

# Bayside Native Vegetation Works Program - Stage 1

Project: 08-50

Prepared for:

Bayside City Council



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## Summary

### Background

Bayside City Council engaged Ecology Australia to prepare Stage 1 of a Native Vegetation Works Program (NVWP) for 14 reserves that are managed on behalf of the Council by contractors and volunteers. This stage of the NVWP involves identifying the Ecological Vegetation Classes (EVCs), Habitat Zones and key management issues in each of the 14 reserves. The second phase involves preparing a management plan and monitoring program for each reserve.

The 14 reserves assessed in this study are:

#### *Foreshore reserves*

- Beaumaris Foreshore – north
- Black Rock – south
- Brighton Dunes
- Picnic Point
- Red Bluff
- Rickett’s Point Hinterland
- Sandringham Foreshore – south

#### *Inland reserves*

- Balcombe Park
- Bay Road Heathland Sanctuary
- Cheltenham Park Flora and Fauna Reserve
- Donald McDonald Reserve
- George Street Reserves
- Gramatan Avenue Heathland Sanctuary
- Long Hollow Heathland

Data reviews and field surveys were used to identify and assess the natural values of the study area. The EVCs present at each site were identified and divided into Habitat Zones based on variations in vegetation quality.

The EVCs were based on the Department of Sustainability’s (DSE) EVC benchmarks. However, as the native vegetation within the Bayside Municipality has had a long history of modification and disturbance since European Settlement (e.g. land clearing, timber harvesting, weed invasion, amenity and revegetation plantings, and the impact of feral animals) some vegetation remnants were difficult to assign to a particular EVC. In these cases, the EVC mapping was based on past reports for the sites, DSE’s EVC mapping and geology maps.

### Results

The current study identified eight Ecological Vegetation Classes (EVCs) across the 14 sites. They are:

- EVC 2 Coast Banksia Woodland
- EVC 3 Damp Sands Herb-rich Woodland
- EVC 6 Sand Heathland
- EVC 48 Heathy Woodland
- EVC 160 Coastal Dune Scrub
- EVC 161 Coastal Headland Scrub
- EVC 876 Spray-zone Coastal Shrubland
- EVC 879 Coastal Dune Grassland

As some of the vegetation did not conform to the EVCs benchmarks, descriptions of the best-fit EVC and the observed vegetation has been provided.

A total of 102 Habitat Zones (HZ) were identified across the 14 sites. One Habitat Zone had been burnt just months before the assessments were conducted and hence a condition assessment was not conducted. The lowest Vegetation Quality Assessment score for a Habitat Zone was 8% while the highest was 62%. A summary of the habitat scores for 101 of the Habitat Zones is provided below.

Habitat Score Range	Number of Habitat Zones	Area of vegetation (ha)
0-9 %	1	1.67
10-19 %	14	4.87
20-29 %	17	5
30-39 %	26	18.24
40-49 %	26	8.35
50-59 %	13	4.21
60-62 %	4	1.62

A site overview has been prepared for each of the 14 sites. This includes site locations and size details, vegetation descriptions and any previous management observed, the Vegetation Quality Assessment details and weed lists for each Habitat Zone, a brief description of the key management issues and a map illustrating the location of each Habitat Zone within each EVC.

### Considerations for Stage 2

Several factors need to be considered to prepare Stage 2 of the Native Vegetation Works Program. This would involve the preparation of a management and monitoring program for each of the sites and include:

- Prioritisation of values and key management issues at each site;
- Identification of the most appropriate control methods to manage the issues identified;
- Recommendations for species appropriate for revegetation within each EVC;
- Maintenance and enhancement of native fauna habitats with the sites;
- Recommendations for regeneration burning and an appropriate burning regime.
- Preparation of an appropriate and cost effective vegetation quality monitoring program to ensure that management efforts are successful. This could include:
  - the development of a vegetation quality assessment that is more sensitive than the habitat hectare system, but is still a relatively simple and efficient assessment. This would assist in determining the changes in vegetation quality over short time frames (e.g. biennial);
  - a pro forma recording sheet
  - establishment of permanent quadrats in appropriate locations; and
  - identifying appropriate permanent photo points locations throughout the sites.

## 1 Introduction

Ecology Australia was commissioned by Bayside City Council to prepare a Native Vegetation Works Program (NVWP) for 14 reserves that are managed on behalf of the Council by contractors and volunteers. The 14 reserves are based on the previous vegetation management plans prepared by Botanicus (1996, 2003).

The NVWP is to be an integrated plan which identifies natural values, threats to these values, and principles and actions to ensure effective long-term management. This report is the first of two stages of the NVWP which are:

- Stage 1. Identification of Ecological Vegetation Classes (EVCs), Habitat Zones and key management issues; and
- Stage 2. Preparation of a management plan and monitoring program for each of the sites.

The purpose of the present study (Stage 1) is to update the reserve inventory in terms of EVC and Habitat Zone mapping consistent with Victoria's Native Vegetation Management Framework (DSE 2002), and identifying management issues. This has been completed by undertaking the following tasks:

- A review of existing reports and the Department of Sustainability and Environment's EVC mapping;
- Field surveys of the 14 reserves to:
  - map the EVCs and Habitat Zones, and collect baseline habitat condition scores for each Habitat Zone;
  - identify management issues; and
  - identify priority weeds requiring control.
- Preparation of a report that provides the following:
  - A summary of the findings, including the key management issues;
  - Results and management issues for each reserve which includes:
    - The EVCs recorded;
    - An overview of the quality of the vegetation;
    - A table of the habitat condition scores for the identified Habitat Zones;
    - A figure showing the location of EVCs and Habitat Zones;
    - Management issues for the site, and where appropriate, for individual or a group of Habitat Zones; and
    - Weed species requiring control and their priority.
  - A summary of factors requiring consideration for Stage 2 of the works program.

## 2 Study Area

The study area is located in Bayside City Council, approximately 12-21 km south east of Melbourne's CBD (Figure 1). The 14 reserves within the municipality include seven foreshore reserves and seven inland reserves. The foreshore reserves are located between Beach Road and Port Phillip Bay between the suburbs of Brighton and Beaumaris, while the inland reserves are located within the area bounded by Bay Road to the north, Beach Road to the south, Bluff Road to the east and Charman Road to the west. The 14 reserves are:

### *Foreshore reserves*

- Beaumaris Foreshore – north
- Black Rock – south
- Brighton Dunes
- Picnic Point
- Red Bluff
- Rickett's Point Hinterland
- Sandringham Foreshore – south

### *Inland reserves*

- Balcombe Park
- Bay Road Heathland Sanctuary
- Cheltenham Park Flora and Fauna Reserve
- Donald McDonald Reserve
- George Street Reserves
- Gramatan Avenue Heathland Sanctuary
- Long Hollow Heathland

The study area is located within the Gippsland Plain bioregion and is part of the Port Phillip Catchment Management Authority (CMA).

The reserves are all located within the Sandbelt region of south-eastern Melbourne which in a geomorphic context is part of the Brighton Coastal Plain. This is a broad coastal plain or low plateau 30 to 40 m above sea level, and extends from Brighton to Springvale. The plain is underlain by Tertiary sedimentary rocks of the Brighton group (previously known as the "Sandringham Sands"), and comprise of the Black Rock Formation and overlaying Red Bluff Formation. These units outcrop in coastal cliffs from south of Brighton to Beaumaris (Ecology Australia 2008a).



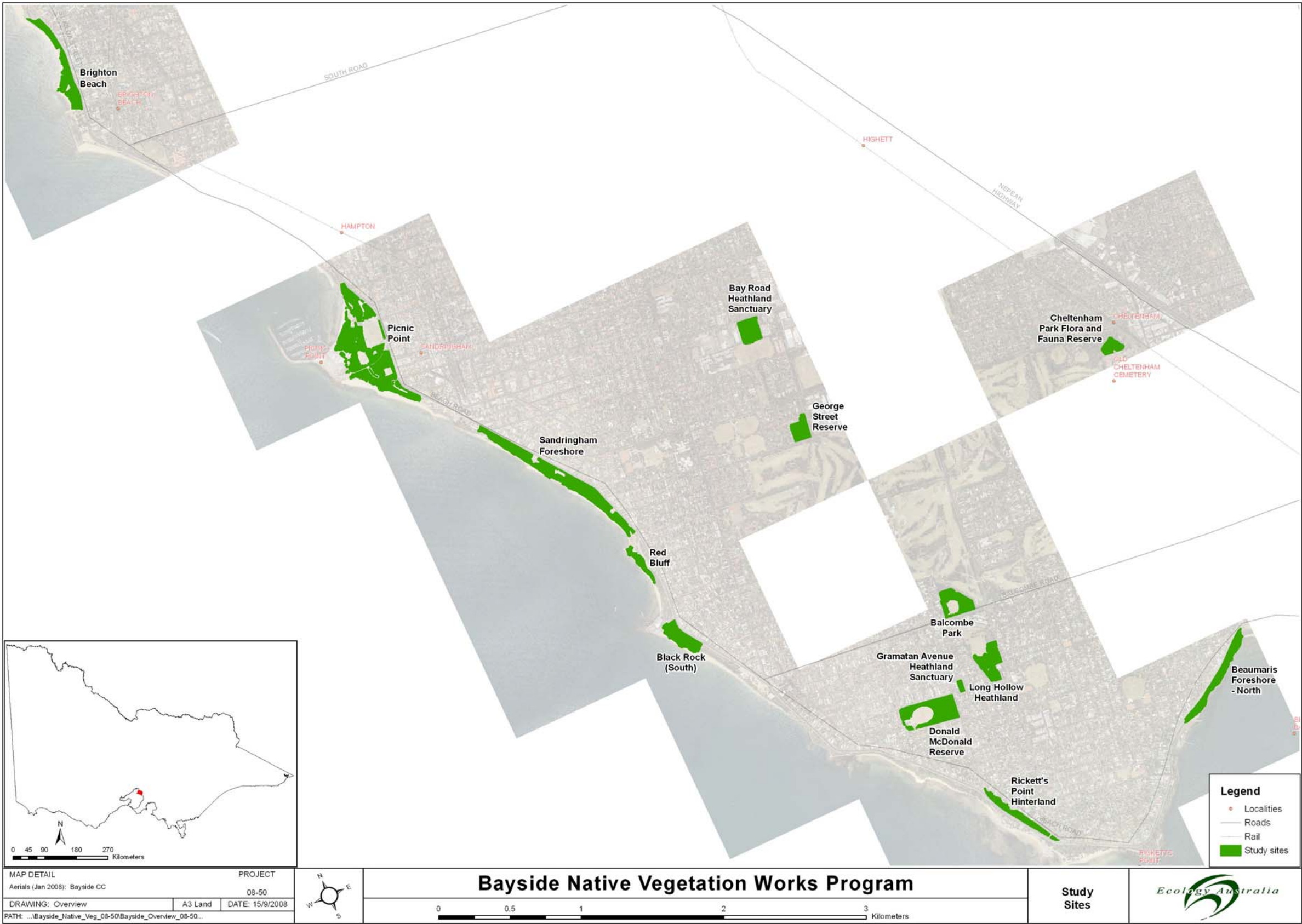


Figure 1 Aerial image showing the location of the 14 study sites within Bayside City Council.



### 3 Methods

Data reviews and field surveys were used to identify and assess the natural values of the study area.

#### 3.1 Desktop review

Databases and information pertaining to the study area were reviewed, including the following:

- Ecological Vegetation Class mapping/modelling of the area (both extant and pre-1750) (DSE 2008a);
- aerial photography; and
- technical reports (Botanicus 1996, 2003).

#### 3.2 Field surveys

The 14 reserves were assessed by a team of two to three botanists on several occasions between 16 July and 29 August 2008.

##### Vegetation sampling

The sites were traversed on foot to map the EVCs within each reserve. Remnant native vegetation was assigned to an EVC based on field observations, DSE's vegetation modelling (DSE 2008a) and EVC benchmarks (DSE 2008b), and by reference to the Botanicus (2003) report.

The EVCs were also separated into Habitat Zones based on a visual assessment. A species inventory was recorded for each Habitat Zone and a habitat condition score was determined by completing the Vegetation Quality Assessment (VQA) (i.e. DSE's habitat hectare scoring method, DSE 2004a).

The Vegetation Quality Assessment involves a site condition score and a landscape context score. The site condition score includes seven components: large trees; tree canopy cover; lack of weeds; understorey; recruitment; organic litter; and logs. The landscape context score includes three components: patch size; neighbourhood; and distance to core area.

The separation of the Habitat Zones was based on readily observable differences within the site condition components of the Vegetation Quality Assessment. In some cases the site condition scores were identical for different Habitat Zones within the same EVC at a site. In these cases the Habitat Zones were separated based on clearly observable differences in habitat quality that were not detected in the site condition scores and management approaches.

#### 3.3 Conservation Status

The conservation status of the EVCs was determined by reference to DSE's bioregional Ecological Vegetation Classes (EVCs) area statement accessed via the EVC benchmarks webpage (DSE 2008b).

#### 3.4 Terminology and Taxonomy

Plant taxonomy and the use of common names follow the accepted authorities – Walsh and Stajsic (2007) and DSE (2004b).

Where an asterisk (\*) precedes a plant name it is used to signify non-indigenous taxa, those species which have been introduced to Victoria or Australia. A hash (#) is used to denote plants that are native to Victoria, but are invasive and occurring outside of their natural range within the study area.

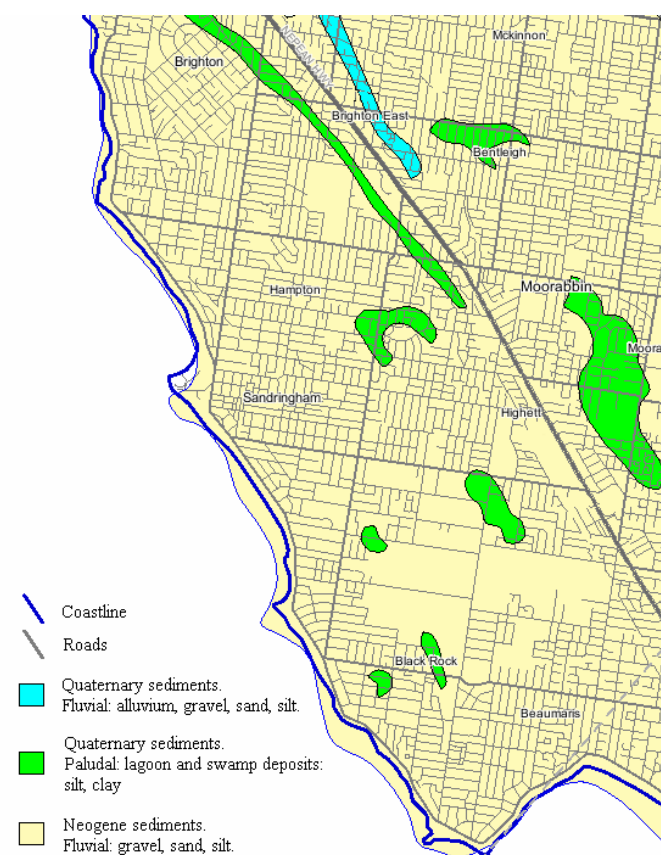
Coast Tea-tree (*Leptospermum laevigatum*) and Coast Wattle (*Acacia longifolia* subsp. *sophorae*) are considered to be naturalised beyond their natural range at all of the inland reserves. They are only indigenous to the coastal areas within the study area. Sallow Wattle (*Acacia longifolia* subsp. *longifolia*) is considered to be naturalised beyond its natural range across the entire study area as it is indigenous to East Gippsland.

## 4 Ecological Vegetation Classes

### 4.1 Background

In this study, vegetation was assigned to a particular EVC on the basis of existing remnant vegetation, soil type and physiography, and by reference to Botanicus (1996, 2003) and EVC mapping (DSE 2008a). Given the high levels of modification since European settlement, including land clearing, timber harvesting, weed invasion, amenity and revegetation plantings, and the impact of feral animals, there is often little evidence of the original vegetation remaining. For example, some areas contained only the most resistant components of the original vegetation, or the more competitive species that had recolonised following disturbance. In many cases this made it difficult to assign vegetation to particular EVCs and clearly define the boundaries between them.

Soils and sediments greatly influence the flora, and hence the EVC of an area, and surface geology is a useful tool when determining the past EVCs. Figure 2 illustrates the basic geology of the study area, which is mainly comprised of Quaternary and Neogene sediments. The majority of the study area (illustrated in yellow and blue, Figure 2) is comprised of sandy sediments while several small areas (illustrated in green, Figure 2) are made up of swamp deposits. Much of the pre-1750 EVC mapping for the area (DSE 2008a) is based on these geological boundaries with the heaths, heathy woodlands and coastal scrubs dominating the sandy sediments and constituting the vast majority of remnants within the study area.



**Figure 2 Geology of the Bayside study area.**

### 4.2 EVC descriptions

The current study identified eight Ecological Vegetation Classes (EVCs) across the 14 sites. They are:

- EVC 2 Coast Banksia Woodland
- EVC 3 Damp Sands Herb-rich Woodland
- EVC 6 Sand Heathland
- EVC 48 Heathy Woodland
- EVC 160 Coastal Dune Scrub
- EVC 161 Coastal Headland Scrub
- EVC 876 Spray-zone Coastal Shrubland
- EVC 879 Coastal Dune Grassland

Below is a brief description of each EVC.

#### 4.2.1 EVC 2 Coast Banksia Woodland

The DSE benchmark for Coast Banksia Woodland states that it is restricted to near coastal localities on secondary or tertiary dunes behind Coastal Dune Scrub, and is usually dominated by a woodland overstorey of Coast Banksia (*Banksia integrifolia*) to 15 m tall over a medium shrub layer (DSE 2008b). The understorey consists of a number of herbs and sedges, including scramblers. Its occurrence in the Gippsland Plains Region includes coastal Port Phillip Bay and Western Port Bay, Bass Coast and Phillip Island (Oates & Taranto 2001).

This EVC is restricted in the study area to Ricketts Point reserve. The main remnant element identifying this EVC is a mature Coast Banksia *Banksia integrifolia* subsp. *integrifolia* woodland, as other components are very depleted due to extensive weed invasion. Other species, although characteristic for this EVC (Oates & Taranto 2001), also occur in other communities, particularly Coastal Headland Scrub. These species include Coast Tea-tree *Leptospermum laevigatum*, Coast Wattle *Acacia longifolia* subsp. *sophorae* and Common Boobialla *Myoporum insulare*. Significant weeds include Panic Veldt-grass *Ehrharta erecta* var. *erecta*, Soursob *Oxalis pes-caprae*, Nasturtium *Tropaeolum majus*, Wandering Jew *Tradescantia fluminensis* and Kikuyu *Pennisetum clandestinum*.

Coastal Banksia Woodland has a bioregional conservation status of Vulnerable in the Gippsland Plain bioregion.



**Plate 1** Reasonable quality (left) and degraded (right) Coast Banksia Woodland vegetation located at Ricketts Point Hinterland (HZ1 and HZ2 respectively).

#### 4.2.2 EVC 3 Damp Sands Herb-rich Woodland

The EVC description for Damp Sands Herb-rich Woodland states it to be a low, grassy or bracken-dominated eucalypt forest or open woodland to 15 m tall with a large shrub layer and ground layer rich in herbs, grasses and orchids (DSE 2008b). It occurs mainly on flat or undulating areas on moderately fertile, relatively well-drained, deep sandy or loamy topsoils over heavier subsoils (duplex soils). It is distributed in the bioregion inland from Port Phillip Bay, southern Mornington Peninsula, Inverloch, Wonthaggi, south of Coronet Bay, Hastings and French Island (DSE 2008b, Oates & Taranto 2001).

In the study area this EVC occurs in inland reserves, sometimes in proximity to Sand Heathland (e.g. Donald McDonald Reserve). The best example of this EVC occurs at Long Hollow Reserve (HZ7), as well as a floristic variant confined to moister areas of this reserve. Dominant overstorey species include Coast Manna-gum *Eucalyptus viminalis* subsp. *pyroriana* and Swamp Gum *E. ovata*, and less commonly Coast Banksia *Banksia integrifolia* subsp. *integrifolia* (eg Cheltenham Park). Black Wattle *Acacia mearnsii*, Lightwood *Acacia implexa*, Hedge Wattle *Acacia paradoxa* and Sweet Wattle *Acacia suaveolens* are present as understorey trees or shrubs. Lower strata often contain Austral Bracken *Pteridium esculentum*, and/or a large number of graminoids compared to other EVCs in the study area such as Small-flower Flax-lily *Dianella brevicaulis* and Weeping Grass *Microlaena stipoides* var. *stipoides*.

Highly degraded examples of this EVC occur in some reserves, e.g. Donald McDonald Reserve HZ2, George Street Reserve HZ2, Balcombe Park HZ2. It was difficult to separate degraded forms of this EVC from highly degraded Sand Heathland (eg Bay Road Reserve HZ4); in these cases a decision was made based on the EVC most likely to have occupied the site prior to disturbance, including the limited botanical evidence available. These degraded examples contained an overstorey of the naturalised native species Coast Tea-tree *Leptospermum laevigatum* and Coast Wattle *Acacia longifolia* subsp. *sophorae*, and were sometimes accompanied by Seaberry Saltbush *Rhagodia candolleana* subsp. *candolleana* and Bower Spinach *Tetragonia implexicoma* (e.g. Donald McDonald Reserve). #Coast Tea-tree and #Coast Wattle are highly invasive in this EVC, with the ability to dominate the site and eliminate remnant species, and should be considered weeds in this situation. Other serious weeds of this EVC include Panic Veldt-grass *Ehrharta erecta* var. *erecta*, Annual Veldt-grass *Ehrharta longifolia* and Soursob *Oxalis pes-caprae*.

Damp Sands Herb-rich Woodland is considered to have a bioregional conservation status of Vulnerable in the Gippsland Plain bioregion.





**Plate 2** Damp Sands Herb-rich Woodland vegetation located at Long Hollow Heathland (HZ 2 left and HZ 1 right). Bayside, July / August 2008.

#### 4.2.3 EVC 6 Sand Heathland

Sand Heathland is described as a treeless heathland (sometimes with occasional emergent mallee-form eucalypts and/or banksias) occurring on deep infertile sands. It consists of a low, dense heathy shrub layer and a number of sedges and sedge-like species; grasses and herbs are absent or infrequent (DSE 2008b). It occurs in the Port Phillip and Westernport region in the Wonthaggi heathlands, French Island, Mornington Peninsula at Greens Bush, Stony Point and Langwarrin (Oates & Taranto 2001).

In the study area the best examples occur at Bay Road Heathland Reserve and George Street Reserve. This EVC was the most species rich, and although modified, the best examples showed a reasonable degree of fidelity to the EVC description. Common species include Showy Bossiaea *Bossiaea cinerea*, Erect Guinea Flower *Hibbertia riparia*, Heath Tea-tree *Leptospermum myrsinoides*, Scrub Sheoak *Allocasuarina paludosa*, Twiggy Daisy-bush *Olearia ramulosa* var. *ramulosa*, Common Flat-pea *Platylobium obtusangulum*, Common Beard Heath *Leucopogon virgatus*, Common Correa *Correa reflexa*, Sandhill Saw-sedge *Lepidosperma concavum*, Small-flower Flax-lily *Dianella brevicaulis*, and Tassel Rope-rush *Hypolaena fastigata*. The EVC is subject to serious weed invasion by Panic Veldt-grass *Ehrharta erecta* var. *erecta* and Annual Veldt-grass *Ehrharta longifolia*, as well as the naturalised native species Coast Tea-tree *Leptospermum laevigatum* and Coast Wattle *Acacia longifolia* subsp. *sophorae* which are particularly significant invaders. *Coast Tea-tree* and *Coast Wattle* are establishing outside their natural range and are considered to be weeds in this situation. With its vigorous scrambling habit, *Muehlenbeckia*

*adpressa* – principally a species of coastal dunes – should similarly be considered potentially weedy within this EVC (e.g. Gramatan Avenue). Downy Cassytha *Cassytha pubescens*, although naturally present in this EVC, may also become rampant (e.g. Gramatan Avenue).

The quality of this EVC is highly variable in Bayside municipality, reflecting the time of occupation by weeds (such as *Coast Tea-tree* and *Coast Wattle*), management input (weeding, planting, burning, etc.; e.g. George Street Reserve), time since burning, fire intensity and alteration to natural soil profiles (e.g. Donald McDonald Reserve). Following burning there can be a dominance of a small number of indigenous species (especially those with long-lived soil-stored seed banks or rootstocks), including Kangaroo Apple *Solanum laciniatum*, Sandhill Saw-sedge *Lepidosperma concavum* and Small-flower Flax-lily *Dianella brevicaulis* (e.g. George Street Reserve and Balcombe Park).

