston municipality and beyond.

The City of Kingston commends this strategy to the community and reminds us all that everyone has a role to play when it comes to protecting our precious environment.

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Dainty Swallowtail Butterfly *Papilio anactus*

1. Introduction

1.1 What is Biodiversity?

Biodiversity encompasses all components of the living world: the number and variety of plants, animals and other living things, including fungi and micro-organisms, across our land, rivers, coast and ocean. It includes the diversity of their genetic information, the habitats and ecosystems within which they live, and their connections with other life forms and the natural world (DELWP 2017).

Biodiversity is fundamental to ecological sustainability and provides ecosystems with resilience and adaptability. Healthy biodiversity contributes to essential ecological processes that provide clean air, clean water and fertile soils and as such is crucial to maintaining our quality of life.

Optimum biodiversity can be found in areas where there is significant open space. Accordingly, protecting open space is important for maintenance of biodiversity that supports health, wellbeing and overall quality of life.

Biodiversity can be categorised as habitat diversity (the variety of places where organisms live) and genetic diversity (the variety of traits expressed within a species). Multiple categories of biodiversity are important to the overall resilience of an area as diverse environments are more able to survive change or threat, due to improved ability to adapt. Habitats with little biodiversity are therefore more vulnerable to change.

1.2 Why prepare a Biodiversity Strategy?

Loss of native biodiversity was recognised in the first national State of the Environment Report in 1996 as Australia's most important environmental problem. There are a number of international conventions and agreements relating to the protection of biodiversity, as well as national, state and council legislation and strategies. A list of these can be found in Section 6 of the 2018–2023 Biodiversity Strategy Technical Report.

In the 2017–2021 Council Plan, Kingston's aim is to deliver on a vision to build a city that is better for local people and provides great places to live, work, study and play. One of the six goals to achieve this is:

Goal 2: *Our sustainable green environment with accessible open spaces*

OUR COMMITMENT TO THE COMMUNITY:

We will provide quality public open spaces and sports fields while protecting and enhancing our natural environment including our green wedge and foreshore. We will be responsible environmental managers and custodians for future generations.

In order to achieve Goal 2 of the Council Plan, the key outcomes that Council wants to deliver are:

2.1 Environmental resilience and sustainability

2.2 Greening Kingston and place making

2.4 Review and implement the Open Space Strategy to ensure high quality and increased capacity of the open space network.

With the underpinning strategies being:

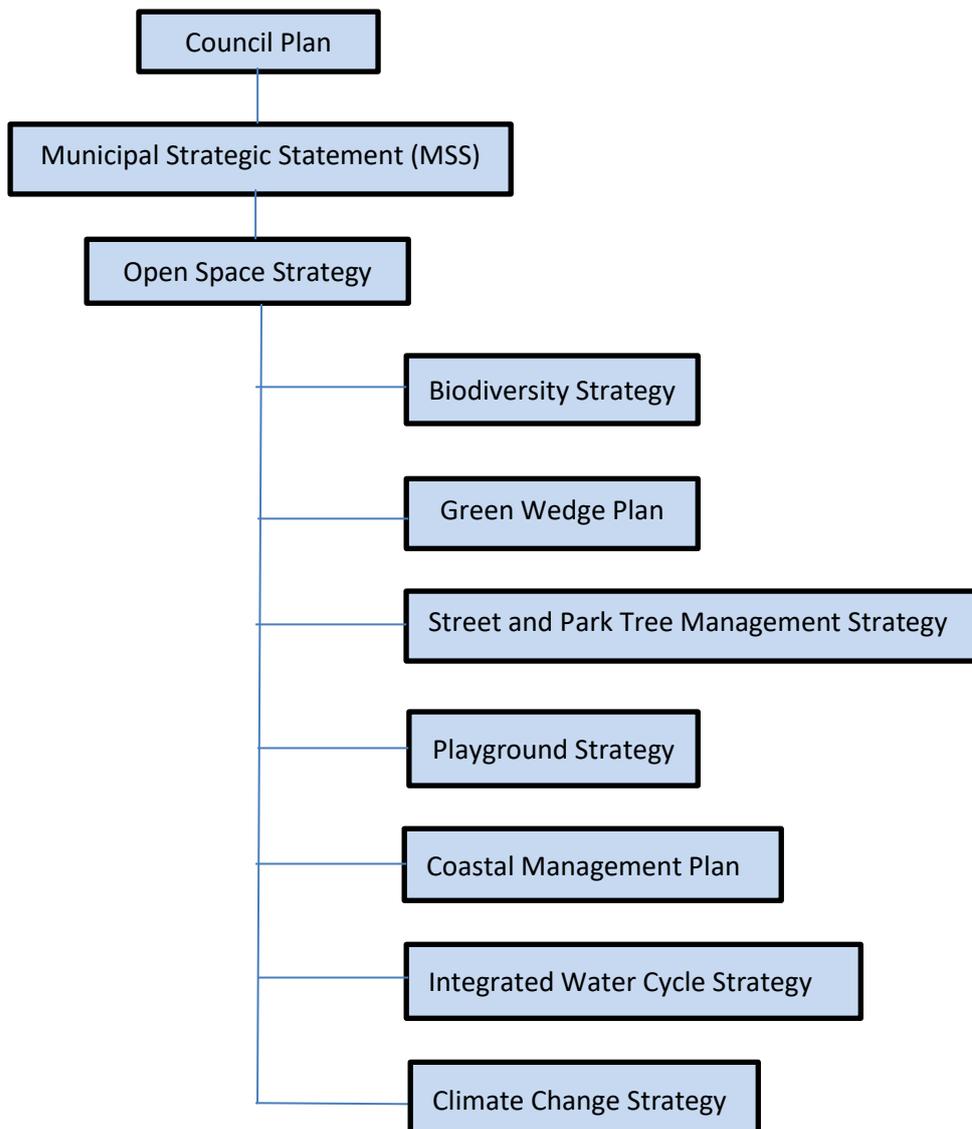
2.1.1 Reduce environmental impacts on our natural and built environment

2.2.3 Protect and enhance Kingston’s natural habitat and bushland reserves

2.4.2 Maintain all parks, reserves and open space to set standards

The Biodiversity Strategy 2018–2023 achieves the underpinning strategies by guiding environmental works and community engagement programs in Council’s Natural Resource Areas.

Below is a flow chart showing the hierarchy of relevant Council plans and policies including the Biodiversity Strategy.



This strategy focuses on Council's actions to protect and enhance biodiversity within Council NRA, while also recognising the role of residents, developers, public and private sector land managers and other agencies. It recognises that many issues associated with biodiversity extend beyond the boundary of the municipality and therefore encourages cooperative partnerships with neighbouring municipalities and regional groups.

This Strategy will be considered along with other relevant strategies and documents when Council makes decisions relating to biodiversity.

1.3 Biodiversity in Kingston

The City of Kingston is a bayside municipality, located approximately 20 kilometres southeast of the Melbourne Central Business District. Kingston is fortunate to have a diverse range of biodiversity including significant areas of natural grassland and bushland reserves (NRA); a variety of wetlands and 13 kilometres of Port Phillip Bay coastline. There is some evidence of the past Aboriginal inhabitants as well as several post settlement heritage features.

Kingston's open space supports many recreational activities and accommodates numerous clubs and community groups. There is also the challenge of balancing competing demands with the limited space. The competing demands include retaining remnant vegetation, housing developments, industrial areas, market gardens and landfill.

1.4 Kingston Biodiversity Strategy 2007–2012

Kingston's original Biodiversity Strategy was developed and adopted by Council in 2007 to identify key areas of biodiversity significance and also the status of biodiversity in the municipality. The Strategy was developed with extensive community consultation and provided a clear vision for the future of the Kingston's biodiversity.

The 2007 strategy focused on the biodiversity of terrestrial areas in the City of Kingston and incorporated an action plan to ensure the strategy goals were delivered on, over a five year period. The action plan outcomes were reviewed in conjunction with Council's Climate Change and Biodiversity Reference Group. The outcomes of these actions are described in Section 10 of this strategy.

1.5 Biodiversity Strategy 2018–2023

The Biodiversity Strategy 2018–2023 includes an action plan to guide work priorities over the 5 year life of this strategy. Specific work items have been identified through the review process to further progress the original goals of the 2007 Strategy. The 2018–2023 Biodiversity Strategy is supported by a Technical Report containing details of Kingston's plant, animals and ecological vegetation classes (EVCs).

1.6 Strategy Outcomes

- Protect and improve areas of remnant indigenous vegetation, sites of significant habitat and other significant vegetation.
- A reduction in the negative impact on biodiversity within Kingston's NRA.
- Undertake and encourage revegetation using indigenous species in modified areas that lack natural regeneration.
- Increased awareness, appreciation and understanding of biodiversity and participation in biodiversity management within the local community.
- Partnerships with neighbouring municipalities and other land managers and stakeholders to enhance and protect biodiversity.



Rosy Hyacinth-orchid *Dipodium roseum*

This Strategy focuses on the biodiversity of terrestrial areas in the City of Kingston. It is acknowledged that terrestrial biodiversity is connected to aquatic and marine biodiversity; however, these aquatic and marine species are not addressed within this Strategy.

Council has recently adopted a 'Climate Change Strategy' and even though this Strategy does not specifically address climate change; however, it is recognised and acknowledged that climate change is affecting the global environment and biodiversity and further information on climate change should be considered in conjunction with this Strategy as the information becomes available.

The Kingston Biodiversity Strategy 2018–2023 is due for review in 2023.

2. Management of Kingston's Biodiversity

Kingston City Council manages 370 open space sites and has the responsibility to manage biodiversity throughout the municipality. This is achieved through:

- Management and ongoing maintenance of NRA
- Partnership with other land managers such as Melbourne Water and Parks Victoria
- Implementation of community education programs as part of activities in NRA and other open space areas
- Management of stormwater programs to ensure best practice in stormwater management and revegetation with indigenous plant species
- Parks and reserves revegetation programs throughout the city, maintained by Council's Parks Department.

There are areas of importance to biodiversity in Kingston that are managed by public land agencies and groups other than Council. These include:

- Department of Environment, Land, Water & Planning (DELWP)
- Parks Victoria (PV)
- Melbourne Water (MW)
- VicTrack
- VicRoads
- Port Philip & Western Port Catchment Management Authority (PPWPCMA)
- Local community and school groups

The role these agencies and groups have in the management of the Kingston biodiversity and the sites they manage can be found in Section 8 of this strategy.

