Glamorgan Spring Bay Council

Swansea Coastal Reserve

NATIVE FLORA AND FAUNA MANAGEMENT PLAN 2014 - 2019

SUMMARY

Glamorgan Spring Bay Council (GSBC) has developed this five year Native Flora and Fauna Management Plan for the section of the Swansea Coastal Reserve under their management. The intent of the Plan is to provide Council with a strategic approach to the sustainable management of the vegetation and other natural values within the Reserve.

Remnant native vegetation in the reserve includes the following communities:

- *Eucalyptus globulus* dry forest & woodland (DGL)
- *Eucalyptus viminalis* grassy forest & woodland (DVG)
- *Allocasuarina verticillata* forest (NAV)
- *Bursaria-Acacia* woodland & scrub (NBA)
- Coastal scrub (SSC)
- *Acacia longifolia* coastal scrub (SAC)
- Coastal grass and herbfield (GHC)
- Lowland grassland complex (GCL)
- Lowland *Themeda triandra* grassland (GTL)
- Saline sedgeland/rushland (ARS).

DGL is listed as threatened communities under the *Nature Conservation Act 2002*.

Other TASVEG non-native vegetation mapping units present are:

- Lichen lithosere (ORO) – the rocky foreshore
- Sand, mud (OSM) – sandy beaches
- Marram grassland (FMG)
- Urban areas (FUR).

Two threatened plant species, *Cynoglossum australe* and *Calystegia soldanella,* listed under the Tasmanian *Threatened Species Protection Act 1995* (TSPA) are present in the Reserve.

The condition of the vegetation varies from very good to poor. However, it provides a diversity of habitat for native fauna. Two species of threatened fauna, variously listed under the TSPA and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA), for which the Reserve provides foraging habitat are the swift parrot and white-bellied sea-eagle.

Notable weeds are mapped and described. These include 9 species of 'declared weeds' under the *Weed Management Act 1999* and 51 other species considered as environmental weeds.

Management issues identified include:

- Natural values –vegetation, flora, fauna and significant trees
- Weeds
- Illegal clearing of vegetation
- Reserve boundaries
- Walking tracks
- Coastal erosion and beach access track
- Planting and revegetation
- Fire

Recommendations and actions plans are provided to deal with these issues and guide management of the Reserve for all of its natural values whilst not compromising its associated cultural and social values.

ACKNOWLEDGMENTS

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Weed identifications: Tasmanian Herbarium

*Maps in this publication have been reduced from their original A3 format. Hard copies of A3 maps are available upon request from:

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1. INTRODUCTION

1.1 BACKGROUND AND OBJECTIVES

Glamorgan Spring Bay Council has developed this five year Native Flora and Fauna Management Plan for the section of the Swansea Coastal Reserve under their management. The intent of the Plan is to provide Council with a strategic approach to the management of the Reserves' natural values whilst recognising and considering the Reserves' significant cultural and social values.

Therefore the main objectives of the Plan are to:

- Identify the natural, and associated cultural and social, values of the Reserve,
- Identify threats to the natural values,
- Provide action plans to ensure that the Reserve is sustainably managed to preserve and enhance all of its natural values, in accordance with the Tasmanian Reserve Management Code of Practice 2003[1], whilst not compromising its cultural and social values, and
- Raise community awareness of the values of the Reserve and thereby encourage participation in activities that minimise threats to these values.

1.2 GENERAL DESCRIPTION OF THE RESERVE

Swansea is situated on the central east coast, in the Glamorgan Spring Bay municipality and in the Tasmanian South East bioregion[2]. It occurs in the dry subhumid warm climatic zone where the annual average rainfall is in the region of 600 mm. The altitude across the Reserve ranges from near sea level to approximately 18 m above sea level.

The location of the Reserve is depicted in Figure 1. It extends from near the seaward end of Maria Street in the north to near the seaward end of Francis Street in the south. It incorporates the narrow coastal fringe but also includes most of the Waterloo Point peninsula and the land margins of Saltwater Creek east of Victoria Street.

The Reserve is largely dominated by parkland, recreation areas, and associated infrastructure. However, there are also several sections of remnant native vegetation and other natural features.

The main characteristics of the Reserve are provided in the tables below. Section 2 provides a more detailed description of the natural values and other biological characteristics of the Reserve. Section 3 provides details of other values of the Reserve.

[1] Parks and Wildlife Service, Forestry Tasmania and Department of Primary Industries, Water and Environment 2003.

[2] IBRA5 – Peters & Thackway 1998. A bioregion is an area of land with similar environmental, physical and climatic conditions and containing characteristic ecosystems.

Reserve characteristics:

P.I.D.	Location	Extent (ha)	Land tenure	Management responsibility
5274908	End of Maria St to Jubilee Park	1	Public Reserve Crown Lands Act DPIPWE	Crown Lease Glamorgan Spring Bay Council
1717134	South of Jetty Rd boat ramp	0.5	Public Reserve Crown Lands Act DPIPWE	Crown Lease Glamorgan Spring Bay Council
5274529	Waterloo Point, golf course, bowls club, oval	11	Public Reserve Crown Lands Act DPIPWE	Crown Lease Glamorgan Spring Bay Council
1716430	Land adjacent to Schouten House Beach, land surrounding Saltwater Creek and southwards to near the end of Francis St	7	Public Reserve Crown Lands Act DPIPWE (north of Saltwater Creek) Swansea Conservation Area Nature Conservation Act Parks and Wildlife Service	Crown License Glamorgan Spring Bay Council

Natural features:

Coastal vegetation including dry sclerophyll forest, non-eucalypt forest, scrub, sedgeland and grassland communities, rocky and sandy shores, and remnant native trees within parkland.

Parkland, recreation areas and infrastructure:

Jubilee Park, the Swansea Golf and Bowls Clubs and Clubhouses, the Oval, the Duck Park, the Gordon Street boatramp, public roads and parking areas, walking tracks, beach access tracks, amphitheatre, BBQ & picnic tables, public toilets, childrens' playgrounds, exercise equipment, petanque playing area.


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Vegetation data, © Glamorgan Spring Bay Council
Imagery data supplied by STCA, © STCA
Figure 1
Swansea Reserves
INSIGHTGIS
Seeing is Achieving
07/06/2012

2. BIOLOGICAL CHARACTERISTICS

The following details the natural values (vegetation, flora and fauna habitat) and other biological characteristics (weeds and plant pathogens) of the Reserve.

The information provided below is based on the results of a recent survey. The methods adopted for the survey and for assessment of conservation significance are provided in Appendix 1.

A list of vascular plants that occur within the Reserve is provided in Appendix 2. A review of the potential of the Reserve to support threatened species known to occur in the vicinity is provided in Appendices 3A and 3B.

The Council's legislative obligations in relation to the management of threatened species and communities as well as weeds occurring in the Reserve are provided in Appendix 4A. Other legislation and policies relevant to reserve management are provided in Appendix 4B.

2.1 VEGETATION

The vegetation has been classified according to the TASVEG[3]. The survey revealed a greater variation in the vegetation compared with current TASVEG coastal mapping of the Reserve, which is slightly more generalised.

Figure 2 depicts the vegetation communities and other TASVEG mapping units, which were mapped during the survey. In summary, across the Reserve there are ten native vegetation communities present. These include two dry eucalypt forest communities, two non-eucalypt forest communities, two scrub communities, three grassland communities and one saltmarsh community.

The condition of the native vegetation is variable. Weeds are present in virtually all communities but, given the small size of these remnants and the proximity to urban areas, this is to be expected. Detailed descriptions of the significant (declared and environmental) weeds present are provided in section 2.6.

Four other TASVEG non-native vegetation mapping units are also present in the Reserve. Two of them are 'other natural environments' and two are 'non-native vegetation'.

Table 1 provides a list of all mapping units together with the conservation status of the native vegetation. Detailed descriptions of each mapping unit, their condition and summary of significant weeds present, are provided following table 1.

[3] TASVEG is the abbreviation for the Tasmanian Vegetation Mapping Program (the vegetation map of the entire State)

Table 1. Native vegetation communities and other TASVEG mapping units in the Reserve.

TASVEG code	TASVEG community name	Listed under the Tasmanian *Nature Conservation Act 2002*
NATIVE VEGETATION COMMUNITIES		
DGL	*Eucalyptus globulus* (blue gum) dry forest & woodland	Yes
DVG	*Eucalyptus viminalis* (white gum) grassy forest & woodland	
NAV	*Allocasuarina verticillata* (drooping sheoak) forest	
NBA	*Bursaria-Acacia* (prickly box-wattle) woodland & scrub	
SAC	*Acacia longifolia* (coast wattle) coastal scrub	
SSC	Coastal scrub	
GCL	Lowland grassland complex	
GHC	Coastal grass & herbfield	
GTL	Lowland *Themeda triandra* (kangaroo grass) grassland	
ARS	Saline sedgeland/rushland	
OTHER NATURAL ENVIRONMENTS		
ORO	Lichen lithosere (rocks)	
OSM	Sand, mud (beaches)	
NON-NATIVE VEGETATION		
FMG	Marram grassland	
FUR	Urban areas (parkland)	

Eucalyptus globulus **(Tasmanian blue gum) dry forest & woodland (DGL)**

A small remnant of this threatened community occurs on the northern side of Waterloo Point through which the Loontitetermairrelehoiner walking track passes. The few remaining old-growth/senescing blue gums are characterised by large girths, tree hollows and dead spars. However, there is also some immature regeneration as well as several seedlings emerging.

Understorey trees of drooping sheoak and shrubs, such as coast beardheath and white correa, form a canopy over a dense ground layer of shortstem flaxlily, saggs, grasses, herbs and creepers.

The condition of the community varies from very good to poor. Some patches on the edge of the track are dominated by weedy herbs and grasses. Occasional significant weeds are African boxthorn, cotoneaster and sweet briar.

Eucalyptus viminalis **(white gum) grassy forest & woodland (DVG)**

This community occurs on the southern side of the Saltwater Creek. Under the dominant white gums there is a moderately dense canopy of under storey trees and tall shrubs including black wattle, drooping sheoak, common native-cherry, prickly box and broadleaf hopbush. The ground layer is sparse to dense and includes grasses, sedges, flaxlily, sagg, prostrate shrubs, herbs, and creepers.

The condition of the community varies from very good to poor. Some weedy herbs and grass are present in patches. Significant weeds include gorse, boneseed seedlings and

some blackberry as well as sweet pittosporum seedlings, patches of blue periwinkle and occasional cotoneaster.

***Allocasuarina verticillata* (drooping sheoak) forest (NAV)**

This community is the dominant vegetation around Waterloo Point through which the Loontitetermairrelehoiner walking track passes. It also occurs as smaller patches in the southern half of the Reserve.

Typically in this community drooping sheoak forms a dense canopy over a dense ground layer of leaf litter, which suppresses the growth of many plants. Within the Reserve the understorey varies considerably. Where the canopy and leaf litter is relatively dense there is a sparse ground layer of herbs grasses, sedges and sagg. Around Waterloo Point, under a relatively open canopy, there is a dense ground layer of creepers including coastal saltbush and bower spinach.

This condition of the community varies from good to poor. In some areas there are dense infestations of weedy herbs and grasses, notably along the walking track. The most common significant weeds, often around the periphery of the community and particularly around the southern remnants, are African boxthorn, gorse and pride of madeira.

***Bursaria-Acacia* (prickly box-wattle) woodland & scrub (NBA)**

A small narrow strip of this community occurs on the southern side of Saltwater Creek. The dominant tree is silver wattle. Coast wattle, grasses, sedges and sagg dominate the understorey and ground layer.

The condition of the community is moderate. Gorse is the main weed present.

***Acacia longifolia* (coast wattle) coastal scrub (SAC)**

This occurs only at the northern end of the Reserve between Jubilee beach and Jubilee Park. Species diversity in this community is typically low. Coast wattle is dominant but other shrubs present are white correa and common boobialla. The creeper coastal saltbush is common as are the native beach spinifex and the introduced marram grass.

This condition of the community varies from good to poor. Apart from marram grass, several weedy herbs are present both along the beach side and park side of the community. The most abundant significant weeds are African boxthorn, trailing daisy and gazania. Others are pride of madeira, cape wattle and caper spurge.

Coastal scrub (SSC)

Three small narrow strips of SSC are present. One strip is adjacent to the golf course at the eastern end of Waterloo Beach where it occurs on a small sand cliff. Small trees and shrubs include drooping sheoak, coast beardheath, coast wattle and common boobialla. The creeper coastal saltbush and the introduced marram grass are common. This section is in moderate to poor condition with several African boxthorn plants present. It has apparently been subject to severe erosion in recent times.

The other two strips of this community occur adjacent to Schouten House Beach. Both effectively consist of just a narrow strip of remnant coast beardheath with some white correa shrubs. Other natives commonly present include knobby clubsedge and smooth riceflower. However, these strips are infested with and surrounded by gazania. Hence both are in very poor condition.

Lowland grassland complex (GCL)

This occurs either side of the NBA community on the south eastern side of Saltwater Creek. Although this area is regularly mown, native grasses and small sedges are interspersed with native herbs and low shrubs. A remnant white gum and some prickly box are also present.

The condition of the community varies from moderate to poor. Some patches are dominated by introduced grasses and herbs. Significant weeds include several gorse plants and some blackberry and watsonia.