Sand Heathland has a bioregional conservation status of Rare in the Gippsland Plain bioregion



**Plate 3** Sand Heathland vegetation located at Bay Road Heathland Sanctuary (top left), Donald McDonald Reserve (top right) and George Street Reserve (bottom left and right). Bayside, July / August 2008.



#### 4.2.4 EVC 48 Heathy Woodland

DSE (2008b) states that Heathy Woodland spans a variety of geologies but is generally associated with nutrient-poor soils including deep uniform sands (aeolian or outwash) and tertiary sand/clay which has been altered to form quartzite gravel. It is a eucalypt-dominated low woodland to 10 m tall lacking a secondary tree layer and generally supporting a diverse array of ericoid-leaved shrubs except where frequent fire has reduced this to a dense cover of Austral Bracken *Pteridium esculentum*. Geophytes and annuals can be quite common but the ground cover is normally fairly sparse. Its occurrence in the Port Phillip and Westernport area includes the Mornington Peninsula and the Cranbourne-Langwarrin area. (Oates & Taranto 2001).

In the study area Heathy Woodland appears to be restricted to the Bay Road Heathland Sanctuary, although the limited remnants would not discount Damp Sands Herb-rich Woodland. The best example occurs along the southern boundary of the site. All of this EVC is degraded, some of it severely, and it is very species poor when compared to the benchmark. The remnants contain an overstorey of Coast Manna-gum *Eucalyptus viminalis* subsp. *pyroriana* with an understorey of Hedge Wattle *Acacia paradoxa*, and Austral Bracken *Pteridium esculentum*. A number of plantings and / or colonisers are present, some of which do not generally occur in this EVC (e.g. Seaberry Saltbush *Rhagodia candolleana* subsp. *candolleana*, Bower Spinach *Tetragonia implexicoma* and Drooping Sheoak *Allocasuarina verticillata*). Weeds include Kikuyu *\*Pennisetum clandestinum*, Panic Veldt-grass *\*Ehrharta erecta* var. *erecta*, Annual Veldt-grass *\*Ehrharta longifolia*, Couch *\*Cynodon dactylon* var. *dactylon*, and Tree Lucerne *\*Chamaecytisus palmensis*. Seaberry Saltbush and Bower Spinach are also weedy as both have the tendency to overrun the small and medium shrubs that characterise this vegetation. The naturalised native species Coast Tea-tree *#Leptospermum laevigatum* and Coast Wattle *#Acacia longifolia* subsp. *sophorae* are highly invasive, with the ability to dominate the site and eliminate remnant components. These two naturalised native species should be considered weeds in this situation.

Heathy Woodland has a bioregional conservation status of Least Concern in the Gippsland Plain bioregion.



**Plate 4** Heathy Woodland vegetation located at Bay Road Heathland Sanctuary. Bayside, July / August 2008.

#### 4.2.5 EVC 160 Coastal Dune Scrub

Coastal Dune Scrub is generally described as a closed scrub to 5 m tall with occasional emergents occurring on secondary dunes along ocean and bay beaches and lake shores, occupying siliceous and calcareous sands that are subject to high levels of salt spray and continuous disturbance from onshore winds (DSE 2008b). It occurs in the coastal areas of Port Phillip and Westernport Bays, Phillip Island, Bass Coast and the southern coast of Mornington Peninsula (Oates & Taranto 2001).

In the study area Coastal Dune Scrub is limited to the Picnic Point and Brighton Beach dunes, with the Brighton dunes providing the better, although still degraded example. In general, Coastal Dune Scrub lies landward of Coastal Dune Grassland and seaward of Coastal Headland Scrub vegetation. The vegetation is dominated by the shrubs Coast Tea-tree *Leptospermum laevigatum*, Common Boobialla *Myoporum insulare*, Coast Wattle *Acacia longifolia* subsp. *sophorae*, Seaberry Saltbush *Rhagodia candolleana* subsp. *candolleana* and some taller Drooping Sheoak *Allocasuarina verticillata* trees. These species are also common to Coastal Headland Scrub in the study area, and a defining feature for the EVC is its location on secondary dunes. It is subject to severe weed invasion, the most serious being African Box-thorn *\*Lycium ferocissimum*, Mirror Bush *\*Coprosma repens*, Kikuyu *\*Pennisetum clandestinum*, Cape Ivy *\*Delairea odorata*, and Galenia *\*Galenia pubescens* var. *pubescens*. Groundstorey weeds include Soursob *\*Oxalis pes-caprae*, and Hare's-tail Grass *\*Lagurus ovatus*. Weed invasion has severely depleted the species diversity and quality of this vegetation type in the study area.

Coastal Dune Scrub is listed as having a bioregional conservation status of Depleted in the Gippsland Plain bioregion.



**Plate 5** Coastal Dune Scrub vegetation located at Brighton Dunes. Bayside, July / August 2008.



#### 4.2.6 EVC 161 Coastal Headland Scrub

The Coastal Headland Scrub benchmark describes this EVC as a scrub or low shrubland to 2 m tall with a cover of medium shrubs around 50%, on steep, rocky coastal headlands often associated with cliffs exposed to the stresses of extreme salt-laden winds and salt spray from the south west (DSE 2008b). It occurs on shallow sands along rocky sections of the coast, including the southern coast of the Nepean and Mornington Peninsulas, Phillip Island and Bass Coast (DSE 2008b, Oates & Taranto 2001).

This EVC is the most extensive in the study area, dominating most of the coastal reserves. It occurs along coastal headlands and extends inland to the interface with development (generally Beach Road). Dominant species include Coast Tea Tree *Leptospermum laevigatum*, Coast Wattle *Acacia longifolia* subsp. *sophorae*, Common Boobialla *Myoporum insulare* and Seaberry Saltbush *Rhagodia candolleana* subsp. *candolleana*, with emergent individuals or clumps of Drooping Sheoak *Allocasuarina verticillata*. The most common graminoids include Small-flower Flax-lily *Dianella brevicaulis* and Coast Spear-grass *Austrostipa flavescens*.

The most substantial occurrences are at Sandringham Foreshore, Beaumaris Foreshore and Picnic Point, with smaller examples at Black Rock, Red Bluff and Brighton Beach. These areas have been subjected to significant modification, including clearing, alteration of soil profiles and drainage patterns, heavy foot traffic, erosion, and degradation by rabbits and rats. In some areas soil profiles have been disturbed through the addition of fill, dumping of building rubble, erosion control works and construction of road batters. These areas are generally highly weed-invaded and severely species-depleted, with a number grading into areas containing almost no indigenous remnant vegetation. The influence of salt is less marked in most areas than suggested by the benchmark for this EVC, resulting in taller maximum shrub height. Small pockets of higher quality examples occur scattered throughout the EVC, notably small areas of Black Rock and Sandringham Foreshores. These generally occur on the more intact soil profiles, are relatively weed-free, more exposed and subject to salt, and with larger numbers of herbs and graminoids persisting. Works undertaken in this EVC include weed control, species enrichment plantings and revegetation.

The most significant weeds are Panic Veldt-grass *\*Ehrharta erecta* var. *erecta*, Annual Veldt-grass *\*Ehrharta longifolia*, Soursob *\*Oxalis pes-caprae*, African Box-thorn *\*Lycium ferocissimum*, Mirror Bush *\*Coprosma repens*, Kikuyu *\*Pennisetum clandestinum*, Pampas Lily-of-the-Valley *\*Salpichroa organifolia* and Cape Ivy *\*Delairea odorata*.

Due to the high degree of variability and disturbance, this EVC rarely corresponds closely with the benchmark, particularly in areas landward of the bluff crests where the influence of salt is less evident. It is possible that some of these areas may originally have supported other EVCs, such as Coastal Banksia Woodland, or that headlands in the study area include a distinct structural and floristic community of the more broadly described Coastal Headland Scrub EVC.

Coastal Headland Scrub has a bioregional conservation status of Depleted in the Gippsland Plain bioregion.



**Plate 6** Coastal Headland Scrub vegetation located at Sandringham Foreshore (top left and right), Rickett's Point Hinterland (bottom left) and Black Rock (bottom right). Bayside, July / August 2008.

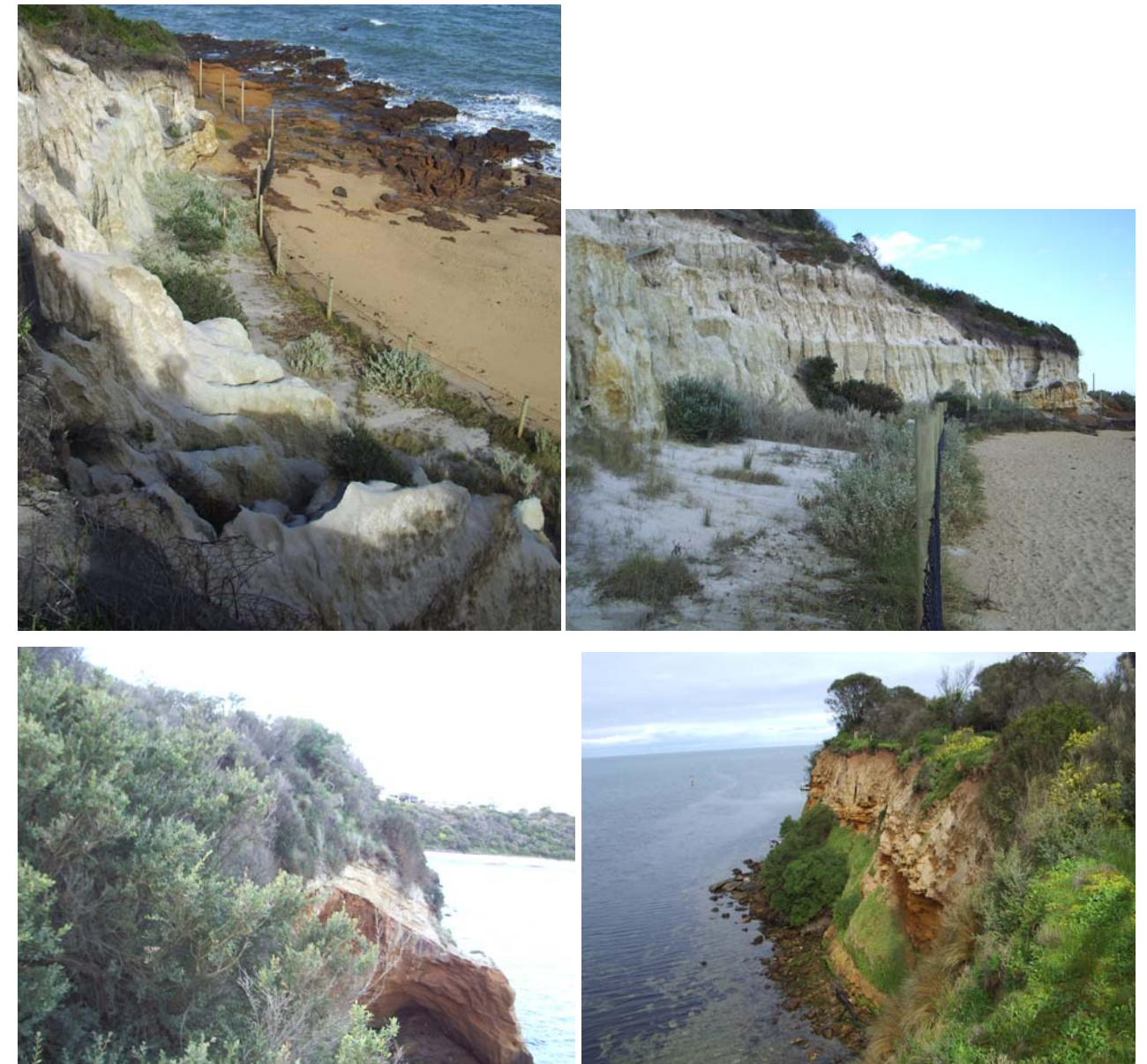


#### 4.2.7 EVC 876 Spray-zone Coastal Shrubland

The DSE Benchmark states Spray-zone Coastal Shrubland to be a wind-pruned salt-affected open shrubland usually less than 1 m tall (with occasional emergent taller shrubs) that occurs on the most exposed coastal areas subject to salt spray and run-off at the crest of sea cliffs, comprised primarily of small shrubs. Examples exist at Seal Rocks and the south-west coast of Phillip Island, and Cape Schank (DSE 2008b, Oates & Taranto 2001).

Its occurrence in the study area is limited, with the best example occurring along the cliffs to the southeast end of the Beaumaris Foreshore reserve, with other vestigial occurrences at Red Bluff, Black Rock and Sandringham Foreshore. The vegetation is generally similar to a stunted form of Coastal Headland Scrub, with which it intergrades, but includes more graminoids such as Prickly Spear-grass *Austrostipa stipoides*, Coast Tussock-grass *Poa poiformis*, and small numbers of more salt-tolerant, succulent plant species such as Rounded Noon-flower *Disphyma crassifolium* subsp. *clavellatum* and on some occasions Beaded Glasswort *Sarcocornia quinqueflora*. Due to the extreme exposed conditions, erosion is also prevalent, and coastal erosion has possibly significantly depleted the occurrence of this EVC in the study area. Weeds include Angled Pigface *Carpobrotus aequilaterus* and Buck's-horn Plantain *Plantago coronopus* as well as a suite of other weeds common to other coastal EVCs in the vicinity.

Spray-zone Coastal Shrubland is listed as having a bioregional conservation status of Rare in the Gippsland Plain bioregion.



**Plate 7** Spray-zone Coastal Shrubland vegetation located at Black Rock (top) and Beaumaris Foreshore (bottom). Bayside, July / August 2008.



#### 4.2.8 EVC 879 Coastal Dune Grassland

The benchmark for Coastal Dune Grassland states it consists of grasses and halophytes (succulents) that colonise the foredunes of ocean beaches, on siliceous sands with a very low humus content (DSE 2008b). Its occurrence includes beaches of Bass Coast, Mornington Peninsula, and Westernport and Port Phillip Bays (Oates & Taranto 2001).

Its occurrence in the study area is very limited, with the best example to the northeast of Picnic Point, and another occurrence at Brighton Beach to the southeast of the bathing boxes. The EVC is predominantly grassy, with some shrub development. The dominant species in the Bayside area are Hairy Spinifex *Spinifex sericeus*, Coast Saltbush *Atriplex cinerea*, and Knobby Club-sedge *Ficinia nodosa*. Coast Wattle *Acacia longifolia* subsp. *sophorae* may occur in the EVC, blending in with Coastal Dune Scrub or Coastal Headland Scrub to landward. Located so close to the beach this vegetation community is subject to intense user pressure, particularly trampling, which has eliminated most of the more succulent salt-tolerant species characterising the EVC leaving the deeply rooted and more resilient species. It is vulnerable to severe weed invasion, especially Sea Wheat-grass *\*Thinopyrum junceiforme*, Marram Grass *\*Ammophila arenaria*, and Angled Pigface *\*Carpobrotus aequilaterus*. At Picnic Point the EVC was subject to burying by sand replenishment works.

Coastal Dune Grassland is listed by DSE as having a bioregional conservation status of Depleted in the Gippsland Plain bioregion. However the extant EVC mapping includes many areas dominated by \*Marrum Grass and/or \*Sea Wheat-grass and we consider Hairy Spinifex dominated foredunes to now be very rare. Considering the prevalence of weed invasion, user pressure and susceptibility to climate change-induced sea-level rise its conservation status should be elevated to vulnerable.



**Plate 8 Coastal Dune Grassland vegetation located at Picnic Point. Bayside, July / August 2008.**

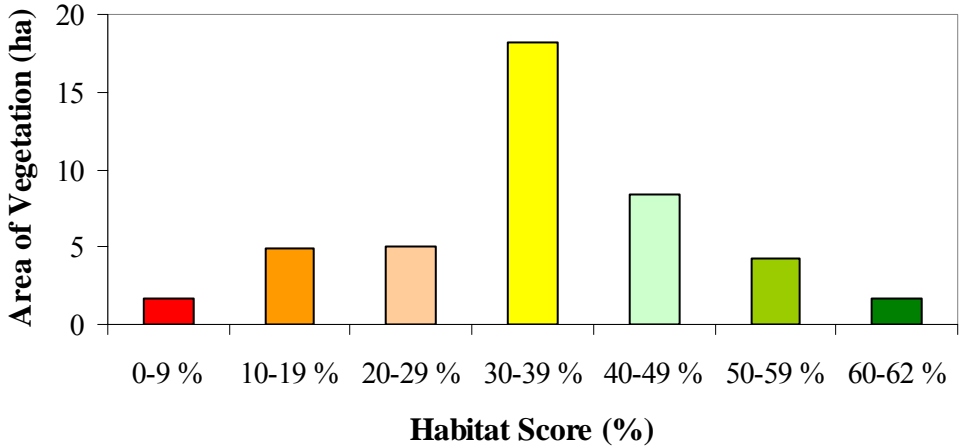
## 5 Results and Site Overviews

A total of 102 Habitat Zones (HZ) were identified across the 14 sites. A summary of the habitat scores for 101 of the Habitat Zones is provided in Table 1 and Figures 3 and 4 below. One Habitat Zone had been burnt just months before the assessments were conducted and hence a condition assessment was not completed.

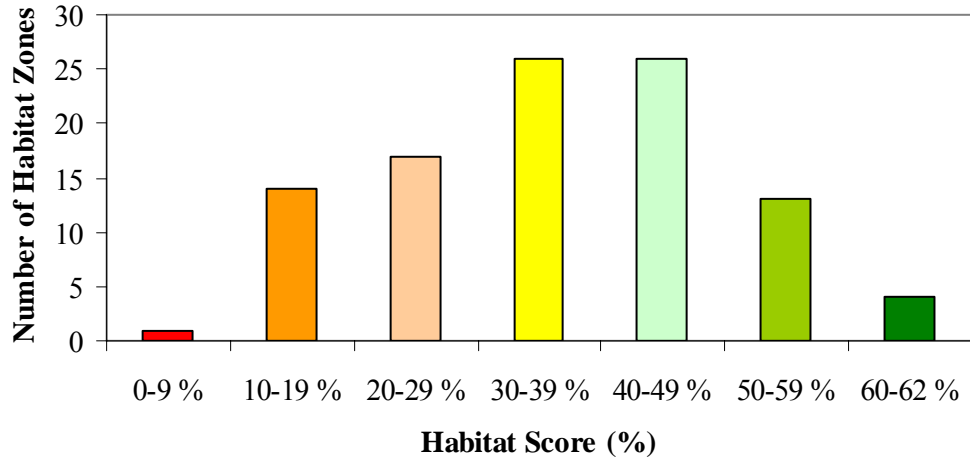
**Table 1 Summary of the habitat scores and total area of vegetation in each habitat score category for 101 of the 102 Habitat Zones identified at the 14 reserves surveyed in Bayside City Council, July / August 2008.**

Note: one Habitat Zone was not assessed as it had been burnt just prior to the assessments.

Habitat Score Range	Number of Habitat Zones	Area of Vegetation (ha)
0-9 %	1	1.67
10-19 %	14	4.87
20-29 %	17	5
30-39 %	26	18.24
40-49 %	26	8.35
50-59 %	13	4.21
60-62 %	4	1.62
<b>TOTAL</b>	<b>101</b>	<b>43.96</b>



**Figure 3 Area of vegetation (ha) assessed within each of the habitat score (%) categories, Bayside Municipality, July / August 2008.**



**Figure 4 Number of Habitat Zones within each habitat score category Bayside Municipality, July / August 2008.**

### Site Overviews

Based on the site assessments, the following information is provided for each of the site overviews:

1. the location of the site;
2. the total area of vegetation that was assessed;
3. a description of the Habitat Zones within each EVC;
4. any previous management observed;
5. a summary of the Vegetation Quality Assessments for each of the Habitat Zones identified;
6. a brief description of the key management issues;
7. a summary of the problematic weeds recorded in each Habitat Zone; and
8. a map of the site illustrating the location of each of the Habitat Zones within each EVC.

Each weed species recorded has been given a control priority in the context of the study area. There are:

1. High priority
2. Moderate priority
3. Low priority
4. Control generally not necessary or not feasible.

A cross (†) signifies species where adult planted specimens may be retained, however elimination of any offspring is recommended.

5.1 Site: Balcombe Park

**Location:** north of Balcombe Rd, between Balcombe Park Lane and Reserve Rd, Beaumaris.  
**Area:** 2.24 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the eight Habitat Zones identified at the site (Figure 6) are summarised in Table 2 and Figure 5. Habitat Zone 8 was not assessed as it had been burnt just prior to the field work leaving very little vegetation above ground.

**Sand Heathland (SH)** (Rare) occurs in three Habitat Zones (HZ 1, 3 and 5). Habitat Zone 1 and 5 appear to have been burnt relatively recently and HZ3 is dominated by Bracken (*Pteridium esculentum*).

**Damp Sands Herb-rich Woodland (DSHW)** (Vulnerable) occurs in five Habitat Zones (HZ2, 4, 6, 7 and 8). Coast Tea-tree (*Leptospermum laevigatum*) has naturalised and now dominates HZ2 and 4; however HZ4 contains more indigenous understorey species (possibly a result of past plantings). Most of the vegetation present in HZ6 and 7 has been planted one (HZ6) to many (HZ7) years ago.

Habitat Zone 8 had been burnt just prior to field assessments and hence is presumed to be DSHW based on the mapping provided in Botanicus (2003).

The **Native Amenity Planting (NAP)** zone provides little ecological function as it is heavily mulched and contains mostly mature non-indigenous species. Some planting has occurred under the mature shrubs and trees which may increase its ecological function in future years.

**PREVIOUS MANAGEMENT**

Some areas of the site (HZ1, 3, 5 and 8) have been burnt very recently (HZ8) to several years ago. These areas have been fenced off and weeds have been controlled. Revegetation has occurred in HZ4, 6 and 7 and the NAP areas. The NAP areas and HZ6 had received additional plantings in the months just prior to the field assessment.

**KEY MANAGEMENT ISSUES**

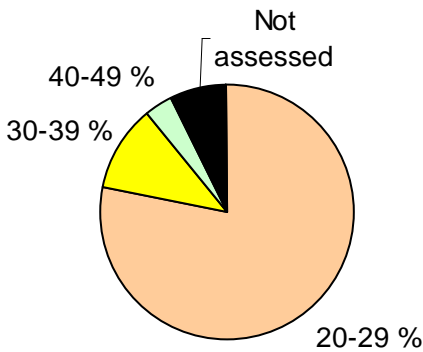
Weeds	Major issue, see Table 3 below.
Fox/Rabbit/Rat	Minor issue, little evidence of feral mammals observed.
Litter	Minor issue, scattered pieces observed across the site.
Dog scats	Minor issue.
Pedestrian damage	Minor issue, most pedestrians stay on the designated paths.
Erosion	Not evident.
Beach sand modifications	Not applicable.

**Table 2 Summary of the Vegetation Quality Assessment for the eight Habitat Zones identified at Balcombe Park, Beaumaris, August 2008.**

**Key:**  
SH Sand Heathland  
DSHRW Damp Sands Herb-rich Woodland  
♦ Vegetation Quality Assessment not completed for HZ8 as it had been burnt too recently

Habitat Zone		1	2	3	4	5	6	7	8 ♦
Ecological Vegetation Class name (initials)		SH	DSHW	SH	DSHW	SH	DSHW	DSHW	DSHW
Site Condition	Large Old Trees	10	-	0	-	0	-	0	♦
	Canopy Cover	5	-	0	-	0	-	0	♦
	Understorey	25	5	10	15	10	10	10	♦
	Lack of Weeds	15	7	0	11	0	7	9	♦
	Recruitment	10	0	3	3	6	3	6	♦
	Organic Matter	5	3	4	3	4	3	4	♦
	Logs	5	-	4	-	4	-	0	♦
Landscape value	Patch Size	10	2	2	2	2	2	2	♦
	Neighbourhood	10	0	0	0	0	0	0	♦
	Distance to Core	5	0	0	0	0	0	0	♦
Habitat Score		100%	22%	23%	46%	26%	33%	31%	27%

♦ HZ 8 was burnt just prior to the field assessments and as such very little vegetation cover was present at the time of the assessment, therefore, a Vegetation Quality Assessment was not complete.



