

# Bushland Strategy



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# Contents

Aims of bushland management	3
Introduction	3
Climate	5
Geology and geomorphology	5
The original 'Sandringham Flora'	6
Planning scheme classification	8
Management issues	9
<i>Ecological relationships</i>	9
<i>Fire ecology</i>	9
<i>Fire prevention</i>	10
<i>Significant vegetation</i>	11
<i>Biological impacts of weeds</i>	11
<i>Hybridisation</i>	11
<i>Indigenous fauna</i>	12
<i>Feral animals</i>	12
<i>Domestic animals</i>	13
<i>Hydrology</i>	13
<i>Pollution</i>	13
<i>Run-off</i>	14
<i>Partnerships</i>	14
<i>Detrimental uses and conflict of use</i>	14
Balcombe Park	15
Long Hollow Heathland	16
Bay Road Heathland Sanctuary	17
George Street Reserve and Merindah Park	18
Gramatan Avenue Heathland Sanctuary	19
Donald MacDonald Reserve	20
Endnotes	21
Bibliography & references	21
Bayside's Open Space Management Framework	22



**The following is a summary of management aims identified in the Strategy:**

1. Minimal nutrient input and low perimeter to area ratios.
2. Use various techniques to remove coast tea tree and coast wattle from defined heathland areas.
3. Use fire to manage heathland vegetation by timing burns to create a mosaic of heathland ages at the expense of Coast Tea-tree and Coast Wattle.
4. Use various techniques to encourage the diversity of heathland species in defined heathland area.
5. Minimise fire risk to the satisfaction of the MFESB.
6. Consider vegetation as a sustainable ecosystem, with the clear understanding that this will require unsustainable practices, such as weed control, additional planting and artificial propagation at nurseries.
7. Retain important remnants of Bayside's original vegetation and seek to have these recognised by other/higher tiers of government.
8. Minimise the impact of weeds in bushland areas by containing then reducing the cover of weeds.
9. Maintain the genetic diversity through protecting genetic integrity of individual populations within each bushland, and enhancing diversity of those individual populations where elements have disappeared.
10. Protect biodiversity and encourage fauna appropriate to any area by:
  - maintaining and enhancing habitat
  - promoting monitoring, research and subsequent action, and
  - reintroducing lost fauna where appropriate.
11. Minimise the impact of foxes and rabbits through a combined process to be determined.
12. Educate dog and cat owners of their roles and responsibilities.
13. Understand better the hydrology of bushland areas and seek to recreate pre-existing conditions where possible.
14. Manage pollution by:
  - planting buffer zones to minimise traffic noise
  - educating nearby residents and the wider community to their responsibilities with respect to rubbish dumping
  - using guidelines for Council operations for chemical application that minimises usage and strives for sustainability.
15. Minimise run-off by ensuring abutting properties have adequate stormwater management.
16. Build partnerships with other stakeholders by:
  - establishing habitat corridors that link bushlands, private and public space to the foreshore and beyond
  - including requirements for vegetation management sympathetic to the Bushland Strategy in all leases of proximate Council properties
  - collating all studies carried out in bushlands in one central repository.
17. Reduce the impact of an activity that is incompatible with heathland management objectives.

# Introduction

The bushlands within Bayside play a substantial role in Bayside's open space network. They provide important 'green' links or belts containing significant remnants of indigenous flora within otherwise locally fragmented native vegetation.

The bushlands provide a key element of the visual identity of Bayside.

These belts provide refuge and habitat for indigenous fauna and serve as 'island sanctuaries' within an increasingly urban environment. Together with other small tracts adjoining sporting reserves golf courses and other large private and public tracts of land, they are significant environmental, educational and recreational resources for Bayside.

The potential conflict between recreational use and environmental conservation requires education, public awareness and enforcement to be high priorities. Council is committed to a program of conservation management that includes community involvement that manifests itself in support of local Friends Groups at many bushland reserves.

This strategy forms part of the Bayside Open Space Management Framework as detailed on the back page of this document. Its purpose is to establish management objectives for the Bayside Bushlands system.

## Cultural History

The first people to inhabit the Bayside area were the Boonerwung<sup>1</sup> tribe of Aborigines, whose territory extended along the coast from Anderson's Inlet in Gippsland and around the shores of Western Port and Port Phillip.

Here the Boonerwung people hunted for kangaroos, wallabies and many of the other abundant local fauna and flora<sup>2</sup>.

Fire was regularly used as a hunting tool to drive game, encourage new regrowth, attract animals and improve access. The arrival of Europeans saw a disruption to the fire regimes instigated by the Boonerwung.

Upon arrival, Europeans began to change the face of the region. From the late 1800s, the heath, woodlands and swamps began to disappear making way for market gardens, poultry farms and housing subdivisions. Flowers and firewood were collected from the native vegetation that remained.

# Natural Environment

## Climate

As most of the bushland areas are centred on Sandringham–Beaumaris, climatic data has been taken from two of the Bureau of Meteorology’s weather stations. Rainfall data has been taken from Beaumaris<sup>3</sup>; temperature data has been taken from Moorabbin Airport<sup>4</sup>. The average total rainfall for Beaumaris is 696 mm. Whilst climate patterns are discernible, the area can be best described as mild.

