

Flora Values of Harmers Haven Coastal Reserve



November, 2019

Alison Oates

Oates Environmental Consulting Pty. Ltd, Newhaven, Vic.



Oates Environmental Consulting Pty Ltd
Newhaven Victoria
aoates@dcsl.net.au
TEL: 0409 939775



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Report prepared for Harmers Haven Residents and Ratepayers Group.

Author:

Alison Oates
Oates Environmental Consulting Pty Ltd
aoates@dcsl.net.au

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CONTENTS

1	Introduction.....	4
2	Study Area	4
3	Ecological Vegetation Class (EVC) Map.....	4
4	Ecological Vegetation Class Descriptions	4
4.1	Coast Banksia Woodland	6
4.2	Coastal Dune Grassland	7
4.3	Coastal Dune Scrub	8
4.4	Coastal Headland Scrub.....	9
4.5	Coastal Tussock Grassland.....	10
4.6	Damp Heathland/Swamp Scrub Complex	11
4.7	Damp Melaleuca Scrub/Swamp Scrub Mosaic.....	12
4.8	Damp Sands Herb-rich Woodland.....	13
4.9	'Dune Swale Grassland'	14
4.10	Estuarine Wetland/Streambed.....	15
4.11	Spray-zone Coastal Shrubland.....	16
4.12	Swamp Scrub	17
5	Flora.....	17
5.1	Summary of flora species	17
5.2	Summary of Victorian Rare or Threatened Species (VROTS).....	18
5.3	Other regionally significant species	19
6	Summary of significance of vegetation at Harmers Haven Coastal Reserve.....	20
6.1	Harmers Haven Biolink.....	21
6.2	Ecological Vegetation Classes (EVCs).....	21
6.3	Flora species	23
7	Risks to vegetation associated with a potential new pathway or widening of existing tracks within Harmers Haven Coastal Reserve	23
8	References	25
9	Appendix	27
	Appendix 1: List of Vascular Flora Species for Harmers Haven	27

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1 Introduction

Oates Environmental Consulting was engaged by Harmers Haven Residents and Ratepayers Group to undertake vegetation mapping and an assessment of flora values on public land managed by Parks Victoria at Harmers Haven plus sections of private land containing native vegetation south of Viminaria Road.

Specific project requirements are outlined below:

- Provide an Ecological Vegetation Class (EVC) map and descriptions of the EVCs mapped in the study area.
- Produce a report including an assessment of the biodiversity values of Harmers Haven Coastal Reserve in relation to threatened flora and vegetation communities as well as risks associated with a potential new pathway through the reserve or the widening of existing pathways.

2 Study Area

The mapped study area of 94 ha consists of Harmers Haven Coastal Reserve which extends from the southern coastal boundary of the Wonthaggi Heathlands Reserve, north to the private land and then east to the coastal strip at the southern end of Wilson's Road, Cape Paterson, where it abuts the Cape Paterson Foreshore Reserve. Parks Victoria is the public land manager for this reserve. Remaining sections of vegetated private land south of Viminaria Road were also included in the mapping and assessment.

3 Ecological Vegetation Class (EVC) Map

The Ecological Vegetation Class (EVC) map for the study area (see attached) was produced by a combination of aerial photograph interpretation, quadrat information from Carr's report (2003) and ground-truthing of the area. Lines were drawn onto hard copy 2018 laminated aerial photographs and digitised by Holocene Environmental Science. EVCs were drawn with reference to NearMap and ESRI aerial imagery and some vegetation boundaries may differ when overlaid on other imagery.

Glossary of EVC mapping terms:

Ecological Vegetation Classes (EVC) - are the standard unit for classifying vegetation types in Victoria. EVCs are described through a combination of floristics, lifeforms and ecological characteristics, and through an inferred fidelity to particular environmental attributes.

Floristic Communities (FC) - Each EVC includes a collection of floristic communities (i.e. lower level in the classification) that occur across a biogeographic range, and although differing in species, have similar habitat and ecological processes operating.

Complex – A mapping unit where the vegetation includes characteristics intermediate between the two EVCs identified in the descriptor.

Mosaic - A mapping unit consisting of more than one EVC but at the scale of mapping the EVCs were unable to be delineated.

4 Ecological Vegetation Class Descriptions

Ecological Vegetation Class (EVC) is the standard unit used in Victoria for classifying vegetation types. There are over 300 EVCs that have been mapped across the State. Eleven EVCs and one unclassified vegetation community have been mapped for the study area (see Table 1 below). Below is a brief description for each of the EVCs mapped for the study area.

The relevant codes and definitions for the threat status of EVCs in Victoria is as follows:

Endangered

Contracted to less than 10% of former range; OR

Less than 10% pre-European extent remains; OR

Combination of depletion, degradation, current threats and rarity is comparable overall to the above:

- 10 to 30% pre-European extent remains and severely degraded over a majority of this area; or
- naturally restricted EVC reduced to 30% or less of former range and moderately degraded over a majority of this area; or
- rare EVC cleared and/or moderately degraded over a majority of former area.

Vulnerable

10 to 30% pre-European extent remains; OR Combination of depletion, degradation, current threats and rarity is comparable overall to the above:

- greater than 30% and up to 50% pre-European extent remains and moderately degraded over a majority of this area; or
- greater than 50% pre-European extent remains and severely degraded over a majority of this area; or
- naturally restricted EVC where greater than 30% pre-European extent remains and moderately degraded over a majority of this area; or
- rare EVC cleared and/or moderately degraded over a minority of former area.

Depleted

Greater than 30% and up to 50% pre-European extent remains; OR

Combination of depletion, degradation and current threats is comparable overall to the above and:

- greater than 50% pre-European extent remains
- and moderately degraded over a majority of this area.

Rare

Rare EVC (as defined by geographic occurrence) but neither depleted, degraded nor currently threatened to an extent that would qualify as Endangered, Vulnerable or Depleted

Least Concern

Greater than 50% pre-European extent remains and subject to little or no degradation over a majority of this area.

Table 1: Ecological Vegetation Classes (EVCs) found within the study area and Bioregional Conservation Status (BCS) Rating

EVC/Vegetation Community Name	EVC No.	BCS
Coast Banksia Woodland	2	Vulnerable
Coastal Dune Grassland	879	Depleted
Coastal Dune Scrub	160	Depleted
Coastal Headland Scrub	161	Depleted
Coastal Tussock Grassland	163	Vulnerable
Damp Heathland	710	Rare
Damp Melaleuca Scrub*	948	Endangered
Damp Sands Herb-rich Woodland	3	Vulnerable
Dune Swale Grassland**	n/a	n/a
Estuarine Wetland#	10	Depleted
Spray-zone Coastal Shrubland***	876	n/a
Swamp Scrub	53	Endangered

*This EVC was split off by DELWP from Swamp Scrub to become a new EVC but has not been designated a BCS status as yet but most likely 'Endangered'.

**Floristic community at present and requires further analysis.

*** Not mapped in the DELWP Gippsland EVC mapping due to its restricted size

Flood & Papas (2016)

4.1 Coast Banksia Woodland



This EVC occurs on deep, calcareous sands with a higher organic content and greater soil horizon development than Coastal Dune Scrub (Oates & Taranto 2001). It develops in sheltered sites often in dune swales inland from Coastal Dune Scrub. Examples can be seen on the transgressive dunes between Coal Creek and the southern extension of Old Boiler Road. Scattered patches of Coast Banksia Woodland are found throughout the Reserve from Wilsons Road west to the Wonthaggi Heathlands Reserve boundary and have mainly been mapped as a mosaic with Coastal Dune Scrub.

The overstorey is dominated by Coast Banksia (*Banksia integrifolia* var. *integrifolia*) often with a shrub layer variously including Coast Wattle (*Acacia longifolia* subsp. *sophorae*), Coast Tea-tree (*Leptospermum laevigatum*), Coast Beard-heath (*Leucopogon parviflorus*) and Seaberry Saltbush (*Rhagodia candolleana* subsp. *candolleana*). Bower Spinach (*Tetragonia implexicoma*) is often common in the understorey as well as Coast Sword-sedge (*Lepidosperma gladiatum*), Knobby Club-sedge (*Ficinia nodosa*) and the creeper, Small-leaved Clematis (*Clematis microphylla*).