**Figure 5 Proportional area of vegetation assessed within each habitat score (%) category, Balcombe Park, Beaumaris, August 2008.**

**Table 3 Summary of the weeds recorded in the eight Habitat Zones identified at Balcombe Park, Beaumaris, August 2008.**

**Key:**  
SH Sand Heathland  
DSHW Damp Sands Herb-rich Woodland  
CaLP Catchment and Land Protection Act 1994  
R Regionally Restricted under the Catchment and Land Protection Act 1994  
C Regionally Controlled under the Catchment and Land Protection Act 1994  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone		1	2	3	4	5	6	7	8 ♦
Ecological Vegetation Class name (initials)		SH	DSHW	SH	DSHW	SH	DSHW	DSHW	DSHW
Habitat Score		22%	23%	46%	26%	33%	31%	27%	♦
Weed species recorded ‡									
Priority	CaLP	WONS	Species Name		Common Name				
1			* <i>Acacia longifolia</i> subsp. <i>longifolia</i>	Sallow Wattle		✓	✓	✓	
1		#	* <i>Acacia longifolia</i> subsp. <i>sophorae</i>	Coast Wattle	✓	✓	✓	✓	
1			* <i>Acetosa sagittata</i>	Rambling Dock		✓			
1	R		* <i>Allium triquetrum</i>	Angled Onion		✓			
1	R	W	* <i>Asparagus asparagoides</i>	Bridal Creeper	✓	✓	✓		
1			* <i>Coprosma repens</i>	Mirror Bush		✓			
1			* <i>Dipogon lignosus</i>	Common Dipogon		✓			
1		#	* <i>Leptospermum laevigatum</i>	Coast Tea-tree	✓	✓	✓	✓	✓
1			* <i>Pennisetum clandestinum</i>	Kikuyu		✓			✓
1			* <i>Pittosporum undulatum</i>	Sweet Pittosporum		✓	✓		
1	C		* <i>Salpichroa origanifolia</i>	Pampas Lily-of-the-Valley		✓	✓	✓	✓
1			* <i>Tradescantia fluminensis</i>	Wandering Jew		✓			
2			* <i>Anthoxanthum odoratum</i>	Sweet Vernal-grass			✓		
2			* <i>Chlorophytum comosum</i>	Spider Plant		✓			
2			* <i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass	✓	✓	✓	✓	✓
2			* <i>Ehrharta longiflora</i>	Annual Veldt-grass	✓	✓	✓	✓	✓
2			* <i>Oxalis incarnata</i>	Pale Wood-sorrel	✓		✓		✓
2	R		* <i>Oxalis pes-caprae</i>	Soursob	✓	✓		✓	
2			* <i>Passiflora</i> sp.	Passion-fruit		✓	✓		
3			* <i>Acanthus mollis</i>	Bear's Breach		✓			
3			* <i>Alstroemeria psittacina</i>	Alstromeria			✓		
3			* <i>Arctotheca calendula</i>	Cape Weed	✓				✓
3			* <i>Briza maxima</i>	Large Quaking-grass		✓		✓	
3			* <i>Cupressus</i> sp.	Cypress			✓		
3 †			* <i>Eucalyptus globulus</i> subsp. <i>globulus</i>	Southern Blue-gum				✓	
3 †			* <i>Eucalyptus lehmannii</i>	Bushy Yate					✓
3			* <i>Fumaria</i> spp.	Fumitory		✓		✓	✓
3			* <i>Hypochoeris radicata</i>	Flatweed	✓	✓	✓	✓	
3			* <i>Lagurus ovatus</i>	Hare's-tail Grass			✓		
3			* <i>Lolium</i> spp.	Rye-grass		✓			
3			* <i>Poa annua</i>	Annual Meadow-grass					✓

Habitat Zone		1	2	3	4	5	6	7	8 ♦
Ecological Vegetation Class name (initials)		SH	DSHW	SH	DSHW	SH	DSHW	DSHW	DSHW
Habitat Score		22%	23%	46%	26%	33%	31%	27%	♦
Weed species recorded ‡									
Priority	CaLP	WONS	Species Name		Common Name				
4			* <i>Cerastium glomeratum</i>	Common Mouse-ear Chickweed		✓			
4 †			* <i>Corymbia ficifolia</i>	Red-flowering Gum		✓		✓	✓
4			* <i>Dianella tasmanica</i> (probably exotic provenance)	Tasman Flax-lily	✓	✓			
4 †			* <i>Eucalyptus burdettiana</i>	Burdetts Mallee				✓	
4 †			* <i>Eucalyptus camaldulensis</i> (exotic provenance)	River Red-gum		✓			
4			* <i>Geranium molle</i> var. <i>molle</i>	Dove's Foot					✓
4			* <i>Malva</i> spp.	Mallow					✓
4			* <i>Romulea rosea</i> var. <i>australis</i>	Onion Grass		✓	✓	✓	
4			* <i>Solanum nigrum</i>	Black Nightshade		✓			✓
4			* <i>Sonchus oleraceus</i>	Common Sow-thistle		✓		✓	✓
4			* <i>Stellaria media</i>	Chickweed		✓	✓	✓	
4			* <i>Trifolium</i> spp.	Clover					✓

♦ A Vegetation Quality Assessment was not complete for HZ 8 as the habitat zone had been burnt too recently.

‡ Species may occur in additional habitat zones than shown

† Adult planted specimens may be retained, however elimination of any offspring is recommended.





Figure 6 Ecological Vegetation Classes and Habitat Zones (HZ) identified at Balcombe Park, Beaumaris, August 2008.

5.2 Site: Bay Road Heathland Sanctuary

**Location:** south of Bay Rd, between Miller St and Aberdeen Rd, Sandringham.

**Area:** 2.18 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the seven Habitat Zones identified at the site (Figure 8) are summarised in Table 4 and Figure 7.

**Sand Heathland (SH)** (Rare) occurs in four Habitat Zones (HZ 1 – 4). Three (HZ1, 2, and 3) are of moderate to high quality, while the fourth (HZ4) is very degraded due to the dominance of naturalised Coast Tea-tree (*Leptospermum laevigatum*). Habitat Zones 1 and 2 have a relatively high diversity of indigenous species while HZ3 has a high cover of Bracken (*Pteridium esculentum*).

**Heathy Woodland (HW)** (Least Concern) occurs in three Habitat Zones (HZ5 – 7). It is dominated by Coast Manna-gum (*Eucalyptus viminalis* subsp. *pryoriana*) (HZ6 and 7) or Coast Tea-tree (HZ5). Much of the Heathy Woodland has been arranged into garden beds.

**PREVIOUS MANAGEMENT**

Repeated burning of the site since 1974 (Botanicus 1996) has restricted the Coast Tea-tree cover primarily to HZ4 and 5 and may have contributed to the dominance of Bracken in other areas. Revegetation has occurred in HZ1, 5, 6 and 7, and fences have been erected across parts of the site to restrict public access. Herbicide spraying has also been used to control weeds.

**KEY MANAGEMENT ISSUES**

Weeds	Major issue, see Table 5 below.
Fox/Rabbit/Rat	Moderate issue, one unused, presumably fox den was observed in HZ2.
Litter	Minor issue.
Dog scats	Minor issue, only associated with HZ6 and 7.
Pedestrian damage	Minor issue, restricted to HZ4-7.
Erosion	Not evident.
Beach sand modifications	Not applicable.

Table 4 Summary of the Vegetation Quality Assessment for the seven Habitat Zones identified at Bay Road Heathland Sanctuary, Sandringham, July 2008.

Key:

SH Sand Heathland

HW Heathy Woodland

Habitat Zone			1	2	3	4	5	6	7
Ecological Vegetation Class name (initials)			SH	SH	SH	SH	HW	HW	HW
Site Condition	Large Old Trees	10	-	-	-	-	0	5	8
	Canopy Cover	5	-	-	-	-	5	4	3
	Understorey	25	20	20	15	5	15	15	15
	Lack of Weeds	15	9	9	6	0	0	6	9
	Recruitment	10	10	10	3	0	6	5	3
	Organic Matter	5	5	5	3	4	5	5	5
	Logs	5	-	-	-	-	2	4	4
Landscape value	Patch Size	10	2	2	2	2	2	2	2
	Neighbourhood	10	0	0	0	0	0	0	0
	Distance to Core	5	0	0	0	0	0	0	0
Habitat Score		100%	62%	62%	39%	14%	35%	46%	49%

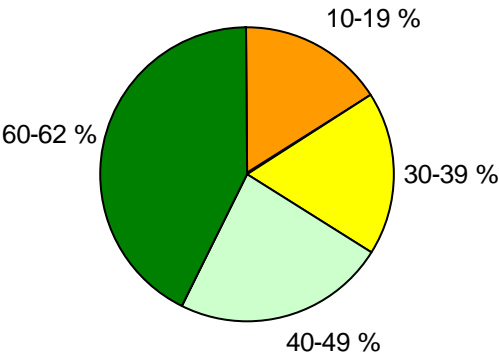


Figure 7 Proportional area of vegetation assessed within each habitat score (%) category, Bay Road Heathland Sanctuary, Sandringham, July 2008.



**Table 5 Summary of the weeds recorded in the seven Habitat Zones identified at Bay Road Heathland Sanctuary, Sandringham, July 2008.**

**Key:**  
SH Sand Heathland  
HW Heathy Woodland  
CaLP *Catchment and Land Protection Act 1994*  
R Regionally Restricted under the *Catchment and Land Protection Act 1994*  
C Regionally Controlled under the *Catchment and Land Protection Act 1994*  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone				1	2	3	4	5	6	7
Ecological Vegetation Class name (initials)				SH	SH	SH	SH	HW	HW	HW
Habitat Score				62%	62%	39%	14%	35%	46%	49%
Weed species recorded ‡										
Priority	CaLP	WONS		Species Name	Common Name					
1			*	<i>Acacia longifolia</i> subsp. <i>longifolia</i>	Sallow Wattle	✓	✓		✓	✓
1	R	W	*	<i>Asparagus asparagoides</i>	Bridal Creeper	✓			✓	
1			*	<i>Chamaecytisus palmensis</i>	Tree Lucerne	✓	✓	✓	✓	
1 †			*	<i>Eucalyptus botryoides</i>	Southern Mahogany		✓			
1			*	<i>Ixia</i> sp.	Ixia		✓		✓	
1			#	<i>Leptospermum laevigatum</i>	Coast Tea-tree	✓	✓		✓	✓
1			*	<i>Pennisetum clandestinum</i>	Kikuyu				✓	✓
1	C		*	<i>Salpichroa origanifolia</i>	Pampas Lily-of-the-Valley	✓		✓		
2			*	<i>Agrostis capillaris</i>	Brown-top Bent				✓	
2			*	<i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch				✓	✓
2			*	<i>Dactylis glomerata</i>	Cocksfoot				✓	
2			*	<i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass	✓		✓	✓	✓
2			*	<i>Ehrharta longiflora</i>	Annual Veldt-grass	✓	✓	✓	✓	
2	R		*	<i>Oxalis pes-caprae</i>	Soursob				✓	✓
2			*	<i>Oxalis</i> sp.	Wood-sorrel		✓			
3			*	<i>Acetosella vulgaris</i>	Sheep Sorrel		✓			
3			*	<i>Arctotheca calendula</i>	Cape Weed	✓	✓	✓	✓	✓
3			*	<i>Fumaria</i> spp.	Fumitory			✓		
3			*	<i>Hypochoeris radicata</i>	Flatweed	✓	✓	✓	✓	
3			*	<i>Poa annua</i>	Annual Meadow-grass					✓
3			*	<i>Vulpia</i> spp.	Fescue	✓		✓	✓	
4			*	<i>Leontodon taraxacoides</i> subsp. <i>taraxacoides</i>	Hairy Hawkbit			✓		
4			*	<i>Oxalis corniculata</i> s.s.	Creeping Wood-sorrel			✓		
4			*	<i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	✓	✓	✓	✓	
4			*	<i>Solanum nigrum</i>	Black Nightshade				✓	✓
4			*	<i>Stellaria media</i>	Chickweed	✓		✓	✓	✓
4			*	<i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover	✓		✓		

‡ Species may occur in additional habitat zones than shown  
§ Many Tree Lucern seedlings are present, however overall cover is relatively low.  
† Adult planted specimens may be retained, however elimination of any offspring is recommended.



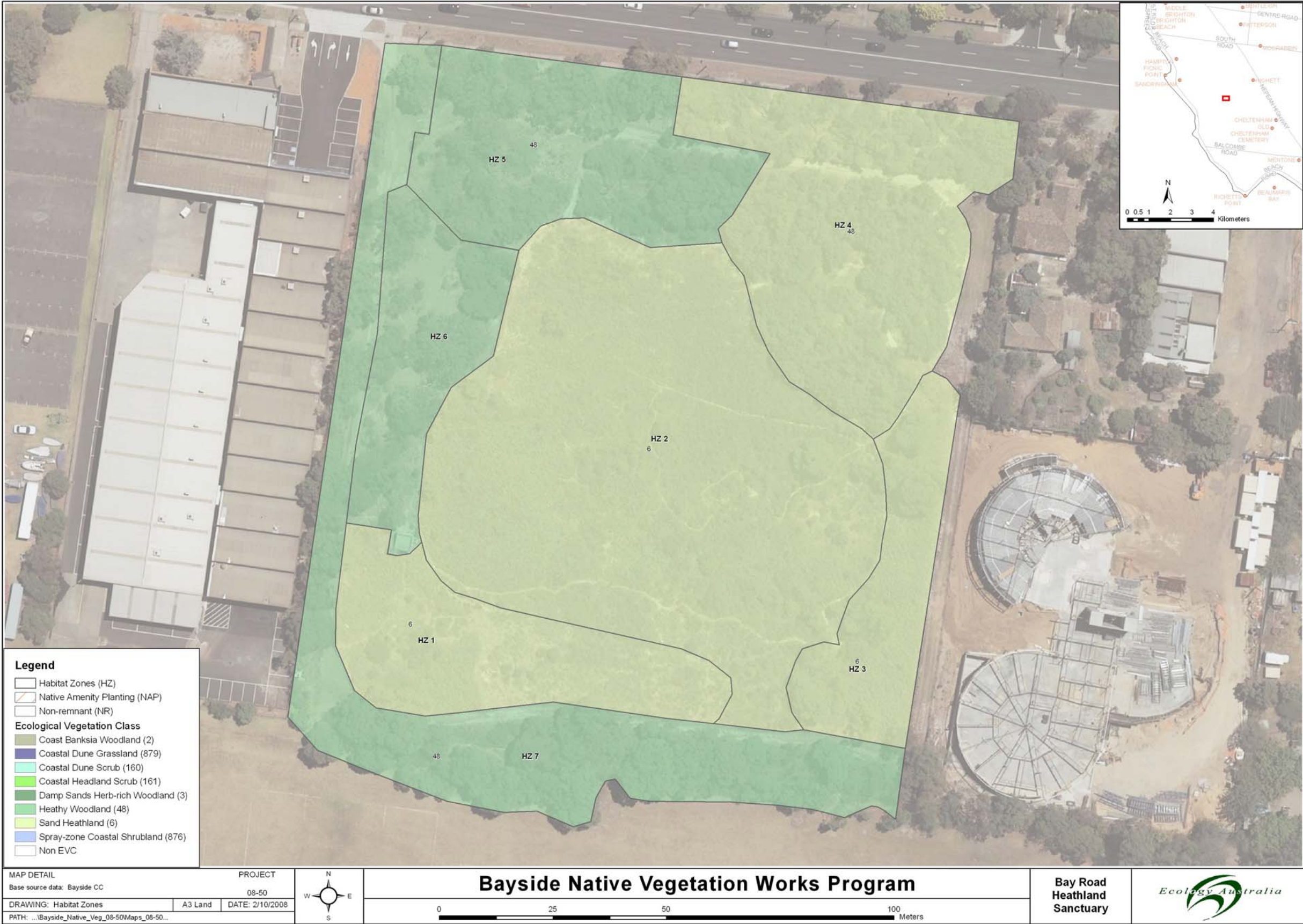


Figure 8 Ecological Vegetation Classes and Habitat Zones identified at Bay Road Heathland Sanctuary, Sandringham, July 2008.

5.3 Site: Beaumaris Foreshore - north

**Location:** south of Beach Rd, between Cromer Rd and Charman Rd, Beaumaris.

**Area:** 2.87 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the 12 Habitat Zones identified at the site (Figure 10) are summarised in Table 6 and Figure 9.

**Coastal Headland Scrub (CHS)** (Depleted) occurs in 10 of the Habitat Zones (HZ1-8, 10 and 11). For no obvious reason, the CHS seaward of the existing footpath (HZ 7 and 8) supports more indigenous graminoid and herb species than the CHS landward of the footpath. Weeds are abundant across the site, however their dominance in some Habitat Zones (HZ 3 and 5) is higher than in others (HZ 1, 2, 4 and 11).

**Spray-zone Coastal Shrubland (SZCS)** (Rare) occurs in two Habitat Zones (HZ9 and 12). Habitat Zone 12 occurs on a sloping seacliff and contains a diverse array of life forms while HZ9 occurs on the (near) vertical seacliffs and supports fewer life forms and more weeds.

The **Native Amenity Planting (NAP)** zone provides little ecological function as it is heavily mulched and contains mostly mature non-indigenous species.

**PREVIOUS MANAGEMENT**

Replanting/revegetation presumably spanning several decades, is common across the site. Older plantings appear to include Drooping Sheoak (*Allocasuarina verticillata*) – often in groves, and non-indigenous eucalypts e.g. Southern Mahogany (*Eucalyptus botryoides*) and Manna Gum (*Eucalyptus viminalis* subsp. *viminalis*). Weed control is also evident and fences have been erected which restrict public access to most areas of the reserve.

**KEY MANAGEMENT ISSUES**

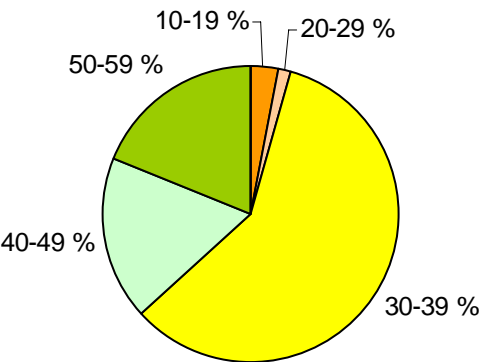
Weeds	Major issue, see Table 7 below.
Fox/Rabbit/Rat	Moderate issue, numerous animal tracks were observed, possibly belonging to foxes or dogs. A fox den was observed in HZ5 and the remains of a rabbit were observed in HZ6 (probably predated by a fox or possibly an owl).
Litter	Minor issue.
Dog scats	Major issue, associated with the existing footpaths and all Habitat Zones landward side of the existing footpath.
Pedestrian damage	Minor issue, most pedestrians stay on the designated footpaths.
Erosion	Major issue, addressed in the technical report prepared by Parsons Brinckerhoff (2008). Cliff instability has lead to the need to relocate the existing footpath in some places (Ecology Australia 2008b). Erosion beneath storm water drain outlets was also observed.

Beach sand modifications                      Not applicable.

**Table 6    Summary of the Vegetation Quality Assessment for the 12 Habitat Zones identified at Beaumaris Foreshore - north, Beaumaris, August 2008.**

**Key:**  
CHS                      Coastal Headland Scrub  
SZCS                    Spray-zone Coastal Shrubland

Habitat Zone		1	2	3	4	5	6	7	8	9	10	11	12
Ecological Vegetation Class name (initials)		CHS	CHS	CHS	CHS	CHS	CHS	CHS	CHS	SZCS	CHS	CHS	SZCS
Site Condition	Large Old Trees	10	-	-	-	-	-	-	-	-	-	-	-
	Canopy Cover	5	-	-	-	-	-	-	-	-	-	-	-
	Understorey	25	15	15	5	10	15	15	20	15	15	5	5
	Lack of Weeds	15	4	7	0	4	0	4	4	0	4	7	7
	Recruitment	10	6	6	3	6	6	3	6	6	10	6	3
	Organic Matter	5	3	5	2	4	2	5	5	5	5	4	5
	Logs	5	-	-	-	-	-	-	-	-	-	-	-
Landscape value	Patch Size	10	2	2	2	2	2	2	2	2	2	2	2
	Neighbourhood	10	0	0	0	0	0	0	0	0	0	0	0
	Distance to Core	5	0	0	0	0	0	0	0	0	0	0	0
Habitat Score		100%	40%	47%	16%	35%	33%	35%	50%	37%	48%	33%	28%



**Figure 9    Proportional area of vegetation assessed within each habitat score (%) category, Beaumaris Foreshore - north, Beaumaris, August 2008**



**Table 7 Summary of the weeds recorded in the 12 Habitat Zones identified at Beaumaris Foreshore – north, Beaumaris, August 2008.**

**Key:**  
CHS Coastal Headland Scrub  
SZCS Spray-zone Coastal Shrubland  
CaLP *Catchment and Land Protection Act 1994*  
R Regionally Restricted under the *Catchment and Land Protection Act 1994*  
C Regionally Controlled under the *Catchment and Land Protection Act 1994*  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone		1	2	3	4	5	6	7	8	9	10	11	12
Ecological Vegetation Class name (initials)		CHS	CHS	CHS	CHS	CHS	CHS	CHS	CHS	SZCS	CHS	CHS	SZCS
Habitat Score		40%	47%	16%	35%	33%	35%	50%	37%	48%	33%	28%	54%
Weed species recorded ‡													
Priority	CaLP	WONS	Species Name	Common Name									
1			* <i>Acacia longfolia</i> s.l. x <i>A. floribunda</i>	Hybrid Sallow Wattle					✓				
1			* <i>Acetosa sagittata</i>	Rambling Dock						✓		✓	
1	R		* <i>Allium triquetrum</i>	Angled Onion		✓	✓	✓			✓	✓	✓
1			* <i>Araujia sericifera</i>	White Bladder-flower	✓					✓			
1	R	W	* <i>Asparagus asparagoides</i>	Bridal Creeper	✓			✓	✓	✓	✓		
1			* <i>Chasmanthe floribunda</i>	African Cornflag				✓					
1	C	W	* <i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	Boneseed	✓			✓	✓	✓			✓
1	C		* <i>Cirsium vulgare</i>	Spear Thistle		✓							
1			* <i>Coprosma repens</i>	Mirror Bush	✓		✓		✓	✓			✓
1			* <i>Delairea odorata</i>	Cape Ivy	✓			✓	✓		✓	✓	
1			* <i>Galenia pubescens</i> var. <i>pubescens</i>	Galenia	✓	✓		✓			✓		
1	C		* <i>Genista linifolia</i>	Flax-leaf Broom					✓		✓		
1			* <i>Hakea drupacea</i>	Sweet Hakea	✓			✓	✓			✓	
1	C		* <i>Lycium ferocissimum</i>	African Box-thorn	✓		✓		✓	✓			
1	C		* <i>Moraea flaccida</i>	One-leaf Cape-tulip	✓			✓			✓		
1			* <i>Pennisetum clandestinum</i>	Kikuyu	✓		✓	✓	✓			✓	✓
1	C		* <i>Salpichroa organifolia</i>	Pampas Lily-of-the-Valley	✓	✓	✓		✓		✓	✓	
1			* <i>Zantedeschia aethiopica</i>	White Arum-lily				✓					
2			* <i>Chlorophytum comosum</i>	Spider Plant				✓					
2			* <i>Crassula sarmentosa</i> var. <i>sarmentosa</i>	Creassula				✓	✓				
2			* <i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch	✓		✓	✓		✓			
2			* <i>Dactylis glomerata</i>	Cocksfoot					✓				
2			* <i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass	✓	✓	✓	✓	✓	✓	✓	✓	✓
2			* <i>Ehrharta longiflora</i>	Annual Veldt-grass	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	R		* <i>Oxalis pes-caprae</i>	Soursob	✓	✓	✓	✓	✓	✓	✓	✓	✓
2			* <i>Oxalis purpurea</i>	Large-flower Wood-sorrel	✓								
2			* <i>Sporobolus africanus</i>	Rat-tail Grass	✓					✓			✓
2			* <i>Thinopyrum junceiforme</i>	Sea Wheat-grass									✓
3			* <i>Acanthus mollis</i>	Bear's Breach									✓

Habitat Zone		1	2	3	4	5	6	7	8	9	10	11	12
Ecological Vegetation Class name (initials)		CHS	CHS	CHS	CHS	CHS	CHS	CHS	CHS	SZCS	CHS	CHS	SZCS
Habitat Score		40%	47%	16%	35%	33%	35%	50%	37%	48%	33%	28%	54%
Weed species recorded ‡													
Priority	CaLP	WONS	Species Name	Common Name									
3			* <i>Arctotheca calendula</i>	Cape Weed	✓	✓	✓	✓	✓	✓	✓		✓
3			* <i>Conyza</i> spp.	Fleabane			✓						
3			* <i>Fumaria</i> spp.	Fumitory	✓	✓	✓		✓		✓	✓	
3			* <i>Hypochoeris radicata</i>	Flatweed	✓				✓				
3			* <i>Plantago coronopus</i>	Buck's-horn Plantain									✓
3			* <i>Poa annua</i>	Annual Meadow-grass		✓							
3			* <i>Vulpia</i> spp.	Fescue	✓	✓		✓	✓	✓	✓		
4			* <i>Cerastium glomeratum</i>	Common Mouse-ear Chickweed	✓					✓	✓		✓
4 †			* <i>Corymbia ficifolia</i>	Red-flowering Gum	✓								
4			* <i>Geranium molle</i> var. <i>molle</i>	Dove's Foot						✓			
4			* <i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	✓				✓	✓	✓		✓
4			* <i>Solanum nigrum</i>	Black Nightshade	✓				✓	✓	✓		
4			* <i>Sonchus oleraceus</i>	Common Sow-thistle	✓	✓			✓	✓		✓	✓
4			* <i>Stellaria media</i>	Chickweed	✓	✓				✓			
4			* <i>Vicia sativa</i> s.l.	Common Vetch			✓					✓	

‡ Species may occur in additional habitat zones than shown  
† Adult planted specimens may be retained, however elimination of any offspring is recommended.



