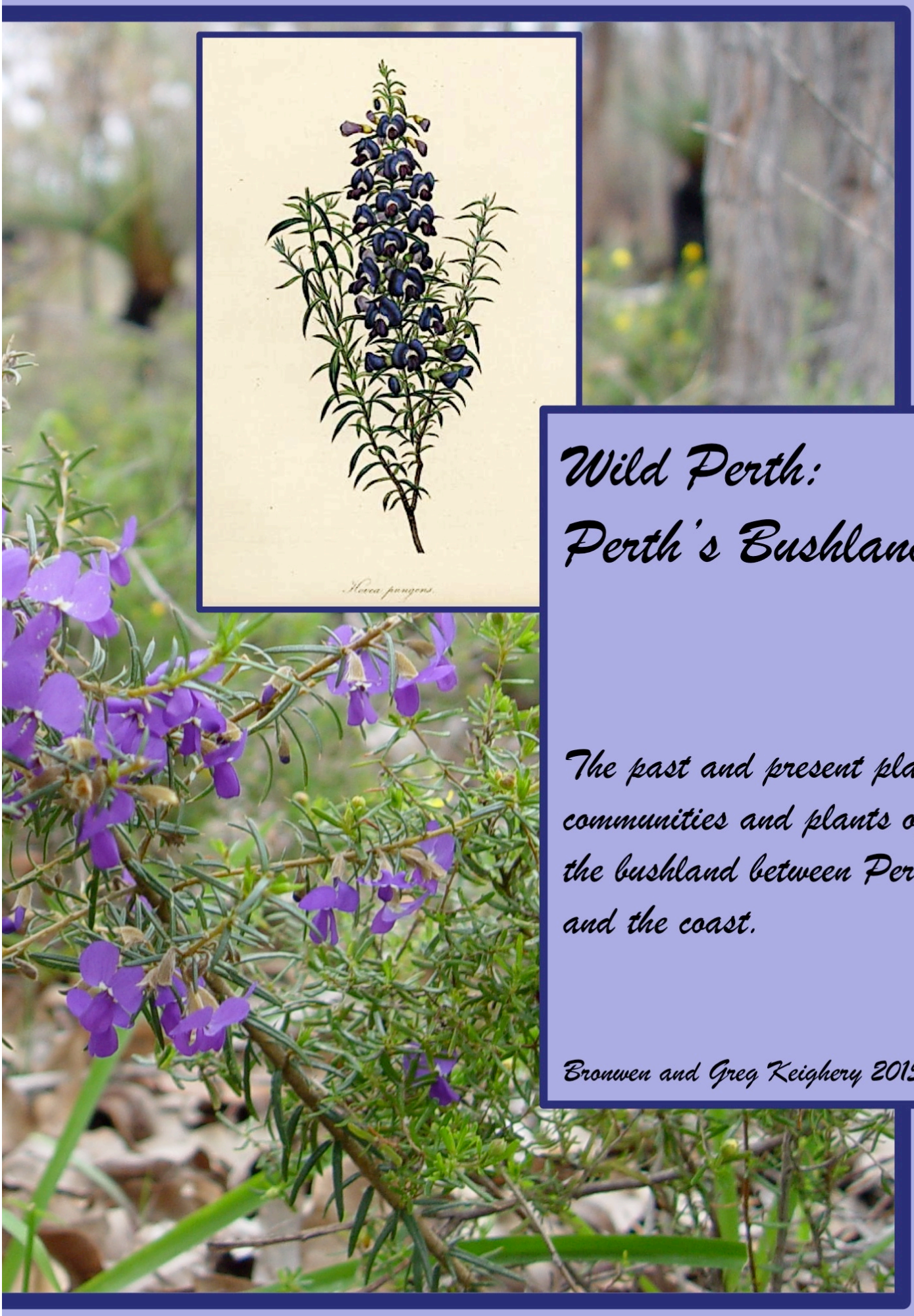


# Wild Perth: Perth's Bushland

The past and present plant communities and plants of the bushland between Perth and the coast.

Bronwen and Greg Keighery 2015

# Wild Perth: Perth's Bushland Plants

## The past and present plant communities and plants of the bushland between Perth and the coast.

Bronwen Keighery
Agonis Botanical Consulting
224 Hamersley Road, Subiaco, Western Australia 6008
Phone 9381 4062
and
Greg Keighery
Senior Principal Research Scientist
Science and Conservation Division
Keiran MacNamara Conservation Science Centre
17 Dick Perry Ave., Kensington, 6151
Dept. Parks and Wildlife, Locked Bag 104,
Bentley Delivery Centre, 6983.
Phone 92199043/0417957450

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Back cover: *Hovea pungens* (Devil's Pins) in bushland in Yalgorup National Park.

**CONTENTS**

**TABLES**



**FIGURES**


The cover illustrations are of *Hovea pungens* (Devil's Pins): the background is in bushland in Yalgorup National Park; and the insert is an in an early print (c1840) by Joseph Paxton. All photos are by Bronwen Keighery unless indicated otherwise.

## SUMMARY

Perth's Bushland from Perth on the Swan Estuary shores to the Indian Ocean between Swanbourne and the estuary mouth at Fremantle Harbour retains highly significant patches of native vegetation. Fortunately between Perth and Floreat/Swanbourne the bushland is associated with a mostly intact landscape. South from Swanbourne to the Harbour and along the Estuary the landscape has been mostly altered. However enough patches of native vegetation remain here and on the broader Swan Coastal Plain to gain a picture of the landscape, plant communities and flora of Perth's Bushland.

The upland/dryland plant communities of Perth's Bushland are the most intact with shrublands on areas of outcropping Tamala limestone in the Spearwood Dunes and shrublands and forests on the deep sands of the Spearwood and Quindalup Dunes. A number of these communities are considered extinct in Perth's Bushland, being: the shrublands of massive limestone hills and coastal limestone cliffs. Fortunately these communities remain elsewhere on the Plain.

The wetland plant communities of Perth's Bushland are now represented by patches of highly altered native vegetation and are effectively extinct. These included plant communities associated with the estuarine fringing saline and calcareous alluvial wetlands on the Swan Estuary, freshwater alluvial wetlands and the communities associated with the basin wetlands. While some of these occur else where on the Plain the estuarine associated freshwater, saline and calcareous alluvial wetlands are extinct on the Swan Estuary and we are not certain that they are replicated elsewhere.

Perth's Bushland with more than 680 vascular plant species supported a diverse flora. More than 200 have historical, genetic or geographical significance. This flora list was compiled from the literature, herbaria and survey by the authors. Around 20% of this flora is, globally, regionally or locally extinct. These species are associated with the grossly altered or extinct plant communities or associated habitats.

Perth's Bushland is also significant for the 20 type collections that originate from the area. These include: *Acacia pulchella* var. *glaberrima, Acacia rostellifera, Acacia truncata, Amyema preissii, Baumea preissii, Drosera porrecta, Gnephosis angianthoides, Grevillea preissii*, *Lomandra hermaphrodita, Lomandra maritima, Myriophyllum tillaeoides, Orthrosanthus laxus,* ***Picris compacta****, Poranthera moorokatta,* ***Rhodanthe chlorocephala*** **subsp.** ***rosea*** **var.** ***nigropapposum****, Stenopetalum gracile, Stylidium bulbiferum, Synaphea spinulosa, Tetraria octandra* and *Xerochrysum macranthum*. Eighteen still occur in Western Australia, four are locally extinct (underlined above) and two are globally extinct (**bold** above).

The Swan River Estuary with its estuarine waters, water logged flats, and freshwater springs was the spiritual focus of the Nyungar group who lived in the area for thousands of years before the coming of the Europeans. This same area was the focus of early European exploration and the initial European settlement of Western Australia. It is fortunate that we have retained so much of the original landscape, plant communities and flora of the area. Current and future generations now have the task of managing these unique natural areas so they continue to flourish. Bushland areas need particular management, relevant to the original plant communities. Information on the communities of the area and the flora in this paper provides guidance to this management and to the use of appropriate species and provenance for this management as well planting of local species in revegetated areas.

# 1 INTRODUCTION

The Swan River Estuary (Figure 1) with its estuarine waters, water logged flats, and freshwater springs have been the spiritual focus of the Nyungar group who lived in the area for thousands of years. The flora and fauna of the estuarine and fresh water bodies, the vegetated wetlands, sandy flats and rises and limestone hills provided all the necessary food, shelter and materials these hunter-gatherers required in the dry season (summer/autumn) each year. This same area was the focus of early European exploration and the initial European settlement of Western Australia.

This study looks at the past and present vegetation and flora of Perth's central suburbs north of the Swan Estuary. This area retains many significant remnants of native vegetation both along the estuary, and north of the estuary. Information gathered in the last 50 years by the authors in the field and from the literature is used to describe the current flora and vegetation of the area and the pre-European vegetation and flora. A number of vegetation units/habitats are no longer considered to be extant in the area. Work on this report began in 2011 with a presentation by Greg Keighery on the flora of Perth's Western Suburbs for the Western Bushland Forum (2nd April, 2011 at the Bold Park Ecology Centre).

The aim of this study is to describe the past and present natural heritage of the area to better inform all who have a deep cultural attachment with this natural heritage; and guide managers of the area in maintaining, revegetating and restoring the natural areas today. The study should join other studies (see Bibliography, section 11) in demonstrating to planners and decision makers of the significance and values of all remaining native vegetation in the study area.

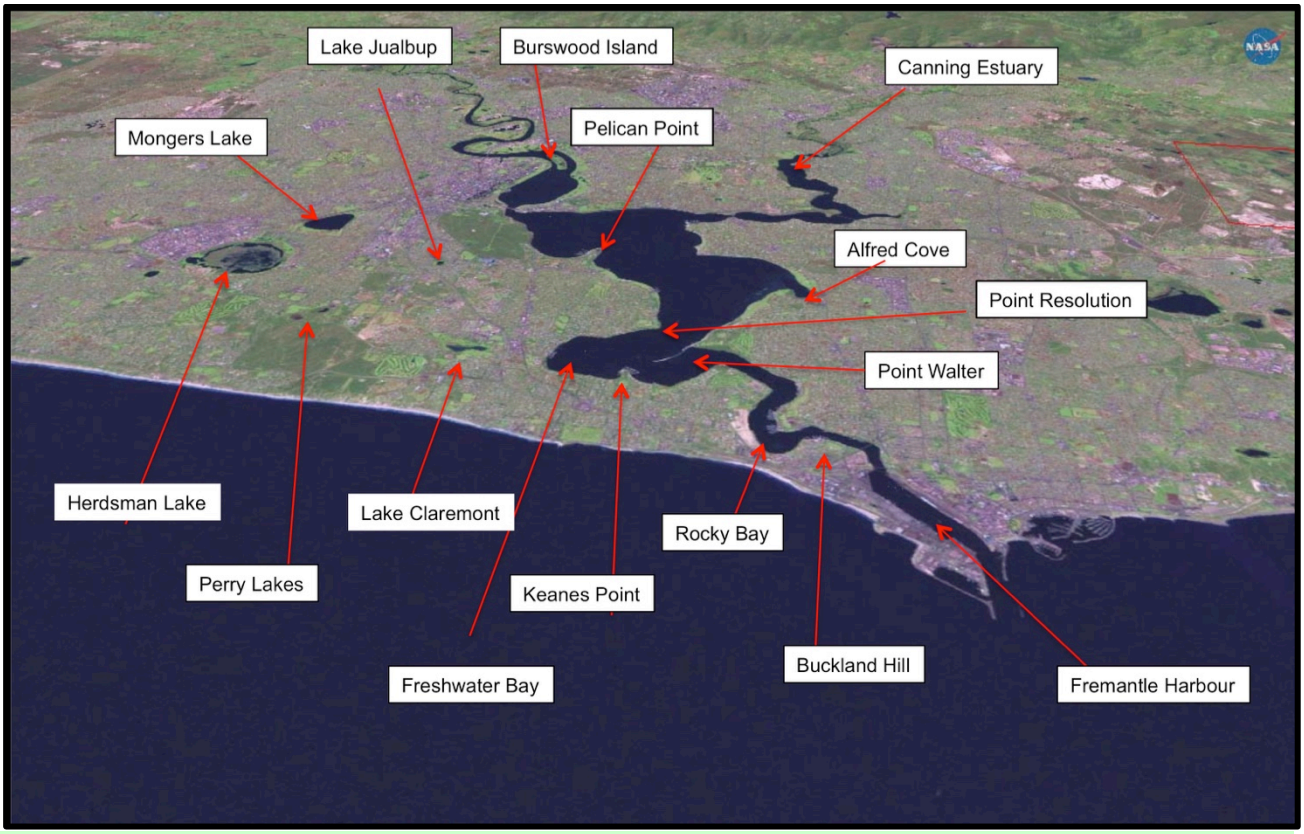



**Figure 1: The Swan Estuary and its surrounds**
The principal natural geographical features are labelled in this oblique satellite picture of the Swan Coastal Plain around Perth. Bushland areas are olive green, grassed areas bright green and built areas speckled. Figure 3 shows the vegetation density in the early 2000s. This web sourced-photo pre-dates the revegetation of Lake Claremont and the housing at Minim Cove.

## 2 STUDY AREA

Past and present natural areas from Perth on the Swan Estuary, west to the Indian Ocean between Scarborough and Fremantle's North Mole, and back to Perth along the estuary shores are the subjects of this study (hereafter referred to as Perth's Bushland). This area includes: the Cities of Claremont, Nedlands and Subiaco, the Towns of Cambridge, Cottesloe and Mosman Park and the Shire of Peppermint Grove (Figure 2); and the adjacent areas of Kings Park and Perth City, as well as North Fremantle and Herdsman Lake (see Figures 1 and 2)

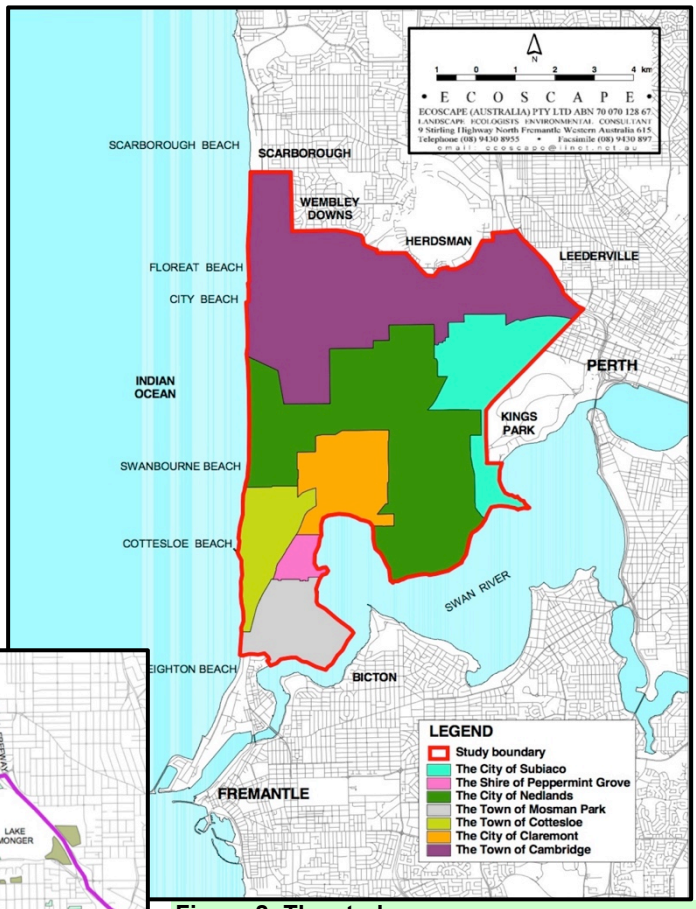



**Figure 2: The study area**
The area covered in this study includes: the seven local government areas shown on the map (after Ecoscape 2002); and Kings Park, North Fremantle and Herdsman Lake.

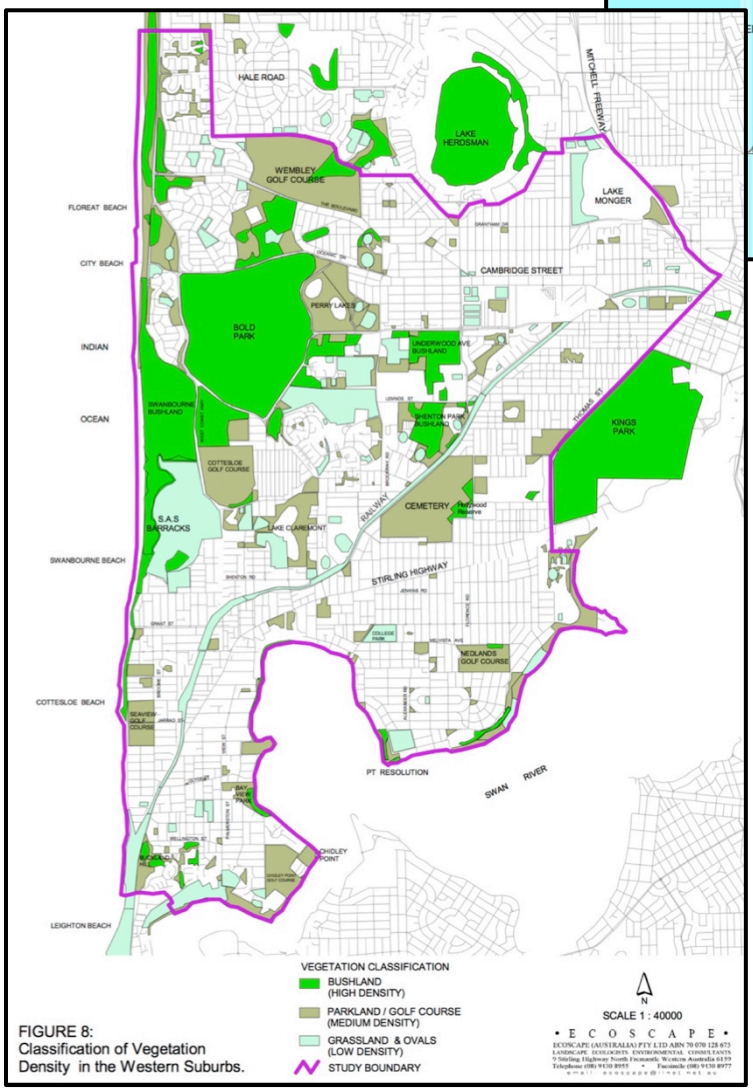



FIGURE 8:
Classification of Vegetation Density in the Western Suburbs.

**Figure 3: Perth's Bushland and other green areas**
A map of the Perth's Bushland showing areas with three classes of vegetation' (Figure 8 from Ecoscape 2002).
The vegetation is placed in three classes as shown on the map and described below.

- Bushland - bright green: trees, shrubs, grasses, herbs and sedges.
- Parkland - light brown: trees and shrubs.
- Grassland – aqua: mostly grass, but may have scattered shrubs and trees.

Since this map was drawn bushland areas have been lost from the Shenton College (east of Shenton Bushland) and patches between Underwood Avenue Bushland and Shenton Bushland. Individual native trees and shrubs continue to be lost. The most recent observed by the author's was a mature Tuart (*Eucalyptus gomphocephala*) on the ocean side of Karrakatta Station.

# 3 CATALOGUING THE VEGETATION AND FLORA OF SETTLED AREAS

Western Australia is fortunate that in most places there are remnants of the original pre-European native vegetation. Observations on these areas, together with written and pictorial resources and herbarium specimens, can together be used to compile a list of the native flora of a specific area. This information, together with a knowledge of the native vegetation and flora of the natural region in which the area is located allows interesting aspects of individual species variation and distribution to be described.

## 3.1 Sources

The sources used to compile the descriptions of the past and present native vegetation and flora of Perth's Bushland (sections 6 and 7 and Appendix 1) are outlined below.

- Field Observations – The authors visited most of the native vegetation patches in Perth's Bushland over the last 30 years, and some over the last 55 years. For example from the age of 6 years in the 1960s Bronwen Keighery (nee Banyard) walked through the bushland patch in Figure 4 on her way to school, and led her first guided bushwalk here when she was 10 years old. Observations from this work underlie vegetation and flora reports, and recommendations, made by the authors over the past 30 years.


**Figure 4: A tiny urban bushland remnant**
This bushland is adjacent to the Floreat Primary School. The three bushland plants shown in (b) and (c) were highlighted having been identified by Bronwen from a small wildflower guide. (a) *Banksia* woodland; (b) *Hypocalymma robustum* (Swan River Myrtle), pink shrub in (a); and (c) *Hardenbergia comptoniana* (Native Wisteria) and *Acacia pulchella* (Prickly Moses).

- Literature – Much of the study area has been cleared since Europeans settled in and around Perth (see Box 1, page 23) and a number of historical bushland photographs and early descriptions were sourced for this study (see Box 2, page 25). In addition all known and available vegetation descriptions and flora checklists for reserves and bushland areas on Perth's Bushland were consulted. The key references to extant bushland areas are: *Bush Forever* (Government of Western Australia, 2000) and its sources; *Bush Forever* Reference Sites (see Box 3, page 35); and flora records for Kings Park and Bold Park (Bennett 1995, Keighery *et al*. 1990 and Barrett and Tay 2005). The *Bush Forever* Site descriptions are in Appendix 2.

- Herbaria collections - All records in FloraBase (Department of Parks and Wildlife or DPaW to June 2015) from each Local Government area were checked. This search was supplemented by searches of records by known collectors in the area and recognised localities/geographic names in the study area. More than1500 collections were accessed. Eastern Australian herbaria were checked via the Australian Virtual Herbarium (AVH 2105) for early collections in the area. Resources were not available for visits to Herbaria outside of Western Australia.

## 3.2 Some cautionary notes and data limitations

### 3.2.1 *Accuracy of location declines with age*

One of the issues in dealing with early collections is that many were labelled as Swan River Colony or just Swan River. When these collections were initially mapped in revisions or databases they were given the latitude and longitude of Perth indicating that they occurred in Perth's Bushland. While most of these collections have subsequently had a precise latitude and longitude removed on FloraBase they still appear in many lists, especially of those referring to rare or priority flora. For example Ecoscape (2002), based on dated FloraBase and Rare flora records, lists: *Eucalyptus* x *mundijongensis*, *Lambertia multiflora* var. *darlingensis* and *Schoenus capillifolius* from Perth's Bushland. However these are from 'Swan River' localities and all are only known from localities and habitats on the east of the Swan Coastal Plain.

Some of the collections housed in Eastern Australia Herbaria, accessed via the Australian Virtual Herbarium, may also have retained the general 'Swan River' co-ordinates. For example *Centrolepis inconspicua* Swan, W.V. Fitzgerald, 30-9-1900 (Sydney), an unlikely record for Perth's Bushland.

### 3.2.2 *Collections may be planted*

Planted material is often listed on FloraBase or AVH without an indication that the collection is not native to the area in which it was collected. For example recent surveys of Mosman Park list many cultivated specimens such as *Eucalyptus camaldulensis*. Fortunately most of the labels on the actual collections are either labelled as cultivated, or are obvious cultivars that they can be readily excluded from this list of native flora.

Additional confusion occurs with plantings of Perth's native species beyond their restricted specific habitats. For example Peppermint (*Agonis flexuosa,* Figure 5) and Geraldton Wax (*Chamelaucium uncinatum*, Figure 74) are both found in restricted areas/habitats in Perth's Bushland, as well as being widely planted well beyond their original distribution. Plantings of both species persist, and seed for generations beyond the original plantings. Peppermint can grow rapidly (maturity in 30 years) and the size of the tree is a poor indicator of its status as a weed or local plant.

### 3.2.3 *Material listed as from the Western Suburbs may not have been collected there*

On occasion botanists will grow sterile material to flowering and then preserve and lodge the flowering specimen. Generally most are clearly labelled with original provenance, but mistakes can occur, especially with older collections labels are brief and it is not possible to ascertain if the collections were collected from the area or labelled in the area. For example the collections of *Austrostipa nitida*, *A. variabilis* and *A*. sp. Cairn Hill are highly disjunct, but otherwise all appear to have been collected locally. Several of the older records for Kings Park are also dubious. One remarkable example is a collection of *Rhagodia candolleana* subsp. *candolleana*, which is listed for Claremont, but the specimen upon which the record is based (Claremont, A. Morrison) is stated to be from Melbourne, Victoria.

### 3.2.4 *Native non-local weedy populations may not be distinguished*

Finally some weedy populations of native non-local species can be confusing. For example a record of the garden escape, Maiden Hair Fern (*Adiantum capillus-veneris*) from Peppermint Grove (Reserve 17113) when, this species is native to the Pilbara. This also applies to known weedy populations of *Acacia acuminata*, *Acacia blakelyi*, *Acacia lasiocalyx* and *Allocasuarina huegeliana* from Kings Park and *Acacia*

*pulchella* var. *pulchella* and *Lechenaultia biloba* from Shenton Bushland (Figure 6). These are currently shown as native in FloraBase, but are not listed in Appendix 1. In each case the past activities in the areas account for the presence of the non-local species in the bushland areas. Appendix 4 lists the native non-local weedy species from Perth's Bushland.


**Figure 5: *Agonis flexuosa***
This is a natural tree on the Estuary at Minim Cove flowering in spring.
(a) *Agonis* plant.
(b) *Agonis* flowering branches.
The natural distribution of *Agonis* in Perth is along the northern Swan Estuary banks and in the Quindalup Dunes north and south of Davies Road.

**Figure 6: *Lechenaultia biloba***
A large clonal plant in Shenton Bushland. It is surmised that this single plant that sets no seed was introduced as a seed with gravel. The gravel was used to construct paths when the area was used to house 'aliens' during the war.

### 3.2.5 *Does the location make ecological sense?*

In determining the accuracy of poorly informed listings and/or deletions of flora for a specific area knowledge of the each species growth characteristics and preferred habitats is essential. Some plants are very habitat specific. For example an unusual narrow leafed variant of *Grevillea vestita* from a dryland habitat in Bold Park (typical variant shown in Figure 7a and b) was mistaken for the Declared Rare *Grevillea curviloba* that is only found in a small area on the east of the Plain in wetland habitat (Figure 7c and d).

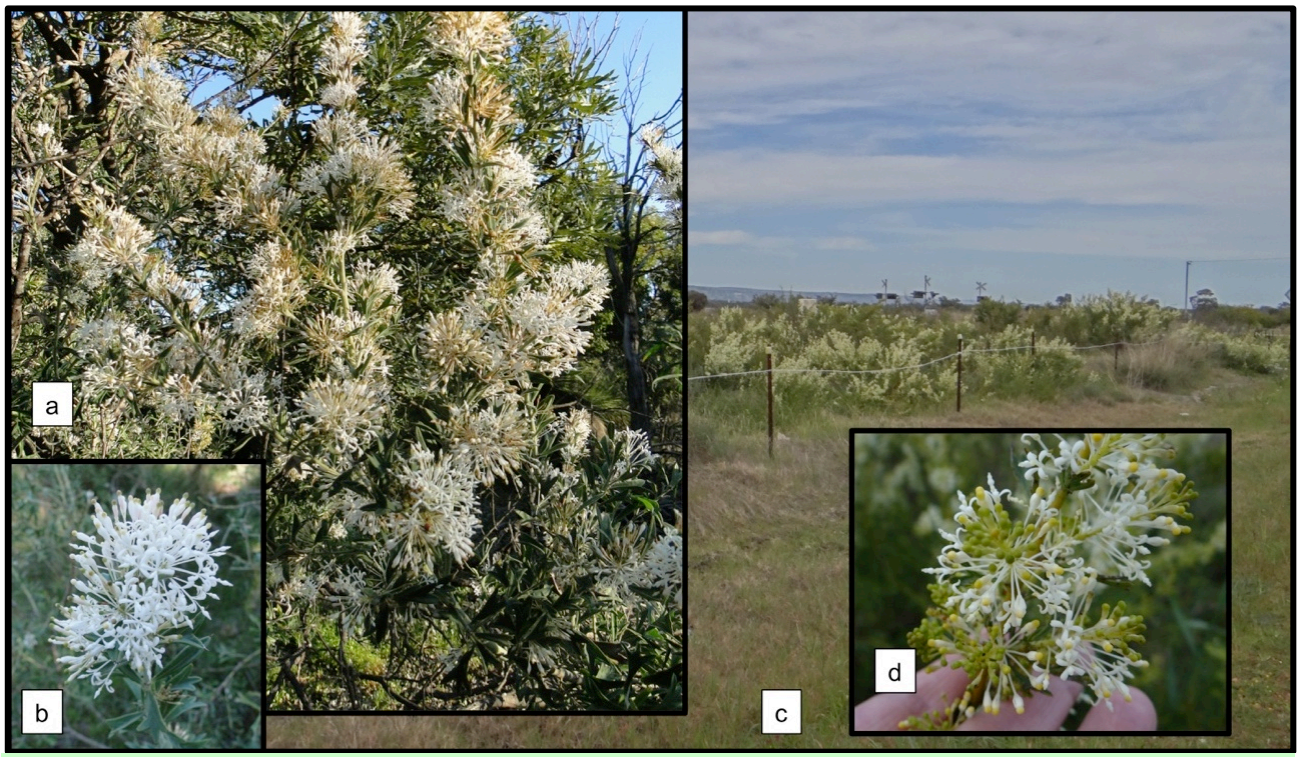



**Figure 7: *Grevillea* species**
(a) A typical upright *Grevillea vestita* plant in Shenton Bushland. Here growing in an upland (dryland) Banksia woodland community. This Grevillea spreads vigorously form an underground stem (rhizome) and establishes well from planted material. This species does vary over its range and material for revegetation/restoration should come from a local source. (b) *Grevillea vestita* flowers. (c) The Declared Rare *Grevillea curviloba* growing naturally near Bullsbrook in a wetland habitat. (d) *Grevillea curviloba* flowers.

## 3.3 The 'final' vegetation descriptions and flora list

### 3.3.1 *Vegetation*

The descriptions of the vegetation associations in Perth's Bushland are closely based on the descriptions in *Bush Forever*. The vegetation descriptions in the *Bush Forever* Site descriptions (Appendix 2) were summarised from all known and accessible information on the vegetation of the Perth Metropolitan Region (PMR) up to 2000. Little additional information has been added since 2000. Examples of the plant communities discussed are illustrated. These examples come from the on line teaching tool 'The Perth Plant Biodiversity Project' designed to explain the *Bush Forever* vegetation and flora information (see Box 3, page 35 and WALGA *et al.* 2006). If the plant community remains extant and accessible in Perth's Bushland examples are from this area. However some of the communities are extinct in Perth's Bushland, or in the case of one not normally accessible, examples come from other accessible localities.

### 3.3.2 *Flora*

The records compiled were critically examined and a list of the flora of the Western Suburbs compiled (Appendix 1). A number of the listed species are discussed as well as comment made on those that were not accepted for the list (section 7). As outlined above both published and unpublished observations by the authors and available literature on the Swan Coastal Plain flora and vegetation informed this process.

The Bibliography lists all written sources, some of which are not directly referenced in this publication.

# 4 NATURAL REGIONS, LANDFORMS AND SOIL – Past and present

## 4.1 Perth's Bushland as part of the Swan Coastal Plain

For the Nyungar people Perth's Bushland was part of their home, the place where they sheltered, obtained food and water, and were spiritually grounded. WA's people today get a glimpse of this spiritual heritage through the stories of the Waugyl and its association with the Swan Estuary. However the Swan Estuary and its surrounding lands to the north and south was different from what we see today (Figures 8 and 9).

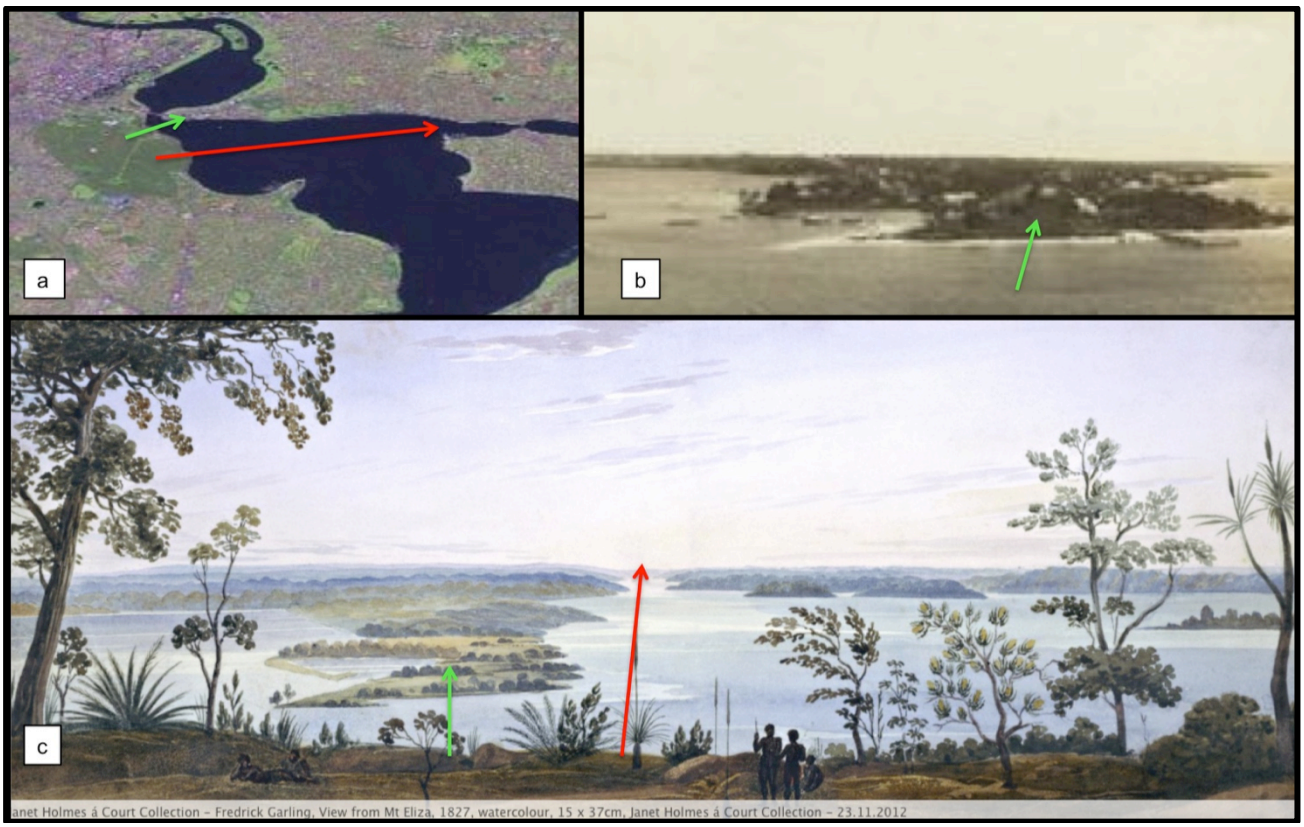



**Figure 8: Early Perth and its surrounds**
(a) A present day satellite image of Perth and the adjacent Estuary.
(b) The view towards South Perth (green arrow) before the Narrows Bridge was built and the South Perth wetlands were filled.
(c) A pre-European watercolour of the view from Kings Park towards South Perth (green arrow) and the Canning Estuary (red arrow). Wooded areas (lumpy green) and wetlands (smooth green) can be seen.

**Figure 9: Bushland on the Swan Coastal Plain from a limestone hill to the coast**
A remaining naturally vegetated transect across Spearwood and Quindalup Dunes from Shire View Hill to Burns Beach. A transect between the estuary and the sea in the study area would have been similar to this.

The Swan Coastal Plain, in which the study area lies, forms its own distinct biogeographic region (bioregions) of the same name (Figure 10). The Swan Coastal Plain (hereafter referred to as SWA or Plain) is one of 56 bioregions recognised Australia wide (DEWHA 2007a). The Plain stretches from Jurien in the north to

Dunsborough in the south, a distance of about 450 kilometres and is between 20-50 kilometres wide. To the west it is bounded by the Indian Ocean, and to the east by several scarps. The eastern boundary between Jurien and Bunbury is the Darling Scarp and the associated Darling Fault; and south of Bunbury by a number of faults associated with the Whicher Scarp (Figure 10).

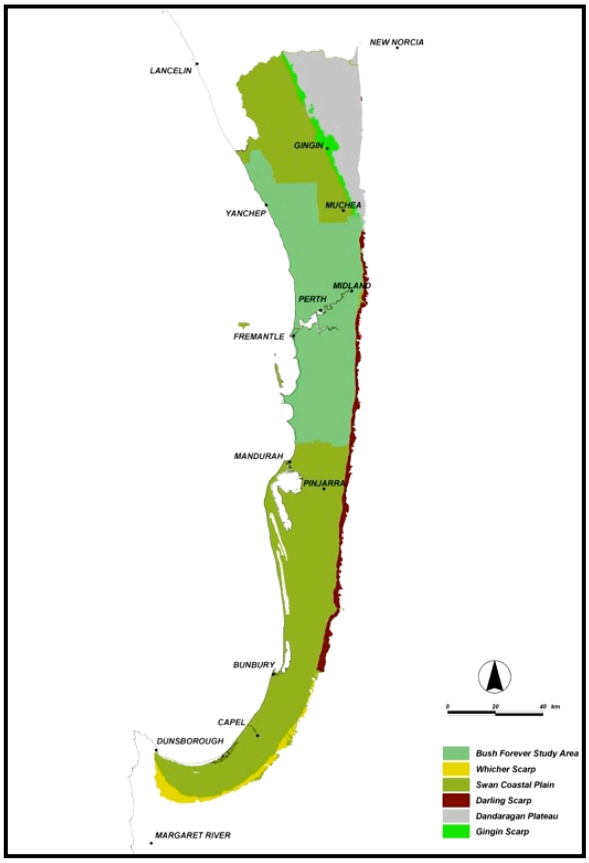



**Figure 10: The southern Swan Coastal Plain Bioregion**
The area shown has been the subject of a number of regional studies of the Swan Coastal Plain vegetation and flora. These studies underpin conservation planning in the bioregion. The SWA bioregion has two subregions: the Dandaragan Plateau (SWA1, grey and bright green) and the Swan Coastal Plain (SWA2, two other greens, the *Bush Forever* study area is distinguished from the rest of the Plain).

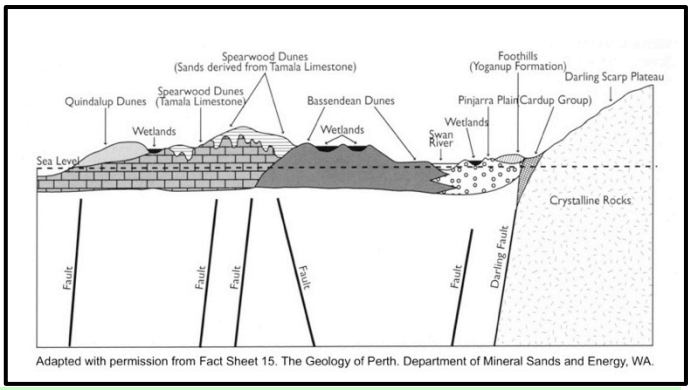



**Figure 11: A typical transect of the landforms of Swan Coastal Plain in the Perth area**

Compared with the Darling Plateau the Swan Coastal Plain is of very recent origin, the soils of the Plain having been laid down in the Pleistocene and Holocene periods from around three million years to the present. The oldest soil landscapes are ancient beach sands on the eastern margin, and the youngest the white beach sands to the west. The entire Plain is characterised by low relief, sandy soils with very low nutrient levels (Macarthur and Bettenay 1960).

The Plain from east to west can be divided into a series of geomorphic elements each with a characteristic suite of soils, generally bearing the same name (Playford *et al*., 1976). From east to west these are: the colluvial and alluvial soils of the Foothills (Ridge Hill Shelf); alluvial soils of the Pinjarra Plain and river valleys; and the wind deposited soils of the Bassendean, Spearwood and Quindalup Dunes (Figures 11 and 12).

### 4.1.1 *Uplands*

Perth's Bushland lies entirely within the wind deposited soils of the Spearwood and Quindalup Dune Systems, made up predominantly of calcareous soils deposited by wave action and moved by wind across the landscape (Figure 12). The Spearwood Dunes are underlain by Tamala Limestone exposed limestone is observed as rocks, pillars and cliffs along the estuary and coast, and hills such as Reabold and Buckland Hill (Figures 13, 14, 18 and 19). The hill slopes, lower hills, swales and flats between them, have light to dark grey sands over yellow sand (rarely orange) above the limestone. The Quindalup Dunes sands are white (Figure 15) and, at times overlay areas of Tamala Limestone and Spearwood Sands. In Perth's Bushland the Quindalup Dunes are characterised by linear dunes with broad to narrow swales and sand sheets between the dunes. The dunes, swales and sheets are typically white sands.