4.2 Coastal Dune Grassland



Coastal Dune Grassland is dominated by grasses that occupy the incipient (not yet established) dunes of high-energy beaches. The soils of these incipient dunes are deep, unconsolidated siliceous sands that have a very low humic content. Rhizomatous grasses can quickly colonise these dunes and are able to bind the sand together to make the dune more stable. This EVC is often found in narrow linear strips along the beach just above high tide mark but in some places the incipient dune can extend to several metres in width as it becomes more stabilized.

Grasses dominating this EVC include native Hairy Spinifex (*Spinifex sericeus*) and introduced Marram Grass (*Ammophila arenaria*). Marram Grass tends to outcompete Hairy Spinifex in many sites due to its deep rhizomes which enable it to quickly form into a tufted grass and trap sand. The highly invasive introduced Sea Wheat-grass (*Thinopyrum junceiforme*) can be locally dominant towards the strand zone. The now rare native tussock grass, Coast Fescue (*Poa billardierei*), was probably also historically present on the incipient dunes at Harmers Haven but has been displaced by Marram Grass over time. Herbs are mostly only a minor component and can include Dune Thistle (*Actites megalocarpa*), Karkalla (*Carpobrotus rossii*), Variable Groundsel (*Senecio pinnatifolius*) and Shady Wood-sorrel (*Oxalis rubens*).

4.3 Coastal Dune Scrub



This EVC occurs on deep, unconsolidated sands, subject to high levels of saltspray and disturbance from onshore winds. It includes a succession of structural types, depending on exposure, stability, soil composition and salinity. It ranges from low and often scattered shrubs of the open foredune to the denser scrubs of the sheltered areas of the transgressive dune.

The more exposed foredunes are dominated by species such as Coast Everlasting (*Ozothamnus turbinatus*), Coast Daisy-bush (*Olearia axillaris*), Coast Wattle (*Acacia longifolia* subsp. *sophorae*), Cushion Bush (*Leucophyta brownii*), Sea Box (*Alyxia buxifolia*), Knobby Club-sedge (*Ficinia nodosa*) and Coast Tussock-grass (*Poa poiformis*). In sheltered areas to the rear of the transgressive dune, dense Coast Tea-tree (*Leptospermum laevigatum*) is present, together with Coast Beard-heath (*Leucopogon parviflorus*) and scattered Sweet Bursaria (*Bursaria spinosa*) and Coast Banksia (*Banksia integrifolia* subsp. *integrifolia*).

Where the shrub-layer is more open, the ground layer includes species such as Coast Sword-sedge (*Lepidosperma gladiatum*), Small-flower Flax-lily (*Dianella brevicaulis*), Dune Wood-sorrel (*Oxalis rubens*), Common Bottle-daisy (*Lagenophora stipitata*), Kidney-weed (*Dichondra repens*) and Lance-leaf Groundsel (*Senecio pinnatifolius* var. *lanceolatus*).

4.4 Coastal Headland Scrub



The dominant vegetation growing on soils derived from Cretaceous cliffs and headlands is Coastal Headland Scrub. It is usually found on steep, rocky, windswept coastal headlands that are subject to frequent gale-force, salt-laden winds. The soils are variable, ranging from shallow, skeletal and relatively fertile clay-loam soils derived from sandstones, siltstones and conglomerates to wind-blown sand or sandy-loam. Structurally, the vegetation ranges from stunted, wind-pruned shrubs in the most exposed sites to a taller shrubland in more sheltered sites inland from the coast.

The vegetation is variously dominated by a range of shrubs including Cushion Bush (*Leucophyta brownii*) on the steeper slopes, Coast Everlasting (*Ozothamnus turbinatus*), Coast Daisy-bush (*Olearia axillaris*), White Correa (*Correa alba*), Sea Box (*Alyxia buxifolia*), Coast Beard-heath (*Leucopogon parviflorus*) and Common Boobialla (*Myoporum insulare*). Seaberry Saltbush (*Rhagodia candolleana* subsp. *candolleana*) and Bower Spinach (*Tetragonia implexicoma*) can also be present.

In the most exposed conditions, the diversity of the ground layer is usually low. On more sheltered sites a wider variety of grasses, sedges and herbs can be present. Grasses and sedges can include Coast Tussock-grass (*Poa poiformis* var. *poiformis*), Knobby Club-sedge (*Ficinia nodosa*), Prickly Spear-grass (*Austrostipa stipoides*) and Slender Wallaby-grass (*Rytidosperma racemosum* var. *racemosum*). Herbs such as Kidney-weed (*Dichondra repens*), Sea Celery (*Apium prostratum* subsp. *prostratum* var. *prostratum*) and Bidgee-widgee (*Acaena novae-zelandiae*) can also be common.

4.5 Coastal Tussock Grassland



A tussock grassland occurring on the most exposed coastal cliffs and headlands. Soils are saline and the strong salt-laden winds preclude tree growth but sometimes there may be a sparse emergent shrub component. (Oates & Taranto 2001).

The tussock grassland is usually dominated by Coast Tussock-grass (*Poa poiformis* var. *poiformis*) and/or Prickly Spear-grass (*Austrostipa stipoides*). Rounded Noon-flower (*Disphyma crassifolium* subsp. *clavellatum*) can often be found in the ground layer. Scattered shrubs such as Seaberry Saltbush (*Rhagodia candolleana* subsp. *candolleana*), Cushion Bush (*Leucophyta brownii*), White Correa (*Correa alba*) and Coast Beard-heath (*Leucopogon parviflorus*) can also be present.

4.6 Damp Heathland/Swamp Scrub Complex



This complex of the EVCs Damp Heathland and Swamp Scrub is mapped to the south of Viminaria Rd and extends in patches from the Harmers Haven township (central area) to the western boundary of the Harmers Haven Coastal Reserve. A couple of isolated patches were also mapped in the east of the study area near the end of Wilsons Road and on private land towards the western boundary of the Reserve.

Damp Heathland consists of a heathland or closed scrub that develops on sites with impeded drainage and typically wet in winter and dry in summer. It includes some species shared with Wet Heathland such as Scrub Sheoak (*Allocasuarina paludosa*), Spreading Rope-rush (*Empodisma minus*) and Scented Paperbark (*Melaleuca squarrosa*) but only as a minor component and only in some sites. The mapped complex also includes species characteristic of the EVC, Swamp Scrub, located in habitat that appears to be prone to occasional shallow inundation as observed during fieldwork. The main structural dominant is Swamp Paperbark (*Melaleuca ericifolia*).

The dense, dwarf scrub of Damp Heathland is dominated by Swamp Paperbark (*Melaleuca ericifolia*), with Woolly Tea-tree (*Leptospermum lanigerum*) occurring as a minor component in this complex, at the end of Wilsons Road. The ground layer may include Coarse Twine-rush (*Apodasmia brownii*). Common Tussock-grass (*Poa labillardierei* var. *labillardierei*), and Pale Rush (*Juncus pallidus*).

Other species observed towards the drier boundaries of this vegetation type included Spiny-headed Mat-rush (*Lomandra longifolia* subsp. *longifolia*), Reed Bent-grass (*Deyeuxia quadriseta*), Kidney-weed (*Dichondra repens*), Bidgee-widgee (*Acaena novae-zelandiae*), Weeping-grass (*Microlaena stipoides* var. *stipoides*), Annual Fireweed (*Senecio glomeratus*), and the climbers Small-leaved Clematis (*Clematis*

microphylla) and Downy Dodder-laurel (*Cassytha pubescens*). Seaberry Saltbush (*Rhagodia candolleana* subsp. *candolleana*) and Bower Spinach (*Tetragonia implexicoma*) can also be present.