## Geology and geomorphology

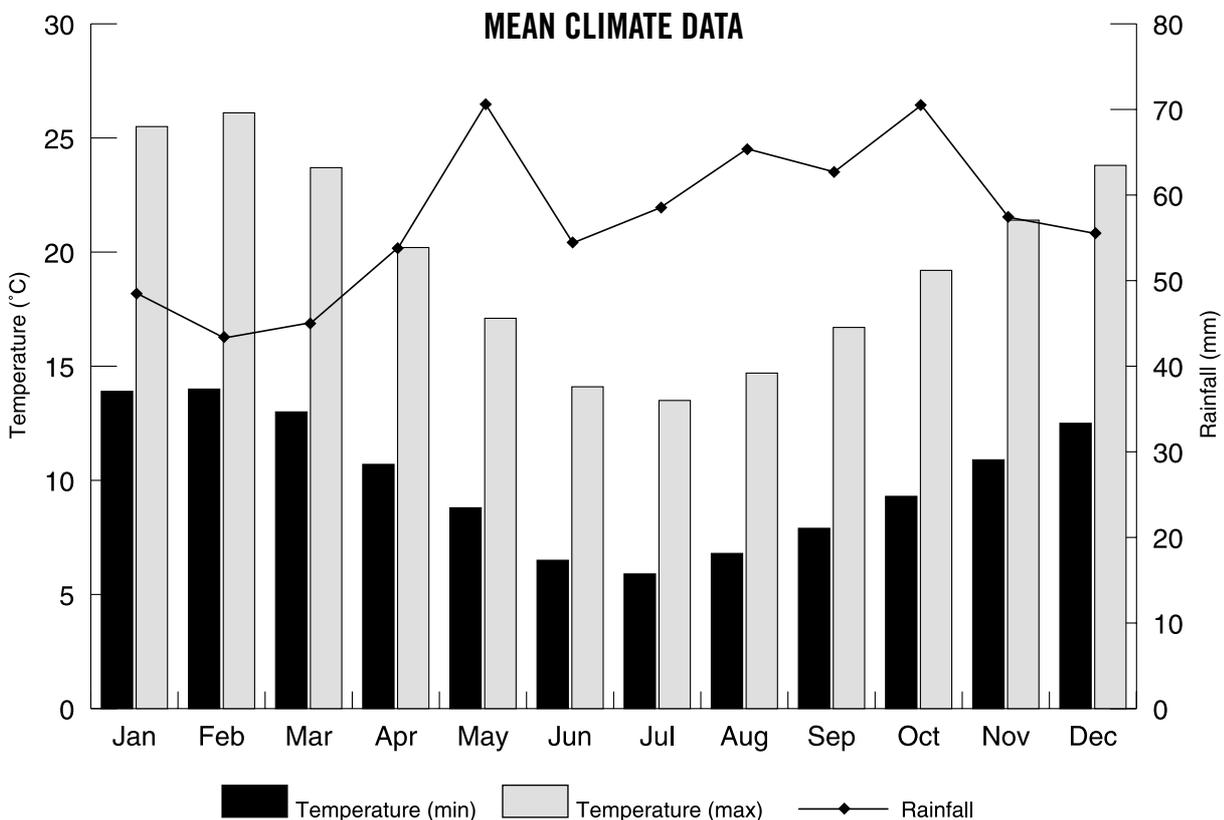
### BAYSIDE REGION

During the Pleistocene epoch, two million years ago, global sea levels dropped with the onset of an Ice Age. As the sea level retreated from the land now forming Port Phillip Bay, it exposed the sand that had been deposited

by the prevailing northwesterly winds. The sand-ridges that resulted over time, became stabilised and vast woodlands formed on these elevated dunes. Swamps formed between the dunes, which were slowly drained as the water table fell due to the retreating sea (Bird 1990).

### THE BEAUMARIS AREA

The Beaumaris area, within which the majority of heathlands exist, consists of Black Rock Sandstone of Miocene age overlain by Pliocene Red Bluff Sandstone formation. The surface of the land in this area consists of the ferruginous-calcareous sand ridges formed during the Pleistocene times. Some swamp and lagoonal deposits, in the form of clays, silts and muds exist as a result of water becoming trapped between the dunes (Bird 1990).



# Natural Environment

## SOILS, TYPOGRAPHY, VEGETATION

### SOILS

The eastern bayside suburbs of Port Phillip Bay are characterised by sandy soils. These soils are derived from tertiary sandstone and more recently, dune deposits resulting from fluctuating sea levels. The tertiary sandstones are of two main types: Black Rock Sandstone—a dark red/brown colour and rich in iron and Red Bluff Sandstone, which overlies the Black Rock Sandstone and is softer.

The Quaternary sands of the Beaumaris region consist of both marine and non-marine sands, (*Melbourne Geological Map Series*). These sands are low in nutrients and traditionally are only able to support vegetation requiring low levels of nitrates and phosphates. The dark brown surface of these soils indicates a high organic content.

### TOPOGRAPHY AND HYDROLOGY

The Bayside district was once was part of a widespread swamp system that covered the region, a combination of swales and hollows, containing streams and swamps. There are no longer any permanent areas of open water present in any of the heathlands as swamps have long been drained and streams redirected to underground drains during the settlement and development of the area. Ephemeral water patches in Balcombe Park and Long Hollow Heathland are all that remain of the swamp system today.

### The Original Sandringham Flora

The early settlers James and Susannah Moyses, recorded the earliest description of the vegetation in Black Rock, Beaumaris, Cheltenham and Mentone in 1844: ‘The land was lightly wooded with gum and wattle trees. Heath predominated among the native grasses, and in springtime the place was

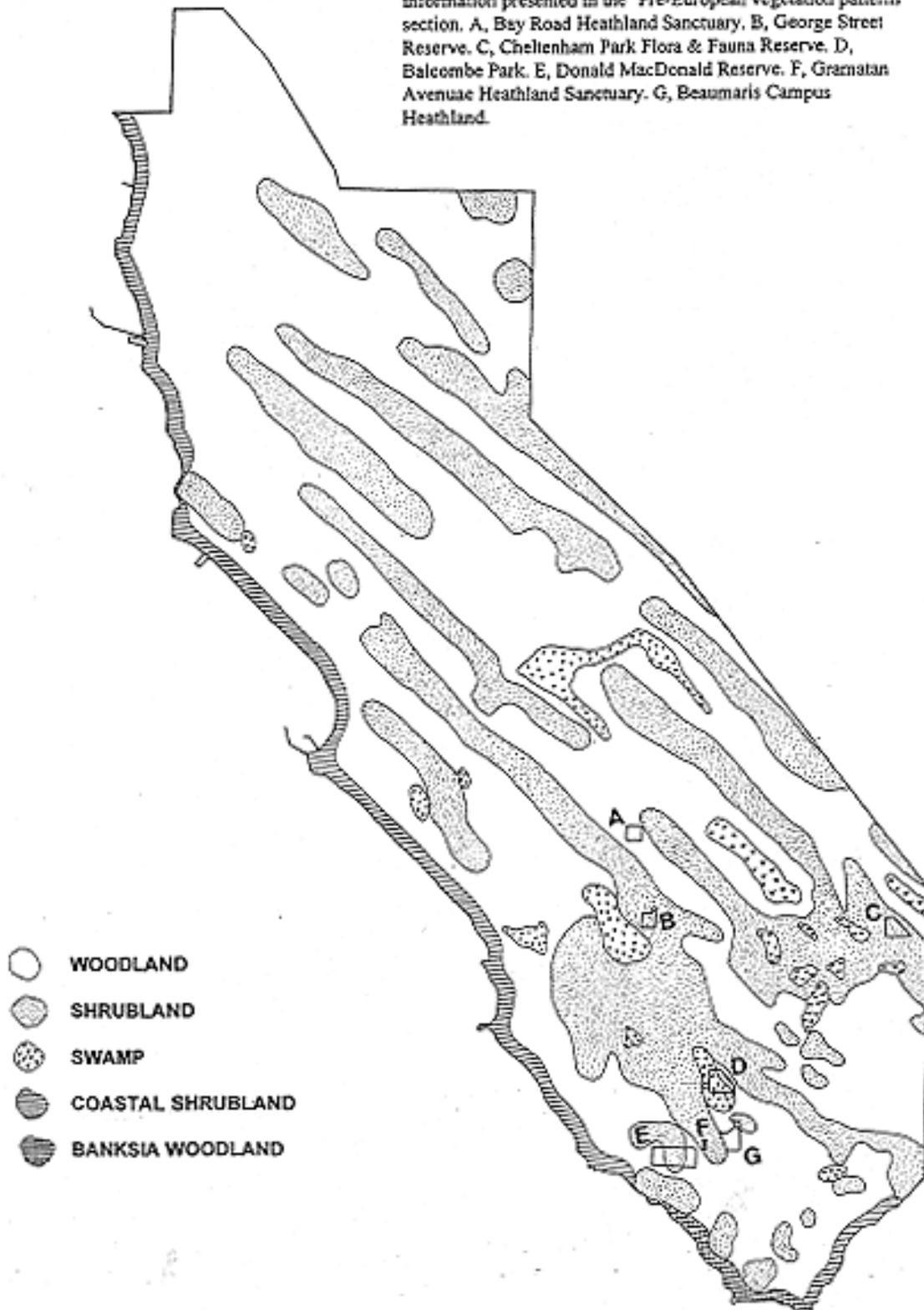
beautiful with wildflowers’ (Fletcher 1988).