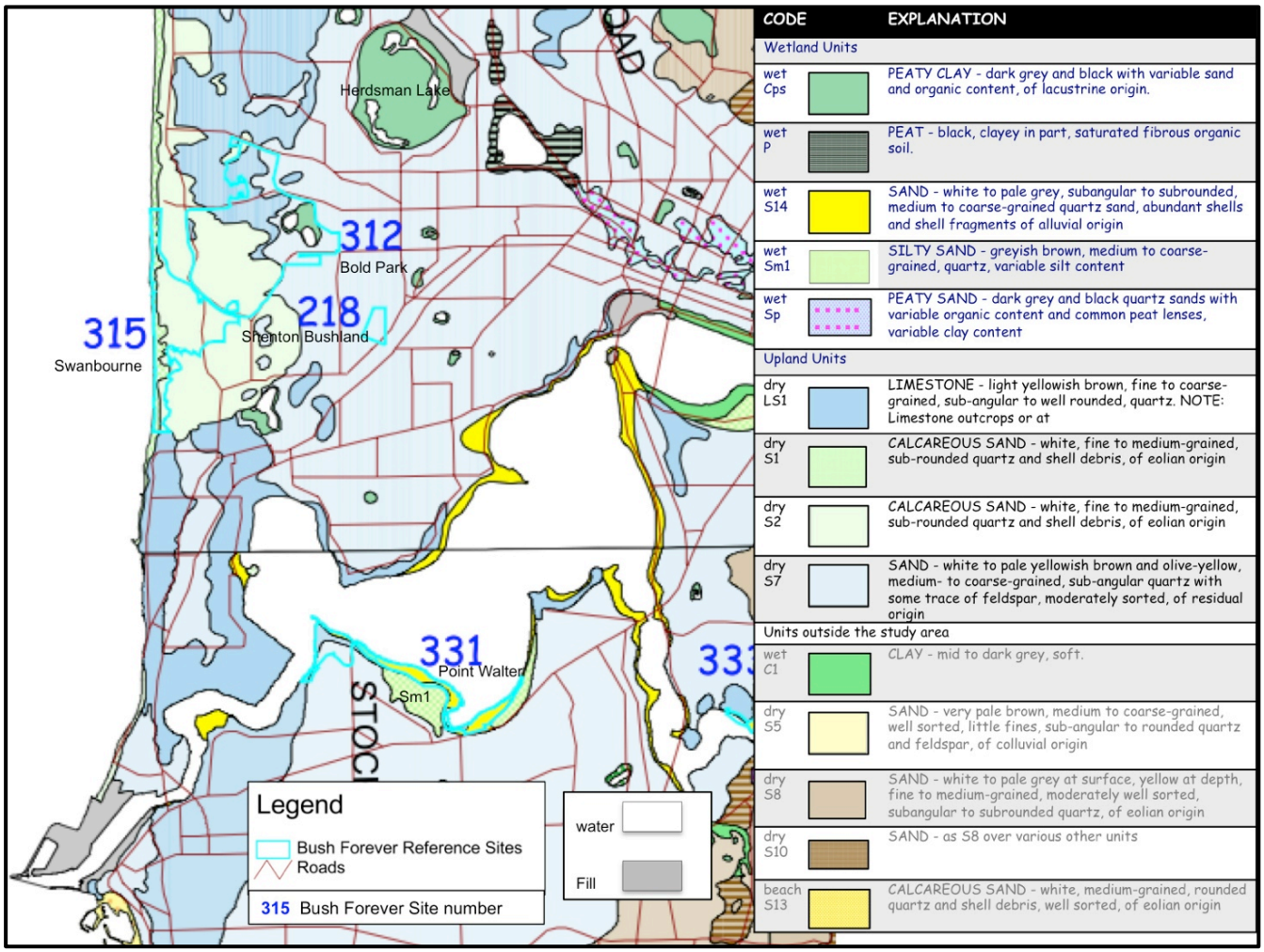



**Figure 12: Environmental Geology map of Perth's Bushland**
The soil-landform units shown in this mapping are useful in determining what the vegetation of the area was before clearing. Areas with like landforms and soils can then be compared with areas that retain principally native vegetation. This is part of the map compiled for the Perth Plant Biodiversity Project (see Box 3, page 35).


**Figure 13: Buckland Hill today**
Buckland Hill has been reshaped by mining but retains some original native plants associated with Tamala Limestone (LS1 in Figure 12).
(a) *Templetonia retusa* (Cockies Tongue) flowers in late winter. The spreading plant lies over exposed Tamala Limestone.
(b) A fruiting *Templetonia retusa* on the side of Buckland Hill looking south towards the Estuary.
These *Templetonia retusa* plants were considered to be remnants of the original population as each had thick old gnarled rootstocks and were located in pockets of soil. Other native species including *Beyeria cinerea* subsp. *cinerea* and *Lomandra maritima* were in the same location.


**Figure 14: Reabold Hill looking west today**
In (a) a number of limestone species can be seen *Grevillea crithmifolia* (white flowered shrub), *Banksia sessilis* (central shrub with pale yellow flowers) and Tuart trees (*Eucalyptus gomphocephala*). This transect of native vegetation (b) retains its original landform with much of its original native vegetation. Reabold Hill is underlain by Tamala Limestone that can be seen exposed in the Quarry Amphitheatre and in the road cutting on Cambridge Street where it transects Bold Park.

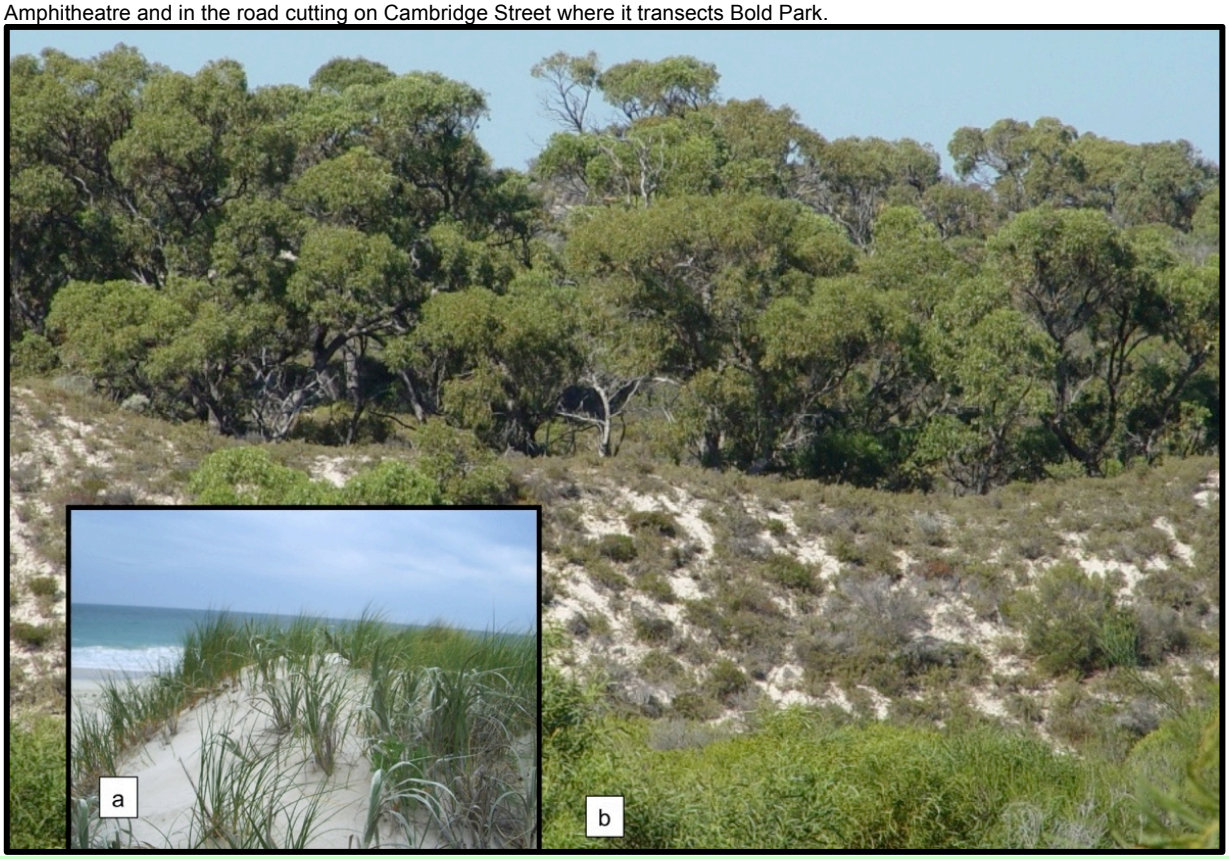



**Figure 15: Qindalup Dunes in Bold Park today**
In (a) is the youngest dune with *Spinifex hirsutus* (foreground) and *S. longifolia* (background); and in (b) an older dune shrubland on the ridge and Tuart in the protected valley.

### 4.1.2 *Wetlands*

Two wetland types are found in Perth's Bushland, these are saline estuarine fringing wetlands and freshwater basin wetlands (Figure 16) within the Spearwood Dunes. No wetlands are known from the Quindalup Dunes in Perth's Bushland.

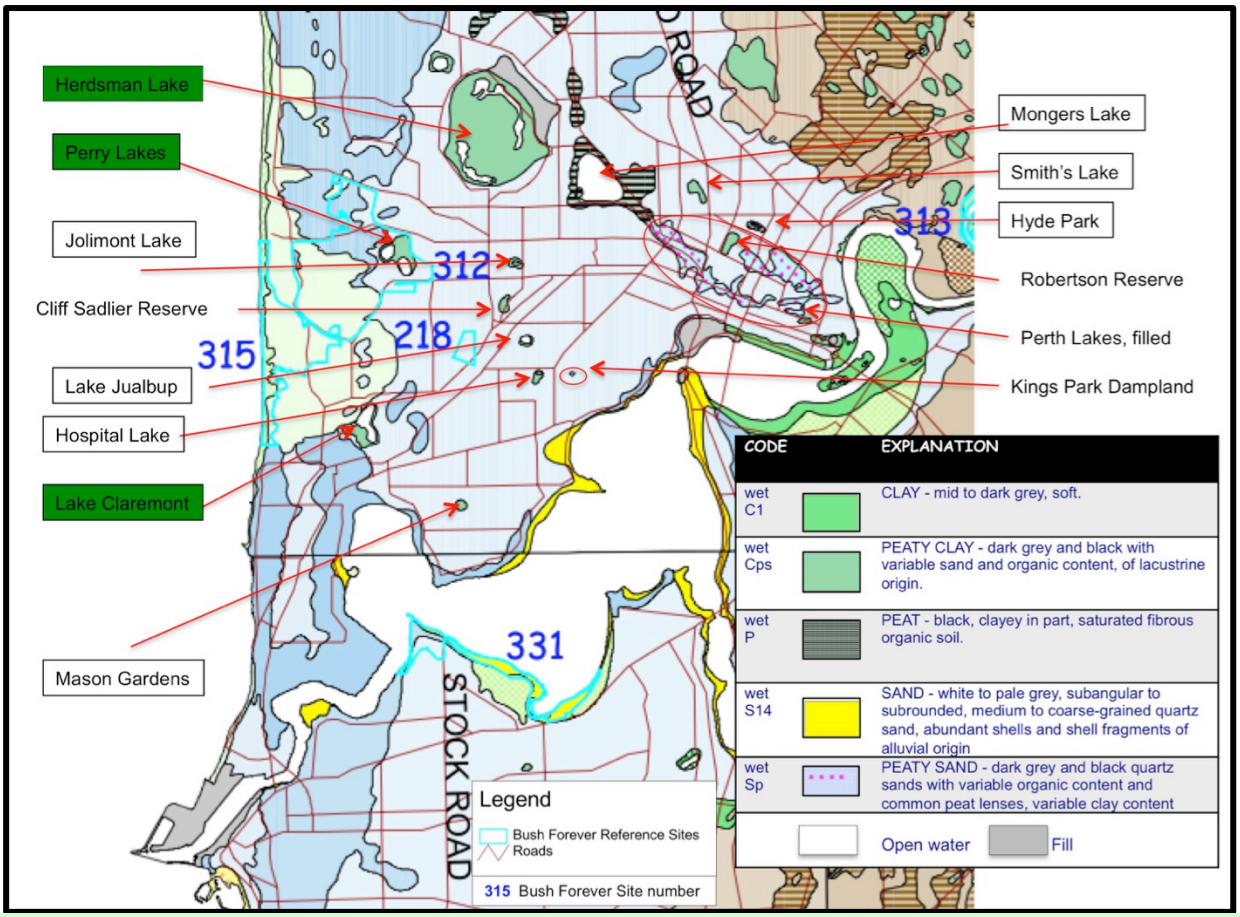



**Figure 16: Past and present basin wetlands in the study area**
Fourteen basin wetlands are mapped. Basin wetlands with some natural vegetation have dark green boxed labels; those with water but no significant natural native vegetation have white boxed labels; and those with no box are no longer extant (some remain as depressions – Cliff Sadlier, and others are filled/restructured – Kings Park, Perth Lakes).

#### 4.1.2.1 Estuary

Within Perth's Bushland the Swan Estuary is boarded by the Spearwood Dunes. The margins of the estuary varying from Tamala Limestone cliffs (Figure 17 LS1), sandy bars and flats (S14), and waterlogged alluvial flats (Sm1 and Sp). In addition the soils of the estuaries are influenced by saline and/or freshwater inundation. A number of freshwater seeps or springs occur along the margins on the estuary, one of which, the Kennedy Fountain, can be seen today. These seeps/springs were important sources of freshwater for the Nyungar people and the European settlers.

**Figure 17: Rocky Bay today**
Tamala limestone cliffs still surround Rocky Bay and support both restored and original native pants.

#### 4.1.2.2 Basin Wetlands

The freshwater basin wetlands in the Spearwood Dunes (Figure 16) are associated with peats and carbonate sands and occasionally clays overlaying sands (Cps). The wetlands that can be seen today are: Herdsman Lake, Perry Lakes (Figure 18), Camel Lake (not mapped in Figure 16), Lake Claremont (also known as Butler's Swamp), Lake Jualbup (also known as Dyson's Swamp, Shenton Lake or Shenton Park Lake), Lake Jolimont (Mabel Talbot Park) and Hospital Lake (Charles Gairdner Hospital). These basin wetlands may have retained water for a full year in wet years. However in recent times (last 150 years), all have been altered by combinations of: land clearing; filling (for example in Figure 16 there is a large area of fill on north east boundary of Herdsman Lake) and/or excavating; changes in groundwater levels; and drainage of surface water. In their natural state it is expected that they would all have dried in summer and be better described as sumplands and damplands. Other freshwater wetlands occurred in the area but these have been lost through the same processes, these include the Kings Park Dampland and the Cliff Sadlier Reserve Dampland. On the north east of our study area from Herdsman Lake to the south east to the Estuary are a series of wetlands that have disappeared (Sp), areas with pink dots). Three adjacent wetlands - Smith's Lake, Robertson Park and Hyde Park retain wetland areas but these have been grossly altered.

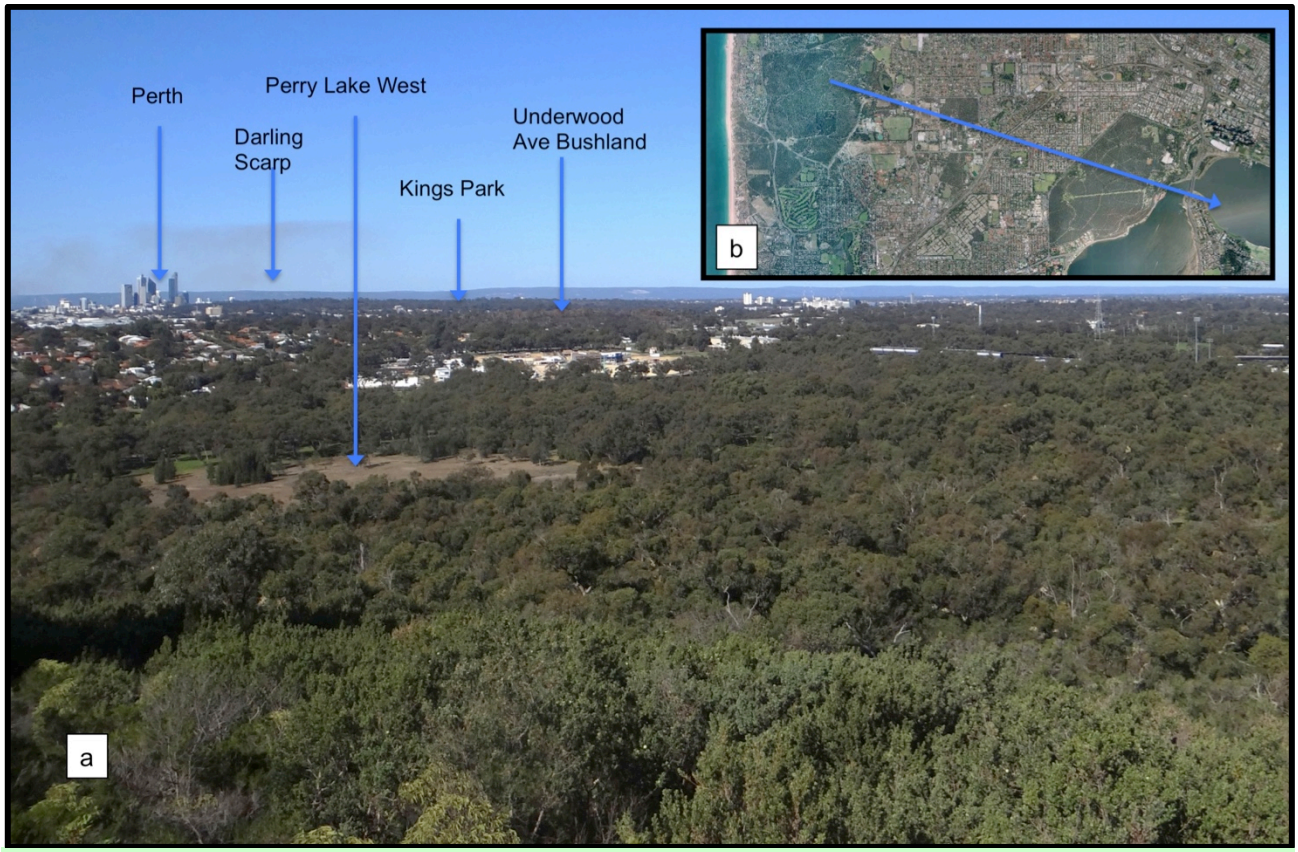



**Figure 18: Reabold Hill looking east today**

This view as shown in (b) retains its natural landforms and significant areas of native vegetation (a). The brown patch in the midground is the Underwood Ave Bushland that was burnt in the previous summer. The western Perry Lake retains water for short periods in winter. The floor of the Lake is vegetated, mostly with weed species. The eastern Lake has an area of open water.

#### 4.1.2.3 Coastline

Between Leighton and Swanbourne the coast is formed by Tamala Limestone cliffs (hard coast, Figure 20), with the remaining coasts coast is formed by Quindalup Dunes (soft coast, Figure 20).

**Figure 19: Buckland Hill looking west today**

This is a view from the guns area on the side of Buckland Hill across a small limestone hill to Rottnest Island. The hill appears to support native vegetation but the predominant shrub is Victorian Teatree (*Leptospermum laevigatum*). Buckland Hill retains some original native species (Figure 13) but the shrubs (*Acacia rostellifera*) and trees (*Callitris preissii*) are local native species that have been planted as part of revegetation on the site.

**Figure 20: A matched landscape - Burns Beach looking south today**

The limestone cliffs of Cottesloe would have supported similar vegetation to these at Burns Beach. These are the closest extensive area of naturally vegetated cliffs to Cottesloe. Coastal cliffs are found between Trigg Beach and Burns Beach but these retain only patches of native vegetation. Another significant area of vegetated coastal cliffs is found in *Bush Forever* Site 293. A 'soft' sandy coast can be seen in the background.

## 4.2 Lost Landscapes since Colonisation

Since Europeans established settlements between Perth and Fremantle substantive landscape change has occurred. Clearing for agriculture, housing and infrastructure was widespread (see Box 1, page 23).

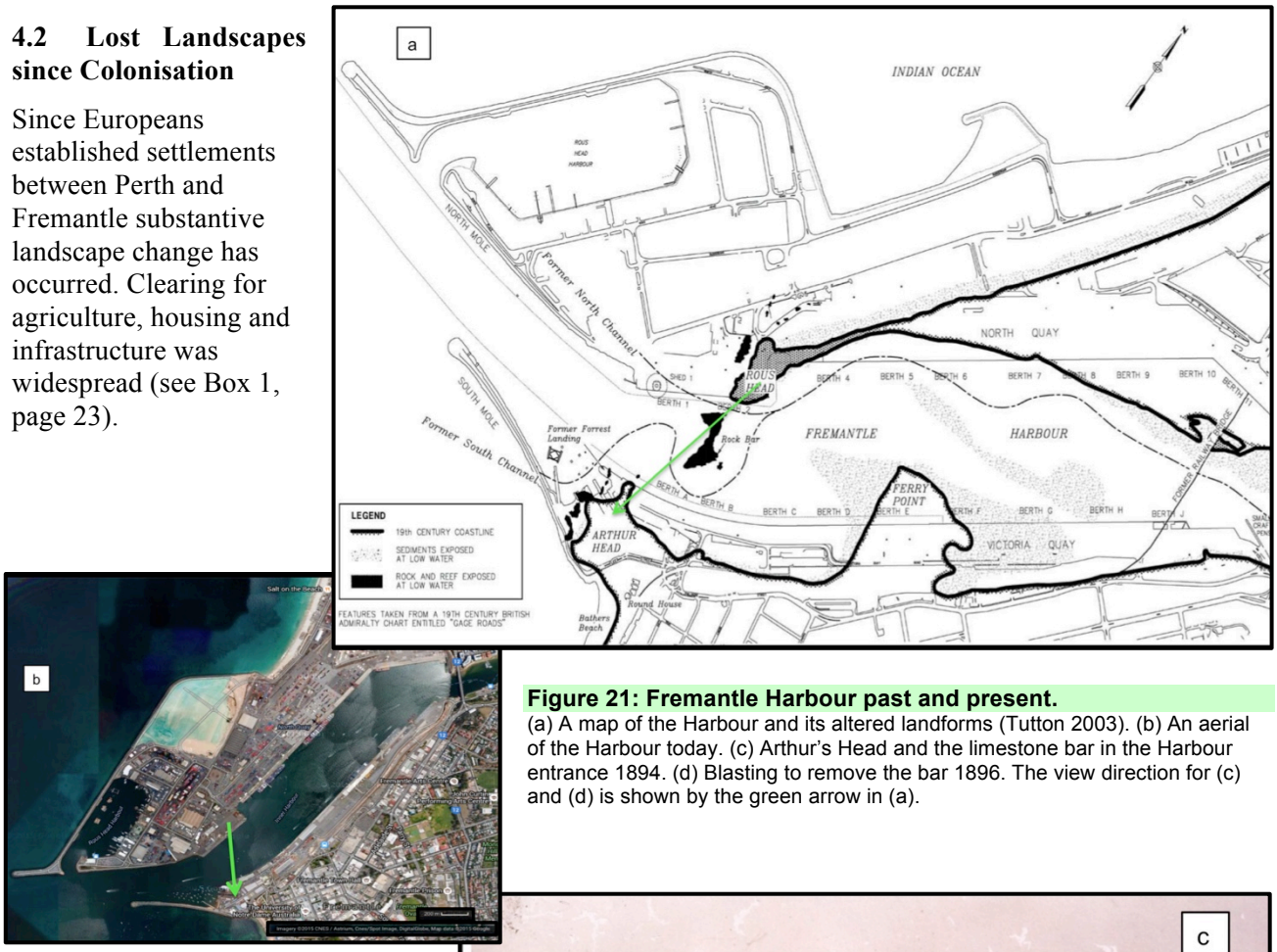



**Figure 21: Fremantle Harbour past and present.**
(a) A map of the Harbour and its altered landforms (Tutton 2003). (b) An aerial of the Harbour today. (c) Arthur's Head and the limestone bar in the Harbour entrance 1894. (d) Blasting to remove the bar 1896. The view direction for (c) and (d) is shown by the green arrow in (a).

Major landform changes are associated with: constructing Fremantle Port in the mouth of the Swan Estuary; mining of limestone for European constructions; and filling the estuarine wet flats and the freshwater sumplands and damplands. Each of these is discussed below. These activities were central to the Europeans need for shelter for people (houses) and transport vessels (harbour) and producing food.

### 4.2.1 *Port construction – Swan Estuary Mouth*

At European settlement the mouth of the Swan Estuary was marked by two limestone outcrops, Rous Head to the north and Arthur's Head to the south. The remnants of Arthur's Head (Figure 21a and c) can be seen today where the Roundhouse stands while Rous Head has been

consumed under the works for the North Quay (Figure 21a and b).

The limestone bar between Rous and Arthurs Heads (Figure 21) was removed by blasting (1895 to 96). With a broader entry to the harbour, the estuary upstream from the bar was deepened by dredging the exposed sediments (1894 to 95) shown in Figure 21a and 22a. The dredged material was used to help fill the edges of the Estuary, which eventually became the land backed wharfs of North and Victoria Quays. In this process Ferry Point was removed.

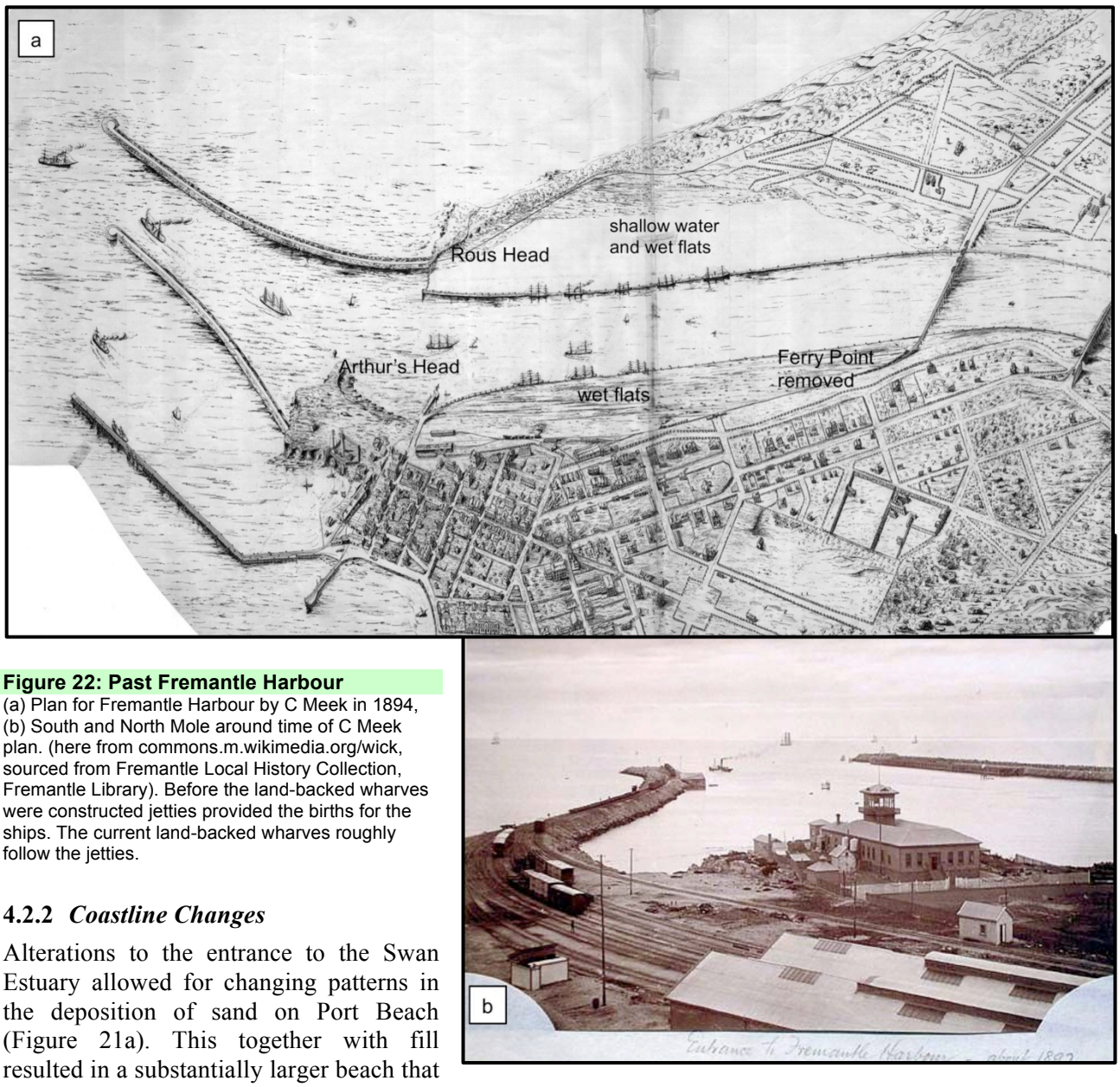



**Figure 22: Past Fremantle Harbour**
(a) Plan for Fremantle Harbour by C Meek in 1894, (b) South and North Mole around time of C Meek plan. (here from commons.m.wikimedia.org/wick, sourced from Fremantle Local History Collection, Fremantle Library). Before the land-backed wharves were constructed jetties provided the births for the ships. The current land-backed wharves roughly follow the jetties.

### 4.2.2 *Coastline Changes*

Alterations to the entrance to the Swan Estuary allowed for changing patterns in the deposition of sand on Port Beach (Figure 21a). This together with fill resulted in a substantially larger beach that was then used for housing and port expansion. Granite breakwaters at Cottesloe and City Beach have also impacted on the shape of the soft coastlines but not to the extent of that at Port Beach.

### 4.2.3 *Loss of Freshwater Seepages*

Freshwater seeps along the Estuary gave Freshwater Bay its name (Figure 24). None of these seeps can be found today on the altered Estuary margins. The seep at the base of Mt Eliza still runs and been altered to form the Kennedy Fountain on Mounts Bay Road. These were important water sources for Perth's Nyungar people and were the first areas that lead to direct competition with Europeans. The seeps were fed by groundwater. All seepage areas have been altered and with the lowering of groundwater levels and a reduced

flow can no longer be located by the freshwater vegetation associated with them. Similar freshwater seepages would have been present in some of the wetlands, particularly at the base of dunes. None of this habitat remains naturally vegetated today.

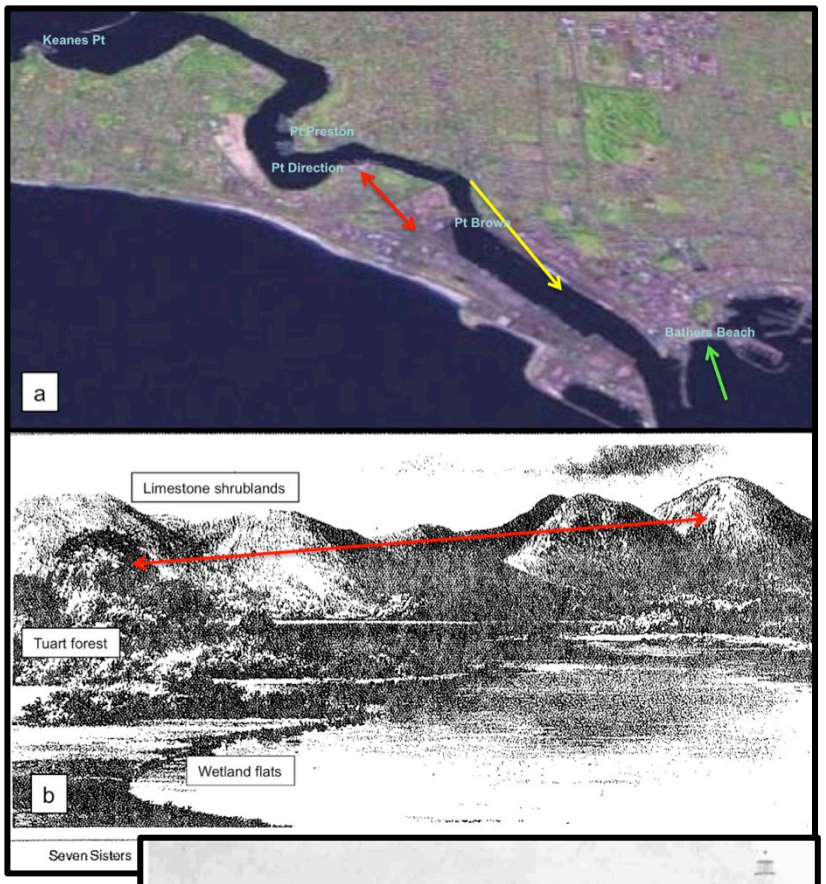



**Figure 23: Past Tamala Limestone landscape features**
The Fremantle area had a number of landscape features associated with Tamala Limestone.
(a) Is the area today, with arrows to indicate the orientation of the pictures in (b), (c) and (d).
(b) The seven limestone hills, the Seven Sisters that faced the Swan Estuary (also see Figure 25).
(c) Mined limestone cliffs around Bathers Beach (yellow arrow in a).
(d) View from the cleared and mined Cantonment Hill (foreground) with large Flooded Gums on estuary flats (these trees show the same insect caused dieback seen today in isolated trees).

### 4.2.4 *Removal of Limestone*

The Europeans found the exposed Tamala limestone a very useful building material. Limestone was quarried from: Arthur's Head to build the South Mole (began 1892); from Rocky Bay to build the North Mole (began 1892); and from the Seven Sisters (Figures 23 and 25) for general building in Perth and Fremantle. In the process these seven limestone hills, in what is now North Fremantle and Mosman Park became two hills, Buckland and Cyprus Hills (Figures 25 and 26). Reabold Hill was also mined but has remained mostly in its natural form (Figures 14 and 18). Sand and limestone mining continue in the Spearwood Dunes of the Swan Coastal Plain. Typically these are mined immediately post clearing for urbanisation. The landforms of suburbs since the 1980s only retain the original landform in the reserved (protected) areas. While mining has altered Perth's landscape, much of the original landscape, can still be seen.

### 4.2.5 *Land Reclamation*

Two areas were the focus of these activities, the shallow estuarine banks and the sumplands and damplands in the Spearwood Dunes (Figures 1, 12 and 16). The large areas of fill are shown in Figures 12 and 16 (grey). Areas of shallow water

sedge banks and bare earth along the Swan Estuary were, either removed to deepen the estuary for boat traffic, or consolidated, initially for market garden plots and later for buildings. Freshwater seepage areas were a focus for horticulture. Similarly many of the sumplands and damplands were altered by, clearing, draining, filling (and levelling) for market gardens plots, summer green grazing and building sites. One of the Perth lakes was drained by its use as a seasonal source of water for a watermill to grind wheat grain in Mill Street in Perth (Love Sherwood George 2010). The Perth Lakes were all filled, as were the dampland surrounds of most other wetlands.

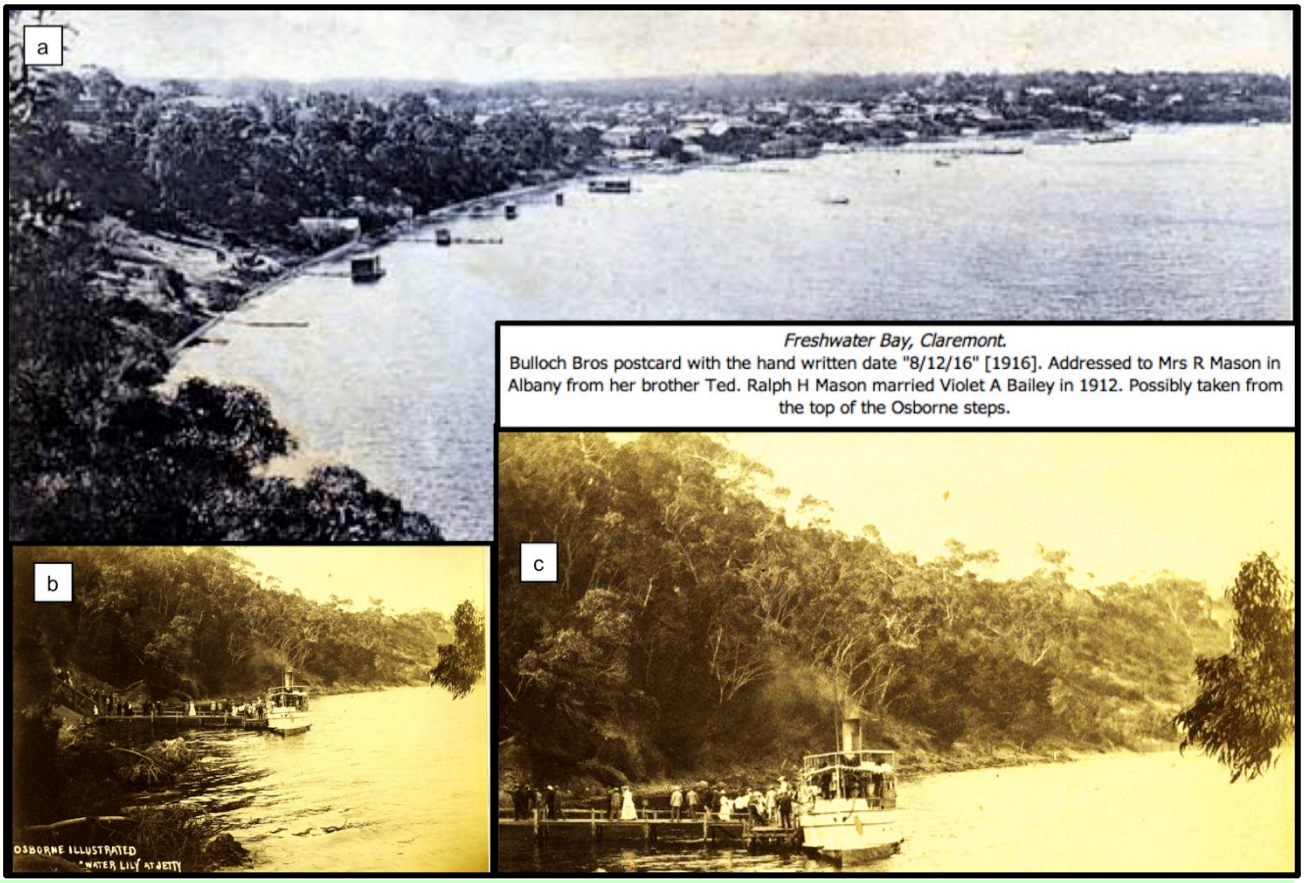



**Figure 24: Past views of Freshwater Bay**

Freshwater Bay supported Tuart forest (Tuart trees can be seen in a, b and c). There is some vegetated land on the closest margins of the Estuary in (b and enlarged in c to better see the trees) but no individual species can be discerned. Osborne Hotel (see Figure 27) was the located at the top of the sand and limestone cliff. Travellers arrived by road and ferry (b) and (c). Steps took visitors from the jetty to the Hotel.

### 4.2.6 *Flooded and Dried lakes*

Most of the wetlands in Perth's Bushland reflect groundwater level (Figures 1, 12, 16 and 18). In the past in winter and spring, when the groundwater was at its highest, bodies of water were present in these wetlands. In summer and autumn the groundwater fell and the wetlands dried as there was little or no rainfall and the native vegetation used more groundwater. With the initial clearing, the native vegetation was no longer using groundwater, and the groundwater level rose to the extent that some wetlands retained water for the whole year and the area of water body increased. However, now, with the use of groundwater with the sinking of wells, and draining of the settled areas, the size and longevity of the water body has returned to a more typical regime. This is due to a lower groundwater level since the initial clearing due to increased usage and decreased re-charge with draining. In recent times (last 50 years) there has been a drying of the damplands. The one known dampland that has not been cleared, Camel Lake, is now rarely waterlogged in winter and spring. The location of the Kings Park Dampland is unclear but may be marked by the area where *Banksia ilicifolia* occurred.

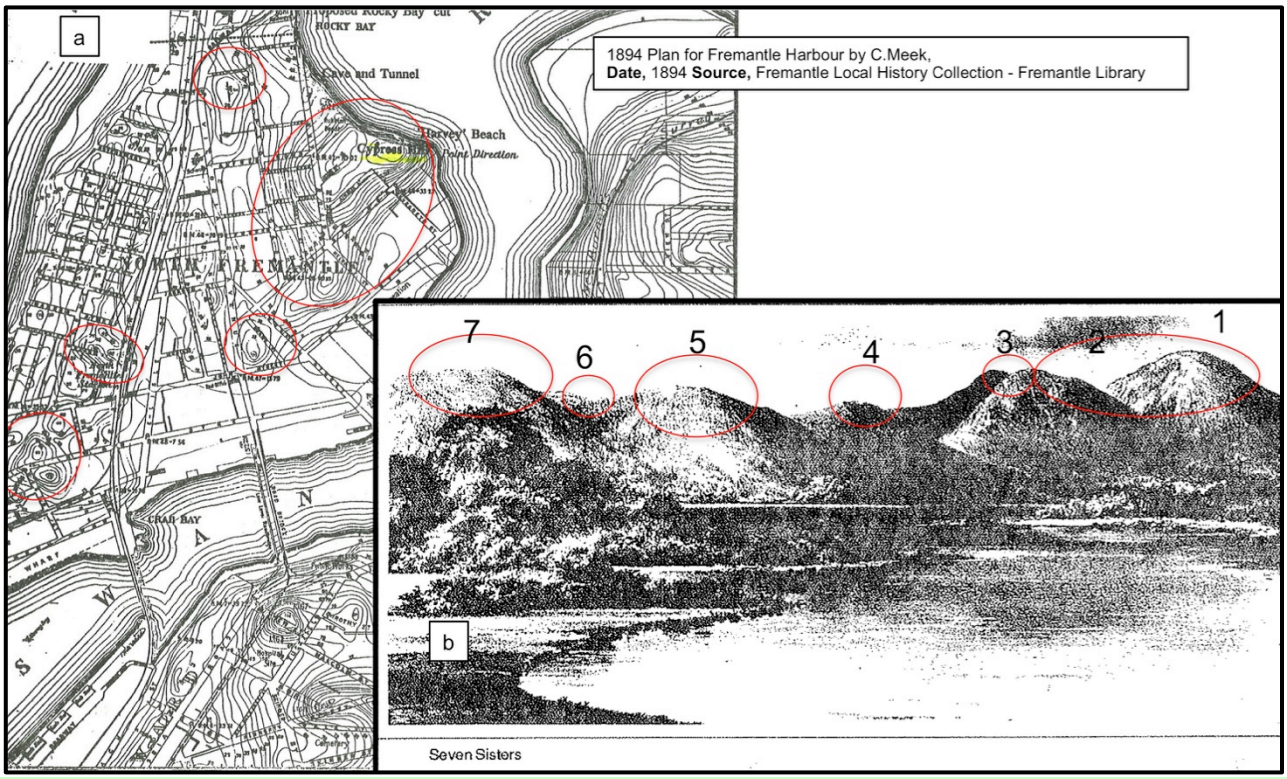



**Figure 25: The lost Seven Sisters**

All that remains today of these seven hills are the remnants of two, Buckland and Cypress Hills (area of 1 and 2 in (a) and (b)). Extensive flat areas are shown on the Estuary edge. The smooth areas are most likely sedgelands and Samphire shrublands with patches of *Melaleuca* forest. The sides of the hills were most likely vegetated with Tuart and Banksia woodland with limestone shrublands on the smooth hilltops.

**Information Box 1: Preparing land for European Use**

Figures 8 and 21 to 27 illustrate how the European use (development) of Perth has removed the native vegetation and altered and/or obscured the natural landforms. The early changes were incremental over a substantive period of time. Without the massive machines available today when landforms were changed native vegetation could re-establish in the altered landscape from the remaining native vegetation and the soil seed bank (Figures 24 and 26). Patches of this native vegetation remain today in very altered landscapes such as the Estuary Cliffs (Figure 17) and Buckland Hill (Figure 26). In places the incremental loss became absolute – all the Estuary flats and five of the Seven Sisters. However much of the study area has retained its natural landform and native vegetation. This is not the case north and south of here where increasingly large machines mine the landscape of limestone (and sometime sand) and reduce the landscape to a common grade. It is fortunate that significant areas have been left as conservation reserves with not only their original native vegetation (bushland) but the landscape as well (Figures 9 and 20). However these sit in a completely altered landscape. In much of Western Suburbs the original landscape remains along with many patches of native vegetation (for example Estuary margin, Buckland Hill, Cypress Hill) and large areas of bushland in the conservation reserves.