2.1 Kingston Natural Resource Areas

Council's NRA team manages higher quality remnant vegetation for conservation purposes. While other sites include remnant /indigenous vegetation that benefits biodiversity, their primary value is as open space management and as such they are not considered viable as long term conservation sites. These sites include Peter Scullin Reserve.

The NRA team manages 16 natural reserves and 2 foreshore reserves, totalling 72 ha. Objectives for the management of NRA in Kingston are to:

- Protect and where possible restore biodiversity in NRA
- Promote and facilitate community support and involvement in the management of NRA
- Promote and facilitate community awareness and understanding of biological diversity, ecological processes, and the values of NRA.

A basic prioritised approach to native vegetation management is the three 'R's (Yugovic 2000):

- Retention

- Restoration (or Rehabilitation)
- Revegetation

These are listed in order of increasing management input requirement and decreasing ecological value. Retention of intact vegetation has the lowest relative cost and highest ecological value (not including land acquisition). Revegetation has the highest relative cost and lowest ecological value.

Revegetation is the partial or complete reconstruction of native vegetation where weeds were previously dominant. There are two types of revegetation: (1) stable revegetation is the typical landscaping situation where planted specimens are maintained by mulching and weed control and there is no recruitment of new plants, (2) dynamic revegetation is vegetation managed for recruitment of new plants; this is more technically demanding and is most appropriate in conservation reserves. Reference: *Yugovic J 2000. Some concepts in revegetation Indigenotes 13(2): 2.*

Vegetation management targets and assessments have been developed and implemented for remnant and significant vegetation in the following parks and reserves, key NRA are detailed in Section 2.3 of this strategy:

- Aspendale to Carrum Foreshore Reserve
- Bald Hill Park
- Bowen Road Redgum Reserve
- Bradshaw Bushland Reserve
- Caruana Woodland
- Epsom Conservation Reserve (Grasslands and Wetlands)
- Groves Reserve
- Heights Park
- Kingston Heath Reserve
- Mordialloc Creek Reserve
- Mordialloc to Mentone Foreshore Reserve
- Namatjira Park
- Powernet Easement Reserve
- Rowan Woodland Reserve
- The Grange Heathland Reserve
- Wells Road Redgum Reserve
- Yammerbook Nature Reserve
- Zephyr Reserve

Council has other 'open space' sites while not managed as NRAs such as Regents Park and Chicquita Park that will be managed to encourage regeneration of indigenous vegetation and protection of remnant vegetation, including habitat values. Council will review opportunities over time for these parks and other similar sites to be added to the NRA list above as appropriate.

Location of City Of Kingston Natural Resource Areas



2.2 Status of Kingston Natural Resource Areas

The City of Kingston occupies a significant portion of Melbourne's 'sandbelt' which is on the western edge of the Gippsland Plain bioregion. It includes a range of soil types, especially sandy soils and habitats ranging from inland sand dunes, through creeks and wetlands, to coast buffs and dunes.

There are 28 terrestrial environment bioregions within Victoria categorised under the Interim Biogeographic Regionalisation for Australia (IBRA) and in the Victorian Biodiversity Strategy identified. Bioregions (Biogeographical regions) are large, geographically distinct areas of land characterised by landscape-scale natural features and environmental processes that influence the function of entire ecosystems. Bioregions are delineated by physical characteristics such as geology, natural landforms, and climate, which are correlated to ecological features, plant and animal assemblages and landscape-scale ecosystem processes. Bioregions provide a useful means to report on underlying complex patterns of biodiversity for regional-scale conservation planning.

“Ecological Vegetation Classes (EVCs) is the standard unit for classifying vegetation types in Victoria. EVCs are described through a combination of floristics, lifeforms and ecological characteristics, and through an inferred fidelity to particular environmental attributes and includes a collection of floristic communities (i.e. lower level in the classification) that occur across a biogeographic range, and although differing in species, have similar habitat and ecological processes operating”—DELWP.

EVC benchmarks relate to a single EVC within one bioregion. They have been developed to assess the vegetation quality of EVC at the site scale in comparison to a 'benchmark' condition. These benchmarks have been developed to assess native vegetation using the method for Vegetation Quality Assessment (VQA). There are 72 EVCs listed for the Gippsland Plain bioregion, however thirty-nine (39) EVCs were likely to have occurred in Kingston prior to European settlement. Currently there are 30 EVCs represented within Kingston (refer to Section 1 - Table 4 of the Technical Report), 16 of these EVCs are found within Councils NRA (refer to Section 10 of the Technical Report for EVC maps). The important remnants of these vegetation communities support a range of indigenous flora and fauna. Some key examples are described in 2.3 Key Natural Resource Areas.

The indigenous flora of Kingston comprises approximately 724 species of ferns and flowering plants ('higher plants') while the indigenous fauna comprises approximately 379 species of vertebrates ('higher animals'). An even larger number of species of smaller organisms exist but it is not feasible to catalogue them. For example, information on the distribution and status of insects and fungi is generally inadequate in Victoria as well as the City of Kingston, thus limiting meaningful analysis.

The analysis is based on the State Government Victorian Biodiversity Atlas and the collective knowledge of local experts. Definitions of extinct, endangered, vulnerable and rare are State Government definitions applied to the Kingston context rather than Victoria as a whole (refer to Section 1 - Table 1 & 2 of the Technical Report for definitions of conservation status categories as defined by the State Government).



Ghost Fungus *Omphalotus nidiformis*

2.3 Key Natural Resource Areas

Of the 18 NRA Council manages, 5 sites are of 'high conservation significance' due to their intactness, biodiversity and rarity of plant species:

- The Grange Heathland
- Rowan Woodland
- Epsom Conservation Reserve
- Mordialloc Creek Reserve
- Kingston Foreshore Reserve

2.3.1 The Grange Heathland

Managed by the City Of Kingston, The Grange Heathland is Council's "jewel in the crown". It is a 6.6 hectare reserve which is highly valued as a conservation area due to the relative intactness and diversity of "heath" vegetation spread across four different EVCs. Some 230 plant species, including a number of regionally rare species and of state significance the Prawn Greenhood *Pterostylis pedoglossa*, which is vulnerable in Victoria occur within the Grange Heathland

The Grange Heathland supports the following EVCs:

- Sand Heathland (EVC 6)
- Heathy Woodland (EVC 48)
- Swampy Woodland (EVC 937)
- Swamp Scrub (EVC 53)

The Grange Heathland, supports a huge diversity of plants including three species of *Eucalyptus* forming the canopy of the woodland. A shrub layer including Silky Tea

Tree *Leptospermum myrsinoides*, Spike Wattle *Acacia oxycedrus*, Wedding Bush *Ricinocarpus pinifolius*, Furze *Hakea ulicina*, Scented Paperbark *Melaleuca squarrosa*, Tree Everlasting *Ozothamnus ferrugineus*, Swamp Paperbark *Melaleuca ericifolia*, Prickly Tea-tree *Leptospermum continentale* and Victoria's floral emblem the Common Heath *Epacris impressa*. The ground layer includes an array of diverse species including two species of Saw-sedge *Gahnia*, orchid species, the carnivorous Tall Sundew *Drosera auriculata* and several species of lilies including the beautiful and fragile Twining Fringe Lily *Thysanotus patersonii*.

More than 63 species of indigenous animals (vertebrates) have been recorded in the reserve. This includes 48 species of birds such as Spotted Pardalote *Pardalotus punctatus* and "birds of prey" like the Brown Goshawk *Accipiter fasciatus*, the Peregrine Falcon *Falco peregrinus*, the Brown Falcon *Falco berigora*, and the Australian Kestrel *Falco cenchroides*. Six species of reptile have been recorded including two species of skink, the Blotched Blue-tongue Lizard *Tiliqua nigrolutea*, Marbled Gecko *Christinus marmoratus* and Lowland Copperhead Snake *Austrelaps superbis*. Four species of frogs live in the wetter areas in the east of the reserve or around the man-made filtration ponds near the soccer fields. Mammals recorded include Ringtail *Pseudocheirus peregrinus* and Brushtail *Trichosurus vulpecula* Possums and several bat species, all of which are best observed and heard at night.

Many species of insects are found in the reserve, including several species of butterflies, moths and dragonflies. In times past the area would have supported a diverse range of mammals including Eastern Grey Kangaroos *Macropus giganteus*, Black Wallabies *Wallabia bicolor*, Southern Brown Bandicoots *Isodon obesulus*, Koalas *Phascolarctos cinereus*, Eastern Quolls *Dasyurus viverrinus* and Echidnas *Tachyglossus aculeatus*.

The major threats to the reserve come from introduced plants and animals. A feral proof fence was constructed around the Heathland in 1999 to protect the flora and fauna from pest animals. The fence prevents Rabbits *Lepus curpaeums* from entering the reserve and destroying plants and causing erosion and soil disturbance through their feeding and burrowing habits. Cats *Felis catus*, Dogs *Canis lupus familiaris* and Foxes *Vulpes vulpes* are also excluded from the reserve preventing them from preying on indigenous fauna.



The Grange Heathland Reserve

2.3.2 Rowan Woodland

Rowan Woodland Flora and Fauna Reserve is a significant 3.9 hectare conservation area in Dingley that supports three EVCs:

- Heathy Woodland (EVC 48)
- Damp Sands Herb-rich Woodland (EVC 3)
- Swampy Woodland (EVC 937)

Rowan Woodland supports three species of *Eucalyptus* and two species of *Acacia*. The shrub layer includes Silky Tea Tree *Leptospermum myrsinoides*, Swamp Paperbark *Melaleuca ericifolia* and Prickly Tea-tree *Leptospermum continentale*. The ground layer includes Broom Spurge *Amperea xiphoclada*, Parsnip Trachymene *Trachymene composita*, Supple Spear-grass *Austrostipa mollis*, Weeping grass *Microleana stipoides*, Sandhill Sword-sedge *Lepidosperma concavum*, Chocolate Lily *Arthropodium strictum*, Thatch Saw-sedge *Gahnia radula* and several species of orchid.