4.7 Damp Melaleuca Scrub/Swamp Scrub Mosaic



This extensive mosaic of the EVCs Damp Melaleuca Scrub and Swamp Scrub was mapped along Berrys Road and Old Boiler Road, Harmers Haven. The mosaic consists of a dense growth of Swamp Paperbark (*Melaleuca ericifolia*) over a grassy-herbaceous or bryophytic/lichen-dominated ground layer. The mosaic also includes patches of Swamp Scrub along drainage lines containing some obligate wetland ground cover species. The remnant patch also includes small unmappable sand lenses dominated by Coast Tea-tree (*Leptospermum laevigatum*).

The scrub overstorey is dominated by Swamp Paperbark (*Melaleuca ericifolia*) with a relatively dense understorey shrub layer including Common Boobialla (*Myoporum insulare*), Coast Beard-heath (*Leucopogon parviflorus*) and Seaberry Saltbush (*Rhagodia candolleana* subsp. *candolleana*). The ground layer is dominated by Common Tussock-grass (*Poa labillardierei*), Knobby Club-sedge (*Ficinia nodosa*) with herbs such as Bower Spinach (*Tetragonia implexicoma*), Annual Fireweed (*Senecio glomeratus*) and *Geranium* species also being present.

4.8 Damp Sands Herb-rich Woodland



Damp Sands Herb-rich Woodland is now depleted in the general Harmers Haven area due to clearing for agriculture. Remnant Coast Manna-gum (*Eucalyptus viminalis* subsp. *pyroriana*) trees which dominate this EVC can be seen along the eastern end of Viminaria Road. A small, disturbed patch downslope from Coastal Dune Scrub is located on private land abutting the eastern boundary of Harmers Haven Coastal Reserve.

The structure of this EVC is a woodland with a grassy and/or bracken-dominated understorey and, in relatively intact examples, a ground layer rich in herbs, grasses and orchids. It occurs mainly on fertile and relatively well-drained, pale grey, loamy sands (Oates & Taranto 2001).

The disturbed ground layer of the small patch on private land is dominated by dense Austral Bracken (*Pteridium esculentum*) with species present including Seaberry Saltbush (*Rhagodia candolleana* subsp. *candolleana*) and Bower Spinach (*Tetragonia implexicoma*). Scattered Coast Tea-tree (*Leptospermum laevigatum*) shrubs are also present. A variety of native herbs are usually found in intact examples of this EVC but are lacking here due to prior disturbance.

4.9 'Dune Swale Grassland'



This rare vegetation community was mapped in damp, sandy dune swales on sandy loam soils within the mosaic of Coast Banksia Woodland/Coastal Dune Scrub to the east of Coal Creek. It was clearly visible on aerial photography as a separate floristic structural unit. The community is dominated by either Coast Tussock-grass (*Poa poiformis* var. *poiformis*) or Common Tussock-grass (*Poa labillardierei* var. *labillardierei*) and also Knobby Club-sedge (*Ficinia nodosa*). Herbs observed include Bower Spinach (*Tetragonia implexicoma*), Bidgee-widgee (*Acaena novae-zelandiae*) and Annual Fireweed (*Senecio glomeratus*). Sea Rush (*Juncus kraussii* subsp. *australiensis*) was also present in damper patches of this floristic community.

4.10 Estuarine Wetland/Streambed



Estuarine Wetland fringes the sandy banks of the lower reaches of Coal Creek. It is dominated by Sea Rush (*Juncus kraussii* subsp. *australiensis*) with Kobby Club-sedge (*Ficinia nodosa*) also present. Salt-tolerant herbs include Beaded Glasswort (*Salicornia quinqueflora*), Sea Celery (*Apium prostratum*) and Creeping Brookweed (*Samolus repens*). Other species noted include Salt-couch (*Sporobolus virginicus*) and Streaked Arrowgrass (*Triglochin striata*).

Beaded Glasswort has regenerated around the banks of the Coal Creek estuary after a bridge was built there in 2011 to re-direct pedestrian traffic away from flora species occupying Estuarine Wetland habitat.

4.11 Spray-zone Coastal Shrubland



Spray-zone Coastal Shrubland occurs on the most exposed, wind-swept, rocky cliffs and bluffs subject to almost constant salt-spray. The succulent herb, Rounded Noon-flower (*Disphyma crassifolium* subsp. *clavellatum*), often dominates these areas but other herbs such as Creeping Brookweed (*Samolus repens*), Beaded Glasswort (*Salicornia quinqueflora*) and Sea Celery (*Apium prostratum* subsp. *prostratum*) are also often present. Cushion Bush (*Leucophyta brownii*), is the most common shrub in these exposed sites with low frequencies of other plants such as Seaberry Saltbush (*Rhagodia candolleana* subsp. *candolleana*), Coast Everlasting (*Ozothamnus turbinatus*). Bower Spinach (*Tetragonia implexicoma*), Ruby Saltbush (*Enchylaena tomentosa* var. *tomentosa*), Variable Groundsel (*Senecio pinnatifolius*), Coast Sow-thistle (*Actites megalocarpa*), and Australian Salt-grass (*Distichlis distichophylla*). A number of these are salt-tolerant species of moister sites.

4.12 Swamp Scrub



Swamp Scrub consists of dense areas of tall shrubs growing on lower slopes and flats prone to periodic inundation or seepage. A very significant patch of Swamp Scrub was mapped on a drainage line on private land at 60-78 Viminaria Road (previously known as Lot 25), east of Banksia Street. Swamp Scrub is also mapped in a complex with Damp Melaleuca Scrub, along Old Boiler Road east of Berrys Road.

The tallest stratum consists of dense Swamp Paperbark (*Melaleuca ericifolia*) over an herbaceous to sedgy ground layer, varying with site wetness and the amount of light penetrating to ground level. In wetter areas, the ground layer is dominated by aquatic herbs, sedges and grasses. Other species present include Prickly Tea-tree (*Leptospermum continentale*), Common Reed (*Phragmites australis*), Slender Twine-rush (*Leptocarpus tenax*), Thatch Saw-sedge (*Gahnia radula*), Shiny Swamp-mat (*Selliera radicans*) and Floating Club-rush (*Isolepis fluitans*).

5 Flora

5.1 Summary of flora species

A total of 295 vascular plant species was recorded by Geoff Carr in 2003 of which 170 were indigenous and 116 introduced to Victoria. An additional 32 species were recorded following a ground survey by the author and Doug Frood in September 2019 (see Appendix 1).

5.2 Summary of Victorian Rare or Threatened Species (VROTS)

Carr recorded one nationally significant species, Bassian Pomaderris (*Pomaderris oraria* subsp. *oraria*), in 2003 but this species no longer has a national threat status although it is still classified as rare in Victoria. In total, Carr recorded seven plant species that have a threat status in Victoria (DPI 2014). Two of these species, *Poa* sp. aff. *tenera* and *Salicornia quinqueflora* subsp. *tasmanica* have been reviewed and are discussed below. Relevant codes and definitions are as follows (definitions from Ross and Walsh 2003):

- r Rare in Victoria but not considered otherwise threatened - there are relatively few known populations or the taxon is restricted to a relatively small area
- k Poorly known in Victoria and suspected, but not definitely known to, belong to the one of the categories Presumed Extinct, Endangered, Vulnerable or Rare in Victoria. At present, accurate distribution information is inadequate

Victorian Rare or Threatened Species recorded for Harmers Haven:

- r *Exocarpos syrticola* (Coast Ballart)
- k *Lotus australis* (Austral Trefoil)
- r *Oxalis rubens* (Dune Wood-sorrel)
- r *Poa poiformis* var. *ramifer* (Dune Poa)
- {Rr?} *Poa* sp. aff. *tenera* (Tussock-grass)]
- r *Pomaderris oraria* subsp. *oraria* (Bassian Pomaderris)
- k *Salicornia quinqueflora* subsp. *tasmanica* (Beaded Glasswort)]

Descriptions below are sourced from VicFlora (2019).