Coastal grass and herbfield (GHC)

Three patches of GHC occur adjacent to Schouten House Beach. The dominant grasses present are coast speargrass, Australian saltgrass, tussockgrass, beach spinifex and the introduced marram grass. Other common dominants include coast swordsedge and coastal saltbush. Herbs and shrubs are common. Drooping sheoak and black wattle are occasional small trees.

The condition of the community is moderate to very poor. Weedy herbs and grasses are very common and a number of significant weeds are present. Whilst many of them occur only occasionally, gazania is particularly abundant. Others include gorse, blackberry and boneseed.

Lowland *Themeda triandra* (kangaroo grass) grassland (GTL)

One small patch of GTL occurs just to the north of Gordon Street. This area probably once supported drooping sheoak forest. Kangaroo grass is dominant and other native grasses and herbs are numerous.

The condition is generally poor as there is also an abundance of introduced grasses, herbs and shrubs. A number of significant weeds present include boneseed, blackberry, gorse and agapanthus.

Saline sedgeland/rushland (ARS)

Two areas of this saltmarsh community are present at either end of Saltwater Creek. Dominant sedges and rushes include sea rush and chaffy sawsedge. Other common plants are low and ground hugging species such as creeping brookweed, glasswort, shiny swampmat, southern seablite as well as Australian saltgrass.

The condition of the community is generally good although introduced grasses and herbs are present, particularly on the periphery. Significant weeds are not present.

Lichen lithosere (rocks) (ORO) and Sand, mud (beaches) (OSM)

The Reserve is bounded by sections of rocky foreshore and beaches, which form the interface between the terrestrial and marine environments. A few obligate coastal or saltmarsh plants survive in these environments. Along the rocks coast speargrass is common in the saltspray zone. On the beaches, apart from beach spinifex and marram grass, sea-celery and the introduced American searocket are common frontline species.

Marram grassland (FMG)

This non-native vegetation community occurs as four narrow strips, one along the edge of Waterloo Beach and three along the edge of Schouten House Beach. Whilst the dominant marram grass is an introduced plant, the native beach spinifex is also present in varying abundance.

Significant weeds present, within and on the periphery of the community, include African boxthorn, fennel and gorse. At Waterloo Beach the community is infested with flaxleaf fleabane. Others along the periphery here include pride of madeira, cape wattle, trailing daisy, New Zealand flax, arum lily, cape ivy and gazania.

Urban areas (parkland) (FUR)

'Parkland' is the dominant mapping unit in the Reserve. Whilst the characteristics of it within the Reserve are diverse, there is no subdivision of this mapping unit in the TASVEG classification system, hence all areas largely devoid of native vegetation have been mapped as FUR (excluding areas Marram grassland).

Within the Reserve FUR includes formal parks with facilities (Jubilee Park and the Duck Park) and recreation areas (the golf and bowls clubs and the oval).

It also includes other open areas devoid of native vegetation that are frequently mown or maintained by Council and used by walkers or for passive recreation. These areas occur behind the marram grassland adjacent to Waterloo Beach, along Schouten House Beach and in the vicinity of the Gordon Street boat ramp.

Other areas of FUR are those that are not maintained by Council and where, at some stage in the past, the native vegetation has been cleared adjacent to private property. Often these areas are infested with a wide array of weedy grasses and herbs as well as a number of significant weeds, some of which have obviously been deliberately planted.

2.2 Flora of Conservation Significance

A total of 186 vascular plant species were recorded during the survey including 2 threatened species and 101 introduced species. A full species list is given in Appendix 2.

The two threatened species, coast houndstongue and sea bindweed, are both listed as 'rare' under the Tasmanian *Threatened Species Protection Act 1995* (TSPA). Further details are provided below.

Appendix 3A lists a total of 25 species of conservation significance previously recorded within the vicinity together with a description of their preferred habitat and an assessment of their likely occurrence within the reserves.

In summary, apart from the 2 species recorded in the Reserve, there are only 2 other species that are considered as having a moderate or moderate to high potential to occur in the Reserve. These are sickle spear grass and shade peppercress. Further targeted surveys during the appropriate flowering times would be required to determine if they are present. Habitat in the Reserve is unsuitable or only marginal for the other 21 species.

Threatened flora recorded in the Reserve

Coast houndstongue (*Cynoglossum australe*) (TSPA: Rare)

Coast houndstongue commonly occurs near the coast and in dry places such as the landward margins of sand dunes, grassland and open forest. It is a perennial herb with a cluster of basal leaves as well as stem leaves. The stems are erect, spreading, rough and hairy up to 1m tall. The tiny flowers, commonly blue or pink, are produced in spring and summer.

Its distribution in the Reserve is depicted in Figure 2. It is locally abundant in the vicinity of Waterloo Point, north and south of the Saltwater Creek and at the southern end of the Reserve. In total, over 400 plants were observed during the survey (Plate 1).

Sea bindweed (*Calystegia soldanella*) (TSPA: Rare)

Sea bindweed is a trailing or twining perennial herb with slender branched underground stems, or rhizomes. The leaves are somewhat fleshy, kidney or heart-shaped and 2 to 5 cm wide. It produces a showy pink or purple and white flower with a yellow centre in summer.

Its distribution in the Reserve is depicted in Figure 2. It is present along Shouten House Beach where it occurs as a frontline species among the pebbles at the northern end of the beach as well as on sand. It was observed at 9 locations during the survey (Plates 2 and 3).

Plate 1: Coast houndstongue *Cynoglossum australe*.

Plate 2: Sea bindweed *Calystegia soldanella* (flower and leaves).

Plate 3: Sea bindweed *Calystegia soldanella* (showing plants and habitat).

2.3 Fauna Habitat

The diverse nature of the vegetation across all the reserve, together with the interface with the marine environment, equates to a diverse range of habitat opportunities for native fauna, most notably for terrestrial and coastal birds, as well as mammals, reptiles and a variety of invertebrates.

2.4 Fauna of Conservation Significance

Appendix 3B lists threatened fauna species that have been recorded within the vicinity of the Reserve or that are considered to have the potential to occur. A brief discussion is given to indicate the reasons why habitat is suitable or unsuitable.

In summary, habitat present in the Reserve does not provide core breeding habitat for any threatened fauna. However, foraging habitat is present in the Reserve, or in the immediate vicinity, for the swift parrot and white-bellied sea-eagle. The swift parrot is listed as 'endangered' under both the TSPA and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA). The white-bellied sea-eagle is listed as 'vulnerable' under the TSPA. Further details are provided below.

Three other threatened fauna species that may potentially forage in the vicinity are the eastern barred bandicoot, wedge-tailed eagle, masked owl.

The Reserve also provides high quality habitat for other fauna species that, whilst not listed as threatened, are of high conservation significance. These are the short-tailed shearwater and a number of shorebirds whose numbers are in decline. Further details are provided below.

Swift parrot (*Lathamus discolor*) (TSPA & EPBCA: Endangered)

Swift parrots are annual migrants to the east coast of Tasmania, from August to March, where they breed, nesting in tree hollows. They feed on the nectar of Tasmanian blue gum (*Eucalyptus globulus*) and black gum (*E. ovata*), in forests, single trees in paddocks, and urban parks and gardens

Whilst there are no known nest sites in the Swansea area, there have been several sightings of the parrot in the vicinity. The many mature blue gums in the Reserve provide the parrot with critical foraging habitat on their annual migration to known nesting sites further south.

White-bellied sea-eagle (*Haliaeetus leucogaster*) (TSPA: Vulnerable)

White-bellied sea-eagles nest and forage near the coast as well as near inland rivers and lakes. They generally nest within 5 km of open water and breed between August and January. Their nests are usually in large sheltered eucalypts, although they can be fairly tolerant of disturbance. They perch in a prominent place and glide down snatching fish, eels or birds from the surface of the water, or small vertebrates or carrion on land. Their home range may be up to 150 km.

Known nests in the vicinity are beyond the range of any disturbance from activities within the Reserve. However, the eagle is known to forage along the coast in the Swansea area and, in fact, one was observed during the survey perching in one of the large blue gums at Waterloo Point. Obviously these, and other large trees, are important for this species.

Short-tailed shearwater (*Puffinus tenuirostris*)

Each year short-tailed shearwaters, or mutton birds, migrate around 15,000 km in each direction between the Arctic Circle and the southern hemisphere. The colony at Waterloo Point is one of approximately 250 breeding colonies around south-eastern Australia. They return here to breed between September and April.

Although there appears to be huge numbers of these birds they are still vulnerable to a number of threats such as habitat destruction and falling prey to feral cats.

Shore birds

Shorebirds of conservation significance that are known to utilise beaches in the Reserve as foraging habitat include:

- **Hooded plover (*Thinornis rubricollis*)**
- **Pied oystercatcher (*Haematopus longirostris*)**
- **Red-capped plover (*Charadrius ruficapillus*)**

These birds breed in scrapes in the sand or in seaweed above the high water mark. Their numbers around Tasmanian has declined over recent years mainly due to increased beach use by people. Activities which threatened their breeding success include trampling by people, predation of eggs, chicks and adults by dogs and feral cats, invasive weeds, removal of seaweed and other beach debris and ingestion or entanglement in litter, especially fishing line.

2.5 Significant Trees

In addition to the many trees within the native vegetation communities and within areas mapped as 'FUR – parkland', there are a number of significant native trees on and in the vicinity of the golf course and oval and at Jubilee Park. These are large mature Tasmanian blue gums (*Eucalyptus globulus*). The location of these is depicted in Figure 2.

Apart for the aesthetic, visual and cultural value of these trees, they provide valuable foraging and nesting habitat for a range of native birds. They are particularly important as foraging habitat for the swift parrot and potential perching habitat for the white-bellied sea-eagle (see section 2.4 above).

2.6 Weeds

Introduced species recorded during the survey numbered 101. This is over half of all species recorded.

Nine of these are 'declared weeds' under the Tasmanian *Weed Management Act 1999*, three of which are also Weeds of National Significance. Another 51 species are considered to be significant environmental weeds. All of these species are listed in Tables 2A and 2B, a photograph of each is provided in Appendices 5A and 5B, and their distribution is depicted in Figures 3 and 4.

Table 2A indicates that the most widespread declared weeds are African boxthorn and gorse, whilst Table 2B indicates that the most widespread environmental weeds are pride-of-madeira, gazania and trailing daisy.

However, it should be noted that the number of observations provided in Tables 2A and 2B are intended to give a general indication of relative abundance and does not always reflect actual abundance. In particular, large patches of gazania were, for practical mapping purposes, often recorded as a single location but there may have been tens or hundreds of plants present at that location. Gazania is probably the most abundant of the significant weeds.

Table 2A. Declared weeds* recorded in the Reserve.

* 'Declared weeds' under the *Weed Management Act 1999*. ** WONS = Weed of National Significance. *** Observations = the number of general locations across the Reserve where it was observed.

Common name	*Scientific name*	WONS**	Observations***
african boxthorn	*Lycium ferocissimum*		40
blackberry	*Rubus fruticosus* aggregate	WONS	7
boneseed	*Chrysanthemoides monilifera* subsp. *monilifera*	WONS	10
english broom	*Cytisus scoparius*		1
fennel	*Foeniculum vulgare*		5
gorse	*Ulex europaeus*	WONS	33
montpellier broom	*Genista monspessulana*		1
slender thistle	*Carduus pycnocephalus*		1
white horehound	*Marrubium vulgare*		8

Table 2B. Other environmental weeds recorded in the Reserve.

* Observations = the number of general locations across the Reserve where it was observed.