There have been substantive restoration and revegetation activities in many of the areas. At times these make unsuitable reference areas for the pre-European communities as the combinations of plants does not match known relatively intact areas. This study indicates bushland areas suitable for reference areas.

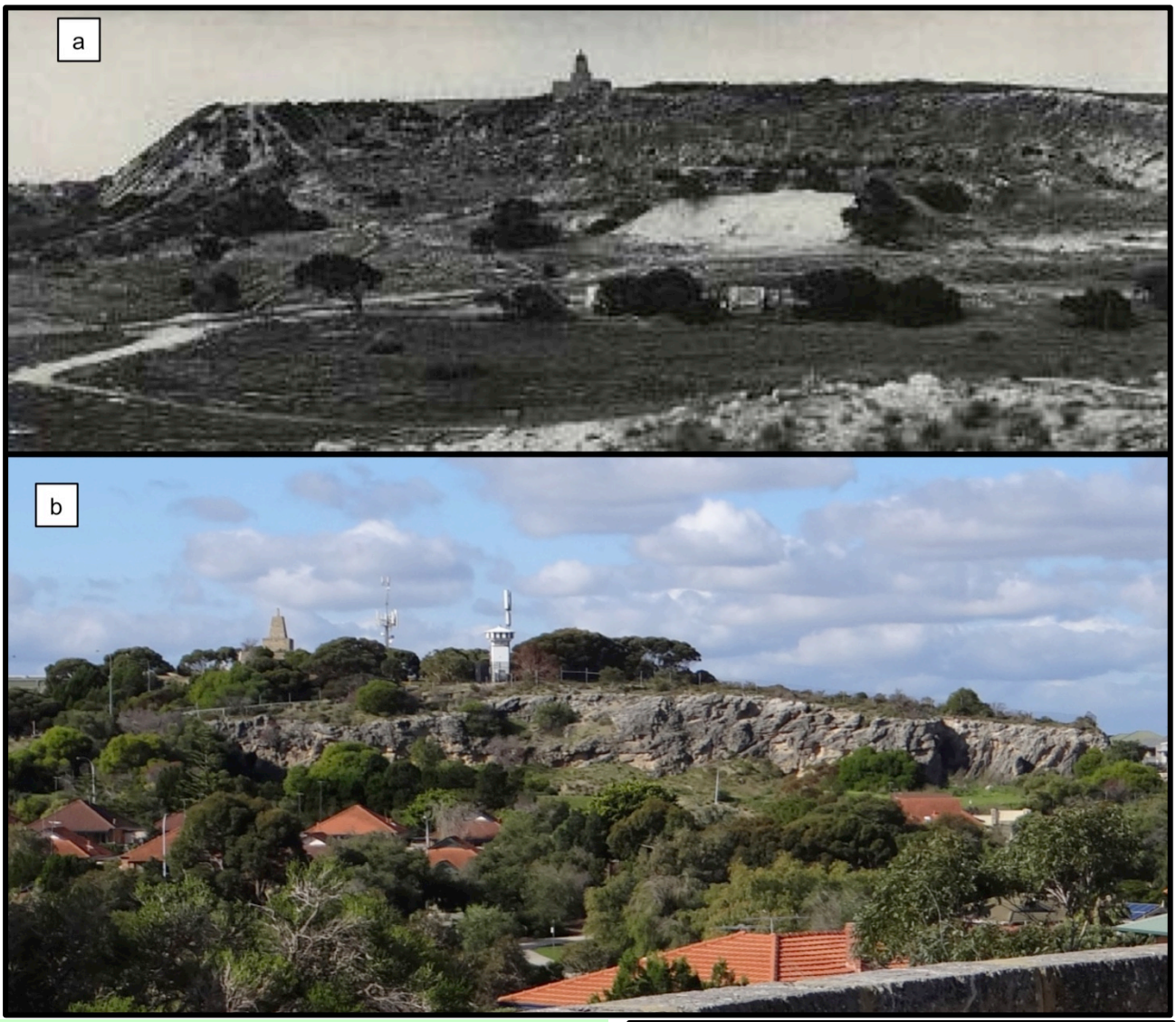
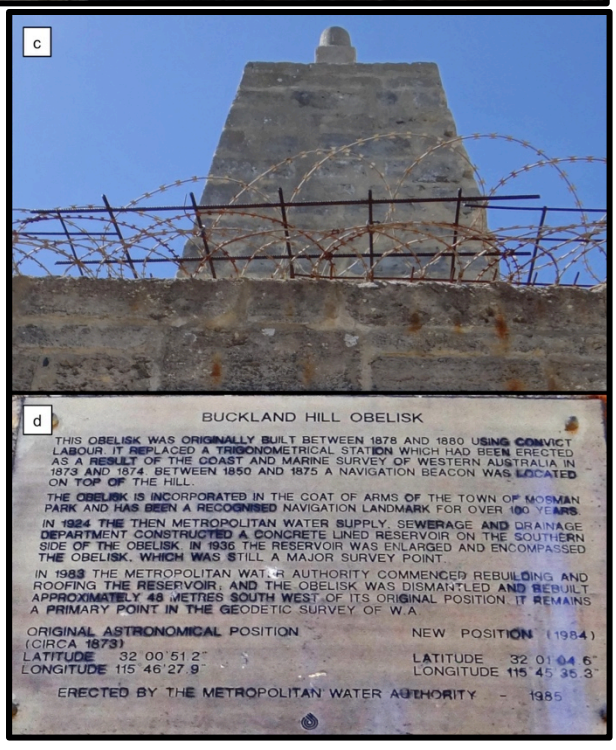



**Figure 26: Buckland Hill past and present**
Buckland Hill was mined for some years, the mine face visible in (a) is still visible today (b). A number of the original native plants remain on Buckland Hill amongst various plants from revegetation projects (see also Figure 33). A number of the WA native plants growing on Buckland Hill would not have occurred in the original native vegetation, these include: *Eucalyptus conferruminata* and *E. platypus*. These species would be best removed in any future revegetation work. *Melaleuca lanceolata* has also been widely planted. It is uncertain if *M. lanceolata* was an original native plant in the area but as it grows in the same habitat as *Callitris preissii* on Garden and Rottnest Islands it is here considered a local native in North Fremantle and Mosman Park on outcropping limestone along the estuary. Barrett and Tay (2005) consider this species native to both Kings Park and Bold Park. Here *M. lanceolata* is accepted as a local native for Kings Park (in the estuarine limestone habitat, not in *Banksia* woodland where it is a weed) but not Bold Park. There are no known early collections of *M. lanceolata* from our study area.



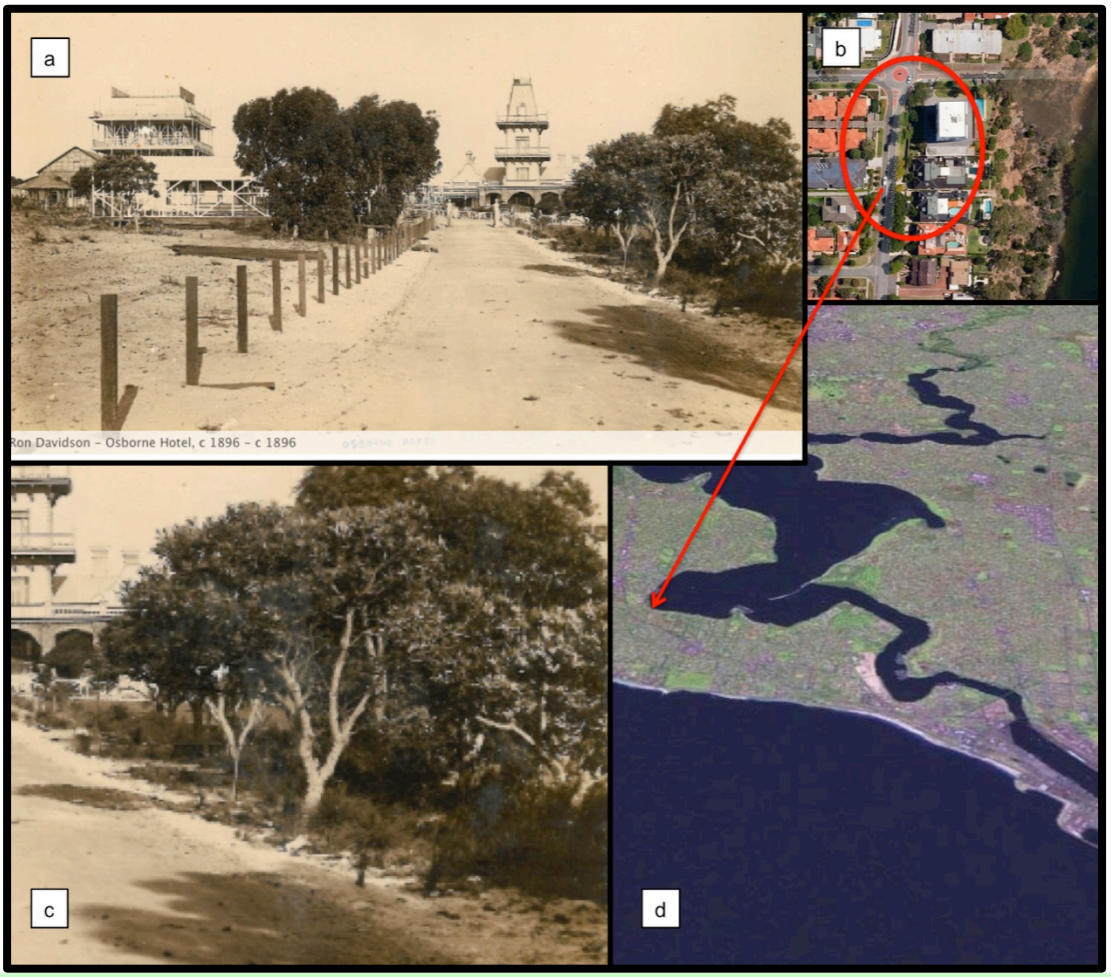


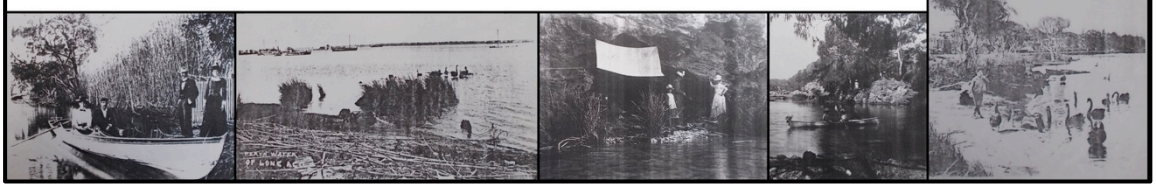

**Figure 27: Osborne Hotel, past and present**
The Osborne Hotel that finished its life (a and c) as the Loreto Convent girls school before being demolished. In its early years *Banksia woodland* lined the entrance road, a remainder of the original native vegetation (b and c). Today the area is covered with houses (b and d).

**Information Box 2: Early drawings and photographs of Perth's Bushland**

Early images can be used as an aid in determining the composition and type of the bushland areas before European settlement. Together Figures 8, and 22 to 27 the small images around this box show past views of Perth's Bushland.

Using knowledge of the current vegetation the following was determined: on the estuarine banks were saline and/or calcareous sedgelands, samphire shrublands and *Melaleuca* woodland to forest (with freshwater patches); on the cliffs woodland to forest dominated by Tuart and /or Flooded Gum (closest to the water); on the sandy hills slopes and valleys *Banksia* woodland with scattered eucalypts (Tuart or Marri); and on the hilltops, slopes, flats and clifftops with outcropping limestone, shrublands. The basin wetlands supported sedgelands, shrublands and *Melaleuca* woodland to forest.

Box images are from top left to below right: Mounts Bay Rd to Mt Eliza 1869; University of WA land on Stirling Hwy 1925; Perth 1905 (4&5); the 'Chine' at Mosman Park( 6&7, late 1800s); Perth 1900; and near Government House 1898. Source Battye Library.



# 5 EARLY COLLECTIONS AND TYPE COLLECTIONS

## 5.1 Pre-colonisation, European Visits, Collections and Type Collections.

### 5.1.1 *1650 to early 1800s*

For Europeans visiting Western Australia in the 1650s to 1800s it was a step into the unknown. A key aspect of early exploration was learning about the new lands. From first encounters the landscape, water sources, rocks, soils, plants and animals were observed and/or collected and this knowledge/collections returned to centres in Europe. This information was used to catalogue the resources these lands might offer to European settlement. In addition there were avid rich collectors eager to feed their love of the uncommon and rare and so raise their status in society. A number of such individuals were able to obtain living material of plants and their expert gardeners were able to grow the material to maturity in Europe. A number of WA plants were first known in flower from such garden material illustrated in collector's magazines.

The Swan Coastal Plain (SWA or Plain) received some of the earliest European visitors to Australia. These early recorded visits were by the Dutch and French. Typically these visits were accidental, or made on searches for lost ships.

#### 5.1.1.1 Dutch

Dutch sailing ships heading to Batavia (now Jakarta on Java) found strong winds south of Africa, which aided their voyages, but also could hit Australia if they misjudged their turn north!

The Dutch ships "White Falcon Whistled" and "Good Hope" were the first recorded ships to intentionally visit and land on the Plain in August 1656. The ships were in search of cargo and survivors of the "Gilt Dragon" wrecked near Ledge Point in April 1656. Neither was located. However survivors of the Gilt Dragon certainly landed on the Plain north of Perth, before sailing the cocks boat to Java, but no or little record remains of both these (or earlier) visits.

Eighteen months later in 1658 Samuel Volkersen on a similar mission landed on Rottnest Island at Point Clune in March. Volkersen (1658) wrote a brief account of Rottnest upon his return.
*"The island has high mountains with a good deal of Brushwood and many thorn bushes so that it is hard to go over".* (Figure 28)
These are some of the earliest European accounts of Australia.

**Figure 28: *Callitris preissii* forest**
This forest is on Garden Island. Garden Island retains large tracts of *Callitris preissii* (Rottnest Island Cypress) forest that is now classed as a threatened ecological community (DPaW 2015). The similar forest areas on Rottnest Island have been lost through combinations of clearing and fire. Callitris is killed by fire and the seed released from the woody capsules grows quickly in the ash beds. However too frequent fires do not give sufficient time for the trees to grow and produce seed.

The next expedition of three ships under the command of Willem De Vlamingh who came to Western Australia looking for "The Knighthood of Holland" lost between Cape Town and Batavia in 1685. They arrived at Rottnest on 30th December 1696, staying till February 1697. Vlamingh anchored on the southern shore at Porpoise Bay and made two visits ashore; this sheltered area favourably impressed him

*"we perceived a very agreeable belt of trees, very thick and about half a league in extent.....From January 1, 1697 to January 3, 1697 we sent every day to get wood and to collect fresh herbs, of which we brought on board many unknown to us, but excellent."*
They named Rottnest Island, landed near Cottesloe, and then explored up the Swan River (which they called Witsen River) to near Kings Park. Members of the expedition returned with collections of seeds and woods (Vlamingh, n.d. and Playford, 1998) and are the first known collections of native plants (*Acacia truncata* and *Synaphea spinulosa*) from Australia (Figures 29 and 70).

Unfortunately the expedition records were only partially published in 1701 and 1705 by Nicolaes Witsen (a director of the Dutch East India Company). Vlamingh was impressed by the woodlands of Rottnest and the Swan River, but generally the Dutch found WA rather barren, waterless and with few good harbours or trade opportunities. Witsen summarised this in 1705
"*this south land or Hollandia Nova, has a desolate and barren sea coast, the further north the more infertile and arid, there being fine forest at 31 degrees south* (?Rottnest), *and pleasant trees, but little population close to the coast. The reason is perhaps that there is a lack of drinking water and the region is not fertile enough to sustain life".*

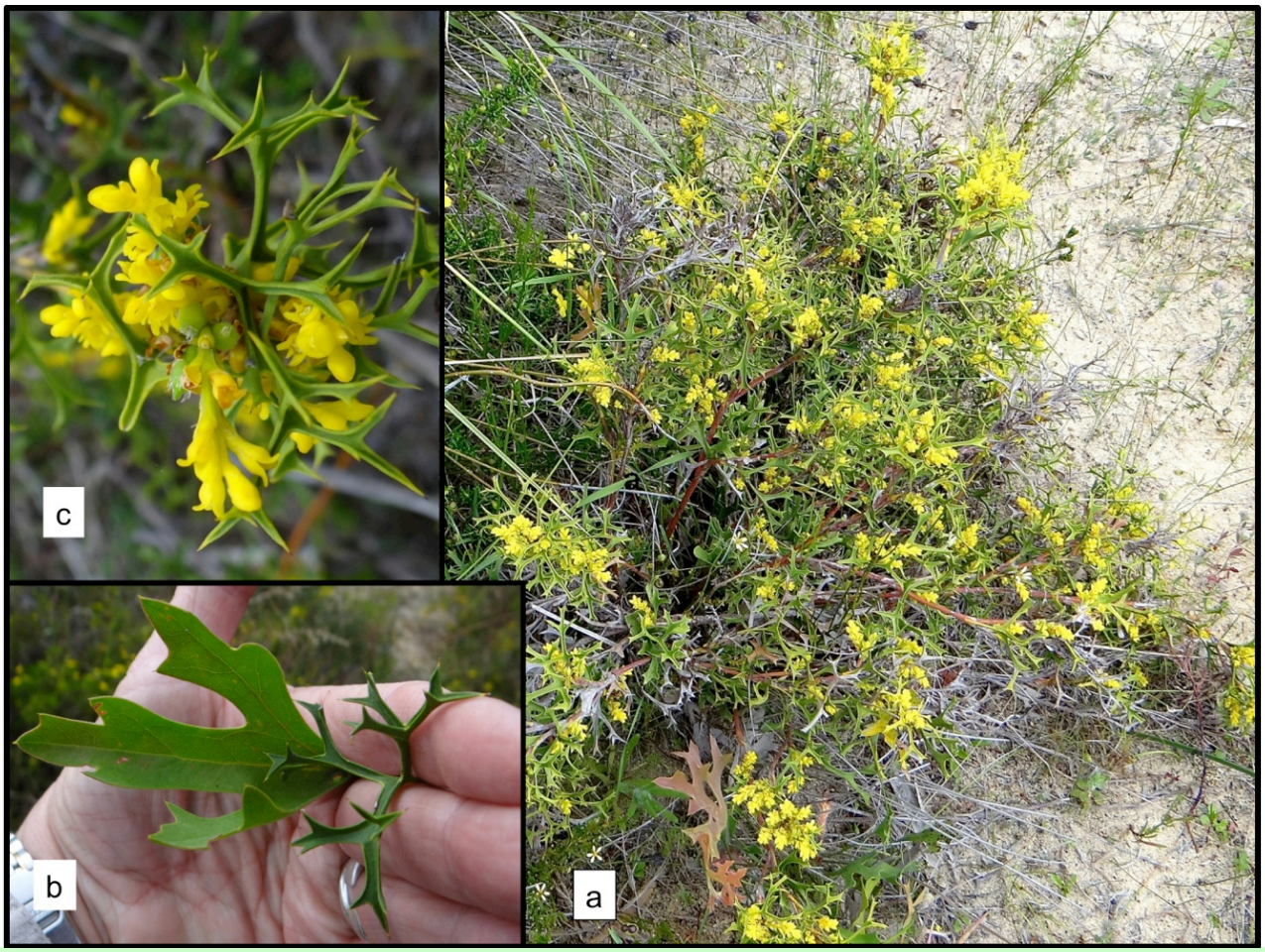



**Figure 29: *Synaphea* spinulosa**
In (a) is a *Synaphea spinulosa* shrub; in (b) a basal leaf (left) and a stem leaf (right); and in (c) a close view of leaves, flowers and fruit. The first specimen was just leaves and from these it was described as a fern.

The Dutch with improved maps and navigation now fade from WA's history. Until recently their contributions were poorly recognised in WA history, veiled by language and lack of translations. Their contribution remains poorly recognised today in Eastern Australia.

5.1.1.2 French

In the late 1700's and early 1800s the French were determined to lead scientific research in Europe. This ambition was not dulled by the revolution and included exploring the largely unknown southern continent (Nelson 1984). Several expeditions visited Australia, including D'Entrecasteaux in WA east of Esperance in 1792. The second major French expedition to WA occurred between 1801 and 1804 under the command of Nicholas Baudin and Hamelin. The ships "Geographe" and "Naturaliste" arrived off Perth in June 1801, after briefly collecting at Busselton. The ships were separated and Hamelin (without the expedition naturalists) spent 14 days near Perth. Six days were spent exploring up the Swan River and produced the first accurate maps of the Perth area. Like De Vlamingh he was favourably impressed by the alluvial soils along the river, unlike the earlier unfavourable impressions of the sandy arid south coast by D'Entrecasteaux.

After wintering in Sydney, the French returned in 1803. The "Geographe" commanded by Baudin and "Casuarina" under Louis De Freycinet, visited King Georges Sound, and Koombana Bay and Leschenault Inlet (in the Bunbury area of today) before returning to France. Although primarily voyages of scientific discovery not colonization, the revolution and subsequent wars meant that the results of these expeditions were greatly delayed and never completely published (Peron, 1807).

French expeditions kept returning: Freycinet came back in 1817-20; and Dumont D' Urville from 1826-29. These expeditions and the French interest in colonising WA have been extensively covered in the excellent book *France Australe* by Lesley Marchant (1982). The French made major contributions to the scientific study of our plants and animals and left their mark in numerous geographic names in coastal Western Australia.

### 5.1.2 *Selling the Swan: 1827-1830*

There seems little doubt that the French interest in Western Australia prompted Governor Darling to establish an outpost at Albany in 1826 and to send Captain James Stirling and Charles Fraser (Government Botanist of NSW) to the Swan River to explore the possibility of a colony in March 1827.

Fraser produced a very optimistic account of the country and vegetation of the Swan River and surrounds (Hay 1906 and Seddon 1972). Stirling was lyrical in his praise of the
"*…richness of the soil, the bright foliage of the shrubs, the majesty of the surrounding trees".*
However as we know now, the magnificent trees they reported are no indication of fertile soils. From a knowledge of the present flora of the area most of the understorey 'grasses' they reported were sedges. Sedges are able to thrive on the infertile, often saline, soils along the estuary and lower river margins. The alluvial soils of the Swan River upriver of Maylands/Guildford are the most fertile soils in the area, but are relatively small in area away from the River. They spent little time surveying the sandy coast at the mouth of the Swan Estuary, where the first settlers would reside, which caused much dissention between their reports and their experiences. It is/has been suggested that the desire to establish a colony and naval base on the West Coast of Australia to protect British interests, and which Stirling became Governor of, perhaps coloured their views.

As example of this over optimism was the renaming of Isle De Bauche to Garden Island (Figure 28) by Stirling and the description of the soils of this island as
*"….though light, appears to me – from the immense thickets of a species of* Solanum *which it produces, and which attains the height of 10 feet - to be capable of producing any description of light garden crops…and the soils I found to be a very fine brown loam, studded with detached blocks of limestone, and susceptible of producing any description of crop".*

This arid sandy island covered with low *Callitris* forest and heath was the site of the first settlement and was also commented on very unfavourably by Captain Fremantle (Fremantle, 1828) who was in command of the settlement fleet
*" …fresh water was found by digging wells in the sand, and firewood [was] in great abundance, the island being covered with a small kind of pine and fit for no other use".*

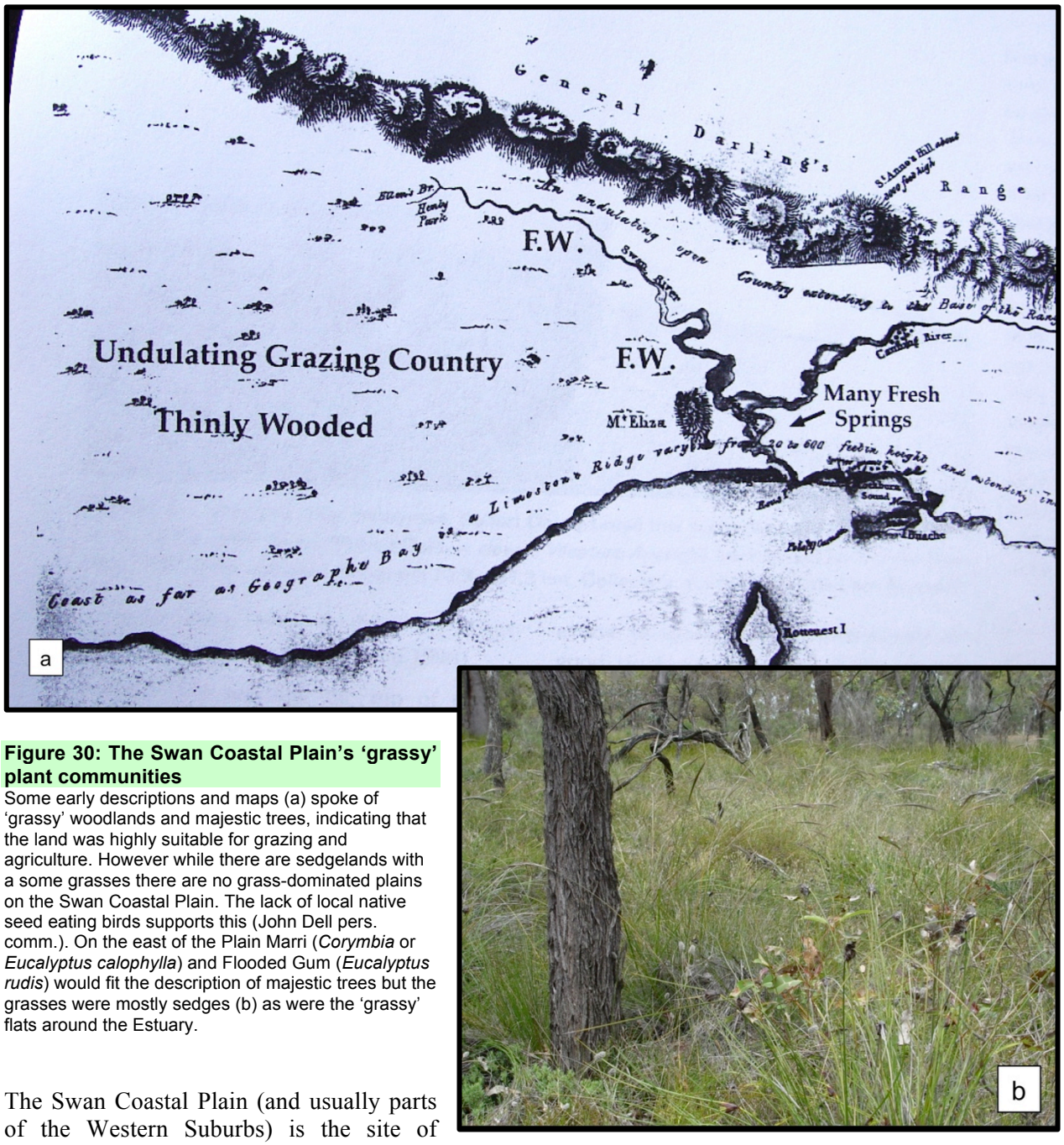



**Figure 30: The Swan Coastal Plain's 'grassy' plant communities**
Some early descriptions and maps (a) spoke of 'grassy' woodlands and majestic trees, indicating that the land was highly suitable for grazing and agriculture. However while there are sedgelands with a some grasses there are no grass-dominated plains on the Swan Coastal Plain. The lack of local native seed eating birds supports this (John Dell pers. comm.). On the east of the Plain Marri (*Corymbia* or *Eucalyptus calophylla*) and Flooded Gum (*Eucalyptus rudis*) would fit the description of majestic trees but the grasses were mostly sedges (b) as were the 'grassy' flats around the Estuary.

The Swan Coastal Plain (and usually parts of the Western Suburbs) is the site of several of the earliest recorded European expeditions to Australia, and perhaps the site of the earliest scientific collections of our amazing flora by Vlamingh. The sandy soils and Mediterranean climate dissuaded the Dutch and the French and left colonisation to the British. The British colonisation of all of Australia contributed to federation and the unity of our country today.

## 5.2 Post-colonisation and Early Collectors

From the colonisation of Perth's Bushland until the 1920s the landscape, flora and vegetation of the area was relatively intact (note early changes in the landscape of the estuary cliffs and limestone hills section 4.2). Scientific collections from this time can be used to catalogue the various habitats. More than 20 early collectors are listed below, grouped in two time periods. Many of the collectors were visiting scientists and/or professional collectors making a living from selling their collections to wealthy gentlemen scientists and institutions in Europe. As a consequence these significant scientific records are in European institutions. A key reference for this section until 1900 is George (2009). Residents and visitors are distinguished.

### 5.2.1 *Pre- Federation 1829-1899*

In this section reference is made to various herbaria around Australia and the world. Herbaria have unique codes, generally a set of capitals. Information Box 4 (page 53) lists the most commonly used codes (with their meaning) used here.

**1831 James Mangles** (visitor): Visited Perth's Bushland in 1831 and was then sent material by Drummond. Specimens are in the British Museum, which have not been checked, however some duplicates in NSW and PERTH are used.

**1832 Alfred Hillman** (resident): Assistant Surveyor Perth, worked on plans for Perth and Fremantle.

**1833 Carl Huegel** (visitor/resident): Visited and worked the area in 1833 (27/11 to 19/12). His collections are described in Endlicher (1837). The collections are mostly housed at Vienna and generally give Swan River as the locality, with some are labelled as Fremantle. Additional collections were provided by: George and Georgiana Leake; and Alexander Collie (residents of the colony (Love, Sherwood and George 2010). Around 164 species came form this source, all labelled as Swan River in 1833 to 34.

**1838 to 39 Ludwig Preiss** (visitor): Worked in the area from 1838 to 39 and provided clear locality information. Most of Preiss's collections are in Europe with a considerable number of duplicates in MEL.

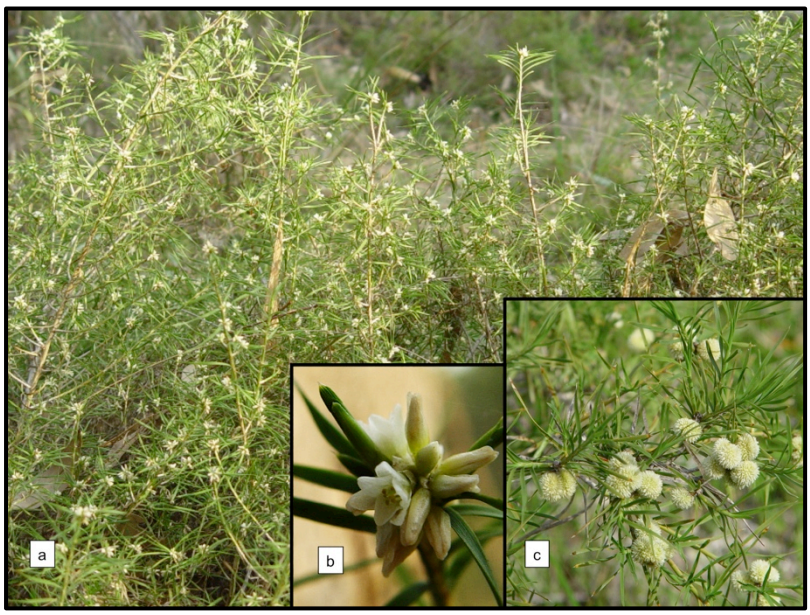



**Figure 31: *Acanthocarpus preissii***
This is a common plant in Perth's Bushland. Its name commemorates Ludwig Preiss who collected the type of this species near Fremantle (near Fremantle, W.A., 7 Dec. 1838, L.Preiss 428). Commonly called Prickle Lily it is a tough wiry spreading shrub-like herb with small lily-like flowers (b) and round prickly fruit (c). Both the leaves and the fruit have 'prickles'.
This is one of 17 plants in Perth's Bushland named for Preiss).

**1839 to 1842 James Drummond** (long term resident): Lived in WA collected around Perth and on Rottnest as well as the much of the state. All of his specimens are labelled as Swan River Colony. Some of the specimens can located by reference to Drummond's letters that accompanied the collections when sold in England.

**1838 William Morrison** (visitor): Collected north of Perth and considered unlikely they are form Perth's Bushland. Specimens are held in the herbarium at Cambridge University and have not been seen.

**1839 John Gilbert** (visitor): Collected around Perth with Drummond and Preiss.

**1840 Benjamin Bynoe** (visitor): Visited the Swan River in 31/01 to 04/04, 27/09 and 25/10/1840 to 23/11/1841. Specimens are held in the herbarium at the British Museum and Kew in England and most have not been seen. Some duplicates held in Australia have been used.

**1842 Miss Lambert** (resident): Collections are in BRI and MEL (see Information Box 4 page 53), but listed as Swan River.

**1859 Augustus F Oldfield** (visitor): Collected around Perth and at Fremantle in 1859, collections in MEL and PERTH.

**1874 Rachel Lukin** (resident): Collections in MEL (see Information Box 4 page 53), labelled as Fremantle but George (2009) notes some were probably collected elsewhere, the ecological attributes of each species supports this.

**1878 to 1883 Margaret Forrest** (nee Hamersley, resident): Collections mainly in MEL.

**1881 Robert D. Fitzgerald** (visitor): Collected in WA but no specimens appear to be from Perth's Bushland.

**1896 to 1899 R Helms** (resident): Collected in Perth area from 1896-1899, collections mainly in NSW. Worked with the Department Agriculture, many collections were the first, and only, records in Perth's Bushland. Collected a wide variety of organisms and left WA 1900.

**1897 to 1906 Alexander Morrison** (resident): The colony's Government Botanist and a prolific collector around Perth. His collections are mainly in Edinburgh, with numerous duplicates in MEL and PERTH. Significant but not all specimens sighted.

**1899 - 1900 William V Fitzgerald** (visitor): Collected in Perth area with collections in the British Museum, Edinburgh and Berlin (lost in WWII) with some in MEL, NSW and PERTH.

### 5.2.2 *Post Federation 1900 to 1920*

**1900 to 1905 Alexander Purdie** (visitor): Many collections that do not appear to be in Perth's Bushland, specimens could not be located.

**1901 to 02 Cecil Andrews** (resident): A prolific collector around Perth, especially in Western Suburbs, collections in PERTH.

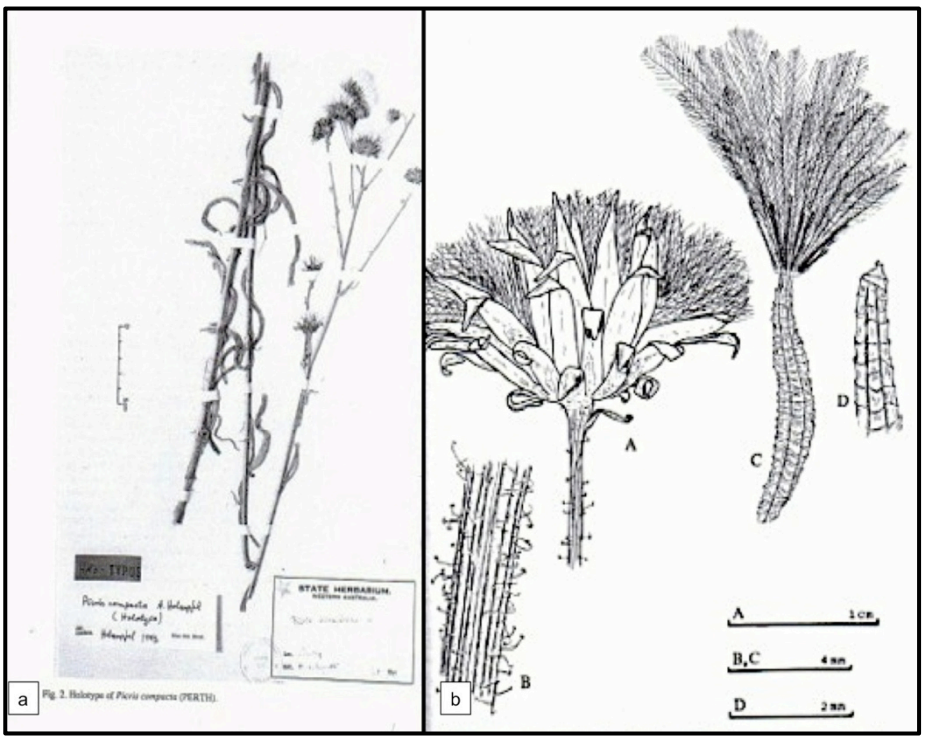



**Figure 32: *Picris compacta***
This plant (a) was collected at Claremont by Cecil Andrews around 1902. It has not been located since 1941 so can now be considered to be globally extinct. The drawings (b) are from the revision of the genus (Holzapel 1994). This is an example of a poorly collected native plant that has been replaced by weeds and its passing has been poorly noted as it was confused with weeds.

**1900 Diels and Pritzel** (visitors): Collected some material in western suburbs in 1900. Most of the collections were in Berlin and lost in World War II. Material described in Diels and Pritzel (1905).

**1909 Joseph H. Maiden** (visitor): Collected in Perth area in 1909, mostly not in Perth's Bushland.

**1915 to 20 Emily Pelloe** (resident): Collections from 1919 to 20 in the Perth to coast area.

**1914 CA Ostenfeld** (visitor): Last early major collector in Perth's Bushland in 1914, published in Ostenfeld (1921).

**1920s B. T. Goadby** (resident): Collected around Perth, mostly sort and collected orchids.

**1928 Meebold** (visitor): Collected in Perth's Bushland in 1928, collections in AD (Herbaria have unique codes, see Information Box 4 page 53).


**Figure 33: Buckland Hill today**
A number of the early collectors would have visited Buckland Hill and the other 6 hills in the area (Seven Sisters, see Figures 23 and 25). There is considerable limestone habitat on Buckland Hill remaining and it remains significant open space in Mosman Park. As mentioned previously some remnants of the original native plants remain to this day. These include *Templetonia retusa* (Figure 13), *Beyeria cinerea* subsp. *cinerea*, *Lomandra maritima* and *Grevillea preissii* subsp. *preissii* (Figure 78, another plant named for Preiss).

# 6 VEGETATION

## 6.1 Introduction

An overview of the principal plant communities of the major landforms found in Perth's Bushland are given below. These are the: Spearwood Dunes, Quindalup Dunes and Estuaries, Rivers and Creeks. Being the oldest of the dunes Spearwood Dunes are treated prior to Quindalup Dunes; and the Estuaries, Rivers and Creeks last as these transect the other two landforms. As discussed in section 4.2 the natural landforms in the study area have been altered. This section further discusses what communities may have been lost when the changes were made.

In each landform the plant communities are considered at two levels, local and regional. The local plant communities are those found in the actual bushland areas extant in Perth's Bushland today, that is the area specific communities. The regional plant communities refer groups recognised across the Swan Coastal Plain. The regional vegetation descriptions used are based on two sets of information available for the Swan Coastal Plain Bioregion: vegetation complexes (Heddle et al 1980, Figure 34) and Swan Coastal Plain floristic community types (Gibson et. al 1994 and Government of WA 2000). The regional information allows for a determination of the conservation value of a particular remnant of bushland by using this data, and flora data, for a comparison across the Plain. This approach follows that in *Bush Forever* (Government of WA 2000).

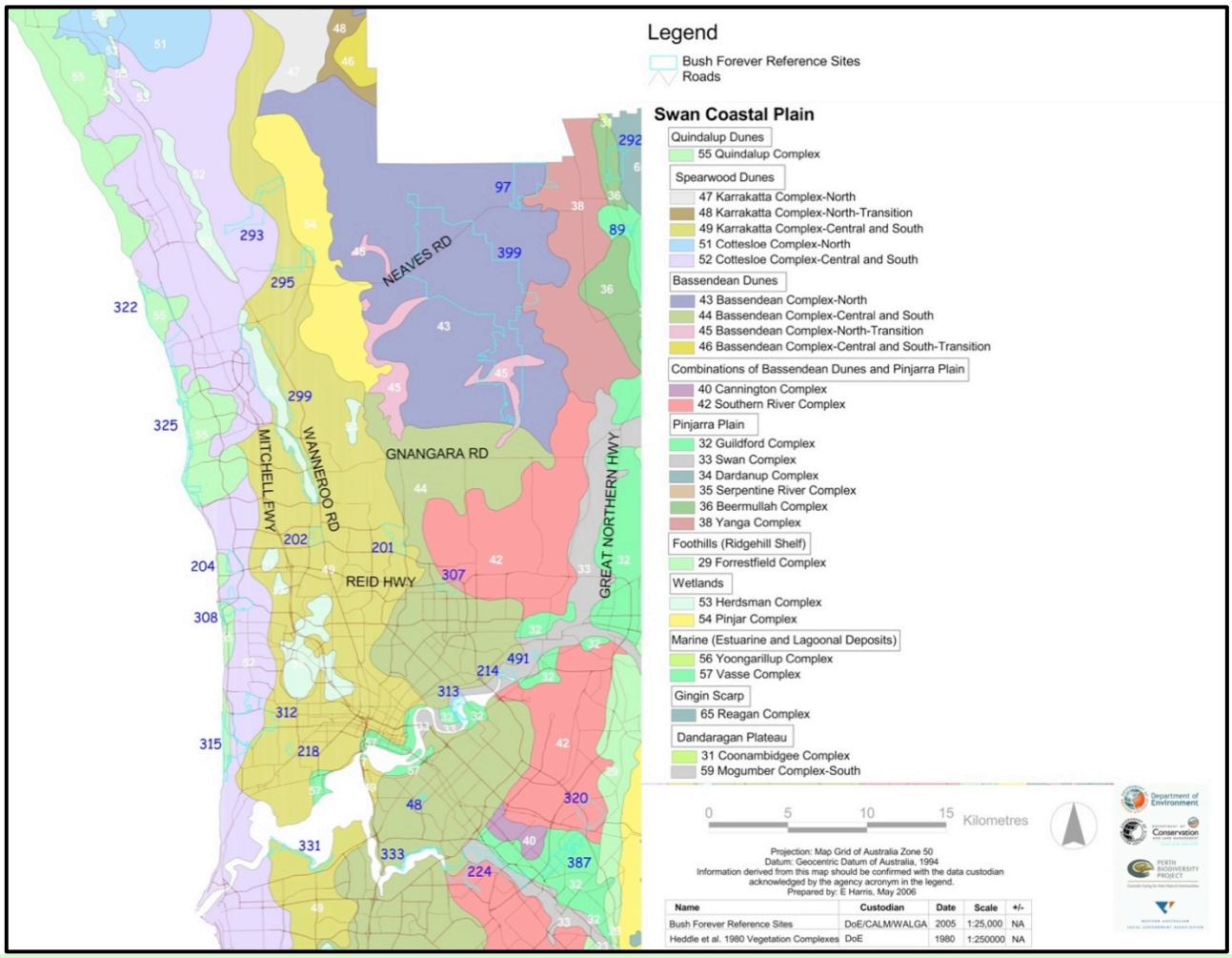



**Figure 34: Vegetation complex map for the Perth area**

This map is from the Perth Plant Biodiversity Project web site (see Box 3, page 35) and shows the location of the *Bush Forever* Sites selected for Reference Sites and the mapped vegetation complexes. Reference Sites in the study area are numbers 315, 312 and 218. Other Reference Sites are referred to when a plant community is considered lost in the study area.