Exocarpos syrticola (Coast Ballart)

Coast Ballart is considered rare in Victoria. It is a shrub to about 3.5m high and is confined to coastal dunes and cliffs on and west of Wilson's Promontory and can be locally common. It was recorded by Carr (2003) in Quadrats 14 and 21 and along Berry Road.

Lotus australis (Austral Trefoil)

Austral Trefoil is considered poorly known in Victoria. It is an erect or ascending perennial herb to 60 cm tall and is an extremely variable species. It is scattered widely but discontinuously across the State, particularly in near-coastal areas, mostly in grassland and open forest. There are few records for the South Gippsland area. It was recorded by Carr (2003) in Quadrat 19.

Oxalis rubens (Dune Wood-sorrel)

Dune Wood-sorrel is considered rare in Victoria. It is a weakly rhizomatous herb which is mostly confined to coastal dunes and scrub, growing on stabilised sand dunes in Coast Banksia Woodland and along beaches in Coastal Dune Grassland. It can be locally common and has been recorded from Phillip Island, Inverloch and Point Smythe. It was recorded by Carr (2003) in Quadrats 12, 14 and 21 who noted that it was apparently widespread and common.

Poa poiformis var. *ramifer* (Dune Poa)

Dune Poa is considered rare in Victoria. It is a rhizomatous and/or stoloniferous perennial grass of coastal sand dunes, more often associated with calcareous sands or shallow siliceous sands overlying basalt. It has been recorded nearby on the southern coast of Phillip Island. It was recorded by Carr (2003) in Quadrat 19.

Poa spp. aff. *tenera*? (Slender Tussock-grass)

Slender Tussock grass (*Poa tenera*) is a very variable species and may include entities requiring formal recognition. *Poa* spp. aff. *tenera*? as identified by Carr in 2003 is now included within the general Slender Tussock grass (*Poa tenera*) taxon and no longer has a Victorian Rare or Threatened Species status of 'rare' or the Federal Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) listing as a threatened flora species.

Pomaderris oraria subsp. *oraria* (Bassian Pomaderris)

Bassian Pomaderris is considered rare in Victoria. It is a compact, much-branched shrub to about one metre in height and occurs on low exposed dunes and in coastal scrub on deep siliceous sands on coasts and has been recorded between Cape Paterson (now records at Harmers Haven) and the Ninety Mile Beach. It was recorded in Coastal Dune Scrub by the author at three different sites in the study area, from the western boundary to just west of the end of Wilsons Road.

Salicornia quinqueflora subsp. *tasmanica* (Beaded Glasswort)

According to VicFlora (2019), this subspecies of Beaded Glasswort is data deficient and at present is only known with certainty in Victoria from an area of landfill immediately adjacent to the rocky seashore near Mt Martha, Port Phillip Bay, and possibly an introduction there. It was recorded by Carr (2003) in Quadrat 22.

5.3 Other regionally significant species

Below is a list of 37 flora species recognized as regionally significant by Carr in his 2003 report.

Scientific Name	Common Name	Location
<i>Acacia verticillata</i> subsp. <i>ovoidea</i>	Creeping Prickly Moses	Quadrat 21
<i>Lachnagrostis billardierei</i> subsp. <i>billardierei</i>	Coast Blown-grass	Various quadrats; common in coastal zone
<i>Alyxia buxifolia</i>	Sea Box	Quadrat 22
<i>Apalochlamys spectabilis</i>	Showy Apalochlamys	?(recorded by Carr 1986)
<i>Brachyscome graminea</i>	Grass Daisy	Quadrat 12
<i>Calystegia sepium</i>	Large Bindweed	Quadrat 11
<i>Allocasuarina littoralis</i>	Black Sheoak	?(recorded by Carr 1986)
<i>Correa alba</i> var. <i>alba</i>	White Correa	Quadrats 2, 18, 19 and 22
<i>Dianella</i> aff. <i>revoluta</i> (East Gippsland)	Flax-lily	Quadrats 1, 14
<i>Eucalyptus viminalis</i> subsp. <i>viminalis</i>	Coast Manna-gum	Rare trees along Viminaria Rd and the western end of the settlement
<i>Gahnia trifida</i>	Coast Saw-sedge	Quadrat 1
<i>Hemarthria uncinata</i> var. <i>uncinata</i>	Mat Grass	Vicinity of quadrats 14 and 17
<i>Hibbertia sericea</i>	Silky Guinea-flower	Quadrats 14, 21
<i>Hydrocotyle tripartita</i>	Slender Pennywort	Quadrat 12

Scientific Name	Common Name	Location
<i>Juncus pauciflorus</i>	Loose-flower Rush	?(recorded by Carr 1986)
<i>Kennedia prostrata</i>	Running Postman	Quadrat 21
<i>Lepidosperma gunnii</i>	Slender Sword-sedge	Quadrat 14
<i>Leptospermum lanigerum</i>	Woolly Teatree	Quadrat 12, lower reaches of Coal Creek and along Viminaria Road
<i>Leucopogon australis</i>	Spike Beard-heath	Quadrat 1
<i>Ozothamnus rosmarinifolius</i>	Rosemary Everlasting	Middle section of Viminaria Road Reserve (1 plant)
<i>Patersonia fragilis</i>	Short Purple-flag	Quadrat 1
<i>Patersonia occidentalis</i>	Long Purple-flag	Quadrat 1
<i>Pelargonium australe</i>	Austral Stork's-bill	Quadrat 13
<i>Persoonia juniperina</i>	Prickly Geebung	?(recorded by Carr 1986)
<i>Pimelea humilis</i>	Common Rice-flower	?(recorded by Carr 1986)
<i>Platylobium obtusangulum</i>	Common Flat-pea	?(recorded by Carr 1986)
<i>Poa clelandii</i>	Noah's Ark	Quadrats 2, 14, 15
<i>Lobelia irrigua</i>	Salt Pratia	?(recorded by Carr 1986)
<i>Pultenaea stricta</i>	Rigid Bush-pea	?(recorded by Carr 1986)
<i>Ranunculus inundatus</i>	River Buttercup	?(not recorded)
<i>Sambucus gaudichaudiana</i>	White Elderberry	?(recorded by Carr 1986)
<i>Scutellaria humilis</i>	Dwarf Skullcap	Quadrat 18
<i>Senecio squarrosus</i>	Leafy Fireweed	Quadrat 14
<i>Sonchus hydrophilus</i>	Native Sow-thistle	Quadrat 11
<i>Veronica gracilis</i>	Slender Speedwell	Quadrat 11
<i>Xanthorrhoea minor</i> subsp. <i>lutea</i>	Small Grass-tree	Quadrat 14
<i>Zoysia macrantha</i>	Prickly Couch	Quadrats 5, 17

6 Summary of significance of vegetation at Harmers Haven Coastal Reserve

Carr states in his 1986 report that '*The public coastal reserve at Harmers Haven has high biological and hence conservation significance as a rare regional remnant. This also applies to the indigenous vegetation surviving on the adjoining private land.*' (Carr 1986). In 2001 Carr confirmed this in a report produced by Luisa Macmillan on the management and environmental significance of Harmers Haven Foreshore Reserve. (Macmillan 2001). Carr also reported in 2003 that '*The complex of vegetation communities recorded at Harmers Haven is of State conservation significance (and by extension National Conservation significance).*' (Carr 2003).

From the surveys of Carr (1986, 2003) to present day there appears to be a significant improvement in the overall vegetation condition. This is largely due to the efforts of the Harmers Haven Residents and Ratepayers Group in obtaining funding to selectively revegetate areas within the Coastal Reserve and to control invasive weeds such as Sweet Pittosporum (*Pittosporum undulatum*), Mirror Bush (*Coprosma repens*), Myrtle-leaf Milkwort (*Polygala myrtifolia*), Cape Ivy (*Delairea odorata*), Common Dipogon (*Dipogon lignosus*), Blackberry (*Rubus* sp.) and Arum Lily (*Zantedeschia aethiopica*).