Up until the late 1980s the Rowan Woodland Flora and Fauna Reserve was inhabited by a small population of Southern Brown Bandicoots *Isodon obesulus* however due to urbanisation and predation by introduced animals it is now believed the population in the reserve is extinct. Rowan Woodland does have a healthy population of both Ringtail *Pseudocheirus peregrinus* and Brushtail *Trichosurus vulpecula* Possums, while bats and gliders may also visit the reserve. Common Garden Skink *Lampropholis guichenoti* and Blotched Blue-tongue Lizard *Tiliqua nigrolutea* are found in the reserve living under rocks and logs, feeding mainly on invertebrates.



Small Grass Tree *Xanthorrhoea minor* flowering at Rowan Woodland Reserve

2.3.3 Epsom Conservation Reserve

Epsom Conservation Reserve is a significant “Grassland” located within the Epsom Estate. Formally the Epsom Racecourse (the site was actually the centre of the racetrack) the reserve covers approximately 3.6 hectares of native floodplain grassland which is within the outer edge of former extensive Carrum Swamp. The adjacent man-made wetland provides almost two hectares of additional bird habitat and stormwater filtration systems which complements the nearby grasslands with its diversity of flora and fauna.

The Epsom Grassland supports the EVC Plains Grassland which is ‘Natural Damp Grassland of the Victorian Coastal Plains’ listed as critically endangered under the *Environment Protection and Biodiversity Conservation Act 1999*. It is also ‘Plains Grassland (South Gippsland)’ listed as threatened under the Victorian *Flora and Fauna Guarantee Act 1988*. It is rare and extremely important in the Melbourne metropolitan area. Over 99% of this ecosystem in Victoria has been removed or substantially altered for agriculture and urban development. The reserve also supports two flora species of state significance: Pale Swamp Everlasting *Coronidium gunnianum* (vulnerable in Victoria) and Purple Blown-grass *Lachnagrostis punicea* subsp. *filifolia* (rare in Victoria, listed as threatened under the FFG Act).

The Epsom Grassland supports the following EVCs:

- Plains Grassland (EVC 132)
- Plains Sedgy Wetland (EVC 647)
- Tall Marsh (EVC 821)

Obvious species found at the Epsom Grassland are Kangaroo Grass *Themeda triandra*, Common Tussock Grass *Poa labillardierei*, Smooth Wallaby-grass *Rytidosperma laeve*, Common Spike-sedge *Eleocharis acuta*, Pale Swamp Everlasting *Coronidium gunnianum*, Smooth Rice-flower *Pimelea glauca* and Australian Salt-grass *Distichlis distichophylla*. Closer inspection will reveal some surprises including Sundews *Drosera* spp., Sun-orchids *Thelymitra* spp., Onion-orchids *Microtis* spp. and the delicate native lily Early Nancy *Wurmbea dioica*.

Both the Epsom Grassland and Wetland provide important habitat for a range of terrestrial and waterbird species, as well as frogs and reptiles. Birds often sighted include Buff-banded Rail *Gallirallus philippensis*, Purple Swamphen *Porphyrio porphyrio*, Great Egret *Ardea alba*, White-faced Heron *Egretta novaehollandiae*, Royal Spoonbill *Platalea regia* and Banded Stilt *Cladorhynchus leucocephalus* as well as several species of ducks and cormorants. In the wetter months the reserve functions as a floodplain, giving rise to a chorus of frog calls.

2.3.4 Mordialloc Creek Reserve

Mordialloc Creek Reserve is approximately 4 ha in area. Despite major environmental changes since European settlement, indigenous vegetation still occurs along Mordialloc Creek which was a natural outlet of the Carrum Swamp.

The reserve supports several EVCs:

- Estuarine Reedbed (EVC 952)
- Estuarine Scrub (EVC 953)
- Swamp Scrub (EVC 53)
- Brackish Wetland (EVC 656)
- Tall Marsh (EVC 821)

A number of significant indigenous flora species can be found including tree species such as Blackwood *Acacia melanoxylon*, Black Wattle *Acacia mearnsii* and River Red Gum *Eucalyptus camaldulensis*, shrub species such as Swamp Paperbark *Melaleuca ericifolia* and Tree Everlasting *Ozothamnus ferrugineus*, and grasses including Weeping Grass *Microleana stipoides*, Australian Salt Grass *Distichlis distichophylla* and a number of wallaby, tussock and blown grasses. Sedges and rushes include species of *Carex*, *Isolepis*, *Juncus* and *Eleocharis*, while Common Reed *Phragmites australis* provides a dense habitat for waterbirds.

The creek is home to many species of waterbirds, while terrestrial birds and mammals utilise vegetation along the banks. There have been sightings of numerous bird species including Buff-banded Rail *Gallirallus phillipensis*, Purple Swamphen *Porphyrio porphyrio*, Great Egret *Ardea alba*, White-faced Heron *Egretta novaehollandiae*, Royal Spoonbill *Platalea regia* and Nankeen Night-heron *Nycticorax caledonicus*. Dense vegetation provides refuge for Spotted Pardalote *Pardalotus punctatus*, Eastern Rosella *Platycercus eximius* and Rainbow Lorikeet *Trichoglossus haematodus* as they feed on the seeds and fruit of the eucalyptus trees. Common Brushtail *Trichosurus vulpecula* and Ringtail *Pseudocheirus peregrinus*. Possums nest along the creek and appear at dusk, while in the warmer months Lowland Copperhead Snakes *Austrelaps superbis* bask in the sun.

2.3.5 Kingston Foreshore Reserve

Kingston Foreshore Reserve is approximately 43 ha spread out over 13 kilometres and is a major land feature in the municipality supporting numerous recreational activities. Council is the 'Committee of Management' for this reserve on behalf of DELWP. Management objectives are guided by Council's Coastal Management Plan.

The Foreshore Reserve supports the following EVCs:

- Coastal Headland Scrub (EVC 161)
- Coastal Dune Scrub (EVC 160)
- Sand Heathland (EVC 006)
- Berm Grassy Shrubland (EVC 311)
- Coastal Dune Grassland (EVC 879)
- Coast Banksia Woodland (EVC 2)

Over time the foreshore environment has been greatly modified, vegetation has been cleared and the dune system has been destabilised by development and erosion through coastal processes such as wind, wave action and tides.

The northern portion of the reserve has been highly modified from a former sandstone cliff to an embankment filled in the first half of last century. It largely consists of vegetated embankments which create a buffer between the beach and Beach Road and are dominated by Coast Tea-tree *Leptospermum laevigatum*, Coast Wattle *Acacia longifolia*, Seaberry Saltbush *Rhagodia candolleana*, Karkalla *Carpobrotus rossii* and spear-grasses *Austrostipa mollis* and *flavescens*.

The southern portion of the foreshore reserve consists of vegetation of high conservation value growing on narrow primary undulating dunes between houses and the beach. The beach is highly affected by foreshore erosion processes with washouts occurring in severe storms. Some of the indigenous flora found in this reserve includes Hairy Spinifex *Spinifex sericeus*, White Correa *Correa alba* and Coast Banksia *Banksia integrifolia*. The reserve provides habitat for a range of fauna such as lizards and birds.



A Plague Soldier Beetle *Chauliognathus lugubris*. on Common Wallaby-grass *Rytidosperma caespitosum*

3. Kingston's Biodiversity Issues

Council and other public land authorities deal with a range of management issues and competing priorities for land use. Three key issues affect flora and fauna within the municipality stemming from alteration in habitats due to human impacts:

- Urbanisation
- Pest flora
- Pest fauna

Every living thing has an impact on its environment. By simply existing, all species including humans imprint their mark on the world around them. However humans in particular have major potential detrimental impacts on the natural environment.

An obvious impact humans have on the environment are water, land and air pollution. This is due to:

- Poor agricultural practices: excessive nutrients; organic enrichment, the overuse of chemical fertilizers, herbicides and pesticides; the practice of growing monocultures (only one crop season after season).
- Poor industrial practices: dumping untreated chemicals and heavy metals into drains. Pollutants in stormwater degrade aquatic habitats and surrounding ecosystems including wetlands, creeks and Port Phillip Bay.
- Urban sprawl: natural habitats are removed to make room for development.
- Personal consumption: our modern culture's desire to have more, bigger and better 'things', as well as our relationship to and habit of wastage, has led to excessive mining and pollution from industrial activities.
- Production of greenhouse gases from motor vehicle and energy use.
- Stormwater pollution that ends up affecting the health of our waterways.

The examples listed above have impacted on local biodiversity, plants and aquatic life, as well as land animals.

Climate change poses very serious threats to biodiversity across Victoria and most parts of Australia. Climate change is altering the environment and natural cycles. *"It is predicted that through climate change some EVC species may disappear due to reductions in rainfall (drought) and that in south-east Australia there will be a long term shift to a warmer and drier climate, but with an increase in frequency and severity of extreme weather events such as droughts, storms, heavy rain and strong winds (State of the Climate 2014, CSIRO and Australian Government Bureau of Meteorology 2014)".* The effects on the local environment are likely to include increased flooding and damage to waterways, severe erosion, a decline in vegetation health, reduced survival of young plants during extended dry periods, long term shifts in plant and animal distribution and the timing of natural events (flowering, seed setting, breeding).

3.1 Urbanisation

Habitat within Kingston for most indigenous flora and fauna has been severely depleted and is fragmented into mostly isolated patches as a result of urbanisation. The increase in human population density and the resulting increase in urban development (e.g. subdivisions and developments) near areas of biodiversity significance causes vital habitat to be lost or fragmented into patches not big enough to support complex ecological communities and biodiversity declines. Urban growth is also often responsible for the introduction of non-native flora and fauna species including food, ornamental plants and pets. Runoff from building sites, dumped building rubble and unnecessary clearing of vegetation also impacts.

Protecting and maintaining healthy, safe and aesthetically pleasing trees and vegetation is vital to Council achieving the desired landscape, social and environmental objectives for Kingston. Vegetation within urban areas is subject to a variety of pressures including changes in land use and public requirements, and high visitation to parks, reserves and NRAs. These pressures may lead to vegetation damage which has a potential impact on their function and viability in the landscape. A number of indigenous species are locally vulnerable or endangered and may become extinct if threatening processes continue.

Tree and vegetation protection is a community wide endeavour that is supported by Council through the Parks Department managing street and public trees, the Planning Department protecting private trees on development sites and Local Laws for protection of Council managed and private trees.