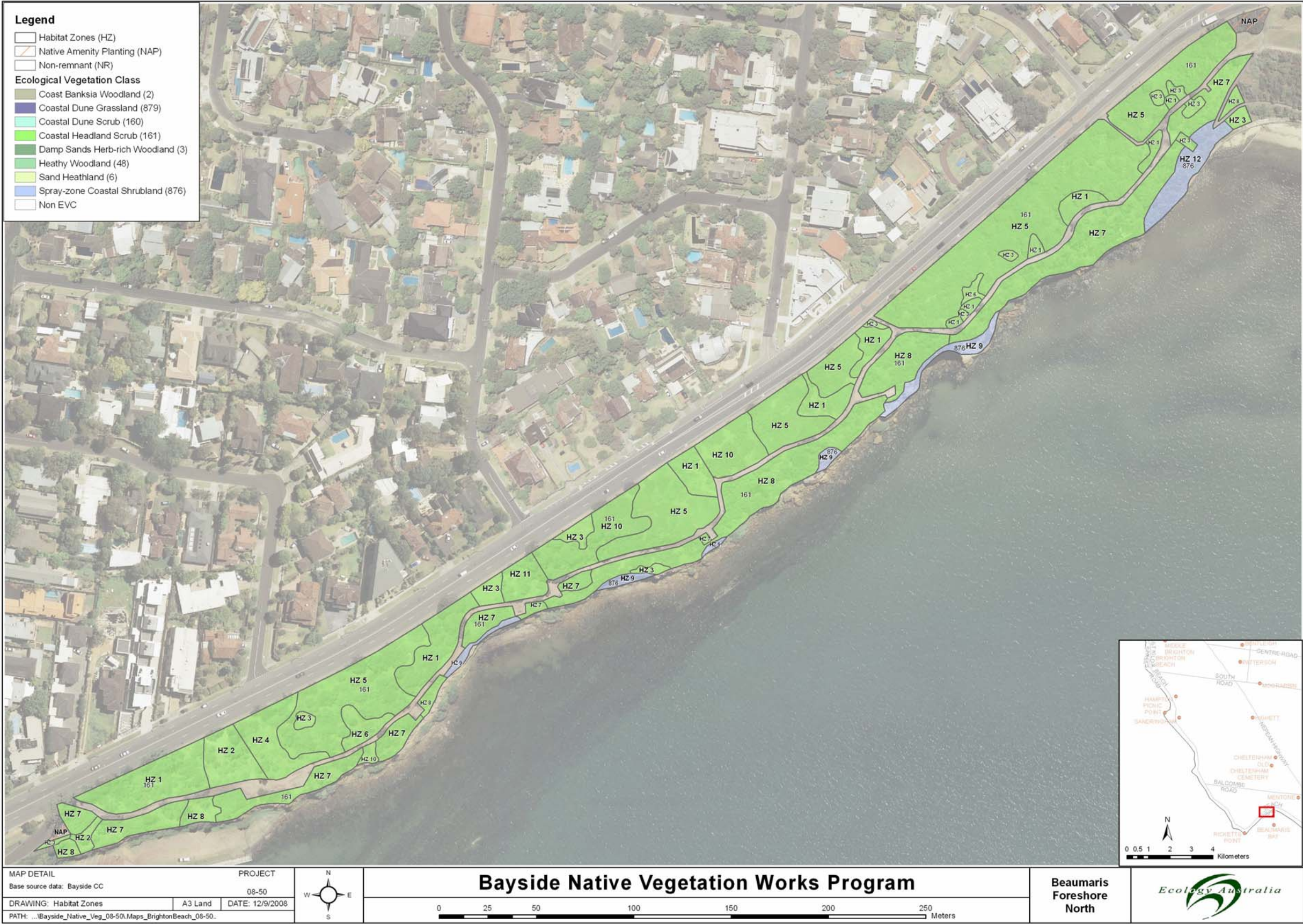


Figure 10 Ecological Vegetation Classes and Habitat Zones identified at Beaumaris Foreshore - north, Beaumaris, August 2008.



5.4 Site: Black Rock - south

**Location:** west of Beach Rd, between Bayview Cr and Glenmore Cr, Black Rock.

**Area:** 2.57 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the five Habitat Zones identified at the site (Figure 12) are summarised in Table 8 and Figure 11.

**Coastal Headland Scrub (CHS)** (Depleted) occurs in three Habitat Zones (HZ1-3). Habitat Zone 1 occupies the top of the headland and contains a high diversity and cover of weeds, while HZ2 and 3 occur on the seaward slopes. Habitat Zone 3 is the most degraded zone containing a high weed cover and lower diversity.

**Spray-zone Coastal Shrubland (SZCS)** (Rare) occupies one Habitat Zone (HZ4) at the base of the headland, on soil that has washed down from the eroding cliffs. It has reasonable species diversity but overall cover is low and there is a lot of bare ground.

**Coastal Dune Grassland (CDG)** (Depleted) occurs in one Habitat Zone (HZ5) on the beach foredunes. It contains several shrub species but very few species in other life forms. It also contains a high cover of weeds.

**PREVIOUS MANAGEMENT**

Weed control has been undertaken at the site; however more resources will be required due to the magnitude of the problem. Fences have been erected to restrict public access on the headland and at the beach (to protect the public from falling rocks). However, both of these fences have been breached.

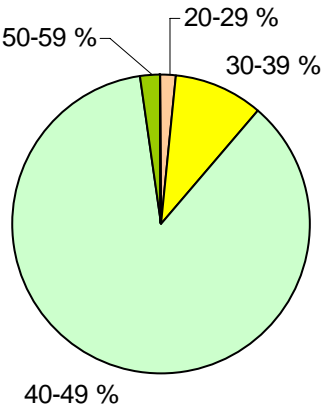
**KEY MANAGEMENT ISSUES**

Weeds	Major issue, see Table 9 below.
Fox/Rabbit/Rat	Moderate issue, two burrows were observed (HZ1) which may belong to a fox or rabbit. Diggings were also present in HZ3 and presumably belong to rats that have been harvesting Soursob ( <i>Oxalis pes-caprae</i> ) bulbs.
Litter	Moderate issue, especially in HZ1.
Dog scats	Moderate issue, primarily associated with the existing footpaths. Fences restrict pets from accessing most of the vegetation.
Pedestrian damage	Minor issue, most pedestrians stay on the designated footpaths.
Erosion	Moderate issue, associated with the eroding seacliffs.
Beach sand modifications	Not observed but may be an issue if beach sand is imported and spread on top of native vegetation (particularly CDG).

**Table 8 Summary of the Vegetation Quality Assessment for the five Habitat Zones identified at Black Rock - south, Black Rock, July 2008.**

**Key:**  
CHS Coastal Headland Scrub  
CDG Coastal Dune Grassland  
SZCS Spray-zone Coastal Shrubland

Habitat Zone		1	2	3	4	5
Ecological Vegetation Class name (initials)		CHS	CHS	CHS	CDG	CDG
Site Condition	Large Old Trees	10	-	-	-	-
	Canopy Cover	5	-	-	-	-
	Understorey	25	20	15	15	5
	Lack of Weeds	15	0	4	0	4
	Recruitment	10	6	6	3	10
	Organic Matter	5	4	5	3	5
	Logs	5	-	-	-	-
Landscape value	Patch Size	10	4	4	4	4
	Neighbourhood	10	0	0	0	0
	Distance to Core	5	0	0	0	0
Habitat Score		100%	45%	45%	33%	50%
			24%			



**Figure 11 Proportional area of vegetation assessed within each habitat score (%) category, Black Rock - south, Black Rock, July 2008.**



**Table 9 Summary of the weeds recorded in the five Habitat Zones identified at Black Rock - south, Black Rock, July 2008.**

**Key:**  
CHS Coastal Headland Scrub  
CDG Coastal Dune Grassland  
SZCS Spray-zone Coastal Shrubland  
CaLP *Catchment and Land Protection Act 1994*  
R Regionally Restricted under the *Catchment and Land Protection Act 1994*  
C Regionally Controlled under the *Catchment and Land Protection Act 1994*  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone		1	2	3	4	5
Ecological Vegetation Class name (initials)		CHS	CHS	CHS	CDG	CDG
Habitat Score		45%	45%	33%	50%	24%
Weed species recorded ‡						
Priority	CaLP	WONS	Species Name		Common Name	
1			*	<i>Asparagus aethiopicus</i>	Emerald fern	✓
1	R	W	*	<i>Asparagus asparagoides</i>	Bridal Creeper	✓
1			*	<i>Carpobrotus aequilaterus</i>	Angled Pigface	✓
1			*	<i>Chasmanthe floribunda</i>	African Cornflag	✓
1	C	W	*	<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	Boneseed	✓
1	C		*	<i>Cirsium vulgare</i>	Spear Thistle	✓
1			*	<i>Coprosma repens</i>	Mirror Bush	✓
1			*	<i>Cotoneaster</i> sp.	Cotoneaster	✓
1			*	<i>Delairea odorata</i>	Cape Ivy	✓
1			*	<i>Dipogon lignosus</i>	Common Dipogon	✓
1			*	<i>Galenia pubescens</i> var. <i>pubescens</i>	Galenia	✓
1	C		*	<i>Genista linifolia</i>	Flax-leaf Broom	✓
1			*	<i>Ixia</i> sp.	Ixia	✓
1	C		*	<i>Lycium ferocissimum</i>	African Box-thorn	✓
1			*	<i>Pennisetum clandestinum</i>	Kikuyu	✓
1	C		*	<i>Salpichroa organifolia</i>	Pampas Lily-of-the-Valley	✓
1			*	<i>Stenotaphrum secundatum</i>	Buffalo Grass	✓
1			*	<i>Zantedeschia aethiopica</i>	White Arum-lily	✓
2			*	<i>Brassica fruticulosa</i>	Twiggy Turnip	✓
2			*	<i>Bromus catharticus</i>	Prairie Grass	✓
2			*	<i>Chlorophytum comosum</i>	Spider Plant	✓
2			*	<i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch	✓
2			*	<i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass	✓
2			*	<i>Ehrharta longiflora</i>	Annual Veldt-grass	✓
2	R		*	<i>Oxalis pes-caprae</i>	Soursob	✓
2			*	<i>Sporobolus africanus</i>	Rat-tail Grass	✓
2			*	<i>Thinopyrum junceiforme</i>	Sea Wheat-grass	✓
3			*	<i>Arctotheca calendula</i>	Cape Weed	✓
3			*	<i>Conyza bonariensis</i>	Flaxleaf Fleabane	✓
3			*	<i>Fumaria</i> spp.	Fumitory	✓
3			*	<i>Hypochoeris radicata</i>	Flatweed	✓
3			*	<i>Lagurus ovatus</i>	Hare's-tail Grass	✓
3			*	<i>Lolium</i> spp.	Rye-grass	✓
3			*	<i>Plantago coronopus</i>	Buck's-horn Plantain	✓
3			*	<i>Setaria pumila</i> subsp. <i>pumila</i>	Pale Pigeon-grass	✓
3			*	<i>Vulpia</i> spp.	Fescue	✓

Habitat Zone		1	2	3	4	5
Ecological Vegetation Class name (initials)		CHS	CHS	CHS	CDG	CDG
Habitat Score		45%	45%	33%	50%	24%
Weed species recorded ‡						
Priority	CaLP	WONS	Species Name		Common Name	
4			*	<i>Cerastium glomeratum</i>	Common Mouse-ear Chickweed	✓
4 †			*	<i>Eucalyptus</i> sp.	Eucalypt	✓
4			*	<i>Malva</i> spp.	Mallow	✓
4			*	<i>Medicago</i> spp.	Medic	✓
4			*	<i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	✓
4			*	<i>Solanum nigrum</i>	Black Nightshade	✓
4			*	<i>Sonchus oleraceus</i>	Common Sow-thistle	✓
4			*	<i>Stellaria media</i>	Chickweed	✓

‡ Species may occur in additional habitat zones than shown  
† Adult planted specimens may be retained, however elimination of any offspring is recommended.





Figure 12 Ecological Vegetation Classes and Habitat Zones identified at Black Rock - south, Black Rock, July 2008.



5.5 Site: Brighton Dunes

**Location:** west of the Esplanade, between Keith Ct and Were St, Brighton.

**Area:** 2.94 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the nine Habitat Zones identified at the site (Figure 14) are summarised in Table 10 and Figure 13.

**Coastal Headland Scrub (CHS)** (Depleted) occurs in two Habitat Zones (HZ6 and 8). Both zones are degraded with weeds; however, HZ8 is less degraded and contains a higher native diversity.

**Coastal Dune Scrub (CDS)** (Depleted) occurs in six Habitat Zones (HZ1, 3, 4, 5, 7 and 9). Habitat Zones 1 and 9 are the best quality while HZ3 and 4 contain a high cover of exotic species. Habitat Zones 5 and 7 both have a high cover of weeds and have been revegetated several years ago.

**Coastal Dune Grassland (CDG)** (Depleted) occupies one Habitat Zone (HZ2) which achieved a low habitat score of 18%. It has low diversity due to trampling and weed invasions; however, the substantial areas of Hairy Spinifex (*Spinifex sericeus*) have high biological value.

The **Native Amenity Planting (NAP)** zone is heavily mulched and treated as a garden bed.

**PREVIOUS MANAGEMENT**

Revegetation has previously occurred in HZ5 and 7. Early plantings in HZ5 also included the exotic sand stabilising grass, Marram Grass (*Ammophila arenaria*), which has naturalised at the site. Fences have also been erected to exclude public access, reducing erosion and damage to the vegetation and enhancing natural regeneration of indigenous species.

**KEY MANAGEMENT ISSUES**

Weeds	Major issue, see Table 11 below.
Fox/Rabbit/Rat	Moderate issue, fox dens were observed in HZ 3 and 9 and African Box-thorn ( <i>Lycium ferocissimum</i> ) provides refuge for rats and other feral animals. Rat and/or Rabbit diggings were also observed in HZ8.
Litter	Moderate issue, scattered pieces of rubbish were observed across the site. Builder’s rubble has also been dumped in the past, predominantly in the CHS remnants.
Dog scats	Minor issue, no scats observed.
Pedestrian damage	Moderate issue, most prevalent in HZ2 (Coastal Dune Grassland) and toward the southern end of the site. In other areas, most pedestrians stay on the designated footpaths as fences restrict access from most of the vegetation. A squatter’s residence was also observed in HZ 9.

Erosion	Moderate issue, some wind erosion of sand in CDS and CDG EVCs resulting from pedestrian activities.
Beach sand modifications	Not observed but may be an issue if beach sand is imported and spread on top of indigenous vegetation (especially CDG).

Table 10 Summary of the Vegetation Quality Assessment for the nine Habitat Zones identified at Brighton Dunes, Brighton, August 2008.

**Key:**  
CHS Coastal Headland Scrub  
CDS Coastal Dune Scrub  
CDG Coastal Dune Grassland

Habitat Zone		1	2	3	4	5	6	7	8	9
Ecological Vegetation Class name (initials)		CDS	CDG	CDS	CDS	CDS	CHS	CDS	CHS	CDS
Site Condition	Large Old Trees	10	-	-	-	-	-	-	-	-
	Canopy Cover	5	-	-	-	-	-	-	-	-
	Understorey	25	15	5	15	5	5	5	10	15
	Lack of Weeds	15	7	0	0	0	0	0	0	4
	Recruitment	10	6	5	3	0	5	0	0	3
	Organic Matter	5	5	2	4	4	4	4	2	5
	Logs	5	-	-	-	-	-	-	-	-
Landscape value	Patch Size	10	2	2	2	2	2	2	2	2
	Neighbourhood	10	0	0	0	0	0	0	0	0
	Distance to Core	5	0	0	0	0	0	0	0	0
Habitat Score		100%	47%	18%	32%	14%	21%	14%	12%	32%

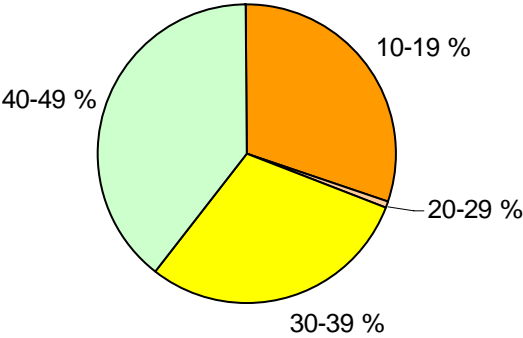


Figure 13 Proportional area of vegetation assessed within each habitat score (%) category, Brighton Dunes, Brighton, August 2008.

**Table 11 Summary of the weeds recorded in the nine Habitat Zones identified at Brighton Dunes, Brighton, August 2008.**

**Key:**  
CHS Coastal Headland Scrub  
CDS Coastal Dune Scrub  
CDG Coastal Dune Grassland  
CaLP *Catchment and Land Protection Act 1994*  
R Regionally Restricted under the *Catchment and Land Protection Act 1994*  
C Regionally Controlled under the *Catchment and Land Protection Act 1994*  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone		1	2	3	4	5	6	7	8	9
Ecological Vegetation Class name (initials)		CDS	CDG	CDS	CDS	CDS	CHS	CDS	CHS	CDS
Habitat Score		47%	18%	32%	14%	21%	14%	12%	32%	48%
Weed species recorded ‡										
Priority	CaLP	WONS	Species Name		Common Name					
1			* <i>Agapanthus praecox</i> subsp. <i>orientalis</i>	Agapanthus				✓		✓
1	R		* <i>Allium triquetrum</i>	Angled Onion			✓	✓		
1	R	W	* <i>Asparagus asparagoides</i>	Bridal Creeper	✓		✓	✓	✓	✓
1	C	W	* <i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	Boneseed					✓	
1			* <i>Coprosma repens</i>	Mirror Bush	✓	✓	✓	✓		✓
1			* <i>Cotoneaster glaucophyllus</i> var. <i>serotinus</i>	Large-leaf Cotoneaster				✓	✓	
1			* <i>Delairea odorata</i>	Cape Ivy	✓		✓			
1			* <i>Freesia</i> sp.	Freesia			✓		✓	
1			* <i>Galenia pubescens</i> var. <i>pubescens</i>	Galenia	✓	✓	✓	✓	✓	✓
1			* <i>Gazania linearis</i>	Gazania	✓	✓	✓			
1			* <i>Hakea drupacea</i>	Sweet Hakea	✓		✓			✓
1	C		* <i>Lycium ferocissimum</i>	African Box-thorn	✓		✓	✓	✓	✓
1	C	W	* <i>Nassella trichotoma</i>	Serrated Tussock				✓		
1			* <i>Paraserianthes lophantha</i> subsp. <i>lophantha</i>	Cape Leeuwin Wattle	✓					
1			* <i>Pennisetum clandestinum</i>	Kikuyu		✓	✓		✓	✓
1			* <i>Pittosporum crassifolium</i>	Karo						✓
1			* <i>Pittosporum undulatum</i>	Sweet Pittosporum						✓
1			* <i>Rhamnus alaternus</i>	Italian Buckthorn						✓
1	C		* <i>Salpichroa organifolia</i>	Pampas Lily-of-the-Valley	✓		✓	✓	✓	
1			* <i>Stenotaphrum secundatum</i>	Buffalo Grass			✓			
1			* <i>Tamarix ramosissima</i>	Tamarisk						✓
1			* <i>Vinca major</i>	Blue Periwinkle			✓			
2			* <i>Ammophila arenaria</i>	Marram Grass	✓	✓	✓		✓	✓
2			* <i>Bromus catharticus</i>	Prairie Grass	✓	✓	✓		✓	✓
2			* <i>Bromus diandrus</i>	Great Brome				✓		✓
2			* <i>Crassula multicava</i> subsp. <i>multicava</i>	Shade Crassula			✓			
2			* <i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch	✓		✓	✓	✓	✓

Habitat Zone		1	2	3	4	5	6	7	8	9
Ecological Vegetation Class name (initials)		CDS	CDG	CDS	CDS	CDS	CHS	CDS	CHS	CDS
Habitat Score		47%	18%	32%	14%	21%	14%	12%	32%	48%
Weed species recorded ‡										
Priority	CaLP	WONS	Species Name		Common Name					
2			* <i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass	✓		✓	✓	✓	✓
2			* <i>Ehrharta longiflora</i>	Annual Veldt-grass	✓		✓	✓	✓	✓
2	R		* <i>Oxalis pes-caprae</i>	Soursob	✓	✓	✓	✓	✓	✓
2			* <i>Oxalis purpurea</i>	Large-flower Wood-sorrel				✓		
2			* <i>Rumex</i> sp.	Dock				✓		
2			* <i>Sporobolus africanus</i>	Rat-tail Grass			✓			
3			* <i>Arctotheca calendula</i>	Cape Weed			✓			✓
3 †			* <i>Eucalyptus cladocalyx</i>	Sugar-gum			✓			
3			* <i>Fumaria</i> spp.	Fumitory			✓			
3			* <i>Hypochoeris radicata</i>	Flatweed	✓		✓			✓
3			* <i>Lagurus ovatus</i>	Hare's-tail Grass	✓		✓			✓
3			* <i>Lolium rigidum</i>	Wimmera Rye-grass			✓			
3			* <i>Lolium</i> spp.	Rye-grass			✓		✓	
3			* <i>Plantago coronopus</i>	Buck's-horn Plantain						✓
3			* <i>Poa annua</i>	Annual Meadow-grass			✓	✓		
3			* <i>Vulpia</i> spp.	Fescue				✓		
4			* <i>Cakile maritima</i> subsp. <i>maritima</i>	Sea Rocket	✓	✓		✓		
4			* <i>Cardamine hirsuta</i> s.s.	Common Bitter-cress			✓	✓		✓
4			* <i>Cerastium glomeratum</i>	Common Mouse-ear Chickweed	✓		✓		✓	✓
4			* <i>Medicago</i> spp.	Medic					✓	
4			* <i>Plantago lanceolata</i>	Ribwort				✓	✓	✓
4			* <i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	✓		✓		✓	✓
4			* <i>Sisymbrium</i> sp.	Mustard						✓
4			* <i>Sonchus oleraceus</i>	Common Sow-thistle	✓	✓	✓	✓	✓	✓
4			* <i>Stellaria media</i>	Chickweed	✓	✓	✓			✓
4			* <i>Trifolium</i> spp.	Clover		✓				
4			* <i>Vicia sativa</i> s.l.	Common Vetch	✓		✓			

‡ Species may occur in additional habitat zones than shown

† Adult planted specimens may be retained, however elimination of any offspring is recommended.





Figure 14 Ecological Vegetation Classes and Habitat Zones identified at Brighton Dunes, Brighton, August 2008.



5.6 Site: Cheltenham Park

**Location:** south of Park Rd, just west of Cheltenham train station and north of the Old Cheltenham Cemetery, Cheltenham.

**Area:** 1.03 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the five Habitat Zones identified at the site (Figure 16) are summarised in Table 12 and Figure 15.

**Damp Sands Herb-rich Woodland** (DSHW) (Vulnerable) occurs across all five Habitat Zones. Many planted trees are present as the site was once part of a botanic garden. Habitat Zones 1 and 2 are the best quality across the site. Habitat Zone 3 has recently been burnt and is now dominated by Black Wattle (*Acacia mearnsii*) regeneration. Habitat Zone 4 is naturalised Coast Tea-tree (*Leptospermum laevigatum*) scrub, and HZ5 has recently been revegetated.

An **isolated, hollow-bearing, remnant large old tree** (Coast Manna-gum *Eucalyptus viminalis* subsp. *pyroriana*) exists between HZ 2 and 4. The understorey is mown lawn.

**PREVIOUS MANAGEMENT**

Cheltenham Park was a botanic garden and as a result many planted trees and shrubs exist onsite. Habitat Zones 1, 2 and 3 appear to have had active management to control weeds and HZ3 has been burnt in the last few years. Habitat Zone 5 has recently been revegetated with indigenous species.

**KEY MANAGEMENT ISSUES**

Weeds	Major issue, see Table 13 below. Increased competition from Coast Tea-tree may have contributed to the deaths of several mature Eucalypt and Banksia trees in HZ4.
Fox/Rabbit/Rat	Not an issue.
Litter	Minor issue, scattered pieces observed across the site, particularly in HZ4.
Dog scats	Minor issue.
Pedestrian damage	Minor issue, most pedestrians stay on the designated footpaths. Fences restrict access to most of the vegetation. A small amount of graffiti and vandalism was observed on the trees in HZ4 (e.g. spray painted trees, etc.).
Erosion	Not an issue.
Beach sand modifications	Not applicable.