**Information Box 3: Perth Plant Biodiversity Project and *Bush Forever* Reference Site Information**

The Perth Plant Biodiversity Project (PRPB) website (WALGA *et al.* 2006) provides comprehensive local and regional information on the vegetation and flora of typical plant communities from selected *Bush Forever* Sites, the *Bush Forever* Reference Sites. Each *Bush Forever* Reference Site contains a set of photo reference points (PRP) and the local and regional information related to each PRP. This information provides reliable quadrat based vegetation and flora information for revegetation/restoration to the original landform and soil type. The information includes species list for each PRP based on the quadrats used to determine the Swan Coastal Plain floristic community types (SWAFCTs).
A number of PRPs are included in this study, both from PRPs in the study area and PRPs matched to those considered to be present/or have been present in the study area. Each photograph is accompanied by a summary of the local and regional information (ie structural vegetation unit, floristic community type (ie the SWAFCT group), vegetation condition, notes on the vegetation condition, vegetation complex and Environmental Geology unit) on each PRP. A diagrammatic insert that shows the location of the PRP in relation to the landform units identified in the Environmental Geology maps is also included (see Figure 12 for key to the symbols). This information has been summarised from the website and the website can be consulted for additional information.
There are 5 PRPs from *Bush Forever* Sites in the study area (Figures 35, 36, 38, 46 and 47) and 13 matched PRPs from outside the study area (Figures 37, 39, 40, 41, 42, 44, 45, 49, 50, 51, 52, 53 and 56).

## 6.2 Spearwood Dunes

Relatively large areas of the Spearwood Dunes remain as bushland over the Swan Coastal Plain (Figure 1 and Table 1). The soils of the Spearwood Dunes are comparatively the most fertile of the Plain's sands as they have the greatest ability to hold nutrients. As a consequence the Spearwood Dunes many wetlands have been have been cleared for horticulture (planted with vegetables, vine and fruit trees). Uncleared wetlands and dunes supplied areas for grazing throughout the year. The grazing value of the shrublands and woodlands on the dunes was enhanced by frequent burning, new growth of the sedges and shrubs being more palatable to stock. Both the inhospitable terrain of areas with outcropping limestone and their being less susceptible to fire has protected these areas and they remain more intact. However they are a focus for mining, some hills having been totally removed and others altered (section 4.2).

### 6.2.1 *Area Specific Plant Communities*

A variety of vegetation associations have been identified on the Spearwood Dunes in Perth's Bushland. Areas with exposed limestone (Tamala Limestones) support a distinctive suite of vegetation associations, hence the upland Spearwood Dunes vegetation associations are considered under two headings: Tamala Limestone and Sands derived from Tamala Limestones.

#### 6.2.1.1 Tamala Limestones

The main upland associations are mallees, shrublands (includes scrubs and heaths) dominated by a variety of shrubs interleaved with herbs and sedges (Figures 13, 17, 20, 33, 35, 39 to 41 and 45). These broad units and associated dominant species are outlined below (from the *Bush Forever* Site descriptions, Appendix 2)).

**Mallees:** *Eucalyptus foecunda, E. petrensis*
**Shrublands:** *Acacia truncata* (Figure 69), *A. lasiocarpa* var. *lasiocarpa*, *A. xanthina, Calothamnus quadrifidus*, *Banksia* (or *Dryandra*) *sessilis* var. *cygnorum*, *Banksia dallanneyi* var. *dallanneyi* (or *D. lindleyana* subsp. *lindleyana)*, *Gompholobium tomentosum*, *Grevillea crithmifolia*, *G. preissii*, *Hakea trifurcata*, *Hibbertia spicata* subsp. *leptotheca*, *Leucopogon parviflorus*, *Melaleuca systena*, *M. huegelii*, *Templetonia retusa* (Figure 13) and *Trymalium ledifolium* subsp. *ledifolium.*
**Herblands**: *Opercularia vaginata.*
**Sedgelands:** *Desmocladus flexuosus*, *Lepidosperma angustatum.*
**Grasslands:** *Austrostipa flavescens*, *Rytidosperma occidentale.*

While these associations are similar to those found across the PMR, the mallee, *Eucalyptus argutifolia*, is absent from Perth's Bushland. The two mallees found in Perth's Bushland, *Eucalyptus foecunda* and *E. petrensis* are uncommon and do not dominate a significant area of Perth's Bushland. These mallees would have been more abundant before mining of the limestone hills.

6.2.1.2 Sands derived from Tamala Limestones

**Uplands:** The main upland associations are forests to open woodlands associated with a diverse understorey and shrublands (Figure 36). The broad units and associated dominant species are outlined below.

**Open Forests and Woodlands**: *Allocasuarina fraseriana, Banksia attenuata*, *B. grandis, B. menziesii*, *B. prionotes*, *Eucalyptus gomphocephala* and *E. marginata.*

**Mallees**: *Eucalyptus decipiens.*

**Shrublands:** *Conostephium pendulum*, *Daviesia triflora*, *D. nudiflora*, *D. decurrens*, *Gompholobium tomentosum*, *Hardenbergia comptoniana*, *Hibbertia hypericoides*, *H. racemosa*, *Leucopogon propinquus*, *Macrozamia riedlei, Melaleuca systena*, *Phyllanthus calycinus* and *Xanthorrhoea preissii.*

**Herblands:** *Burchardia congesta*, *Conostylis aculeata*, *C. setigera*, *Daucus glochidiatus*, *Dianella revoluta, Lomandra maritima* and *Sowerbaea laxiflora*.

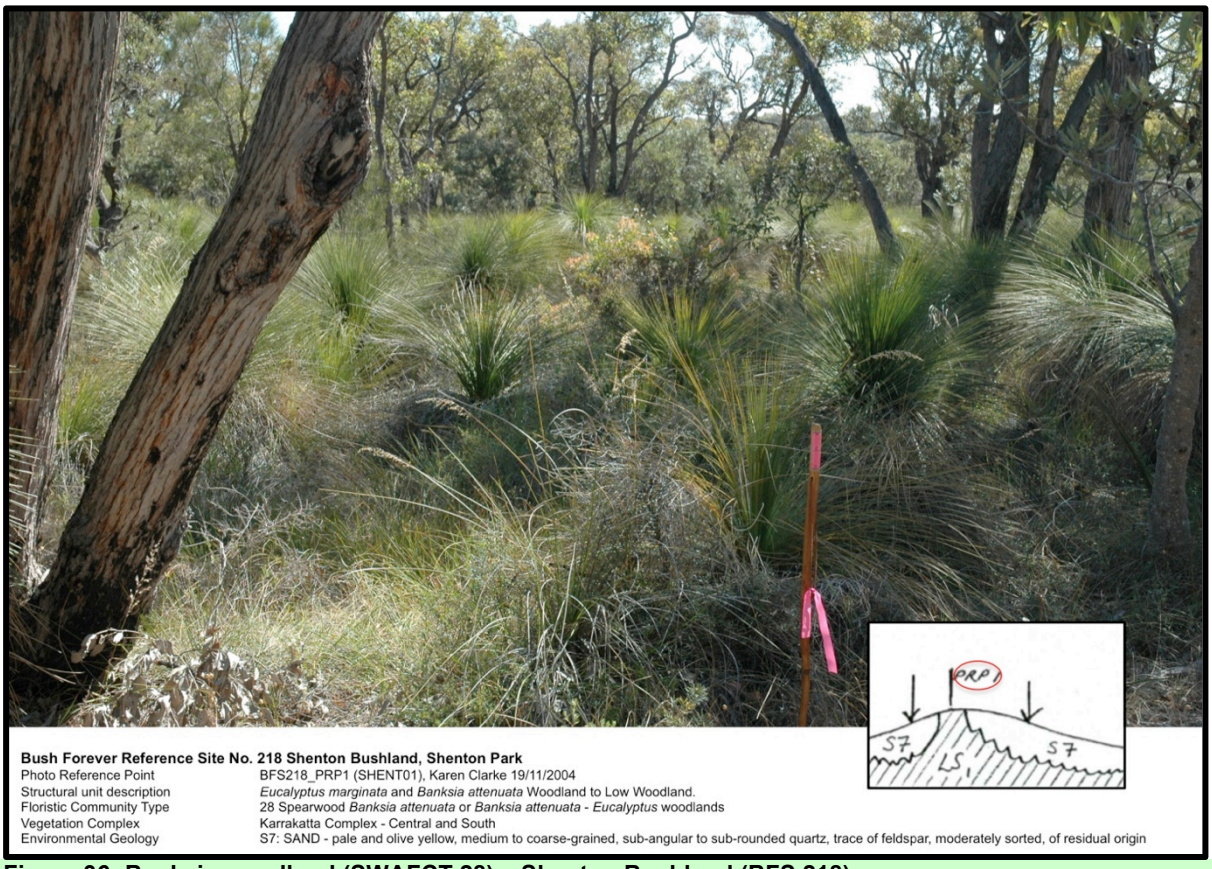
**Sedgelands:** *Desmocladus flexuosus*, *Lepidosperma angustatum, Mesomelaena pseudostygia* and *Schoenus grandiflorus*.

**Grasslands:** *Austrostipa flavescens* and *Rytidosperma occidentale.*


**Bush Forever Reference Site No. 312 Bold Park and Adjacent Bushland, City Beach**

| | |
|---|---|
| Photo Reference Point | BFS312_PRP2 (BOLD 4) Karen Clarke 19/11/2004 |
| Structural unit description | Closed Low Heaths, Closed to Open Heaths and Tall Scrub dominated by *Acacia truncata*, *Melaleuca systena, Calothamnus quadrifidus*, *Dryandra sessilis* var. *cygnorum*, *Grevillea crithmifolia*, *Acacia lasiocarpa*, *Acacia xanthina* and combinations of these |
| Floristic Community Type | 24 Northern Spearwood shrublands and woodlands |
| Vegetation Condition | Good to Very Good |
| Vegetation Complex | Cottesloe Complex - Central and South |
| Environmental Geology | LS1: LIMESTONE - light, yellowish brown, fine to coarse-grained, sub-angular to well rounded, quartz, trace of feldspar, shell debris, variably lithified, surface kankar, of eolian origin |

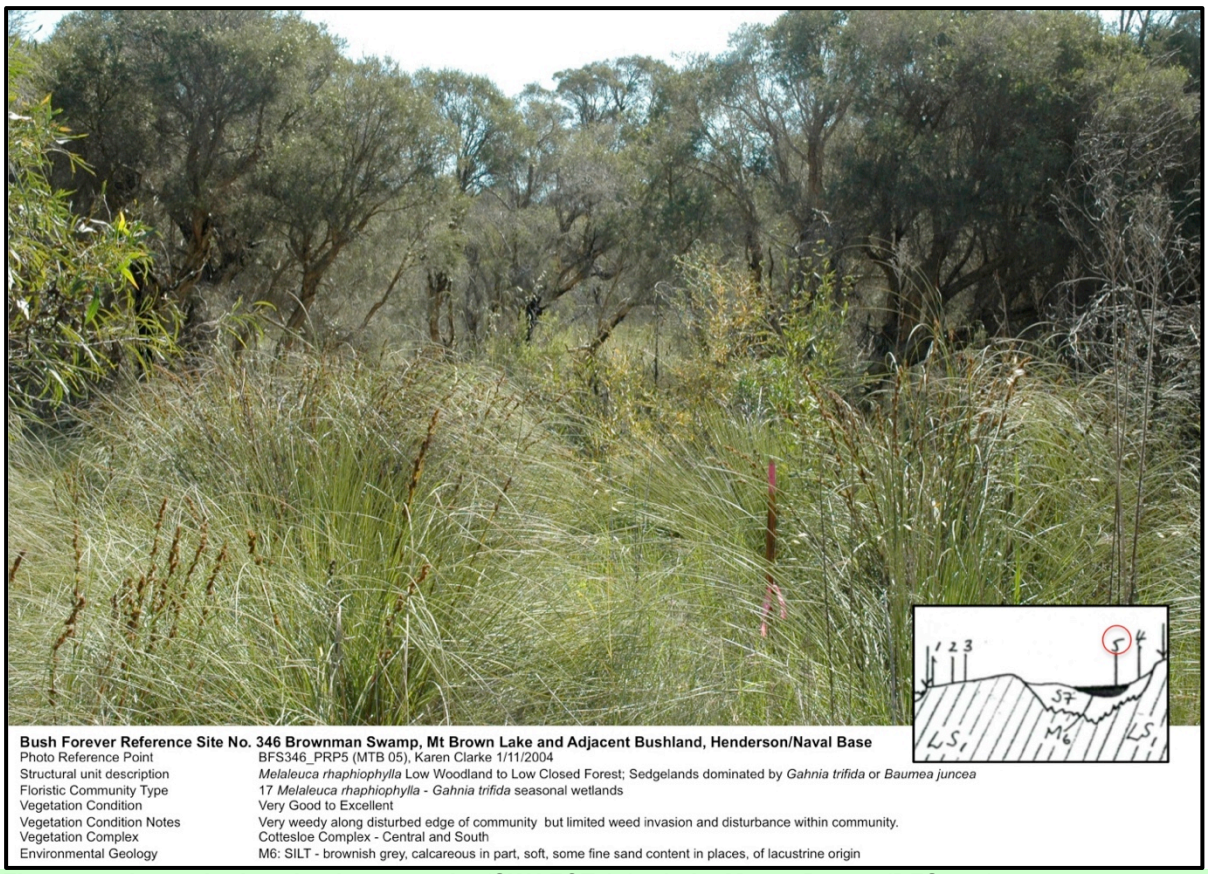
**Figure 35: Tamala Limestone Heath (SWAFCT 24) - Bold Park (BFS 312).**




**Bush Forever Reference Site No. 218 Shenton Bushland, Shenton Park**

| | |
|---|---|
| Photo Reference Point | BFS218_PRP1 (SHENT01), Karen Clarke 19/11/2004 |
| Structural unit description | *Eucalyptus marginata* and *Banksia attenuata* Woodland to Low Woodland. |
| Floristic Community Type | 28 Spearwood *Banksia attenuata* or *Banksia attenuata* - *Eucalyptus* woodlands |
| Vegetation Complex | Karrakatta Complex - Central and South |
| Environmental Geology | S7: SAND - pale and olive yellow, medium to coarse-grained, sub-angular to sub-rounded quartz, trace of feldspar, moderately sorted, of residual origin |

**Figure 36: Banksia woodland (SWAFCT 28) – Shenton Bushland (BFS 218).**




**Bush Forever Reference Site No. 346 Brownman Swamp, Mt Brown Lake and Adjacent Bushland, Henderson/Naval Base**

| | |
|---|---|
| Photo Reference Point | BFS346_PRP5 (MTB 05), Karen Clarke 1/11/2004 |
| Structural unit description | *Melaleuca rhaphiophylla* Low Woodland to Low Closed Forest; Sedgelands dominated by *Gahnia trifida* or *Baumea juncea* |
| Floristic Community Type | 17 *Melaleuca rhaphiophylla* - *Gahnia trifida* seasonal wetlands |
| Vegetation Condition | Very Good to Excellent |
| Vegetation Condition Notes | Very weedy along disturbed edge of community but limited weed invasion and disturbance within community. |
| Vegetation Complex | Cottesloe Complex - Central and South |
| Environmental Geology | M6: SILT - brownish grey, calcareous in part, soft, some fine sand content in places, of lacustrine origin |

**Figure 37: A matched wetland community (SWAFCT 17) – Lake Mount Brown (BFS 346).**

**Wetlands**: The main wetland associations are forests to woodlands and sedgelands (Figure 37). These broad units and associated dominant species are outlined below.

**Open Forests and Woodlands:** *Banksia littoralis, Corymbia* (or *Eucalyptus*) *calophylla* (wetland margins), *Eucalyptus rudis, Melaleuca cuticularis* (saline), and *M. rhaphiophylla*

**Sedgelands – freshwater:** *Baumea articulata*, *B. juncea*, *Bolboschoenus caldwellii, Ficinia nodosa, Gahnia trifida*, *Juncus pallidus* and *Lepidosperma longitudinale*

**Sedgelands – saline influence:** *Baumea juncea*, *Bolboschoenus caldwellii, Cyperus gymnocaulos*, *C. tenuiflora, Ficinia nodosa, Gahnia trifida*, *Juncus kraussii*

### 6.2.2 *Plant communities currently listed for Perth's Bushland*

The upland vegetation associations currently found in Perth's Bushland can be determined from the *Bush Forever* Site descriptions (Appendix 2) and a summary of these is given below.

**Uplands — Tamala Limestone**
*Banksia (or Dryandra) sessilis* var. *cygnorum* and *Acacia xanthina* Tall Open Scrub
*Callitris preissii* Low Woodland
*Melaleuca huegelii* Mixed Closed Heath with *Grevillea preissii* and *Templetonia retusa*
*Banksia (or Dryandra) sessilis* var. *cygnorum* Open Heath
*Banksia (or Dryandra) sessilis* var. *cygnorum* and *Acacia xanthina* Tall Open Scrub
**Uplands (slopes) — Sands derived from Tamala Limestone:**
*Eucalyptus gomphocephala* and *Banksia* species Open Woodland
*Eucalyptus marginata* and *Banksia* species Woodland to Open Woodland
*Eucalyptus gomphocephala* Woodland
*Agonis flexuosa*, *Banksia* species and *Callitris preissii* Low Woodland
*Eucalyptus decipiens* Low Open Woodland

The wetland associations are less varied being: *Eucalyptus rudis* Woodland; *Melaleuca rhaphiophylla* Low Forest to Low Woodland, Mixed Herblands (on dry lake beds); Sedgelands dominated by *Baumea articulata, Bolboschoenus caldwellii*, *Cyperus gymnocaulos* and *C. tenuiflora, Juncus kraussii* and *Ficinia nodosa* alone and in various combinations. As discussed previously (section 4.2) these wetlands have been grossly altered.

### 6.2.3 *Regional Vegetation - Vegetation Complexes*

Within Perth's Bushland there are three vegetation complexes associated with the Spearwood Dunes. The two 'upland' complexes are found only in this major landform (Table 1).

**Table 1: Spearwood Dunes Vegetation complexes**

After Heddle *et al*., (1980). Percentage remaining as native vegetation (DPaW 2014) on the Spearwood Dunes in the Perth-Peel Strategic Assessment boundary*. # on the example indicates a matched community.

| Vegetation Complex | Native Vegetation |
|---|---|
| **Spearwood Dunes** | |
| KARRAKATTA COMPLEX - CENTRAL AND SOUTH: Predominantly open forest of *Eucalyptus gomphocephala - E. marginata - E. calophylla* and woodland of *E. marginata - Banksia* species **Example:** Figures 36 | 17% (6354ha) |
| COTTESLOE COMPLEX - CENTRAL AND SOUTH: Mosaic of woodland of *Eucalyptus gomphocephala* and open forest of *E. gomphocephala - E. marginata - E. calophylla;* closed heath on the limestone outcrops. **Examples:** Figure 35, 38, 39#, 40#, 41#, 42#, 45# | 33% (14459ha) |
| **Wetlands** | |
| HERDSMAN COMPLEX: Sedgelands and fringing woodland of *Eucalyptus rudis - Melaleuca* species. Examples: Figure 37#, 44#, (note these are not mapped as this complex as the areas are two small in area to be differentiated on the maps) | 34% (2826 ha) |

***** The percentage of bushland remaining from each vegetation complex in *Bush Forever* was from 1996 figures for the PMR, the latest similar figures are for the PMR and the Peel Planning Region combined (DPaW 2004).

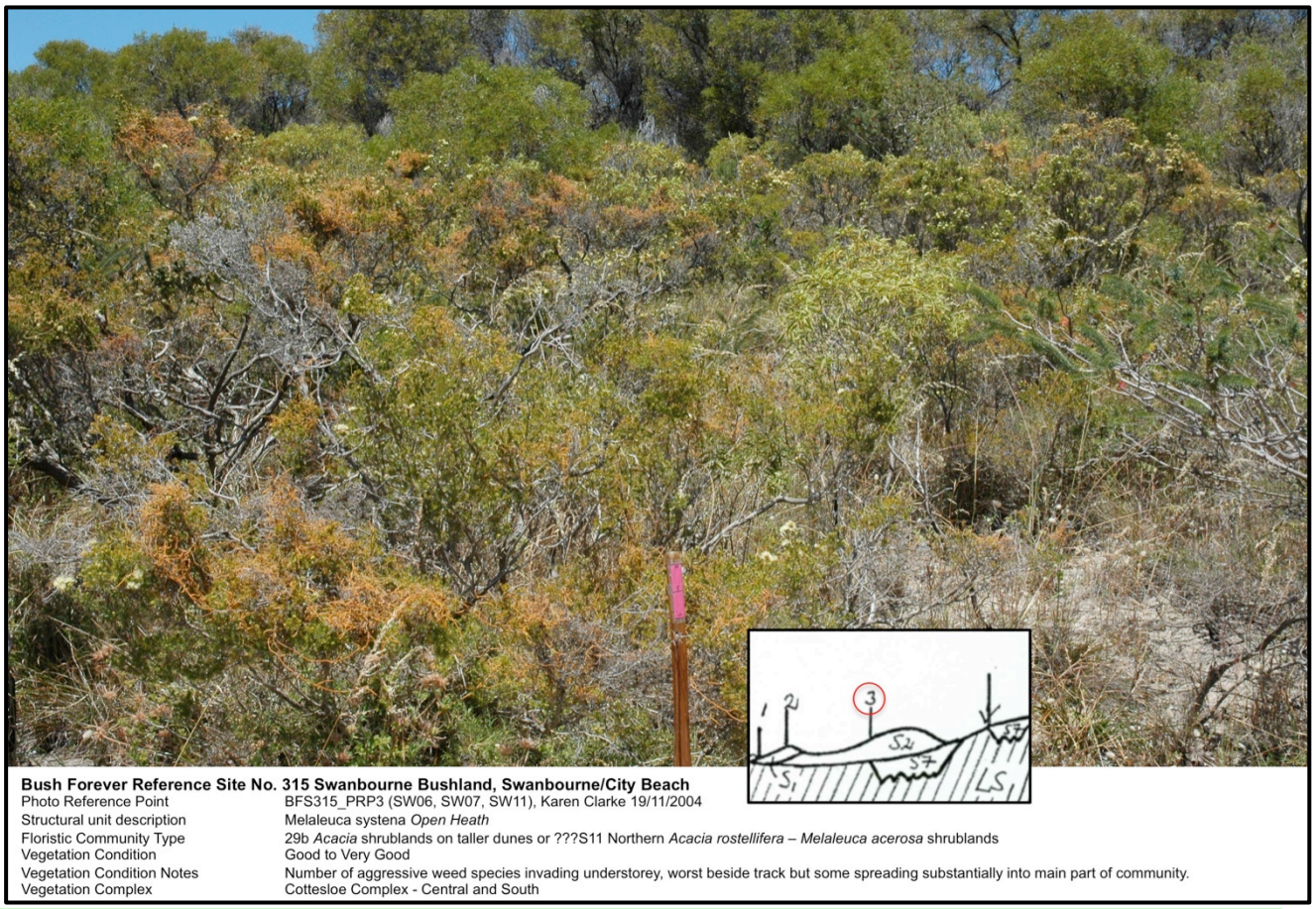



**Figure 38: A *Melaleuca systena* heath (SWAFCT 29b or S11) – Swanbourne Bushland (BFS 315)**
This community is mapped differently in the vegetation complex (Spearwood Dunes) and environmental geology (Quindalup Dunes) mapping hence the two suggested SWAFCTs.

### 6.2.4 *Regional Vegetation – Swan Coastal Plain Floristic Community Types*

Five Swan Coastal Plain Floristic Community Types or SWAFCTs (SWA form the code for the Plain bioregion) have been identified in Perth's Bushland (Table 2, shaded turquoise). Based on the original landforms of the area it is reasoned that another four occurred in Perth's Bushland (not shaded in Table 2). These SWAFCTs are associated with two habitats that are absent, or much reduced and altered in Perth's Bushland: massive outcropping limestone and damplands associated with the remaining sumplands/lakes and margins of the Estuary.

**Table 2: Floristic community types**
(after Gibson *et al*., 1994 and DEP 1996)

**Key**
**Column 1: Floristic Community Type Codes**
Shaded lines indicate SWAFCTs currently recorded from Perth's Bushland, unshaded were expected in Perth's Bushland before landforms/vegetation was altered. The numbers of the types additional to Gibson *et al*. (1994) are italicised if they are subsets of an existing group and italicised and preceded by 'S' if they are supplementary groups. # indicates a matched SWAFCT. SWAFCTs are grouped in large supergroups that reflect the landform/soil units on which they are found.
**Column 2: General Description of Floristic Community Types**
Descriptions are based on generalised information from all plots in the group. Structural units are categorised into forest, woodlands, shrublands, sedgelands and herblands after Gibson *et al.* (1994).
**Column 3: Average Species Richness per Floristic Community Type**
Average species richness per 10x10m plots less those species only occurring in a single plot. Some community types can have a high proportion of single records. Thus these estimates of average species richness are underestimates in some cases.
**Column 4: Threatened Ecological Community Category of Threat after June 2015 (DPaW)**
See Appendix 3 for definition of Threatened Ecological Community and priority (P) categories.

**Supergroup 2 - Seasonal Wetlands**

| | | | |
|---|---|---|---|
| 16 | Highly saline seasonal wetlands example Figures 46#, 52# and 53# | 11.2 | |
| 17 | *Melaleuca rhaphiophylla - Gahnia trifida* seasonal wetlands<br>Examples: Figures 38# and 45# | 13.4 | |
| *S7* | Northern woodlands to forests over tall sedgelands alongside permanent wetlands<br>Examples: Figure 51# | 17.7 | |

**Supergroup 4 - Uplands centred on Spearwood Dunes**

| | | | |
|---|---|---|---|
| *24* | *Northern Spearwood shrublands and woodlands*<br>**Example:** Figure 35 foreground | *38.9* | *P3(i)* |
| *25* | *Southern Eucalyptus gomphocephala - Agonis flexuosa woodlands*<br>**Example:** Figure 35 background | *48.1* | *P3(iii)* |
| 26a | *Melaleuca huegelii - M. systena* shrublands of limestone ridges<br>**Example:** Figure 39#, | 49.6 | EN B)iii |
| 26b | Woodlands and mallees on limestone **Example** Figure 42# | 49.8 | |
| 27 | Species poor mallees and shrublands on limestone<br>**Example:** Figure 40# | 37.3 | |
| 28 | Spearwood *Banksia attenuata* or *B. attenuata - Eucalyptus* species woodlands<br>**Example**: Figures 36 and 42# | 55.1 | * |
| 29b | *Acacia* shrublands on taller dunes or ???S11 Northern *Acacia rostellifera – Melaleuca acerosa* shrublands<br>**Example**: Figure 39 | | (P3i) |

* *Banksia* dominated woodlands of the Swan Coastal Plain IBRA region P3 (iii) and being considered for listing under the *EPBC Act*.

#### 6.2.4.1 Tamala Limestone

Massive limestone occurred as: cliffs along the coast and Swan Estuary (see section 6.4) and on the larger hills across Perth's Bushland. All major remaining occurrences have been altered by mining, and in some cases completely removed. The best remaining examples in Perth's Bushland are on Mt Eliza in Kings Park and the limestone ridges in Bold Park. Bold Park vegetation is unusual as there are often Quindalup Sands over and/or mixed with the Spearwood Sands over the limestone.

It is expected that SWAFCT 26a and b and 27, would have been associated with the Seven Sisters (Figure 23). The best condition, closest now known sequence of these communities is to the north east in Bush Forever Site 293: Shire View Hill and Adjacent Bushland (Figures 39 to 41). Yalgorup National Park and adjacent lands also support similar communities, and being closer to the coast, may have shared additional features.

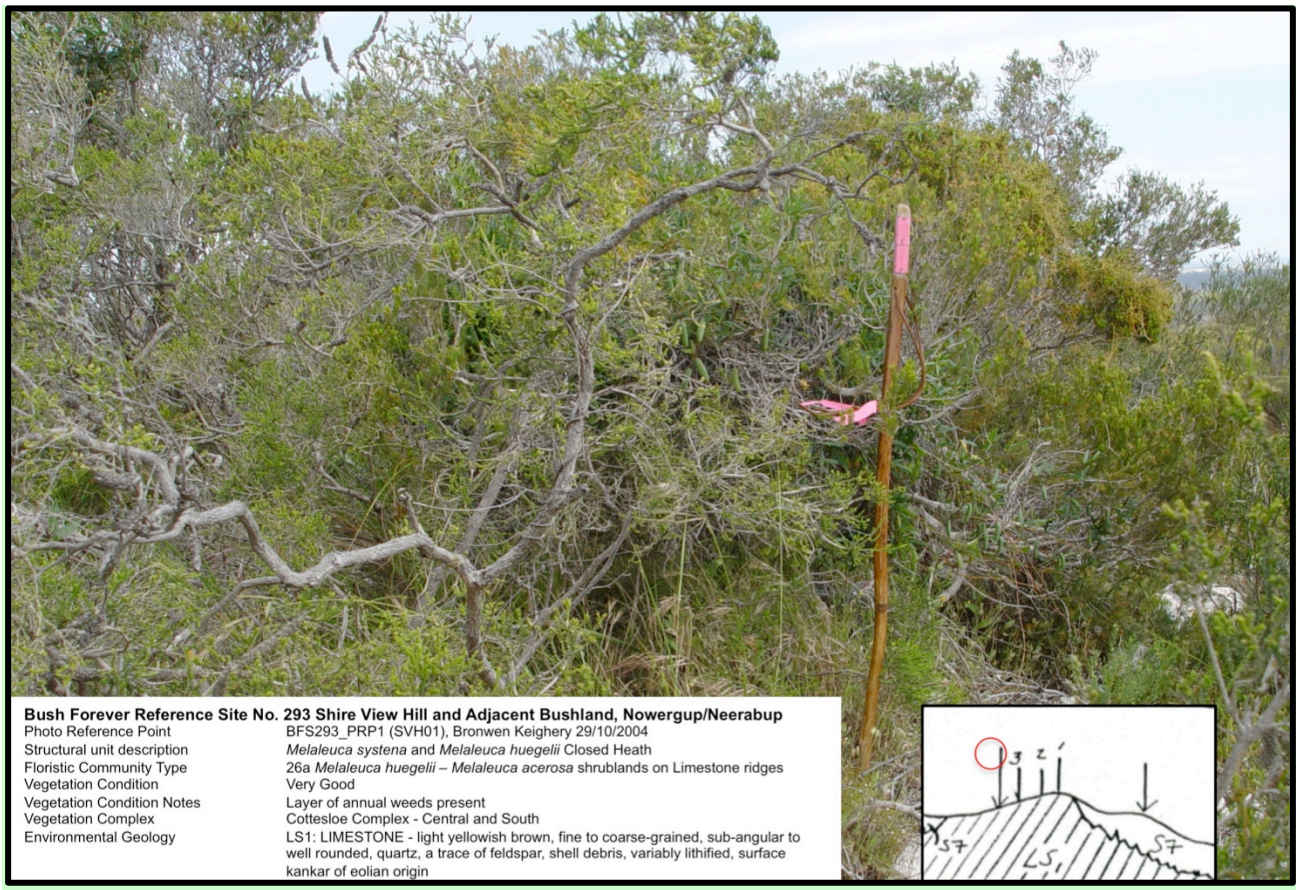



**Figure 39: A *matched* limestone heath (SWAFCT 26a) – Shire View Hill (BFS 293)**

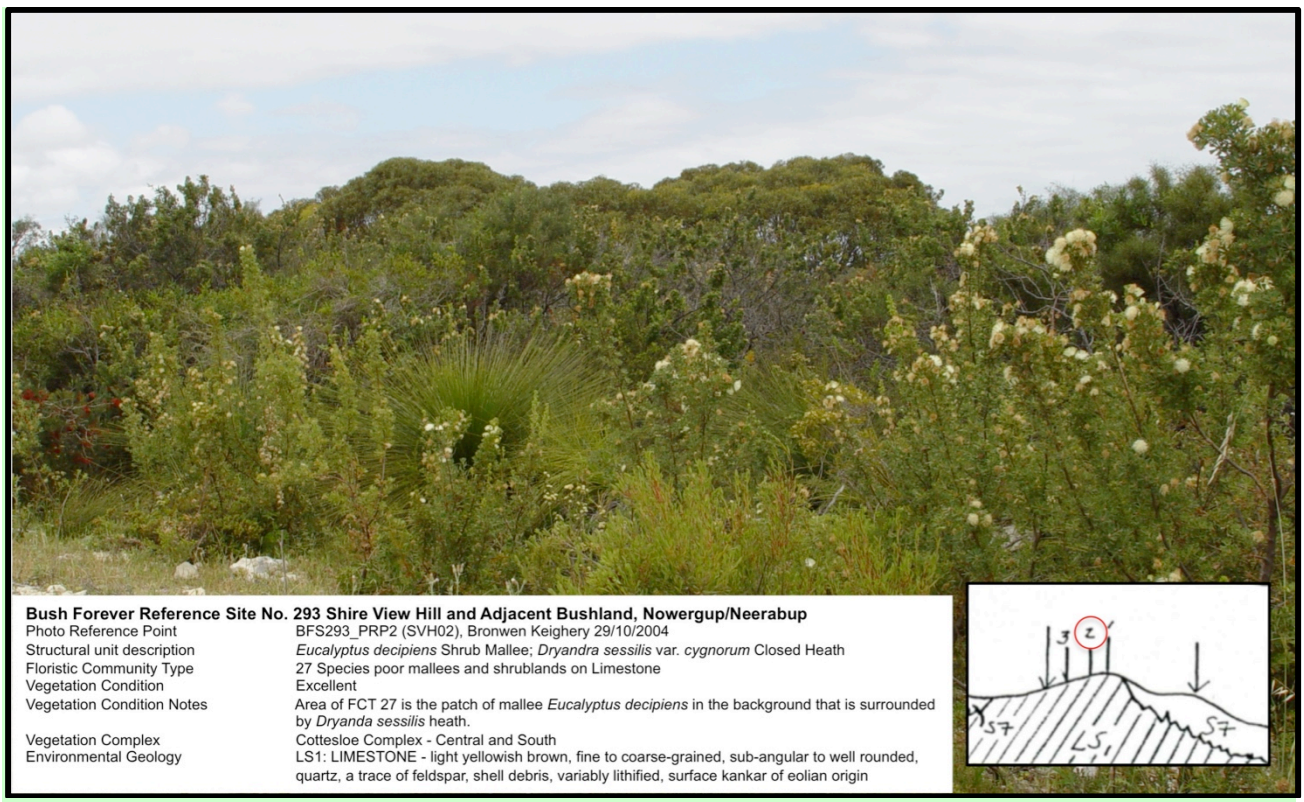



**Figure 40: A matched limestone heath (SWAFCT 27) – Shire View Hill (BFS 293)**

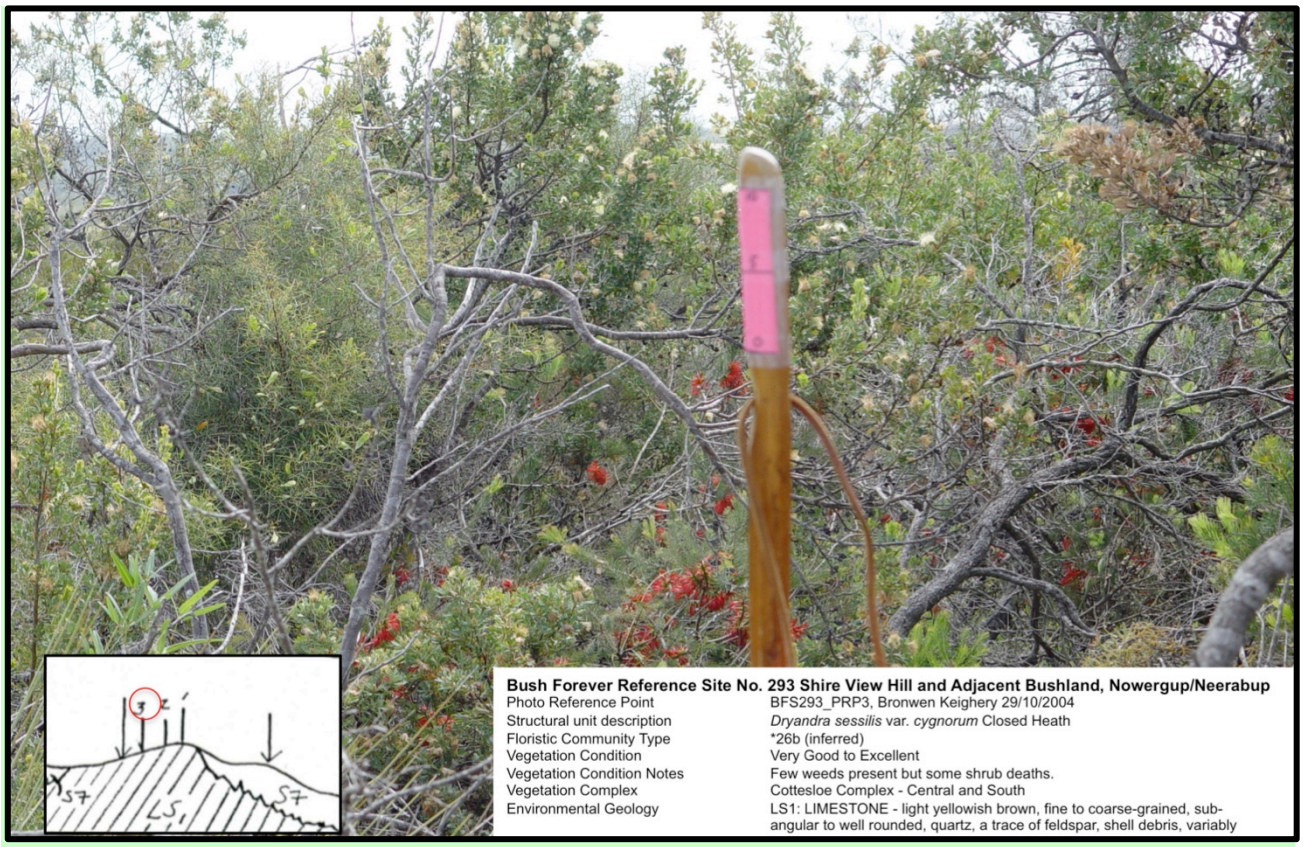



**Figure 41: A matched limestone heath (SWAFCT 26b) – Shire View *Hill* (BFS 293)**

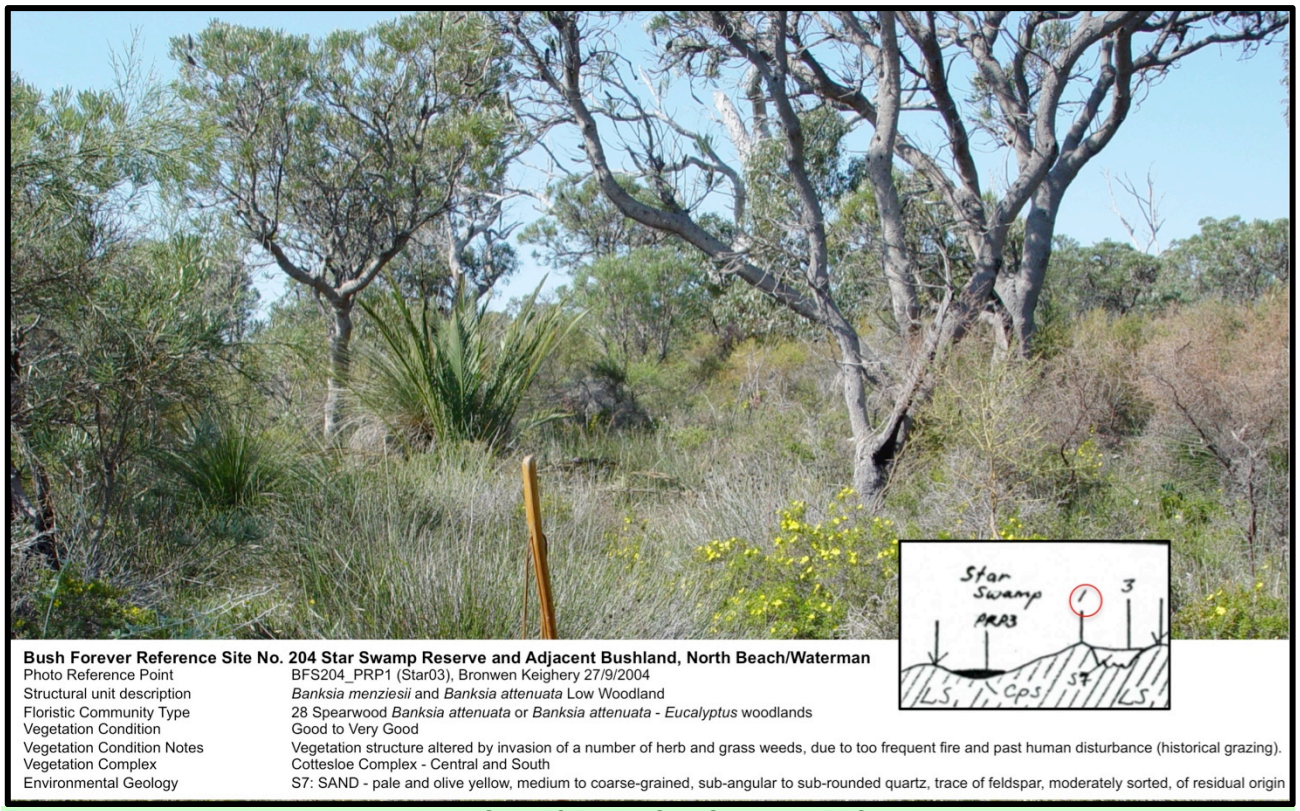



**Figure 42: A matched *Banksia* woodland (SWAFCT 28) – Star Swamp (BFRS 204).**

6.2.4.2 Sands derived from Tamala Limestones

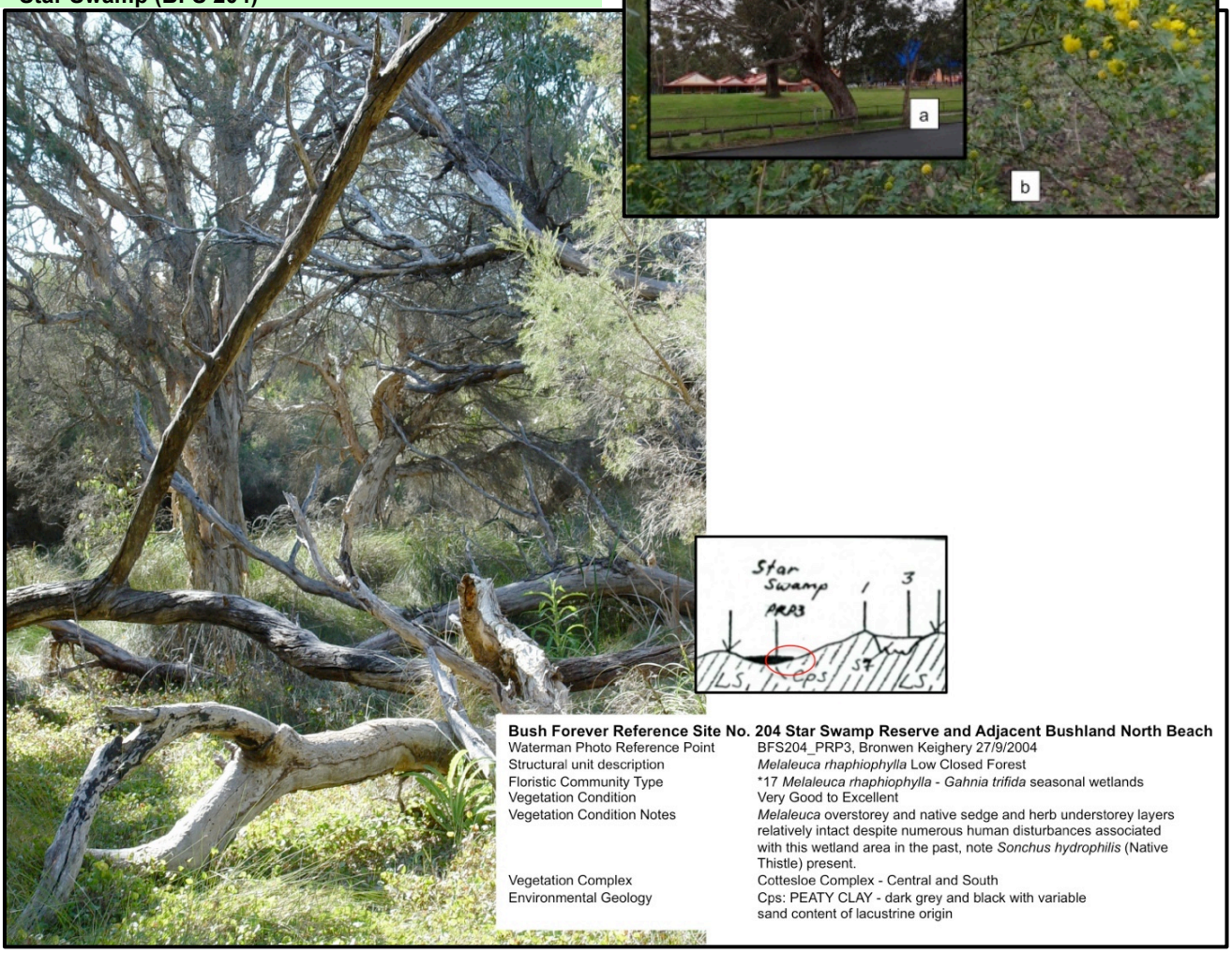
*Banksia attenuata* and *B. menziesii* woodlands (SWAFCT 28), with or without an overstorey of Tuart and Jarrah, would have been the typical communities of these sands of Perth's Bushland (Figures 27, 36 and 42).