Prior to European settlement, Bayside is considered to have included four main vegetation types—heathland, woodland, swamps and coastal vegetation. In 1911–12, Dr. Sutton, a member of The Field Naturalists Club of Victoria, compiled a thorough census of the ‘Sandringham Flora’ naming 448 plant species.

Cropper (1996) provides an excellent discussion of pre-European vegetation of Bayside, including a vegetation distribution map (see Figure 1). This map indicates that the heathland areas supported mostly woodland, with a smaller area of scrubland/heathland. Since 1911, some 260 (60 per cent) species have disappeared from this vegetation community and of those species remaining, a number are considered rare on the metropolitan scale (Fletcher 1988).

‘Sandringham flora’, the term used to describe the indigenous vegetation of the sand-belt region, was mainly heathland. Heathlands are a fire-adapted community, regenerating from buried root stocks or seeds after fire. They consist of a diversity of shrubs up to two metres tall, which have evergreen leaves and extensive root systems (Specht 1981), with herbaceous and grass species making up the ground cover. Locally the heathlands contained an abundance of orchids. A wide range of fauna including birds, mammals, reptiles and insects coexisted with the original vegetation in self-sustaining ecosystems.

Figure 1: Vegetation communities and their distribution within the City of Bayside prior to European Settlement based on geological, topographical and anecdotal information. (see information presented in the 'Pre-European vegetation patterns' section. A, Bay Road Heathland Sanctuary. B, George Street Reserve. C, Cheltenham Park Flora & Fauna Reserve. D, Balcombe Park. E, Donald MacDonald Reserve. F, Granatan Avenue Heathland Sanctuary. G, Beaumaris Campus Heathland.



# Planning Scheme

## CLASSIFICATION

### **Planning Scheme Classification**

Upon the amalgamation of the cities of Sandringham and Brighton in 1994, with the inclusion of small sections of the Cities of Moorabbin and Mordialloc, all reserves and heathlands became the property of Bayside City Council. The size of many of these within Bayside provides excellent opportunities for the conservation of important vegetation in the municipality.

Council's bushland management strategies, detailed in the Municipal Strategic Statement, are implemented by:

- applying the Public Park and Recreation Zone to public open space reserves
- applying the Special Use Zone to private golf courses
- applying a Vegetation Protection Overlay to the Bayside Coast and Bayside Bushland Areas—Donald MacDonald Reserve, Gramatan Avenue Heathland Sanctuary, Long Hollow Heathland, Bay Road Flora Reserve, Cheltenham Park Flora & Fauna Reserve, George Street Reserve and Balcombe Park Reserve.



### Ecological relationships

The native plant communities found in the Bayside area are adapted to surviving in nutrient deficient, sandy soils. Heathland habitat is very susceptible to ecological disturbance. A small change in hydrology (water-balance), soil nutrient level (due to frequent fires of waste products), soil fungi (either beneficial mycorrhizal species or root pathogens like *Phytophthora cinnamomi*) can change the nature of the vegetation within a decade. Inadvertent actions taken both outside and within reserves can produce these subtle changes which will lead to the extinction of fragile heathland flora (Specht 1981).

The heathland vegetation is dependent upon two main factors for its ongoing viability:

- a suitable fire regime to stimulate regeneration and to maintain the maximum diversity of species
- reduction in competition from both exotic plants and those indigenous species (such as bracken, dodder laurel and burghan) able to dominate.

Bayside's bushland areas are susceptible to a disturbance known as 'edge effect'<sup>5</sup>. This is where the perimeter to area ratio is high, allowing external factors to influence the internal environment<sup>6</sup>.

The mature stands of Coast Tea-tree (*Leptospermum laevigatum*) present in heathlands and reserves, illustrate the potential that this species has for dominating other vegetation. Very few plant species are able to grow beneath the Coast Tea-tree<sup>7</sup>. This restricts weed growth and heathland growth. Both Coast Tea-tree and Coast Wattle (*Acacia sophorae*), while indigenous to the Sandringham area, are not considered original

members of the heath vegetation. They are regarded as very serious weed species both locally and elsewhere in Victoria.

*Bushland management aims at:*

- minimal nutrient input and low perimeter to area ratios, and
- using various techniques to remove coast tea tree and coast wattle from defined heathland areas.

### Fire ecology

The heathland and woodland communities present in heathlands are composed of species that are adapted to fire. The above ground vegetation may be destroyed or damaged, but the species present are able to regenerate. This is achieved in four main ways:

- buried rootstock which reshoots
- reshooting of epicormic buds
- germination of soil stored seed
- release and subsequent germination of plant-stored seed.