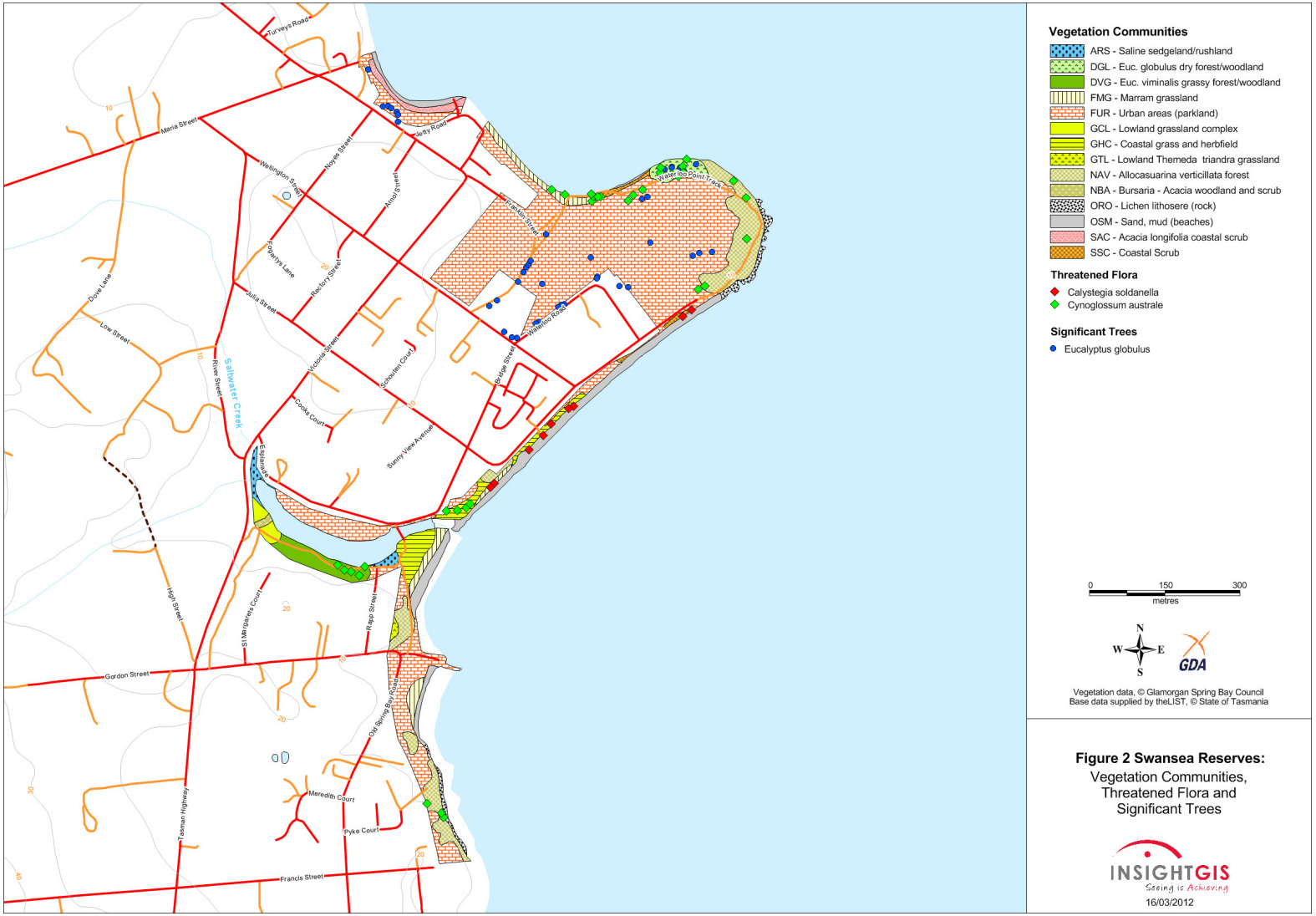
Common name	*Scientific name*	Observations*
agapanthus	*Agapanthus praecox*	3
arum lily	*Zantedeschia aethiopica*	3
bears breeches	*Acanthus mollis*	1
blue periwinkle	*Vinca major*	8
bluebell creeper	*Billardiera heterophylla*	1
borage	*Borago officinalis*	1
bottlebrush	*Melaleuca* sp.	1
cape ivy	*Delairea odorata*	3
cape wattle	*Paraserianthes lophantha* subsp. *lophantha*	4
caper spurge	*Euphorbia lathyris*	1
coast teatree	*Leptospermum laevigatum*	2
cotoneaster	*Cotoneaster* sp.	10
diosma	*Coleonema* sp.	2
escallonia	*Escallonia* sp.	1
field marigold	*Calendula arvensis*	2
flaxleaf fleabane	*Conyza bonariensis*	1
garrya	*Garrya elliptica*	1
gazania	*Gazania* sp.	19
geranium	*Pelargonium* sp.	6
giant honeymyrtle	*Melaleuca armillaris* subsp. *armillaris*	2
grevillea hybrid	*Grevillea* sp.	1
gum	*Eucalyptus* sp.	2
hawthorn	*Crataegus monogyna*	3
hebe	*Hebe* sp.	1

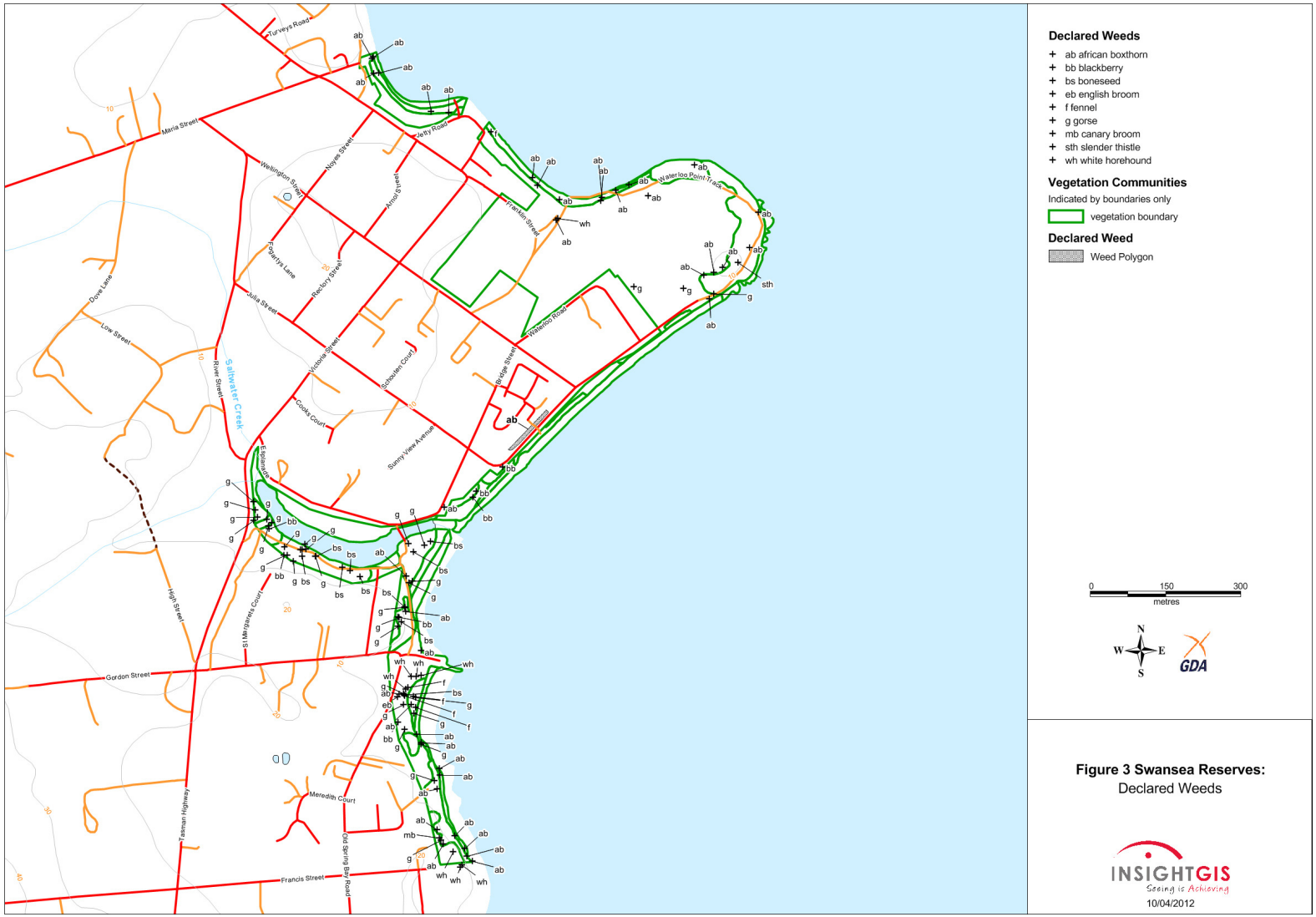
Common name	*Scientific name*	Observations*
hoary cress	*Lepidium draba*	3
howitt's wattle	*Acacia howittii*	1
ivy	*Hedera helix*	2
large mediterranean spurge	*Euphorbia characias*	2
marguerite	*Argyranthemum frutescens*	5
milkwort	*Polygala myrtifolia*	1
mirrorbush	*Coprosma repens*	1
nasturtium	*Tropaeolum majus*	1
new zealand flax	*Phormium tenax*	2
paulownia	*Paulownia* sp.	1
pigs ear	*Cotyledon orbiculata*	2
prickly pear	*Opuntia* sp.	1
pride-of-madeira	*Echium candicans*	22
protea	*Protea* sp.	1
radiata pine	*Pinus radiata*	7
red valerian	*Centranthus ruber*	3
rhubard	*Rheum* sp.	1
scrambling groundsel	*Senecio angulatus*	4
showy honey-myrtle	*Melaleuca nesophila*	1
sweet alice	*Lobularia maritima*	3
sweet briar	*Rosa rubiginosa*	5
sweet pittosporum	*Pittosporum undulatum*	13
teatree	*Leptospermum* sp.	1
trailing daisy	*Osteospermum fruticosum*	19
tree mallow	*Malva dendromorpha*	2
watsonia	*Watsonia* sp.	2
wattle	*Acacia* sp.	1

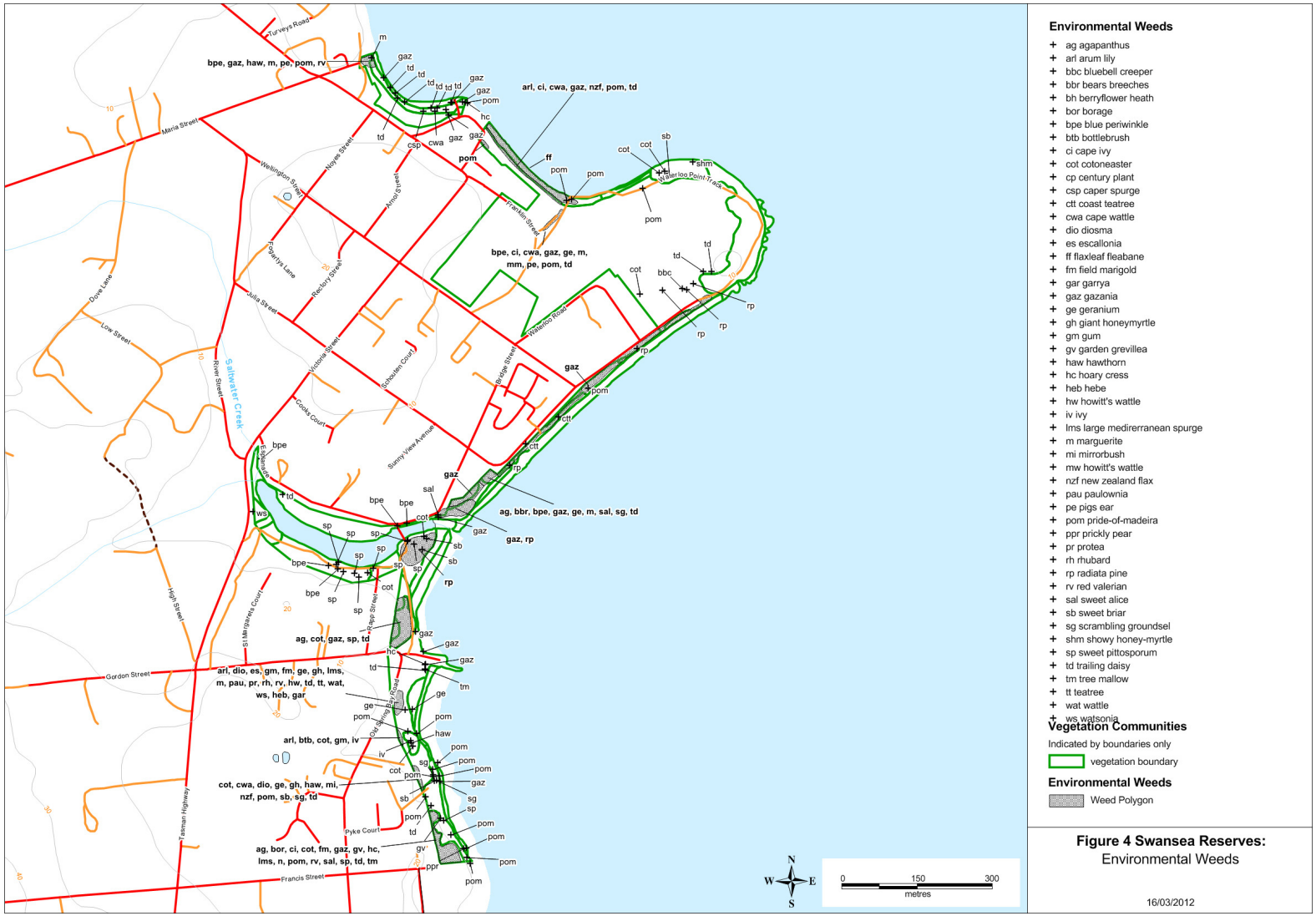
2.7 *PHYTOPHTHORA CINNAMOMI*

Commonly known as dieback or root rot fungus, *P. cinnamomi* is a soil borne fungal pathogen that invades the roots of plants and starves them of nutrients and water. Heath communities are the most susceptible to infection with a consequent serious loss of species diversity. It is generally spread by the transportation of soil on vehicles, construction machinery and walking boots. The establishment and spread of *P. cinnamomi* is favoured in areas that receive above 600 mm of rainfall per annum, are below 800 m altitude and have a predominantly heathy shrub layer.

Swansea falls on the perimeter of the known distribution of *P. cinnamomi* and within its favoured climatic zone. However, no vegetation communities that are highly susceptible to the fungus are present in the Reserve and no obvious evidence of its presence was observed.