6.2.4.3 Damplands

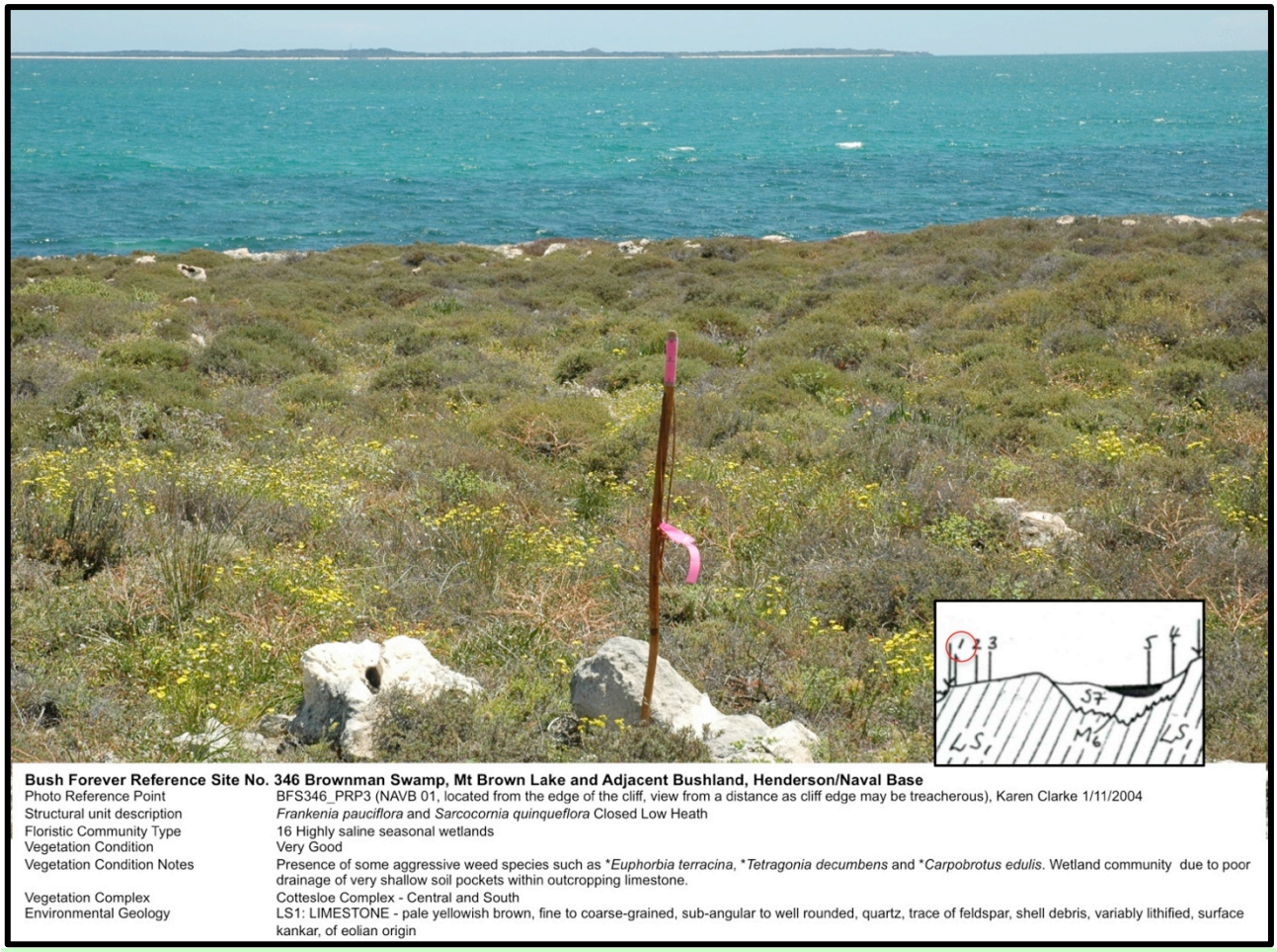
All of sumplands and damplands in Perth's Bushland have lost most of the native vegetation that would have been associated with the dampland margins. In a few places remaining *Eucalyptus rudis* trees (Flooded Gum) are the only key to the area's previous life as a dampland. A lone tree to the south west of Floreat Primary School (Figure 43a) is such an occurrence. The damplands associated with the Estuary have also been lost, the wetlands at the edge of the Estuary being reduced to narrow bands of inundated shallows. With the general loss of freshwater seepage areas this vegetation is also lost.


**Figure 43: A lost wetland marked by a Flooded Gum**
This Flooded Gum (a) has been alongside the Floreat Primary School for as long as Bronwen can remember, the only remnant of a past, unmapped wetland. Other remnant native plants are seen in (b).

**Figure 44: A matched wetland community (SWAFCT 17) – Star Swamp (BFS 204)**



Wetlands are not typically associated with outcropping limestone but, a wetland community has been identified on the Tamala Limestone coastal cliffs (SWAFCT 16, Figure 46) at Naval Base in the PMR and it is thought that this community would have occurred in Perth's Bushland on the limestone cliffs at the Swan Estuary entrance (Arthur and Rous Heads) and on the Cottesloe Beach limestone cliffs.




**Bush Forever Reference Site No. 346 Brownman Swamp, Mt Brown Lake and Adjacent Bushland, Henderson/Naval Base**

| | |
|---|---|
| Photo Reference Point | BFS346_PRP3 (NAVB 01, located from the edge of the cliff, view from a distance as cliff edge may be treacherous), Karen Clarke 1/11/2004 |
| Structural unit description | *Frankenia pauciflora* and *Sarcocornia quinqueflora* Closed Low Heath |
| Floristic Community Type | 16 Highly saline seasonal wetlands |
| Vegetation Condition | Very Good |
| Vegetation Condition Notes | Presence of some aggressive weed species such as **Euphorbia terracina*, **Tetragonia decumbens* and **Carpobrotus edulis*. Wetland community due to poor drainage of very shallow soil pockets within outcropping limestone. |
| Vegetation Complex | Cottesloe Complex - Central and South |
| Environmental Geology | LS1: LIMESTONE - pale yellowish brown, fine to coarse-grained, sub-angular to well rounded, quartz, trace of feldspar, shell debris, variably lithified, surface kankar, of eolian origin |

**Figure 45: A matched coastal limetone community (SWAFCT 16) – Naval Base (BFS 346).**

SWAFCT 16 in this location is today very rare. Previous locations were most likely spread from Burns Beach to Cape Naturaliste where limestone cliffs come to the sea.

## 6.3 Quindalup Dunes

Relatively large areas of the Quindalup Dunes remain as bushland (Table 3). The soils of the Quindalup Dunes have very low fertility and, until recently, have remained vegetated. However, similarly to the Spearwood Dunes, the uncleared dunes have been subject to substantial grazing pressure. While this has had low impact on the slopes of the dunes, the protected swales have been favoured as stock watering and shelter points and the vegetation in the swales has been generally degraded.


**Bush Forever Reference Site No. 315 Swanbourne Bushland, Swanbourne/City Beach**

| | |
|---|---|
| Photo Reference Point | BFS315_PRP1 (SW01), Karen Clarke 19/11/2004 |
| Structural unit description | *Spinifex hirsutus* Grassland |
| Floristic Community Type | S14 *Spinifex longifolius* grassland and low shrublands |
| Vegetation Condition | Good to Very Good |
| Vegetation Condition Notes | Vegetation structure significantly altered. Most of area dominated by aggressive coastal weed species scuh as **Ammophila arenaria* (Marram Grass), **Tetragonia decumbens* (Sea Spinach) and **Trachyandra divaricata* (Dune Onion Weed). |
| Vegetation Complex | Quindalup Complex |
| Environmental Geology | S1: CALCAREOUS SAND - white, fine to medium-grained, sub-rounded quartz and shell debris, of eolian origin |

**Figure 46: Grassland (SWAFCT S14) – Swanbourne Bushland (BFS 315).**

### 6.3.1 *Area Specific Plant Communities*

A variety of vegetation associations have been identified on the Quindalup Dunes. The different associations are related to the age of the dunes on which they occur, the degree of protection from prevailing winds and the relationship between the Quindalup Sands and the adjacent Tamala Limestone surfaces. These broad units and associated dominant species are outlined below.

**Uplands:** The main upland associations are grasslands, shrublands and less commonly woodlands to open woodlands. These broad units and associated dominant species listed below.

**Woodlands**: *Eucalyptus gomphocephala*, *Callitris preissii* (generally patches near coast, Swan Estuary and, Garden and Rottnest Islands in PMR) and *Melaleuca lanceolata* (uncommon in the PMR along estuary and on Garden and Rottnest Islands).

**Shrublands:** *Acacia lasiocarpa* var. *lasiocarpa*, *A. rostellifera*, *A. cyclops, Eremophila glabra* subsp. *albicans*, *Jacksonia furcellata*, *Olearia axillaris*, *Melaleuca systena*, *Phyllanthus calycinus*, *Rhagodia baccata*, *Nemcia reticulata*, *Scaevola crassifolia*, *S. nitida* and *Spyridium globulosum*,

**Herblands**: *Acanthocarpus preissii, Conostylis candicans*, *Lomandra maritima*, *Opercularia vaginata* and *Senecio pinnatifolius* (previously) *lautus*).

**Sedgelands:** *Desmocladus flexuosus*, *Ficinia nodosus*, *Lepidosperma gladiatum, L. angustatum* and *Schoenus grandiflorus*
**Grasslands:** *Spinifex hirsutus, S. longifolius*, *Austrostipa flavescens*, *A. elegantissima* and *Poa porphyroclados.*

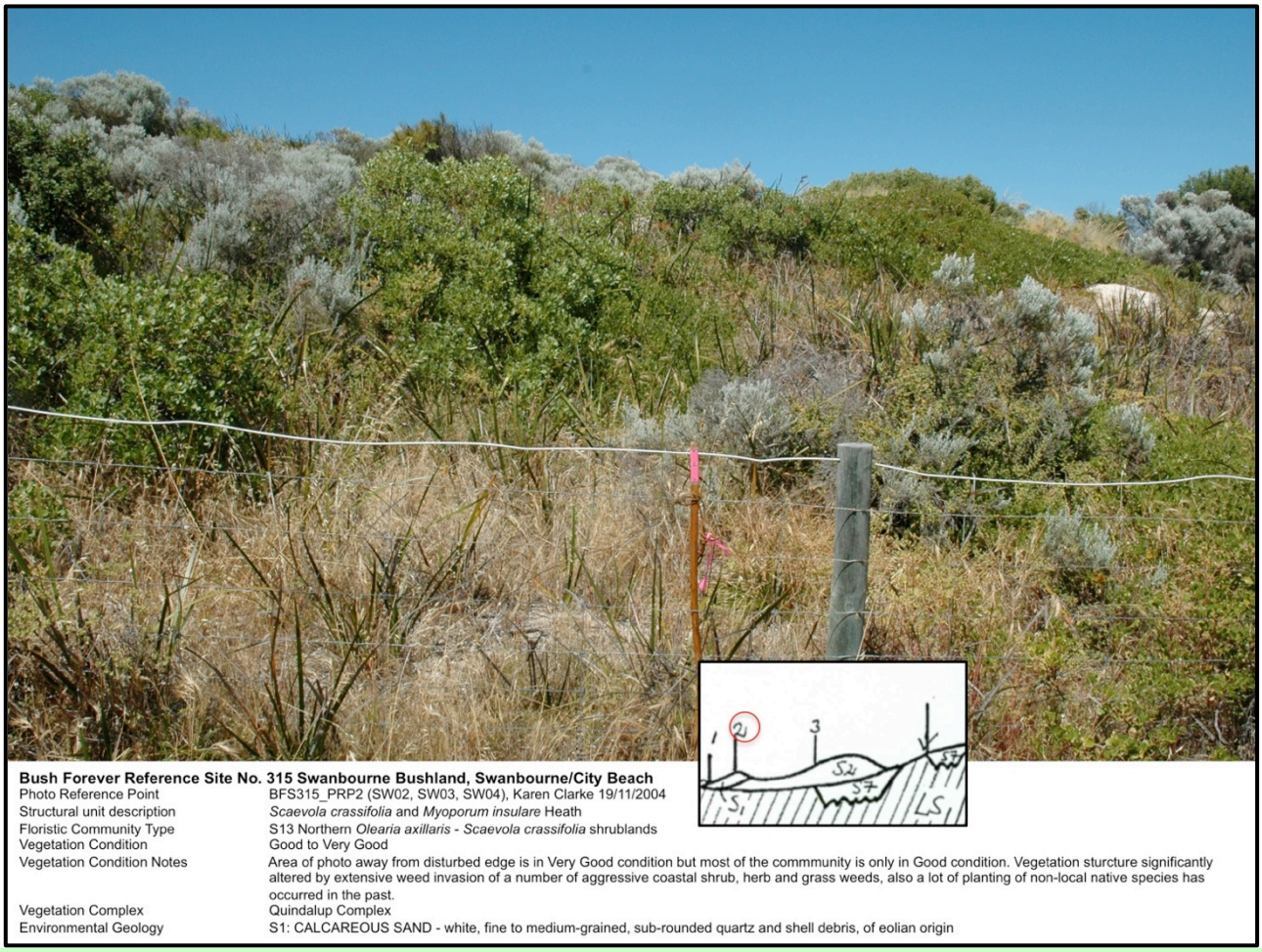



**Figure 47: A coastal heath (SWAFCT S13) – Swanbourne Bushland (BFS 315).**

### 6.3.2 *Plant communities currently listed for Perth's Bushland*

The upland vegetation associations currently found in Perth's Bushland can be determined from the *Bush Forever* Site descriptions (Appendix 2) and a summary of these is given below.

**Oldest dunes and plains (limited area) - Woodlands**
*Eucalyptus gomphocephala* Woodland
*Callitris preissii* Low Closed Forest to Low Woodland
*Agonis flexuosa* Low Closed Forest to Low Woodland
**Oldest dunes and plains (limited area) - Shrublands**
*Allocasuarina lehmanniana* subsp. *lehmanniana* Closed Tall Scrub
*Acacia rostellifera* Closed Tall Scrub
Open Low Heaths dominated by *Melaleuca systena*, *Acacia rostellifera* (Figure 48), *A. lasiocarpa*, *Calothamnus quadrifidus* over Herblands dominated by *Lomandra maritima*
Open Heaths dominated by *Melaleuca systena*, *Acacia rostellifera, Chamelaucium uncinatum*, *Calothamnus quadrifidus*, *Olearia axillaris*, *Acacia xanthina* and combinations of these over Herblands dominated by *Lomandra* species.
**Youngest dunes – Shrublands:** Open Low Heaths to Closed Tall Scrub dominated by *Myoporum insulare*, *Scaevola crassifolia*, *Acacia rostellifera*, *Olearia axillaris*
**Strand:** *Spinifex hirsutus* Grassland


**Figure 48: *Acacia rostellifera***
A sand stabilising shrub of *Acacia rostellifera* (a) and a group of round inflorescences (b).

### 6.3.3 *Regional Vegetation - Vegetation Complexes*

At the regional level one upland vegetation complex (Table 3) has been identified as being confined to the Quindalup Dunes. A wetland complex is also associated with the Quindalup Dunes. All Quindalup Dunes in Perth's Bushland are mapped a Quindalup Complex, here are no areas of Herdsman Complex within these Dunes in Perth's Bushland.

**Table 3: Vegetation complexes**
After Heddle *et al*., (1980). Percentage remaining as native vegetation (DPaW 2014) on the Quindalup Dunes in the Perth-Peel Strategic Assessment boundary.

| **Vegetation Complex** | **Native Vegetation** |
|---|---|
| **Quindalup Dunes** | |
| QUINDALUP COMPLEX: Coastal dune complex consisting mainly of two alliances - the strand and foredune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata* - *Callitris preissii* and the closed scrub of *Acacia rostellifera.* **Example** Figures 46, 47, 49#, | 51% (14238ha) |
| **Wetlands** | |
| HERDSMAN COMPLEX: Sedgelands and fringing woodland of *Eucalyptus rudis* - *Melaleuca* species | 34% (2825HA) |

### 6.3.4 *Regional Vegetation – Swan Coastal Plain Floristic Community Types*

In Perth's Bushland five upland SWAFCTs types have been recorded (Table 4). One of the SWAFCTs on Quindalup Dunes is a threatened ecological community (this is SWAFCT30a after Gibson *et al.* 1994 and was not as redefined by additional survey and analysis for *Bush Forever*) is found in Perth's Bushland in

Bush Forever Site 315 (Swanbourne Bushland) (Figure 49, a matched site as this community is in a restricted access area), and is also associated with populations of *Callitris preissii* on the estuarine cliffs (Figure 55).

**Table 4: Floristic community types**

Key

**Column 1: Floristic Community Type Codes (after Gibson *et al*., 1994, and DEP, 1996)**

Shaded lines indicate SWAFCTs currently recorded from Perth's Bushland, unshaded were expected in Perth's Bushland before landforms/vegetation was altered. The numbers of the types additional to Gibson *et al*. (1994) are italicised if they are subsets of an existing group and italicised and preceded by 'S' if they are supplementary groups. # indicates a matched SWAFCT. SWAFCTs are grouped in large supergroups that reflect the landform/soil units on which they are found.

**Column 2: General Description of Floristic Community Types**

Descriptions are based on generalised information from all plots in the group. Structural units are categorised into forest, woodlands, shrublands, sedgelands and herblands after Gibson *et al.* (1994).

**Column 3: Average Species Richness per Floristic Community Type**

Average species richness per 10x10m plots less those species only occurring in a single plot. Some community types can have a high proportion of single records. Thus these estimates of average species richness are underestimates in some cases.

**Supergroup 4 - Uplands centred on Spearwood and Quindalup Dunes**

| **Quindalup Dunes** | | |
|---|---|---|
| 29b | *Acacia* shrublands on taller dunes **Example**: Figure 38 | 34.2 |
| *30a2** | *Callitris preissii* and/or *Melaleuca lanceolata* forests & woodlands **Example:** Figure 49# | 17.5 |
| *S11* | Northern *Acacia rostellifera - Melaleuca acerosa* shrublands **Example:** Figure 38 | 21.0 |
| *S13* | Northern *Olearia axillaris - Scaevola crassifolia* shrublands **Example:** Figure 47 | 18.8 |
| *S14* | *Spinifex longifolius* grassland and low shrublands **Example:** Figure 46 | 8.6 |

*30a *Callitris preissii* and/or *Melaleuca lanceolata* forests and woodlands VU B)

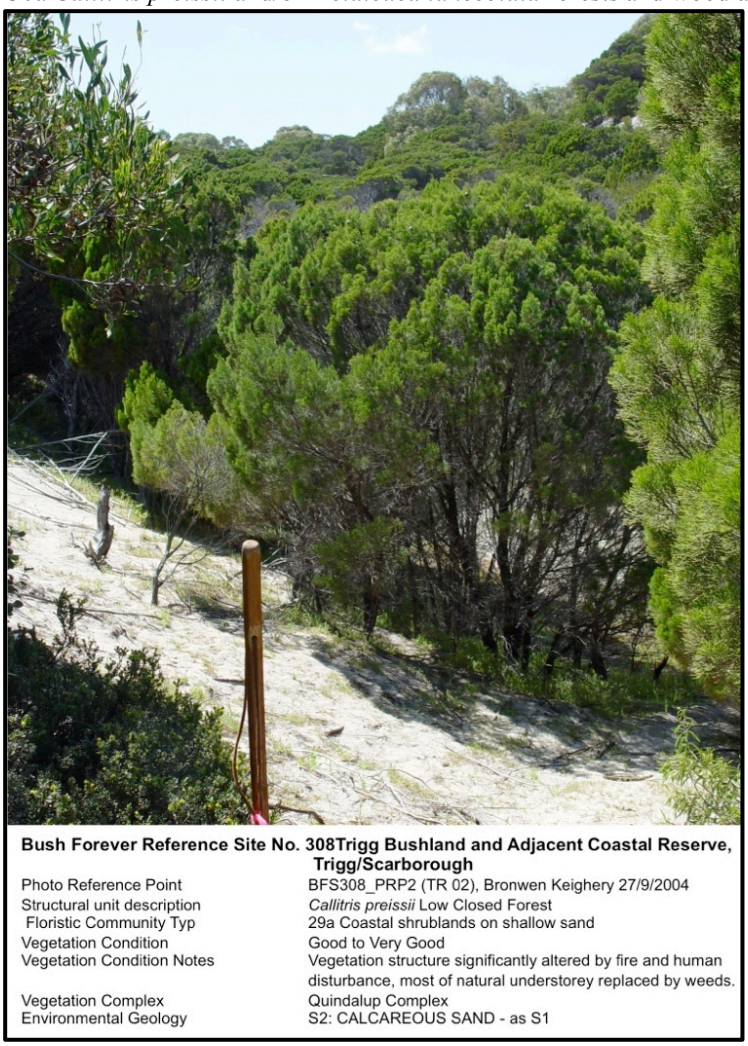



**Figure 49: A matched *Callitris preissii* forest– Trigg Bushland (BFS 308)**
This community is in the Swanbourne Bushland (Bush Forever Site 315), in the area used by the Australian Army and is not able to be visited on a normal basis.

## 6.4 Estuaries, Rivers and Creeks

Vegetation associated with estuaries, rivers and creeks is typically highly cleared. The presence of relatively fertile soils and fresh water from the estuary, river or creek or shallow wells adjacent to transport corridors made these areas the first focus for agriculture. In addition many of the wet flats have been drained and filled for agriculture, playing fields and roads. Only one per cent of the native vegetation in the vegetation complex associated with these areas remained in the PMR in 1996, with new figures taking into account the Peel Region this has increased substantially (Table 5).

### 6.4.1 *Area Specific Plant Communities*

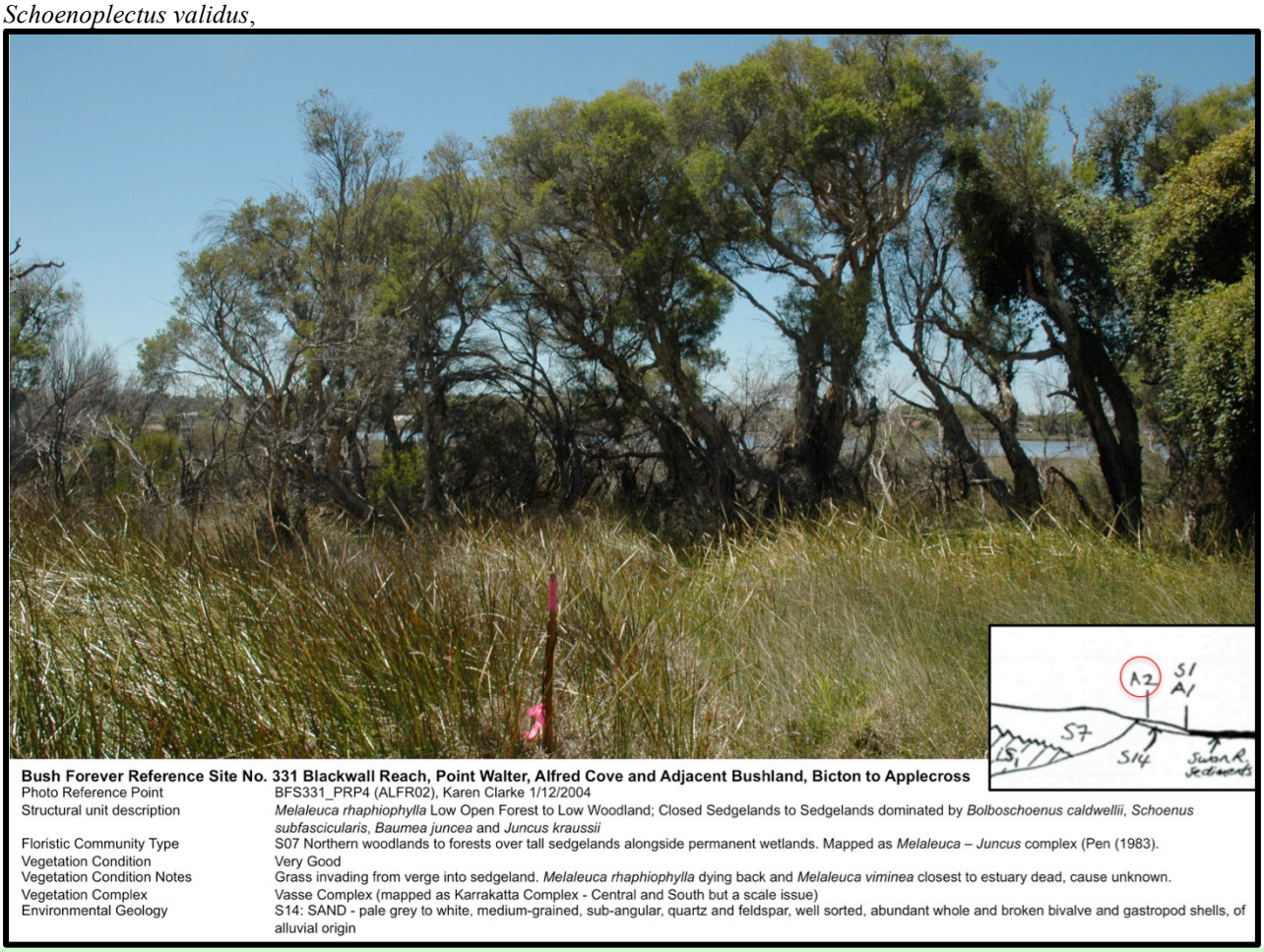
A variety of vegetation associations have been identified on the slopes and wetflats along estuaries.

6.4.1.1 Wetflats

The main vegetation associations on the wetflats are forest to woodland, shrublands and sedgelands. While the estuarine margins are typically saline, freshwater seepages result in the local occurrence of freshwater communities. These broad units and associated dominant species are listed below.

**Forests and Woodlands:** *Casuarina obesa, Eucalyptus rudis*, *Melaleuca rhaphiophylla* and *M. cuticularis.*
**Shrublands:** *Halosarcia* species, *Melaleuca viminea* and *Sarcocornia* species.
**Sedgelands:** *Baumea juncea*, *Bolboschoenus caldwellii*, *Gahnia trifida*, *Juncus kraussii*, *J. pallidus* and *Meeboldina* species.

*Schoenoplectus validus*,



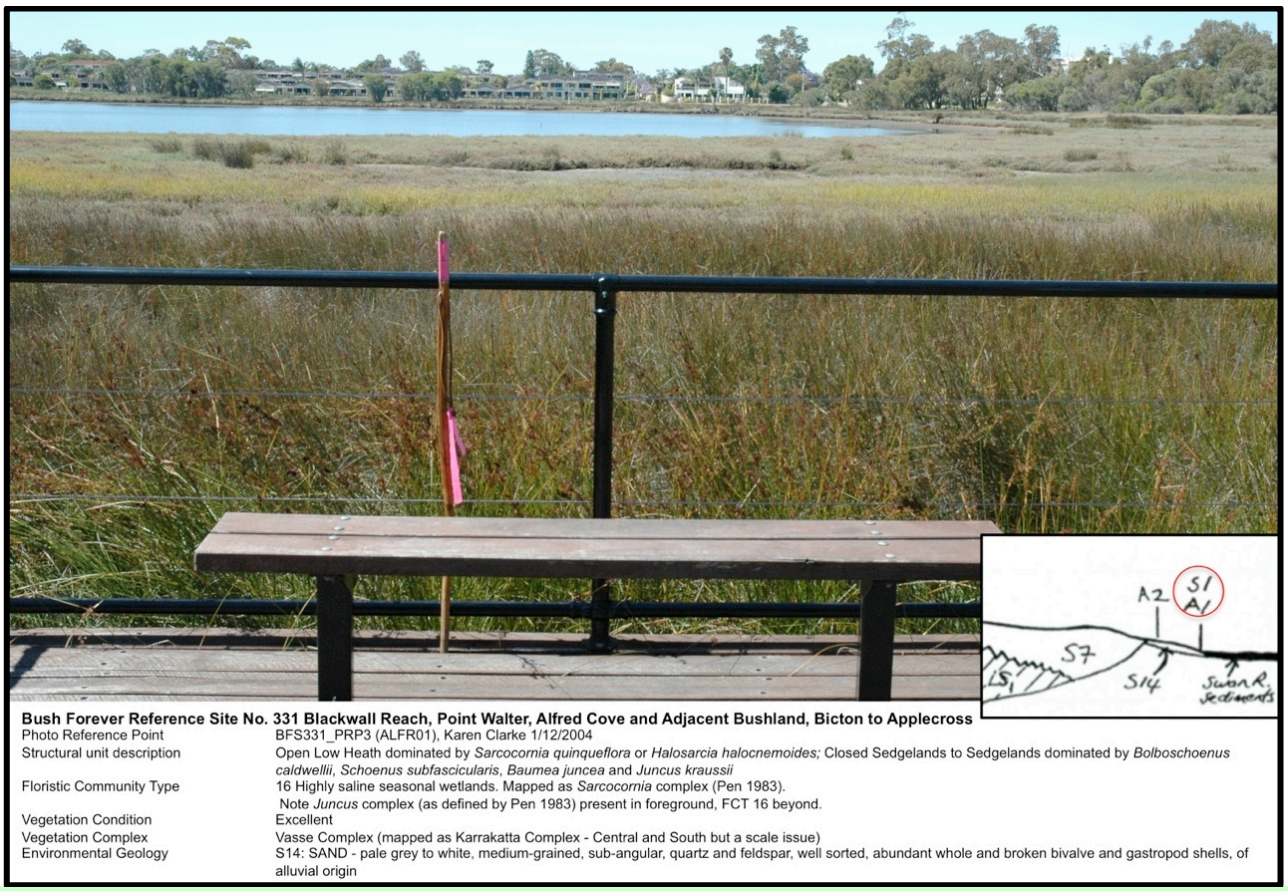

| Bush Forever Reference Site No. 331 Blackwall Reach, Point Walter, Alfred Cove and Adjacent Bushland, Bicton to Applecross | |
|---|---|
| Photo Reference Point | BFS331_PRP4 (ALFR02), Karen Clarke 1/12/2004 |
| Structural unit description | *Melaleuca rhaphiophylla* Low Open Forest to Low Woodland; Closed Sedgelands to Sedgelands dominated by *Bolboschoenus caldwellii*, *Schoenus subfascicularis*, *Baumea juncea* and *Juncus kraussii* |
| Floristic Community Type | S07 Northern woodlands to forests over tall sedgelands alongside permanent wetlands. Mapped as *Melaleuca – Juncus* complex (Pen (1983). |
| Vegetation Condition | Very Good |
| Vegetation Condition Notes | Grass invading from verge into sedgeland. *Melaleuca rhaphiophylla* dying back and *Melaleuca viminea* closest to estuary dead, cause unknown. |
| Vegetation Complex | Vasse Complex (mapped as Karrakatta Complex - Central and South but a scale issue) |
| Environmental Geology | S14: SAND - pale grey to white, medium-grained, sub-angular, quartz and feldspar, well sorted, abundant whole and broken bivalve and gastropod shells, of alluvial origin |

**Figure 50: A matched estuarine wetland community (SWAFCT S07) – Blackwell Reach (BFS 331)**

**Bush Forever Reference Site No. 333 Canning River Foreshore, Salter Point to Wilson**

| | |
|---|---|
| Photo Reference Point | BFS333_PRP1 (Sandon 01), Karen Clarke 1/12/2004 |
| Structural unit description | Open Forest to Low Open Forest dominated by *Casuarina obesa, Melaleuca rhaphiophylla and/or M. preissiana* (on opposite side of the water); *Juncus kraussii* Sedgeland to Closed Sedgeland in foreground |
| Floristic Community Type | 16 Highly saline seasonal wetlands. Mapped as *Juncus* complex (Pen (1983). |
| Vegetation Condition | Excellent |
| Vegetation Complex | Swan Complex (mapped as Bassendean Complex - Central and South but a scale issue) |
| Environmental Geology | S14: SAND - pale grey to white, medium-grained, sub-angular, quartz and feldspar, well sorted, abundant whole and broken bivalve and gastropod shells, of alluvial origin |

**Figure 51: A matched estuarine wetland community (SWAFCT 16) – Canning River Foreshore (BFS 333)**




**Bush Forever Reference Site No. 331 Blackwall Reach, Point Walter, Alfred Cove and Adjacent Bushland, Bicton to Applecross**

| | |
|---|---|
| Photo Reference Point | BFS331_PRP3 (ALFR01), Karen Clarke 1/12/2004 |
| Structural unit description | Open Low Heath dominated by *Sarcocornia quinqueflora* or *Halosarcia halocnemoides;* Closed Sedgelands to Sedgelands dominated by *Bolboschoenus caldwellii, Schoenus subfasciculatis, Baumea juncea* and *Juncus kraussii* |
| Floristic Community Type | 16 Highly saline seasonal wetlands. Mapped as *Sarcocornia* complex (Pen 1983).<br>Note *Juncus* complex (as defined by Pen 1983) present in foreground, FCT 16 beyond. |
| Vegetation Condition | Excellent |
| Vegetation Complex | Vasse Complex (mapped as Karrakatta Complex - Central and South but a scale issue) |
| Environmental Geology | S14: SAND - pale grey to white, medium-grained, sub-angular, quartz and feldspar, well sorted, abundant whole and broken bivalve and gastropod shells, of alluvial origin |

**Figure 52: A matched estuarine wetland community (SWAFCT 16) – Blackwell Reach (BFS 331).**

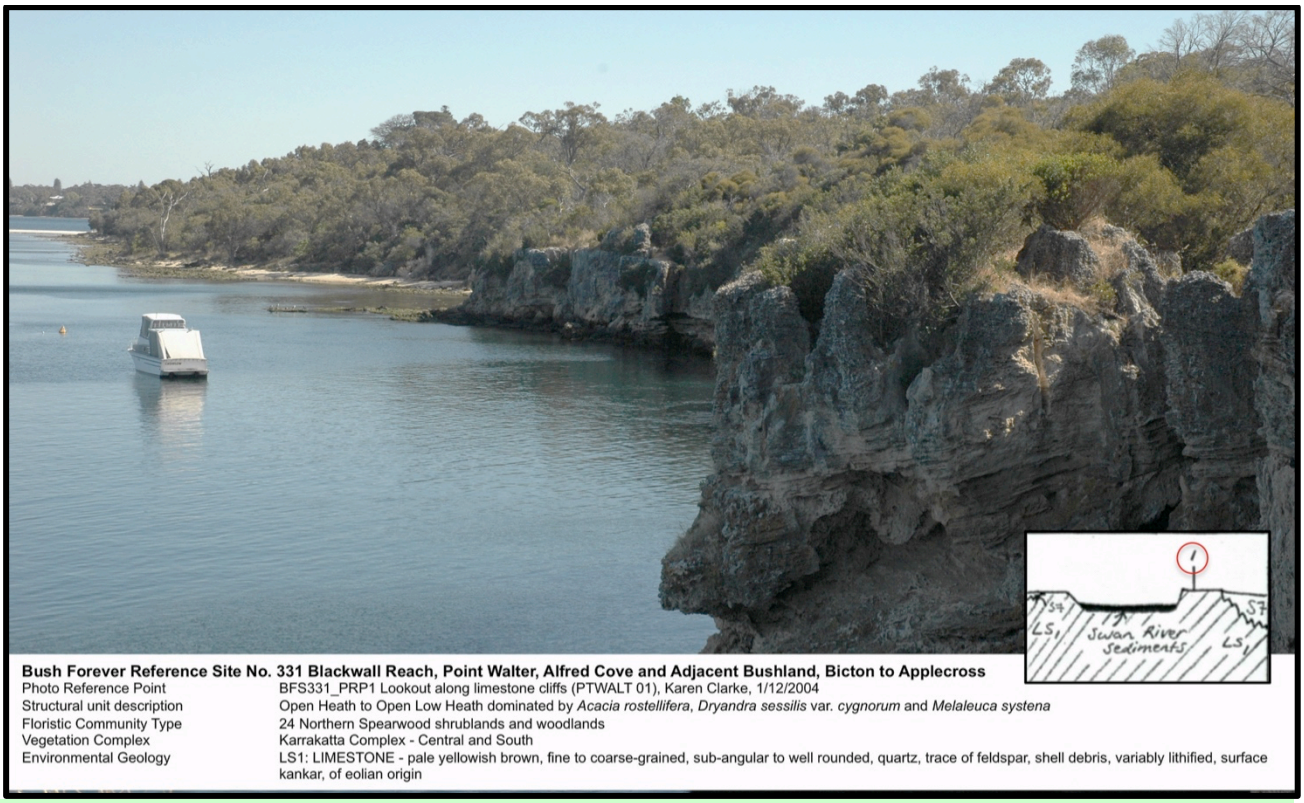
6.4.1.2 Slopes

The main vegetation associations on the slopes are low woodlands and shrublands, dominated by species typical of the Quindalup and/or Spearwood Dunes. The broad units and associated dominant species are listed below.

**Woodlands:** *Allocasuarina fraseriana, Banksia attenuata, B. menziesii, Callitris preissii* and Eucalyptus *gomphocephala.*

**Shrublands:** *Acacia lasiocarpa* var. *lasiocarpa*, *A. truncata*, *A. xanthina*, *Acanthocarpus preissii*, *Adriana quadripartita*, *Alyxia buxifolia*, *Anthocercis littorea*, *Comesperma integerrima*, *Dodonaea aptera*, *Banksia (or Dryandra))* *sessilis* subsp. *cygnorum*, *Grevillea vestita*, *Melaleuca huegelii*, *Pittosporum ligustrifolium*, *Scaevola nitida*, *Spyridium globulosum* and *Templetonia retusa*

**Herblands:** *Conostylis candicans.*




**Bush Forever Reference Site No. 331 Blackwall Reach, Point Walter, Alfred Cove and Adjacent Bushland, Bicton to Applecross**

| | |
|---|---|
| Photo Reference Point | BFS331_PRP1 Lookout along limestone cliffs (PTWALT 01), Karen Clarke, 1/12/2004 |
| Structural unit description | Open Heath to Open Low Heath dominated by *Acacia rostellifera*, *Dryandra sessilis* var. *cygnorum* and *Melaleuca systena* |
| Floristic Community Type | 24 Northern Spearwood shrublands and woodlands |
| Vegetation Complex | Karrakatta Complex - Central and South |
| Environmental Geology | LS1: LIMESTONE - pale yellowish brown, fine to coarse-grained, sub-angular to well rounded, quartz, trace of feldspar, shell debris, variably lithified, surface kankar, of eolian origin |

**Figure 53: A matched estuarine wetland community (SWAFCT 24) – Blackwell Reach (BFS 331).**

### 6.4.2 *Plant communities currently listed for Perth's Bushland*

The wetland estuarine vegetation associations currently found in Perth's Bushland can be determined from the *Bush Forever* Site descriptions (Appendix 2) and a summary of these are: *Eucalyptus rudis* Woodland, *Melaleuca rhaphiophylla* and/or *Melaleuca cuticularis* Woodland, and sedgelands dominated by *Juncus kraussii, Bolboschoenus caldwellii*, *Cyperus gymnocaulos* and *C. tenuiflora* and *Ficinia nodosa* and combinations of these.