Coast Tea-tree is killed by fire and regenerates by releasing an accumulated supply of viable seeds. After fire, regeneration from seed is prolific (Burrell 1969).

Fire at specific intervals and seasons can eliminate or promote Coast Tea-tree from heathland and woodland. The effects of fire on heath and Tea-tree communities at three different time intervals is outlined by (Burrell 1969):

1. Fires less than five years apart kills Coast Tea-tree (*Leptospermum laevigatum*) before it has set seed and in turn eliminates it from the heath. This may also eliminate heath species.
2. Fires 5–20 years apart, particularly 12–20 years, allow for an increase of Coast Tea-

- tree in a heath already infested and a spread of Coast Tea-tree by windblown seed into heaths not previously invaded.
3. Greater than 20 years apart allow time for the Coast Tea-tree to overtop and suppress the heath species.

The season in which a fire occurs also effects Coast Tea-tree regeneration. The plants flower in late spring, between August and November. Natural seed germination is in winter: from May to October. Because Coast Tea-tree seed is shed after a fire, it is on the ground until May when germination takes place. Thus the proportion of Coast Tea-tree seed germinating after a spring fire (Oct–Nov) would be less than that of a late summer fire (Feb–March), as the seed would be on the ground longer and more prone to predation. Also Coast Tea-tree seeds are destroyed by fire. Taking these factors into account, the timing and interval between fires can be used in heathland or Coast Tea-tree regeneration.

The fire regime also effects weeds, as some species are germinated by fire. Weeding of a site in the first six months after fire is critical for the long-term survival of indigenous species (Molnar, et al 1989). Burning of a site for regeneration should only be carried out when post-fire hand weeding can be guaranteed for a minimum of 2 years.

The use of fire at heathlands is influenced by the following issues:

- the previous burns at the heathland have resulted in regeneration of heathland and wet heath species
- the extensive mowing regime and the previous fires have created a mosaic of age groups of heathland, with the oldest vegetation being at least 26 years old
- the impact of fire on the significant species is unknown
- many areas were in the past dominated by Coast Tea-tree and this species retains its potential to dominate
- for regeneration of the heath and woodland vegetation, seedling survival is a major priority. The intensity of fire can also have impact upon regeneration and safety. This suggests that a late summer/early autumn burn is the most appropriate although public safety may require a later burn.

Consideration of these issues suggests:

- the areas recorded unburnt since the 1970s should have a higher priority for burning in the short and medium term, to revitalise the indigenous vegetation
- more information is required regarding the potential impact of fire upon orchids and other significant species
- removal of Coast Tea-tree from heath areas is a valuable management tool.

*Bushland management aims to:*

- *use fire to manage heathland vegetation by timing burns to create a mosaic of heathland ages at the expense of Coast Tea-tree and Coast Wattle*
- *use various techniques to encourage the diversity of heathland species in defined heathland areas.*

### Fire prevention

Much of the vegetation of heathlands is flammable. Roads, ovals and firebreaks protect nearby houses around most heathlands. The Metropolitan Fire & Emergency Services Board carry out an annual review of fire risk. Council is obliged to act upon any recommendations arising from that review.

## SIGNIFICANT VEGETATION, WEEDS AND HYBRIDISATION

Fire suppression is of high priority in protecting those homes within close proximity. Unplanned fires have been extinguished as soon as possible. Allowing these fires to burn may have resulted in more successful regeneration, without compromising safety.

*Bushland management aims to minimise fire risk to the satisfaction of the Metropolitan Fire & Emergency Services Board.*

### Significant vegetation

All bushland areas include vegetation of significance (see below).

*Bushland management aims to consider vegetation as a sustainable ecosystem, with the clear understanding that this will require unsustainable practices, such as weed control, additional planting and artificial propagation at nurseries.*

Larger remnants of this flora are widely recognised by botanists as important and have been described as being of state significance, e.g. Cropper. Except as described in relation to the Planning Scheme these remnants are not officially recognised. There are opportunities to register these sites at the State and Federal level<sup>8</sup> that should be pursued.

*Bushland management aims to retain important remnants of Bayside's original vegetation and seek to have these recognised by other/higher tiers of government.*

### Biological impacts of weeds

Carr et al (1992) indicates that invasion by weed can alter both function and structure of ecosystems in a number of ways. Weeds compete with indigenous plants for resources such as water, nutrients and light. Production

of toxic plant exudates (*allelopathy*) is also a factor in the success of some weed species such as Sweet Pittosporum (*Pittosporum undulatum*). Synergistic effects associated with, for example, soil disturbance, grazing and mowing also compound the problem.

Competition also prevents the regeneration of the indigenous flora. Seed germination may be prevented because unfavourable conditions prevail, even where there is an available seed source, particularly as soil-stored seed, or seedlings may fail to survive because of competition.

*Bushland management aims to minimise the impact of weeds in bushland areas by containing then reducing the cover of weeds.*

### Hybridisation

Exotic species or forms may have the potential to hybridise with in situ indigenous species where they are brought into contact by deliberate or accidental introduction. The resultant hybrids can out compete the indigenous population of the species and possibly cause their elimination. This is particularly significant in respect to rare species. Foreign genetic provenances of indigenous species, introduced for revegetation or other purposes, may also cause 'genetic pollution' with unknown consequences.

*Bushland management aims to maintain the genetic diversity through protecting genetic integrity of individual populations within each bushland, and enhancing diversity of those individual populations where elements have disappeared.*

### Indigenous fauna

Animals are vital to the health of ecosystems<sup>9</sup>. Pavey (1966, Table 4.1) ranked many heathlands in Bayside as principal habitat mainly due to the high diversity of birds and, in some cases, reptiles. His definition of principal habitat was ‘an area that provides habitat (roosting, breeding or feeding) for one or more significant species of fauna during any stage of their life cycle, and/or supports a high to very high diversity of native species of any particular faunal group.’

More recent wildlife studies suggest that all the heathlands and the Royal Melbourne and Sandringham golf courses are principal habitat. Ground-dwelling native mammals [Dasyurids] survive at Balcombe Park, a scorpion has been found at Long Hollow, and both golf courses hold at least four species of frog as well as many bird species, especially so in the case of the Royal Melbourne<sup>10</sup>. There is little known about other fauna such as small skinks, bats and insects.

Native faunal species have a range of requirements for survival and contribute to the ecological health of bushlands in many ways. However not all native fauna now found in heathlands is beneficial<sup>11</sup>.