Vegetation Communities
ARS - Saline sedgeland/rushland
DGL - Euc. globulus dry forest/woodland
DVG - Euc. viminalis grassy forest/woodland
FMG - Marram grassland
FUR - Urban areas (parkland)
GCL - Lowland grassland complex
GHC - Coastal grass and herbfield
GTL - Lowland Themeda triandra grassland
NAV - Allocasuarina verticillata forest
NBA - Bursaria - Acacia woodland and scrub
ORO - Lichen lithosere (rock)
OSM - Sand, mud (beaches)
SAC - Acacia longifolia coastal scrub
SSC - Coastal Scrub
Threatened Flora
Calystegia soldanella
Cynoglossum australe
Significant Trees
Eucalyptus globulus
0
150
300
metres
N
W
E
S
GDA
Vegetation data, © Glamorgan Spring Bay Council
Base data supplied by theLIST, © State of Tasmania
Figure 2 Swansea Reserves:
Vegetation Communities,
Threatened Flora and
Significant Trees
INSIGHTGIS
Seeing is Achieving
16/03/2012
Turveys Road
Maria Street
Wellington Street
Noyes Street
Arnott Street
Jetty Road
Waterloo Point Track
Franklin Street
Foggintyre Lane
Rectory Street
Julia Street
Dove Lane
Low Street
Victoria Street
Saltwater Creek
River Street
Cook Court
Schouten Court
Sunny View Avenue
Burgess Street
Waterloo Road
Esplanade
High Street
St Margarets Court
Rapp Street
Gordon Street
Old Spring Bay Road
Meredith Court
Pyke Court
Tasman Highway
Francis Street


Declared Weeds
ab african boxthorn
bb blackberry
bs boneseed
eb english broom
f fennel
g gorse
mb canary broom
sth slender thistle
wh white horehound
Vegetation Communities
Indicated by boundaries only
vegetation boundary
Declared Weed
Weed Polygon
0
150
300
metres
N
W
E
S
GDA
Figure 3 Swansea Reserves:
Declared Weeds
INSIGHTGIS
Seeing is Achieving
10/04/2012
Saltwater Creek
Gordon Street
Francis Street
Tasman Highway
Old Spring Bay Road
Meredith Court
High Street
Low Street
Dove Lane
Julia Street
Rectory Street
Victoria Street
Cooks Court
Schouten Court
Sunny View Avenue
Bridge Street
Waterloo Road
Franklin Street
Jetty Road
Arnold Street
Noyes Street
Wellington Street
Maria Street
Turveys Road
River Street
Esplanade
St Michaels Court
Rogerrya Lane
Waterloo Point Track


Environmental Weeds
ag agapanthus
arl arum lily
bbc bluebell creeper
bbr bears breeches
bh berryflower heath
bor borage
bpe blue periwinkle
btb bottlebrush
ci cape ivy
cot cotoneaster
cp century plant
csp caper spurge
ctt coast teatree
cwa cape wattle
dio diosma
es escallonia
ff flaxleaf fleabane
fm field marigold
gar garrya
gaz gazania
ge geranium
gh giant honeymyrtle
gm gum
gv garden grevillea
haw hawthorn
hc hoary cress
heb hebe
hw howitt's wattle
iv ivy
lms large medirerranean spurge
m marguerite
mi mirrorbush
mw howitt's wattle
nzf new zealand flax
pau paulownia
pe pigs ear
pom pride-of-madeira
ppr prickly pear
pr protea
rh rhubard
rp radiata pine
rv red valerian
sal sweet alice
sb sweet briar
sg scrambling groundsel
shm showy honey-myrtle
sp sweet pittosporum
td trailing daisy
tm tree mallow
tt teatree
wat wattle
ws watsonia
Vegetation Communities
Indicated by boundaries only
vegetation boundary
Environmental Weeds
Weed Polygon
bpe, gaz, haw, m, pe, pom, rv
arl, ci, cwa, gaz, nzf, pom, td
bpe, ci, cwa, gaz, ge, m, mm, pe, pom, td
ag, bbr, bpe, gaz, ge, m, sal, sg, td
gaz, rp
ag, cot, gaz, sp, td
arl, dio, es, gm, fm, ge, gh, lms, m, pau, pr, rh, rv, hw, td, tt, wat, ws, heb, gar
arl, btb, cot, gm, iv
cot, cwa, dio, ge, gh, haw, mi, nzf, pom, sb, sg, td
ag, bor, ci, cot, fm, gaz, gv, hc, lms, n, pom, rv, sal, sp, td, tm
Saltwater Creek
Maria Street
Wellington Street
Noyes Street
Arthur Street
Franklin Street
Waterloo Road
Bridge Street
Victoria Street
Rocksutten Court
Cooks Court
Sunny View Avenue
Esplanade
River Street
Low Street
Dove Lane
Julia Street
Rectory Street
Forsythe Lane
High Street
St Margarets Court
Rapp Street
Gordon Street
Old Spring Bay Road
Pyke Court
Francis Street
Tasman Highway
Turveys Road
Waterloo Point Track
N
W
E
S
0
150
300
metres
Figure 4 Swansea Reserves:
Environmental Weeds
16/03/2012

3. OTHER RESERVE VALUES

3.1 CULTURAL HERITAGE

- **Aboriginal heritage**

The Reserves hold cultural significance for the contemporary Aboriginal community. Cultural heritage values connect contemporary Aboriginal Tasmania with the people and events of the past. The Loontitetermairrelehoinner band from the Oyster Bay nation occupied the area at the time of European arrival.

- **Post European settlement heritage**

The Post European settlement heritage values of the Reserve are closely linked with the histories of the town and the municipality. These have been documented in various publications, including Davenport & Amos (1988) and Guiler (1998).

Many other publications and historical documents and photographs on both Aboriginal and Post European Settlement heritage are housed at the Glamorgan Spring Bay Historical Society Inc, which is located at 22 Franklin Street, Swansea.

3.2 RECREATIONAL VALUES

Both residents and visitors use the reserve for a wide range of passive and active recreational activities. These include beach use, walking, jogging, dog exercise, wildlife viewing and fishing. The popular Loontitetermairrelehoiner walking track facilitates many of these activities. Other facilities also provide additional recreational opportunities. These include the golf course, bowls club, oval, barbeque and picnic areas, the amphitheatre, childrens' playground, exercise equipment, a boat ramp and a petanque playing area.

3.3 EDUCATIONAL VALUES

All the reserves in the Glamorgan Spring Bay area have educational value, whether it be as an outdoor classroom for our local schoolchildren or for visitors to the area interested in our natural and cultural history. There are many opportunities to communicate the many values of our reserves to the locals and visitors alike, whether that be through interpretation signage, walk and talks over the summer months or information brochures and articles in the local newsletters. In the future other technology could be utilised such as smart phones to provide interaction educational experiences.

3.4 SUMMARY OF OTHER VALUES

Although there are many other values in our reserves this plan focuses on the management of the native vegetation and associated biodiversity values. Other values particularly recreational values are addressed through other processes and resourcing avenues such as Council's capital works and renewal programs for walking tracks, recreational facilities, parks and gardens.

4. MANAGEMENT ISSUES

4.1 NATIVE VEGETATION, FLORA, FAUNA AND SIGNIFICANT TREES

Maintaining the natural values of the reserves is a primary objective of management. Protecting native vegetation communities is the most effective way of conserving flora and fauna values. A high priority should be given to managing threatening processes or activities that are likely to have an impact on species and communities of high conservation significance.

Within the Reserves these include two species of threatened flora and foraging habitat for the two threatened fauna species, which are variously listed under the TSPA and/or EPBCA. One vegetation community listed as threatened under the NCA is also present in the Reserve. Legislative obligations in relation to threatened species and communities are provided in Appendix 4.

In addition to the many trees within the native vegetation communities and within areas mapped as 'FUR – parkland', there are several large mature and old-growth blue gums present in the Reserve. As these trees senesce they often form tree hollows which are important nesting habitat for many native birds and small mammals. Some regeneration of these trees is occurring in the DGL community and protection of this regeneration is vital to ensure this community's persistence.

All of these blue gums are significant from a conservation perspective, particularly for the swift parrot, as well as from an aesthetic and visual perspective. Management should aim to retain as many trees as possible, and not only blue gums. Whilst some trees may be perceived as 'dangerous', it does not necessarily follow that they should be felled. Removing potentially dangerous limbs may be all that is required.

<u>Recommendation 1</u> – Train Council staff who are involved with day-to-day management of the Reserve to recognise the natural values present and provide them with strategies to protect these values during management activities.

4.2 WEEDS

The Glamorgan Spring Bay Weed Management Plan (GSBWMP)[4] recognise that weeds are one of the most serious threats to the natural environment. Any plant growing outside its natural range is a potential weed that may have a detrimental effect on the natural values of reserves. Management objectives include eradicating weeds or preventing or minimising their spread to native vegetation communities.

It is recognised that weed control in the Reserve is currently an ongoing day-to-day management activity and that substantial progress has been made in reducing the levels of weed infestation. However, both declared and other environmental weeds are still widespread across the Reserve. The survey conducted for this Plan provides a detailed inventory of weeds and the basis for a more strategic approach to their management.

Firstly, it is important in weed management planning in an urban context to recognise the futility of eliminating all non-native species. Hence, in areas of parkland with a ground cover of introduced grasses and herbs the focus of weed management should be containment.

[4] Glamorgan Spring Bay Natural Resource Management Committee 2008

Priorities for weed control should focus on declared and other environmental weeds that are having, or have the potential to have, a negative impact upon the native flora and which are also manageable. Therefore a hierarchy of priorities has been developed for weeds in the Reserve, which are applied to each species in Tables 3A and 3B. The priority system is as follows, where 1 is the highest priority and 3 is the lowest:

Priority	Reasons for priority rating
1	Declared weeds, and/or
	Easily controlled or eradicated, and/or
	Only small infestations or small numbers of infestations are present, and/or
	Likely to spread quickly.
2	Requires a substantial time allocation due to the size of infestations, and/or
	Creepers that require all plant parts to be remove, and/or
	Unlikely to spread quickly.
3	Plantings that require monitoring only to ensure that they do not spread.
	Large infestations of gazania, mainly in the vicinity of Schouten House Beach, that would require substantial investment in rehabilitation of the site.
NB:	**-Plants with more than one priority rating in Tables 3A & 3B indicate that infestations in different locations vary in size and/or manageability.** **-Most plants will require monitoring for re-emergence and follow-up control.**

Table 3A. Priorities for declared weeds in the Reserve.

* Observations = the number of general locations across the Reserve where it was observed.

common name	*Scientific name*	Observations*	Priority
african boxthorn	*Lycium ferocissimum*	40	1
gorse	*Ulex europaeus*	33	1
boneseed	*Chrysanthemoides monilifera* subsp. *monilifera*	10	1
white horehound	*Marrubium vulgare*	8	1
blackberry	*Rubus fruticosus* aggregate	7	1
fennel	*Foeniculum vulgare*	5	1
english broom	*Cytisus scoparius*	1	1
montpellier broom	*Genista monspessulana*	1	1
slender thistle	*Carduus pycnocephalus*	1	1

Table 3B. Priorities for other environmental weeds in the Reserve.

* Observations = the number of general locations across the Reserve where it was observed.

** Gazania & scrambling groundsel: Priority 1 = outlying, small infestations
Radiata pine: Priority 1 = seedlings only

common name	*Scientific name*	Observations*	Priority
pride-of-madeira	*Echium candicans*	22	1
gazania	*Gazania* sp.	19	1 & 3 **
sweet pittosporum	*Pittosporum undulatum*	13	1
cotoneaster	*Cotoneaster* sp.	10	1
radiata pine	*Pinus radiata*	7	1 & 3 **
geranium	*Pelargonium* sp.	6	1

common name	*Scientific name*	Observations*	Priority
marguerite	*Argyranthemum frutescens*	5	1
cape wattle	*Paraserianthes lophantha* subsp. *lophantha*	4	1
scrambling groundsel	*Senecio angulatus*	4	1 & 2 **
agapanthus	*Agapanthus praecox*	3	1
arum lily	*Zantedeschia aethiopica*	3	1
cape ivy	*Delairea odorata*	3	1
hawthorn	*Crataegus monogyna*	3	1
hoary cress	*Lepidium draba*	3	1
red valerian	*Centranthus ruber*	3	1
sweet alice	*Lobularia maritima*	3	1
ivy	*Hedera helix*	2	1
large mediterranean spurge	*Euphorbia characias*	2	1
new zealand flax	*Phormium tenax*	2	1
pigs ear	*Cotyledon orbiculata*	2	1
tree mallow	*Malva dendromorpha*	2	1
watsonia	*Watsonia* sp.	2	1
bears breeches	*Acanthus mollis*	1	1
bluebell creeper	*Billardiera heterophylla*	1	1
borage	*Borago officinalis*	1	1
caper spurge	*Euphorbia lathyris*	1	1
flaxleaf fleabane	*Conyza bonariensis*	1	1
milkwort	*Polygala myrtifolia*	1	1
mirrorbush	*Coprosma repens*	1	1
nasturtium	*Tropaeolum majus*	1	1
prickly pear	*Opuntia* sp.	1	1
rhubard	*Rheum* sp.	1	1
trailing daisy	*Osteospermum fruticosum*	19	2
blue periwinkle	*Vinca major*	8	2
sweet briar	*Rosa rubiginosa*	5	2
grevillea hybrid	*Grevillea* sp.	1	2
coast teatree	*Leptospermum laevigatum*	2	3
diosma	*Coleonema* sp.	2	3
field marigold	*Calendula arvensis*	2	3
giant honeymyrtle	*Melaleuca armillaris* subsp. *armillaris*	2	3
gum	*Eucalyptus* sp.	2	3
bottlebrush	*Melaleuca* sp.	1	3
escallonia	*Escallonia* sp.	1	3
garrya	*Garrya elliptica*	1	3
hebe	*Hebe* sp.	1	3
howitt's wattle	*Acacia howittii*	1	3
paulownia	*Paulownia* sp.	1	3
protea	*Protea* sp.	1	3
showy honey-myrtle	*Melaleuca nesophila*	1	3
teatree	*Leptospermum* sp.	1	3
wattle	*Acacia* sp.	1	3

<u>Recommendation 2</u> – Control Priority 1 weeds. (See Tables 3A and 3B).