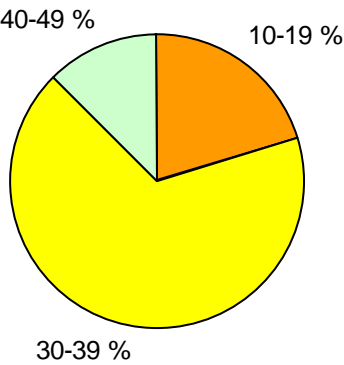
**Table 12 Summary of the Vegetation Quality Assessment for the five Habitat Zones identified at Cheltenham Park, Cheltenham, August 2008.**

**Key:**

EVC Ecological Vegetation Class

DSHW Damp Sands Herb-rich Woodland

Habitat Zone		1	2	3	4	5
Ecological Vegetation Class name (initials)		DSHW	DSHW	DSHW	DSHW	DSHW
Site Condition	Large Old Trees	10	1	0	0	0
	Canopy Cover	5	4	3	0	0
	Understorey	25	15	15	5	15
	Lack of Weeds	15	4	7	11	0
	Recruitment	10	3	10	6	5
	Organic Matter	5	5	5	5	4
	Logs	5	5	0	4	0
Landscape value	Patch Size	10	2	2	2	2
	Neighbourhood	10	0	0	0	0
	Distance to Core	5	0	0	0	0
Habitat Score		100%	39%	42%	33%	16%



**Figure 15 Proportional area of vegetation assessed within each habitat score (%) category, Cheltenham Park, Cheltenham, August 2008.**



**Table 13 Summary of the weeds recorded in the five Habitat Zones identified at Cheltenham Park, Cheltenham, August 2008.**

**Key:**  
DSHW Damp Sands Herb-rich Woodland  
CaLP Catchment and Land Protection Act 1994  
R Regionally Restricted under the Catchment and Land Protection Act 1994  
C Regionally Controlled under the Catchment and Land Protection Act 1994  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone		1	2	3	4	5
Ecological Vegetation Class name (initials)		DSHW	DSHW	DSHW	DSHW	DSHW
Habitat Score		39%	42%	33%	16%	35%
Weed species recorded ‡						
Priority	CaLP	WONS	Species Name	Common Name		
1			# <i>Acacia longfolia</i> subsp. <i>sophorae</i>	Coast Wattle		✓
1			* <i>Acacia saligna</i>	Golden Wreath Wattle	✓	
1	C		* <i>Cirsium vulgare</i>	Spear Thistle		✓
1 †			* <i>Eucalyptus botryoides</i>	Southern Mahogany		✓
1			* <i>Freesia</i> sp.	Freesia	✓	
1			* <i>Hakea drupacea</i>	Sweet Hakea		✓
1			# <i>Leptospermum laevigatum</i>	Coast Tea-tree	✓	
1			* <i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	Giant Honey-myrtle	✓	
1			* <i>Paraserianthes lophantha</i> subsp. <i>lophantha</i>	Cape Leeuwin Wattle	✓	
1	C		* <i>Salpichroa oranifolia</i>	Pampas Lily-of-the-Valley		✓
2			* <i>Acacia iteaphylla</i>	Flinders Ranges Wattle	✓	
2			* <i>Acacia prominens</i>	Gosford Wattle	✓	
2			* <i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass		✓
2			* <i>Ehrharta longiflora</i>	Annual Veldt-grass	✓	✓
2	R		* <i>Oxalis pes-caprae</i>	Soursob	✓	✓
3			* <i>Arctotheca calendula</i>	Cape Weed		✓
3 †			* <i>Corymbia maculata</i>	Spotted Gum		✓
3 †			* <i>Eucalyptus globulus</i> subsp. <i>globulus</i>	Southern Blue-gum		✓
3			* <i>Fumaria</i> spp.	Fumitory		✓
3			* <i>Hypochoeris radicata</i>	Flatweed	✓	✓
3			* <i>Poa annua</i>	Annual Meadow-grass		✓
4 †			* <i>Callistemon rugulosus</i>	Scarlet Bottlebrush	✓	
4 †			* <i>Corymbia ficifolia</i>	Red-flowering Gum	✓	
4 †			<i>Eucalyptus camaldulensis</i> (exotic provenance)	River Red-gum		✓
4 †			* <i>Eucalyptus</i> sp.	Eucalypt		✓
4 †			* <i>Eucalyptus tricarpa</i>	Red Ironbark		✓
4			* <i>Hardenbergia comptoniana</i>	Native Wisteria	✓	

Habitat Zone		1	2	3	4	5
Ecological Vegetation Class name (initials)		DSHW	DSHW	DSHW	DSHW	DSHW
Habitat Score		39%	42%	33%	16%	35%
Weed species recorded ‡						
Priority	CaLP	WONS	Species Name	Common Name		
4			* <i>Kunzea baxteri</i>	Crimson Kunzea	✓	
4			* <i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	✓	✓
4			* <i>Solanum nigrum</i>	Black Nightshade		✓
4			* <i>Sonchus oleraceus</i>	Common Sow-thistle		✓
4			* <i>Stellaria media</i>	Chickweed	✓	✓
4			* <i>Taraxacum officinale</i> spp. agg.	Garden Dandelion		✓

‡ Species may occur in additional habitat zones than shown  
† Adult planted specimens may be retained, however elimination of any offspring is recommended.



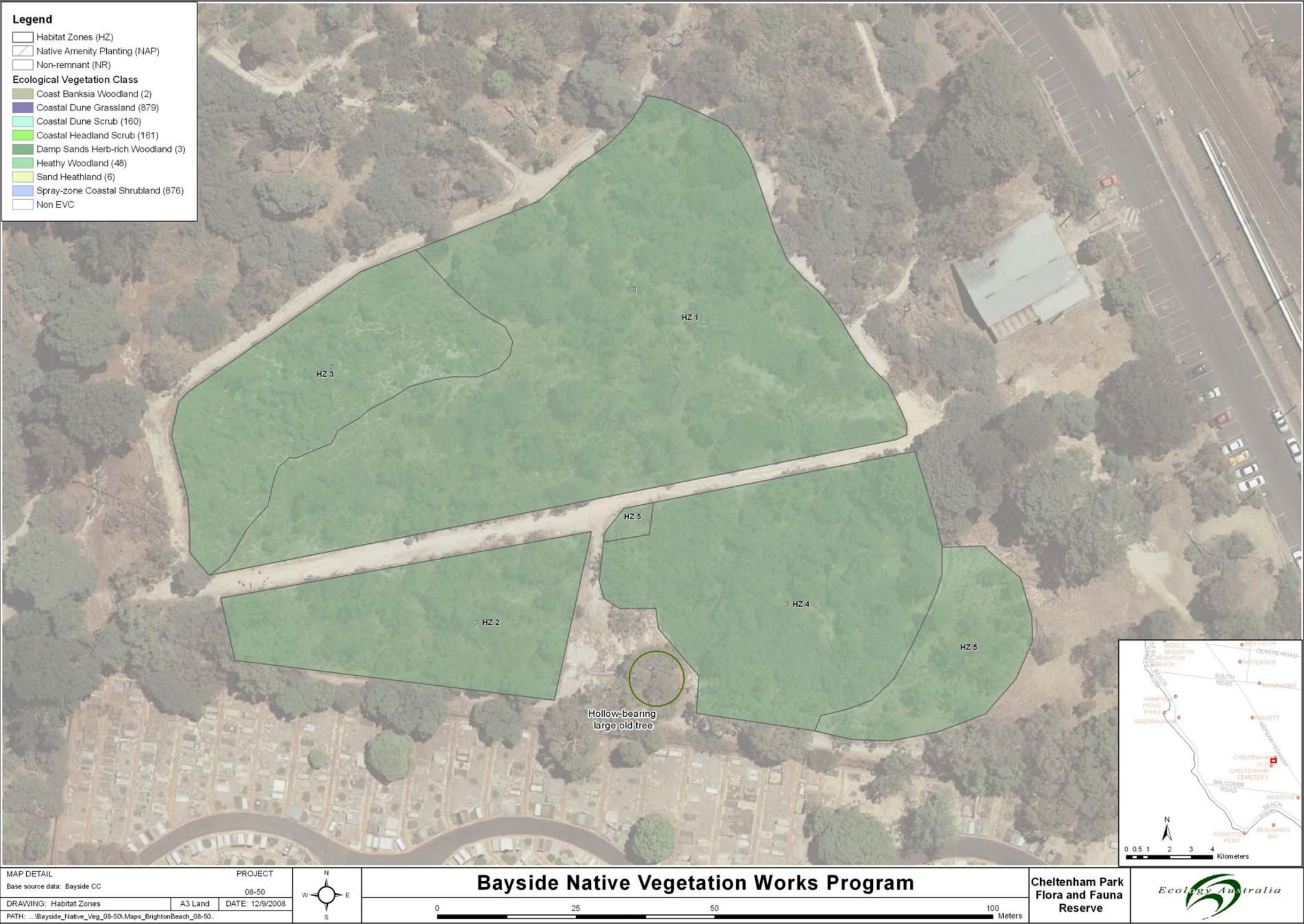


Figure 16 Ecological Vegetation Classes and Habitat Zones identified at Cheltenham Park, Cheltenham, August 2008.



5.7 Site: Donald McDonald Reserve

**Location:** south of Fourth St, between Keating St and Haydens Rd, Beaumaris.

**Area:** 3.87 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the 11 Habitat Zones identified at the site (Figure 18) are summarised in Table 14 and Figure 17.

**Sand Heathland (SH)** (Rare) occurs within seven of the Habitat Zones (HZ 1, 3, 4, 5, 8, 9 and 11) and is primarily in the centre of the site. Fire history and active management have been the bases for the separation of HZ1, 3, 4 and 5, whereby HZ1 and 3 have been burnt more recently (approximately 2-3 years ago) than HZ4 and 5 (approximately 4-5 years ago), and weeds have been managed in HZ1 and 5. Habitat Zone 8 has been planted with Eucalypts (both indigenous and exotic provenances) and is becoming a woodland. Habitat Zone 9 contains several Southern Mahogany's (*Eucalyptus botryoides*) planted several decades ago, which now contain hollows and provide habitat for native fauna. Habitat Zone 11 is dominated by Coast Tea-tree and supports very little remnant vegetation.

**Damp Sands Herb-rich Woodland (DSHW)** (Vulnerable) occupies four of the Habitat Zones (HZ2, 6, 7 and 10). Habitat Zone 2 and 6 are similar in quality as they both contain some remnant vegetation (e.g. tree canopy cover), and HZ2 has received supplementary understorey plantings. Habitat Zone 7 is dominated by naturalised Coast Tea-tree and retains few remnant qualities and HZ10 has been recently burnt (approximately 2-3 years ago) and regenerating Wattles (*Acacia* spp.) and Kangaroo Apples (*Solanum* sp.) are prominent.

The **Native Amenity Planting (NAP)** zone contains large mature Manna Gums (*Eucalypt viminalis* subsp. *viminalis*) trees but very little other remnant vegetation.

**PREVIOUS MANAGEMENT**

Weed control has been prevalent across the reserve and several methods have been used including hand weeding, herbicide use and fire. The use of fire in the reserve has been successful in replacing the Coast Tea-tree dominated vegetation with reasonably high quality Sand Heathland vegetation (e.g. HZ5). Revegetation of indigenous species was also observed across the site (e.g. HZ2).

**KEY MANAGEMENT ISSUES**

Weeds	Major issue, see Table 15 below.
Fox/Rabbit/Rat	Moderate issue, a fox den and animal remains (possibly rabbit) were observed in HZ8.
Litter	Minor issue.
Dog scats	Major issue, predominantly associated with the walking tracks and the oval
Pedestrian damage	Minor issue, most pedestrians stay on the designated footpaths. Fences restrict access to most of the vegetation, although many tracks exist through HZ9.

Erosion                      Not evident.

Beach sand                      Not applicable.

modifications

Table 14 Summary of the Vegetation Quality Assessment for the 11 Habitat Zones identified at Donald McDonald Reserve, Beaumaris, August 2008.

Key:  
DSHW Damp Sands Herb-rich Woodland  
SH Sand Heathland

Habitat Zone			1	2	3	4	5	6	7	8	9	10	11
Ecological Vegetation Class name			SH	DSHW	SH	SH	SH	DSHW	DSHW	SH	SH	DSHW	SH
Site Condition	Large Old Trees	10	-	0	-	-	-	0	0	-	-	0	-
	Canopy Cover	5	-	3	-	-	-	5	0	-	-	3	-
	Understorey	25	15	5	15	15	15	5	0	15	5	10	5
	Lack of Weeds	15	9	4	0	0	13	4	0	4	2	9	0
	Recruitment	10	10	0	5	6	10	6	0	6	6	10	0
	Organic Matter	5	2	3	4	4	5	3	2	5	2	2	4
	Logs	5	-	4	-	-	-	4	4	-	-	4	-
Landscape value	Patch Size	10	2	2	2	2	2	2	2	2	2	2	2
	Neighbourhood	10	0	0	0	0	0	0	0	0	0	0	0
	Distance to Core	5	0	0	0	0	0	0	0	0	0	0	0
Habitat Score		100%	51%	21%	35%	36%	61%	29%	8%	43%	22%	40%	14%

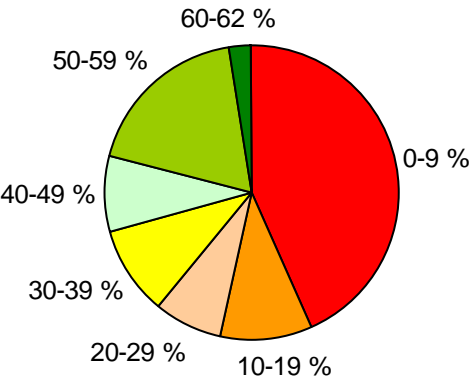


Figure 17 Proportional area of vegetation assessed within each habitat score (%) category, Donald McDonald Reserve, Beaumaris, August 2008.



**Table 15 Summary of the weeds recorded in the 11 Habitat Zones identified at Donald McDonald Reserve, Beaumaris, August 2008.**

**Key:**  
DSHW Damp Sands Herb-rich Woodland  
SH Sand Heathland  
CaLP Catchment and Land Protection Act 1994  
R Regionally Restricted under the Catchment and Land Protection Act 1994  
C Regionally Controlled under the Catchment and Land Protection Act 1994  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone		1	2	3	4	5	6	7	8	9	10	11
Ecological Vegetation Class name (initials)		SH	DSHW	SH	SH	SH	DSHW	DSHW	SH	SH	DSHW	SH
Habitat Score		51%	21%	35%	36%	61%	29%	8%	43%	22%	40%	14%
Weed species recorded ‡												
Priority	CaLP	WONS	Species Name	Common Name								
1			* <i>Acacia longifolia</i> s.l.	Coast/Sallow Wattle			✓	✓	✓		✓	✓
1			* <i>Acacia longifolia</i> subsp. <i>longifolia</i>	Sallow Wattle	✓					✓		
1			# <i>Acacia longifolia</i> subsp. <i>sophorae</i>	Coast Wattle		✓				✓	✓	
1			* <i>Acacia saligna</i>	Golden Wreath Wattle	✓							
1			* <i>Acetosa sagittata</i>	Rambling Dock				✓				✓
1	R		* <i>Allium triquetrum</i>	Angled Onion		✓						
1	R	W	* <i>Asparagus asparagoides</i>	Bridal Creeper	✓	✓	✓	✓	✓	✓	✓	✓
1	C	W	* <i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	Boneseed				✓				✓
1			* <i>Coprosma repens</i>	Mirror Bush	✓					✓		
1			* <i>Delairea odorata</i>	Cape Ivy		✓		✓		✓		✓
1			* <i>Dipogon lignosus</i>	Common Dipogon	✓			✓			✓	✓
1	†		* <i>Eucalyptus botryoides</i>	Southern Mahogany	✓		✓	✓	✓	✓		✓
1			* <i>Kennedia rubicunda</i>	Dusky Coral-pea			✓					
1			# <i>Leptospermum laevigatum</i>	Coast Tea-tree	✓	✓	✓	✓	✓	✓	✓	✓
1			* <i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	Giant Honey-myrtle	✓							
1			* <i>Pennisetum clandestinum</i>	Kikuyu						✓		
1	C	W	* <i>Rubus anglocandicans</i>	Blackberry				✓				✓
1	C		* <i>Salpichroa origanifolia</i>	Pampas Lily-of-the-Valley	✓	✓	✓	✓			✓	✓
1			* <i>Tradescantia fluminensis</i>	Wandering Jew				✓				✓
2			* <i>Acacia iteaphylla</i>	Flinders Ranges Wattle	✓						✓	
2			* <i>Bromus catharticus</i>	Prairie Grass				✓				
2			* <i>Chlorophytum comosum</i>	Spider Plant				✓				✓
2			* <i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch					✓			

Habitat Zone		1	2	3	4	5	6	7	8	9	10	11
Ecological Vegetation Class name (initials)		SH	DSHW	SH	SH	SH	DSHW	DSHW	SH	SH	DSHW	SH
Habitat Score		51%	21%	35%	36%	61%	29%	8%	43%	22%	40%	14%
Weed species recorded ‡												
Priority	CaLP	WONS	Species Name	Common Name								
2			* <i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass	✓	✓	✓	✓	✓	✓	✓	✓
2			* <i>Ehrharta longiflora</i>	Annual Veldt-grass	✓	✓	✓	✓		✓	✓	✓
2			* <i>Lolium perenne</i>	Perennial Rye-grass					✓			
2			* <i>Oxalis incarnata</i>	Pale Wood-sorrel					✓			✓
2	R		* <i>Oxalis pes-caprae</i>	Soursob	✓	✓	✓		✓	✓	✓	✓
3			* <i>Aloe maculata</i>	Common Soap Aloe						✓		
3			* <i>Arctotheca calendula</i>	Cape Weed				✓		✓		
3			* <i>Cynosurus echinatus</i>	Rough Dog's-tail				✓				
3			* <i>Fumaria</i> spp.	Fumitory	✓	✓		✓			✓	✓
3			* <i>Hypochoeris radicata</i>	Flatweed	✓	✓	✓	✓	✓		✓	
3			* <i>Lolium</i> spp.	Rye-grass	✓			✓		✓		✓
3			* <i>Plantago coronopus</i>	Buck's-horn Plantain	✓							
3			* <i>Poa annua</i>	Annual Meadow-grass	✓		✓	✓		✓	✓	
4			* <i>Cardamine</i> sp.	Bitter Cress		✓						
4			* <i>Cerastium glomeratum</i>	Common Mouse-ear Chickweed						✓		
4	†		<i>Eucalyptus camaldulensis</i> (exotic provenance)	River Red-gum		✓				✓		
4	†		* <i>Eucalyptus</i> sp.	Eucalypt					✓			✓
4			* <i>Geranium molle</i> var. <i>molle</i>	Dove's Foot						✓		
4	†		* <i>Grevillea robusta</i>	Silky Oak					✓			
4			* <i>Lactuca serriola</i>	Prickly Lettuce			✓					
4			* <i>Lepidium africanum</i>	Common Peppergrass						✓		
4			* <i>Malva</i> spp.	Mallow			✓					
4			* <i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	✓						✓	
4			* <i>Solanum nigrum</i>	Black Nightshade		✓	✓	✓		✓		
4			* <i>Sonchus oleraceus</i>	Common Sow-thistle	✓	✓	✓			✓		
4			* <i>Stellaria media</i>	Chickweed	✓	✓	✓	✓	✓	✓		✓
4			* <i>Trifolium</i> spp.	Clover	✓							

‡ Species may occur in additional habitat zones than shown  
† Adult planted specimens may be retained, however elimination of any offspring is recommended.





Figure 18 Ecological Vegetation Classes and Habitat Zones identified at Donald McDonald Reserve, Beaumaris, August 2008.



5.8 Site: George Street

**Location:** north of Tulip St, between Wentworth Av and George St, Sandringham.

**Area:** 1.63 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the six Habitat Zones identified at the site (Figure 20) are summarised in Table 16 and Figure 19.

**Sand Heathland (SH)** (Rare) occurs in all six Habitat Zones. Habitat Zones 1 and 3 are the best quality areas in the site but they differ in their successional stage after fire whereby HZ1 has been burnt more recently (c. 2-3 years ago). Habitat Zone 2 is dominated by naturalised Coast Tea-tree, but still retains a reasonable diversity of indigenous species under the canopy. Habitat Zones 4, 5 and 6 have all been revegetated but differ in what vegetation exists within the zone. For example, HZ5 contains a Coast Tea-tree canopy while HZ6 does not, and HZ4 contains more herbaceous weeds and has also been planted with Eucalypts c. 5-10 years ago.

**PREVIOUS MANAGEMENT**

Weed control has been extremely effective in this reserve, especially HZ 1, 3 and 6. Revegetation has occurred in some areas and fences have been erected to restrict access of people and their pets through the high quality vegetation remnants.

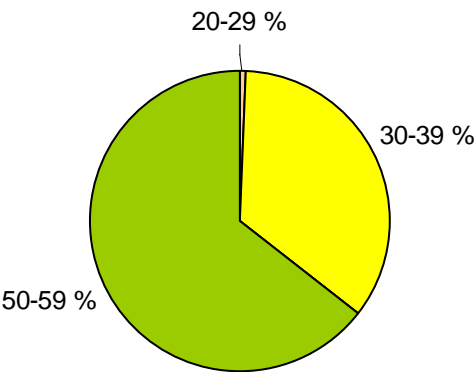
**KEY MANAGEMENT ISSUES**

Weeds	Major issue, see Table 17 below.
Fox/Rabbit/Rat	Minor issue, very little evidence observed.
Litter	Minor issue.
Dog scats	Moderate issue, predominantly associated with the walking tracks and unfenced areas.
Pedestrian damage	Minor issue, most pedestrians stay on the designated footpaths. Fences restrict access to most of the vegetation.
Erosion	Not evident.
Beach sand modifications	Not applicable.

**Table 16 Summary of the Vegetation Quality Assessment for the six Habitat Zones identified at George Street Reserve, Sandringham, July 2008.**

**Key:**  
SH Sand Heathland

Habitat Zone		1	2	3	4	5	6
Ecological Vegetation Class name (initials)		SH	SH	SH	SH	SH	SH
Site Condition	Large Old Trees	10	-	-	-	-	-
	Canopy Cover	5	-	-	-	-	-
	Understorey	25	15	15	20	5	5
	Lack of Weeds	15	11	0	9	6	7
	Recruitment	10	10	6	6	5	6
	Organic Matter	5	3	4	5	2	2
	Logs	5	-	-	-	-	-
Landscape value	Patch Size	10	1	1	1	1	1
	Neighbourhood	10	0	0	0	0	0
	Distance to Core	5	0	0	0	0	0
Habitat Score		100%	54%	35%	56%	30%	28%
			32%				



**Figure 19 Proportional area of vegetation assessed within each habitat score (%) category, George Street Reserve, Sandringham, July 2008.**



**Table 17 Summary of the weeds recorded in the six Habitat Zones identified at George Street Reserve, Sandringham, July 2008.**

**Key:**  
SH Sand Heathland  
CaLP Catchment and Land Protection Act 1994  
R Regionally Restricted under the Catchment and Land Protection Act 1994  
C Regionally Controlled under the Catchment and Land Protection Act 1994  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone				1	2	3	4	5	6
Ecological Vegetation Class name (initials)				SH	SH	SH	SH	SH	SH
Habitat Score				54%	35%	56%	30%	28%	32%
Weed species recorded ‡									
Priority	CaLP	WONS		Species Name	Common Name				
1			*	<i>Acacia longfolia</i> s.l.	Coast/Sallow Wattle		✓	✓	
1			*	<i>Acacia longfolia</i> subsp. <i>longifolia</i>	Sallow Wattle		✓		✓
1			#	<i>Acacia longfolia</i> subsp. <i>sophorae</i>	Coast Wattle		✓		
1	R	W	*	<i>Asparagus asparagoides</i>	Bridal Creeper		✓		
1			*	<i>Carpobrotus aequilaterus</i>	Angled Pigface		✓	✓	
1			*	<i>Chamaecytisus palmensis</i>	Tree Lucerne	✓	✓		
1	C	W	*	<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	Boneseed		✓		
1			*	<i>Coprosma repens</i>	Mirror Bush		✓		
1			#	<i>Leptospermum laevigatum</i>	Coast Tea-tree	✓	✓	✓	✓
1			*	<i>Pennisetum clandestinum</i>	Kikuyu		✓		
1	C		*	<i>Salpichroa origanifolia</i>	Pampas Lily-of-the-Valley		✓		
1	C	W	*	<i>Ulex europaeus</i>	Gorse		✓		
2			*	<i>Brassica fruticulosa</i>	Twiggy Turnip		✓		
2			*	<i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass		✓	✓	✓
2			*	<i>Ehrharta longiflora</i>	Annual Veldt-grass		✓	✓	✓
2	R		*	<i>Oxalis pes-caprae</i>	Soursob	✓	✓		
3			*	<i>Arctotheca calendula</i>	Cape Weed	✓	✓		
3			*	<i>Briza maxima</i>	Large Quaking-grass		✓		
3			*	<i>Fumaria</i> spp.	Fumitory		✓		
3			*	<i>Hypochoeris radicata</i>	Flatweed	✓	✓	✓	
3			*	<i>Lolium</i> spp.	Rye-grass		✓	✓	
3			*	<i>Vulpia</i> spp.	Fescue	✓			
4			*	<i>Helminthotheca echioides</i>	Ox-tongue		✓		
4			*	<i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	✓			
4			*	<i>Solanum nigrum</i>	Black Nightshade		✓		
4			*	<i>Sonchus oleraceus</i>	Common Sow-thistle	✓	✓	✓	✓
4			*	<i>Stellaria media</i>	Chickweed	✓	✓	✓	
4			*	<i>Trifolium</i> spp.	Clover	✓	✓	✓	

‡ Species may occur in additional habitat zones than shown  
† Adult planted specimens may be retained, however elimination of any offspring is recommended.