### 6.4.3 *Regional Vegetation - Vegetation complexes*

At the regional level one vegetation complex has been identified as being associated with the Swan Estuary in Perth's Bushland (Table 5).


**Figure 54: Rocky Bay native vegetation today**
Two views of native vegetation on the cliffs around Rocky Bay, five different species can be distinguished: 1 *Callitris preissii*; 2 *Acacia xanthina*; 3 *Eucalyptus gomphocephala*; 4 *Templetonia retusa*; and 5 *Casuarina obesa*.

**Table 5: Estuarine Vegetation Complexes**
After Heddle et al., 1980. Percentage remaining as native vegetation (DEC 2014) on the estuaries, rivers and creeks in the Perth-Peel Strategic Assessment boundary.

| Vegetation Complex | Native Vegetation |
|---|---|
| VASSE COMPLEX: Mixture of the closed scrub of *Melaleuca* species fringing woodland of *Eucalyptus rudis* - *Melaleuca* species and open forest of *E. gomphocephala* - *E. marginata* - *E. calophylla*<br>Example: Figures 51#, 52#, 53# | 36%<br>(2709.6ha)<br>only 1% remaining in PMR |

### 6.4.4 *Regional Vegetation – Floristic community types*

In general, estuarine and riverine vegetation was not systematically sampled in the Gibson *et al.* (1994) study — it was not possible to cover fully this vegetation in the time available and it was considered that these restricted habitat types in the PMR had been documented elsewhere (Government of WA 2000b). The System 6 Update work sampled a few locations in these habitats. As a consequence, while floristic community types have been identified in specific bushland areas, the units broadly associated with this vegetation have not been determined. One upland SWAFCT (SWAFCT 30 see section 6.3.4) associated with the Swan Estuary is a threatened ecological community.

## Table 6: Estuarine Wetland Floristic Community Types

(after Gibson *et al*., 1994 and DEP 1996)

### Key

**Column 1: Floristic Community Type Codes**

Shaded lines indicate SWAFCTs currently recorded from Perth's Bushland, unshaded were expected in Perth's Bushland before landforms/vegetation was altered. The numbers of the types additional to Gibson *et al*. (1994) are italicised if they are subsets of an existing group and italicised and preceded by 'S' if they are supplementary groups. # indicates a matched SWAFCT. SWAFCTs are grouped in large supergroups that reflect the landform/soil units on which they are found.

**Column 2: General Description of Floristic Community Types**

Descriptions are based on generalised information from all plots in the group. Structural units are categorised into forest, woodlands, shrublands, sedgelands and herblands after Gibson *et al.* (1994).

**Column 3: Average Species Richness per Floristic Community Type**

Average species richness per 10x10m plots less those species only occurring in a single plot. Some community types can have a high proportion of single records. Thus these estimates of average species richness are underestimates in some cases.

**Supergroup 2 - Seasonal Wetlands**

| | | |
|---|---|---|
| 16 | Highly saline seasonal wetlands **Example:** Figure 46#, 52# and 53# | 11.2 |
| 17 | *Melaleuca rhaphiophylla - Gahnia trifida* seasonal wetlands<br>**Example:** Figures 38# and 45# | 13.4 |
| *S7* | Northern woodlands to forests over tall sedgelands alongside permanent wetlands<br>**Example:** Figure 51# | 17.7 |

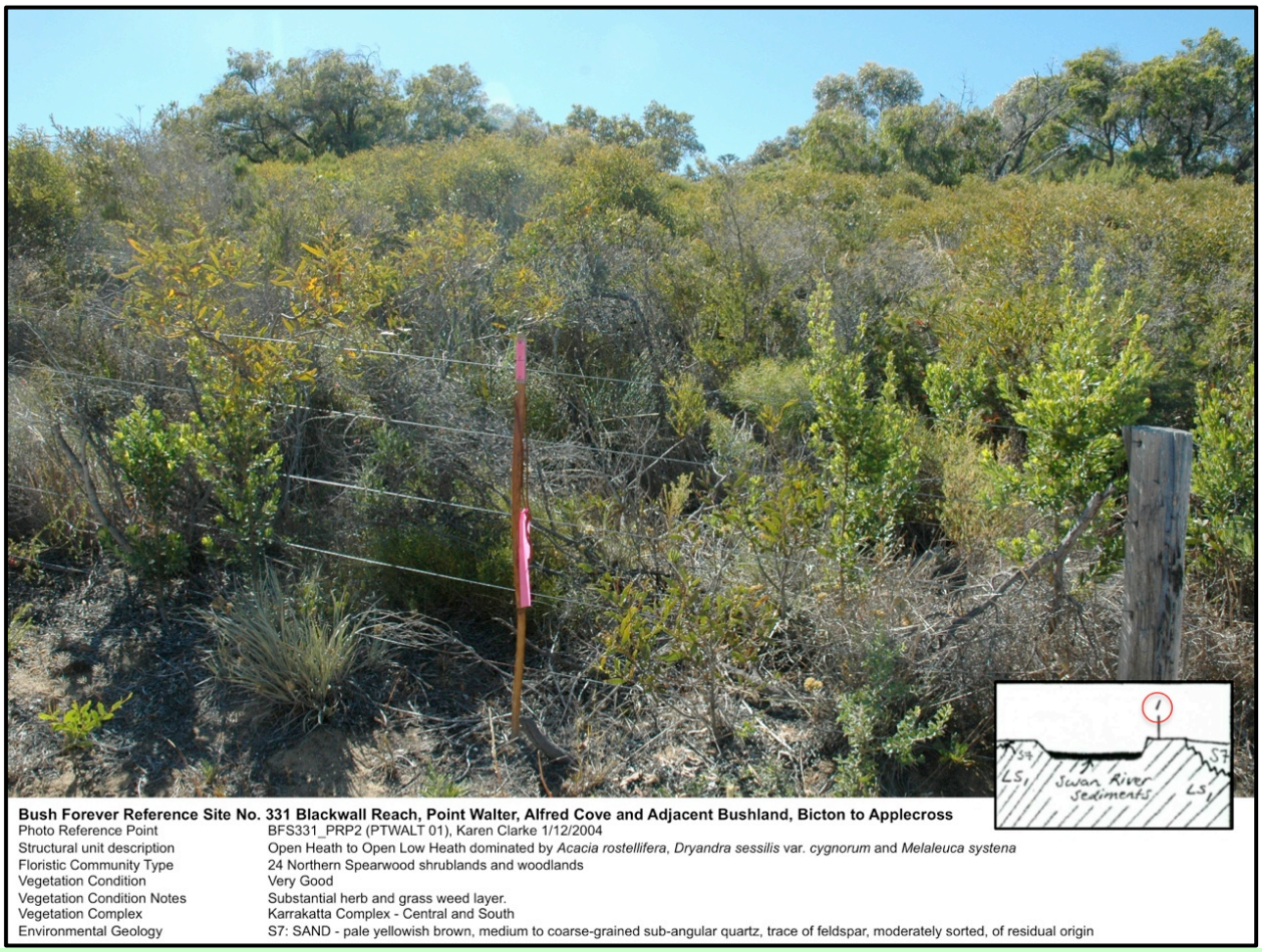


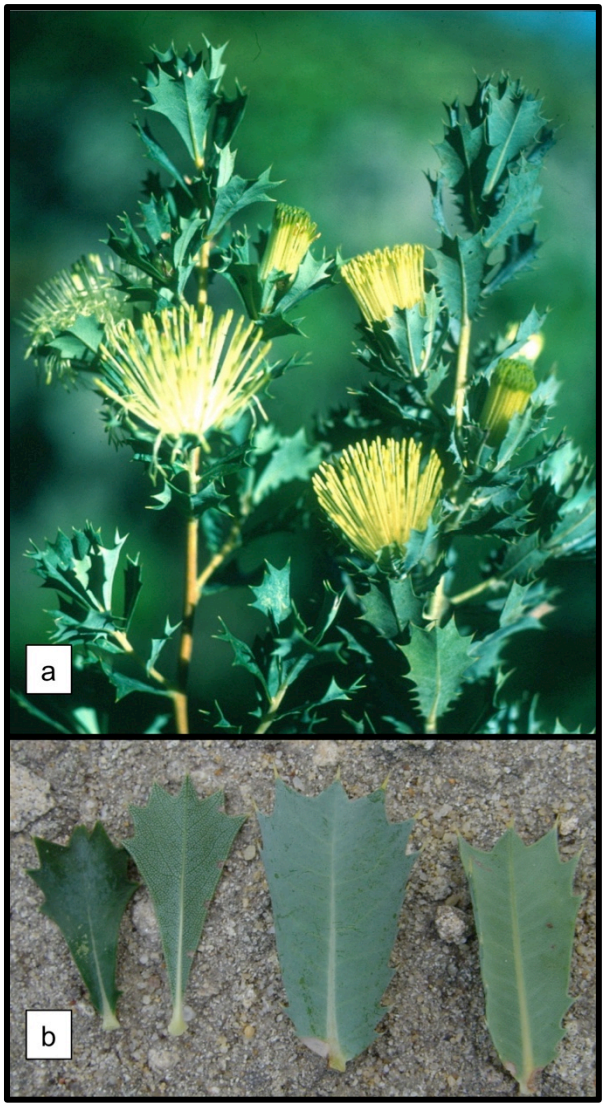

**Figure 55: A matched estuarine dryland cliff-top community (SWAFCT 24) – Blackwell Reach (BFS 331).**

# 7 FLORA

## 7.1 Total Flora

Currently over 2,500 species of native plants have been recorded on the Swan Coastal Plain (Gibson et al., 1994, Keighery et al., unpub. obs.). The Swan Coastal Plain is part of Southwest Australia; an area of international significance as one of 25 biodiversity hotspots for flowering plant diversity worldwide (Myers et al., 2000). Our capital Perth is the only major city in the world is such a hotspot. The Swan Coastal Plain and adjacent Darling Scarp are also an area of high plant richness within the diverse Southwest.

As noted a high level of species and plant community diversity is characteristic of the Plain. The patterning of plant species distribution and of the communities in which they grow is to a great extent determined by the soils of the Plain. The species richness of the plant communities is also allied to the summer drought of our Mediterranean climate, nutrient deficient soils and complex soils and hydrology of the Plain.




Many plants on the Plain evolved recently from related plants on the Plateau and numerous undescribed species have been discovered and named from the Plain over the past decade, even from within Perth and from Rottnest Island (a new species of grass *Lachnagrostis nesomytica* was described in 2006 from Rottnest and Garden Island)!

After checking and authenticating the records we are left with a total of 690 native vascular plant species for the study area, these are listed in Appendix 1.

**Figure 56: *Banksia sessilis* varieties**
*Banksia* (or *Dryandra*) *sessilis* has two subspecies in the greater Perth, one on the Darling Plateau and another on the Spearwood Dunes. *B. sessilis* var. *cygnorum* from the Spearwood Dunes (left in a and b) has narrower leaves than *B. sessilis* var. *sessilis* (right in a and b) whose leaves are a blue-green. This patterning of speciation between Plateau and Spearwood Dunes species also occurs in *Diplopeltis huegelii* and *Kennedia coccinea* (Figure 70).

## 7.2 Species accepted/not accepted for Perth's Bushland Flora

A number of collections are not included in the listing for Perth's Bushland. While these species were potentially recorded for Perth's Bushland the localities are too vague and/or the species is very unlikely to occur in Perth's Bushland on ecological grounds. Those taxa not accepted are listed below under a series of groups. The remainder of these are listed and discussed in section 7.3 along with the significant flora.

**Huegel Collections**
Huegel collected approximately 164 species all labelled as Swan River in 1833/4. Of these specimens the following are considered not to be from Perth's Bushland: *Amblysperma scapigera, Angianthus tomentosus, Calandrinia polypetala, Convolvulus angustissimus, Darwinia citriodora, Eucalyptus occidentalis, Eutaxia virgata, Gompholobium confertum, Gonocarpus cordiger, Goodenia coerulea, Goodenia fasciculata, Hyalospermum cotula, Ixiolaena viscosa, Kennedia stirlingii, Lechenaultia expansa, Lobelia heterophylla, Melaleuca seriata, Myriocephalus appendiculatus, Podolepis canescens, Rhodanthe manglesii, Rhodanthe*

*pyrethrum, Scaevola calliptera, Scaevola lanceolata, Scaevola pilosa, Verticordia huegelii, Verticordia insignis* and *Verticordia pennigera*. The following are possible from extinct alluvial freshwater wetlands along the Estuary (freshwater seepage areas) and/or patches of wetlands associated with drainage lines to the Estuary such as Perth Lakes along the Claisebrook and Hospital Wetland (this may be source of Kings Park records). Not listed at present: *Gnephosis tenuissima, Isotoma pusilla, Stylidium longitubum, Stylidium utricularioides* and *Wahlenbergia multicaulis*. Pritzel collected *Gnephosis tenuissima* from Perth (No 63), but again this is a vague locality.

**Preiss Collections**
*Comesperma flavum* and *Grevillea fililoba*.

**Oldfield Collections**
*Gastrolobium spinosum*, *Gastrolobium oxylobioides* and *Leucopogon oxycedrus* from Fremantle

**Other Collections**
Locality of Cambridge: A number of specimens are listed as from 'Cambridge' and have been given the coordinates for Floreat Park. The following are not accepted: Sneath, J. s.n. (AD) collected *Crowea angustifolia* subsp. *angustifolia* and *Hakea stenocarpa*; Cleland, J.B. 63 (NSW) *Eriochilus scaber* subsp. *scaber* and *Billardiera floribunda* and *Acacia alata* var. *alata* (but not var. *tetranthera*).

Locality of Lake Monger: Collections of *Mallophora rugosifolia* and *Phlegmatospermum drummondii* by Max Kock (NSW) originate from Mongers Lake in the Goldfields (not Cambridge as given).

M. Carter (s.n., 29th August 1985 in CANB) of *Diuris laxiflora* from sand dunes at Challenger Parade City Beach, either the identification or locality is incorrect.

## 7.3 Significant Flora

Of the 690 vascular plant species there are 208 that have conservation, historical, genetic or geographical significance and these are discussed in section 7.4 and listed in Appendix 1a. Each of the significant taxa is discussed in section 7.4 and annotated with various categories of significance as outlined in Table 7.

Appendix 1a can be used as quick guide to which species are considered significant and what major landform unit they are associated with in Perth's Bushland. Photographs and short descriptions of most upland taxa, and some wetland taxa, listed can found in *Perth's Plants: A field guide bushland and coastal flora of Kings Park and Bold Park* (Barrett and Tay 2005).

**Information Box 4: Herbaria Around the World**
Herbaria have coded names, the most common Australian codes are listed below. Other herbaria are given a fuller name. Australian Herbaria: AD – State Herbarium of South Australia, BRI – Queensland Herbarium, CANB – Australian National Herbarium, HO – Tasmanian Herbarium, MEL – National Herbarium of Victoria, NSW – National Herbarium of New South Wales and PERTH – Western Australian Herbarium.

## 7.4 Flora comment

This section comments on the significant flora and a number of individual species not accepted for listing for Perth's Bushland (Appendix 1). A number of annotations are noted for each species (Table 7). Some species are illustrated in this section and elsewhere in the report and additional information on these is also found in the figure's caption. This information may relate to a particular feature of the species that relates to its use in revegetation/restoration.

As outlined previously (section 3) records are from the literature, herbaria and survey by the authors. Most records have at least one herbarium collection in Australian and European herbaria from Perth's Bushland. The majority of these herbarium collections are in the Western Australian Herbarium, if they are from other

herbaria the herbarium are annotated (see Box 4). Species that are recorded in the literature for which no herbarium specimen was located, and the authors have not located in Perth's Bushland, are considered in need of further confirmation. If they are found in habitats that occur, or were expected to occur, in Perth's Bushland they are listed in Appendix 1. These habitats include: an upland habitat - massive limestones; and wetland habitats – freshwater alluvial wetlands (may have freshwater seepage areas within a saline and/or calcareous wetland), saline wetland, calcareous wetland, sumplands, damplands Those with no suitable habitat (past or present) in Perth's Bushland, and from vague localities, are not listed but are discussed below.

**Table 7: Flora Annotations**

| Annotation | Explanation | Number |
|---|---|---|
| **Significant Flora** (see also Appendix 1a) | | |
| Type | Type collection in Perth's Bushland | 34 |
| **Extinct Habitats** | | |
| TL | Upland - extensive outcropping Tamala limestone | 15 |
| WFA | Wetland - freshwater alluvial habitat | 35 |
| WC | Wetland – calcareous, freshwater or saline wetland | 8 |
| Ws | Wetland - Sumpland | 6 |
| Wd | Wetland - Dampland | 8 |
| **Extinct Plants** | | |
| LE | Locally extinct - lost from Perth's Bushland | 141 |
| WAE | Extinct state-wide - no known current records in the WA | 1 (WFA) |
| GE | Globally extinct - no known current records in the world | 3 (1WFA, 1TL) |
| **Geographic range ends** | | |
| r | Limit of their known geographic range, limit indicated as (N) or southern (S) | |
| d | Populations disjunct from their known geographic range | |
| Rare Plants | Declared Rare Flora (T) and Priority flora (P1 to 4)(DPaW 2015) | 7 (2 T, 5 P) |
| **Flora not listed for Perth's Bushland flora** | | |
| # | Not listed in Appendix 1 | 21 |
| **Species with distinct forms/characteristics in Perth's Bushland** | | |
| **name** | Information includes notes for managers | |

### 7.4.1 *Ferns and Lycopods*

*Adiantum aethiopicum* WFA/LE

Unconfirmed records on lower reaches of Swan River, but this is a species commonly encountered on the SWA associated with freshwater seepages alongside drainage lines. The nearest confirmed, South Perth, Mrs Gribble 1887 and Swan, Sewell 1884 (Melbourne). Unknown from Perth's Bushland at present.

*#Adiantum capillaris-veneris*

The record of this species on FloraBase at Peppermint Grove (G. Keighery 13067) is a weedy population escaped from cultivation. This is distinguished from the native Maiden Hair Fern by its larger leaves and generally more robust habit.

*#Cheilanthes austro-tenuifolia* (Figure 57)

Collected by Preiss (No. 1307) from 'sandy woodlands ?near Perth'. This is not listed as Kings Park material has been determined as *Cheilanthes sieberi* subsp. *sieberi* (Barrett and Tay 2005).


**Figure 57: *Cheilanthes austro-tenuifolia***
Plant in typical granite habitat (a) and spores forming on backs of leaves (b). Preiss refers to sand in his description, an unlikely habitat for this species.

*Cheilanthes sieberi* subsp. *sieberi*
Listed as Kings Park based on Barrett and Tay (2005) for a small population on the Mt Eliza escarpment. No specimens have been located. This is the only record for the Plain.

*Selaginella gracillima* WFA/LE
Recorded on lower reaches of the Swan River by Preiss (No 1882) November 1839 in wetlands near Perth. This is a species commonly encountered on the Plain associated with alluvial freshwater areas in wetlands or along drainage lines.

### 7.4.2 *Gymnosperms*

***Callitris preissii*** (Figures 49 and 54)
Recorded along the Swan River from riverine cliffs of the Swan Estuary from near Fremantle to Mount Eliza. Early collections were made by both Huegel (1833) and Preiss (1839) in this area. On the SWA *Callitris* occurs in a number of fire-protected sites in Quindalup Dunes on the mainland and Rottnest and Garden Islands. In Perth's Bushland it is located in Swanbourne. Glaucous and green leaved plants are found in natural populations.

*Callitris pyramidalis* WFA/LE
Collected on Swan River below Kings Park (Barrett and Tay 2005). No collection has been located. This species is expected to have occurred in an extinct wetland plant community found on alluvial freshwater wetlands below Kings Park and west to at least the area inland of Pelican Point. *C. pyramidalis* and the community are now locally extinct. Unknown from Perth's Bushland at present.

### 7.4.3 *Flowering Plants*

7.4.3.1 Aizoaceae

*Tetragonia implexicoma* LE
Currently only known from Rottnest and Garden Islands in Perth area, but was recorded on riverine cliffs at Minim Cove in 1980s (GJK) now apparently extinct due to invasion by the weedy **Tetragonia decumbens*. Unknown from Perth's Bushland at present.

7.4.3.2 Amaranthaceae

*Ptilotus esquamatus* WFA/LE
Recorded for Fremantle on 8th November 1897, by Helms (NSW). It is expected that this would have been associated with alluvial freshwater areas in wetlands, a now extinct habitat. Unknown from Perth's Bushland at present.

7.4.3.3 Anarthriaceae

*#Lyginia barbata*
This species may have occurred in the Western Suburbs, as there are a number of nearby records, including: Melville Park, in 31st July 1897 by R, Helms (s.n., NSW). All recent collections are *L. imberbis*.

7.4.3.4 Apiaceae

*#Actinotus leucocephalus* (Figure 58c)
Recorded for the Swan River by Huegel in 1834 (WIEN), unknown if from Perth's Bushland. This is not listed, as it is not known on any current or past habitats in the area.

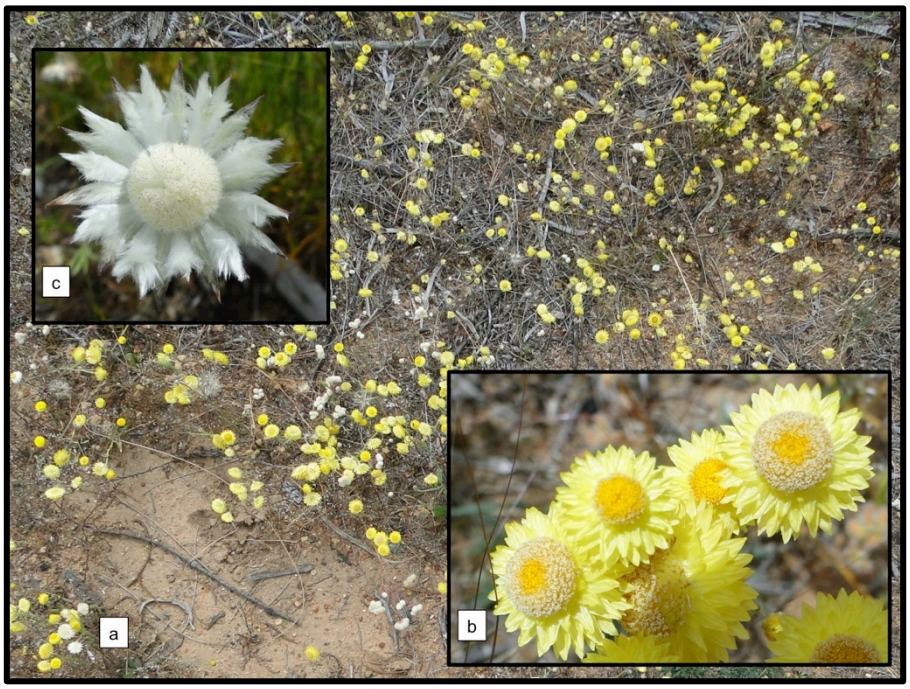



**Figure 58: 'Daisy Flowers'**
A real daisy from the Asteraceae family Yellow Everlasting plants (*Rhodanthe citrina*) near Beverley is shown in (a) and (b); and (c) a daisy mimic, Annual Flannel Flower (*Actinotus leucocephalus*) from eastern side of the Swan Coastal Plain. Both species are annuals. *Rhodanthe citrina* is known form the area but is declining, while *Actinotus leucocephalus* is not accepted as occurring in the area.

*Apium annuum* WFA
This species is found in freshwater seep areas in estuaries of the Southwest. It was once common in freshwater seeps along Swan River, but is now very uncommon.

*Apium prostratum* subsp. *prostratum* WFA
This species is found in freshwater seep areas in estuaries of the Southwest. It was once common in freshwater seeps along Swan River, but is now very uncommon.

*Centella asiatica* WFA
Once common in seeps along Swan River and at Fremantle for example Swan River at Fremantle in 12th December 1839 by Preiss (No 2065), it is now very uncommon.

*Platysace ramosissima* LE
Recorded for Fremantle on limestone, in 1839 by Preiss (No 2057) as *Trachymene candelabrum*. The nearest current record is to the south in Yalgorup National Park, unknown from Perth's Bushland at present.

*Schoenolaena juncea* LE
Recorded from wetlands on the Swan River near Perth by Preiss (No 2082) in 1839, unknown from in Perth's Bushland at present.

*Xanthosia ciliata* LE
Only record Claremont, C. Andrews (September 1902), unknown from Perth's Bushland at present.

7.4.3.5 Apocynaceae

***Alyxia buxifolia*** (Figure 59) d
There is a disjunct population in Perth's Bushland on the estuarine cliffs from Minim Cove to Peppermint Grove. It is also found on Rottnest and Garden Islands.


**Figure 59: *Alyxia buxifolia***
(a) A shrub alongside the Swan Estuary at Minim Cove; (b) a close view of a flower and buds; and (c) leaves, flowers and fruit.

7.4.3.6 Asparagaceae

*Arthropodium preissii* WFA/LE
Only record Claremont, A. Morrison 12th October 1895, probably from alluvial freshwater patches in wetlands. Also collected from swamps near Perth by Preiss (No 1567) in 1839. Unknown from Perth's Bushland at present.

*Laxmannia ramosa* subsp. *ramosa* Wd/LE
Was recorded for the Kings Park Dampland, now unknown from Perth's Bushland.

*Lomandra hermaphrodita* Type
The type collection is: Claremont, C. Andrews, 1902.

*Lomandra maritima* Type
The type collection is: Challenger Drive, City Beach, T.S. Choo, 1966.

*Thysanotus multiflorus* LE
Collected at Mongers Lake, February 1839, Preiss (1572), under synonym *T. proliferus*. Probably occurred in Perth's Bushland, but there are no other records. Unknown from Perth's Bushland at present.

*Thysanotus scaber* LE
The type collection is: Sand, Swan River, Preiss (No 1578). Unable to ascertain if this collection was from Perth's Bushland. Unknown from Perth's Bushland at present.

*Thysanotus* ?*tenellus* LE
A single record, Mont Elizamontain, Preiss (No 1570) (MEL). We have been unable to confirm the identity of this collection, which is from Kings Park. Unknown from Perth's Bushland at present.

7.4.3.7 Araliaceae

*Hydrocotyle alata* LE
Recorded for sandy depressions at Perth on 27th September 1839 by Preiss (No 2084), unknown from in Perth's Bushland at present.

*Hydrocotyle pilifera* var. *glabrata* LE
Only record Claremont, C. Andrews (September 1902), unknown from Perth's Bushland at present.

*Hydrocotyle tetragonocarpa* LE
Only record Claremont, C. Andrews (September 1902), unknown from Perth's Bushland at present.

7.4.3.8 Asteraceae

*Angianthus cunninghamii* LE
Preiss collected this species at Fremantle in 1838. Only recent record is Claremont, C. Andrews in ?1902. Unknown from Perth's Bushland at present.

*Brachyscome bellidioides* (Figure 72a) Wd/LE
Collected near Perth by Preiss (No 99) on 1st September 1839 and at Fremantle by Oldfield in 1858 (MEL). Unknown from Perth's Bushland at present.

*Brachyscome pusilla* TL/LE
Was found on coastal limestones heaths at Fremantle Preiss (No 98) collected on 15th August 1839 and Nedlands by W.V. Fitzgerald in 1901 (NSW). Only nearby recent collections are from Alfred Cove. Unknown from Perth's Bushland at present.

*Cotula cotuloides* W/LE
Two collections in Perth, Preiss (No 101) in 1839 and Nedlands W.V. Fitzgerald in 1900. Probably from swamps or marshes (fresh or saline wetlands) by Swan River. Unknown from Perth's Bushland at present.

*Erymophyllum ramosum* subsp. *involucratum* TL/LE
This small everlasting grows on near coastal limestones, well to the north of Perth (most southern know population is in the Lancelin area). There is a collection from Nedlands, E.Pritzel (No 54), on November 1900 (NSW). Unknown from Perth's Bushland at present.

*Euchiton sphaericus*
Collected at Fremantle by Preiss (No 47) in January 1839. No recent collections but Barrett and Tey (2005) refer to it as being uncommon in Bold Park.

*Gnephosis angianthoides* Type/LE
The type collection is: Along Swan River below Kings Park by Preiss in 1839 (Vienna and Melbourne). The most recent record was from Claremont, C. Andrews in ?1902. Uncommon elsewhere on the Plain generally known from sandy rises alongside wetlands, may well have been on sandy rises along the Estuary.

***Olearia axillaris*** (Figure 60)
This species has two forms in Perth's Bushland, a silver short leaved coastal form with strongly scented flowers (named as *Olearia candissimum*, Figure 61 below) and an inland form with slender leaves, green above and grey below with faintly scented flowers (Figure 61 above). These two forms co-occur at Point Resolution (Figure 61: Silver GK 17207 and Green, GK 17208) with no signs of hybridization or intergradations. Inland along the estuary past this point all are the green leaved form.

**Figure 60: *Olearia axillaris***
Silver form (below); and green form (above).

*Olearia elaeophila* LE
Type of *Olearia lehmanniana* (which is a synonym of this species) collected in Perth by Preiss (No 79) in 1839. Collected on Swan River below Kings Park (Barrett and Tay 2005), West Perth, Blackall (s.n.), and south Perth in 1923. Unknown from Perth's Bushland at present.

*Picris compacta* (Figure 32) Type/WFA/GE
The type collection is: Crawley, 1941 by Bennett (s.n.). Previous collection at Claremont, C. Andrews in ?1902. Now considered to be globally extinct. At the same time Bennett also collected *Melaleuca lateritia* from the University of Western Australia, suggesting that both may have come from a now cleared alluvial freshwater wetland.

***Rhodanthe chlorocephala* subsp. *rosea*** GE(s)
There is Fremantle F. Mueller s.n. (HO) collection, and historical collections from Kings Park, Ostenfeld 874, 8-10-1914 (Copenhagen), which are the type for variety *nigropapposum* (Ostenfeld, 1921). Having black terminal tufts of hairs on the pappus bristles differentiates this variety. This local variant/population is now globally extinct (ie variety *nigropapposum* which is not currently recognised as a taxon). Plants recorded presently from Kings Park are re-introduced from inland (Barrett and Tay 2005), so are NOT this variant.

*Rhodanthe citrina* (Figure 59)
Like many once common native annuals, this species is declining due to weeds, fire and soil changes (Barrett and Tay, 2005 and authors).

*Rhodanthe corymbosa* LE
Collected by Preiss at Fremantle in 1838, and then from the Chine (Mosman Park), C. Andrews, October 1902. Unknown from Perth's Bushland at present.

*Senecio ramosissimus* LE
Collected near Fremantle by Preiss (No 70) in 1839. Currently known from calcareous wetlands north (Yanchep) and south (Pagononi) of Perth. Unknown from Perth's Bushland at present.

***Sonchus hydrophilus*** (Figure 61)
This Native Sowthistle is a widespread species of wetlands in Australia. It was not known in Western Australian until material from Camel Lake at Bold Park was able to be identified. At times it is thought to be a weed but Drummond commented on this large native 'sow thistle) in his letters.


**Figure 61: *Sonchus hydrophilus***
(a) Flowering branch; and (b) a plant. Plants can get to over 1m in height. Leaves are soft and lobed. This picture was taken at Camel Lake in Bold Park by G Keighery in the 1980s.

***Xerochrysum macranthum***
(Figure 82) Type/LE
The type collection is: Fremantle by Huegel in 1833. Closest records now limestone hills at Wanneroo. Unknown from Perth's Bushland at present.

7.4.3.9 Boraginaceae

*Heliotropium curassavicum*
Declining in Perth's Bushland due to permanent drying of sumplands and associated weed invasion at Perry Lakes, Mavis Talbot and Herdsman.

7.4.3.10 Brassicaceae

*Lepidium foliosum* LE
In WA currently confined to limestone surfaces on offshore islands, but was collected in sand near Fremantle in December 1838 by Preiss (No 1942). Unknown from Perth's Bushland at present.

*Lepidium pseudohyssopifolium* WFA/WAE(s)
Occurs throughout southern Australia, but there is only a single Western Australian collection - Herdsman Lake, C. Andrews, 1902 (PERTH and Edinburgh). This species is unknown from WA at present so it is regionally extinct. Listed as Priority 1 (DPaW 2015).

*Lepidium rotundum* LE
Collected from the Chine (Mosman Park), C. Andrews (September 1902) and Claremont, on the north bank of Swan River, A Morrison, 10th November 1900. Unknown from Perth's Bushland at present.

*Stenopetalum gracile* Type
The type probably from Perth's Bushland collected by Preiss (No 1838) 'In shady valley under large trees near sea, Perth'. Declining in Perth's Bushland due to fragmentation and associated fire regime changes and weed invasion.

7.4.3.11 Campanulaceae

***Grammatotheca bergiana***
Known from one collection - Margins Lake Kei-er-mu-lu (we were unable to locate this Lake but assume it is one of the Perth Lakes) on 9th February 1839, Preiss (No 1453). This species is often considered an early introduction from South Africa, however this early record indicates this is not the case.

*Isotoma scapigera* (Figure 73d) WFA/LE
Listed for Kings Park (Bennett 1998, and Barrett and Tay 2005). This is a species of alluvial wetlands. Unknown from Perth's Bushland at present.

*Lobelia rhytidosperma* LE
Known from one collection - Swan District, Cottesloe, Miss Lambert 432, November 1900. Unknown from Perth's Bushland at present.

7.4.3.12 Caryophyllaceae

These native members of the Carnation family are very uncommonly collected in the Southwest. It is thought, that the native species, have been displaced by the numerous weedy members of this genus (and other genera in the family) now present in the Perth's Bushland and the Southwest.

***Spergularia brevifolia*** LE
Recorded for Rottnest, but also Fremantle by Helms in 1897 (NSW), no current mainland recent records in Perth's Bushland. Unknown from Perth's Bushland at present.

***Spergularia nesophila*** LE
There is a single record from Perth's Bushland - Nedlands, W.V. Fitzgerald (s.n.) August 1900 (NSW), unknown from Perth's Bushland at present. This is a Priority 3 listed species (DPaW 2015).

7.4.3.13 Casuarinaceae

***Allocasuarina lehmanniana* subsp. *lehmanniana*** r (S)
Southern limit on Swan Coastal Plain is in Bold Park. There is a population at Minninup Beach south of Bunbury but these have been introduced in rehabilitation of the dunes after mining (BJK observation). This species is typically a near coastal species of Quindalup Dunes on the Plain but it is also found between Franklin and Bremer Bay in swamps and along drainage lines.

7.4.3.14 Centrolepidaceae

*Centrolepis inconspicua* WFA/LE
W.V. Fitzgerald collected this species at Swan on 30th September 1900; there are no other records. This species would been expected to have occurred in wetland plant community found on alluvial freshwater wetlands below Kings Park and west to at least the area inland of Pelican Point. Unknown from Perth's Bushland at present.

7.4.3.15 Chenopodiaceae

***Chenopodium glaucum* subsp. *ambiguum***
The native form of this cosmopolitan species is often regarded as a wetland weed, but there is no evidence to support this designation. This native species can still be found at Lake Claremont. This is considered to be a native form being named by Brown from a collection made before European settlement.

*Dysphania glomulifera* subsp. *glomulifera* Ws/LE
One collection is known - Leederville, Hutchison (s.n.) March 1967. It is considered that it was once a component of the annual summer flora of Perth's Bushland sumpland floors when they dried. Unknown from Perth's Bushland at present.

7.4.3.16 Colchicaceae

***Burchardia multiflora*** WFA/LE
Recorded near Point Walter by Preiss (No 1568) and stated by Ostenfeld (1921) to be common around Perth. No recent records. This species is expected to have occurred in an extinct wetland plant community found on alluvial freshwater wetlands below Kings Park and west to at least the area inland of Pelican Point. Unknown from Perth's Bushland at present. This is a highly variable species across its range.

7.4.3.17 Commelinaceae

*Cartonema philydroides*
Collected first by Preiss (No 2228) near Perth in 1839, now declining in Kings Park and Bold Park due to fire changes and weed invasion of the natural bare patches of sandy soils of the Plain.

7.4.3.18 Convolvulaceae

*Wilsonia backhousei* WC/LE
This species is known from a single collection - Swan River at Claremont, A. Morrison (No 9215) (NSW). There are no recent records and it is unknown from in Perth's Bushland at present. This is a species of calcareous wetlands and was most likely in the lost wetflats along the Swan Estuary.

*Wilsonia humilis* (Figure 62) WC/LE
In sandy soil near Perth, January 1839, Preiss (No 1360). Almost certainly present in calcareous wetlands along lower Swan Estuary. Unknown from Perth's Bushland at present.

**Figure 62: *Wilsonia humilis***
*Wilsonia humilis* and *W. backhousei* are species associated with calcareous, and often saline, wetlands in the Southwest. The two species are often found growing together.

7.4.3.19 Cyperaceae

*Baumea arthrophylla* WC/LE
Collected in calcareous sands near the sea at Perth by Preiss (No. 1781), in 1840 with *Schoenus grandiflorus*. This indicates that there may have been interdunal wetlands in the Quindalup Dunes. Unknown from Perth's Bushland at present.

*Baumea laxa* (was *B. preissii* subsp. *laxa*) Ws/LE
There are a number of collections of this taxon - Preiss collected this near Perth in 1839; Subiaco, in April-1900 by W.V. Fitzgerald (NSW); and the last East Perth by C. Andrews in 1902. Unknown from Perth's Bushland at present.

*Baumea preissii* Type/WFA/LE
The type collection is: from Kings Park, by Preiss in 1839. Last collected by W.V. Fitzgerald in Subiaco in November 1900 (NSW). Unknown from Perth's Bushland at present.

*Baumea riparia* Ws/LE
The collection - Mongers Lake, Preiss 1778 in Oct. 1839, indicates it was probably once in Perth's Bushland wetlands. Unknown from Perth's Bushland at present.

*Baumea vaginalis* Ws/LE
The collection from Swamps, near Subiaco, by WV Fitzgerald, November 1900, indicates it was probably once in Perth's Bushland wetlands. Unknown from Perth's Bushland at present.

***Caustis dioica*** TL/LE
There is an unconfirmed record from Bold Park (Barrett and Tay 2015), but the other southern-most records in Spearwood Dunes are from Yanchep. Unknown from Perth's Bushland at present.

*#Chorizandra enodis*
Collected above the town of Perth in swamps by the Swan River by Preiss (No 1867). Probably not from the Western Suburbs and there are no further records near Perth. This locality is not considered precise enough.

*Fimbristylis velata*
(Figure 63) Ws
This species is declining due to the drying of basin wetlands, weed invasion and higher nutrient inflows. Previously common in Perry Lakes, but no longer present. Major remaining population at Lake Jualbup.


**Figure 63: *Fimbristylis velata***
(a) This small annual has carpeted the drying Lake Jualbup (gold patches); and (b) flowering and seeding plants.

*Gahnia trifida* (Figure 38) WC/LE
This wetland species is known from a single collection by C. Andrews on Buckland Hill, on the 26th March 1902. This was most likely from the wet flats around the Estuary in the area of Buckland Hill. Unknown from Perth's Bushland at present.

*Isolepis cyperoides* W/LE
Known from a single collection - near Perth, by W.V. Fitzgerald s.n. on November 1900 (NSW). Was probably once in Perth's Bushland wetlands. Unknown from Perth's Bushland at present.

*Lepidosperma striatum* WFA/LE
Known from two collections - In bubbling springs near Lake Dunshambus not at all far from small town of Perth, Preiss (No 1794); and Near Perth, W.V. Fitzgerald s.n., March 1901 (NSW). Unknown from Perth's Bushland at present.

*Schoenoplectus pungens* (Figure 64) Ws/LE
This species is a rarely recorded sedge in WA. It is considered to be declining due to permanent drying of basin wetlands, e.g. Perry Lakes and weed invasion (Mavis Talbot, Herdsman). Only known local extant record Lake Jualbup that has most likely been planted. Unknown from Perth's Bushland at present.


**Figure 64: *Schoenoplectus pungens***
This small wetland in the centre of Bunbury supports a population of *Schoenoplectus pungens* (a); (b) is a closer view of the flower heads. Wetland sedges have very small seed that can be carried by birds hence these species often have disjunct distributions.

*Schoenus benthamii* WFA/LE
Known from two collections - Near Perth, Preiss (Nos 1754 and 1782); and ?Perth, C. Andrews, 29th October 1902. There is also a record for Kings Park given in Barrett and Tay (2005). Unknown from Perth's Bushland at present. This is a Priority 3 species (DPaW 2015).

*Schoenus pedicellatus* WFA/LE
Known from a single collection - Swan River at Perth, W.V. Fitzgerald s.n., in November 1899. Unknown from Perth's Bushland at present.

*Schoenus sculptus* Type, WD/LE
Type collection Perth, Preiss (No1745), other collection Nedlands, W.V. Fitzgerald s.n. in 1900 (NSW). Unknown from Perth's Bushland at present.

*Schoenus subfascicularis* WFA/LE
Known from two collections - Swan River near Perth, Preiss 1802; and Perth, W.V. Fitzgerald s.n., 29-Dec.-1902 (NSW). The nearest known populations are at Mount Henry and Alfred Cove. Unknown from Perth's Bushland at present.

*Tetraria octandra* Type
The type collection is: Kings Park, by Preiss in 1839.

7.4.3.20 Dilleniaceae

*Hibbertia aurea* (Figure 65 a and b) LE
An historical records from Kings Park by A.M. Baird (s.n.) in August 1950 and now locally extinct. Unknown from Perth's Bushland at present.


**Figure 65: Two uncommon *Hibbertia* species**
*Hibbertia aurea* flowers (a), and a plant (b) and *H. commutata* flowers (a) and a plant (b).

*Hibbertia commutata* (Figure 65 c and d)
An unconfirmed record from Bold Park, there are no other known records (Barrett and Tay, 2005).

***Hibbertia cuneiformis***
This is a difficult species to place at its northern limit. Birds are known to eat and distribute it seeds and it will spread from planted material. It has been planted in Kings Park and Bold Park. It is native and abundant in the Rockingham area, but has been recorded in wetlands as far north as Neerabup. As a consequence it is possible that native forms were present in the wet areas of the dunes such as those at Swanbourne.