The importance of the flora and fauna in Harmers Haven Coastal Reserve is of even greater significance today given that Bass Coast Shire is now one of the fastest growing rural municipalities in Victoria which

will result in even more pressure being placed on existing high quality remnant vegetation patches within the Shire.

Below is a summary of the author's findings of recent observations on the significance of vegetation and associated flora species for the Harmers Haven Coastal Reserve.

6.1 Harmers Haven Biolink

Over 85% of native vegetation has been cleared within the Bass Coast Shire. The main objective of the BCSC Biolinks Plan is to identify priority areas of native vegetation that need protection and enhancement for landscape-scale connectivity and identify the main strategic linkages to connect remnant vegetation within the Shire (BCSC 2018).

One of the links identified in the plan is the Wonthaggi Heathlands and the Bunurong Coastal Reserve which includes Harmers Haven and the stretch of coastline east to Inverloch. This biolink is a critical linkage of a diversity of vegetation communities and associated fauna habitat, especially the highly localised heathland communities found in the area. This stretch of coastline is so critical to biodiversity conservation and biolinks management that the whole of Harmers Haven Coastal Reserve is about to be given updated status within the National Parks Act with the declaration of a new Bunurong Marine and Coastal Park and Harmers Haven Coastal Reserve being incorporated into the new coastal park.

At the time of writing this report DELWP has also announced that the Bass Coast has now been declared a 'Distinctive Area and Landscape' under the *Planning and Environment Act 1987*. Work is about to commence on a draft Statement of Planning Policy for Bass Coast which will set a long-term vision and strategies to guide future land use and development. Once implemented, the Statement of Planning Policy will provide the highest level of state planning protection.

6.2 Ecological Vegetation Classes (EVCs)

A diverse and complex range of Ecological Vegetation Classes (EVCs) are found within the study area on a range of geomorphological types from steep coastal dune and coastal headland vegetation types to flats with impeded drainage to gullies which have been formed through sand dunes and form intermittent wetlands in the lower reaches near the coast.

Of the eleven EVCs recorded for Harmers Haven Coastal Reserve, one is classified by the State Government as 'Endangered' within the Gippsland Plain Bioregion, three are 'Vulnerable', three are 'Depleted', one is 'Rare' and one is of 'Least Concern' (see Table 1). Damp Heathland is classified as 'Rare' as there are few intact patches remaining in the Gippsland Plain bioregion and it is highly localized within the bioregion. Swamp Scrub is rated as 'Endangered' due to the extensive clearing for agriculture within the Gippsland Plain bioregion. Damp Melaleuca Scrub does not have a significance rating as yet from the Department of Environment, Land, Water and Planning (DELWP) but would be classified as 'Endangered' as it was originally part of the wetter Swamp Scrub EVC which was extensively cleared. It is vitally important that these EVCs be protected in the Harmers Haven area from future infrastructure development such as housing, roads and pathways.

6.2.1 Significant EVCs

Damp Heathland/Swamp Scrub Complex is a very significant vegetation type at Harmers Haven. This complex is highly restricted in the area, having most likely been more widespread before clearing for agriculture. It is now mainly found as roadside remnants. Heathlands dominated by Swamp Paperbark are very rare in the Gippsland Plain bioregion with few other known recorded locations (Carr 1986). The nearest sizeable patch is at Gellions Run, west of Yarram. Its distribution in the general Wonthaggi area extends in scattered patches from the Wonthaggi Heathlands to Cape Paterson with Harmers Haven being a stronghold and an extremely important biolink between these two areas. The heathlands within the Wonthaggi Heathlands Nature Conservation Reserve tend to be dominated more by low-growing Scrub Sheoak (*Allocasuarina paludosa*) and Prickly Tea-tree (*Leptospermum continentale*) shrubs.

Swamp Antechinus (*Antechinus minimus maritimus*) listed as 'Near Threatened' by DELWP (DSE 2013) and Southern Brown Bandicoot (*Isodon obesulus obesulus*), also listed as 'Near Threatened' by DELWP (DSE 2013) and as 'Endangered' under the EPBC Act of Listed Threatened Fauna (DE 2019), have been recorded in the Harmers Haven Coastal Reserve. These fauna species utilise habitat including heathlands (Parks Victoria 2006) and are most likely to be found in the Damp Heathland/Swamp Scrub Complex in the Harmers Haven Coastal Reserve.

Extensive areas of Damp Melaleuca Scrub (a drier version of Swamp Scrub) occur on the southern edge of Old Boiler Road and this EVC needs to be protected due to its depletion in the Gippsland Plains bioregion from past land clearing for agriculture. As for Swamp Scrub, remaining patches in the bioregion are mainly confined to roadside remnants.

The area of Swamp Scrub along the drainage line at 60-78 Viminaria Road is a very significant patch of this endangered EVC. It was cleared extensively for agriculture in the Gippsland Plain bioregion and only small remnant patches are present within the mainly cleared landscape. There are no access tracks across the allotment or into the adjacent Harmers Haven Coastal Reserve, thus human disturbance is minimal. It is also an important habitat area for a number of flora and fauna species (Macmillan 2001).

The apparently very rare grassland vegetation community growing in the damp swales of Coastal Dune Scrub/Coast Banksia Woodland to the east of Harmers Haven (sometimes adjacent to private land), requires further investigation and quadrating. This vegetation community is also potential habitat for Swamp Antechinus and Southern Brown Bandicoot.

Flora species such as Beaded Glasswort (*Salicornia quinqueflora*) growing along the banks of the lower reaches of Coal Creek within the Estuarine Wetland EVC provide important feeding habitat for the Orange-bellied Parrot (*Neophema chrysogaster*) which is listed as 'Critically Endangered' by both the Stae Government (DELWP 2013) and the Federal Government (DE 2019). The Orange-bellied Parrot has been recorded feeding at this site in 2013 and again in 2014 (Perlesz, *pers. com.*).

The EVC, Coastal Dune Grassland, located above high tide mark on the incipient dunes, provides extremely important habitat for beach-nesting birds such as the Hooded Plover which is listed as 'vulnerable' by both

the State and Federal Government. These birds will often nest in these low dunes amongst scattered tussock grasses which also provide some degree of protection from predators such as foxes and raptors.

Coast Banksia Woodland, often found as a mosaic with Coastal Dune Scrub in Harmers Haven Coastal Reserve, and classified as 'vulnerable' within the Gippsland Plain bioregion, is also quite significant as it forms an important linkage of this EVC along the Bass Coast from Kilcunda through to Inverloch and the Venus Bay area. Some stands of this EVC, located in close proximity to the coastline, are being depleted due to significant coastal recession such as is happening at Flat Rocks, west of Inverloch. Many Coast Banksia trees on the transgressive (secondary) dunes in coastal areas of Gippsland, such as at Harmers Haven, are senescing and dying, possibly from a number of factors such as past drought and insect attack.

6.3 Flora species

The study area consists of a diverse range of native vascular plant species with 179 species having been recorded to date. Six of these flora species have been classified as Rare or Threatened in Victoria by DELWP (DPI 2014) and are described in Section 5.2 above. A further 37 flora species have been classified by Carr (2003) as regionally significant with some being located in the vicinity of housing and walking tracks in the area.

Frood's visit to the survey area to record additional flora species was of shorter duration than Carr's 1986 and 2003 surveys and the significant flora highlighted in this report is based on Carr's original two surveys. It is recommended that in future, should more funds become available, Carr's 22 quadrats undertaken in 2003 be re-surveyed and further ground truthing of significant flora species be carried out as well as undertaking quadrating in the 'Dune Swale Grassland' floristic community.

7 Risks to vegetation associated with a potential new pathway or widening of existing tracks within Harmers Haven Coastal Reserve

In light of the much discussed plans by Government agencies for a coastal walking path between San Remo and Inverloch and the recent announcement by the State Government that this project will begin shortly, in conjunction with the Distinctive Areas and Landscape Project, the author has listed below some of the potential risks and impacts that a new pathway or widening of existing tracks could have on flora within Harmer Haven Coastal Reserve.