<u>Recommendation 3</u> – Control Priority 2 weeds. (See Tables 3A and 3B).

<u>Recommendation 4</u> – Regularly monitor for re-growth of Priority 1 and 2 weeds, as well as the spread of Priority 3 weeds, and take follow-up control action as necessary.

It is also important to acknowledge that the presence of most weeds recorded is probably a consequence of the proximity of the reserves to urban areas and associated gardens, which provide a source of ongoing infestation. Therefore, in conjunction with direct on-ground weed control actions, a campaign to educate residents about the consequences associated with garden escapes and garden waste dumping on the Reserve should be ongoing.

<u>Recommendation 5</u> – Continue to raise community awareness of the values present in their local environment focusing on the threats posed to these values most notably by garden escape plants and dumping of garden cuttings. Such a campaign could include:

- **making this Plan publicly available through the GSBC website,**
- **a public presentation/workshop,**
- **brochures/posters/articles in local news letter, and**
- **field days and working bees.**

4.3 Illegal Clearing of Vegetation

As noted in section 2.1 (at the end of the 'Urban areas' section), there are areas of the Reserve where, at some stage in the past, the native vegetation has been cleared adjacent to private property. Often these areas are infested with a wide array of weedy grasses and herbs as well as a number of significant weeds, some of which have obviously been deliberately planted.

There have also been recent cases where Council has received reports of illegal clearing of trees. Usually it is difficult for Council to apprehend or prosecute offenders. Therefore, alternative strategies are required to deal with this issue. This could include the erection of Bush Watch signs. Bush Watch is a Tasmania Police initiative that encourages the public to report unusual, suspicious or criminal activity and vandalism to the Police. The signs provide a phone number (131 444) which is a direct link to the police. The GSBC Natural Resource Management (NRM) Committee is a member of Bush Watch.

<u>Recommendation 6</u> – Raise community awareness of the problem illegal clearing, outlining the legislative implications and encouraging people to report offenders to the police. This should be combined with Recommendation 5, but also involve the erection of signage, such as 'Bush Watch' signs. Investigate the development of a 'by-law' that addresses the illegal clearing of vegetation on Council managed public land.

4.4 Reserve Boundaries

In managing any reserve it is obviously important that reserve boundaries are known to both reserve managers and adjacent landowners. There are issues of undefined boundaries in some sections of the Reserve and, perhaps as a consequence, some gardens have encroached onto the reserves to varying degrees. This issue is linked to some extent with the issue of illegal clearing.

On-ground marking of undefined boundaries may be necessary in some instances in order to clarify the council's authority in implementing some of the actions required to protect the reserve values. Such on-ground markers could include fencing or a row of large boulders. Alternatively it may merely require a verbal recognition by other land owners.

Recommendation 7 - Clarify Reserve boundaries. Liaise with landowners regarding the most appropriate way to more clearly define these boundaries and, where deemed necessary, install on-ground boundary markers.

4.5 Walking Tracks

Existing walking tracks in the Reserve include those from Jubilee Beach around to Schouten House Beach and around Saltwater Creek. These are greatly utilised by both local residents and visitors.

There is potential for this valuable amenity to be extended south of Gordon Street. A clearly defined track along this section, and perhaps ultimately extending beyond the Reserve to Kennedia Beach, would greatly enhance the recreational value of the Reserve. Currently only a vague track exists that skirts around some gardens and where the Reserve boundary is unclear.

Recommendation 8 – Investigate the potential for a walking track from Gordon Street to the southern end of the Reserve. This could be assessed in conjunction with Recommendation 7. (NB: Any new works need to consider legislative obligations – see Appendix 4.)

4.6 Coastal Erosion and Beach Access Tracks

Coastal erosion is often a natural process. For example, long shore drift results in the alternating process of seasonal erosion and accretion of sandy beaches. In the longer term coastal erosion is likely to be exacerbated by climate change and associated rises in sea level and increases in the size of storm surge.

It is perhaps the later that is occurring on the increasingly eroded small sandy cliff on the northern side of Waterloo Point.

Erosion can also be exacerbated by uncontrolled beach access through the dunes. Along Schouten House Beach there is a formalised access track but there are also a number of informal access tracks that appear to have destabilised sections of the dunes and contributed to sand blowouts.

At Jubilee Beach the erection of a low rope fencing to direct foot access appears to have been successful.

Recommendation 9 – Assess methods to stabilise dune blowouts at Schouten House Beach: determine the alignment of a track that would be least susceptible to erosion (avoiding populations of the threatened sea bindweed); direct foot traffic via the erection of rope fences; and undertake dune rehabilitation work. (NB: Any new works need to consider legislative obligations – see Appendix 4.)

Recommendation 10 – Assess the success, or otherwise, of Recommendation 9 through the establishment of photo-point monitoring sites, and re-assess as necessary.

4.7 Plantings and Revegetation

Plantings of introduced species within the Reserve are present in various locations. Whilst these may be appropriate in parkland that is regularly maintained, the use of introduced species should be considered carefully. Many have the potential to 'escape' into native vegetation and exacerbate the problem of environment weeds, which in turn leads to the degradation of Reserves' natural values.

In consultation with the local community, any future plantings preferably use local native species, which have a number of benefits. They are adapted to the local climate and soil and consequently require less maintenance, including watering, and the risk of escape resulting in degradation of the natural values is nullified. Furthermore, local native plants also attract and provide habitat for native birds, which in turn are natural pest control agents as well as providing pleasure to a great number of people.

Following weed control, it is preferable to allow areas to naturally regenerate with native species. However, if there is little or no nearby source of native species seed or other regenerative parts then weed invasion may be ongoing. In such cases revegetation is likely to be required. Any of the native species listed in Appendix 2 are appropriate for revegetation work, as well as other plantings, in the Reserve.

Recommendation 11 – In consultation with the local community, any plantings and revegetation work should preferably use local native species.

4.8 Fire

The primary objective of fire management in reserves is to protect human life and property from fire. Other objectives include the maintenance of biodiversity through appropriate fire regimes and the of protection conservation values from the adverse impacts of fire in so far as these are consistent with the primary objective.

Developing a fire management plan is complex. Many native vegetation communities and plant species require fire to trigger regeneration. Conversely, some communities and species are killed by fire depending on factors such as their growth stage, fire frequency and fire intensity. Therefore the maintenance of a mosaic of fire age classes is preferable. Total exclusion of fire may result in periodic and devastating hot summer wildfires. Conversely, over frequent and comprehensive fuel reduction burning will also modify the structure and composition of vegetation.

However, in a coastal setting it is generally recommended to exclude fire as fire can lead to the destabilisation of coastal landforms. The use of fire as a tool to reduce fuel loads in

urban reserves can also be controversial as well as hazardous to people and property. Furthermore, maintaining biodiversity values whilst minimising wildfire hazard may not always necessarily require the use of fire. Therefore alternative approaches, such as raking litter and removing dead wood by hand is preferable[5].

<u>Recommendation 12</u> – Conduct regular assessments of fuel loads and remove litter and dead wood as necessary but retain at least some large habitat logs if they are present.

Notwithstanding the above, small patch burns may be periodically necessary if, for example, localised fuel loads become unmanageable by other removal methods, or, as a management tool for particular weed infestations. In such cases a fire management plan should be developed with the advice of the Tasmania Fire Service.

<u>Recommendation 13</u> – Patch burn as the need arises in accordance with a fire management plan developed in consultation with the Tasmania Fire Service.

4.9 Plan Review

This Native Flora and Fauna Management Plan covers the 5 year period from 2014 to 2019. A review of the Plan, including the success in achieving its objectives, is due to be conducted in 2019 and an updated Plan will be developed. This process will be ongoing for each consecutive 5 year period.

<u>Recommendation 14</u> – Review the current Native Flora and Fauna Management Plan near the end of the current 5 year period, including the success in achieving its objectives, and develop a Plan for the period 2020 to 2024.

[5] Wood & Knee 1999

5. ACTION PLANS

The following tables provide action plans that are based on the above recommendations. Table 5.1 is a weed management action plan and Table 5.2 includes all other actions. Each action has been assigned a time frame and a performance measure.

With regard to weeds, the distribution of the declared and other environmental weeds recorded during the survey is provided in Figures 3 and 4 and a photo of each weed is provided in Appendices 5A and 5B. The maps and photos should be used as a resource to guide and direct weed control actions. However, the maps should be used with caution as the point locations of weeds were recorded with a hand-held gps with a potential error of several metres. Furthermore, the maps should not be considered as a comprehensive guide as some weeds may have emerged since surveys were undertaken and others may have been missed. Additionally, as weed control is an ongoing task performed by Council Officers, some weeds may have already been treated.

5.1 Weed Action Plan

Recommendation No.	Recommendation / Specific Action	Timing	Performance Measure
2	Control Priority 1 weeds. (See Tables 3A & 3B and Appendices 5A and 5B.)	Ongoing	Eradication of weeds, or at least, a reduction in weed abundance each year.
3	Control Priority 2 weeds. (See Tables 3A & 3B and Appendices 5A and 5B.)	Ongoing following initial control of Priority 1 weeds	Eradication of weeds, or at least, a reduction in weed abundance each year.
4	Monitor for re-growth of Priority 1 and 2 weeds, Monitor for the spread of Priority 3 weeds, and Take follow-up control action as necessary.	At least once a year in Spring and opportunistically	Minimise new weed infestations.
14	Review the success of weed control actions through further weed mapping and develop a new weed action plan.	July-December 2019	New weed action plan in place for 2020-2024.

5.2 General Action Plan

Recommendation No.	Recommendation / Action	Timing	Performance Measure
1	Train Council staff who are involved with day-to-day management of the Reserve to recognise the natural values present and provide them with strategies to protect these values during management activities.	2015	Education of Council staff and added protection of Reserve natural values.
5	Continue to raise community awareness of the values present in their local environment focusing on the threats posed to these values most notably by garden escape plants and dumping of garden cuttings. Such a campaign should include: - making this Plan publicly available through the GSBC website, - a public presentation/workshop, - brochures/posters/articles in local news letter, and - field days and working bees.	Ongoing	Education of community and reduction of risk of new weed infestations.
6	Raise community awareness of the problem illegal clearing, outlining the legislative implications and encouraging people to report offenders to the police. This should be combined with Recommendation 5, but also involve the erection of signage, such as 'Bushwatch' signs. These signs provide a phone number (131 444) which is a direct link to the police.	Ongoing	Education of community and reduction of risk and reports of illegal clearing.
	Investigate the development of a 'by-law' that addresses the illegal clearing of vegetation on Council managed public land.	2015	Investigation complete.
7	Clarify Reserve boundaries. Liaise with landowners regarding the most appropriate way to more clearly define these boundaries and, where deemed necessary, install on-ground boundary markers. Survey boundary line and liaise with landowners Install boundary markers as necessary	 2015 2016	Clarification of reserve boundary locations.

Recommendation No.	Recommendation / Action	Timing	Performance Measure
8	Investigate the potential for a walking track from Gordon Street to the southern end of the Reserve. Assess in conjunction with Recommendation 7. Conduct feasibility study Implementation – track construction (if feasibility study allows)	 2015 2016 - 2019	 Feasibility study finalised. Track construction and enhanced amenity value (if feasibility study allows).
9	Assess methods to stabilise dune blowouts at Schouten House Beach: determine the alignment of a track that would be least susceptible to erosion (avoiding populations of the threatened sea bindweed); direct foot traffic via the erection of rope fences; and undertake dune rehabilitation work. Conduct feasibility study Implementation – track construction, fencing, dune rehabilitation	 2015 2016 - 2019	 Feasibility study finalised. Improved beach access, enhanced amenity value and sand stabilisation.
10	Assess the success, or otherwise, of Recommendation 9 through the establishment of photo-point monitoring sites, and re-assess as necessary.	Following implementation of Recomm. 9.	Record of success of sand stabilisation.
11	In consultation with the local community, any plantings and revegetation work should preferably use local native species.	As required	Natural values of Reserve enhanced.

Recommendation No.	Recommendation / Action	Timing	Performance Measure
12	Conduct regular assessments of fuel loads and remove litter and dead wood as necessary but retain at least some large habitat logs if they are present.	Late winter each year	Assessment of and reduction in wild fire hazard.
13	Patch burn as the need arises in accordance with a fire management plan developed in consultation with the Tasmania Fire Service.	As required	Reduced hazard (depending on reason for burn).
14	Review the current Native Flora and Fauna Management Plan near the end of the current 5 year period, including the success in achieving its objectives, and develop a Plan for the period 2020 to 2024.	2019	Publication of Plan for 2020-2024.