### 7.4.4 *Dioscoreaceae*

***Dioscorea hastifolia*** (Figure 66)
Recorded from muddy shaded places along the Swan and Canning River in June 1839 by Preiss (No 1954). A remnant population still exists on estuarine Tamala Limestone cliffs in Kings Park. This is the only known current locality. This plant was an important source of edible tubers for the Nyungar.

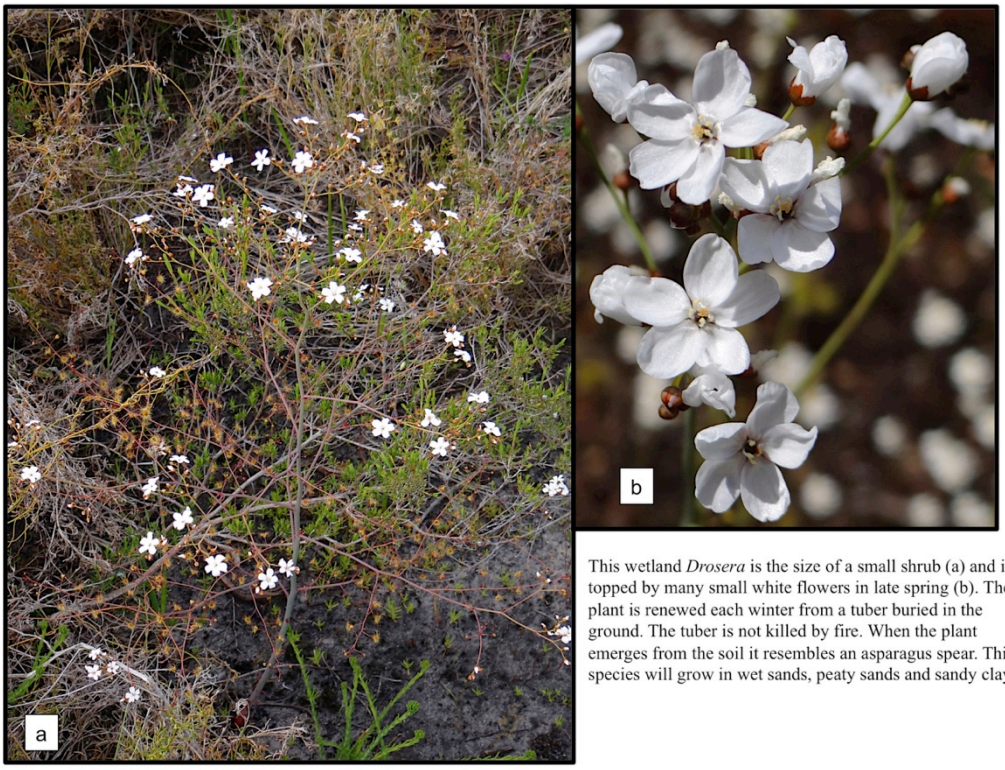

**Figure 66: *Dioscorea hastifolia***
This climber is annually renewed from large tubers (a) and flowers in late winter (b). Plants are male or female, a male plant is illustrated here (b). These plants are from the cliffs in Kings Park.

7.4.4.1 Droseraceae

*Drosera gigantea* subsp. *gigantea* (Figure 67)

WFA/LE

Recorded near town of Perth in September 1839 by Preiss (1991), and Swan River by Mangles. Unknown if records are in Perth's Bushland wetlands. Unknown from Perth's Bushland at present.




This wetland *Drosera* is the size of a small shrub (a) and is topped by many small white flowers in late spring (b). The plant is renewed each winter from a tuber buried in the ground. The tuber is not killed by fire. When the plant emerges from the soil it resembles an asparagus spear. This species will grow in wet sands, peaty sands and sandy clays.

**Figure 67: *Drosera gigantea* subsp. *gigantea***

*Drosera glanduligera* W/LE
Declining probably due to weed competition, now locally extinct in Kings Park, no other records. Unknown from Perth's Bushland at present.

*Drosera porrecta* Type
The type collection is: Kings Park, by Preiss in 1839.

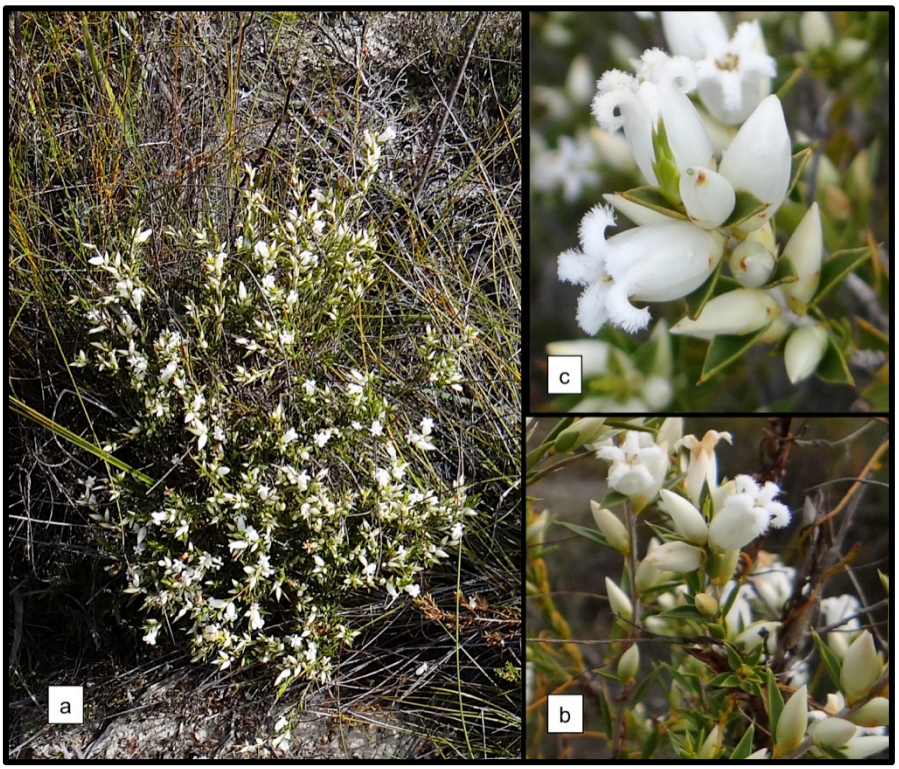
7.4.4.2 Elaeocarpaceae

*Tetratheca hirsuta* LE
Known from a single collection - Subiaco, Diels and Pritzel (No 300), in 1905, no other records. Unknown from Perth's Bushland at present.

7.4.4.3 Ericaceae/Epacridaceae

*#Andersonia aristata*
Recorded from a single collection - Fremantle, A. Oldfield (No 318) in 1858. No suitable habitats are known to have existed in Perth's Bushland so this is a very unusual record, perhaps not correctly identified (specimens not seen).

*Astroloma stomarrhena*
Ostenfeld (1921) records this species from Perth, but no collections have been seen.




*Astroloma xerophyllum* (Figure 68) LE
Known from two collections - Preiss (413) records this species near Pine-Apple Inn at Perth in September 1839; and Reabold Hill, G.T. s.n. in 1-8-1958 (PERTH). Unknown from Perth's Bushland at present.

**Figure 68: *Astroloma xerophyllum***
This species is uncommon in Spearwood Dunes, bur remains common in Bassendean Sands. Plants have single stem (a), the tubular flowers cluster in the leaf axils (b and c).

*Leucopogon australis* Wd/LE
Known from a single collection - Perth in September 1839 by Preiss (No 368). This typically a dampland species and is now unknown from Perth's Bushland.

*Leucopogon conostephioides* LE
Known from a number of collections - Near Perth, Swan River, A. Morrison 1st July 1899; Leederville, R. Helms, June-1897; and North Fremantle Helms, May 1897. The loss of this species is curious, it is an upland species that typically reseeds after death. Unknown from Perth's Bushland at present.

*Leucopogon polymorphus* LE
Only record is from Challenger Drive and Launceston Av, City Beach (PERTH 02994135). The loss of this species is curious, it is an upland species that typically reseeds after death. Unknown from Perth's Bushland at present.

*Leucopogon squarrosus* TL/LE
Recorded from limestone slopes near Fremantle in August 1838 by Preiss (No 403) and by Oldfield (No 1115) in 1859. Unknown from Perth's Bushland at present.

7.4.4.4 Euphorbiaceae

*Amperea protensa* Ws/LE
Known from two collections - Lake Kei-er-mulu (we were unable to locate this Lake but assume it is one of the Perth Lakes) and Lake Monger by Preiss (No 1214). Unknown from Perth's Bushland at present.

*Beyeria cinerea* subsp. *borealis*
This subspecies is found from North – West Cape to Dongara, with populations from Reabold Hill and Mandurah. However there are two sheets of the Mandurah collection (AS George 9202), one placed in each of the subspecies (this and the one below). These two subspecies may need further investigation.

*Beyeria cinerea* subsp. *cinerea*
Known from two present locations - Buckland Hill and Mosman Park; with an old record from and Cottesloe. A Priority 3 species (DPaW 2015).

***Beyeria viscosa*** TL/LE
Known from one location - Freshwater Bay, Claremont, C. Andrews, 19-8-1901. Unknown from Perth's Bushland at present.

7.4.4.5 Fabaceae


**Figure 69: *Acacia truncata***
This is a common species north of Perth. The plants in (a) are just north of Cervantes, with (b) a closer view of the flowers and leaves.

*Acacia benthamii*
A Priority 2 species (DPaW 2015), confined to the Swan Coastal Plain. There is a large population in Kings Park but it is not known from any other location in Perth's Bushland.

*Acacia pulchella* var. *glaberrima* Type
The type collection is: "In Arensis sylvae ad Fluvium Cygnorum", Preiss (No 884) and is considered to be from Perth's Bushland.

***Acacia truncata*** (Figure 69) Type
The type collection was from Cottesloe in 1697, probably collected by Vlamingh. This species was first described as a fern, as this collection was just a stem with leaves, but no flowers.

***Acacia xanthina*** r
This species is near the southern margin of its range in Perth's Bushland (Cantonment Hill in Fremantle). There are large populations in Bold Park and along cliffs of lower Swan River. This species is extensively planted, at times outside its natural range.

***Aotus cordifolia*** (Figure 75c) Wd/LE
Known from three collections - lake margins near Perth on 14th September in 1839 by Preiss (No 1050); from Nedlands by Diels and Pritzel in December 1900; and Turner s.n. (AD). There are no other records in Perth's Bushland. Now known from very wet freshwater wetlands on the Plain. Unknown from Perth's Bushland at present.

***Aotus gracillima*** Wd/LE
Known from one collection - Recorded in wetlands near Perth, on 20th November1839 by Preiss (No 863). Probably occurred in Perth's Bushland wetlands. Unknown from Perth's Bushland at present.

***Aotus procumbens*** Wd/LE
Known from two collections - Swan River near Perth, on 9th September 1841 by Preiss 45; and near Perth by W.V. Fitzgerald on Nov. -1902. Probably occurred in Perth's Bushland wetlands. Unknown from Perth's Bushland at present.

***Chorizema varium*** TL/LE
Collected at Arthurs Head, Fremantle on 15-Aug. – 1839 by Preiss (No 1046). Currently only known from populations near Seabird, north of Perth. Drummond (letter of 14th October 1839) commented on this species being common at Arthur's Head (from copies James Drummond's letter from 1839 to 1848 in Kew Library, held at the DPaW Conservation Science Library). Considered to have been lost from the massive limestones such as at those at the harbour heads and the Seven Sisters. Unknown from Perth's Bushland at present. This species is listed as Declared Rare Flora – Extant (DPaW 2015).

*Cristonia biloba* WFA/LE
There is a dubious record from Bold Park, probably an error (Barrett and Tay, 2005), however, also recorded from Fremantle by R. Helms s.n. on 17th July 1897 (NSW). There are several other Helms collections of this date from Fremantle. These are puzzling records, as the species does not occur on Spearwood or Bassendean Sands, perhaps it grew on alluvial soils by the river. Unknown from Perth's Bushland at present, included here as listed by Barrett and Tay.

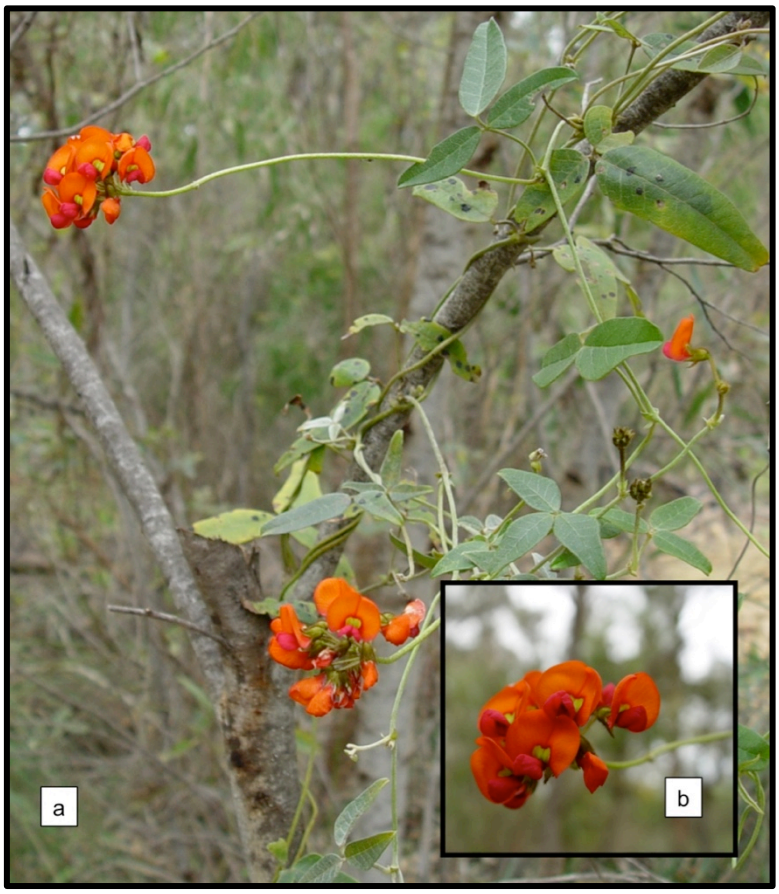



**Figure 70: *Kennedia coccinea* subsp. *calcaria***
This now uncommon subspecies is found in areas associated with Tamala Limestone. These photographs are from the Peppermint forest around Lake Clifton. The plant scrambles up the vegetation (a) and the flowers (b) are larger than those of the hills subspecies.

*Gastrolobium linearifolium* TL/LE
Known from one collection - Claremont, A. Morrison, 25th November 1899. This was most likely associated with Seven Sisters. Unknown from Perth's Bushland at present.

***Jacksonia calcicola*** r
Ranges from Kalbarri to Perth, southernmost population on limestone ridges in Bold Park. Care should be taken in distinguishing it from the more species below.

***Jacksonia sericea***
This species is confined to Spearwood Dunes on the Swan Coastal Plain, between Mandurah and Wanneroo. There are large populations in Kings Park and Shenton Bushland and it is uncommon in valleys of Bold Park. This is a Priority 4 species (DPaW 2015).

***Kennedia coccinea*** (Figure 70) LE
There are two subspecies of *Kennedia coccinea* with *K. coccinea* subsp. *calcaria* being found on the Spearwood Dunes. This subspecies is becoming uncommon across its range and is no longer found in Perth's Bushland.

*Labichea lanceolata*
Known from old records along river (Huegel s.n., 1833) and some at the base of the escarpment in Kings Park (Barrett and Tay 2005) and it is accepted as a species of Perth's Bushland along the Estuary. However Barrett and Tey list it as a weed for Kings Park as it has been planted and spread into *Banksia* Woodland from these plantings. This is another puzzling record as the species does not occur on Spearwood or Bassendean Sands, but it does occur naturally along other rivers of the Swan Coastal Plain.

#*Latrobea tenella*
The type collection is from near Perth by Preiss (No 878) on 4th February 1839, but it is not considered to be in Perth's Bushland.

***Paraserianthes lophantha*** W
This is an uncommon wetland species and is currently only known from Herdsman Lake in Perth's Bushland. The seeds are long-lived and often 'pop up' after weed control.

7.4.4.6 Gentianaceae

*Schenkia australis* WC/LE
Recorded for Fremantle by Preiss (No 1959), almost certainly present in a calcareous wetlands along the lower Swan Estuary. Unknown from Perth's Bushland at present.

7.4.4.7 Goodeniaceae

*Anthotium junciforme* (Figure 72b and c) WFA/LE
Known from two collections - Swan River near Perth by Preiss (No 1522 and 1492). Almost certainly present in wetlands along lower the Swan Estuary, but no definite collections from Perth's Bushland. Unknown from Perth's Bushland at present.

#*Dampiera coronata*
Collected near Perth by Preiss (No 1444), probably not from Perth's Bushland.

*Goodenia pulchella* WFA/LE
Known from two collections - collected in sand near Fremantle on 25th December 1838 by Preiss (No 1428); and in shady woodlands; and at Perth, on 25th March 1839 by Preiss (No 1425). Unknown from Perth's Bushland at present.

*Velleia trinervis* W/LE
Known from two collections - collected by Swan River near Perth by Preiss (No 1545); and from Perth by Miss Bauiere in November – 1903 (MEL). Unknown from Perth's Bushland at present.

7.4.4.8 Gyrostemonaceae

*Gyrostemon ramulosus* r
Widespread post fire shrub to small tree, current southernmost Plain populations are in Bold Park, but collected near Fremantle in December 1838 by Preiss (No 1234).

7.4.4.9 Haemodoraceae

***Anigozanthos humilis* subsp. *humilis***
This species is declining in urban bushland due to grassy weed invasion and grazing by snails and rabbits. Ostenfeld (1921, p 34) commented on it being very common in Kings Park and the surrounds.

***Conostylis candicans***
Oldfield collected intergrades between *Conostylis candicans* subsp. *candicans* and *C. candicans* subsp. *calcicola* at Fremantle in 1859.

***Conostylis aculeata* subsp. *cygnorum***
This species is confined to the Plain, between Yanchep and Lake Mealup. Listed as uncommon for Kings Park (Barrett and Tay 2005) it appears to have declined in the area as there are numerous early collections from Perth's Bushland, for example: Leederville, R. Helms, 15th August 1897, Claremont, WV Fitzgerald September 1901; and Blackwall Reach, C. Andrews, September 1901.

***Phlebocarya ciliata*** (Figure 71) LE
There are historical collections from Kings Park. Ostenfeld (1921) notes the species as common in October 1914. But has severely declined and the Kings Park population is extinct (Barrett and Tay 2005). Unknown from Perth's Bushland at present.

**Figure 71: *Phlebocarya ciliata***
This strappy leafed herb is inconspicuous until flowering and is often mistaken for a sedge. The flowers are in groups at the end of flowering stems (insert).

***Tribonanthes longipetala*** WFA/LE
Known from two collections - collected from Swan River on 26th July 1839 by Preiss (No 1561); and Perth in 1899 by Moore s.n. (NSW). Neither of these specimens has been seen and it is possible these specimens are *T. violacea*. Unknown from Perth's Bushland at present.

***Tribonanthes violacea*** (Figure 87) WC/LE
*Tribonanthes violacea* has been collected from fresh water seepages in the saline flats along the Swan Estuary at Alfred Cove (Keighery No 10427) and it is considered to have been present in calcareous wetlands along lower Swan River. Unknown from Perth's Bushland at present.

7.4.4.10 Haloragaceae

*Glischrocaryon aureum* LE
Known from two collections - Swan River, A. Lea and Subiaco, Diels and Pritzel (No 185/76), November 1905. The related *Glischrocaryon angustifolium* occurs in Kings Park. Unknown from Perth's Bushland at present.

*Haloragis scoparia* WC&TL/LE
The type collection is: Swan River by Huegel in 1833. There are no other records, but the species occurs on limestone rises and calcareous flats south of Perth. Unknown from Perth's Bushland at present. This taxon is listed as Priority 1 (DPaW 2015).

***Myriophyllum tillaeoides*** Type/LE
The type collection is: Pritzel (No 162) (BERLIN) collected in 1900 is from Herdsman Lake, and it was subsequently collected by A. Morrison, 1st May 1909, Herdsman Lake, and A. Morrison, 12th February 1910, Subiaco. Unknown from Perth's Bushland at present. The common *Myriophyllum* presently in Perth's Bushland is *M. crispatum*.

7.4.4.11 Hemerocallidaceae

*Agrostocrinum hirsutum*
Only currently known from several small populations in Kings Park. The only other nearby records are old records from South Perth but it is now unknown from this area.

7.4.4.12 Hypoxidaceae

*Pauridia occidentalis* var. *occidentalis* WFA/LE
Known from one collection - North Fremantle, R.Helms (s.n.) 17th July 1897 (MEL). This is a species of freshwater alluvial wetlands. Unknown from Perth's Bushland at present.

*Pauridia occidentalis* var. *quadriloba* WFA/LE
Known from one collection - North Fremantle, R.Helms (s.n.) 17th July 1897 (MEL). This is a species of freshwater alluvial wetlands. Unknown from Perth's Bushland at present.

7.4.4.13 Iridaceae

*Orthrosanthus laxus* subsp. *laxus* Type
The type collection is: Kings Park, by Preiss in 1839. Remains in a number of bushland areas in Perth's Bushland.

7.4.4.14 Juncaceae

*Juncus caespiticius* W/LE
Known from one collection - Vincent, W.V. Fitzgerald (s.n.) February 1902. Unknown from Perth's Bushland at present.

*Juncus subsecundus* W/LE
Known from one collection - Subiaco, W.V. Fitzgerald (s.n.) November 1900. Unknown from Perth's Bushland at present.

7.4.4.15 Lamiaceae

***Hemigenia sericea*** TL/LE
Known from two collections - Cottesloe, R. Helms, 22-7-1897; and North Fremantle, R. Helms, 19-12-1897. A species of outcropping limestones. Unknown from Perth's Bushland at present.

***Mentha satureioides*** LE
Known from one collection - In peaty depressions near Perth, 13th April 1839, Preiss (No 2324). This is a very poorly collected native mint, usually found near wetlands and could easily have been present in Perth's Bushland. Estuarine wetlands have declined throughout their range in the Southwest and it has only seen by author (GJK) in Cape Arid. Unknown from in Perth's Bushland at present.

7.4.4.16 Lentibulariaceae

*Utricularia multifida* (Figures 72a and 87) WFA/LE
Known from one collection - flooded sand near Perth, 26th September 1839, Preiss (No 1919). This is a species of alluvial wetlands. Unknown from Perth's Bushland at present.

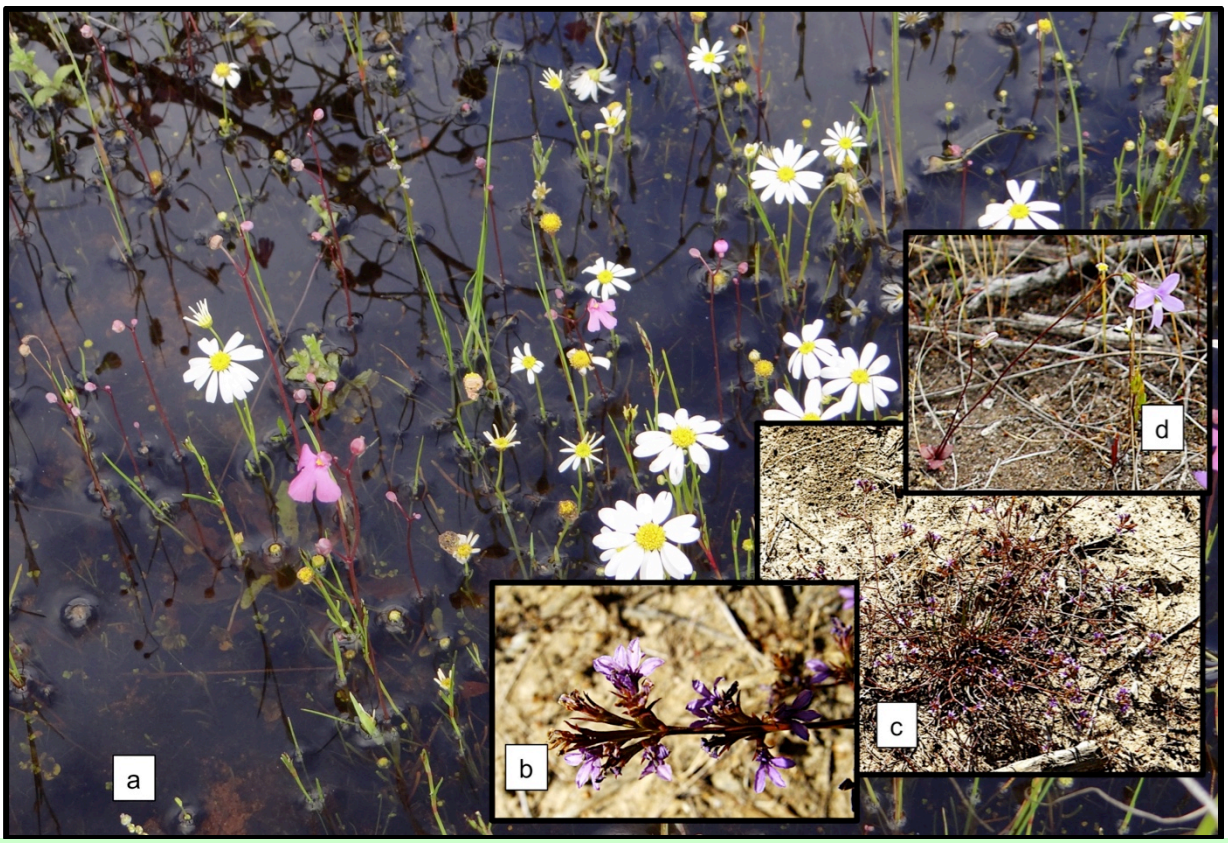



**Figure 72: Four locally extinct wetland species**
(a) Bright pink flowering *Utricularia multifida* is a tuberous annually renewed perennial herb, growing in water with *Brachycome bellidioides* (white daisy); (b) and (c) are flowers and plants of *Anthotium junciformе* and (d) is the annual herb *Isotoma scapigera*.

7.4.4.17 Loranthaceae

*Amyema preissii* Type
The type was collected near Perth, on 8th March 1841 by Preiss (No 1611). There is a small population in Shenton Bushland.

7.4.4.18 Malvaceae

***Alyogyne huegelii*** LE
The type is from Fremantle collected by Huegel in 1834. This species was also collected in Fremantle, on 5th January 1839 by Preiss (No 1341) and, by R. Helms in December 1897. Unknown from Perth's Bushland at

present. There are a lot of forms of this species and the closest known location for sourcing suitable seed is the populations in Manning Lake and Adjacent Bushland (BFS 247).

***Guichenotia ledifolia*** d
Disjunct range end, normally only on Rottnest and Garden Islands in Perth area, but plants on the estuarine cliffs near Minim Cove and Freshwater Bay appear to be native and not planted.

***Hibiscus tridactylites*** W/LE
The only record is from the drain at Lake Claremont (Keighery 15653). Unknown from Perth's Bushland at present. This is recent collection and was initially thought to be a weed until identified by a world expert in the area.

*Lasiopetalum membranaceum*
This uncommon *Lasiopetalum* can be locally abundant in sands associated with Tamala Limestone. This is Priority 3 species (DPaW 2015).

*Lawrencia spicata* WC/LE
Known from one collection - Claremont, C. Andrews 22nd February 1902. A species of alluvial calcareous wetlands. Unknown from in Perth's Bushland at present.

***Thomasia foliosa*** LE
Known from three collections - St. Georges Tce, Perth on 21st January 1840 by Preiss (No 1653); and Swan River by Preiss (No 1639 & 1649). Unknown from in Perth's Bushland at present. This species is typically associated with calcareous soils.

7.4.4.19 Menyanthaceae

*Liparophyllum capitatum* WFA/LE
Known from one collection – from Subiaco, in the vicinity of Perth, in 1914, Dorph-Petersen (No 118), (this specimen in Copenhagen and not seen) and commented on by Ostenfeld (1921). An annually renewed herb of freshwater wetlands. Unknown from Perth's Bushland at present.

*Ornduffia albiflora* WFA/LE
Known from two collection – collected from Perth, Oldfield s.n., 1858 (MEL); and in stagnant water near Perth, Oct. -1839, Preiss 1958. An annually renewed herb of freshwater wetlands. Unknown from Perth's Bushland at present.

7.4.4.20 Myrtaceae

***Agonis flexuosa* var. *flexuosa*** (Figure 5) r (north)
This species is at the northern end of its native range in Bold Park and Swanbourne (on the Quindalup Dunes) and alongside the estuary inland to Peppermint Grove. These populations are disjunct from the next southern populations south of the Dawesville cut (south of Mandurah). Populations elsewhere in Perth's Bushland and the greater Perth area, including Kings Park, are weeds having been established from plantings.

#*Calytrix aurea*
Known from one collection – Subiaco/Midland Junction, A. Morrison, 5th December 1903 (MEL). This population was probably collected at Midland, and is relatively common in wetlands on the eastern side Plain.

*Calytrix leschenaultii* LE
There are historical collections from Kings Park, for example Speck (s.n.) in 1950. Unknown from Perth's Bushland at present.

***Chamelaucium uncinatum*** (Figure 73) r (south)
The type collection is: sandy slopes near Fremantle, Preiss (No 359). Other early collections are - Claremont, C. Andrews (s.n.), 1902, Fremantle; A. Morrison (s.n.) 15th January 1898; and Coastal Hills between Jolimont and the sea, December 1919, by Pelloe (No B1509). Populations are currently extant in Bold Park. The closest other populations on the Quindalup Dunes are at Moore River adjacent to the estuary. This area is considered to support the most similar set of extant habitats of the coast and estuary mouth to that of Perth's Bushland.

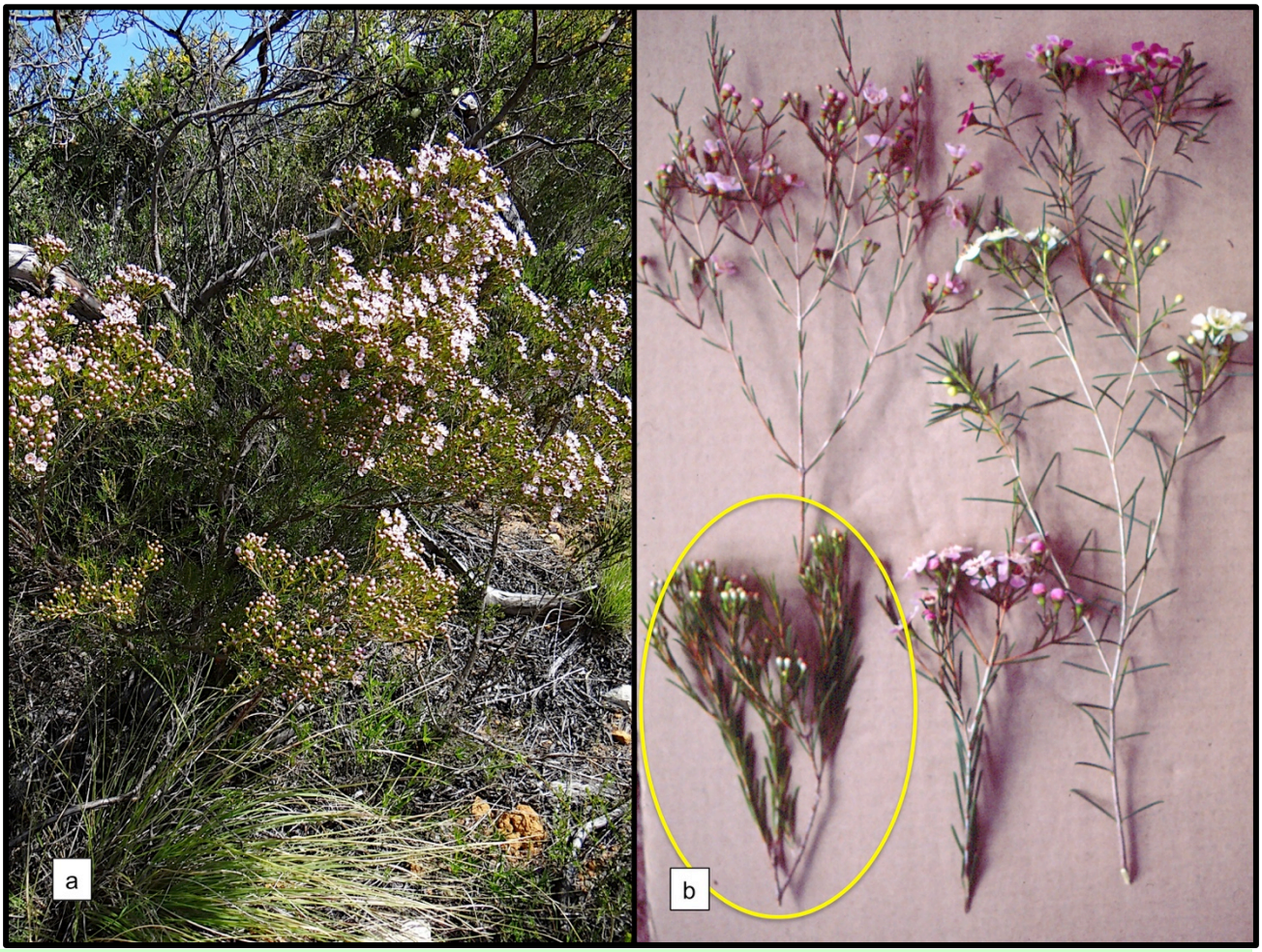



**Figure 73: *Chamelaucium uncinatum***
A wild plant from north east of Jurien on the Spearwood Dunes (a); and (b) sprigs of the planted cultivars (above and below right, photo: G. Keighery), hybrids with the Bold Park native plants (above left and centre below) and circled a native Bold Park plant. Bold Park materials sourced are used in revegetation and/or restoration in Bold Park and Lake Claremont.

#***Eucalyptus ×mundijongensis***
This is thought to be a hybrid of *Eucalyptus rudis* and another eucalypt species and is listed as a Priority I species (DPaW 2015). Reported in Ecoscape (2002).

*Eremaea asterocarpa* subsp. *asterocarpa* (Figure 74) US/LE
Known from one collection – West Perth, R. Helms, 18th September 1898. Unknown from Perth's Bushland at present.

*Eremaea fimbriata* US/LE
Known from one collection – Mongers Lake, Preiss (No 251). Unknown from in Perth's Bushland at present.

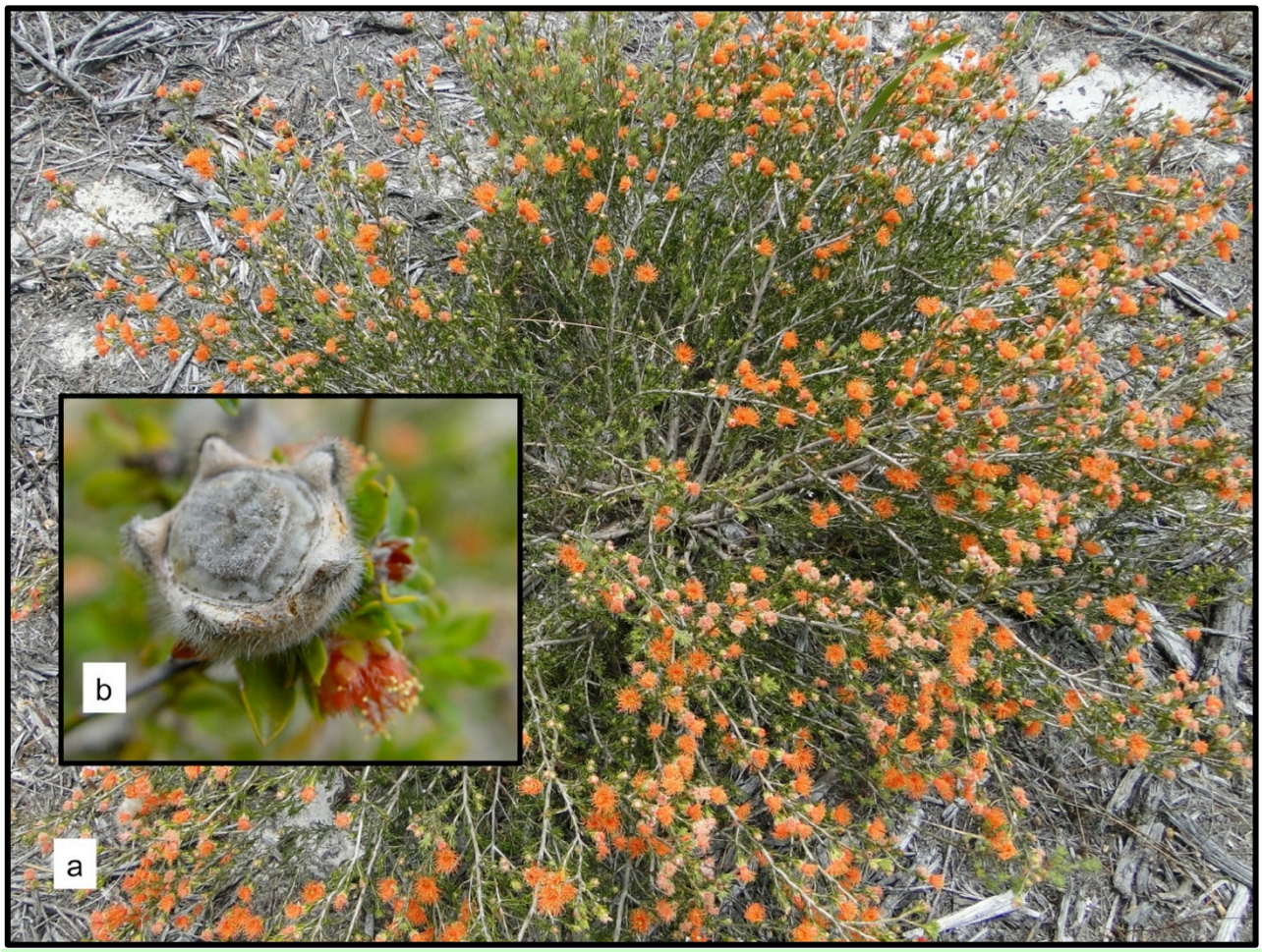



**Figure 74: *Eremaea asterocarpa* subsp. *asterocarpa***
A flowering plant form north of Perth (a), this species is more common on Bassendean Dunes, and (b) the characteristic fruit.

***Leptospermum spinescens*** TS/LE
Known from one collection – Claremont, C. Andrews October 1902; Cottesloe W.V. Fitzgerald c. 1910. Unknown from Perth's Bushland at present. This is a variable species across its range.

***Melaleuca cardiophylla*** TS/LE
Single plant observed on east side of Reabold Hill in Bold Park in a site for one of the Swan Coastal Plain studies (Gibson *et al* 1994). This has not been located again in more recent studies. Unknown from Perth's Bushland at present.

***Melaleuca lateritia*** WFA/LE
Known from one collection – University of Western Australia Grounds, F.M. Bennett (s.n.) on January 1941. Unknown from Perth's Bushland at present.

***Melaleuca thymoides*** US/LE
Known from one collection – Claremont, C. Andrews, September 1902. Unknown from Perth's Bushland at present.

***Melaleuca viminea* subsp. *viminea*** WFA/LE
Known from one collection – Nedlands, CA Gardner, 1920 (PERTH). Considered to be from a lost alluvial soil wetland. Unknown from Perth's Bushland at present.

***Pericalymma ellipticum*** (Figure 75a and b) W/LE
Known from one collection – Nedlands, E. Pritzel (No 178) on December 1900 (NSW). This is a species of wetlands on the Plain, it prefers freshwater damplands and sumplands. Unknown from Perth's Bushland at present.

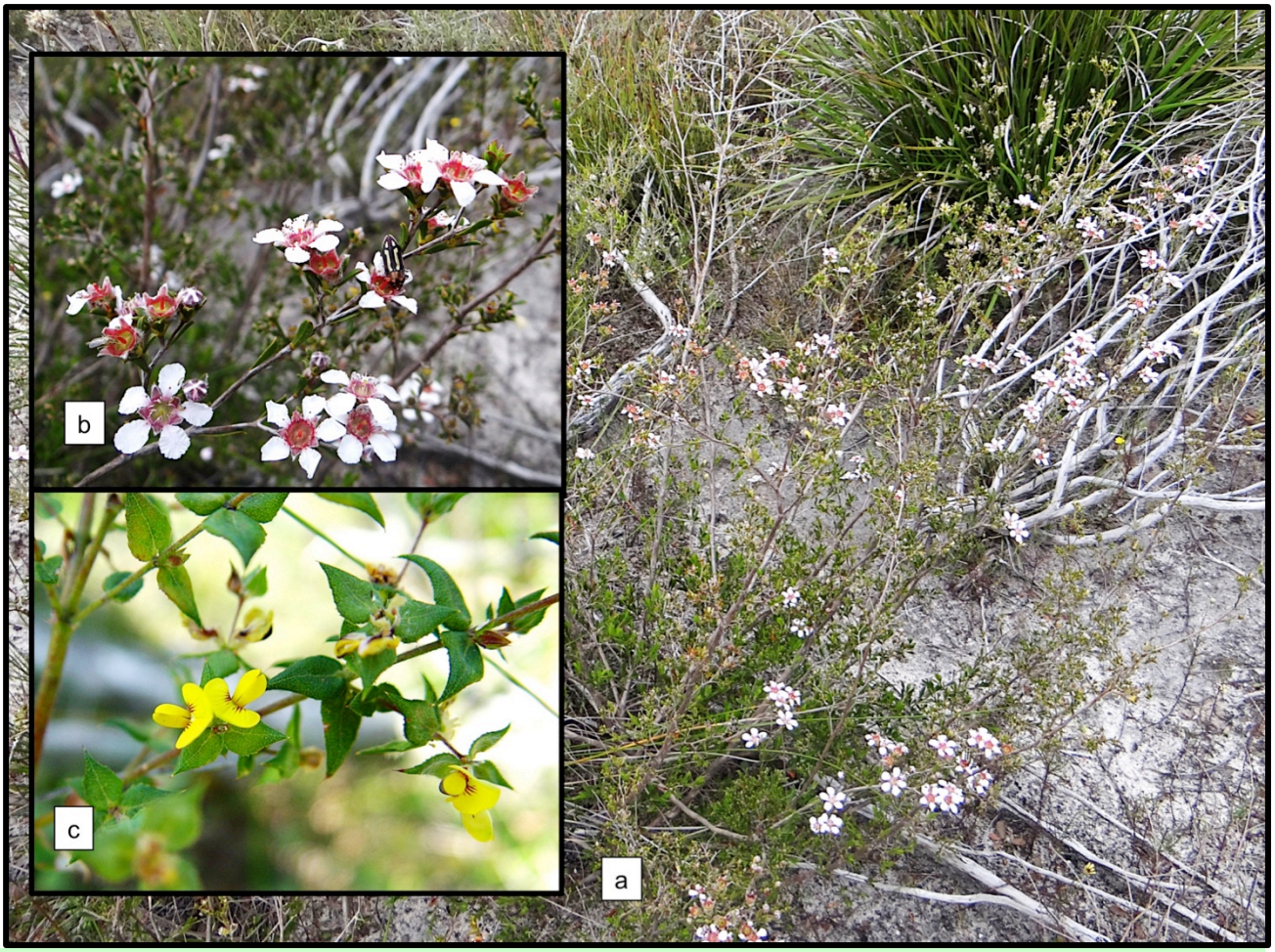



**Figure 75: Two locally extinct wetland shrubs**
*Pericalymma ellipticum* (a and b) is a widespread wetland shrub that regenerates from seed. *Aotus cordifolia* (c) is a rare wetland shrub of very wet fresh wetlands.