- The coastal dune system is extremely susceptible to disturbance and vegetation communities growing on these dune systems are very easily destabilised by human disturbance. Coastal dunes consist of deep sand which if disturbed can result in sand blowouts and accelerate coastal erosion if bare of vegetation. It would not be recommended that new tracks be established within Harmers Haven Coastal Reserve or even the widening of existing tracks.
- Disturbance to existing vegetation in EVCs such as Coast Banksia Woodland and Coastal Dune Scrub can result in the establishment of a number of aggressive woody weeds such as Mirror Bush (*Coprosma repens*) and Myrtle-leaf Milkwort (*Polygala myrtifolia*) and outcompete understorey

shrubs. Many of the weeds at Harmers Haven are originally garden weeds that have invaded into the adjacent Reserve.

- Fragmentation of vegetation communities occurs when clearing areas, even for a pathway or widening of an existing path. This often leads to edge effects and an increase in weeds in the newly disturbed areas.
- Opening up the vegetation by the creation of new tracks also reduces habitat for native fauna and opens up areas for invasion by pest animals such as foxes and rabbits.
- A new coastal pathway would also bring increased foot traffic and it is recommended that if a pathway is to be constructed in the area that it is located off the dune system and on the edge of existing inland disused public roads to limit damage to an already fragile and dynamic coastal dune system.

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9 Appendix

Appendix 1: List of Vascular Flora Species for Harmers Haven

Key to Codes Used within Table:

Status:

The symbol '*' denotes that it is considered introduced in Victoria.

The symbol '#' denotes that it is considered introduced within the study area, but indigenous within some other part of Victoria.

VROT codes (from DSE Advisory List of Rare and Threatened Flora):

r Rare in Victoria: rare but not considered otherwise threatened - there are relatively few known populations or the taxon is restricted to a relatively small area.

k Poorly known in Victoria and suspected, but not definitely known to, belong to the one of the categories Presumed Extinct, Endangered, Vulnerable or Rare in Victoria. At present, accurate distribution information is inadequate.

Recorders:

GC Geoff Carr, Ecology Australia. 2003

DF Doug Frood, Pathways Bushland & Environment. 2019.

Scientific Name	Common Name	Conservation Status	GC	DF
<i>Acacia longifolia</i> subsp. <i>sophorae</i>	Coast Wattle		x	x
# <i>Acacia longifolia</i> subsp. <i>sophorae</i> X # <i>A. floribunda</i>	Hybrid Wattle		x	
# <i>Acacia verticillata</i> subsp. <i>ovoidea</i>	Creeping Prickly Moses		x	
<i>Acacia verticillata</i> subsp. <i>verticillata</i>	Prickly Moses		x	
<i>Acaena novae-zelandiae</i>	Bidgee-widgee		x	x
* <i>Acetosella vulgaris</i>	Sheep Sorrel		x	
<i>Acrotriche serrulata</i>	Honey-pots		x	
<i>Actites megalocarpus</i>	Dune Thistle		x	x
* <i>Agapanthus praecox</i> subsp. <i>orientalis</i>	Agapanthus		x	
* <i>Aira</i> sp.	Hair-grass		x	
* <i>Allium triquetrum</i>	Angled Onion		x	x
<i>Allocasuarina littoralis</i>	Black Sheoak		x	
<i>Allocasuarina paludosa</i>	Scrub Sheoak		x	
<i>Allocasuarina verticillata</i>	Drooping Sheak			x
* <i>Aloe arborescens</i>	Tree Aloe		x	
<i>Alyxia buxifolia</i>	Sea Box		x	
* <i>Amaryllis belladonna</i>	Belladonna Lily		x	
* <i>Ammophila arenaria</i>	Marram Grass		x	x
* <i>Anagalis arvensis</i>	Scarlet Pimpernel		x	x
<i>Anthosachne scabra</i>	Common Wheat-grass		x	
* <i>Anthoxanthum odoratum</i>	Sweet Vernal-grass		x	
<i>Apalochlamys spectabilis</i>	Showy Cassinia		x	
* <i>Aphanes</i> sp.	Piert			x
<i>Apium prostratum</i> var. <i>filiforme</i>	Sea Celery		x	x
<i>Apodasmia brownii</i>	Coarse Twine-rush		x	x
* <i>Arctotheca calendula</i>	Cape Weed		x	x
* <i>Arctotis stoechadifolia</i>	White Arctotis		x	
* <i>Artemisia arborescens</i>	Silver Wormwood		x	

Scientific Name	Common Name	Conservation Status	GC	DF
* <i>Arum italicum</i> subsp. <i>italicum</i>	Italian Cuckoo-pint		x	
* <i>Asparagus asparagoides</i>	Bridal Creeper			x
<i>Asperula conferta</i>	Common Woodruff			x
* <i>Aster subulatus</i>	Aster-weed		x	
<i>Astroloma humifusum</i>	Cranberry Heath		x	
* <i>Atriplex prostrata</i>	Hastate Orache		x	
<i>Austrostipa flavescens</i>	Coast Spear-grass		x	
<i>Austrostipa</i> spp.	Spear Grass		x	
<i>Austrostipa stipoides</i>	Prickly Spear-grass		x	x
<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	Coast Banksia		x	x
<i>Banksia marginata</i>	Silver Banksia		x	x
<i>Baumea acuta</i>	Pale Twig-sedge		x	
<i>Baumea juncea</i>	Bare Twig-sedge		x	
* <i>Bellis perennis</i>	English Daisy			x
<i>Billardiera mutabilis</i>	Common Apple-berry		x	
<i>Bossiaea prostrata</i>	Creeping Bossiaea		x	
<i>Brachyscome graminea</i>	Grass Daisy		x	
* <i>Briza maxima</i>	Large Quaking-grass			x
* <i>Briza minor</i>	Lesser Quaking-grass		x	
* <i>Bromus catharticus</i> var. <i>catharticus</i>	Prairie Grass		x	
<i>Burchardia umbellata</i>	Milkmaids		x	
* <i>Cakile maritima</i> subsp. <i>maritima</i>	Sea Rocket		x	x
<i>Caladenia latifolia</i>	Pink Fairies		x	x
* <i>Callitriche brutia</i> subsp. <i>brutia</i>	Thread Water-starwort		x	
<i>Calystegia sepium</i>	Large Bindweed		x	
* <i>Cardamine hirsuta</i>	Common Bitter-cress			
* <i>Carduus</i> spp.	Slender Thistle		x	
<i>Carex appressa</i>	Tall Sedge		x	
<i>Carex</i> sp.	Sedge			x
* <i>Carpobrotus edulis</i>	Hottentot Fig		x	
<i>Carpobrotus rossii</i>	Karkalla		x	x
<i>Cassytha glabella</i>	Slender Dodder-laurel		x	
<i>Cassytha melantha</i>	Coarse Dodder-laurel		x	x
<i>Cassytha pubescens</i> s.s.	Downy Dodder-laurel		x	x
* <i>Cenchrus clandestinus</i>	Kikuyu		x	x
* <i>Centaurium erythraea</i>	Common Centaury		x	
* <i>Cerastium glomeratum</i>	Sticky Mouse-ear Chickweed		x	x
* <i>Cerastium</i> sp.	Mouse-ear Chickweed		x	x
* <i>Chasmanthe floribunda</i>	African Cornflag		x	
* <i>Chenopodium murale</i>	Sowbane		x	
* <i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	African Boneseed		x	x
* <i>Cirsium vulgare</i>	Spear Thistle		x	x
<i>Clematis microphylla</i>	Small-leaved Clematis		x	x
<i>Comesperma volubile</i>	Love Creeper		x	