The impacts of habitat loss and degradation for the Council, community and local flora and fauna include:

- Loss of aesthetically pleasing vegetation/trees
- High cost of replacing vegetation
- Increased pressure already on compromised local flora and fauna species raising the likelihood that they may disappear from the municipality

There is a risk that indigenous/remnant sites will continue to degrade if these areas are not properly managed. The community places a high value on the preservation of natural environment areas and it is anticipated that sympathetic, appropriate and scientifically based management will ensure their ongoing existence in Kingston.



Unauthorised cutting of a Coast Banksia *Banksia integrifolia* on the Foreshore Reserve

3.2 Pest Flora

Environmental weeds are the most serious threat to the survival of indigenous flora and fauna. Weeds outcompete indigenous plants for light, nutrients and water, and can thrive in the absence of their natural diseases and predators. They have the ability to change habitats and ecosystems, leaving some species of our native wildlife without habitat, food and shelter. Weeds can be:

- Foreign plants accidentally or intentionally introduced into Australia
- Native plants that have become invasive due to inappropriate management, or because they are outside of their pre-European range

Weeds can be spread in a number of ways including machinery, birds, animals and wind. Industries including nursery, landscaping and gardening can also play a role in spreading weeds when introduced plants are distributed for commercial use before their potential impact is fully understood. Many existing environmental weeds impacting on NRAs were originally introduced as garden ornamentals which have subsequently spread. These introduced plants are climatically suited to their new environment and can thrive and outcompete native species.

Weeds have significant environmental, economic and social impacts including:

- Reduction of biodiversity
- Cost of control
- Degradation of natural landscape
- Loss of open space for recreational activities
- Increased risk of fire
- Smothering of indigenous vegetation
- Prevention of regeneration of indigenous plants
- Reduction of habitat and displacement of native fauna
- Harbour for pest animals such as rabbits and foxes
- Choking of waterways, increasing flooding and reducing water quality
- Alteration of hydrological and nutrient cycles



Patch of the noxious weed Blackberry *Rubus anglocandicans*

Weed management within Kingston NRAs is based on a modified version of the Bradley Method, the original method of bush regeneration which focuses on facilitating native plant recruitment from the seedbank, rather than planting seedlings or sowing seeds, resulting in minimal disturbance or off-target herbicide damage.

Rather than 'no disturbance', Council works to a 'some disturbance' method as many Australian plant species/ communities require some level of stimulation to trigger germination from long-dormant seed banks. Disturbing some types of vegetation, with techniques such as 'prescribed burns', has been successful in the regeneration of species such as in heathlands and grasslands.

Council takes a strategic integrated approach when undertaking weed control works. Weed species, native flora & fauna, erosion issues, habitat and ecological values are taken into consideration when planning weed management. A number of different weed control techniques are required for success in reducing/eliminating weeds. Weed control techniques that the NRA team undertake include:

- Chemical: use of herbicide that is applied by spraying or painting the concentrate onto the weeds
- Manual: handweeding is the most sensitive approach to weed control and is used in high quality areas to ensure desirable plants are not damaged
- Mechanical: use of machinery to remove or slow the production of seed e.g. slashing and a mower and catcher, this removes weed seeds and biomass
- Seed head/seedling burning: use of a gas bottle and weed burner tool to flame and consume the seedlings/seed-heads before they are viable enough to produce flowers/seeds and germinate. This technique is very successful as it reduces the potential build-up of annual weed species through the destruction of the plant and their seed prior to ripening. As these species

become active, management intervention is required to ensure their numbers are kept to a minimum.

- Prescribed burn: Fire is a very important management tool for regeneration of indigenous plant species in some vegetation communities in reserves such as The Grange Heathland, Rowan Woodland, Bradshaw Bushland Reserve and Epsom Grasslands. Due to the dense urbanised nature of the municipality ecological burning in reserves requires careful planning and management.

A list of species designated as ‘environmental weeds’ within the City of Kingston can be found on Council’s website. Within Kingston the owner or occupier of any premises must not allow to grow on those premises any declared noxious weed except with the approval of Council.

Some species of environmental weed may also be designated as a ‘noxious weed’ under the *Catchment and Land Protection Act 1994*, and therefore must be removed and their growth halted to prevent them from spreading. Contact Agriculture Victoria on 136 186 or visit the [Agriculture Victoria](#) website for more information.



Prescribed burn at The Grange Heathland Reserve

3.3 Pest Fauna

Key pests animals that have been introduced and have a negative impact in Kingston are set out in Table 1 below:

Pest Animal	Impacts on wildlife	Impacts on habitat
Rabbits	✓	✓
Foxes	✓	✓
Cats	✓	-
Dogs		-
Feral Bees	To be determined#	To be determined#

Table 1. Pest animal impacts on Kingston flora and fauna
more research needed

Rabbits

Rabbits cause significant environmental damage across Australia. Many of our native plant species won't grow or survive if rabbits are present as even in low numbers they can prevent regeneration of many plant species. Rabbits have caused native plant species to become extinct or endangered by removing all seedlings and young plants. Rabbits will also dig plants up to get to moisture in roots and ringbark plants, all of which may cause the death of the plant and contribute to soil erosion. The removal of topsoil results in these areas being unsuitable for the capture and germination of seeds, so they remain bare and subject to further erosion. Rabbits have also had a catastrophic impact on fauna and are a significant contributor to the decline or extinction of many species of small to medium sized mammals. This is due to the direct competition for food and shelter.

Competition and land degradation by feral rabbits is listed as a key threatening process under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Foxes

Fox populations are widely established in urban, suburban, agricultural and natural environments throughout Victoria and have had a huge impact causing significant environmental damage. They are a key species that threaten the survival of Australia's native plants and animals. Foxes are highly adaptable omnivores, opportunistic hunters and scavengers. They feed on vertebrate and invertebrate prey, plant material and human refuse. Foxes inhabit many urban areas, especially where there is cover provided by vegetation and food is easy to find. They can also be found in the suburbs of most large cities in Australia. The density of foxes residing in cities is approx. 3–16 per sq. km.

Foxes have an impact on native flora by feeding on introduced plant fruits. Species found in fox scats include Boxthorn *Lycium ferocissimum*, Sweet Briar *Rubus rubiginosa*, and Blackberry *Rubus albocandicans*. Foxes are excellent dispersers of seeds as they consume and then defecate viable weed seed over wide distances. It is also likely that seeds are dispersed attached to fox fur.

Foxes impact on native fauna, by preying on many species of Australian native wildlife. They include birds, small mammals, frogs, reptiles and insects in their diet. Foxes significantly contribute to the decline and extinction of many species. It has been suggested that surplus killing by foxes may have been a major contributor to the rapid mainland extinction or reduction of a range of native species in Australia.

Fox predation has been listed as a key threatening process under Schedule 3 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. A key threatening process is that which threatens, or may threaten, the survival, abundance or evolutionary development of a native species or ecological community.

Cats

Feral and domestic cats prefer live prey but do occasionally scavenge or eat human food scraps. They are carnivorous and very well adapted to hunting small mammals and birds. Being largely nocturnal hunters, cats may travel for several kilometres at night in search of prey. Cats have excellent eyesight, hearing and sense of smell. They are also very able climbers. All of these features together with four sets of retractable claws, and teeth adapted for gripping, tearing and shearing, make the cat a formidable hunter. They are opportunistic predators meaning that their diet generally reflects the fauna present in the area where they live and hunt. Their diet can include small mammals, birds, reptiles (particularly skinks), frogs, fish, invertebrates and even vegetable matter.

Dogs

Dogs are carnivorous and are also very well adapted to harassing and hunting small mammals and birds. Domestic dogs occur in high numbers in urban areas, where native animal numbers are fewer. So even though each individual dog may only kill or injure a small number of native animals, it has a large effect on already reduced populations. Even though most pet owners meet their pet's requirements for food and shelter, a domestic dog's instinctive hunting and chasing behaviour may continue. Most common kills are birds, possums and lizards.

Feral Bees

European honey bee has been present in Australia for nearly 200 years, and is believed to visit the flowers of at least 200 Australian plant genera and interact with a wide diversity of native flower-visiting animals. They may outcompete native fauna for floral resources, may disrupt natural pollination processes and may displace indigenous wildlife from tree hollows. However, there is insufficient research about interactions between European and Australian bee species to fully assess their impacts.

4. Kingston's Management Approach to Biodiversity within Natural Resource Areas

In order to address the issues identified in Section 3, Council has a number of management strategies with the aim to protect and improve biodiversity across the NRA. These management strategies form the basis of the actions identified in the Action Plan 2018-2023 in Section 11 of this strategy.

4.1 Management of Urbanisation within Natural Resource Areas

To reduce the impacts of human activity on Kingston's biodiversity, Council has a range of strategies. These include:

- Raising awareness within the local community about the value of indigenous plants and animals, and historic and cultural sites.
- Provide opportunities for community engagement with environment management.
- Ensure Kingston residents are aware of responsible pet ownership behaviours.

City of Kingston encourages increased ownership of open space areas by residents and the general community. Through active engagement, residents and the general community learn about the value of their open space areas and develop an understanding of the rationale behind management decisions.

Community groups and educational institutions with an interest in the environment and biodiversity are encouraged to undertake relevant projects, access grant funding and "learning" opportunities within Council's NRAs. Council continues to engage and work with community groups and educational institutions to increase the level of involvement of such groups. This includes educating the community in valuing indigenous plants; as a landscape solution in lowering maintenance of domestic garden areas; and also the value of these plants in providing habitat.

4.2 Management of Pest Flora within Natural Resource Areas

Councils overall objective in NRA is to improve biodiversity by reducing weed coverage and increasing indigenous species coverage. For each NRA, Council has developed the following management tools to assist us in improving biodiversity.

Each NRA is divided into Vegetation Management Zones (VMZ) and a 5 year Vegetation Management Plan (VMP) has been developed with set targets. An audit of the vegetation quality in each VMZ is made, to identify the level of cover for indigenous vegetation and environmental weeds; and the diversity of indigenous species relative to presumed pre-European species diversity and coverage, for the communities represented as remnant or regeneration indigenous vegetation. Based on the results of the audit a 5 year VMP is developed and implemented to improve biodiversity in each of the VMZ.