*Bushland management aims to protect biodiversity and encourage fauna appropriate to any area by:*

- *maintaining and enhancing habitats*
- *promoting monitoring, research and subsequent action, and*
- *reintroducing lost fauna where appropriate.*

### Feral animals

Pest fauna is present in many of the heathland areas, as urban development has led to common household pests finding habitat in and around these areas. The presence of domestic animals including dogs and cats is evident by the amount of faeces in heathlands. Foxes (*Vulpes vulpes*) and rabbits (*Oryctolagus cuniculus*) are also present and it is assumed both the Black Rat (*Rattus rattus*) and the House Mouse (*Mus musculus*) could be found within heathlands, as they are common in the metropolitan area. Exotic fauna and insects can also be found in gardens in adjoining properties.

Pest species impact on heathland ecological communities in the following ways:

- displacing indigenous fauna
- predation of indigenous fauna—a major cause of population decline
- creation of warrens and dens—disturbing soils and flora
- competition for shelter and food—affecting fauna such as birds, amphibians and reptiles
- altering heathland vegetation—through selective browsing of plant seedlings and spreading weeds
- invertebrate pests such as slugs and snails can have significant impact on plant species.

Pavey (1996) lists pest fauna species as one of the three main causes of the change in faunal distribution and diversity in Bayside. Control of introduced species is difficult within urban areas, and within heathlands in particular, as control methods such as baits and fumigants cannot be used due to the threat to domestic animals and people. Therefore limited options are available to successfully control or eliminate introduced species.

*Bushland management aims to minimise the impact of foxes and rabbits through a combined process to be determined.*

### **Domestic animals**

The presence of domestic pets, particularly dogs, can result in unacceptable levels of faeces throughout heathlands, if owners are not responsible about this issue. As a result, high levels of nutrients may be released into the soil, making conditions suitable for weed invasion. A potential health risk is also associated with animal excreta.

Cats can have a major impact on native fauna through predation. There is also serious concern that the spread of disease from cats can be a major cause of population decline in native animals (Dickman 1993). The presence of cats and dogs may have a number of impacts on indigenous wildlife:

- chasing and hunting can lead to stress as well as physical harm or death
- native fauna can be displaced by territorial scents laid down by dogs and cats
- disturbance of nesting or foraging animals
- increased nutrient levels resulting from faeces
- disturbance caused by digging of holes can lead to increased weed invasion
- native animals may be affected by disease carried by domestic animals.

Under the Domestic (Feral and Nuisance) Animal Act of 1994 all cats and dogs are now required to be registered. There may be merit in restricting dog and cat movement in areas near bushlands.

*Bushland management aims to educate dog and cat owners of their roles and responsibilities.*

### **Hydrology**

Urban development has altered local hydrology. A swamp system was once widespread in the Bayside region but was drained for residential development. Open water exists in some heathlands for no more than a couple of months of the year, although this does not always occur. Among other things, the dieback in the Eucalypt species may be the result of this altered hydrology.

*Bushland management aims to better understand the hydrology of bushland areas and seek to recreate pre-existing conditions where possible.*

### **Pollution**

Noise pollution noted in many heathlands derives from local traffic. Apart from an annoyance to visitors the noise may induce fright and stress in indigenous fauna.

Heathlands bordered by residential development are faced with associated household pollutants. These may include household rubbish—in any shape or form, herbicides, garden refuse, broken glass and dog excreta. Rubbish dumping detracts from the visual quality of heathlands, can result in accidents if young children or unwary users come into contact with sharp objects and can also have negative impacts on both flora and fauna. For example, garden clippings act as a vector for weed infestation, increasing competition with indigenous plant species causing reduced diversity.

Chemicals used by Council and neighbours could potentially have adverse impacts upon heathlands. Up to date information is required at all times to determine safe usage of chemicals within heathlands.

# Issues

## RUN-OFF, PARTNERSHIPS, DETRIMENTAL USES & CONFLICT OF USE

Bushland management aims to manage pollution by:

- planting buffer zones to minimise traffic noise
- educating nearby residents and the wider community to their responsibilities with respect to rubbish dumping
- using guidelines for Council operations for chemical application that minimises usage and strives for sustainability.

### Run-off

Run-off from buildings, golf courses and oval facilities into remnant vegetation could potentially contain harmful substances such as herbicides, pesticides, weed seeds and fertilisers.

Increased nutrient levels are harmful as they can increase the potential for weed invasion, many weed species being able to utilise the increased nutrients. This is also detrimental to heathland species as increased nutrients may cause premature senescence in heathland species.

*Bushland management aims to minimise run-off by ensuring abutting properties have adequate stormwater management techniques.*

### Partnerships

Heathland reserves within Bayside are all in close proximity to both each other and the public and private golf courses and play an important role in creating a vegetation corridor.

Education institutions regularly use bushlands for their studies. The opportunity is there to build a library of studies on Bayside's bushlands.

*Bushland management aims to build partnerships with other stakeholders by:*

- *establishing habitat corridors that link bushlands, private and public space to the foreshore and beyond*
- *including requirements for vegetation management sympathetic to the Bushland Strategy in all leases of proximate Council properties*
- *collating all studies carried out in bushlands in one central repository.*

### Detrimental uses and conflict of use

'Cubby-house' building presents a problem due to destruction of vegetation, accumulation of rubbish and disturbance, increasing the potential for weed invasion.

Non-use of the path system by both pedestrians and cyclists can lead to trampling of vegetation, disturbance to fauna and the development of informal pathways, which then leads to more intensive usage and increased impact.

The concept of stronger path identification—and implicit 'no-go' areas beyond those paths—is a key management technique to resolve this conflict.

*Bushland management aims to reduce the impact of an activity that is incompatible with heathland management objectives.*

# Balcombe Park

Balcombe Park is a five sided area located on Balcombe Road, Beaumaris. Council purchased the land in 1933 although the purpose for which the reserve was purchased is unknown. The park frontage is approximately 210 m long and has an area of approximately 3.4 hectares. This area was once part of a swamp system that covered much of the region.

Pink Swamp Heath (*Sprengelia incarnata*), Swamp Paperbark (*Melaleuca ericifolia*) and/or Scented Paperbark (*Melaleuca squarrosa*) dominated the original vegetation of Balcombe Park. The northeast edge of the reserve was heathy woodland probably dominated by River Red Gums (*Eucalyptus camaldulensis*), Swamp Gum (*E. ovata*) and/or Coast Manna Gum (*E. pryoriana*). There are 22 significant plant species recorded for the reserve, four of which are only found here—Common Apple-berry (*Billardiera scandens*), Pink Fairies (*Caladenia latifolia*), Austral Indigo (*Indigofera australis*) and Ivy-leaf Violet (*Viola hederacea*).