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APPENDIX 1 – SURVEY METHODS

Background Research

The following source was used for biological records from the region:

- Natural Values Atlas[6] - all threatened plant and animal records within 5 km of the study area plus potential suitability for other threatened fauna.

Botanical and Vegetation Survey

The reserve was surveyed during mid spring 2011. The vegetation was mapped and all vascular plant species were recorded. The location of significant features, including threatened plants and weeds, were recorded by a hand-held GPS. Botanical nomenclature follows the current census of Tasmanian plants [7].

Fauna Habitat Assessment

The study area was assessed for fauna habitat with respect to threatened fauna species known from the area, or considered to potentially occur there. This assessment was based on the overall structure of the vegetation including identification of factors such as the presence of old growth trees with hollows and logs. Evidence of native animal presence, such as scats and burrows, were also noted.

Assessment of Conservation Significance

Vegetation types have been classified according to TASVEG[8]. The conservation status of a vegetation type relates to its current extent compared with the modelled extent prior to European settlement. This has allowed an estimate of the extent of loss to land clearing to be calculated. A 2007 amendment to the *Nature Conservation Act 2002* included the listing of threatened native vegetation communities in accordance with their conservation status.

The conservation significance of species is determined at a state and federal level by legislation (Tasmanian *Threatened Species Protection Act 1995* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*), the implications of which are considered in the light of relevant legislation (Appendix 4).

Limitations/Disclaimer

While the survey was undertaken in mid spring, no botanical survey can guarantee that all vascular plants will be recorded due to the limitations of the sampling technique, seasonal and annual variation in abundance and the possible absence of fertile material for identification. Additional species are likely to occur that may be recorded by repeated visits over several years and at different seasons.

Fauna assessment is limited to the identification of habitat of significant fauna species known from the area.

[6] Natural Values Report # 43030 (29 August 2011), Threatened Species Section, DPIPWE

[7] Buchanan 2009

[8] Harris & Kitchener 2005

APPENDIX 2 – VASCULAR PLANT SPECIES LIST

Status codes:

STATE SCHEDULE – TSP Act 1995
e – endangered
v – vulnerable
r – rare

NATIONAL SCHEDULE – EPBC Act 1999
CR – critically endangered
EN – endangered
VU – vulnerable

ORIGIN
i - introduced
d - declared weed WM Act 1999
en - endemic to Tasmania

TSPA/ EPBCA	origin	**Group FAMILY** *Scientific name*	common name	DGL	DVG	NAV	NBA	SSC	SAC	GHC	GCL	GTL	ARS	FMG	FUR parkland
		Dicotyledonae													
		ACANTHACEAE													
	i	*Acanthus mollis*	bears breeches			+									
		AIZOACEAE													
		Carpobrotus rossii	native pigface		+	+		+	+	+		+		+	
		Tetragonia implexicoma	bower spinach	+		+		+							
		APIACEAE													
		Apium prostratum	sea-celery										+		
	d	*Foeniculum vulgare*	fennel											+	+
		APOCYNACEAE													
	i	*Vinca major*	blue periwinkle		+	+									+
		ARALIACEAE													
	i	*Hedera helix*	ivy												+
		ASTERACEAE													
		Actites megalocarpus	dune thistle							+				+	
	i	*Arctotheca calendula*	capeweed			+				+					
	i	*Argyranthemum frutescens*	marguerite			+									+
	i	*Calendula arvensis*	field marigold												+
	d	*Carduus pycnocephalus*	slender thistle			+									
	d	*Chrysanthemoides monilifera* subsp. *monilifera*	boneseed		+	+				+		+			+

TSPA/ EPBCA	origin	**Group FAMILY** *Scientific name*	common name	DGL	DVG	NAV	NBA	SSC	SAC	GHC	GCL	GTL	ARS	FMG	FUR parkland
		Chrysocephalum apiculatum	common everlasting	+	+					+		+			
	i	*Cirsium vulgare*	spear thistle	+	+	+									
	i	*Conyza bonariensis*	flaxleaf fleabane											+	
	i	*Cotula coronopifolia*	water buttons										+		
	i	*Delairea odorata*	cape ivy												+
		Euchiton collinus	common cottonleaf									+			
	i	*Gazania* sp.	gazania			+		+	+	+				+	+
	i	*Hypochoeris radicata*	rough catsear	+	+	+		+	+		+	+		+	
		Leptorhynchos sp.	buttons		+										
		Leucophyta brownii	cushionbush							+					
	i	*Osteospermum fruticosum*	trailing daisy			+			+					+	+
	en	*Ozothamnus scutellifolius*	buttonleaf everlastingbush			+									
	i	*Senecio angulatus*	scrambling groundsel			+				+					+
		Senecio glomeratus	purple fireweed			+						+		+	
		Senecio quadridentatus	cotton fireweed		+	+	+			+		+		+	+
	i	*Sonchus oleraceus*	common sowthistle	+	+	+		+	+	+	+	+		+	
	i	*Tragopogon porrifolius subsp. porrifolius*	salsify	+							+				
		BORAGINACEAE													
	i	*Borago officinalis*	borage												+
r/-		*Cynoglossum australe*	coast houndstongue	+	+	+		+		+		+		+	+
		Cynoglossum suaveolens	sweet houndstongue	+	+							+			
	i	*Echium candicans*	pride of madeira			+			+	+				+	+
		BRASSICACEAE													
	i	*Cakile edentula*	american searocket					+						+	

TSPA/ EPBCA	origin	**Group FAMILY** *Scientific name*	common name	DGL	DVG	NAV	NBA	SSC	SAC	GHC	GCL	GTL	ARS	FMG	FUR parkland
	i	*Diplotaxis tenuifolia*	sand rocket											+	
	i	*Lepidium africanum*	common peppercress						+						+
	i	*Lepidium draba*	hoary cress						+					+	+
	i	*Lobularia maritima*	sweet alice			+		+		+					+
	i	*Raphanus* sp.	radish						+						
	i	*Rapistrum rugosum*	giant mustard	+	+	+									+
		CACTACEAE													
	i	*Opuntia* sp.	prickly pear			+									
		CAMPANULACEAE													
		Wahlenbergia sp.	bluebell		+							+			
		CARYOPHYLLACEAE													
	i	*Cerastium glomeratum*	sticky mouse-ear											+	
	i	*Polycarpon tetraphyllum*	fourleaf allseed		+					+					
	i	*Silene gallica*	catchfly	+											
		CASUARINACEAE													
		Allocasuarina littoralis	black sheoak			+									
		Allocasuarina verticillata	drooping sheoak	+	+	+	+	+	+	+					+
		CHENOPODIACEAE													
	i	*Atriplex prostrata*	creeping orache					+	+				+		
	i	*Chenopodium murale*	nettleleaf goosefoot												+
		Einadia nutans subsp. *nutans*	climbing saltbush	+	+	+			+	+					+
		Rhagodia candolleana subsp. *candolleana*	coastal saltbush			+		+	+	+			+	+	
		Sarcocornia quinqueflora	glasswort										+		
		Suaeda australis	southern seablite										+		
		CONVOLVULACEAE													
r/-		*Calystegia soldanella*	sea bindweed					+		+				+	
	i	*Convolvulus arvensis*	field bindweed						+						

TSPA/ EPBCA	origin	**Group FAMILY** *Scientific name*	common name	DGL	DVG	NAV	NBA	SSC	SAC	GHC	GCL	GTL	ARS	FMG	FUR parkland
		Dichondra repens	kidneyweed	+	+	+		+		+		+			
		CRASSULACEAE													
	i	*Cotyledon orbiculata*	pigs ear			+				+					+
		EPACRIDACEAE													
		Astroloma humifusum	native cranberry		+							+			
		Leucopogon parviflorus	coast beardheath	+		+		+		+				+	+
		Lissanthe strigosa subsp. *subulata*	peachberry heath								+				
		EUPHORBIACEAE													
	i	*Euphorbia characias*	large mediterranean spurge												+
	i	*Euphorbia lathyris*	caper spurge						+						
		Poranthera microphylla	small poranthera		+	+						+			
		FABACEAE													
	d	*Cytisus scoparius*	english broom												+
	d	*Genista monspessulana*	montpellier broom												+
	i	*Medicago* sp.	medick	+		+		+		+				+	
		Platylobium sp.	flatpea								+				
	i	*Trifolium* sp.	clover							+					
	d	*Ulex europaeus*	gorse			+	+			+	+	+	+	+	+
	i	*Vicia* sp.	vetch			+				+				+	
		FUMARIACEAE													
	i	*Fumaria muralis* subsp. *muralis*	wall fumitory		+	+			+						
		GARRYACEAE													
	i	*Garrya elliptica*	garrya												+
		GENTIANACEAE													
	i	*Centaurium erythraea*	common centaury								+	+			
		GERANIACEAE													

TSPA/ EPBCA	origin	**Group FAMILY** *Scientific name*	common name	DGL	DVG	NAV	NBA	SSC	SAC	GHC	GCL	GTL	ARS	FMG	FUR parkland
		Geranium sp.	cranesbill									+			
		Pelargonium australe	southern storksbill			+									
	i	*Pelargonium* sp.	geranium							+					+
		GOODENIACEAE													
		Goodenia lanata	trailing native-primrose		+										
		Selliera radicans	shiny swampmat										+		
		GROSSULARIACEAE													
	i	*Escallonia* sp.	escallonia												+
		LAMIACEAE													
	d	*Marrubium vulgare*	white horehound												+
		LINACEAE													
		Linum marginale	native flax		+										
		MALVACEAE													
	i	*Malva dendromorpha*	tree mallow											+	+
		MIMOSACEAE													
		Acacia dealbata subsp. *dealbata*	silver wattle				+								
	i	*Acacia howittii*	howitt's wattle												+
		Acacia longifolia subsp. *sophorae*	coast wattle	+			+		+	+				+	+
		Acacia mearnsii	black wattle		+					+					
		Acacia melanoxylon	blackwood												+
	i	*Acacia* sp.	wattle												+
	i	*Paraserianthes lophantha* subsp. *lophantha*	cape wattle						+	+					+
		MYOPORACEAE													
		Myoporum insulare	common boobialla	+		+		+	+						
		MYRTACEAE													
		Eucalyptus globulus subsp. *globulus*	tasmanian blue gum	+											+

TSPA/ EPBCA	origin	**Group FAMILY** *Scientific name*	common name	DGL	DVG	NAV	NBA	SSC	SAC	GHC	GCL	GTL	ARS	FMG	FUR parkland
	i	*Eucalyptus* sp.	gum												+
		Eucalyptus viminalis subsp. *viminalis*	white gum		+						+				
	i	*Leptospermum laevigatum*	coast teatree							+					
	i	*Leptospermum* sp.	teatree												+
	i	*Melaleuca armillaris* subsp. *armillaris*	giant honeymyrtle												+
	i	*Melaleuca nesophila*	showy honeymyrtle	+											
	i	*Melaleuca* sp.	honeymyrtle												+
		OXALIDACEAE													
	i	*Oxalis articulata*	bent woodsorrel							+				+	
		Oxalis perennans	grassland woodsorrel	+	+	+				+	+	+			
	i	*Oxalis* sp.	sorrel											+	
		PITTOSPORACEAE													
	i	*Billardiera heterophylla*	bluebell creeper												+
		Bursaria spinosa subsp. *spinosa*	prickly box		+	+					+				
	i	*Pittosporum undulatum*	sweet pittosporum		+	+				+					+
		PLANTAGINACEAE													
	i	*Plantago coronopus*	buckshorn plantain	+		+		+		+			+		
	i	*Plantago lanceolata*	ribwort plantain	+	+	+		+		+	+	+			+
		Plantago varia	variable plantain									+			
		POLYGALACEAE													
	i	*Polygala myrtifolia*	milkwort												+
		POLYGONACEAE													
	i	*Rheum* sp.	rhubard												+
	i	*Rumex crispus*	curled dock										+		
		PRIMULACEAE													
	i	*Anagallis arvensis* var. *arvensis*	scarlet pimpernel		+	+									

TSPA/ EPBCA	origin	**Group FAMILY** *Scientific name*	common name	DGL	DVG	NAV	NBA	SSC	SAC	GHC	GCL	GTL	ARS	FMG	FUR parkland
		Samolus repens	creeping brookweed										+		
		PROTEACEAE													
		Banksia marginata	silver banksia	+											
	i	*Grevillea* sp.	grevillea hybrid			+									+
	i	*Protea* sp.	protea												+
		RANUNCULACEAE													
	en	*Clematis gentianoides*	ground clematis		+	+									
		ROSACEAE													
		Acaena echinata	spiny sheepsburr		+										
		Acaena novae-zelandiae	common buzzy	+					+	+				+	
	i	*Cotoneaster* sp.	cotoneaster	+	+	+				+					+
	i	*Crataegus monogyna*	hawthorn												+
	i	*Rosa rubiginosa*	sweet briar	+						+					+
	d	*Rubus fruticosus* aggregate	blackberry		+	+				+	+	+			+
		RUBIACEAE													
	i	*Coprosma repens*	mirrorbush												+
		RUTACEAE													
	i	*Coleonema* sp.	diosma												+
		Correa alba	white correa	+		+		+	+	+					
		SANTALACEAE													
		Exocarpos cupressiformis	common native-cherry		+	+									
		SAPINDACEAE													
		Dodonaea viscosa subsp. *spatulata*	broadleaf hopbush		+	+									+
		SCROPHULARIACEAE													
	i	*Paulownia* sp.	paulownia												+