Vegetation Management Targets (VMT) are set for each VMZ for the gradual reduction in coverage for weeds each year, while the VMT for indigenous vegetation are set based on their anticipated increase each year. Revegetation VMT are set for the number of each plant strata to be planted and the number of species per strata (diversity). Weeds are categorised into 5 groups: annuals, perennials, woody weeds, climbers and vines, and geophytes. Indigenous vegetation is categorised into: ground layer, shrub layer and tree layer.

Below is a copy of the current Vegetation Management Plan for the Grange with objectives and targets for VMZ GR4.

VEGETATION MANAGEMENT PLAN

GRANGE HEATHLAND RESERVE

Location

The Grange Heathland Reserve is located off Osborne Avenue, Clayton South (Melways 79 F8).

Description

The Grange Heathland Reserve is approximately 7.0 ha in area. The reserve slopes from the western side down to the eastern side, which is seasonally inundated.

The remnant vegetation at the Grange Heathland Reserve grades from a Coast Manna Gum (*Eucalyptus viminalis* ssp. *pryoriana*) Heathy Woodland on well-drained sandy loam soils in the west, through a Mealy Stringybark (*Eucalyptus cephalocarpa*) Swampy Woodland on poorly-drained sandy clay loam soils in the central part of the reserve, to a Swamp Paperbark (*Melaleuca ericifolia*) Scrub on seasonally waterlogged sandy clay soils in the east.

Values

The Grange Heathland Reserve is highly valued as a conservation area due to the high quality and diversity of its 'heath' vegetation, including many examples of rare species, its dense vegetation that provides significant fauna refuge, and the relative intactness of the ecosystems present. The Grange Heathland Reserve also has high values as a passive, nature-based recreation venue and educational resource.

Vegetation Management Zones

The Grange Heathland Reserve has been divided into a total of 15 Vegetation Management Zones of the following quality:

Quality rating	Number of zones
Quality 1	0
Quality 2	6
Quality 3	5
Quality 4	4

Community involvement / interpretation

Existing Community Group: Friends of the Grange
Existing Interpretive materials: Self-guided Nature Walk with accompanying brochure, and timber interpretive display structure (constructed and maintained by the Friends group)

Vegetation Management Zone Targets For GR4

NRA: Grange Heathland Reserve

ZONE:

GR4

Area:

17,027m²

- **OBJECTIVES and STRATEGY for this zone:**

This zone consists of very high quality remnant vegetation.

- Prevent encroachment of *Leptospermum laevigatum* into heathland.
- Continued gradual reduction of understorey weed cover throughout zone, with focus on:
 - 2015 controlled burn site
 - Hakea track
 - 2008 vandal burn site on east edge
 - Annuals along south-eastern edge.
 - Hit isolated patches of weeds through the high quality middle
- Protect Leopard orchids *Diuris pardina*
- Conduct prescribed burns in this zone to try to locate and stimulate the *Pterostylis pedoglossa*, *Hakea ulicina* and *Pyrorchis nigricans*, and expand Sand Heath EVC

EVCs for this zone are:

Heathy Woodland and Sand Heathland

- **ENVIRONMENTAL WEED cover/abundance targets for this:**

Weed Category	June, 2016	June, 2017	June, 2018	June, 2019	June, 2020
Annual Grasses and Herbs	4	4	4	3	3
Perennial & Biennial	4	4	4	4	4
Grasses, Herbs and Succulents					
Woody Weeds	4	4	4	4	4
Climbers and Vines	+	+	+	+	+
Geophytes	1	1	1	1	1

- **INDIGENOUS VEGETATION cover/abundance targets for this zone:**

Vegetation stratum	June, 2016	June, 2017	June, 2018	June, 2019	June, 2020
Tree Layer (> 5m)	7	7	7	7	7
Shrub Layer (1m - 5m)	8	8	8	8	8
Ground Layer (<1m)	8	8	8	8	8

- REVEGETATION targets for this zone: There are no revegetation targets for this management zone
- QUALITY rating for this zone: 2

The VMTs for weeds & indigenous vegetation are based on the Domin-Krajina Cover/Abundance Scale (see table 2 below) which considers the overall cover of a species within an area as well as their abundance.

Code	% cover	Description
10	100	Any number (of individuals) with complete cover
9	75 - <100	Any number, with more than 75% but less than complete cover
8	50 - 75	Any number, with 50% to 75% cover
7	33 - 50	Any number, with 33% to 50% cover
6	25 - 33	Any number, with 25% to 33% cover
5	10 - 25	Any number, with 10% to 25% cover
4	5 - 10	Any number, with 5% to 10% cover
3	1 - 5	Scattered, with small cover under 5%
2	<1	Very scattered, with small cover under 1%
1	<1	Seldom, with insignificant cover under 1%
0	<1	Solitary, with insignificant cover under 1%

Table 2 Domin-Krajina Cover/Abundance Scale

To enable the NRA team to meet the VMT, maintenance works are regularly undertaken as part of an Annual Works Program (AWP). Tasks undertaken include: weed control, revegetation and fire management. Council undertake regular auditing of every VMZ to ensure the programmed works have met the set VMT.

Further to this, the Biodiversity Strategy (2007) identified the following action was a high priority for Council: Action 1: Collect habitat hectare data on all Council owned land in Kingston to provide a baseline inventory for future monitoring.

Biosis Research Pty Ltd was commissioned by Kingston City Council to undertake habitat hectare assessments in key NRAs:

The objective of the assessment was to:

- Identify what Council had of 'Conservation Significance' and its condition in Council's NRA, in comparison with DSE (DELWP) vegetation quality 'benchmarks.
- Enable Council to make informed decisions about how these sites are managed into the future based on a scientific approach.

Ongoing assessments are required to provide valuable data on the status of these NRA. Also as part of this assessment, EVC were mapped by Biosis Research Pty Ltd and are included in Section 10 of the technical report.

4.3 Management of Pest Fauna within Natural Resource Areas

Council takes a site-based approach to the management of pest and feral animals which includes the following control methods:

- Baiting
- Trapping
- Fumigation of dens
- Exclusion-installation of a feral proof fence
- Providing suitable habitat for native bees
- Removal/destruction of feral bee hives located in NRA by experienced and qualified contractors.

The protection of flora & fauna can also be achieved by advising pet owners to comply with local laws signage regarding their pets near/within NRA. Enforcement of these by Council's Local Laws is also part of a management option.



European Fox *Vulpes vulpes*. Fox predation is a key threatening process under Schedule 3 of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.

5. Current Council Programs Outside Natural Resource Areas

Council has a number of existing programs, projects and actions that contribute to the achievement of biodiversity objectives.

5.1 Our Place Program

Kingston's Our Place Program seeks to inform staff and community on sustainability related issues, inspire and assist them to change and integrate these changes into their lives – at work, at home, in the community. Our Place assists in enhancing their knowledge of and care for the environment and inspires them to create solutions to reduce environmental impact.

5.2 Friends Groups & Community Activities

Local friends and community groups are actively involved in biodiversity conservation. Council is currently involved in projects with several community groups and local schools. Some activities the groups are currently involved in, include Clean Up Australia Day and National Tree Day activities; propagation and revegetation of indigenous species where appropriate, weeding and litter control in reserves and at train stations within the municipality. Regular working bees are held throughout a number of NRA and can be found on councils' website www.kingston.vic.gov.au/Places-and-Events/Foreshore-and-Environment/How-you-can-help or on My Community Life website www.mycommunitylife.com.au.

5.3 Stormwater Programs

Council has a broad range of stormwater management systems in place to reduce flooding and protect the environment.

The strategies and programs that make a positive contribution towards biodiversity include:

- Targets established within Council's award winning '*Integrated Water Cycle Strategy*' to reduce the amount of pollution draining into Port Phillip Bay, Mordialloc Creek, wetlands and sensitive waterways.
- Plans to construct numerous large vegetated filtration basins around the municipality that will treat stormwater and provide increased habitat for a diverse range of wildlife.
- Ongoing programs to educate local residents, business, builders, landscapers and industry on best practice stormwater management practices.
- Requirements for developers to incorporate *Water Sensitive Urban Design* objectives into new building projects

5.4 Parks and Reserves Revegetation Programs

Kingston has 370 open space areas throughout the city, maintained by Council's Parks team and contractors. The reserves range from large open spaces to small

parcs with recreational facilities. The main purpose of revegetation programs is to maintain and restore pre-European biological diversity through the protection, maintenance and restoration of ecological processes, indigenous flora and fauna communities, habitats and gene pools.

In order to increase the tree population as part of the Urban Forest, Council has an adopted Tree Management Policy. This policy provides a holistic approach to guide Council in managing the urban forest, consisting of approximately 90,000 trees within reserves, streets and Council-managed facilities. The 'urban forest provides a multitude of benefits from an ecological, climatic, architectural, psychological and economic point of view. The urban forest provides habitat and food sources for wildlife, provides efficient use of stormwater runoff, mitigates noise and dust levels, improves air and water quality, absorbs pollutants, sequesters carbon and helps conserve energy.'

5.5 Kingston Planning Scheme

Kingston is required to follow the State Policy Planning Framework when considering applications for a wide range of developments and other issues, both on private and public land. This requires Council to:

- Avoid impacts of land use and development on important areas of biodiversity.
- Assist in the identification, protection and management of important areas of biodiversity.
- Assist in the establishment, protection and re-establishment of links between important areas of biodiversity, including through a network of green spaces and large-scale native vegetation corridor projects.

Kingston is also required to have regard to all the relevant acts and strategies as listed in Section 6 of the Technical Report.

5.6 Significant Tree Register

Council has a Significant Tree Register to help identify and conserve trees of importance to the community. The Register aims to preserve the municipality's leafy neighbourhood character, cultural heritage, history and biological diversity. Details can be found on Council's website.

5.7 Local Laws

Enforcement is undertaken in relation to the unauthorised damage and/or removal of trees or vegetation on private and public land, under both the City of Kingston Community Local Law and the Planning and Environment Act 1987.