Currently, two types of vegetation communities can be defined:

1. Low closed forest—three sub-communities exist within this type. Community 1 is located mainly on the western side of the reserve and consists of a dense overstorey of mature Coast Tea-tree (*Leptospermum laevigatum*) with scattered Coast Wattle (*Acacia sophorae*). The dense understorey consists mainly of weed species with some heath species present as well. Community 2 consists of a natural wet soak area, a remnant of the swamp system. This has a natural ephemeral water regime that is dependent upon the catchment of the surrounding area. Community 3, located mainly on the eastern side, also contains mature Coast Tea-tree with a significant number of Sand-hill Sword-sedge (*Lepidosperma concavum*) in the understorey. Several indigenous orchid colonies are scattered amongst the Coast Tea-tree and in the heathland area.
2. Open heath—this vegetation resulted from extensive regeneration following a wildfire in February 1992. Over 100 indigenous species have been recorded in this area, including a several species which occur in no other location within the municipality and several species which were considered locally extinct until their reappearance here. The vegetation is dominated by Silky Guinea Flowers (*Hibbertia sericea*), Twiggy Daisy bush (*Olearia ramulosa*), Heath Tea-tree (*Leptospermum myrsinoides*) and Common Correa (*Correa reflexa*) and is considered to be of local, regional and state significance.



# Long Hollow Heathland

Long Hollow Heathland is located adjacent to the Beaumaris Campus of the Sandringham Secondary College in Reserve Road, Beaumaris. Uneven in shape, the area covered is approximately 2.2 hectares with a gradual slope from north to south and from the northeast to the southwest. The heathland is Crown Land owned by the Department of Natural Resources and Environment (DNRE). Bayside City Council has been appointed as committee of management for the heathland. Details of the management history are provided overleaf [where??]

Long Hollow Heathland is the site of the most diverse single remnant of the noted 'Sandringham Flora'. It is a popular local reserve with an active Friends Group and plays a key role in Bayside's bushland and open space network, containing woodlands of regional significance and heathland of state significance, as well as a rare collection of wet heath species. It is the only reserve in the municipality with woodland vegetation and is also the sole location for 28 plant species. 21 regionally rare species can also be found in the heathland. A high diversity of birds also exists within the heathland.

The original vegetation of the heathland has been determined as containing woodland, heathland and some wet heath vegetation. The area is presently covered in remnant vegetation comprising heathland, woodland and even-aged stands of Coast Tea-tree (*Leptospermum*

*laevigatum*). The dominant trees in the low woodland (<10m) are Coast Manna Gum (*Eucalyptus pryoriana*) and Swamp Gum (*Eucalyptus ovata*). The understorey is comprised of heath species. This is the only location in the municipality where this community can be found.

The heathland occupies the majority of area and is represented by a mosaic of age groups resulting from a series of fires. It is usually dominated by Silky Guinea-flower (*Hibbertia sericea*), Twiggy Daisy-bush (*Olearia ramulosa*), Silky Tea-tree (*Leptospermum myrsinoides*) and/or Common Correa (*Correa reflexa*). 12 species of indigenous orchids have also been identified within the heathland.

There are no areas of open water present in the heathland. However, there is an area on the eastern side of the heathland that periodically becomes boggy. A boardwalk was built in 1995 to enable access to this area when it is wet, as well as providing protection to the vegetation from trampling.

Long Hollow Heathland has a varied fire history—it may have been effected by large-scale fires which occurred in Beaumaris in 1944 and possibly by a fire in the reserve in the 1970s (1976?). In addition four controlled burns have been carried out from 1984–1987 and an unplanned grass fire burned a section of the heathland in 1992.



# Bay Road Heathland Sanctuary

Bay Road Heathland Sanctuary is the largest closest remnant of coastal vegetation to the central business district of Melbourne and as such has local, regional and state significance. The sanctuary is located on Bay Road in Sandringham. It is approximately 2 hectares in size. The sanctuary has a gentle slope running from northeast to southwest and the elevation ranges from approximately 32.5m to 40.5m.

Two very small ponds have been installed within the sanctuary to both provide water sources for indigenous fauna and to increase habitat for wet heath vegetation. Bay Road Sanctuary fauna has both municipal and regional significance as the sanctuary has a high diversity of birds including the locally endangered Superb Fairy-wren as well as a breeding population of Blotched Blue-tongue lizards (*Tiliqua nigrolutea*) which are regionally uncommon. There are 21 significant plant species recorded for the sanctuary, four of which—Hop Wattle (*Acacia stricta*), Creeping Raspwort (*Gonocarpus micranthus* ssp. *micranthus*), Slender Knotweed (*Polygonum minus*) and Small-leaf Bramble (*Rubus parvifolius*)—have in the last 50 years been seen there but nowhere else.

The original vegetation consisted of heathy woodland, low shrubland or open-heath. The vegetation community comprising of Silky Tea-tree (*Leptospermum myrsinoides*) heath, once widespread and abundant, is now rare regionally and very rare locally. As such, the open-heath

vegetation is of state significance. Seven species occurring within the Reserve are regionally significant: Green Sheoak (*Allocasurina paradoxa*), Common Aotus (*Aotus ericoides*), Showy Bossiaea (*Bossiaea cinerea*), Common Wedge-pea (*Gompholobium huegelii*), Bundled Guinea-flower (*Hibbertia prostrata*), Wedding Bush (*Ricinocarpos pinifolius*) and the Small Grass-tree (*Xanthorrhoea minor*).

Currently, four types of vegetation communities can be defined, although bracken is dominant in many parts:

- Open heath dominated by Silky Guinea-flower (*Hibbertia sericea*), Twiggy Daisy-bush (*Olearia ramulosa*), Silky Tea-tree (*Leptospermum myrsinoides*) and Common Correa (*Correa reflexa*);
- Open scrub consisting of Hedge Wattle (*Acacia paradoxa*) and Coast Tea-tree (*Leptospermum laevigatum*);
- Open forest of Black Wattle (*Acacia mearnsii*) with a scrubby middle-storey dominated by Coast Tea-tree (*Leptospermum laevigatum*);
- Low closed forest of Coast Tea-tree (*Leptospermum laevigatum*).