TSPA/ EPBCA	origin	**Group FAMILY** *Scientific name*	common name	DGL	DVG	NAV	NBA	SSC	SAC	GHC	GCL	GTL	ARS	FMG	FUR parkland
		SOLANACEAE													
	d	*Lycium ferocissimum*	african boxthorn			+		+	+	+				+	+
		Solanum laciniatum	kangaroo apple						+						
	i	*Solanum nigrum*	blackberry nightshade						+						
		STYLIDIACEAE													
		Stylidium graminifolium	narrowleaf triggerplant								+				
		THYMELAEACEAE													
		Pimelea glauca	smooth riceflower	+		+		+		+					
		Pimelea humilis	dwarf riceflower		+						+	+			
		TREMANDRACEAE													
		Tetratheca pilosa	hairy pinkbells		+		+				+				
		TROPAEOLACEAE													
	i	*Tropaeolum majus*	nasturtium												+
		VALERIANACEAE													
	i	*Centranthus ruber*	red valerian												+
		Gymnospermae													
		CUPRESSACEAE													
		Callitris rhomboidea	oyster bay pine	+				+							
		PINACEAE													
	i	*Pinus radiata*	radiata pine			+		+		+				+	+
		Monocotyledonae													
		AGAVACEAE													
	i	*Phormium tenax*	new zealand flax												+
		ARACEAE													

TSPA/ EPBCA	origin	**Group FAMILY** *Scientific name*	common name	DGL	DVG	NAV	NBA	SSC	SAC	GHC	GCL	GTL	ARS	FMG	FUR parkland
	i	*Zantedeschia aethiopica*	arum lily			+									+
		CYPERACEAE													
		Eleocharis acuta	common spikesedge										+		
		Ficinia nodosa	knobby clubsedge					+		+				+	
		Gahnia filum	chaffy sawsedge										+		
		Lepidosperma curtisiae	little swordsedge		+						+				
		Lepidosperma gladiatum	coast swordsedge			+		+		+				+	
		Lepidosperma gunnii	narrow swordsedge		+							+			
		Lepidosperma laterale	variable swordsedge		+		+					+			
		Schoenus apogon	common bogsedge								+	+			
		IRIDACEAE													
	i	*Watsonia* sp.	watsonia								+				+
		JUNCACEAE													
		Juncus kraussii subsp. *australiensis*	sea rush										+		
		Juncus pallidus	pale rush											+	
		JUNCAGINACEAE													
		Triglochin striatum	streaked arrowgrass										+		
		LILIACEAE													
	i	*Agapanthus praecox* subsp. *orientalis*	agapanthus			+				+		+			+
		Burchardia umbellata	milkmaids								+				
		Dianella brevicaulis	shortstem flaxlily	+	+	+		+		+		+		+	+
		Dianella revoluta var. *revoluta*	spreading flaxlily		+	+				+				+	
		POACEAE													
	i	*Ammophila arenaria*	marram grass					+	+	+				+	
		Austrodanthonia sp.	wallabygrass			+									

TSPA/ EPBCA	origin	**Group FAMILY** *Scientific name*	common name	DGL	DVG	NAV	NBA	SSC	SAC	GHC	GCL	GTL	ARS	FMG	FUR parkland
		Austrofestuca littoralis	coast fescue											+	
		Austrostipa sp.	speargrass	+	+	+	+	+		+	+	+			+
		Austrostipa stipoides	coast speargrass			+				+					
		Austrostipa stuposa	corkscrew speargrass									+			
	i	*Avena* sp.	oat			+									
	i	*Briza maxima*	greater quaking-grass		+	+						+			+
	i	*Briza minor*	lesser quaking-grass									+			
	i	*Bromus* sp.	brome					+	+	+				+	+
	i	*Dactylis glomerata*	cocksfoot			+				+					+
		Distichlis distichophylla	australian saltgrass	+		+		+		+			+		
	i	*Ehrharta erecta*	panic veldtgrass			+			+						
	i	*Festuca arundinacea*	tall fescue										+		
	i	*Holcus lanatus*	yorkshire fog										+		
	i	*Hordeum* sp.	barley			+									
	i	*Lagurus ovatus*	harestail grass			+		+		+					
	i	*Parapholis incurva*	coast barbgrass										+		
		Phragmites australis	southern reed						+						
		Poa labillardierei	tussockgrass			+				+					
		Poa rodwayi	velvet tussockgrass								+				
		Spinifex sericeus	beach spinifex			+			+	+				+	
		Tetrarrhena distichophylla	hairy ricegrass	+											
		Themeda triandra	kangaroo grass		+						+	+			
	i	*Vulpia* sp.	fescue	+		+		+							
		TYPHACEAE													
		Typha sp.	typha										+		

TSPA/ EPBCA	origin	**Group FAMILY** *Scientific name*	common name	DGL	DVG	NAV	NBA	SSC	SAC	GHC	GCL	GTL	ARS	FMG	FUR parkland
		XANTHORRHOEACEAE													
		Lomandra longifolia	sagg	+	+	+	+			+	+	+		+	
		Pteridophyta													
		DENNSTAEDTIACEAE													
		Pteridium esculentum	bracken			+				+					

APPENDIX 3A – REVIEW OF THREATENED FLORA

The following details threatened flora species, from the Natural Values Report, that have previously been recorded with a 5 km radius. It also provides an assessment of the likely occurrence of each within the study area.

Species	Status[9] TSPA/EPBCA	Potential to occur	Observations and Preferred Habitat[10]
Known from within 500 m			
Austrostipa scabra subsp. *falcata* sickle spear grass	Pending Rare / -	MODERATE to HIGH	Many previous records are from 2011 include 20 within 500m and 4 within 5km Occurs in dry open habitats including grassy remnants, roadside banks and coastal vegetation. Previous records are from along Old Spring Bay Rd. Possibly overlooked during the survey.
Calocephalus lacteus milky beautyheads	Rare / -	VERY LOW	One previous record is from 1928. Occurs in open grasslands. Very marginal habitat present and unlikely to have been overlooked during the survey.
Calystegia soldanella sea bindweed	Rare / -	**present**	Two previous records from the 2000s include 1 within 500m and 1 within 5 km. A coastal species known from sand and granite soils as well as grazed coastal grasslands. Observed during the survey. More details provided in the Flora section.
Cryptandra amara pretty pearlflower	Endangered / -	VERY LOW	One previous record is historical. Occurs in a range of dry habitats including rocky dry sclerophyll forest, roadside heathy woodland, north facing dolerite outcrops, riverine rockplates and grazed paddocks on dolerite. No suitable habitat is present.
Cynoglossum australe coast houndstongue	Rare / -	**present**	Many recent records including some from within 500m and some within 5km. Occurs in grasslands, open forest, coastal dunes and other dry places. Observed during the survey. More details provided in the Flora section.
Hyalosperma demissum moss sunray	Endangered / -	VERY LOW	One previous record within 500m is undated and 1 within 5km is from 2007. Occurs in shallow, stony dolerite soils and rock plates. No suitable habitat is present.
Lasiopetalum micranthum tasmanian velvetbush	Rare / -	VERY LOW	Previous records include 4 within 500 m that are historical and 4 within 5km that are recent. Occurs on shallow, dry dolerite soils in dry sclerophyll forest. No suitable habitat is present.
Lepidium pseudotasmanicum shade peppercress	Rare / -	MODERATE	One previous record is from 2007. Found on bare ground in grassland and grassy woodland. It relies on gap-forming disturbance and is often associated with roads and tracks although road maintenance may have an adverse impact upon it. Habitat is present throughout much of the coastal reserve. However, the previous record could be erroneous as an introduced *Lepidium*, which is very similar in appearance, is common.

[9] TSPA - Tasmanian *Threatened Species Protection Act 1995;* EPBCA - Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

[10] Natural Values Report; Jones *et al.* 1999; Wapstra *et al.* 2008; Notesheets and Listing Statements, Threatened Species Unit, DPIPWE

Species	Status[9] TSPA/EPBCA	Potential to occur	Observations and Preferred Habitat[10]
Lobelia pratioides poison lobelia	Vulnerable / -	LOW	One previous record within 500m is historical and one from within 5km is from 2006. Occurs on river edges and wet areas in grassland and grassy woodland. Some marginal habitat is present around Saltwater Creek.
Melaleuca pustulata warty paperbark	Rare / -	LOW	One historical record within 500 m and many within 5km. Occurs in dry open woodland, grassland and scrub, riparian zones and stable dunes in sparse coastal shrubbery. Habitat in the coastal reserve is marginal and it is unlikely to have been overlooked during the survey.
Ozothamnus lycopodioides clubmoss everlastingbush	Rare / -	VERY LOW	Two historical records within 500 m and 6 more recent ones within 5km. Occurs in dry sclerophyll forest and rocky slopes, commonly on a dolerite substrate. No suitable habitat is present and unlikely to have been overlooked.
Phyllangium divergens wiry mitrewort	Vulnerable / -	VERY LOW	One previous record is historical. Occurs in open areas on periodically wet, sandy and clayey soils often overlying rock. No suitable habitat is present.
Scaevola aemula fairy fanflower	Endangered / -	VERY LOW	One previous record is historical. Associated with dolerite soils within dry sclerophyll forest. No suitable habitat is present.
Stenanthemum pimeleoides propeller plant	Vulnerable / VULNERABLE	VERY LOW	Two previous records within 500m are from 1938 & 1946. One record from within 5km is from 1987. Occurs on dry, stony soils on siliceous, sandy gravels usually in heathy *E. amygdalina* or *E. pulchella* forest and usually where grasses and herbs are absent. No suitable habitat is present.
Vittadinia burbidgeae smooth new-holland daisy	pending Rare / -	LOW	Two previous records within 500m are from 2007 & 2011. One record from within 5km is undated. Occurs in dry grasslands. Habitat is extremely marginal and it is unlikely to have been overlooked during the survey.
Vittadinia cuneata var *cuneata* fuzzy new-holland daisy	Rare / -	LOW	One previous record is historical. Occurs in dry sclerophyll forest in low rainfall areas on fertile and infertile soils. Habitat is extremely marginal and it is unlikely to have been overlooked during the survey.
Known from within 5 km			
Austrodanthonia induta tall wallaby grass	Rare / -	LOW	One previous record is undated. Occurs on mudstone and dolerite in open, dry sclerophyll woodlands. No suitable habitat is present.
Damasonium minus starfruit	Rare / -	LOW	One previous record is from 1978. Occurs in swampy habitat, including farm dams, and prefers slow flowing or stationary water. Some marginal habitat is present in and around Saltwater Creek.
Eucalyptus barberi barbers gum	Rare / -	VERY LOW	One previous record is historical. Occurs on the edges of dolerite rock plates in dry sclerophyll forest and scrub. No suitable habitat is present.

Species	Status[9] TSPA/EPBCA	Potential to occur	Observations and Preferred Habitat[10]
Haloragis heterophylla variable raspwort	Rare / -	VERY LOW	One previous record is from 2010. Known from moist areas in *Themeda* grassland, roadsides and woodland. Habitat is very marginal.
Lepilaena patentifolia spreading watermat	Rare / -	LOW	Two previous records are from 1984. Occurs in coastal lagoons, creeks, inlets and estuaries and brackish inland lagoons. Some marginal habitat is present in Saltwater Creek.
Pterosytlis ziegeleri grassland greenhood	Vulnerable / VULNERABLE	LOW	Two previous records from 2009 are in the vicinity of Dolphin Sands. In coastal areas it occurs on the slopes of low stabilised sand dunes and in grassy dune swales. Habitat is very marginal and unlikely to be present.
Teucrium corymbosum forest germander	Rare / -	LOW	One previous record is from 1984. Occurs predominantly in *Allocasuarina verticillata* coastal and inland woodland, *Eucalyptus viminalis* woodland and native grasslands. Some marginal habitat is present but unlikely to have been overlooked unless it occurs in very low numbers.
Viola cunninghamii alpine violet	Rare / -	VERY LOW	Two previous records are from 1984. Most commonly occurs to moist, sub-alpine areas. Records of this species in other environments may be erroneous.
Vittadinia gracilis woolly new-holland daisy	Rare / -	VERY LOW	One previous record is undated. Known from dry sites on dolerite and basalt, predominantly in dry sclerophyll forest. No suitable habitat is present.

APPENDIX 3B – REVIEW OF THREATENED FAUNA

The following details threatened fauna species, from the Natural Values Report, that have previously been recorded, or could potentially occur, with a 5 km radius. It also provides an assessment of the likely occurrence of each within the study area.