6. Opportunities

Further opportunities exist within Kingston to address key biodiversity issues in Section 3:

- There are areas within Council reserves and other public land where there is scope for natural regeneration, revegetation with indigenous species and site management to enhance native flora and fauna habitat.
- There are potential opportunities to plant indigenous trees, shrubs and/or ground layer plants in streetscapes, carparks, school grounds, gardens of residential and commercial properties, Council properties and the foreshore as appropriate. Council undertakes many of these already through existing programs.
- Existing reserves with indigenous species have potential to be linked and extended as wildlife corridors. This will increase the size and connectivity of reserves which will increase opportunities for species retention, adaption and evolution.
- Community groups and educational institutions with an interest in environmental and biodiversity action have the opportunity to undertake relevant projects.
- Council has the opportunity to continue to engage and work with community groups and educational institutions and to increase the level of involvement of such groups.
- Council may continue to foster links and partnerships with other municipal Councils and government agencies such as Parks Victoria and Melbourne Water.
- Council has the opportunity to continue to increase awareness within the local community about indigenous plants and animals. This includes the ability of indigenous plants to reduce the reliance on water.
- Approaches to NRA management can be continually improved through scientific knowledge, technological advances, training opportunities and enhanced resource allocation.

7. Heritage & Stewardship

7.1 Heritage

The history and cultural heritage of sites within Kingston is a source of pride for local residents and should be preserved and enhanced. The Foreshore, Mordialloc Creek and the swamplands provided abundant food for the people of the Kulin Nation, the traditional people of this area, in the form of eels, fish, birds, molluscs such as mussels and various plants such as water ribbons and cumbungi shoots. Aboriginal artefacts, such as midden sites and scar trees, have been found throughout Kingston and it is important to retain aboriginal cultural sites and educate visitors about how these sites were traditionally used.

7.2 Stewardship

Council engages and is committed to supporting numerous volunteers including community and school groups that participate in biodiversity conservation works such as restoration and protection of remnant indigenous vegetation and the propagation of indigenous species. Activities the volunteers undertake include collecting and germination of seed and cutting material, revegetation using indigenous species, weed control and removal, erosion prevention and remediation, water quality monitoring and collecting rubbish. Council also supports annual environmental events with school and community groups such as National Tree Day and Clean Up Australia Day.

These groups add significant value to the day-to-day operation and conservation of their reserves in addition to adding an element of community pride and local responsibility.

A strong sense of community ownership of natural assets and the provision of information regarding the ongoing maintenance of natural assets to residents will assist the community to better understand why specific works are undertaken and promote community stewardship.

8. Other Public Land Agencies and Groups

The following section details the roles public land agencies and groups have in the management of the Kingston biodiversity and the sites they manage.

8.1 Department of Environment, Land, Water and Planning (DELWP)

The Department of Environment, Land, Water and Planning (DELWP) is a State Government agency which works to protect and preserve Victoria's biodiversity. DELWP manages a range of biodiversity research and management programs, permits and regulations, and industry reference tools, including interactive maps and the native vegetation information system. Protecting Victoria's Environment – Biodiversity 2037 is Victoria's plan to prevent the decline of our native plants and animals and improve our natural environment so it is healthy, valued and actively cared for.

8.2 Parks Victoria (PV)

Park Victoria is a State Government agency responsible for the management of protected areas, nominated Crown land, marine parks and other cultural and recreational assets as specified under the *Parks Victoria Act 1998*.

PV is responsible for the management at the following sites that contain biodiversity within Kingston:

8.2.1 Braeside Park

Braeside Park is a 295 hectare recreational and conservation park. The 45 hectare Heathland Conservation Zone is managed to preserve and enhance the remnant natural features and cultural resources.

8.2.2 Karkarook Park

Karkarook Park is a 40 hectare recreational and environmental park, featuring wetlands and a lake, developed from 1997 to 2004. Since the development of the park and wetlands over 145 species of native birds have been recorded. It is anticipated over time that as the wetland and parkland revegetation matures there will be an improvement in habitat values and an increase in the fauna population.

8.2.3 Patterson River

Parks Victoria manages Patterson River in partnership with Council and Melbourne Water. The river was originally within the Carrum Swamp which extended from Mordialloc to Frankston, behind a broad coastal sand barrier. In 1879, works were conducted to cut through the sand barrier to drain the swampland. Patterson River still supports a number of indigenous fauna and flora species. However the most popular activities at Patterson River are recreational boating and fishing.

8.3 Melbourne Water (MW)

Melbourne Water is a State Government agency responsible for the management of rivers, estuaries, floodplains and wetlands in the Port Phillip and Westernport region. MW is responsible for the management of a number of areas within Kingston supporting important biodiversity, as follows.

8.3.1 Edithvale-Seaford Wetlands

The Edithvale-Seaford Wetlands is the largest natural wetlands of their type in the Port Phillip and Westernport basins, having diverse habitats with both fresh and brackish elements. They are of significance as they are remnants of the former extensive Carrum Swamp. With the abundance of birds they support, particularly the migratory species, Edithvale-Seaford Wetlands is an example of how disturbed systems can retain biodiversity significance through careful management. The Edithvale and Seaford Wetlands have been registered under the Ramsar Convention as wetlands of international importance since 2001.

8.3.2 Mordialloc Creek Reserve

MW manages Mordialloc Creek in partnership with Council. MW is responsible for the water body and the vegetation along the south side of Mordialloc Creek from Wells Bridge to the Frankston/Mordialloc Railway line. The creek reserve supports brackish to freshwater flora species and provides habitat to numerous bird and fish species.

8.3.3 Yammerbook Nature Reserve

Yammerbook Nature Reserve is adjacent to and within the floodplain area of Mordialloc Creek (formerly known as Drills Land). MW owns the land and the City of Kingston manages it for amenity, habitat and recreation. The site is managed as a landscaped, indigenous wetland/lake.

8.3.4 Centre Swamp Drain / Browns Reserve

MW manages the floodplain area between Browns Reserve, adjacent to Mordialloc Creek and Edithvale South Wetlands known as Centre Swamp Drain / Longbeach Trail. The main function of the area is for floodplain storage, but more recently it has been identified by MW as having amenity and environmental values.

8.3.5 Waterways Development

Established in 2000, the suburb of Waterways combines housing with over 40 hectares of recreated wetland and terrestrial habitat. More than 1.4 million indigenous plants of 223 different species have been planted, creating 5 different indigenous vegetation communities. The aim of the project was to use constructed wetlands to treat stormwater and reduce the pollutant loads to Mordialloc Creek and Port Phillip Bay, whilst recreating habitat areas within the development. The Mordialloc Freeway will have an impact on the biodiversity at this site.

8.4 VicTrack

VicTrack is responsible for managing Victoria's rail network and the vegetation within the railway reserve system. There are two rail corridors within Kingston that contain fragmented patches of remnant vegetation:

- Along the Frankston line between Moorabbin to Carrum
- Along the Pakenham line between Centre Rd and Westall Rd, Clayton South.

Some of these remnant patches interface with Council land e.g. Bradshaw Bushland Reserve and there may also be opportunities for future revegetation works similar to recent plantings along Station St in Aspendale by Council.

8.5 VicRoads

VicRoads is responsible for planning, developing and managing Victoria's arterial road network. There are a number of proposed road reserves within Kingston that contain high quality vegetation sites that will be disturbed should construction of the roads be undertaken.

Vic Roads has a number of policies in place which aim to:

- Maintain and where possible improve roadside biodiversity
- Maintain landscapes through native vegetation offsets and revegetation
- Manage state and regionally prohibited weeds
- Minimise the threats to plants and animals when roads are built
- Provide for fauna movement where possible, by creating fauna crossings (underpasses or overpasses). This reduces fragmentation of habitats and improves and maintains species diversity.

8.6 Major Projects Roads Authority (MPRA)

The MPRA is a dedicated government body charged with planning and delivering major road projects for Victoria. Established in July 2018, the MRPA is an administrative office under the Office of the Coordinator General and Department of Economic Development, Jobs, Transport and Resources.

One of MPRA projects is to build the Mordialloc Freeway that will link the Mornington Peninsula Freeway at Springvale Road in Aspendale Gardens to the Dingley Bypass in Dingley Village. The Mordialloc Freeway alignment will have some impact on biodiversity in the grasslands and wetlands within Waterways Estate; Braeside Park and Woodlands Wetlands.

Currently the Environmental Effects Statement (EES) process has commenced for this project. The EES process enables a transparent and rigorous process for the consideration of potential impacts of the project and to ensure they are managed appropriately. This includes potential environmental, cultural and economic impacts. The EES will be prepared by VicRoads in consultation with DELWP and a technical reference group consisting of statutory agencies, department and local councils. The state road authority has already been undertaking a range of technical investigations in preparing for the EES to assess the potential impacts of the project on biodiversity, groundwater and surface water, air quality and soil, landscape and visual, economic and social impact.

8.7 Port Phillip & Westernport Catchment Management Authority

Living Links is an urban nature project working to create a web of green spaces across Melbourne's south-east. By linking up the many parks, reserves and other natural places, it aims to make the area a world-class urban ecosystem.

This will improve habitat for wildlife and make it easier for people to connect with nature as part of their daily lives.

The project is run by the Port Phillip and Westernport Catchment Management Authority (PPWCMA) in conjunction with land management agencies including Councils, VicRoads, Melbourne Water and Parks Victoria.

Living Links aims to coordinate current activities and attract new investment to establish corridors linking existing open space, recreational facilities, and commercial centres.

Living Links projects within Kingston that link a number of open spaces are:

1. Mordialloc Creek, which includes Waterways and Braeside Park.
2. Patterson River which includes Edithvale-Seafood Wetlands, Centre Swamp Drain / Longbeach Trail.
3. Port Phillip Bay Foreshore.

Living Links seeks to:

- Support Landcare and community activities in the program area
- Influence planning by land management authorities in the program area
- Incorporate catchment management and sustainability principles
- Develop new and enhance existing vegetation corridors along roadsides, waterways public open spaces and private land
- Protect and enhance habitat for native fauna and ensure the retention of biodiversity in an otherwise fragmented and urbanised landscape
- Promote best practice in the management of stormwater runoff from sealed surfaces (roads, urban developments)
- Promote Water Sensitive Urban Design in existing urban estates and infill development across the catchment
- Develop further pedestrian and cycle paths throughout south-east Melbourne connecting major commercial and recreational centres
- Benefit the residents through cleaner waterways, more desirable and accessible recreation areas, improved opportunities for environmental education, and safer and more comprehensive pedestrian and cycling facilities.

8.8 Level Crossing Removal Authority (LXRA)

The LXRA was established in 2015 by the Victorian Government to oversee the largest rail infrastructure project in the state's history. The project aim is the elimination of 50 dangerous and congested level crossings across metropolitan Melbourne by 2022, in addition to upgrading or constructing more than 20 train stations; laying many kilometres of new track; and making associated rail improvements.