Three fires have occurred in the sanctuary since its reservation. These fires, particularly 1994, stimulated regeneration of heathland species both from underground root stock and soil stored seed. This regeneration is considered to be of good diversity but is threatened by too frequent fires.



# George Street Reserve & Merindah Park

George Street Reserve is a vegetated block covering 6.25 hectares located on the corner of George and Tulip Streets in Sandringham. Abutting this reserve is Merindah Park which stretches from George Street Reserve to the Sandilands Estate and then [on] to Holloway Road. Council purchased the George Street Reserve block in 1924. Merindah Park, comprising of several blocks were purchased in 1948 and were acquired for the purposes of providing a green belt (hence the former name) between industries and residences, creating both a physical and visual vegetative buffer. This in turn provides a valuable area of remnant vegetation and habitat.

The vegetation community provides significant structural and floristic components for fauna and as a result, George Street Reserve is considered to contain a high diversity of bird species and a moderate diversity of reptile species. There are 20 significant plant species recorded from this reserve, three of which found nowhere else in Bayside—Shiny Cassinia (*Cassinia longifolia*), Indian Cudweed (*Gnaphalium polycaulon*) and Snowy Mint-bush (*Prostanthera nivea*).

The original vegetation of the area consisted of heathy shrubland, non-coastal vegetation of the Bayside area largely a Green Sheoak (*Allocasurina paradoxa*)/Silky Tea-tree (*Leptospermum myrsinoides*) heath community. Currently an even-aged Coast Tea-tree

(*Leptospermum laevigatum*) community with scattered Coast Wattle (*Acacia sophorae*) and Manna Gum (*Eucalyptus pryoriana*) dominates the area. Although much of the understory contains exotic grasses, some indigenous species still exist. Species such as Sand-hill Sword sedge (*Lepidosperma concavum*), Flax lilies (*Dianella spp.*), Mat Rush (*Lomandra spp.*), Showy Bossiaea (*Bossiaea cinerea*) and Small Grass-trees (*Xanthorrhoea minor*) can be found.

There are however, pockets of indigenous heath that have regenerated after fire. There have been several fires in the George Street Reserve. A burn in 1976 produced a small area of heathland with relatively low species diversity. This area is situated next to a firebreak on the western side of the reserve and as such is susceptible to weed invasion or 'edge effect'. However, this heath contains at least one heathland species, Silver Banksia (*Banksia marginata*) that does not occur in the main heathland area that resulted from the 1984 wildfire. It also supports small colonies of terrestrial orchids.

The area burnt by wildfire in 1984 contains a diverse heathland community, following intense hand weeding of the burn site. This heathland is high in species richness and extended beyond the original burn site, which would suggest that natural regeneration is also occurring. However, currently 15 years old, some species are beginning to senesce, allowing gaps to appear in the vegetation.



# Gramatan Avenue Heathland Sanctuary

Gramatan Avenue Sanctuary is located between Gramatan and Sunset Avenues in Beaumaris. Its dimensions are 25m x 55m with 1.8m firebreaks on the east and west boundaries. The Sanctuary has a gentle slope running from northeast to southwest and the elevation ranges from approximately 16m to 21m. In 1954, botanists from the National Herbarium and Melbourne University lodged appeals for reservation of the land due to its botanical significance. Bayside City Council has owned the property since 1956. It was leased to the Beaumaris Conservation Society (then the Beaumaris Tree Preservation Society) in 1960. This lease expired in 1990 and Council resolved to accept management responsibility for the area.

The heath in Gramatan Avenue, Silky Tea-tree (*Leptospermum myrsinoides*) was formerly widespread and abundant within the southeastern suburbs of Melbourne and is now considered rare, restricted to isolated remnants. As such the sanctuary has local, regional and state significance. The sanctuary retains the typical structure of heath vegetation developed on deep nutrient poor siliceous sandy podsol soils. An open canopy of Silky Tea-tree (*Leptospermum myrsinoides*) with occasional Silver Banksia (*Banksia marginata*) and rare Green Sheoak (*Allocasurina paradoxa*) occurs over a dense lower stratum of small shrubs and herbs. There are 14 significant plant species recorded for the sanctuary, two of that are found nowhere else in Bayside—Slender

Sword-sedge (*Lepidosperma gunnii*) and the Slender Onion-orchid (*Microtis parviflora*).

Gramatan Avenue, as with other reserves, has been invaded by Coast tea-tree (*Leptospermum laevigatum*), some of which has been cleared. Some areas of the sanctuary have also been severely degraded by weed invasion.

Older areas [of the] sanctuary's heath community display characteristics of long-unburnt remnant coastal heath. Much of the community is senescent with some Green Sheoak (*Allocasurina paradoxa*) and Silky Tea-tree (*Leptospermum myrsinoides*) dying or reducing in vigour. There has also been a decline in species diversity where some—and possibly many—species have been reduced to critically low numbers or have died out completely. Many of these species may still be present in the site as soil stored seed.

Two burns have been conducted within the Sanctuary, one in 1993 and one in 1998. The 1993 burn was in the northern section of the sanctuary and another burn was carried out in the southern part of the reserve in 1998, followed by intensive hand weeding. This has produced excellent results with significant increases in indigenous species present as well as a reduction in weed species present. Burnt sites show, on average, 41 per cent more indigenous species compared to unburnt sites. The use of fire is critically important in maintaining this type of heath vegetation.



# Donald MacDonald Reserve

Donald MacDonald Reserve is a rectangular reserve located on Haydens Road in Beaumaris. It covers an area of 6 hectares. The Reserve is located in an area once dominated by Pleistocene dune complexes, however the dune previously occupying this site has been levelled, creating relatively flat land. The presence of a large colony of Trim Greenhood orchids (*Pterostylis concinna*), considered to be the largest in Melbourne, gives Donald MacDonald regional significance. The reserve also contains a high diversity of bird species.

Purchased in 1917 by Council, the area has been appreciated by Melbourne botanists and naturalists from as early as 1885. In 1938, the Reserve was established in memory of the late Donald MacDonald, noted naturalist and journalist with 'The Argus' newspaper. Old tethering posts remain on the western side of the reserve, remnants from the horse-drawn tram system.