Figure 20 Ecological Vegetation Classes and Habitat Zones identified at George Street Reserve, Sandringham, July 2008.



5.9 Site: Gramatan Avenue Heathland Sanctuary

**Location:** west of Haydens Rd, between Gramatan Av and Sunset Av, Beaumaris.

**Area:** 0.24 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the two Habitat Zones identified at the site (Figure 22) are summarised in Table 18 and Figure 21.

**Sand Heathland (SH)** (Rare) occurs in both Habitat Zones on the site. While the vegetation in both is good quality, HZ1 is slightly better. This may be due to the overabundance of organic litter in HZ2 which may contribute to the reduced diversity and the lack of adequate recruitment compared to HZ1.

**PREVIOUS MANAGEMENT**

There is a high fence surrounding the whole reserve, restricting access into the reserve. Active management of weeds has been extremely effective across this reserve.

**KEY MANAGEMENT ISSUES**

Weeds	Moderate issue, see Table 19 below. Local species of Dodder-laurel ( <i>Cassytha pubescens</i> and <i>C. glabella</i> ) appear to be expanding above the ‘natural’ levels and these could have detrimental smothering effects in the mid-term.
Fox/Rabbit/Rat	Minor issue, one burrow/den (probably no longer in use) was observed in HZ1.
Litter	Minor issue.
Dog scats	Not an issue, no scats observed in the reserve as dogs don’t have access.
Pedestrian damage	Minor issue, a high fence surrounding the reserve reduces access into the reserve to the designated opening times. When the reserve is open most visitors appear to stay on the designated footpath.
Erosion	Not evident.
Beach sand modifications	Not applicable.

Table 18 Summary of the Vegetation Quality Assessment for the two Habitat Zones identified at Gramatan Avenue Heathland Sanctuary, Beaumaris, July 2008.

Key:  
SH Sand Heathland

Habitat Zone		1	2
Ecological Vegetation Class name (initials)		SH	SH
Site Condition	Large Old Trees	10	-
	Canopy Cover	5	-
	Understorey	25	20
	Lack of Weeds	15	7
	Recruitment	10	10
	Organic Matter	5	5
	Logs	5	-
Landscape value	Patch Size	10	1
	Neighbourhood	10	0
	Distance to Core	5	0
Habitat Score		100%	58%

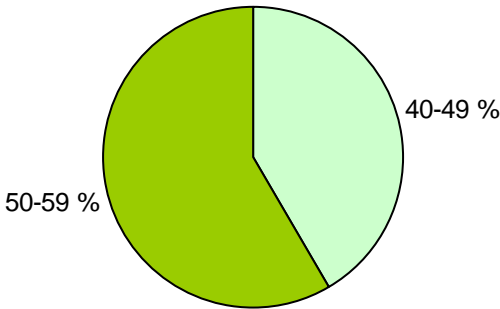


Figure 21 Proportional area of vegetation assessed within each habitat score (%) category, Gramatan Avenue Heathland Sanctuary, Beaumaris, July 2008.

**Table 19 Summary of the weeds recorded in the two Habitat Zones identified at Gramatan Avenue Heathland Sanctuary, Beaumaris, July 2008.**

**Key:**  
SH Sand Heathland  
CaLP *Catchment and Land Protection Act 1994*  
R Regionally Restricted under the *Catchment and Land Protection Act 1994*  
C Regionally Controlled under the *Catchment and Land Protection Act 1994*  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone					1	2
Ecological Vegetation Class name (initials)					SH	SH
Habitat Score					58%	45%
Weed species recorded ‡						
Priority	CaLP	WONS		Species Name	Common Name	
1			*	<i>Acacia longifolia</i> subsp. <i>longifolia</i>	Sallow Wattle	✓
1			*	<i>Ixia</i> sp.	Ixia	✓
1			#	<i>Leptospermum laevigatum</i>	Coast Tea-tree	✓
1			*	<i>Pittosporum undulatum</i>	Sweet Pittosporum	✓
2			*	<i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass	✓
2			*	<i>Ehrharta longiflora</i>	Annual Veldt-grass	✓
2	R		*	<i>Oxalis pes-caprae</i>	Soursob	✓
3			*	<i>Arctotheca calendula</i>	Cape Weed	✓
3			*	<i>Conyza sumatrensis</i>	Tall Fleabane	✓
3			*	<i>Fumaria</i> spp.	Fumitory	✓
3			*	<i>Hypochoeris radicata</i>	Flatweed	✓
3			*	<i>Lolium</i> spp.	Rye-grass	✓
3			*	<i>Vulpia</i> spp.	Fescue	✓
4			*	<i>Cerastium glomeratum</i>	Common Mouse-ear Chickweed	✓
4			*	<i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	✓
4			*	<i>Sonchus oleraceus</i>	Common Sow-thistle	✓
4			*	<i>Stellaria media</i>	Chickweed	✓

‡ Species may occur in additional habitat zones than shown  
† Adult planted specimens may be retained, however elimination of any offspring is recommended.





Figure 22 Ecological Vegetation Classes and Habitat Zones identified at Gramatan Avenue Heathland Sanctuary, Beaumaris, July 2008.



5.10 Site: Long Hollow Heathland

**Location:** north of Gramatan Av, between Gareth Av and Reserve Rd, Beaumaris.

**Area:** 2.89 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the nine Habitat Zones identified at the site (Figure 24) are summarised in Table 20 and Figure 23.

**Damp Sands Herb-rich Woodland** (DSHW) (Vulnerable) occupies all nine Habitat Zones throughout the reserve. A well developed tree canopy is present in HZ 1, 2, 6 and 7. Habitat Zones 1 and 7 are the best quality, while HZ 2 has low diversity due to the dominance of Bracken (*Pteridium esculentum*), and HZ6 has a much higher cover of weeds and a revegetated understorey. The tree canopy is reduced or absent in HZ 3, 4, 5, 8 and 9. Habitat Zones 5 and 8 have recently been burnt (c. 1 and 5 years ago respectively), while HZ9 was burnt possibly 10 years ago. Habitat Zone 3 supports some remnants, however the understorey is very weedy, and HZ4 is dominated by the naturalised Coast Tea-tree and retains very few remnant characteristics.

**PREVIOUS MANAGEMENT**

Weed control has taken place throughout the reserve and in some areas has been very effective. Efforts to keep people off the vegetation through fencing and the construction of a boardwalk through parts of the reserve also appear to have been successful. Habitat boxes of varying shapes and sizes have also been installed throughout the reserve to help compensate for the lack of hollow bearing trees across the site.

**KEY MANAGEMENT ISSUES**

Weeds	Major issue, see Table 21 below.
Fox/Rabbit/Rat	Moderate issue, a fox den was observed in HZ9 and rabbit remains were observed in HZ2.
Litter	Minor issue.
Dog scats	Minor issue, mainly restricted to the tracks.
Pedestrian damage	Minor issue, most pedestrians stay on the designated tracks.
Erosion	Not evident.
Beach sand modifications	Not applicable.

Table 20 Summary of the Vegetation Quality Assessment for the nine Habitat Zones identified at Long Hollow Heathland, Beaumaris, August 2008.

Key:  
DSHW Damp Sands Herb-rich Woodland

Habitat Zone		1	2	3	4	5	6	7	8	9
Ecological Vegetation Class name (initials)		DSHW	DSHW	DSHW	DSHW	DSHW	DSHW	DSHW	DSHW	DSHW
Site Condition	Large Old Trees	10	0	0	0	0	0	0	0	0
	Canopy Cover	5	5	1	2	0	0	5	5	3
	Understorey	25	15	5	15	5	15	5	15	5
	Lack of Weeds	15	9	4	0	0	11	0	9	11
	Recruitment	10	10	3	6	0	10	0	10	10
	Organic Matter	5	5	3	3	4	3	4	5	3
	Logs	5	4	0	0	4	0	0	0	4
Landscape value	Patch Size	10	2	2	2	2	2	2	2	2
	Neighbourhood	10	0	0	0	0	0	0	0	0
	Distance to Core	5	0	0	0	0	0	0	0	0
Habitat Score		100%	50%	18%	28%	15%	41%	16%	46%	38%

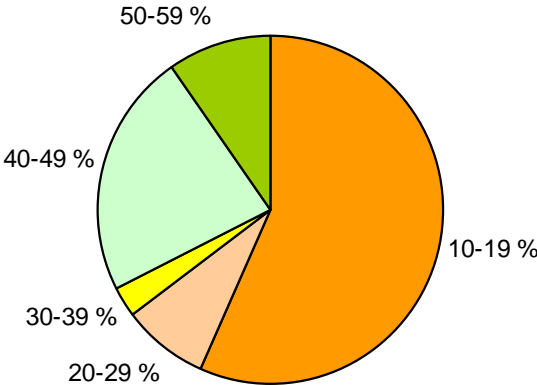


Figure 23 Proportional area of vegetation assessed within each habitat score (%) category, Long Hollow Heathland, Beaumaris, August 2008.





**Table 21 Summary of the weeds recorded in the nine Habitat Zones identified at Long Hollow Heathland, Beaumaris, August 2008.**

**Key:**  
DSHW Damp Sands Herb-rich Woodland  
CaLP Catchment and Land Protection Act 1994  
R Regionally Restricted under the Catchment and Land Protection Act 1994  
C Regionally Controlled under the Catchment and Land Protection Act 1994  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone		1	2	3	4	5	6	7	8	9
Ecological Vegetation Class name (initials)		DSHW	DSHW	DSHW	DSHW	DSHW	DSHW	DSHW	DSHW	DSHW
Habitat Score		50%	18%	28%	15%	41%	16%	46%	38%	41%
Weed species recorded ‡										
Priority	CaLP WONS	Species Name	Common Name							
1		* <i>Acacia longifolia</i> subsp. <i>longifolia</i>	Sallow Wattle	✓		✓	✓			
1		# <i>Acacia longifolia</i> subsp. <i>sophorae</i>	Coast Wattle		✓		✓		✓	✓
1		* <i>Acacia saligna</i>	Golden Wreath Wattle				✓			
1	R	* <i>Allium triquetrum</i>	Angled Onion		✓					
1		* <i>Asparagus aethiopicus</i>	Emerald fern				✓			
1	R W	* <i>Asparagus asparagoides</i>	Bridal Creeper	✓	✓	✓				✓
1		* <i>Carpobrotus aequilaterus</i>	Angled Pigface							✓
1		* <i>Dietes grandiflora</i>	Dietes		✓					
1		* <i>Dipogon lignosus</i>	Common Dipogon				✓			
1 †		* <i>Eucalyptus botryoides</i>	Southern Mahogany				✓			
1		# <i>Leptospermum laevigatum</i>	Coast Tea-tree	✓	✓	✓	✓	✓		✓
1		* <i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	Giant Honey-myrtle				✓	✓		
1		* <i>Pennisetum clandestinum</i>	Kikuyu				✓			
1		* <i>Pittosporum undulatum</i>	Sweet Pittosporum		✓		✓			
1	C	* <i>Salpichroa organifolia</i>	Pampas Lily-of-the-Valley				✓	✓		
1		* <i>Tradescantia fluminensis</i>	Wandering Jew				✓			
2		* <i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch	✓				✓		
2		* <i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass	✓	✓	✓	✓	✓		✓
2		* <i>Ehrharta longiflora</i>	Annual Veldt-grass	✓	✓	✓	✓	✓	✓	✓
2		* <i>Oxalis incarnata</i>	Pale Wood-sorrel		✓					
2	R	* <i>Oxalis pes-caprae</i>	Soursob	✓	✓	✓		✓		✓
2		* <i>Pandorea pandorana</i>	Wonga Vine		✓					
2		* <i>Passiflora cinnabarina</i>	Red Passion-flower	✓						
2		* <i>Passiflora</i> sp.	Passion-fruit		✓		✓			
3		* <i>Acanthus mollis</i>	Bear's Breach				✓			
3		* <i>Arctotheca calendula</i>	Cape Weed			✓	✓			
3		* <i>Fumaria</i> spp.	Fumitory	✓	✓	✓	✓			✓
3		* <i>Hypochoeris radicata</i>	Flatweed			✓	✓		✓	✓
3		* <i>Lagurus ovatus</i>	Hare's-tail Grass			✓				✓
3		* <i>Poa annua</i>	Annual Meadow-grass				✓			✓

Habitat Zone		1	2	3	4	5	6	7	8	9
Ecological Vegetation Class name (initials)		DSHW	DSHW	DSHW	DSHW	DSHW	DSHW	DSHW	DSHW	DSHW
Habitat Score		50%	18%	28%	15%	41%	16%	46%	38%	41%
Weed species recorded ‡										
Priority	CaLP WONS	Species Name	Common Name							
3		* <i>Setaria pumila</i> subsp. <i>pumila</i>	Pale Pigeon-grass			✓				
3		* <i>Vulpia</i> spp.	Fescue						✓	
4		* <i>Cerastium glomeratum</i>	Common Mouse-ear Chickweed	✓						
4 †		<i>Eucalyptus camaldulensis</i> (exotic provenance)	River Red-gum	✓						
4		* <i>Lepidium africanum</i>	Common Peppergrass							✓
4		* <i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	✓		✓	✓	✓		✓
4		* <i>Sonchus oleraceus</i>	Common Sow-thistle	✓		✓		✓		✓
4		* <i>Stellaria media</i>	Chickweed	✓	✓	✓	✓	✓		✓
4		* <i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover			✓				✓
4		* <i>Vicia sativa</i> s.l.	Common Vetch	✓				✓		

‡ Species may occur in additional habitat zones than shown  
† Adult planted specimens may be retained, however elimination of any offspring is recommended.





Figure 24 Ecological Vegetation Classes and Habitat Zones identified at Long Hollow Heathland, Beaumaris, August 2008.



5.11 Site: Picnic Point

**Location:** west of Beach Rd between Small St and The Crescent, Sandringham.  
**Area:** 11.13 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the nine Habitat Zones identified at the site (Figure 26) are summarised in Table 22 and Figure 25.

**Coastal Headland Scrub (CHS)** (Depleted) occupies six Habitat Zones (HZ 3-8). Habitat Zone 3 occurs throughout a large proportion of the site and is relatively low quality due to the high cover of weeds. Some areas of HZ3 have also been revegetated. Habitat Zone 6 is similar to HZ3, but has a lower cover of weeds, while HZ7 has a much higher cover of weeds and lower diversity. Habitat Zone 8 consists of a Coast Tea-tree or Drooping Sheoak overstorey with relatively few other indigenous species and a very high cover of weeds in the understorey. Habitat Zone 4 has recently been burnt and HZ5 has been revegetated under the Drooping Sheoak (*Allocasuarina verticillata*) overstorey.

**Coastal Dune Scrub (CDS)** (Depleted) occurs in two Habitat Zones (HZ2 and 9). Habitat Zone 9 has been revegetated and weeded, unlike HZ2 which appears to have received little previous management.

**Coastal Dune Grassland (CDG)** (Depleted) occupies one Habitat Zone (HZ1). It is a good quality remnant with high biological values due to the substantial areas of Hairy Spinifex (*Spinifex sericeus*); however trampling may have reduced its diversity and enhanced the establishment of weeds.

The **Native Amenity Planting (NAP)** zone contains planted indigenous species (mainly trees and shrubs) in garden beds surrounding part of the shared footpath.

**PREVIOUS MANAGEMENT**

Scattered revegetation has occurred across the site which has usually been coupled with weed control. Beyond the revegetation areas, very little weed control is evident. Fences surround some areas of vegetation restricting public access; however informal paths leading to the beach are common.

**KEY MANAGEMENT ISSUES**

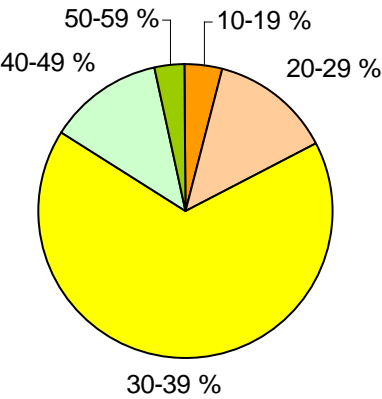
Weeds	Major issue, see Table 23 below.
Fox/Rabbit/Rat	Moderate issue, fox dens and / or rabbit warrens, as well as evidence of rats were observed throughout the site.
Litter	Major issue, especially in HZ1 where it is most easily washed / blown out into the Bay. Scattered pieces of litter were also observed throughout the rest of the site along with occasional deposits of discarded garden waste (HZ3).
Dog scats	Major issue, particularly along the tracks and adjoining vegetation.

Pedestrian damage	Moderate issue, trampling of Coastal Dune Grassland is evident and some informal tracks leading to the beach have been created. A squatter’s residence was also observed.
Erosion	Minor issue, mainly associated with the headland.
Beach sand modifications	Not observed but may be an issue if beach sand is imported and spread ontop of the indigenous vegetation (especially CDG)

**Table 22 Summary of the Vegetation Quality Assessment for the nine Habitat Zones identified at Picnic Point, Sandringham, August 2008.**

**Key:**  
CHS Coastal Headland Scrub  
CDS Coastal Dune Scrub  
CDG Coastal Dune Grassland

Habitat Zone		1	2	3	4	5	6	7	8	9
Ecological Vegetation Class name (initials)		CDG	CDS	CHS	CHS	CHS	CHS	CHS	CHS	CDS
Site Condition	Large Old Trees	10	-	-	-	-	-	-	-	-
	Canopy Cover	5	-	-	-	-	-	-	-	-
	Understorey	25	15	15	15	15	15	5	5	5
	Lack of Weeds	15	6	0	0	7	7	0	0	15
	Recruitment	10	10	6	6	10	3	6	0	6
	Organic Matter	5	5	4	5	0	5	5	4	5
	Logs	5	-	-	-	-	-	-	-	-
Landscape value	Patch Size	10	4	4	4	4	4	4	4	4
	Neighbourhood	10	0	0	0	0	0	0	0	0
	Distance to Core	5	0	0	0	0	0	0	0	0
Habitat Score		100%	53%	38%	39%	48%	45%	49%	16%	26%



**Figure 25 Proportional area of vegetation assessed within each habitat score (%) category, Picnic Point, Sandringham, August 2008.**

**Table 23 Summary of the weeds recorded in the nine Habitat Zones identified at Picnic Point, Sandringham, August 2008.**

**Key:**  
CHS Coastal Headland Scrub  
CDS Coastal Dune Scrub  
CDG Coastal Dune Grassland  
CaLP *Catchment and Land Protection Act 1994*  
R Regionally Restricted under the *Catchment and Land Protection Act 1994*  
C Regionally Controlled under the *Catchment and Land Protection Act 1994*  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone		1	2	3	4	5	6	7	8	9
Ecological Vegetation Class name (initials)		CDG	CDS	CHS	CHS	CHS	CHS	CHS	CHS	CDS
Habitat Score		53%	38%	39%	48%	45%	49%	16%	26%	44%
Weed species recorded ‡										
Priority	CaLP	WONS	Species Name		Common Name					
1			* <i>Acacia longifolia</i> subsp. <i>longifolia</i>	Sallow Wattle			✓			✓
1			* <i>Acetosa sagittata</i>	Rambling Dock			✓			
1	R		* <i>Allium triquetrum</i>	Angled Onion			✓			
1			* <i>Anredera cordifolia</i>	Madeira Vine			✓			
1	R	W	* <i>Asparagus asparagoides</i>	Bridal Creeper	✓	✓	✓	✓		
1			* <i>Berkheya rigida</i>	African Thistle		✓				
1			* <i>Carpobrotus aequilaterus</i>	Angled Pigface			✓			
1			* <i>Carpobrotus</i> sp.	Pigface	✓		✓			
1			* <i>Chamaecytisus palmensis</i>	Tree Lucerne			✓			
1			* <i>Chasmanthe floribunda</i>	African Cornflag			✓			
1	C	W	* <i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	Boneseed		✓		✓	✓	
1	C		* <i>Cirsium vulgare</i>	Spear Thistle		✓			✓	
1			* <i>Coprosma repens</i>	Mirror Bush			✓		✓	
1			* <i>Dipogon lignosus</i>	Common Dipogon			✓			✓
1 †			* <i>Eucalyptus botryoides</i>	Southern Mahogany		✓				
1			* <i>Galenia pubescens</i> var. <i>pubescens</i>	Galenia	✓		✓		✓	
1			* <i>Gazania linearis</i>	Gazania	✓		✓			
1			* <i>Ixia</i> sp.	Ixia		✓			✓	
1	C		* <i>Juncus acutus</i> subsp. <i>acutus</i>	Sharp Rush		✓				
1	C		* <i>Lycium ferocissimum</i>	African Box-thorn	✓		✓		✓	
1			* <i>Paraserianthes lophantha</i> subsp. <i>lophantha</i>	Cape Leeuwin Wattle				✓		
1			* <i>Pennisetum clandestinum</i>	Kikuyu	✓	✓	✓		✓	
1			* <i>Pittosporum undulatum</i>	Sweet Pittosporum			✓			
1	C		* <i>Salpichroa organifolia</i>	Pampas Lily-of-the-Valley		✓	✓	✓		✓
1			* <i>Stenotaphrum secundatum</i>	Buffalo Grass		✓	✓		✓	
1			* <i>Tradescantia fluminensis</i>	Wandering Jew			✓			
2			* <i>Brassica fruticulosa</i>	Twiggy Turnip		✓	✓	✓		
2			* <i>Bromus catharticus</i>	Prairie Grass		✓				
2			* <i>Crassula sarmentosa</i> var. <i>sarmentosa</i>	Creassula			✓			
2			* <i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch	✓	✓	✓			
2			* <i>Drosanthemum candens</i>	Rodondo Creeper			✓			

Habitat Zone		1	2	3	4	5	6	7	8	9
Ecological Vegetation Class name (initials)		CDG	CDS	CHS	CHS	CHS	CHS	CHS	CHS	CDS
Habitat Score		53%	38%	39%	48%	45%	49%	16%	26%	44%
Weed species recorded ‡										
Priority	CaLP	WONS	Species Name		Common Name					
2			* <i>Ehrharta calycina</i>	Perennial Veldt-grass	✓			✓	✓	
2			* <i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass	✓	✓	✓	✓	✓	✓
2			* <i>Ehrharta longiflora</i>	Annual Veldt-grass	✓	✓	✓	✓		✓
2			* <i>Holcus lanatus</i>	Yorkshire Fog	✓					
2			* <i>Lolium perenne</i>	Perennial Rye-grass	✓	✓	✓			
2			* <i>Ornithogalum longibracteatum</i>	Pregnant Onion			✓			
2	R		* <i>Oxalis pes-caprae</i>	Soursob	✓	✓	✓	✓	✓	✓
2			* <i>Oxalis purpurea</i>	Large-flower Wood-sorrel			✓			
2			* <i>Passiflora caerulea</i>	Blue Passion-fruit			✓			
2			* <i>Phoenix canariensis</i>	Canary Island Date-palm					✓	
2			* <i>Sporobolus africanus</i>	Rat-tail Grass		✓				
2			* <i>Thinopyrum junceiforme</i>	Sea Wheat-grass	✓					
3			* <i>Arctotheca calendula</i>	Cape Weed		✓	✓	✓		✓
3			* <i>Avena fatua</i>	Wild Oat				✓		
3			* <i>Conyza</i> spp.	Fleabane		✓		✓	✓	
3			* <i>Fumaria</i> spp.	Fumitory		✓	✓	✓	✓	✓
3			* <i>Hypochoeris radicata</i>	Flatweed	✓	✓		✓		
3			* <i>Lagurus ovatus</i>	Hare's-tail Grass	✓		✓			
3			* <i>Lolium</i> spp.	Rye-grass			✓		✓	
3			* <i>Plantago coronopus</i>	Buck's-horn Plantain			✓	✓		
3			* <i>Poa annua</i>	Annual Meadow-grass			✓	✓		✓
3			* <i>Schinus molle</i>	Pepper Tree			✓			
3			* <i>Vulpia</i> spp.	Fescue	✓					
4			* <i>Cakile maritima</i> subsp. <i>maritima</i>	Sea Rocket	✓		✓			
4			* <i>Chenopodium murale</i>	Sowbane				✓		
4 †			* <i>Corymbia ficifolia</i>	Red-flowering Gum		✓				
4 †			* <i>Eucalyptus camaldulensis</i> (exotic provenance)	River Red-gum		✓				
4			* <i>Galium aparine</i>	Cleavers		✓				
4			* <i>Hypochoeris glabra</i>	Smooth Cat's-ear	✓					
4			* <i>Malva</i> spp.	Mallow			✓			
4			* <i>Medicago polymorpha</i>	Burr Medic		✓				
4			* <i>Medicago</i> spp.	Medic	✓		✓			
4			* <i>Romulea rosea</i> var. <i>australis</i>	Onion Grass		✓	✓	✓		✓
4			* <i>Solanum nigrum</i>	Black Nightshade		✓	✓			✓
4			* <i>Sonchus oleraceus</i>	Common Sow-thistle	✓	✓	✓	✓	✓	✓
4			* <i>Stellaria media</i>	Chickweed	✓	✓	✓	✓		✓
4			* <i>Taraxacum officinale</i> spp. agg.	Garden Dandelion	✓					
4			* <i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover			✓			
4			* <i>Trifolium</i> spp.	Clover				✓		
4			* <i>Vicia sativa</i> s.l.	Common Vetch			✓		✓	

‡ Species may occur in additional habitat zones than shown  
† Adult planted specimens may be retained, however elimination of any offspring is recommended.