A number of crossings on the Frankston Line between Carrum and Moorabbin will be removed. Both elevated and trenching are proposed options that will have impact on biodiversity. Council will work with LXRA to investigate opportunities to incorporate revegetation into these sites throughout the planning stage.

9. Monitoring and Review

9.1 Monitoring of the Strategy

The goals outlined in this strategy are long-term and their success must therefore be measured over years rather than months. A number of programs are currently underway that support or contribute to this strategy.

Progress on the implementation of this Strategy will be reported on as part of Council's Annual Report process. A monitoring program provides baseline and trend information about local flora, fauna and ecosystems to inform management and policy decisions.

The Biodiversity Strategy 2018–2023 Action Plan (see Section 11) collates all actions that have been identified throughout this document, identifying their implementation priority. The Action Plan is assessed annually to determine progress and reviewed in line with a planned 5 yearly Strategy update.

A status report of the previous Action Plan in the 2007–2012 Biodiversity Strategy is included below in Section 10.

9.2 Review of the Biodiversity Strategy

The Biodiversity Strategy will be subject to a comprehensive review with community consultation in 2023. Other key items/elements of this strategy to be reviewed are:

TASK	TIMING	DATE	COMMENTS
Review Council's Habitat value	Conduct Habitat Hectare assessment review every 10 years	2022	APPROX. \$100K required
Review Council's EVC, flora and fauna status	Conduct review every 5 years	2023	APPROX. \$20K required

Evaluation of Strategy

This Biodiversity Strategy plays an important role in the protection and enhancement of important and threatened biodiversity assets including all indigenous flora and fauna. Any actions to conserve these assets will assist in improving other environmental factors such as air and water quality.

This Strategy supports the strategic directions and priorities for biodiversity conservation which have been outlined in national, state and regional strategies and applies these principles at a local level. This Strategy will further Council's commitment to environmental sustainability.

This Strategy will benefit the Community now and into the future by providing:

- Increased cover and abundance of indigenous flora
- More opportunities to become involved with environmental community projects
- Greater awareness and appreciation of the role of indigenous flora and fauna and
- Increased opportunity to see and learn more about native flora and fauna.

10. 2007–2012 Action Plan Status

The status of the 2007–2012 Biodiversity Strategy Action Plan is set out in table below.

Objective 1: Identify protect and manage remnant indigenous vegetation				
Action Number	Action	Priority	Responsibility	Outcomes
1	Collect habitat hectare data on all Council land in Kingston to provide a baseline inventory for future monitoring. Council should also work with other land management agencies to encourage data collection and sharing on other land in Kingston.	1	Parks & Recreation Department	Data collected in 2010 at Council managed NRA sites to determine status of habitat value against DSE (DEPI) benchmark. Data & recommendations incorporated into Vegetation Management Plans to guide future maintenance works.
2	Update and validate habitat hectare information in 2010 and establish a monitoring plan.	3	Parks & Recreation Department	Work completed as part of Action No 1.
3	Identify existing & potential wildlife corridors	1	Parks & Recreation Department	Council involvement in the Dandenong Living Links Project. Included projects at Mordialloc Creek, Epsom Grasslands, Yammerbook, Long Beach Trail and the Foreshore Reserve. Council has received in excess of \$100k in funding for projects during life of the strategy.
4	Develop the actions needed to protect and enhance the wildlife corridors identified in Action 3.	3	Parks & Recreation Department	Dandenong Living Links Partnership. Council resources for NRA mgt. Development of Coastal Management Plan. Vegetation Management Plans reviewed. Project works have included significant pest plant control works along Mordialloc Creek & the Foreshore reserve as well as follow up revegetation and maintenance.

Objective 2: Identify protect and enhance sites of habitat significance and other significant vegetation				
Action Number	Action	Priority	Responsibility	Outcomes
5	Investigate the status of species considered endangered in Kingston that are also listed as rare or threatened at the regional, state or national level, and take appropriate management actions. This may include activities like weeding, fencing, propagation and planting.	3	Environment Department & Parks & Recreation Department	<p>Environment Department undertook Rakali Survey to determine species numbers.</p> <p>Continued maintenance of damage to feral proof fence at The Grange Reserve.</p> <p>Continued feral animal control reduction at key NRA</p> <p>Reduced vegetation pressure on endangered orchid specie at The Grange Reserve & Epsom Grasslands.</p>
6	Investigate the status of species considered endangered in Kingston that are not listed as rare or threatened at the state or national level, and take appropriate management actions.	2	As Above	<p>Continued maintenance of damage to feral proof fence at The Grange Reserve.</p> <p>Continued feral animal control reduction at key NRA</p> <p>Reduced vegetation pressure on endangered orchid specie at The Grange Reserve & Epsom Grasslands.</p>
7	Investigate the status of species considered vulnerable in Kingston, and take appropriate management actions.	3	As Above	<p>Continued maintenance of damage to feral proof fence at The Grange Reserve.</p> <p>Continued feral animal control reduction at key NRA</p> <p>Reduced vegetation pressure on endangered orchid specie at The Grange Reserve & Epsom Grasslands.</p>
8	Investigate the status of EVC considered endangered in Kingston, and take appropriate management actions.	1	As Above	All EVC have been mapped and placed on Council's GIS system (Intramaps) as a layer. This information has then been incorporated into the 5 year management plans.

Objective 2: Identify protect and enhance sites of habitat significance and other significant vegetation Cont.				
9	Investigate the status of EVC considered vulnerable in Kingston, and take appropriate management actions.	2	As Above	Undertaken as part of Action No 8.
10	Prepare Vegetation Management Targets (VMT) focusing on remnant vegetation and re-vegetation at key sites. This should be reviewed every 5 years	1	Parks & Recreation Department	NRA managed sites plans reviewed in 2010 to incorporate reviewed targets. Next review was undertaken in 2015, again incorporating additional information obtained through Habitat Hectare & EVC assessment.

Objective 3: Undertake and encourage revegetation using indigenous species				
Action Number	Action	Priority	Responsibility	Outcomes
11	Plant indigenous species in biodiversity corridors, recreational parks and reserves, streetscapes, car parks, Council premises. Continue to encourage schools, residential and commercial properties to plant indigenous plants where appropriate.	2	Parks & Recreation Department	Over the life of the 2007 Biodiversity Strategy, approximately 160,000 indigenous plants were grown and planted in NRA alone. A further 200,000 indigenous/native trees or plants have also been installed at other open space areas.
12	Identify opportunities to enhance or create habitat for indigenous fauna. Develop management prescriptions to maintain these areas, for example: ensure that off-lead dog exercise areas are not adjacent to designated habitat areas, and manage access within designated habitat areas.	3	Parks & Recreation Department	Continued Council involvement in the Dandenong Living Links Project has identified habitat projects at Mordialloc Creek, Yammerbook, Long Beach Trail and the Foreshore Reserve. This has resulted in significant weed control and revegetation works.

Objective 4: Reduce negative impacts on biodiversity within and beyond Kingston's boundaries that arise from activities within the municipality

Action Number	Action	Priority	Responsibility	Outcomes
13	Implement actions as outlined in other relevant Council Strategies and Plans such as: Stormwater Quality Management Plan, Local Action Plan to Reduce Greenhouse Gas Emissions and Sustainable Water Use Plan.	3	Infrastructure Department Parks & Recreation Department	Significant planning and implementation of Storm Water Harvesting Projects undertaken by Infrastructure in key sites including: <ul style="list-style-type: none"> • Heatherton Rec Reserve • Kingston Heath Reserve • Namatjira Park • Mordialloc Creek Also worked with local businesses to capture and utilize rain water for tree planting.
14	Introduce Environmental Significance or Vegetation Protection Overlay controls into the revised Planning Scheme where appropriate.	2	Strategic Planning	Strategic Planning continue to review the Planning Scheme as required.
15	Investigate opportunities to introduce incentives and supporting mechanisms to encourage biodiversity conservation on private land.	3	Parks & Recreation Department	Indigenous plant giveaways to schools and the community. Have given away approximately 10,000 plants grown in Council's Bonbeach Nursery over the life of this Strategy.

Objective 5: Increase the local communities awareness, appreciation and understanding of biodiversity and create opportunities for participation in biodiversity management				
Action Number	Action	Priority	Responsibility	Outcomes
16	Identify opportunities and appropriate methods for interpretive information in Council parks and reserves and other suitable locations.	3	Parks & Recreation Department	Brochures produced for The Grange, Bradshaw Park, Rowan Woodlands and Epsom Grassland. Updated Information Boards at The Grange & Rowan Woodlands. NRA information made available through Customer Service Centres, KYC and Website. Weeds brochure also available to the community.
17	Identify opportunities to expand the Growing the Foreshore's Future Program to other areas of the municipality.	3	Parks & Recreation Department	Continued operating Program along foreshore reserve. Program involved residents participation at Councils community nursery with follow up planting in key foreshore sites. Approximately 15,000 plants propagated and planted on the foreshore during the life of this Strategy.
18	Ensure that information is available about the impacts of cats and dogs on native wildlife and ways to reduce these impacts	3	Parks & Recreation Department	Information made available to residents on Council's website and DEPI.
19	Support major environmental programs, as appropriate.	2	Parks & Recreation Department	Council continued support for key events such as Clean Up Australia Day & National Tree Day. Approximately 2,500 people assisted Council to remove over 1,000 bags of litter and plant over 18,000 plants over the life of this Strategy.
20	Support community groups and school groups working on projects to maintain and enhance local biodiversity.	1	Parks & Recreation Department	Council has continued to support numerous school and community groups with the provision of working bees and educational presentations on the local environment. Have provided approximately 10,000 staff hours to support these groups over the life of this Strategy.

Objective 5: Increase the local communities awareness, appreciation and understanding of biodiversity and create opportunities for participation in biodiversity management (cont).

Action Number	Action	Priority	Responsibility	Outcomes
21	Work with community groups and school groups to identify appropriate grant opportunities for biodiversity actions.	2	Parks & Recreation Department	Ongoing with Friends Groups as required. Have assisted AGRA/Friends Of Yammerbook Reserve to submit grant application for significant revegetation along Wells Rd. as well as funding for Master Plan along Long Beach Trail through Living Links. Successfully assisted Friends Of Mordialloc Catchment for Corridors Of Green funding along north side of Mordialloc Creek.
22	Make biodiversity information more readily available through the Council website and other media avenues. Examples of information could include: a list of priority environmental weeds information on indigenous plants and areas where they are found.	2	Parks & Recreation Department	NRA information made available through Customer Service Centres, KYC and Website. Weeds brochure also available to the community.