The original vegetation of the reserve consisted of an overstorey of Green Sheoak (*Allocasurina paradoxa*) and Silky Tea Tree (*Leptospermum myrsinoides*). Currently the Reserve comprises

of a sportsground surrounded by a bushland outer, mainly mature even aged Coast Tea-tree (*Leptospermum laevigatum*) with Coast Wattle (*Acacia sophorae*) dispersed throughout. Scattered colonies of terrestrial orchids and some indigenous species such as Showy Bossiaea (*Bossiaea cinerea*) and Sand-hill Sword-sedge (*Lepidosperma concavum*) also remain. There are 13 significant plant species recorded from this reserve, five of which are found nowhere else—Pink Fingers (*Caladenia carnea* spp. agg.), Veined Helmet-orchid (*Corybas dilatatus*), Tall Greenhood (*Pterostylis longifolia*), Tiny Greenhood (*Pterostylis parviflora*) and Rabbit-ears (*Thelymitra antennifera*).

Three burns have occurred within the reserve, two in the early 1980s and one in 1997. The 1980 burns produced extensive regeneration of Coast Wattle (*Acacia sophorae*) and Coast Tea-tree (*Leptospermum laevigatum*) with few other indigenous heathland species regenerating. The 1997 burn was more successful, producing a general increase of indigenous species, with some heathland herbs and shrubs regenerating.

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## AND ENDNOTES

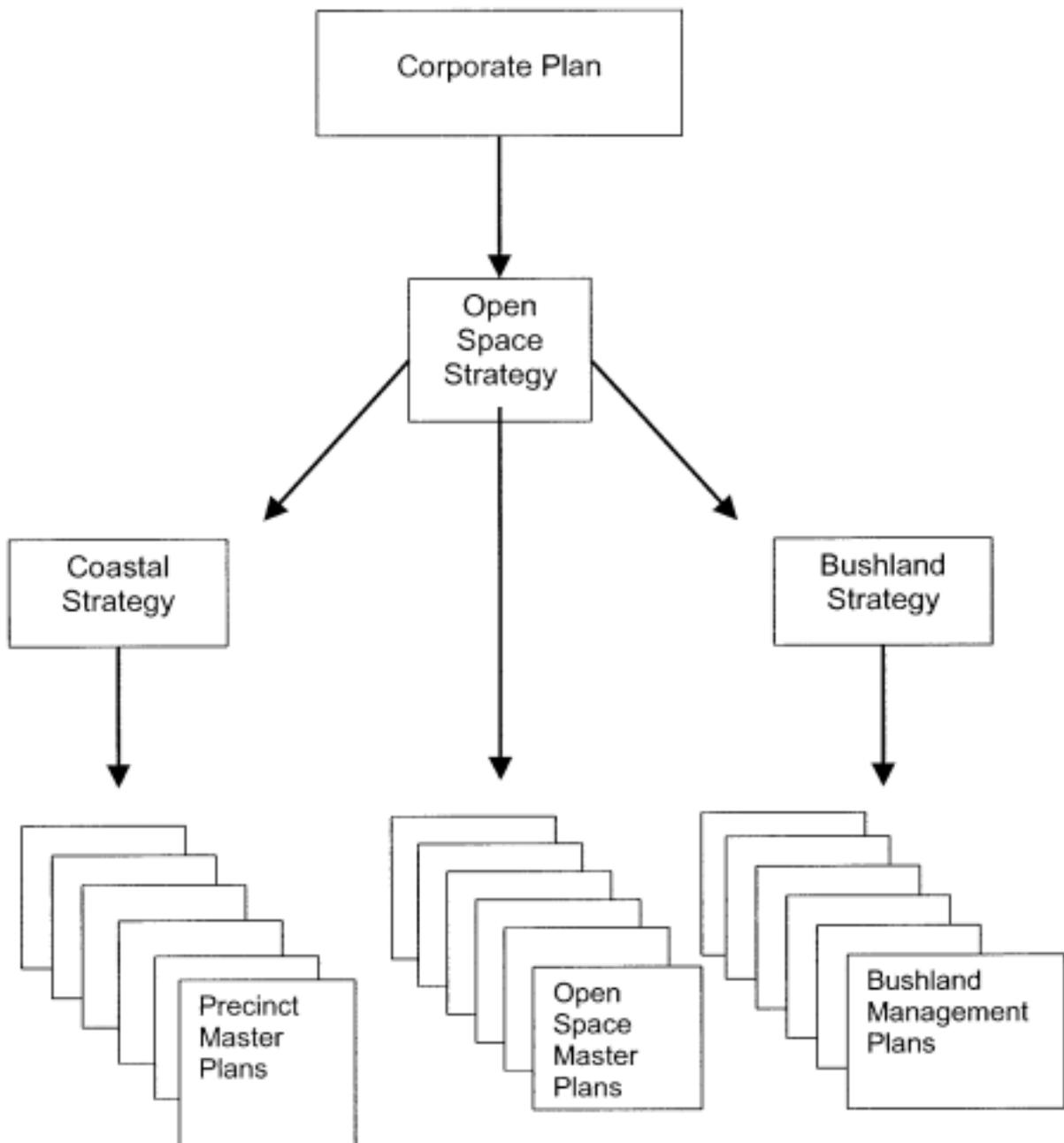
### Endnotes

- <sup>1</sup> Caroline Briggs (Kulin Nations) pers comm. 2001.
- <sup>2</sup> The use of native plants by Boonerwung people has been interpreted at the Native Resource Garden in Sandringham.
- <sup>3</sup> Station No. 086146 (1955 to 1999) at an elevation of 30.5metres.
- <sup>4</sup> Station No. 086077 (1971 to 1999) at an elevation of 12.5metres.
- <sup>5</sup> Each path through a bushland greatly increases the perimeter to area ratio and therefore edge effects.
- <sup>6</sup> An example is the greater incidence of weed invasion along the boundaries of some areas of heathland. Weed invasion is greater where the distance between the boundaries is smaller and where built areas further reduce the extent of the natural vegetation.
- <sup>7</sup> due mainly to restricted sunlight penetration and the toxicity of the decaying leaf litter.
- <sup>8</sup> For example, Environment Protection & Biodiversity Conservation Act (1999).
- <sup>9</sup> Echidnas disappeared from Bayside about 20 years ago and would have fed on ants, with some of those ant species in turn helping butterflies—pollinators of small plants—and other insects to breed.
- <sup>10</sup> Flame Robins (endangered in Pavey) seem to be wintering at RMGC although they have gone elsewhere in Bayside and 3-4 bird species not recorded elsewhere have been casually spotted.
- <sup>11</sup> for example, Noisy Miners pushing into Bay Road.

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# Open Space Management Framework



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