Scientific Name	Common Name	Conservation Status	GC	DF
*Coprosma repens	Mirror Bush		x	x
*Cordyline australis	New Zealand Cabbage-tree		x	x
Correa alba var. alba	White Correa		x	x
*Cortaderia selloana	Pampas Grass		x	
Cotula australis	Common Cotula		x	
*Cotula coronopifolia	Water Buttons		x	x
*Crassula decumbens	Spreading Crassula		x	x
*Crassula multicava susp. multicava	Shade Crassula		x	x
*Crassula natans var. minus	Water Crassula		x	x
Crassula sieberiana	Sieber Crassula		x	
*Crocasmia X crocosmiiflora	Montbretia		x	
*Cynodon dactylon var. dactylon	Couch		x	
Cynoglossum australe	Australian Hound's-tongue		x	x
*Cynosurus echinatus	Rough Dog's-tail		x	x
*Dactylis glomerata	Cocksfoot		x	x
Daucus glochidiatus	Australian Carrot		x	
*Delairea odorata	Cape Ivy		x	
Deyeuxia quadriseta	Reed Bent-grass		x	
Deyeuxia sp.	Bent-grass		x	
Dianella brevicaulis	Small-flower Flax-lily		x	x
Dianella revoluta var. revoluta s.l.	Black-anther Flax-lily		x	x
Dichondra repens	Kidney-weed		x	x
*Dimorphotheca fruticosa	Trailing African Daisy		x	
Dipogon lignosus	Common Dipogon			x
Disphyma crassifolium subsp. clavellatum	Rounded Noon-flower		x	x
Distichlis distichophylla	Australian Salt-grass		x	
*Dittrichia graveolens	Stinkwort		x	
*Dorotheanthus bellidiformis	Livingstone Daisy		x	
*Ehrharta erecta	Panic Veldt-grass		x	x
Ehrharta longiflora	Annual Veldt-grass		x	x
Eleocharis acuta	Common Spike-sedge		x	
Empodisma minus	Spreading Rope-rush		x	
Epilobium billardierianum subsp. billardierianum	Smooth Willow-herb		x	
Eragrostis brownii	Common Love-grass		x	
*Erigeron primulifolius	Rough Conyza		x	
*Erigeron sumatrensis	Tall Fleabane		x	x
Eucalyptus ovata subsp. ovata	Swamp Gum		x	x
Eucalyptus viminalis	Manna-gum			x
Eucalyptus viminalis subsp. pryoriana	Coast Manna-gum		x	
Euchiton involucratus	Common Cudweed		x	
*Euphorbia paralias	Sea Spurge		x	x
Euphorbia peplus	Petty Spurge			x
Exocarpos syrticola	Coast Ballart	r	x	

Scientific Name	Common Name	Conservation Status	GC	DF
*Festuca rubra s.l.	Red Fescue		x	
Ficinia nodosa	Knobby Club-sedge		x	x
*Freesia alba x Freesia leichtlinii	Freesia hybrid		x	x
*Fumaria muralis subsp. muralis	Wall Fumitory			x
Gahnia radula	Thatch Saw-sedge			x
Gahnia trifida	Coast Saw-sedge		x	
*Galium aparine	Cleavers		x	x
*Galium murale	Small Goosegrass		x	
*Gamochaeta purpurea	Purple Cudweed		x	
*Gazania linearis	Gazania		x	
*Geranium dissectum	Cut-leaf Crane's-bill		x	x
*Geranium molle	Dove's Foot		x	x
Geranium potentilloides	Soft Crane's-bill			x
Geranium spp.	Crane's-bill		x	
Gonocarpus tetragynus	Common Raspwort		x	
Goodenia lanata	Trailing Goodenia		x	
Goodenia ovata	Hop Goodenia		x	
*Hakea drupacea	Sweet Hakea		x	x
Hakea nodosa	Yellow Hakea		x	
*Helminthotheca echioides	Ox-tongue		x	x
Hemarthria uncinata var. uncinata	Mat Grass		x	
Hibbertia sericea	Silky Guinea-flower		x	
*Hirschfeldia incana	Buchan Weed		x	
*Holcus lanatus	Yorkshire Fog		x	x
Hydrocotyle hirta	Hairy Pennywort		x	
Hydrocotyle laxiflora	Stinking Pennywort		x	
Hydrocotyle sibthorpioides	Shining Pennywort		x	
Hydrocotyle tripartita	Slender Pennywort		x	
*Hypochaeris glabra	Smooth Cat's-ear		x	
*Hypochaeris radicata	Flatweed		x	x
Hypolepis spp.	Ground Fern		x	
Imperata cylindrica	Blady Grass		x	
Isolepis cernua	Nodding Club-sedge			x
Isolepis fluitans	Floating Club-sedge			x
Isolepis inundata	Swamp Club-sedge		x	
Isolepis marginata	Little Club-sedge		x	
Juncus articulatus subsp. articulatus	Jointed Rush		x	
Juncus bufonius	Toad Rush			x
Juncus kraussii subsp. australiensis	Sea Rush		x	x
Juncus pallidus	Pale Rush		x	x
Juncus pauciflorus	Loose-flower Rush		x	
Juncus planifolius	Broad-leaf Rush		x	x
Juncus procerus	Tall Rush		x	
Kennedia prostrata	Running Postman		x	
*Kniphofia uvaria	Red-hot Poker		x	

Scientific Name	Common Name	Conservation Status	GC	DF
*Lachnagrostis billardierei subsp. billardierei	Coast Blown-grass		x	
*Lachnagrostis filiformis s.l.	Common Blown-grass		x	
Lagenophora stipitata	Common Bottle-daisy		x	x
*Lagurus ovatus	Hare's-tail Grass		x	x
Laphangium luteoalbum	Jersey Cudweed		x	
Lemna disperma	Common Duckweed			x
*Leontodon taraxacoides subsp. taraxacoides	Hairy Hawkbit		x	x
*Lepidium didymum	Lesser Swine-cress		x	
Lepidosperma concavum	Sandhill Sword-sedge		x	x
Lepidosperma gladiatum	Coast Sword-sedge		x	x
Lepidosperma gunnii	Slender Sword-sedge		x	
Lepidosperma laterale var. majus	Variable Sword-sedge		x	
Lepidosperma longitudinale	Pithy Sword-sedge		x	x
Leptinella reptans s.s.	Creeping Cotula		x	
Leptocarpus tenax	Slender Twine-rush			x
Leptospermum continentale	Prickly Tea-tree		x	x
Leptospermum laevigatum	Coast Tea-tree		x	x
Leptospermum lanigerum	Woolly Tea-tree		x	
Leptospermum scoparium	Manuka		x	
*Leucanthemum X superbum	Shasta Daisy		x	
Leucophyta brownii	Cushion Bush		x	x
Leucopogon australis	Spike Beard-heath		x	
Leucopogon parviflorus	Coast Beard-heath		x	x
Lobelia anceps	Angled Lobelia		x	
Lobelia irrigua	Salt Pratia		x	
*Lolium perenne	Pwerennial Rye-grass			x
Lomandra filiformis subsp. coriacea	Wattle Mat-rush		x	
Lomandra longifolia subsp. longifolia	Spiny-headed Mat-rush		x	x
*Lonicera japonica	Japanese Honeysuckle		x	
Lotus australis var. australis	Austral Trefoil	k	x	
*Lotus corniculatus var. corniculatus	Bird's-foot Trefoil		x	x
*Lunaria annua	Honesty		x	
Luzula meridionalis var. flaccida	Common Woodrush		x	
*Lycium ferocissimum	African Box-thorn		x	
*Malva dendromorpha	Tree Mallow		x	
*Malva parviflora	Small-flower Mallow		x	
*Medicago polymorpha	Burr Medic		x	x
Melaleuca ericifolia	Swamp Paperbark		x	x
Melaleuca squarrosa	Scented Paperbark		x	
*Melilotus sp.	Melilot			x
Microlaena stipoides var. stipoides	Weeping Grass		x	
Montia australasica	White Purslane			x
Muehlenbeckia adpressa	Climbing Lignum		x	x
Myoporum insulare	Common Boobialla		x	x
*Myosotis sylvatica	Wood Forget-me-not		x	