Objective 6: Work in partnership with neighboring municipalities and other land managers and stakeholders to enhance and protect biodiversity

Action Number	Action	Priority	Responsibility	Outcomes
23	Work collaboratively with adjoining local and state government authorities, to protect and enhance sites of biodiversity significance, and to undertake coordinated pest plant and animal control.	2	Parks & Recreation Department	Current and ongoing vegetation management work at Mordialloc Creek in conjunction with Melbourne Water. Have consistently obtained \$20k funding per annum for vegetation maintenance works with \$160k obtained over the life of this Strategy.
24	Pursue partnerships with local businesses and schools and other educational institutions for specific biodiversity projects.	2	Parks & Recreation Department	Continued vegetation management work at Mordialloc Creek in conjunction with Melbourne Water as well as ongoing involvement in Dandenong Living Links. Partnerships established with schools and businesses to manage open space areas and harvest rain water from tanks.

11. Action Plan 2018–2023

The 2007–2012 Action Plan has been updated to coincide with Section 4 of this strategy – Kingston’s Management Approach to Biodiversity within NRAs.

All actions have been assigned a priority from 1–3 meaning the following:

Anticipated timelines (all subject to resources and funding):

1. intended to commence within one year
2. intended to commence within three years
3. intended to commence within five years

Issue 1: Management of Urbanisation within NRAs						
Action No.	OBJECTIVE	ACTION	Priority	Responsibility (within Council)	Estimated Completion	Outcomes
1.1	To minimise the loss of high value private trees from within the municipality	Assess planning permit application sites to ensure the retention of high value trees	2	Planning		Ongoing
1.2	Council to record identified significant trees	Update and maintain Council’s Significant Tree Register to ensure retention of trees of importance to the community	1	Planning		Ongoing
1.3	Council to implement the Street & Park Tree Management Strategy to increase the tree canopy in the Urban Forest	Undertake annual Tree Establishment works to continue creation and maintenance of Council’s Urban Forest. This includes tree maintenance activities such as planting, mulching and watering of young street trees.	1	Parks	June (each year)	Ensure 90% survival of trees planted in municipality

Issue 1: Management of Urbanisation within NRAs (cont.)						
Action No.	OBJECTIVE	ACTION	Priority	Responsibility (within Council)	Estimated Completion	Outcomes
1.4	Council to implement the Street & Park Tree Management Strategy to maintain an Urban Forest.	Undertake tree maintenance works to support establishment of Council's Urban Forest. This includes tree maintenance activities, pruning and disease control of significant trees to promote the health and vigour of trees as well as maintain required clearances while achieving amenity values.	1	Parks	June (each year).	Maintain all street trees on a 2 year cycle. Replace trees that are removed due to death.
1.5	Council to raise awareness within the local community about the value of local indigenous plants and animals, and historic and cultural sites	Continue to engage with the local community to achieve stewardship and appreciation of the local natural environment and historic and cultural sites. Make information more readily available through the Council website and other media avenues. Examples of information could include local plant species and nurseries that propagate these.	1	Parks		Ongoing
1.6	Council to continue to provide opportunities for community engagement	Council to continue to encourage and support community groups and school groups working on projects to maintain and enhance local biodiversity. This includes weed control and planting of indigenous species (where appropriate) in Council Parks (NRA and open space areas), biodiversity corridors, streetscapes and car parks. Encourage and support residents where appropriate, in the planting of indigenous species in their own gardens.	1	Parks	Annual	Provide minimum 800 staff hours per annum of community support for school & 'Friends' groups

1.7	Council to engage the community in the recording of local species sightings.	Council to investigate options for a community reporting mechanism for flora and fauna species found in Kingston	1	Parks	December 2019	Provide a reporting mechanism for the community
1.8	Council to work collaboratively with adjoining local and state government authorities, to protect and enhance sites of biodiversity significance.	Council to continue to work in collaboration with other authorities through operational projects such as Living Links and via Melbourne Waters' Healthy Waterways Strategy.	1	Parks		Ongoing

Issue 2: Management of Pest Flora within NRAs						
Action No.	OBJECTIVE	ACTION	Priority	Responsibility (within Council)	Estimated Completion	Outcomes
2.1	Reduce coverage of targeted weeds in key NRA management zones	Implement Vegetation Management Plan works to achieve annual Vegetation Management Targets	1	Parks	Ongoing	Achieve KPI of 92% performance outcome
2.2	Increase indigenous coverage by natural regeneration and revegetation (where appropriate)	Implement Vegetation Management Plan works to achieve annual Vegetation Management Targets	1	Parks	Ongoing	Achieve KPI of 92% performance outcome
2.3	Ensure Vegetation Management Plans for each NRA are kept up to date	Review NRA Vegetation Management Plans	3	Parks	Commence in March 2020	Complete 2020 5 year plan in July 2020.

2.4	Regularly undertake prescribed burns to stimulate regeneration within key NRA management zones	Plan and conduct prescribed burns in key NRA e.g. The Grange, Rowan Woodland and Bradshaw Park for biodiversity values. Liaison with Council's communication team prior to burn season for notification of proposed burn/s.	1	Parks	April each year	1 planned burn per year (depending on fire danger)
2.5	Accurately record all prescribed burns undertaken in NRA	Work with GIS team to record fire history at key NRAs for future management	1	Parks		Ongoing
2.6	Assist the public to understand the role of prescribed burning in conserving biodiversity	Ensure it is publically available through the Council website and other media avenues. Liaise with Councils communication team.	1	Parks/ Communication Team		Ongoing update of prescribed burn information on website

Issue 3: Management of Pest Fauna within NRAs

Action No.	OBJECTIVE	ACTION	Priority	Responsibility (within Council)	Estimated Completion	Outcomes
3.1	Reduce pest fauna numbers of certain species key NRA management zones	Undertake pest control at key NRA sites as required. Include: <ul style="list-style-type: none"> • Baiting • Trapping • Fumigation of dens • Exclusion-installation of a feral proof fence • Providing suitable habitat for native bees • Removal/destruction of feral bee hives 	1	Parks	Annually	Ongoing – as required
3.2	Provide up to date information to residents	Ensure that up to date information is available for residents about the impacts of cats and dogs	1	Parks/ Communication Team		Ongoing

		on native wildlife and ways to reduce these impacts				
3.3	Ensure domestic animals regulations are kept up to date and enforced	Work with Local Laws to ensure compliance to regulations regarding domestic animals near/within NRAs	3	Parks/ Local Laws		Annual meetings between Parks & Local Laws to address issues
3.4	Ensure Kingston residents are aware of responsible pet ownership behaviours	Council to continue to advise pet owners of responsible ownership through ongoing promotion and engagement with the community	1	Local Laws		Ongoing

12. List of Terms

DELWP – Department of Environment, Land, Water and Planning

EVC – Ecological Vegetation Class

GIS – Geographic Information System

MW – Melbourne Water

NRA – Natural Resource Area

PV – Parks Victoria

VQA – Vegetation Quality Assessment

VMP – Vegetation Management Plan

VMT – Vegetation Management Target

VMZ – Vegetation Management Zone

13. Glossary

Annual weed – plant that completes its life cycle (from seedling to seeding) within one year

Perennial weed – weed that continues to regrow over two or more seasons

Woody weeds – woody perennials which have established in NRAs outside their natural range

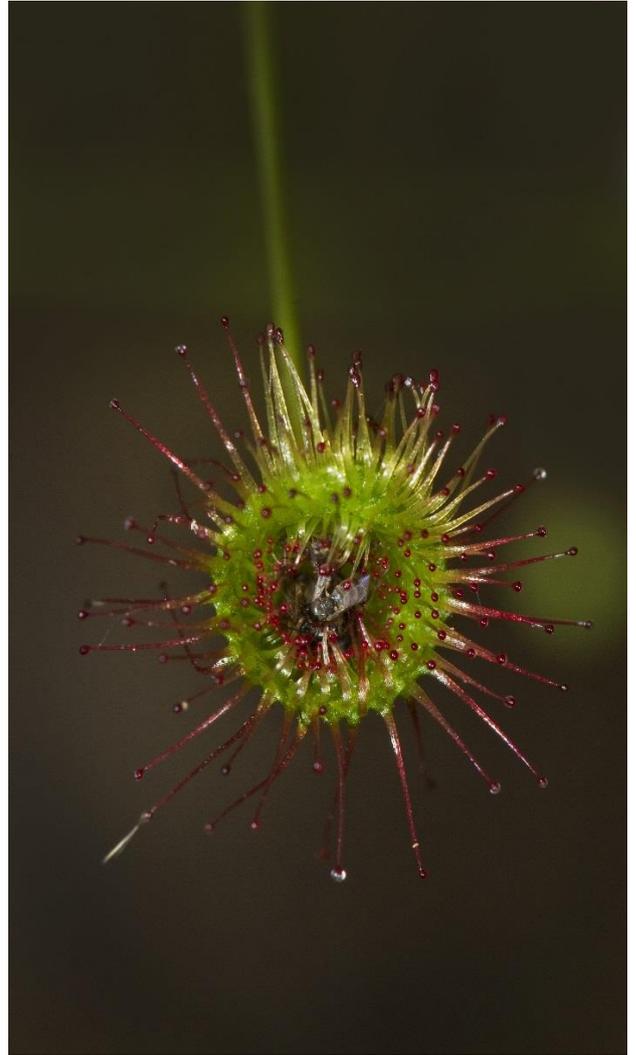
Climbers and vines – plants that derives support from climbing, twining, or creeping along a surface (any plant having a long, slender stem that trails or creeps on the ground or climbs by winding itself, clinging or holding fast with tendrils or claspers)

Geophyte – perennial plant propagated by buds on underground bulbs, tubers or corms

Habitat – the natural home or environment of an animal, plant, or other organism

Indigenous – locally native

Back cover photos Top left: Grey Billy-buttons *Craspedia canens*. Top right: Climbing Sundew *Drosera macrantha* with insect.
Bottom: Bull Ant *Myrmecia* Spp. organising lunch.





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