Figure 26 Ecological Vegetation Classes and Habitat Zones identified at Picnic Point, Sandringham, August 2008.



5.12 Site: Red Bluff

**Location:** west of Beach Rd between Eliza St and Middleton St, Black Rock.

**Area:** 1 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the three Habitat Zones identified at the site (Figure 28) are summarised in Table 24 and Figure 27.

**Coastal Headland Scrub (CHS)** (Depleted) occurs in two Habitat Zones (HZ1 and 2), on the crests and slopes of the more stable cliffs. Habitat Zone 1 is much better quality than HZ2 which had been degraded by weeds, reducing diversity.

**Spray-zone Coastal Shrubland (SZCS)** (Rare) occupies one Habitat Zone (HZ 3) on the eroding cliffs. It has a low weed cover and low species diversity.

**PREVIOUS MANAGEMENT**

Fences have been erected to keep people and their pets off parts of the cliffs and vegetation. Wooden erosion control barriers have also been installed in places some time ago; a number of which are no longer functioning.

**KEY MANAGEMENT ISSUES**

Weeds	Major issue, see Table 25 below.
Fox/Rabbit/Rat	Minor issue, very little evidence observed.
Litter	Moderate issue, scattered pieces also observed throughout the site, especially in HZ3.
Dog scats	Moderate issue, especially along the tracks and adjoining vegetation.
Pedestrian damage	Moderate issue, some informal tracks leading to the beach have been created along the unstable cliffs and slopes, but signs detailing fines for leaving the tracks may be reducing the priority of this issue.
Erosion	Major issue, associated with the seacliffs.
Beach modifications	Not observed but may be an issue if beach sand is imported and spread ontop of the indigenous vegetation (especially CDG)

Table 24 Summary of the Vegetation Quality Assessment for the three Habitat Zones identified at Red Bluff, Black Rock, July 2008.

Key:  
CHS Coastal Headland Scrub  
SZCS Spray Zone Coastal Shrubland

Habitat Zone		1	2	3
Ecological Vegetation Class name (initials)		CHS	CHS	SZCS
Site Condition	Large Old Trees	10	-	-
	Canopy Cover	5	-	-
	Understorey	25	15	5
	Lack of Weeds	15	4	0
	Recruitment	10	6	0
	Organic Matter	5	2	0
	Logs	5	-	-
Landscape value	Patch Size	10	4	4
	Neighbourhood	10	0	0
	Distance to Core	5	0	0
Habitat Score		100%	41%	14%
			26%	

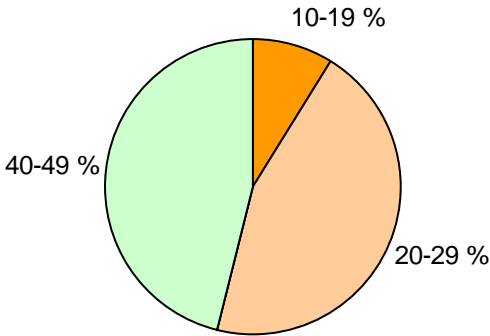


Figure 27 Proportional area of vegetation assessed within each habitat score (%) category, Red Bluff, Black Rock, July 2008.



**Table 25 Summary of the weeds recorded in the three Habitat Zones identified at Red Bluff, Black Rock, July 2008.**

**Key:**  
CHS Coastal Headland Scrub  
SZCS Spray Zone Coastal Shrubland  
CaLP *Catchment and Land Protection Act 1994*  
R Regionally Restricted under the *Catchment and Land Protection Act 1994*  
C Regionally Controlled under the *Catchment and Land Protection Act 1994*  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone				1	2	3
Ecological Vegetation Class name (initials)				CHS	CHS	SZCS
Habitat Score				41%	14%	26%
Weed species recorded ‡						
Priority	CaLP	WONS		Species Name	Common Name	
1	R	W	*	<i>Asparagus asparagoides</i>	Bridal Creeper	✓
1			*	<i>Carpobrotus aequilaterus</i>	Angled Pigface	✓
1			*	<i>Chasmanthe floribunda</i>	African Cornflag	✓
1	C	W	*	<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	Boneseed	✓
1			*	<i>Coprosma repens</i>	Mirror Bush	✓
1			*	<i>Delairea odorata</i>	Cape Ivy	✓
1			*	<i>Galenia pubescens</i> var. <i>pubescens</i>	Galenia	✓
1	C		*	<i>Lycium ferocissimum</i>	African Box-thorn	✓
1			*	<i>Pennisetum clandestinum</i>	Kikuyu	✓
2			*	<i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch	✓
2			*	<i>Drosanthemum candens</i>	Rodondo Creeper	✓
2			*	<i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass	✓
2			*	<i>Ehrharta longiflora</i>	Annual Veldt-grass	✓
2			*	<i>Hakea</i> sp.	Hakea	✓
2			*	<i>Lampranthus</i> sp.	Noon-flower	✓
2	R		*	<i>Oxalis pes-caprae</i>	Soursob	✓
3			*	<i>Arctotheca calendula</i>	Cape Weed	✓
3			*	<i>Artemisia arborescens</i>	Silver Wormwood	✓
3			*	<i>Hypochoeris radicata</i>	Flatweed	✓
3			*	<i>Lagurus ovatus</i>	Hare's-tail Grass	✓
3			*	<i>Lolium</i> spp.	Rye-grass	✓
3			*	<i>Plantago coronopus</i>	Buck's-horn Plantain	✓
4			*	<i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	✓
4			*	<i>Solanum nigrum</i>	Black Nightshade	✓
4			*	<i>Sonchus oleraceus</i>	Common Sow-thistle	✓

‡ Species may occur in additional habitat zones than shown  
† Adult planted specimens may be retained, however elimination of any offspring is recommended.



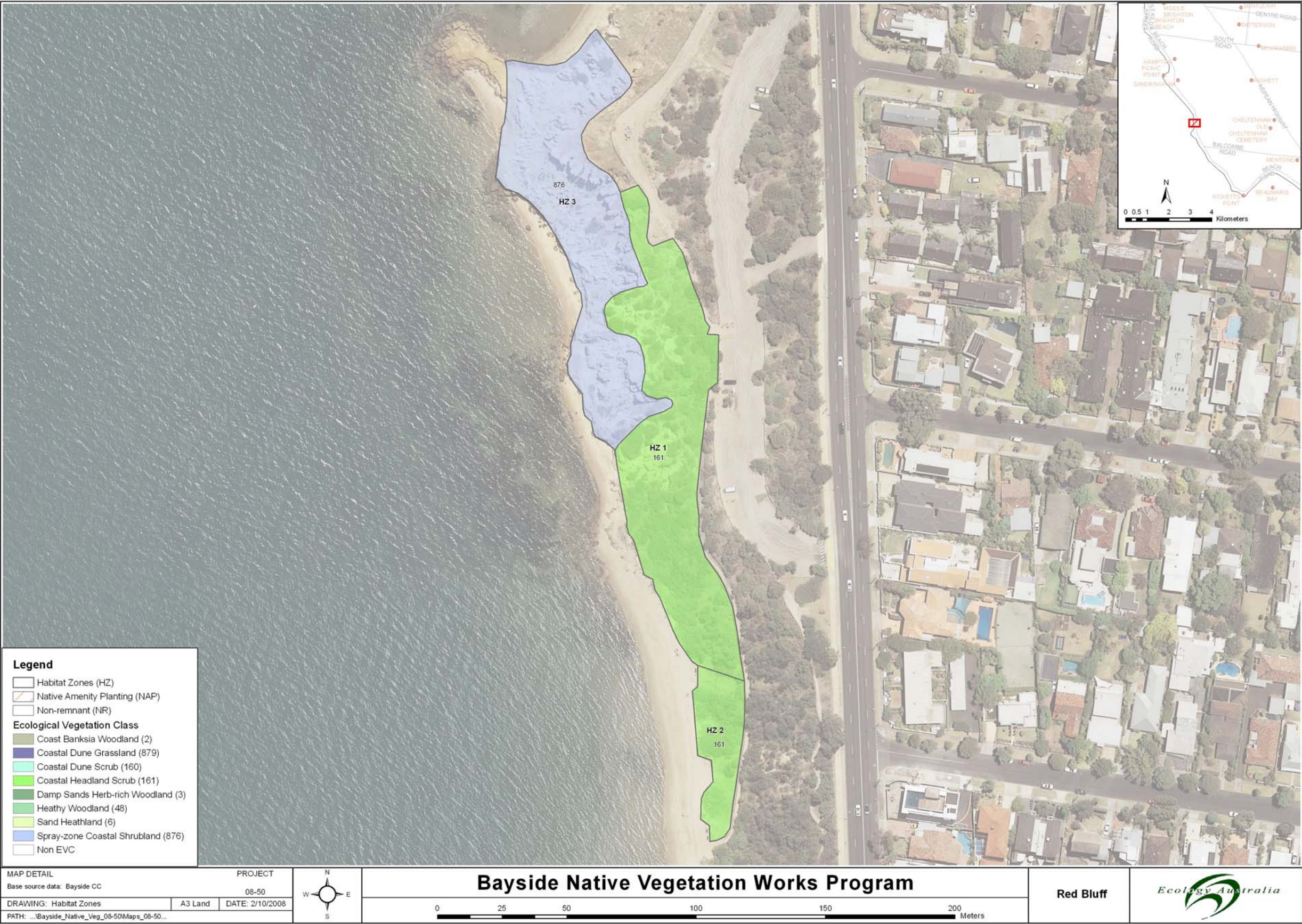


Figure 28 Ecological Vegetation Classes and Habitat Zones identified at Red Bluff, Black Rock, July 2008.



5.13 Site: Rickett’s Point Hinterland

**Location:** northeast of Beach Rd between Haydens Rd and Reserve Rd, Beaumaris.

**Area:** 1.82 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the five Habitat Zones identified at the site (Figure 30) are summarised in Table 26 and Figure 29.

**Coast Banksia Woodland (CBW)** (Vulnerable) occupies two Habitat Zones (HZ1 and 2) on the low-lying coastal terraces. Habitat Zone 1 has been partially maintained in garden beds and is better quality than HZ2 which contains a much higher cover of weeds.

**Coastal Headland Scrub (CHS)** (Depleted) occurs in three Habitat Zones (HZ 3, 4 and 5) on the slope and headland above the CBW. Habitat Zone 3 has higher diversity and is better quality than HZ4 which has a higher cover of weeds and HZ5 which has been revegetated.

**PREVIOUS MANAGEMENT**

Weed control and revegetation have occurred throughout the south east of the site, but weeds are still a major threat in these areas. Some areas between the remnant Coast Banksia (*Banksia integrifolia* subsp. *integrifolia*) trees in HZ1 have been arranged into garden beds with lawn paths between them.

**KEY MANAGEMENT ISSUES**

Weeds	Major issue, see Table 27 below.
Fox/Rabbit/Rat	Minor issue, some evidence of, presumably, feral animals were observed in HZ2.
Litter	Moderate issue, several deposits of discarded garden waste were observed in HZ3 and 4. Scattered pieces of litter were also observed throughout the site.
Dog scats	Minor issue, very few scats observed.
Pedestrian / Resident damage	Major issue, several residents backing onto the reserve have extended their gardens into the remnant vegetation, removing indigenous plants in the process.
Erosion	Minor issue, may pose a threat when weeds are removed from the steep slopes backing onto the houses at the southern end of the site.
Beach sand modifications	Not applicable.

Table 26 Summary of the Vegetation Quality Assessment for the five Habitat Zones identified at Rickett’s Point Hinterland, Beaumaris, July 2008.

**Key:**  
CBW Coast Banksia Woodland  
CHS Coastal Headland Scrub

Habitat Zone		1	2	3	4	5
Ecological Vegetation Class name (initials)		CBW	CBW	CHS	CHS	CHS
Site Condition	Large Old Trees	10	9	10	-	-
	Canopy Cover	5	4	5	-	-
	Understorey	25	5	5	15	10
	Lack of Weeds	15	7	0	4	0
	Recruitment	10	6	6	6	0
	Organic Matter	5	5	3	5	3
	Logs	5	5	5	-	-
Landscape value	Patch Size	10	1	1	1	1
	Neighbourhood	10	0	0	0	0
	Distance to Core	5	0	0	0	0
Habitat Score		100%	42%	35%	42%	27%

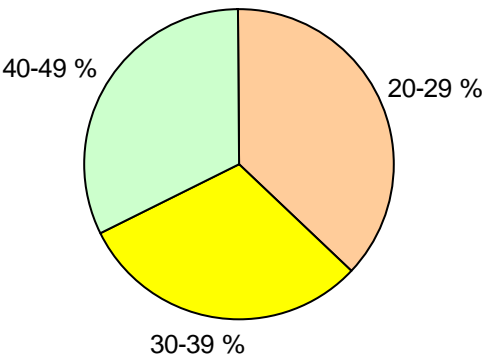


Figure 29 Proportional area of vegetation assessed within each habitat score (%) category, Rickett’s Point Hinterland, Beaumaris, July 2008.

**Table 27 Summary of the weeds recorded in the five Habitat Zones identified at Rickett's Point Hinterland, Beaumaris, July 2008.**

**Key:**  
CBW Coast Banksia Woodland  
CHS Coastal Headland Scrub  
CaLP *Catchment and Land Protection Act 1994*  
R Regionally Restricted under the *Catchment and Land Protection Act 1994*  
C Regionally Controlled under the *Catchment and Land Protection Act 1994*  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone		1	2	3	4	5
Ecological Vegetation Class name (initials)		CBW	CBW	CHS	CHS	CHS
Habitat Score		42%	35%	42%	27%	20%
Weed species recorded ‡						
Priority	CaLP	WONS	Species Name	Common Name		
1			* <i>Acetosa sagittata</i>	Rambling Dock	✓	✓
1			* <i>Agapanthus praecox</i> subsp. <i>orientalis</i>	Agapanthus		✓
1	R		* <i>Allium triquetrum</i>	Angled Onion	✓	
1			* <i>Anredera cordifolia</i>	Madeira Vine		✓
1	R	W	* <i>Asparagus asparagoides</i>	Bridal Creeper		✓
1			* <i>Chasmanthe floribunda</i>	African Cornflag		✓
1	C	W	* <i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	Boneseed	✓	✓
1			* <i>Coprosma repens</i>	Mirror Bush	✓	✓
1			* <i>Cortaderia selloana</i>	Pampas-grass	✓	
1			* <i>Cymbalaria muralis</i> subsp. <i>muralis</i>	Ivy-leaf Toadflax		✓
1			* <i>Dipogon lignosus</i>	Common Dipogon	✓	✓
1			* <i>Hedera helix</i>	English Ivy	✓	✓
1	C		* <i>Lycium ferocissimum</i>	African Box-thorn	✓	✓
1			* <i>Opuntia schickendantzii</i>	Lion's Tongue		✓
1			* <i>Paraserianthes lophantha</i> subsp. <i>lophantha</i>	Cape Leeuwin Wattle		✓
1			* <i>Pennisetum clandestinum</i>	Kikuyu		✓
1			* <i>Pitiosporum undulatum</i>	Sweet Pittosporum		✓
1			* <i>Polygala myrtifolia</i> var. <i>myrtifolia</i>	Myrtle-leaf Milkwort		✓
1	C		* <i>Salpichroa origanifolia</i>	Pampas Lily-of-the-Valley	✓	✓
1			* <i>Stenotaphrum secundatum</i>	Buffalo Grass	✓	✓
1			* <i>Tradescantia fluminensis</i>	Wandering Jew		✓
1			* <i>Zantedeschia aethiopica</i>	White Arum-lily		✓
2			* <i>Aeonium haworthii</i>	Pinwheel Aeonium		✓
2			* <i>Arundo donax</i>	Giant Reed		✓
2			* <i>Brassica fruticulosa</i>	Twiggy Turnip		✓
2			* <i>Bromus catharticus</i>	Prairie Grass		✓
2			* <i>Chlorophytum comosum</i>	Spider Plant		✓
2			* <i>Crassula multicava</i> subsp. <i>multicava</i>	Shade Crassula		✓
2			* <i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch	✓	✓

Habitat Zone		1	2	3	4	5
Ecological Vegetation Class name (initials)		CBW	CBW	CHS	CHS	CHS
Habitat Score		42%	35%	42%	27%	20%
Weed species recorded ‡						
Priority	CaLP	WONS	Species Name	Common Name		
2			* <i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass	✓	✓
2			* <i>Ehrharta longiflora</i>	Annual Veldt-grass		✓
2			* <i>Oxalis incarnata</i>	Pale Wood-sorrel		✓
2	R		* <i>Oxalis pes-caprae</i>	Soursob	✓	✓
2			* <i>Pandorea pandorana</i>	Wonga Vine		✓
2			* <i>Piptatherum miliaceum</i>	Rice Millet		✓
2			* <i>Sporobolus africanus</i>	Rat-tail Grass		✓
3			* <i>Acanthus mollis</i>	Bear's Breach		✓
3			* <i>Arctotheca calendula</i>	Cape Weed	✓	✓
3			* <i>Conyza bonariensis</i>	Flaxleaf Fleabane		✓
3			* <i>Conyza sumatrensis</i>	Tall Fleabane		✓
3			* <i>Fumaria</i> spp.	Fumitory		✓
3			* <i>Hypochoeris radicata</i>	Flatweed		✓
3			* <i>Lolium</i> spp.	Rye-grass		✓
3			* <i>Poa annua</i>	Annual Meadow-grass		✓
3			* <i>Setaria pumila</i> subsp. <i>pumila</i>	Pale Pigeon-grass		✓
3			* <i>Tropaeolum majus</i>	Nasturtium		✓
3			* <i>Viola odorata</i>	Common Violet		✓
3			* <i>Vulpia</i> spp.	Fescue		✓
4			* <i>Billbergia vittata</i>	Billbergia		✓
4			* <i>Cardamine hirsuta</i> s.s.	Common Bitter-cress		✓
4			* <i>Cerastium glomeratum</i>	Common Mouse-ear Chickweed		✓
4			* <i>Convolvulus sabatius</i>	Blue Convolvulus		✓
4			* <i>Erodium moschatum</i>	Musky Heron's-bill		✓
4 †			* <i>Eucalyptus calophylla</i>	Marri		✓
4			* <i>Galium aparine</i>	Cleavers		✓
4 †			* <i>Hibiscus rosa-sinensis</i>	Rose-of-China		✓
4			* <i>Malva</i> spp.	Mallow	✓	✓
4			* <i>Medicago polymorpha</i>	Burr Medic		✓
4			* <i>Modiola caroliniana</i>	Red-flower Mallow	✓	
4			* <i>Pelargonium x hortorum</i>	Zonal Pelargonium		✓
4			* <i>Plantago lanceolata</i>	Ribwort		✓
4			* <i>Romulea rosea</i> var. <i>australis</i>	Onion Grass		✓
4			* <i>Scilla peruviana</i>	Cuban Lily	✓	
4			* <i>Sonchus oleraceus</i>	Common Sow-thistle	✓	✓
4			* <i>Stellaria media</i>	Chickweed	✓	✓
4			* <i>Urtica urens</i>	Small Nettle		✓
4			* <i>Vicia sativa</i> s.l.	Common Vetch		✓

‡ Species may occur in additional habitat zones than shown  
† Adult planted specimens may be retained, however elimination of any offspring is recommended.





Figure 30 Ecological Vegetation Classes and Habitat Zones identified at Rickett's Point Hinterland, Beaumaris, July 2008.



5.14 Site: Sandringham Foreshore - south

**Location:** west of Beach Rd between Bay Rd and Red Bluff St, Sandringham.

**Area:** 7.56 ha.

**VEGETATION OVERVIEW**

**Vegetation Quality Assessment** scores for the 11 Habitat Zones identified at the site (Figure 32) are summarised in Table 28 and Figure 31.

**Coastal Headland Scrub (CHS)** (Depleted) occupies nine Habitat Zones (HZ 1-6, 8-10). Habitat Zones 1 and 3 scored identically but were separated because HZ1 had just over 50% weed cover while HZ3 had c. 80%. Habitat Zone 2 was separated as high rat activity has probably increased the cover of weeds and reduced diversity. Habitat Zones 4 and 5 are very good quality remnants containing few weeds; however HZ5 has a denser shrub layer with less open spaces than HZ4 which has more herbaceous and graminoid species. A sheltered gully and drainage area was the basis for separating out HZ6 which was extremely weedy and degraded. Seaberry Saltbush (*Rhagodia candolleana* subsp. *candolleana*) and Bower Spinach (*Tetragonia implexicoma*) appear to be smothering some of the vegetation in HZ 8, HZ 9 was revegetated and HZ10 appeared to be good quality but is located on unstable cliffs making access dangerous.

**Coastal Dune Grassland (CDG)** (Depleted) occurs in one Habitat Zone (HZ7) on the foreshore. It is dominated by Hairy Spinifex (*Spinifex sericeus*), Coast Saltbush (*Atriplex cinerea*) and \*Sea Wheat-grass (*\*Thinopyrum junceiforme*).

**Spray-zone Coastal Shrubland (SZCS)** (Rare) occupies one Habitat Zone (HZ11) at the base of the cliffs adjoining the foreshore. The substrate is sands and clays that have accumulated at the base of the eroding seacliffs.

The **Native Amenity Planting (NAP)** zone contains several indigenous species in a heavily mulched garden bed.

**PREVIOUS MANAGEMENT**

Fences that restrict people and their pets from accessing the vegetation and / or the dangerous cliffs surround most of the vegetation. Some footpaths to the beach have been closed for safety reasons and, possibly as a result, several informal tracks leading to the beach have been created. Weeding was also observed in some places and has occasionally been followed by revegetation.

**KEY MANAGEMENT ISSUES**

Weeds	Major issue, see Table 29 below.
Fox/Rabbit/Rat	Major issue, fox dens and / or rabbit warrens, as well as evidence of rats were observed throughout the site (particularly HZ5, 6 and 8).
Litter	Minor issue, scattered pieces also observed throughout the site.
Dog scats	Major issue, particularly along the tracks and the adjoining vegetation.

Pedestrian damage	Major issue, some informal tracks leading to the beach have been created as some of the designated tracks leading down to the beach have been closed for erosion and safety reasons.
Erosion	Major issue, mainly associated with the seacliffs. The high abundance of exotic species that die off in summer (e.g. Soursob, Veldt-grasses) and the soil turning activities of rats (HZ2) leaves the soil open to erosion.
Beach sand modifications	Major issue, imported beach sand was observed to be dumped on top of remnant vegetation (primarily Coastal Dune Grassland vegetation).

Table 28 Summary of the Vegetation Quality Assessment for the 11 Habitat Zones identified at Sandringham Foreshore – south, Sandringham, July 2008.