Species	Status TSPA/ EPBCA[11]	Potential to occur	Observations and preferred habitat[12]
MAMMALS			
New holland mouse *Pseudomys novaehollandiae*	Endangered / VULNERABLE	Foraging: VERY LOW Nesting: VERY LOW	Previous survey effort has been low and habitat may be broader than described. Core habitat is coastal dry heath on a sandy substrate with a dense and floristically diverse understorey. Habitat in the coastal reserve does not accord with core habitat.
Eastern-barred bandicoot *Perameles gunnii gunnii*	- / VULNERABLE	Foraging: MODERATE Nesting: LOW	Seven previous sightings in the vicinity are from between 1973 & 1993. Favours a mosaic of open grassy areas for foraging with thick vegetation cover for shelter and nesting. This habitat mosaic is present although most sightings are from more than 500m from the coastal reserve. However, it may periodically forage in the area.
Tasmanian devil *Sarcophilus harrisii*	Endangered / ENDANGERED	Foraging: LOW Nesting: VERY LOW	Five previous sightings in the vicinity are from between1973 & 1993. Inhabits forest, woodland and agricultural areas, sheltering during the day in caves, old burrows and thick scrub. Although devil facial tumour disease is the main threat to this species the protection of maternal dens to ensure successful breeding is important to assist recovery. Unlikely to currently occur in the coastal reserve although foraging habitat is present.
BIRDS			
Wedge-tailed eagle *Aquila audax fleayi*	Endangered / ENDANGERED	Foraging: MODERATE Nesting: NONE	Nine previous sightings in the vicinity are from between 1977 and 2005. Requires large sheltered trees for nesting and is highly sensitive to disturbance during the breeding season. There is no suitable nesting habitat within the coastal reserve and a known nest in the vicinity is beyond the range of potential disturbance. However, it may forage in the general vicinity.
White-bellied sea-eagle *Haliaeetus leucogaster*	Vulnerable / -	Foraging: HIGH Nesting: NONE	Nine previous sightings in the vicinity are from between 1977 and 2003. Similar habitat requirements to the wedge-tailed eagle but it is generally more tolerant of disturbance. There is no suitable nesting habitat within the coastal reserve and known nests in the vicinity is beyond the range of potential disturbance. However, it may utilise some of the eucalypts in the reserve as perching trees whilst foraging in Great Oyster Bay.
Grey goshawk *Accipiter novaehollandiae*	Endangered / -	Foraging: VERY LOW Nesting: NONE	Inhabits large tracts of wet forest. No suitable habitat is present. However, juveniles or non-breeding adults may visit the area on occasion.

[11] TSPA – Tasmanian *Threatened Species Protection Act 1995*; EPBCA – Commonwealth *Environment Protection & Biodiversity Conservation Act 1999*

[12] Natural Values Report; Bryant & Jackson 1999.

Species	Status TSPA/ EPBCA[11]	Potential to occur	Observations and preferred habitat[12]
Masked owl *Tyto novaehollandiae castanops*	Endangered / VULNERABLE	Foraging: MODERATE Nesting: NONE	Six previous sightings in the vicinity are from between the 1950s & 1980s. Preferred habitat is coastal and sub-coastal dry forest and woodland of the north, north east, east and south east. Requires a mosaic of forest and open areas for foraging and large old-growth hollow-bearing trees for nesting. There are no suitable nesting trees in the reserve and there are no known nests within 500m. However, it may forage in the area.
Swift parrot *Lathamus discolor*	Endangered / ENDANGERED	Foraging: HIGH Nesting: VERY LOW	Seven previous sighting in the vicinity are from between 1977 & 2008. It migrates from the mainland each year to breed mainly near the Tasmanian east coast. Requires tree hollows for nesting and feeds on nectar of blue gum and black gum flowers. There several blue gums in the coastal reserve including some with hollows but there are no known nests in this part of the east coast. However, it may well forage on blue and black gums in, and close to, the reserve during its migration.
Forty-spotted pardalote *Pardalotus quadragintus*	Endangered / ENDANGERED	Foraging: LOW Nesting: NONE	Restricted to dry grassy forest and woodland along the east coast containing mature white gum (*E. viminalis*). There are no known breeding colonies in the vicinity although outside the breeding season dispersing birds forage on white gums in the reserve.
Great crested grebe *Poliocephalus cristatus* subsp. *australis*	Vulnerable / -	Nesting: NONE	One previous sighting is from 1981. An uncommon species that inhabit rivers, lakes and estuaries and nest in heaped floating vegetation anchored in reed beds or drooping branches. No suitable habitat is present.
Fairy tern *Sterna nereis nereis*	Vulnerable / VULNERABLE	Nesting: VERY LOW	Three previous sightings are from around 1980. Preferred breeding habitat includes sand or shingle beaches, dunes and estuaries. Beaches in the reserve may provide potential nesting habitat but it is unlikely to breed successfully here due to long established and regular disturbance by humans and dogs and probably cats.
Black-browed albatross *Diomedea melanophrys melanophrys*	pending Endangered / pending VULNERABLE	NONE	One previous sighting is from 1980. An oceanic bird that also forages along the coasts and sometimes enters bays and harbours. Breeding colonies in Australian water are on sub-Antarctic islands. It may occasionally visit Great Oyster Bay.
Fairy prion (southern subspecies) *Pachyptila turtur subantarctica*	Endangered / VULNERABLE	NONE	One previous sighting is from 1981. An oceanic bird that breeds on offshore islands mainly in Bass Strait. It may occasionally visit Great Oyster Bay.
Australasian bittern *Botaurus poiciloptilus*	- / ENDANGERED	NONE	One previous sighting is from 1977. Inhabits wetlands, usually freshwater, with dense reed beds and rushes. No suitable habitat is present.
FROGS			
Green and gold frog *Litoria raniformis*	Vulnerable / VULNERABLE	NONE	Requires permanent fresh water for breeding preferably shallow water with diverse emergent vegetation. No suitable habitat is present.

Species	Status TSPA/ EPBCA[11]	Potential to occur	Observations and preferred habitat[12]
FISH			
Australian grayling *Prototroctes maraena*	Vulnerable / VULNERABLE	NONE	Three previous sightings in the vicinity include 2 from 1979 and one is undated. Inhabits permanent rivers and streams. No suitable habitat is present.
Swan galaxias *Galaxias fontanus*	Endangered / ENDANGERED	NONE	Inhabits slow to moderately fast-flowing freshwater, rocky streams with shelter both within-stream and from stream-side vegetation. No suitable habitat is present.

APPENDIX 4A – LEGISLATIVE OBLIGATIONS RELEVANT TO NATURAL VALUES OF RESERVES

Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA)

No species of flora that are listed under the EPBCA occur in the Reserve.

One species of fauna potentially occurring in the Reserve that is listed under the EPBCA is the swift parrot.

Referral under the EPBC Act is necessary if any management activity within the reserves are likely to have a significant impact on listed threatened species. In this regard the Act states:

'An action has, will have, or is likely to have a significant impact on a critically endangered, endangered or vulnerable species if it does, will or is likely to (amongst other things):

- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, or
- adversely affect habitat critical to the survival of a species.'

Tasmanian *Threatened Species Protection Act 1995* (TSPA)

Flora species occurring in the Reserve that are listed under the TSPA are *Cynoglossum australe* and *Calystegia soldanella*.

Fauna species potentially occurring in the Reserve that are listed under the TSPA include the swift parrot and white-bellied sea-eagle.

Any management activities in the reserves that will impact on these species would require a permit application to be submitted to the Development and Conservation Assessment Branch (DCAB) of DPIPWE with regard to the populations affected.

Tasmanian Forest Practices Regulations 2005

The Forest Practices Regulations[13] require a Forest Practices Plan (FPP) where clearing of forest is in excess of 1 hectare or 100 tonnes of timber or involves 'vulnerable land' where the thresholds become less.

Under the terms of the Forest Practices Regulations, any native vegetation which has the potential to develop to a height exceeding 5 m is considered 'forest'. 'Vulnerable' land includes land supporting threatened vegetation communities or species listed as threatened under the TSPA and/or the EPBCA. One threatened community that occurs in the Reserve is DGL. Threatened species are listed above under the EPBCA and TSPA headings.

Any clearing activities on 'vulnerable land' will require an FPP, irrespective of the volume of timber or area of vegetation involved (unless the clearing or harvesting is necessary to protect public safety or to maintain existing infrastructure and it involves less than 1 ha or 5 tonnes of timber).

Tasmanian *Weed Management Act 1999* (WMA)

The following table summarises the status within the Glamorgan Spring Bay municipality of 'declared weeds' present in the reserves according to relevant Weed Management Plans prepared under the Act.

[13] Tasmanian State Government 2005.

Common name	*Scientific name*	Status in the GSB municipality	Municipal classification
african boxthorn	*Lycium ferocissimum*	Localised infestation	B
blackberry	*Rubus fruticosus* aggregate	Widespread	B
boneseed	*Chrysanthemoides monilifera* subsp. *monilifera*	Localised infestation	A
english broom	*Cytisus scoparius*	Localised infestation	A
fennel	*Foeniculum vulgare*	Isolated occurrences	A
gorse	*Ulex europaeus*	Widespread	B
montpellier broom	*Genista monspessulana*	Localised infestation	A
slender thistle	*Carduus pycnocephalus*	Widespread	B
white horehound	*Marrubium vulgare*	Widespread	B

According to the provisions of the WMA Zone A municipalities are those that host infestations of a 'declared weed' that are currently deemed eradicable. Achieving and maintaining a total absence of the weed from within the municipal boundaries is the ultimate management outcome.

Zone B municipalities are those that host infestations of the 'declared weed' that are not deemed eradicable because the feasibility of effective management is low at this time. Therefore, the objective is containment of infestations. The objective includes preventing spread of the 'declared weed' from the municipality and preventing spread to properties currently free of them. There is a requirement to prevent spread of the 'declared weeds' to properties containing sites for significant flora, fauna and vegetation communities such as those present here.

APPENDIX 4B – OTHER LEGISLATION AND POLICIES RELEVANT TO RESERVE MANAGEMENT

Strategic policies

- Glamorgan Spring Bay Planning Scheme
- State Coastal Policy
- Tasmanian Reserve Management Code of Practice 2003

Legislation

- *Aboriginal Relics Act 1975*
- *Cat Management Act 2009*
- *Crown Lands Acts 1976*
- *Environmental Management and Pollution Control Act 1994*
- *Historical Cultural Heritage Act 1995*
- *Land Use Planning and Approvals Act 1993*
- *Local Government Act 1993*
- *National Parks and Reserves Management Act 2002*
- *Nature Conservation Act 2002*

APPENDIX 5A – DECLARED WEED PHOTOS

african boxthorn *Lycium ferocissimum*

blackberry *Rubus fruticosus* aggregate

boneseed *Chrysanthemoides monilifera* subsp.*monilifera*

english broom *Cytisus scoparius*

fennel *Foeniculum vulgare*

fennel *Foeniculum vulgare* (close-up of leaves)

gorse *Ulex europaeus*

montpellier broom *Genista monspessulana*

slender thistle *Carduus pycnocephalus*

slender thistle *Carduus pycnocephalus* (close-up of flower)

white horehound *Marrubium vulgare*

APPENDIX 5B – ENVIRONMENTAL WEED PHOTOS

agapanthus *Agapanthus praecox*

arum lily *Zantedeschia aethiopica*

bears breeches *Acanthus mollis*

blue periwinkle *Vinca major*

bluebell creeper *Billardiera heterophylla*

borage *Borago officinalis*

bottlebrush *Melaleuca* sp.

cape ivy *Delairea odorata*

cape wattle *Paraserianthes lophantha* subsp. *Lophantha* (with fruit)

caper spurge *Euphorbia lathyris*

coast teatree *Leptospermum laevigatum*

cotoneaster *Cotoneaster* sp.

diosma *Coleonema* sp.

escallonia *Escallonia* sp.

field marigold *Calendula arvensis*

flaxleaf fleabane *Conyza bonariensis* (seed head)

flaxleaf fleabane *Conyza bonariensis* (seedling)

garrya *Garrya elliptica*

gazania *Gazania* sp.

geranium *Pelargonium* sp. 1

geranium *Pelargonium* sp. 2

geranium *Pelargonium* sp. 3 (not to be confused with the native *Pelargonium australe*)

giant honeymyrtle *Melaleuca armillaris* subsp. *armillaris*

grevillea hybrid *Grevillea* sp. @SWANSEA

gum *Eucalyptus* sp.

hawthorn *Crataegus monogyna*

hebe *Hebe* sp.

hoary cress *Lepidium draba*

howitt's wattle *Acacia howittii*

ivy *Hedera helix*

large mediterranean spurge *Euphorbia characias*

marguerite *Argyranthemum frutescens*

milkwort *Polygala myrtifolia*

mirrorbush *Coprosma repens*

nasturtium *Tropaeolum majus*

new zealand flax *Phormium tenax*

paulownia *Paulownia* sp.

pigs ear *Cotyledon orbiculata*

prickly pear *Opuntia* sp.

pride-of-madeira *Echium candicans*

protea *Protea* sp.

radiata pine *Pinus radiata*

radiata pine *Pinus radiate* (juvenile)

red valerian *Centranthus ruber*

rhubard *Rheum* sp.

scrambling groundsel *Senecio angulatus*

showy honey-myrtle *Melaleuca nesophila*

sweet alice *Lobularia maritima*

sweet briar *Rosa rubiginosa*

sweet pittosporum *Pittosporum undulatum*

teatree *Leptospermum* sp.

trailing daisy *Osteospermum fruticosum*

tree mallow *Malva dendromorpha*

watsonia *Watsonia* sp.

wattle *Acacia* sp.