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*Narcissus spp.	Narcissus			x
Olearia axillaris	Coast Daisy-bush		x	x
Olearia lirata	Snowy Daisy-bush		x	
Olearia phlogopappa var. phlogopappa	Dusty Daisy-bush		x	x
Olearia ramulosa	Twiggy Daisy-bush		x	
Oxalis exilis	Shady Wood-sorrel		x	
*Oxalis incarnata	Pale Wood-sorrel		x	
*Oxalis pes-caprae	Soursob		x	x
Oxalis rubens	Dune Wood-sorrel		x	x
Ozothamnus rosmarinifolius	Rosemary Everlasting		x	
Ozothamnus turbinatus	Coast Everlasting		x	x
*Paraserianthes lophantha subsp. lophantha	Cape Wattle		x	
Parietaria debilis s.s.	Shade Pellitory		x	x
*Paspalum dilatatum	Paspalum		x	
*Paspalum distichum	Water Couch		x	
Patersonia fragilis	Short Purple-flag		x	
Patersonia occidentalis var. occidentalis	Long Purple-flag		x	
Pelargonium australe	Austral Stork's-bill		x	
*Pelargonium X domesticum	Regal Pelargonium		x	
Persoonia juniperina	Prickly Geebung		x	
*Phalaris aquatica	Toowoomba Canary-grass		x	
Phragmites australis	Common Reed		x	x
Pimelea humilis	Common Rice-flower		x	
#Pittosporum undulatum	Sweet Pittosporum		x	x
*Plantago coronopus	Buck's-horn Plantain		x	x
*Plantago lanceolata	Ribwort		x	x
Platylobium obtusangulum	Common Flat-pea		x	
*Poa annua	Annual Meadow-grass		x	x
Poa clelandii	Noah's Ark		x	x
Poa labillardierei var. labillardierei	Common Tussock-grass		x	x
Poa poiformis var. poiformis	Coast Tussock-grass		x	x
Poa poiformis var. ramifer	Dune Poa	r	x	x
Poa sp.	Tussock-grass		x	
Poa sp. aff. tenera	Slender Tussock-grass		x	x
*Polycarpon tetraphyllum	Four-leaved Allseed		x	x
*Polygala myrtifolia	Myrtle-leaf Milkwort		x	x
*Polypogon monspeliensis	Annual Beard-grass		x	
Pomaderris oraria subsp. oraria	Bassian Pomaderris	r	x	x
Poranthera microphylla s.l.	Small Poranthera		x	
*Psoralea pinnata	Blue Psoralea		x	
Pteridium esculentum subsp. esculentum	Austral Bracken		x	x
Pteris tremula	Tender Brake		x	
Pultenaea stricta	Rigid Bush-pea		x	
Ranunculus inundatus	River Buttercup		x	

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Ranunculus pumilio	Ferny Small-flower Buttercup		x	
Ranunculus sessiliflorus	Annual Buttercup			x
Ranunculus sp.	Buttercup		x	
*Ranunculus sp.	Buttercup			x
Rhagodia candolleana subsp. candolleana	Seaberry Saltbush		x	x
*Romulea rosea	Onion Grass			x
*Rubus anglocandicans	Common Blackberry			x
Rubus parvifolius	Small-leaf Bramble			x
*Rubus sp.	Blackberry		x	
Rumex brownii	Slender Dock		x	x
*Rumex conglomeratus	Clustered Dock		x	x
*Rumex crispus	Curled Dock		x	
*Rumex pulcher subsp. pulcher	Fiddle Dock			x
Rytidosperma geniculatum	Kneed Wallaby-grass		x	
Rytidosperma penicillatum	Weeping Wallaby-grass		x	
Rytidosperma pilosum	Velvet Wallaby-grass		x	
Rytidosperma racemosum var. racemosum	Slender Wallaby-grass		x	
Rytidosperma setaceum var. setaceum	Bristly Wallaby-grass		x	
Rytidosperma spp.	Wallaby-grass		x	
Sambucus gaudichaudiana	White Elderberry		x	
Samolus repens	Creeping Brookweed		x	x
Salicornia quinqueflora subsp. tasmanica	Beaded Glasswort	k	x	x
Schoenus apogon	Common Bog-sedge		x	
Schoenus nitens	Shiny Bog-sedge		x	x
Scutellaria humilis	Dwarf Skullcap		x	
Selliera radicans	Shiny Swamp-mat		x	x
*Senecio angulatus	Climbing Groundsel		x	
Senecio biserratus	Jagged Fireweed		x	
*Senecio elegans	Purple Groundsel		x	x
Senecio glomeratus	Annual Fireweed		x	x
*Senecio jacobaea	Ragwort		x	
Senecio minimus	Shrubby Fireweed		x	x
Senecio odoratus	Scented Groundsel		x	x
Senecio pinnatifolius	Variable Groundsel		x	x
Senecio pinnatifolius var. lanceolatus	Lance-leaf Groundsel			x
Senecio spp.	Groundsel		x	
Senecio squarrosus s.l.	Leafy Fireweed		x	
Solanum americanum	Glossy Nightshade		x	
Solanum aviculare	Kangaroo Apple		x	x
Solanum laciniatum	Large Kangaroo Apple		x	
*Solanum nigrum s.s.	Black Nightshade		x	x
*Solanum tuberosum	Potato		x	
Solenogyne dominii	Smooth Solenogyne		x	
*Sonchus asper subsp. asper	Rough Sow-thistle		x	x

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<i>Sonchus hydrophilus</i>	Native Sow-thistle		x	x
* <i>Sonchus oleraceus</i>	Common Sow-thistle		x	x
<i>Spinifex sericeus</i>	Hairy Spinifex		x	x
* <i>Sporobolus africanus</i>	Rat-tail Grass		x	
<i>Sporobolus virginicus</i>	Salt Couch			x
<i>Stackhousia monogyna</i> s.l.	Creamy Stackhousia		x	
* <i>Stellaria media</i>	Chickweed		x	x
* <i>Stellaria pallida</i>	Lesser Chickweed			x
* <i>Stenotaphrum secundatum</i>	Buffalo Grass		x	
<i>Tetragonia implexicoma</i>	Bower Spinach		x	x
<i>Themeda triandra</i>	Kangaroo Grass		x	
* <i>Thinopyrum junceiforme</i>	Sea Wheat-grass		x	x
* <i>Tribolium acutiflorum</i>	Desmazeria		x	
* <i>Trifolium dubium</i>	Suckling Clover		x	
* <i>Trifolium fragiferum</i> var. <i>fragiferum</i>	Strawberry Clover		x	
* <i>Trifolium glomeratum</i>	Cluster Clover			x
* <i>Trifolium repens</i> var. <i>repens</i>	White Clover		x	x
<i>Triglochin striata</i>	Streaked Arrowgrass		x	x
<i>Triglochin striata</i> (flat leaf form)	Streaked Arrowgrass			x
<i>Typha domingensis</i>	Narrow-leaf Cumbungi		x	x
<i>Urtica incisa</i>	Scrub Nettle		x	x
<i>Veronica gracilis</i>	Slender Speedwell		x	x
<i>Veronica plebeia</i>	Trailing Speedwell			x
* <i>Vicia sativa</i> subsp. <i>sativa</i>	Common Vetch		x	x
* <i>Vicia</i> sp.	Vetch		x	
<i>Villarsia exaltata</i>	Erect Marsh-flower		x	
<i>Villarsia reniformis</i>	Running Marsh-flower		x	
<i>Viola hederacea</i> sensu Willis (1972)	Ivy-leaf Violet		x	
* <i>Viola odorata</i>	Common Violet			x
* <i>Vulpia bromoides</i>	Squirrel-tail Fescue		x	x
* <i>Vulpia</i> spp.	Fescue		x	
<i>Xanthorrhoea minor</i> subsp. <i>lutea</i>	Small Grass-tree		x	
* <i>Zantedeschia aethiopica</i>	White Arum-lily		x	x
* <i>Zoysia macrantha</i>	Prickly Couch		x	x