Key:  
CHS Coastal Headland Scrub  
SZCS Spray-zone Coastal Shrubland  
CDG Coastal Dune Grassland

Habitat Zone		1	2	3	4	5	6	7	8	9	10	11
Ecological Vegetation Class name (initials)		CHS	CHS	CHS	CHS	CHS	CHS	CDG	CHS	CHS	CHS	SZCS
Site Condition	Large Old Trees	10	-	-	-	-	-	-	-	-	-	-
	Canopy Cover	5	-	-	-	-	-	-	-	-	-	-
	Understorey	25	15	5	15	15	5	5	15	15	15	15
	Lack of Weeds	15	0	0	0	11	11	0	7	4	9	9
	Recruitment	10	6	6	6	6	0	10	10	0	6	10
	Organic Matter	5	5	3	5	5	3	4	5	5	3	5
	Logs	5	-	-	-	-	-	-	-	-	-	-
Landscape value	Patch Size	10	4	4	4	4	4	4	4	4	4	4
	Neighbourhood	10	0	0	0	0	0	0	0	0	0	0
	Distance to Core	5	0	0	0	0	0	0	0	0	0	0
Habitat Score		100%	39%	23%	39%	54%	52%	16%	41%	50%	41%	52%
												60%

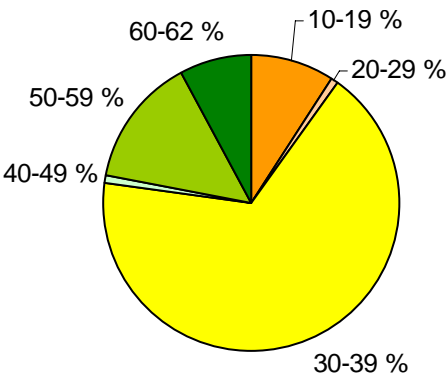


Figure 31 Proportional area of vegetation assessed within each habitat score (%) category, Sandringham Foreshore – south, Sandringham, July 2008.





**Table 29 Summary of the weeds recorded in the 11 Habitat Zones identified at Sandringham Foreshore – south, Sandringham, July 2008.**

**Key:**  
CHS Coastal Headland Scrub  
SZCS Spray Zone Coastal Shrubland  
CDG Coastal Dune Grassland  
CaLP *Catchment and Land Protection Act 1994*  
R Regionally Restricted under the *Catchment and Land Protection Act 1994*  
C Regionally Controlled under the *Catchment and Land Protection Act 1994*  
WONS / W Weed of National Significance  
✓ Present

Habitat Zone		1	2	3	4	5	6	7	8	9	10	11
Ecological Vegetation Class name (initials)		CHS	CHS	CHS	CHS	CHS	CHS	CDG	CHS	CHS	CHS	SZCS
Habitat Score		39%	23%	39%	54%	52%	16%	41%	50%	41%	52%	60%
Weed species recorded ‡												
Priority	CaLP WONS	Species Name	Common Name									
1		* <i>Acetosa sagittata</i>	Rambling Dock	✓		✓		✓	✓		✓	
1		* <i>Agapanthus praecox</i> subsp. <i>orientalis</i>	Agapanthus			✓						
1	R	* <i>Allium triquetrum</i>	Angled Onion	✓			✓	✓				
1		* <i>Asparagus aethiopicus</i>	Emerald fern	✓								
1	R W	* <i>Asparagus asparagoides</i>	Bridal Creeper	✓	✓	✓	✓	✓		✓		
1		* <i>Carpobrotus aequilaterus</i>	Angled Pigface	✓		✓				✓	✓	✓
1		* <i>Chasmanthe floribunda</i>	African Cornflag	✓		✓		✓				
1	C W	* <i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	Boneseed	✓		✓	✓				✓	
1		* <i>Coprosma repens</i>	Mirror Bush	✓		✓		✓			✓	✓
1		* <i>Delairea odorata</i>	Cape Ivy			✓		✓				
1		* <i>Dipogon lignosus</i>	Common Dipogon			✓	✓					
1		* <i>Freesia</i> sp.	Freesia	✓		✓						
1		* <i>Galenia pubescens</i> var. <i>pubescens</i>	Galenia			✓		✓		✓		
1	C	* <i>Genista linifolia</i>	Flax-leaf Broom				✓					
1		* <i>Hakea laurina</i>	Pincushion Hakea							✓		
1	C	* <i>Lycium ferocissimum</i>	African Box-thorn	✓		✓		✓		✓		
1		* <i>Malva dendromorpha</i>	Tree Mallow			✓						
1		* <i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	Giant Honey-myrtle			✓	✓					
1	C	* <i>Opuntia monacantha</i>	Drooping Prickley-pear	✓								
1		* <i>Pennisetum clandestinum</i>	Kikuyu	✓		✓		✓	✓			✓
1		* <i>Pittosporum undulatum</i>	Sweet Pittosporum	✓			✓	✓		✓		
1	C	* <i>Salpichroa organifolia</i>	Pampas Lily-of-the-Valley	✓		✓		✓	✓			
1		* <i>Stenotaphrum secundatum</i>	Buffalo Grass	✓								
1		* <i>Tradescantia fluminensis</i>	Wandering Jew			✓			✓			
2		* <i>Aeonium haworthii</i>	Pinwheel Aeonium			✓	✓					
2		* <i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	✓								
2		* <i>Chlorophytum comosum</i>	Spider Plant	✓								
2		* <i>Crassula multicava</i> subsp. <i>multicava</i>	Shade Crassula	✓								
2		* <i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch	✓			✓					
2		* <i>Dactylis glomerata</i>	Cocksfoot	✓								

Habitat Zone		1	2	3	4	5	6	7	8	9	10	11
Ecological Vegetation Class name (initials)		CHS	CHS	CHS	CHS	CHS	CHS	CDG	CHS	CHS	CHS	SZCS
Habitat Score		39%	23%	39%	54%	52%	16%	41%	50%	41%	52%	60%
Weed species recorded ‡												
Priority	CaLP WONS	Species Name	Common Name									
2		* <i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass	✓	✓	✓	✓	✓	✓		✓	✓
2		* <i>Ehrharta longiflora</i>	Annual Veldt-grass	✓	✓	✓	✓	✓	✓		✓	✓
2 †		* <i>Eucalyptus conferruminata</i>	Bald Island Marlock	✓				✓				
2		* <i>Juncus articulatus</i>	Jointed Rush									✓
2	R	* <i>Oxalis pes-caprae</i>	Soursob	✓	✓	✓	✓	✓	✓	✓	✓	✓
2		* <i>Thinopyrum junceiforme</i>	Sea Wheat-grass						✓			
3		* <i>Aloe maculata</i>	Common Soap Aloe	✓								
3		* <i>Amaryllis belladonna</i>	Belladonna Lily	✓		✓						
3		* <i>Arctotheca calendula</i>	Cape Weed	✓		✓						
3		* <i>Briza maxima</i>	Large Quaking-grass	✓		✓						
3		* <i>Conyza bonariensis</i>	Flaxleaf Fleabane	✓								
3		* <i>Fumaria</i> spp.	Fumitory	✓				✓				
3		* <i>Hypochoeris radicata</i>	Flatweed	✓	✓	✓						
3		* <i>Lagurus ovatus</i>	Hare's-tail Grass	✓								
3		* <i>Lolium</i> spp.	Rye-grass	✓							✓	
3		* <i>Plantago coronopus</i>	Buck's-horn Plantain	✓								
3		* <i>Vulpia</i> spp.	Fescue					✓				
4		* <i>Brachychiton populneus</i> subsp. <i>populneus</i>	Kurrajong					✓				
4		* <i>Cerastium glomeratum</i>	Common Mouse-ear Chickweed	✓		✓		✓				
4 †		* <i>Corymbia ficifolia</i>	Red-flowering Gum			✓						
4		* <i>Geranium molle</i> var. <i>molle</i>	Dove's Foot	✓								
4		* <i>Lepidium africanum</i>	Common Peppergrass			✓						
4		* <i>Malva</i> spp.	Mallow	✓		✓						
4		* <i>Petroselinum crispum</i>	Parsley	✓								
4		* <i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	✓	✓	✓					✓	
4		* <i>Solanum nigrum</i>	Black Nightshade	✓				✓				
4		* <i>Sonchus oleraceus</i>	Common Sow-thistle	✓		✓	✓				✓	
4		* <i>Stellaria media</i>	Chickweed	✓	✓			✓	✓		✓	
4		* <i>Trifolium</i> spp.	Clover	✓								
4		* <i>Yucca gloriosa</i>	Palm Lily				✓					

‡ Species may occur in additional habitat zones than shown  
† Adult planted specimens may be retained, however elimination of any offspring is recommended.





Figure 32 Ecological Vegetation Classes and Habitat Zones identified at Sandringham Foreshore – south, Sandringham, July 2008.



## 6 Considerations for Stage 2

Several factors need to be considered to prepare Stage 2 of the Native Vegetation Works Program. This would involve the preparation of a management and monitoring program for each of the sites and include:

### *Management Plan*

- Prioritisation of values and key management issues at each site;
- Identification of the most appropriate control methods to manage the issues identified;
- Recommendations for species appropriate for revegetation within each EVC;
- Maintenance and enhancement of native fauna habitats with the sites;
- Recommendations for regeneration burning and an appropriate burning regime.

### *Monitoring Program*

- Preparation of an appropriate and cost effective vegetation quality monitoring program to ensure that management efforts are successful. This could include:
  - the development of a vegetation quality assessment that is more sensitive than the habitat hectare system, but is still a relatively simple and efficient assessment. This would assist in determining the changes in vegetation quality over short time frames (e.g. biennial);
  - a pro forma recording sheet
  - establishment of permanent quadrats in appropriate locations; and
  - identifying appropriate permanent photo points locations throughout the sites.

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9 Glossary

Benchmark	EVC ‘benchmarks’ are standard vegetation-quality assessments. They are intended to represent the average characteristic attributes of a mature and apparently long-undisturbed stand of the EVC
CaLP	<i>Catchment and Land Protection Act 1994</i>
DSE	Victorian Department of Sustainability and Environment
Ecological Vegetation Class (EVC)	A classification of plant communities that allows vegetation to be grouped into ecologically meaningful units that are useful for natural resource managers
Exotic species	An introduced species that is outside its natural geographic range
Habitat Zone (HZ)	A discrete area of native vegetation consisting of a single vegetation type (EVC) with an assumed averaged quality that is the basis for conducting a vegetation quality assessment
Indigenous	A plant species or vegetation community occurring within its natural geographic range
Invasive species	A plant species naturalised outside its natural distribution which threatens environmental or other values
Native species	A plant species that naturally occurs in Victoria
Naturalised	An exotic plant species that forms self-sustaining populations but is not necessarily an invasive species
Taxon (plural = taxa)	A taxonomic entity at any level, e.g. genera, species and sub-species
Vegetation Quality Assessment	A measure of the intactness of vegetation in relation to its <i>site condition</i> and <i>landscape context</i> as described in DSE (2004a)
Weed	A plant naturalised outside its natural geographic range. Environmental weeds threaten natural ecosystems (e.g. reduce biodiversity)
WONS	Weed of National Significance



**Appendix 1** Exotic plant species recorded at the 14 coastal and inland reserves within the Bayside municipality and their control priority rating within the Bayside study area, September 2008.

**Key:**

Priority

Control Priority (in the context of the study area)

1. High priority

2. Moderate priority

3. Low priority

4. Control generally not necessary or not feasible.

† Adult planted specimens may be retained, however elimination of any offspring is recommended.

CaLP

*Catchment and Land Protection Act 1994*

R

Regionally Restricted under the *Catchment and Land Protection Act 1994*

C

Regionally Controlled under the *Catchment and Land Protection Act 1994*

WONS / W

Weed of National Significance

**Note:** The control priority (in the context of the study area) for each species may differ across the 14 sites due to site specific conditions and population sizes.

Priority	CaLP	WONS	Scientific Name	Common Name
2		*	<i>Acacia cardiophylla</i>	Wyalong Wattle
1		*	<i>Acacia elata</i>	Cedar Wattle
2		*	<i>Acacia iteaphylla</i>	Flinders Ranges Wattle
1		*	<i>Acacia longfolia</i> s.l. x <i>A. floribunda</i>	Hybrid Sallow Wattle
1		*	<i>Acacia longfolia</i> s.l.	Coast/Sallow Wattle
1		*	<i>Acacia longfolia</i> subsp. <i>longifolia</i>	Sallow Wattle
1		#	<i>Acacia longfolia</i> subsp. <i>sophorae</i>	Coast Wattle
1		*	<i>Acacia oxycedrus</i> x <i>A. floribunda</i>	Hybrid Wattle
2		*	<i>Acacia prominens</i>	Gosford Wattle
1		*	<i>Acacia saligna</i>	Golden Wreath Wattle
3		*	<i>Acanthus mollis</i>	Bear's Breach
1		*	<i>Acetosa sagittata</i>	Rambling Dock
3		*	<i>Acetosella vulgaris</i>	Sheep Sorrel
2		*	<i>Aeonium haworthii</i>	Pinwheel Aeonium
1		*	<i>Agapanthus praecox</i> subsp. <i>orientalis</i>	Agapanthus
2		*	<i>Agrostis capillaris</i>	Brown-top Bent
1	R	*	<i>Allium triquetrum</i>	Angled Onion
3		*	<i>Aloe maculata</i>	Common Soap Aloe
3		*	<i>Alstroemeria psittacina</i>	Alstromeria
3		*	<i>Amaryllis belladonna</i>	Belladonna Lily
2		*	<i>Ammophila arenaria</i>	Marram Grass
1		*	<i>Anredera cordifolia</i>	Madeira Vine
2		*	<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass
1		*	<i>Araujia sericifera</i>	White Bladder-flower
3		*	<i>Arctotheca calendula</i>	Cape Weed
3		*	<i>Artemisia arborescens</i>	Silver Wormwood
2		*	<i>Arundo donax</i>	Giant Reed
1		*	<i>Asparagus aethiopicus</i>	Emerald fern
1	R	W	<i>Asparagus asparagoides</i>	Bridal Creeper
3		*	<i>Avena fatua</i>	Wild Oat
1		*	<i>Berkheya rigida</i>	African Thistle
4		*	<i>Billbergia vittata</i>	Billbergia
4		*	<i>Brachychiton populneus</i> subsp. <i>populneus</i>	Kurrajong
2		*	<i>Brassica fruticulosa</i>	Twiggy Turnip

Priority	CaLP	WONS	Scientific Name	Common Name
3		*	<i>Briza maxima</i>	Large Quaking-grass
2		*	<i>Bromus catharticus</i>	Prairie Grass
2		*	<i>Bromus diandrus</i>	Great Brome
4		*	<i>Cakile maritima</i> subsp. <i>maritima</i>	Sea Rocket
4 †		*	<i>Callistemon rugulosus</i>	Scarlet Bottlebrush
4		*	<i>Cardamine hirsuta</i> s.s.	Common Bitter-cress
4		*	<i>Cardamine</i> sp.	Bitter Cress
1		*	<i>Carpobrotus aequilaterus</i>	Angled Pigface
1		*	<i>Carpobrotus edulis</i>	Hottentot Fig
1		*	<i>Carpobrotus</i> sp.	Pigface
4		*	<i>Cerastium glomeratum</i>	Common Mouse-ear Chickweed
1		*	<i>Chamaecytisus palmensis</i>	Tree Lucerne
1		*	<i>Chasmanthe floribunda</i>	African Cornflag
4		*	<i>Chenopodium murale</i>	Sowbane
2		*	<i>Chlorophytum comosum</i>	Spider Plant
1	C	W	<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	Boneseed
1	C		<i>Cirsium vulgare</i>	Spear Thistle
4		*	<i>Convolvulus sabatius</i>	Blue Convolvulus
3		*	<i>Conyza bonariensis</i>	Flaxleaf Fleabane
3		*	<i>Conyza</i> spp.	Fleabane
3		*	<i>Conyza sumatrensis</i>	Tall Fleabane
1		*	<i>Coprosma repens</i>	Mirror Bush
1		*	<i>Cortaderia selloana</i>	Pampas-grass
4 †		*	<i>Corymbia ficifolia</i>	Red-flowering Gum
3 †		*	<i>Corymbia maculata</i>	Spotted Gum
1		*	<i>Cotoneaster glaucophyllus</i> var. <i>serotinus</i>	Large-leaf Cotoneaster
1		*	<i>Cotoneaster</i> sp.	Cotoneaster
2		*	<i>Crassula multicava</i> subsp. <i>multicava</i>	Shade Crassula
2		*	<i>Crassula sarmentosa</i> var. <i>sarmentosa</i>	Creassula
3		*	<i>Cupressus</i> sp.	Cypress
1		*	<i>Cymbalaria muralis</i> subsp. <i>muralis</i>	Ivy-leaf Toadflax
2		*	<i>Cynodon dactylon</i> var. <i>dactylon</i>	Couch
3		*	<i>Cynosurus echinatus</i>	Rough Dog's-tail
2		*	<i>Dactylis glomerata</i>	Cocksfoot
1		*	<i>Delairea odorata</i>	Cape Ivy
4			<i>Dianella tasmanica</i> (probably exotic provenance)	Tasman Flax-lily
1		*	<i>Dietes grandiflora</i>	Dietes
1		*	<i>Dipogon lignosus</i>	Common Dipogon
2		*	<i>Drosanthemum candens</i>	Rodondo Creeper
2		*	<i>Ehrharta calycina</i>	Perennial Veldt-grass
2		*	<i>Ehrharta erecta</i> var. <i>erecta</i>	Panic Veldt-grass
2		*	<i>Ehrharta longiflora</i>	Annual Veldt-grass
4		*	<i>Erodium moschatum</i>	Musky Heron's-bill
1 †		*	<i>Eucalyptus botryoides</i>	Southern Mahogany
4 †		*	<i>Eucalyptus burdettiana</i>	Burdetts Mallee
4 †		*	<i>Eucalyptus calophylla</i>	Marri
4 †			<i>Eucalyptus camaldulensis</i> (exotic provenance)	River Red-gum
3 †		*	<i>Eucalyptus cladocalyx</i>	Sugar-gum
2 †		*	<i>Eucalyptus conferruminata</i>	Bald Island Marlock

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3 †			* <i>Eucalyptus globulus</i> subsp. <i>globulus</i>	Southern Blue-gum
3 †			* <i>Eucalyptus lehmannii</i>	Bushy Yate
4 †			* <i>Eucalyptus</i> sp.	Eucalypt
4 †			* <i>Eucalyptus tricarpa</i>	Red Ironbark
1			* <i>Freesia</i> sp.	Freesia
3			* <i>Fumaria</i> spp.	Fumitory
1			* <i>Galenia pubescens</i> var. <i>pubescens</i>	Galenia
4			* <i>Galium aparine</i>	Cleavers
1			* <i>Gazania linearis</i>	Gazania
1	C		* <i>Genista linifolia</i>	Flax-leaf Broom
4			* <i>Geranium molle</i> var. <i>molle</i>	Dove's Foot
4 †			* <i>Grevillea robusta</i>	Silky Oak
1			* <i>Hakea drupacea</i>	Sweet Hakea
1			* <i>Hakea laurina</i>	Pincushion Hakea
2			* <i>Hakea</i> sp.	Hakea
4			* <i>Hardenbergia comptoniana</i>	Native Wisteria
1			* <i>Hedera helix</i>	English Ivy
4			* <i>Helminthotheca echioides</i>	Ox-tongue
4 †			* <i>Hibiscus rosa-sinensis</i>	Rose-of-China
2			* <i>Holcus lanatus</i>	Yorkshire Fog
4			* <i>Hypochoeris glabra</i>	Smooth Cat's-ear
3			* <i>Hypochoeris radicata</i>	Flatweed
1			* <i>Ixia</i> sp.	Ixia
1	C		* <i>Juncus acutus</i> subsp. <i>acutus</i>	Sharp Rush
2			* <i>Juncus articulatus</i>	Jointed Rush
1			* <i>Kennedia rubicunda</i>	Dusky Coral-pea
4			* <i>Kunzea baxteri</i>	Crimson Kunzea
4			* <i>Lactuca serriola</i>	Prickly Lettuce
3			* <i>Lagurus ovatus</i>	Hare's-tail Grass
2			* <i>Lampranthus</i> sp.	Noon-flower
4			* <i>Leontodon taraxacoides</i> subsp. <i>taraxacoides</i>	Hairy Hawkbit
4			* <i>Lepidium africanum</i>	Common Peppergrass
1			# <i>Leptospermum laevigatum</i>	Coast Tea-tree
2			* <i>Lolium perenne</i>	Perennial Rye-grass
3			* <i>Lolium rigidum</i>	Wimmera Rye-grass
3			* <i>Lolium</i> spp.	Rye-grass
1	C		* <i>Lycium ferocissimum</i>	African Box-thorn
1			* <i>Malva dendromorpha</i>	Tree Mallow
4			* <i>Malva</i> spp.	Mallow
4			* <i>Medicago polymorpha</i>	Burr Medic
4			* <i>Medicago</i> spp.	Medic
1			* <i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	Giant Honey-myrtle
1			* <i>Melaleuca nesophila</i>	Showy Honey-myrtle
3			* <i>Melaleuca styphelioides</i> var. <i>styphelioides</i>	Prickly Paperbark
4			* <i>Modiola caroliniana</i>	Red-flower Mallow
1	C		* <i>Moraea flaccida</i>	One-leaf Cape-tulip
1	C	W	* <i>Nassella trichotoma</i>	Serrated Tussock
1	C		* <i>Opuntia monacantha</i>	Drooping Prickly-pear
1			* <i>Opuntia schickendantzii</i>	Lion's Tongue
2			* <i>Ornithogalum longibracteatum</i>	Pregnant Onion

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4			* <i>Oxalis corniculata</i> s.s.	Creeping Wood-sorrel
2			* <i>Oxalis incarnata</i>	Pale Wood-sorrel
2	R		* <i>Oxalis pes-caprae</i>	Soursob
2			* <i>Oxalis purpurea</i>	Large-flower Wood-sorrel
2			* <i>Pandorea pandorana</i>	Wonga Vine
1			* <i>Paraserianthes lophantha</i> subsp. <i>lophantha</i>	Cape Leeuwin Wattle
2			* <i>Passiflora caerulea</i>	Blue Passion-fruit
2			* <i>Passiflora cinnabarina</i>	Red Passion-flower
2			* <i>Passiflora</i> sp.	Passion-fruit
4			* <i>Pelargonium x hortorum</i>	Zonal Pelargonium
1			* <i>Pennisetum clandestinum</i>	Kikuyu
4			* <i>Petroselinum crispum</i>	Parsley
2			* <i>Phoenix canariensis</i>	Canary Island Date-palm
2			* <i>Piptatherum miliaceum</i>	Rice Millet
1			* <i>Pittosporum crassifolium</i>	Karo
1			* <i>Pittosporum undulatum</i>	Sweet Pittosporum
3			* <i>Plantago coronopus</i>	Buck's-horn Plantain
4			* <i>Plantago lanceolata</i>	Ribwort
3			* <i>Poa annua</i>	Annual Meadow-grass
1			* <i>Polygala myrtifolia</i> var. <i>myrtifolia</i>	Myrtle-leaf Milkwort
1			* <i>Rhamnus alaternus</i>	Italian Buckthorn
4			* <i>Romulea rosea</i> var. <i>australis</i>	Onion Grass
1	C	W	* <i>Rubus anglocandicans</i>	Blackberry
2			* <i>Rumex</i> sp.	Dock
1	C		* <i>Salpichroa organifolia</i>	Pampas Lily-of-the-Valley
3			* <i>Schinus molle</i>	Pepper Tree
4			* <i>Scilla peruviana</i>	Cuban Lily
3			* <i>Setaria pumila</i> subsp. <i>pumila</i>	Pale Pigeon-grass
4			* <i>Sisymbrium</i> sp.	Mustard
4			* <i>Solanum nigrum</i>	Black Nightshade
4			* <i>Sonchus oleraceus</i>	Common Sow-thistle
2			* <i>Sporobolus africanus</i>	Rat-tail Grass
4			* <i>Stellaria media</i>	Chickweed
1			* <i>Stenotaphrum secundatum</i>	Buffalo Grass
1			* <i>Tamarix ramosissima</i>	Tamarisk
4			* <i>Taraxacum officinale</i> spp. agg.	Garden Dandelion
2			* <i>Thinopyrum junceiforme</i>	Sea Wheat-grass
1			* <i>Tradescantia fluminensis</i>	Wandering Jew
4			* <i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover
4			* <i>Trifolium</i> spp.	Clover
3			* <i>Tropaeolum majus</i>	Nasturtium
1	C	W	* <i>Ulex europaeus</i>	Gorse
4			* <i>Urtica urens</i>	Small Nettle
4			* <i>Veronica</i> sp.	Speedwell
4			* <i>Vicia sativa</i> s.l.	Common Vetch
1			* <i>Vinca major</i>	Blue Periwinkle
3			* <i>Viola odorata</i>	Common Violet
3			* <i>Vulpia</i> spp.	Fescue
4			* <i>Yucca gloriosa</i>	Palm Lily
1			* <i>Zantedeschia aethiopica</i>	White Arum-lily