***Regelia ciliata*** Wd/LE
Known from two collections – Nedlands, E. Pritzel (No 258) in February 1901 (NSW); and Nedlands-Claremont, F. Stoward (Nos 101 and 141), March 1912 (NSW). Unknown from Perth's Bushland at present.

*#Regelia inops*
This species is listed by Barrett and Tay (2005) from a small population Kings Park. There are no early specimens so these may be from planted material. Only known collection for Perth's Bushland.

7.4.4.21 Olacaceae

***Olax aurantia*** TL/LE
Known from one collection – this is a mixed collection of this species with *O. benthamiana*, at Fremantle by A. Oldfield (s.n.) in 1859 (MEL). The current known distribution is on coastal limestones from Kalbarri south to Dongara. This major disjunction suggests that the collection may be in error. However, there is a literature record of this species, although listed as the related *O. scalariformis* (which grows on alluvial/colluvial soils in the Perth area) from limestones near Yanchep (Weston and Gibson 1997). This record is accepted. Unknown from Perth's Bushland at present.

7.4.4.22 Onagraceae

***Epilobium billardiereanum* subsp. *cinereum*** W/LE
Known from two collections – on Swan River by Huegel in 1834; and at Nedlands by G.G. Smith. Unknown from Perth's Bushland at present.

***Epilobium billardiereanum* subsp. *intermedium*** W/LE
Known from one collection – Subiaco, A. Morrison s.n., on 8-Feb.-1902. Unknown from Perth's Bushland at present.

7.4.4.23 Orchidaceae

***Epiblema grandiflora*** WFA/LE
Known from one collection – in peaty margins of lake, Perth, 28th November 1839, Preiss (No 2219). This species prefers deep peat wetlands, at times associated with alluvial soils (Lake Pinjar), but could have occurred in Perth's Bushland, especially around Herdsman Lake and the Perth Lakes. Unknown from Perth's Bushland at present.

*Microtis atrata* WFA/LE
Known from one collection – growing in water on muddy sand, near Perth, Preiss (No 2403). Typically found clay based alluvial wetlands or granites. The Perth Lakes may have been its original location. Unknown from Perth's Bushland at present

*Paracaleana nigrita* LE
Previously recorded for Kings Park, now extinct (Barrett and Tay 2005). Unknown from Perth's Bushland at present

*Pterostylis frenchii*
This *Pterostylis* is uncommon and is listed Priority 3 species (DPaW 2015).

*Pterostylis pyramidalis* WFA/LE
Known from one collection – Margins Lake Kei-er-mu-lu (we were unable to locate this Lake but assume it is one of the Perth Lakes) and Lake Monger on 9th February 1839, Preiss (No 2203). The closet possible habitat is Perth Lakes. Unknown from Perth's Bushland at present.

#*Thelymitra antennifera*
Known from one collection – Nedlands, F.G. Perrin s.n. in September 1922 (NSW). This is a doubtful locality being so recent and not supported by other collections. Hence this species is considered unlikely to have occurred in Perth's Bushland.

7.4.4.24 Phyllanthaceae

***Poranthera drummondii*** TS/LE
Reported from Rottnest and Garden Islands, but apparently declined in Perth area. There are several old collections - Wembley (no date or collector PERTH05618347); Blackwell Reach, C. Andrews, September 1902; and Claremont, C. Andrews, October 1902. There are no recent collections. This is a species worth searching for, especially on limestone habitats. Unknown from Perth's Bushland at present.

*Poranthera ericoides* TS/LE
This annual herb is known from two collections – Pine-Apple Inn, Perth by Preiss (No 1227) and from Perth, by Morrison (No 9494) in 1899. Unknown from Perth's Bushland at present.

***Poranthera moorokatta*** Type/r (south)
This is a very recently described species with the type coming from Kings Park. It is a tiny plant related to *Poranthera triandra* from the south coast. It is listed as a Priority 2 species (DPaW 2015) and endemic to the

Swan Coastal Plain. There are currently three known localities: Kings Park, Ellenbrook and Dandaragan Plateau sands (Ioppolo Rd).

7.4.4.25 Pittosporaceae

*#Marianthus candidus*
The type is Swan River, Huegel and in sandy woodlands, near Perth on November 1839 by Preiss (No 1285). However there are no other records and as it typically found on heavy soils and/or granites it unlikely to be from the Perth's Bushland. It is found on limestones along the Leeuwin-Naturaliste Ridge but this is not considered sufficient to be a very similar habitat to those current or extinct in Perth's Bushland.

***Pittosporum ligustrifolium*** (Figure 76)
Typically found from Moses Rock to Kalbarri, in near coastal locations. In the Perth area it is known from offshore Islands (Shoalwater Bay, Garden and Rottnest Islands); Point Peron and extends up Swan Estuary on riverine cliffs from Minim Cove to Claremont. These populations are clonal and often chromosomally different from each other (Scrymgeour 1966). The Swan Estuary populations are highly significant.


**Figure 76 *Pittosporum ligustrifolium***
This is a plant from the Swan Estuary Cliffs at Minim Cove (a). *Pittosporum ligustrifolium* spreads via its underground stems and typically grows in small colonies. Some plants are tree-like. The bright orange fruit (b) is eaten by birds.

7.4.4.26 Plantaginaceae

*#Euphrasia scabra*
Known from one collection – Fremantle Miss Lukin (s.n.) 1874 (MEL). George (2009) notes that Lukin's collections are all labelled Fremantle but may have originated nearer Harvey. This species has declined throughout its Australian range. In Western Australia it is now only known from the Lake Muir area, and probably did not occur in Perth's Bushland. Listed as Priority 2 (DPaW).

*Gratiola pubescens* W/LE
Known from three collections – in Peaty clays by Swan River on 4th February 1839 by Preiss (No 2331); near Perth, M.E. Forrest (s.n.), 1878 (MEL); and near Perth, Dorph-Petersen (No 1036) (Copenhagen) in Ostenfeld (1921). Apparently extinct in Perth's Bushland, due to weed invasion and the drying of lakebeds. Unknown from Perth's Bushland at present.

*Plantago exilis* WC/LE
Known from three collections – Fremantle Helms, (NSW); North Fremantle, W. Stoward (No 4456) (NSW); and Claremont, A. Morrison (No 114). The closely related *P. debilis* grows on Rottnest. Unknown from Perth's Bushland at present.

***Veronica distans*** (listed as this but should be *V. stolonifera*).
*Veronica stolonifera* was described from a Fremantle specimen collected on 15th August1839 by Preiss (No 2329). There are two taxa in what is now called *V. distans*, *V. distans* and *V. stolonifera* (Briggs and Ehrendorfer 2006). *Veronica stolonifera* is associated with limestones on the Swan Coastal Plain and the populations are declining. The type of *V. distans* is from granites on south coast. It is listed as *V. distans* in Bold Park (Barrett and Tay 2005).

7.4.4.27 Poaceae

*Austrostipa nitida* LE
Known from one collection – Limestone, Mosman Park, AM Baird, 9-1953. This record is near its most southern limit on SWA. Unknown from Perth's Bushland at present

#*Austrostipa* sp. Cairn Hill (M.E. Trudgen 21176)
Known from one collection – 'Crawley Sands', Greig B17, October 1970 '[natural pasture grass]'. Most localities are from the Avon Wheatbelt and this collection may have come from a pasture trial record.

*Austrostipa variabilis*
Known from one early collection – Limestone, Mosman Park, A.M. Baird, September 1953. It is also listed for Kings Park in Barrett and Tay (2005). This species is a post fire annual.

***Dichelachne crinita*** LE
Known from one collection – Claremont, C. Andrews, October 1902. This species appeared in the Woodvale Nature Reserve after fire but it is unknown from Perth's Bushland at present.

***Lachnagrostis aemula*** WFA/LE
Known from one collection – Claremont, Anon (most likely by A. Morrison), September 1910 (NSW). A species of freshwater alluvial wetlands, unknown from Perth's Bushland at present.

*Paspalidium clementii* TS/LE
Known from one collection – Limestone, Cottesloe, Lea (No 191), September 1895. Very disjunct from the species typical range, north and east of a line from Kalbarri to Kalgoorlie. This species prefers limestone associated habitats. Unknown from Perth's Bushland at present.

7.4.4.28 Polygonaceae

*Muehlenbeckia polybotrya* TS/LE
Known from one collection – sandy woodlands near Perth, 12th May 1839, Preiss (No 1353). The nearest confirmed populations are at Yanchep. The plant's habitat of yellow sand over limestone is present in Perth's Bushland. Unknown from Perth's Bushland at present.

***Persicaria decipiens***
Known from one early collection – base Mount Eliza, 22nd May 1839, Preiss (No 1354). This species would have been common in Lake Monger, Lake Claremont, Perry Lakes and Herdsman Lake but is now often replaced by weedy relatives (*P. lapathifolia* and *P. maculosa*). Plants have been recently observed in Lake Claremont and Smith's Lake. Birds distribute the seeds but these populations may have arisen from plantings.

7.4.4.29 Primulaceae

*Samolus bickfordianus* W/LE
Last known from early collection – Claremont Morrison 25th November 1899. This taxon has been recently re-determined from *Samolus repens* var. *pauciflorus* and occurs in mainly in estuarine areas from Kalbarri to Bunbury. The type collection is from the Swan River Estuary. Unknown from Perth's Bushland at present.

7.4.4.30 Proteaceae

*#Grevillea obtusifolia*
Known from one collection – Swan River, Price (s.n.). Considered not to be from Perth's Bushland.

*Grevillea pilulifera* LE
Is recorded on the basis of old dubious records from Kings Park. Considered locally extinct by Barrett & Tay (2005). Closest known early collection is from South Perth, Mrs Gribble (s.n.) in 1887.

***Grevillea preissii* subsp. *preissii*** (Figure 77) Type
The type is: Mount Eliza, on 19th May 1839 by Preiss (No 709). This species varies considerably over its range and care should be taken in selecting material for revegetation/restoration as there are many commercially available species of mixed species and subspecies background.


**Figure 77: *Grevillea preissii* subsp. *preissii***
A widespread limestone resprouting shrub on the coastal cliffs at Coogee (a); and flowering branches from Buckland Hill (b) and Yalgorup National Park (c). In Yalgorup National Park it is at the southern extent of its range. Local material should be used in revegetation/restoration.

*Grevillea* sp. (listed by McGilvray and Mackinson 1993 as *G. pinaster*) GE
Known from one collection – Limestone near Fremantle Oldfield (No 360a, MEL69938). This taxon has simple leaves matched to *G. pinaster* and *G. hirtella* (from the *G. thelemanniana* group). There are no other known collections from this taxon and the specimen cannot be located on the current databases. Unknown from Perth's Bushland at present and should be considered extinct.

***Grevillea vestita* subsp. *vestita*** (Figure 7)
This is a common clonal shrub in Perth's Bushland, spreading over large areas by sprouting from an extensive underground stem. A highly restricted form of *Grevillea vestita* subsp. *vestita* with very narrow in-rolled leaves (superficially similar to the very rare wetland species *Grevillea curviloba*) is found in Bold Park and City Beach. This form was mistakenly listed as the rare wetland species at one stage.

*Synaphea spinulosa* (Figure 29) Type
The type collection was from Cottesloe in 1697, probably collected by Vlamingh. This species was first described as a fern, as the type collection is a stem with leaves, but no flowers. A widespread species in the Southwest.

7.4.4.31 Ranunculaceae

*Ranunculus sessiliflorus* subsp. *sessiliflorus* LE
Known from one collection – Claremont, C. Andrews, October 1902. A species of damp protected areas in a number of different habitats (not necessarily wetlands). Unknown from in Perth's Bushland at present.

7.4.4.32 Restionaceae

*Lepidobolus preissianus* subsp. *preissianus* LE
Known from one collection from Kings Park– Royce in 1949 (Royce 3100, 3099 PERTH). Listed in Barrett and Tay (2005) but they did not relocate it. Unknown from Perth's Bushland at present.

7.4.4.33 Rhamnaceae

*Cryptandra arbutiflora* var. *arbutiflora* LE
There is a collection from Fremantle (Helms, 17th July 1897) but this locality is probably an error as the coastal variety of this species is *Cryptandra arbutiflora* var. *tubulosa*. However, there is also a collection of this variety from Nedlands by Helms s.n., 17th August 1899 (NSW), suggesting that the current geographic separation of the two varieties may not have been present in the recent past. This is a very interesting case, suitable for investigation by molecular means. Unknown from Perth's Bushland at present.

*Cryptandra pungens* LE
Known from several early collections – collected 'near the sea west of Perth in sandy woodlands and on calcareous slopes' by Preiss (Nos 2422 and 2433). There is an unconfirmed record from Buckland Hill, but the current closest population is at Yanchep. Unknown from Perth's Bushland at present.

*Cryptandra scoparia* TL/LE
Known from one collection – Cottesloe, A. Morrison, 25th May 1900, Cottesloe Breach, Diels/Pritzel 80, in 1900. Unknown from Perth's Bushland at present.

***Spyridium globulosum*** (Figure 78)
The populations along Estuary have plants with grey or green leaves. Grey leaved plants from Kings Park have been allocated a name as *Pomaderris albicans*, based on a Preiss collection.


**Figure 78: *Spyridium globulosum***
A green-leaved plant on Buckland Hill (a and b) and a grey-leaved plant at Minim Cove.

*Stenanthemum notiale* subsp. *chamelum* r (south)
This species is endemic to the Swan Coastal Plain, from Cervantes to Perth and ends its range along Swan Estuary at Kings Park. There is an early record from Claremont (C. Andrews, March 1902).

*Trymalium ledifolium* var. *ledifolium*
This is a near coastal limestone habitat taxon growing from Busselton to Leeman. It is one of the group of limestone associated species that move inland along the Swan Estuary limestone to Kings Park.

*Trymalium odoratissimum* subsp. *odoratissimum* TL/LE
Known from one collection – Leederville, R. Helms s.n. on 10th September 1899. This is another coastal to estuary limestone taxon. Unknown from Perth's Bushland at present.

7.4.4.34 Rutaceae

***Boronia alata*** (Figure 79) d
This is a near coastal species from Cape Arid to Perth. The Perth populations, on Rottnest and Garden Islands and riverine cliffs at Minim Cove, are disjunct from Cape Naturaliste. This is another coastal to estuary limestone taxon.


**Figure 79: *Boronia alata***
A shrub on the limestone cliffs at Minim Cove (a); and a close look at a group of flowers (b).

***Diplolaena angustifolia***
TS/LE
Currently southern range margin of this species range is Yanchep. However, *Diplolaena salicifolia* var. *revoluta*, a synonym of this species was described in 1844 from a collection made by Ludwig Preiss near Fremantle (Along Swan R. near Fremantle, Woodman Pt. and Rottnest Island, 15th August 1839, L. Preiss No 2020). Unknown from Perth's Bushland at present.

***Diplolaena dampieri***
This near coastal species is found from east of Augusta to Perth, associated with limestone. There are populations at Rockingham, Point Peron, Woodmans Point, Rottnest and Garden Islands, and along river at Minim Cove. Wilson (2013) notes that intergrades between this and the above species were once present at Fremantle and the type collection (Preiss No 2020) of *Diplolaena salicifolia* (which was also used to name *Diplolaena salicifolia* var. *cuneata,* a synonym of *D. dampieri*) is a mixed collection of these hybrids. This indicates both parent species were present at the site.

7.4.4.35 Santalaceae

*Leptomeria pauciflora* LE
Known from three collections – Fremantle, Oldfield, 1858; Miss Lukin s.n., 1874; and Cottesloe, R. Helms, 17th August 1898. The nearest recent collection is at Sorrento in 1953. Unknown from Perth's Bushland at present. A search of the dunes from Floreat to Swanbourne may find this species.

***Leptomeria preissiana***
Currently known from the beach side of Bold Park, but previously recorded at Cottesloe Beach (Diels/Pritzel 663, 1905; and WV Fitzgerald, October 1900). In Perth's Bushland it is near the southern margin of its range on Swan Coastal Plain.

***Santalum acuminatum***
This species is very widespread in the Southwest, and extends from the Pilbara to the south coast. There are many distinct forms including the populations on the Quindalup Dunes in Perth's Bushland. This form has broad succulent leaves and was named as *Santalum cognatum* (Perth, 31st January 1839, Preiss No 2098), probably from Perth's Bushland.

7.4.4.36 Sapindaceae

***Dodonaea hackettiana***
This species is confined to the Swan Coastal Plain from Woodmans Point to the Moore River and is common in Kings Park and along the Swan Estuary at Minim Cove. This is a Priority 4 species (DPaW) and is being extensively planted in revegetation and restoration in Perth's Bushland.

***Dodonaea viscosa* subsp. *angustissima***
There is a broad-leaved form of this subspecies, which has been recorded sporadically along rivers and estuaries on the Swan Coastal Plain, including the Swan Estuary. A population of this species (but with very broad leaves) is found in disturbed Tuart woodland in Bay View Park in Mosman Park. We are unsure if this is a truly native population. This is naturally a very widespread and variable species, which is planted throughout Australia.

7.4.4.37 Solanaceae

#*Anthocercis illicifolia* subsp. *caldariola*
These two taxa are in a mixed collection by Oldfield (s.n.) in 1859 labelled from Fremantle. This must be: either an unusual collection misallocated; or a mislabelled collection as the latter subspecies only occurs in the Kalbarri area.

*Solanum simile* (similar to *S. symonii* but with a globular berry) LE
Known from one collection – South Fremantle, Schrock (No 496) 9th March 1920. Probably present in the area near the beach. Unknown from Perth's Bushland at present.

7.4.4.38 Stylidiaceae

#*Stylidium brunonianum*
The type is: Near Perth, 4th February 1839, Preiss (No 2280). There are a number species now recognised in in '*Stylidium brunonianum'*. *Stylidium brunonianum* prefers wet areas with clayey soils and may have occurred along the Estuary but is not accepted for Perth's Bushland at this stage.

***Stylidium bulbiferum*** Type, TL/LE
The type is: Swan River, Fremantle, Huegel s.n. 1834. Other specimens are from Fremantle, Preiss (No 2281) and Oldfield (s.n.) 1859. This species is still present on limestones at Navel Base, but probably locally extinct from Perth's Bushland.

*Stylidium carnosum* LE
Known from two collections – Near Mongers Lake, 2nd October 1829, Preiss (No 2233); and Subiaco (? Kings Park) A. Morrison (s.n.) 12th October 1907. Appears to have greatly declined and is unknown from Perth's Bushland at present.

*Stylidium cygnorum* LE
Known from three collections – Perth, A. Morrison 15th November 1899; Andrews November 1902; and W.V. Fitzgerald 1901. Unknown from Perth's Bushland at present.

*Stylidium despectum* LE
The type is: In shady depressions in woodland near Perth, 26th September 1839, Preiss (No 2248). Another early collection is: Perth A Morrison (s.n.) 6th November 1898. This species was possibly along the estuary in Perth's Bushland.

*Stylidium hesperium* LE
Known from two collections – sandy places around Perth, 23rd September 1841, Preiss (No 2264); and Jolimont by Mrs Pelloe (No I: 101) in October 1919 (PERTH 02857960). Unknown from Perth's Bushland at present.

**Figure 80 : *Stylidium inundatum***
This annual triggerplant is a tiny wetland plant. The plant stores water in its stems and continues to flower and set seed as the wetland dries. Insert shows the size of the tiny plants.

*Stylidium inundatum* (Figure 81) WFA/LE
Known from two collections – Swan River, near Perth, 26th September 1839, Preiss (No 2248); and Claremont, WV Fitzgerald in 1900. Unknown from in Perth's Bushland at present.

***Stylidium maritimum***
This is often a locally common species in near coastal situations on both Quindalup and Tamala Limestones but is declining in Perth's Bushland. It is listed as a Priority 3 species (DPaW 2105).

*Stylidium rigidulum* r (south)
This species is currently at the southern range end of its range in Bold Park, but was previously at Claremont (O.H. Sargent 16th October 1921 and C. Andrews September 1902). This species was previously referred to as *S. macrocarpum*.

*Stylidium roseoalatum* WFA/LE
Known from one collection – Claremont, W.V. Fitzgerald (s.n.) in October 1900. Unknown from in Perth's Bushland at present.

7.4.4.39 Thymelaeaceae

***Pimelea calcicola***
This species is listed as a Priority 3 (DPaW 2105).

*Pimelea imbricata* subsp. *piligera* WFA/LE
Known from one collection – Swan River at Fremantle, A. Oldfield 880, 1859 (MEL). Unknown from Perth's Bushland at present.

7.4.4.40 Typhaceae

***Typha orientalis***
The type of *Typha shuttleworthii* was collected at the base of Mount Eliza on 19th January 1839 by Preiss (No 1874). *Typha shuttleworthii* is a synonym of *Typha muelleriana*, which is also a synonym of *Typha orientalis*. This is now considered a native species not introduced after settlement. Grey refers to this and another species of Yanget in his journals as major indigenous food (Keighery and McCabe 2015).

7.4.4.41 Xanthorrhoeaceae

*#Xanthorrhoea brunonis* subsp. *semibarbata*
Known from one collection – Perth, A. Oldfield in 1859 (MEL). Probably not from Perth's Bushland.

## 7.5 Type Collections

A number of early collectors worked in and around Perth's Bushland including: Vlamingh, Cunningham (the Botanist with Phillip Parker King collected on Rottnest in 1822); Baron Von Huegel (collected around Perth in 1834 and 1839; and Ludwig Preiss collected along the Swan Estuary at Kings Park, Point Walter, Fremantle and Rottnest Island.

There are 34 species (Table 6) whose type collections originate from the Western Suburbs including: *Acacia pulchella* var. *glaberrima, Acacia rostellifera, Acacia truncata, Amyema preissii, Baumea preissii, Drosera porrecta, Gnephosis angianthoides, Grevillea preissii*, *Lomandra hermaphrodita, Lomandra maritima, Myriophyllum tillaeoides, Orthrosanthus laxus,* ***Picris compacta*** (Figure 32)*, Poranthera moorokatta,* ***Rhodanthe chlorocephala*** **subsp.** ***rosea*** **var.** ***nigropapposum****, Stenopetalum gracile, Stylidium bulbiferum, Synaphea spinulosa, Tetraria octandra* and *Xerochrysum macranthum* (Figure 82).
Twenty seven still occur in Western Australia, five are locally extinct (underlined above) and two are globally extinct (**bold** above). A number of types originate nearby from Fremantle and Rottnest Island.

## 7.6 Extinct Taxa and Populations

### 7.6.1 *Globally extinct plants*

Two taxa are globally extinct: the native thistle *Picris compacta* (Figure 32) known only from two collections from Claremont and the last from Crawley in 1941; and the variety *nigropapposum* of *Rhodanthe chlorocephala* subsp. *rosea* from Fremantle F. Mueller (s.n.) collection (HO) and Kings Park, Ostenfeld (No 874) on 8th October 1914 (these are the type for this taxon Ostenfeld, 1921).

### 7.6.2 *Regionally extinct plants*

Two species are extinct on the Plain, being: *Euphrasia scabra* collected from the Fremantle area in the Nineteenth Century, now only known from the Lake Muir area; and *Lepidium pseudohyssopifolium* only known in Western Australia from an old collection from Herdsman Lake. The later is extinct in WA.

### 7.6.3 *Locally extinct plant populations*

From this work it appears that at least 141 species (Table 6, about 20% of the total recorded) are locally extinct in the Western Suburbs, being only known from historical collections. Locally extinct species are predominantly from: estuarine fringing wetlands edging the River and basin wetlands in Perth, Nedlands, Cambridge, Claremont and Subiaco (see section 7.6.2. 1 and 2). There is also a set recorded from the massive limestone hills at Mosman Park (see section 8.2.1.1).

**Figure 81: *Xerochrysum macranthum***
This species is found in a number of habitats in the Southwest and is becoming increasingly rare on the Plain. On the Plain it is a species associated with outcropping Tamala limestone in the Spearwood Dunes. While the type came from Perth's Bushland it is now locally extinct. This photograph is from an area of outcropping Tamala limestone in the Spearwood Dunes north of Jurien.

## 7.7 Sourcing material for restoration/revegetation

It is evident from the work on a number of plants that recognises distinct variants on the Spearwood and Quindalup Dunes that a number of widespread species need to be sourced with extreme care for revegetation and restoration of natural areas and bushland. Some of these variants are recognised taxonomically, these include *Banksia* (or *Dryandra*) *sessilis* var. *cygnorum* (Figure 56), *Diplopeltis huegelii* subsp. *huegelii, Hibbertia spicata* subsp. *leptotheca* and *Kennedia coccinea* subsp. *calcaria* (Figure 70). There is observed variation associated with many other species in Perth's Bushland, including: *Acacia lasiocarpa* var. *lasiocarpa*, *Acacia pulchella, Alyogyne huegelii, Bossiaea eriocarpa, Callitris preissii, Chamelaucium uncinata, Daviesia nudiflora* subsp. *nudiflora, Grevillea crithmifolia, Hakea trifurcata, Jacksonia furcellata* and *Melaleuca systena* (Figure 82). The species discussed in section 7.4 are also annotated (bold and underlined) to alert readers to management information.

Seed sources within Perth's Bushland are limited and if seed is sourced out of the area care should be taken in identifying populations that are similar to those in Perth's Bushland and from a similar habitat. Populations off the Swan Coastal Plain are rarely if ever suitable. Once plants are carefully selected and established in revegetation/restoration areas, they can be sourced they can be used for propagation material. In fact this approach is best to use.

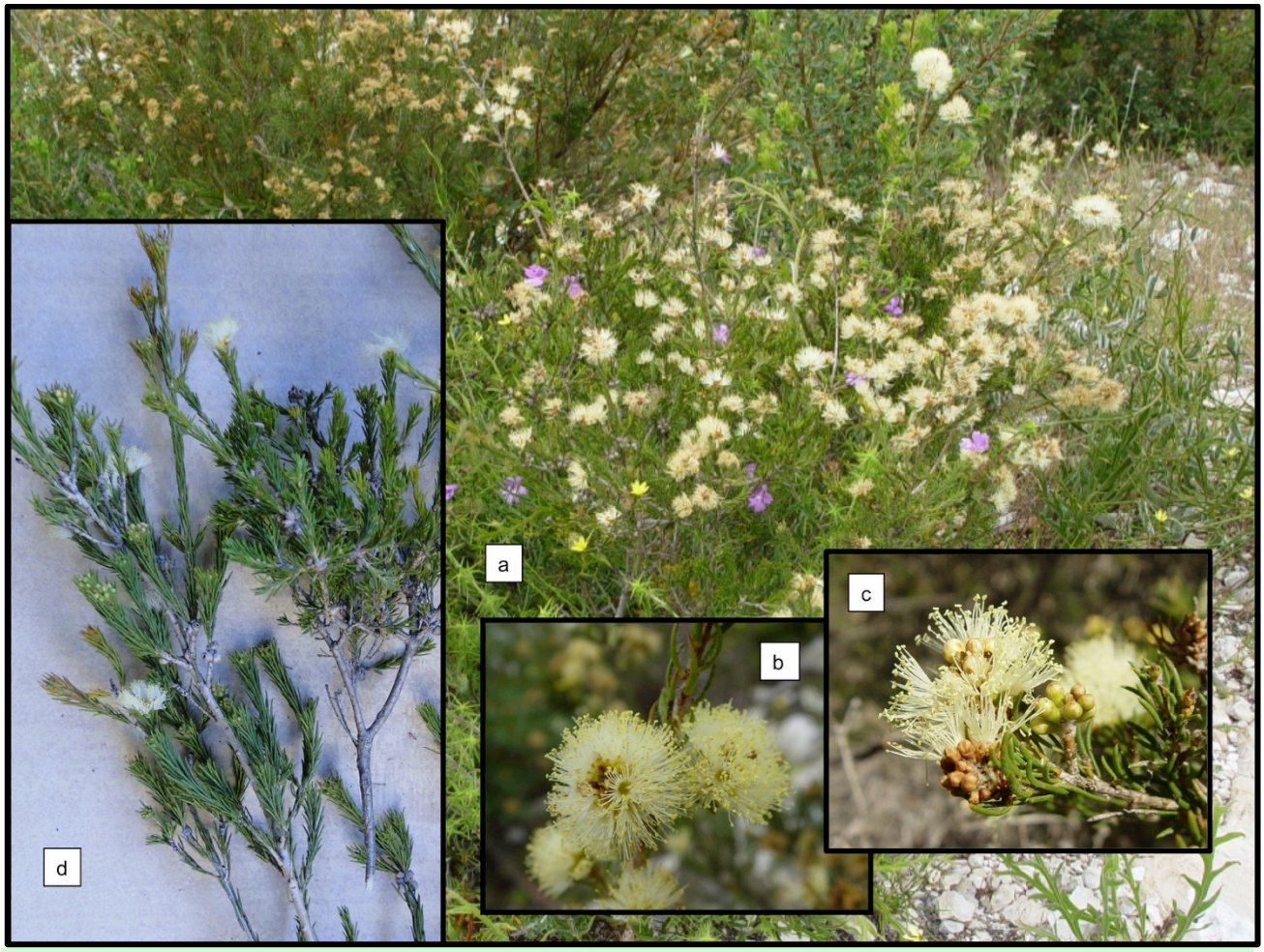



**Figure 82: Variation in *Melaleuca systena***

*Melaleuca systena* is a widespread species. It s most common on the Spearwood Dunes on the Plain be can be found on the Quindalup Dunes and Bassendean Dunes as well as in other bioregions. On the Plain there are at least two other species allied to *M. systena*: one is a shrub to two metres on two Tamala limestone surfaces north of Perth (Figure 85); and the other a three metre tall shrub on Muchea limestone in the Kemerton Nature Reserve. Within the more typical *M. systena* there is a significant amount of variation in such characters as: the ability to resprout from a lignotuber like the plant in (a); leaf shape and length, flat leaves in (b) and terete leaves in (c) and flowering time. In (d) two plants from Buckland Hill are shown, the one on the left is planted and is a single stemmed erect plant with long flat leaves to 1.5m while the local material on the right is multi-stemmed and spreading to 0.5m with narrower and shorter leaves. All planted material observed is similar to that in (d). Also see Figure 84.

# 8 RARE AND DISTINCT HABITATS

## 8.1 Rare habitats

Some habitats are naturally rare. There are a series of at least 10 species that are now, or always were, rare on the Swan Coastal Plain. The northern bank of the Swan Estuary from North Fremantle to Kings Park contains species that are normally found only on the relatively fire free and climatically moderate offshore islands in the Perth area. These include: *Alyxia buxifolia*, *Beyeria viscosa*, *Boronia alata*, *Callitris preissii*, *Diplolaena dampieri*, *Guichenotia ledifolia* and *Tetragonia implexicoma*. There were probably more of these species that were never recorded.

As noted in Keighery (2015a) a series of normally coastal taxa that penetrate inland along the estuary/river including: *Callitris preissii*, *Eucalyptus gomphocephala*, *Pittosporum ligustrifolium* and *Trymalium ledifolia* var. *ledifolia*. Often these species contain distinctive forms (*Olearia axillaris* (Figure 61) and *Spyridium globulosum* (Figure 79).

**Figure 83: A matched landscape - Moore River mouth today**
The Moore River Estuary opens to the sea at Guilderton. During summer a sand bar closes the mouth between the two Tamala limestone heads. The bar breaks in winter when there is sufficient freshwater flow to bridge the sandbar. This is the most similar remaining estuary/river mouth to that of the Swan. However the Swan Estuary is much larger than the Moore and had a limestone bar in the mouth. It is thought that there was never a sand bar here as the Nyungar crossed the Swan Estuary at sandbars further up the Estuary at Point Walter.

## 8.2 Extinct Habitats

### 8.2.1.1 Uplands

Vegetated areas of outcropping Tamala limestone in the Spearwood Dunes (and Quindalup Dunes) do occur in Perth's Bushland however these are much reduced from the original area that was found on the coast

(Cottesloe), Estuary and on the Seven Sisters. Fourteen plants are listed that are now locally extinct and would have been associated with these Tamala limestone habitats (TL/LE in section 7.3) and include: *Brachyscome pusilla*, *Chorizema varium*, *Erymophyllum ramosum* subsp. *involucratum*, *Hemigenia sericea*, *Lepidium foliosum* and *Xerochrysum macranthum.*

Beyond the study area clearing, limestone mining, and building for industry and housing are continuing to see the decline in the outcropping Tamala limestone habitat. This loss is so severe that the community on the top of the massive limestone hills is a threatened ecological community. There are limited (and threatened) areas of all of the other communities (see section 6.2). Some have a level of protection in *Bush Forever* Sites, for example those illustrated in Figure 84 below and in the following sites: Wilbinga-Caraban Bushland West (BFS 406), Yanchep National Park and Adjacent Bushland (BFS 288); Ridges and Adjacent Bushland (BFS 381); Shire View Hill and Adjacent Bushland (BFS 293); Manning Lake and Adjacent Bushland (BFS 247); Coastal: Coastal Strip from Wilbinga to Mindarie (BFS 397); Coastal Strip from Burns Beach to Hillarys (BFS 325); Point Peron and Adjacent Bushland (BFS 355); Brownman Swamp, Mt Brown lake and Adjacent Bushland (BFS 346); and Garden Island (BFS 63).

**Figure 84: A view of Spearwood Dunes from the Ridges**
A view of the principal plant communities of Spearwood Dunes from a limestone ridge in the Ridges and Adjacent Bushland (BFS 381): the ridgetop shrubland is the threatened ecological community SWAFCT 26a *Melaleuca huegelii - M. systena* shrublands of limestone ridges (the flowering *Melaleuca* is the an undescribed species allied to *M. systena*) below the ridge a sequence of limestone (shrublands and mallees) and deep sand communities (Tuart and Banksia woodland to forest) be seen (see section 6.2).

8.2.1.2 Wetlands

8.2.1.2.1 Estuarine fringing saline and calcareous alluvial wetlands

This would have been a widespread habitat along the estuarine margin (Figure 85). While many of the plants associated with this habitat are still present today, these have generally declined to just a few plants, these include: *Casuarina obesa*, *Lysinema casuarinae* (Figure 86), *Centella asiatica* and *Juncus kraussii*. Others were always uncommon and are now locally extinct, including: *Gahnia trifida*, *Wilsonia humilis* and *W. backhousei*. Most of these species are common to saline and calcareous wetlands. The suite of communities, on these estuarine fringing flats, are all lost in the study area. The closest areas are those at Alfred Cove (part of the Blackwell Reach, Point Walter and Alfred Cove and Adjacent Bushland *Bush Forever* Site 331).


**Figure 85: Extinct saline and/or calcareous wetlands in Crawley Bay**
The top left and right show similar extant communities to those expected in Crawley Bay and in other patches along the Estuary, these include: top left on the Serpentine River samphire shrublands, *Juncus kraussii* sedgeland and *Casuarina obesa* forest; and right *Juncus kraussii* sedgeland in the foreground and in freshwater seepage area *Lepidosperma longitudinale* sedgeland and *Melaleuca rhaphiophylla* forest.

**Figure 86: *Casuarina obesa* and its mistletoe**
*Casuarina obesa* (tree left) and *Lysinema casuarinae* flowers (top right) and flowering branches alongside the Swan River. While several mistletoes are recorded in the study area (Loranthaceae) those found parasitic on trees are becoming increasingly rare.

8.2.1.2.2 Fresh alluvial

Apart from the freshwater seeps in Alfred Cove there are no freshwater alluvial estuarine or, near estuarine alluvial wetlands the Swan River and Estuary on the Plain. A number of individual plant records indicate that there was a significant area of these wetlands in the Crawley Bay area (Figure 85) and extending up the valley from the Bay to the Charles Gardener Hospital site. *Melaleuca lateritia* and *Picris compacta* (Figure 32) are from this area. Other species form the Perth area also support the presence of such wetlands including: *Anthotium junciforme* (Figure 73)*, Burchardia multiflora*, *Drosera gigantea* (Figure 68), *Callitris pyramidalis* (Figure 88), *Goodenia pulchella*, *Schoenus benthamii*, *S. pedicellatus*, *S. subfascicularis, Tribonanthes* species (Figure 87) and *Utricularia multifida* (Figures 72 and 87). It is thought that the records for Kings Park of plants from alluvial wetlands (*Isotoma scapigera* Figure 72d) and associated sands (*Gnephosis angianthoides*) may well have come from these wetlands. *Gnephosis angianthoides* has been found on sand banks along the Serpentine River and adjacent to the alluvial flats in Lake Pinjar (BFS 382). Such alluvial flats may have been associated with the Perth Lakes and Claise Brook.

**Figure 87: Extinct freshwater alluvial plant communities**
These communities support a large number of species including *Tribonanthes violacea* (insert) and *Utricularia multifida*.

**Figure 88: *Callitris pyramidalis***
This native cypress is a distinctive small tree in wetlands of the Plain. Here in Hartfield Park the trees are festooned with *Thysanotus manglesii*.

8.2.1.2.3 Basin Wetlands

All plant communities of seasonally water-logged soils have been lost through clearing, mining (for peat) draining, water drawdown and/or water level rises (with loss of native vegetation). For example Lake Jularbup is expected to have been similar to Lake Mt Brown (Figure 90) and was surrounded by a series of similar plant communities. Studies of wetland plant communities have shown that these communities are highly variable (most diverse set of SWAFCTs) and, together, the wetlands would have supported a diversity of communities and associated species. It is expected

that there would have been areas of alluvium in Perth's Lakes and possibly Mongers and Herdsmans Lake. A number of locally extinct species of these habitats include: *Aotus cordifolia* (Figure 89)*, A. gracillima, A. procumbens*, *Baumea laxa*, *B. preissii B. riparia B. vaginalis*, *Gahnia trifida*, *Lepidosperma striatum* and *Pericalymma ellipticum* (Figure 75).


**Figure 89: Lake Mount Brown matched to Lake Jualbup**
Lake Mount Brown (photo K Clarke) is thought to be a good match to Lake Jualbup (insert). The transect from the hill top (Mt Brown) west of Lake Mt Brown retains its original native vegetation. From the lake edge there is a transition from sedgelands are inundated edges then: 1) *Melaleuca rhaphiophylla* forest on the waterlogged flats (see also Figure 38); 2) Tuart forest; 3) *Banksia* woodland with scattered Jarrah; and 4) hilltop shrublands.

# 9 CONCLUSION

This combination of soils and climate has given us Perth's Bushland, a unique scientific resource at world, regional and local levels, a window on the evolution of ecosystems and taxa and which are not available to any other centre of population in the world. While it is apparent that some losses in habitats, especially dampland and riverine wetlands have lead to local extinctions of some flora species, significant areas of great value remain.

The largest, diverse and most intact areas remaining are the uplands. Most of the larger areas, and areas along the Estuary, have some level of protection and are recognised in *Bush Forever* Sites. All of these areas require ongoing management to maintain the vegetation and flora values described here and in other publications (see Bibliography and section 13). There are a number of smaller remnants that act as local habitat for plants and animals and corridors for fauna (Figure 91), all of which are very worthy of retention. The remnants adjacent to the Floreat (Figure 4) and Jolimont Primary Schools have additional value in being located adjacent to the school. Small areas generally need restoration of understory components to be more effective.

There are also a number of large areas such as Lake Claremont and Buckland Hill that are being restored/revegetated and are important natural areas. Management of these areas and other revegetated/restored sites require ongoing management to retain the values being established. Revegetation with the local flora of areas in public gardens, private gardens and verges (rail and road) can provide additional habitat.

**Figure 90: A wasp pollinator** *Chamelaucium uncinatum* flower head and a thynnid wasp pair. The large winged male, with the attached small unwinged female collected from the bushland, travel from plant to plant and flower to flower spreading pollen while collecting nectar. Bushland remnants provide habitat for native birds, reptiles and invertebrates. Many birds and insects have a vital role in pollination important in maintaining healthy populations of the native flora.

As discussed the remaining wetlands are mostly completely altered with just a few areas that retain patches of the original native vegetation. Fortunately being in the centre of European settlement pictorial, descriptive and scientific information and associated collections have been useful in gaining a picture of what the native vegetation was like pre-1829. The conservation and careful revegetation, restoration and rehabilitation of remaining wetland remnants and/or habitat, such as occurring at Lake Claremont and and in the Claisebrook catchment are significant examples of such work. The remnants of the estuarine wetlands should be included in this ongoing work. There is a pressing need in the Perth area is the preservation, conservation and restoration of riverine wetland habitats and associated uplands.

There are a number of consistent features in the successful management of both restoration and revegetation. These include: an knowledgeable and active Friends group; a committed local government with officers employed to work with the Friend groups; and local nurseries in the area (such as that at APCAE Inc. in North Fremantle and the Botanic Gardens and Parks Authority in Kings Park) that provide locally sourced material. Each restored site can then become an additional source of local plant material.

The conservation of these native plants and plant communities attuned to our natural environment will be a major challenge for the inhabitants of the local government areas associated with Perth's Bushland since most bushland remnants are vested in their local governments. An overall plan for preservation, rehabilitation and restoration of the remnants stretching from Perth to Fremantle is urgently needed.

This is also cautionary tale as with the ever-expanding Perth and associated agriculture, industry, mining and housing the very character of the entire Plain is being altered. It is even more relevant today that we aim for at least the levels of retention of landscape, plant communities and plants as shown between Kings Park and Bold Park to maintain our landscape and sense of place.

The Swan Coastal Plain has defined the city and its inhabitants and it is one of the few areas in Australia to inspire a ground breaking coffee table book in the 1970's - *'Sense of Place - A response to an environment - The Swan Coastal Plain Western Australia*' by George Seddon. Hopefully the natural values of the Plain explained so eloquently by George will continue to provide Perth with a "Sense of Place" long into the future.

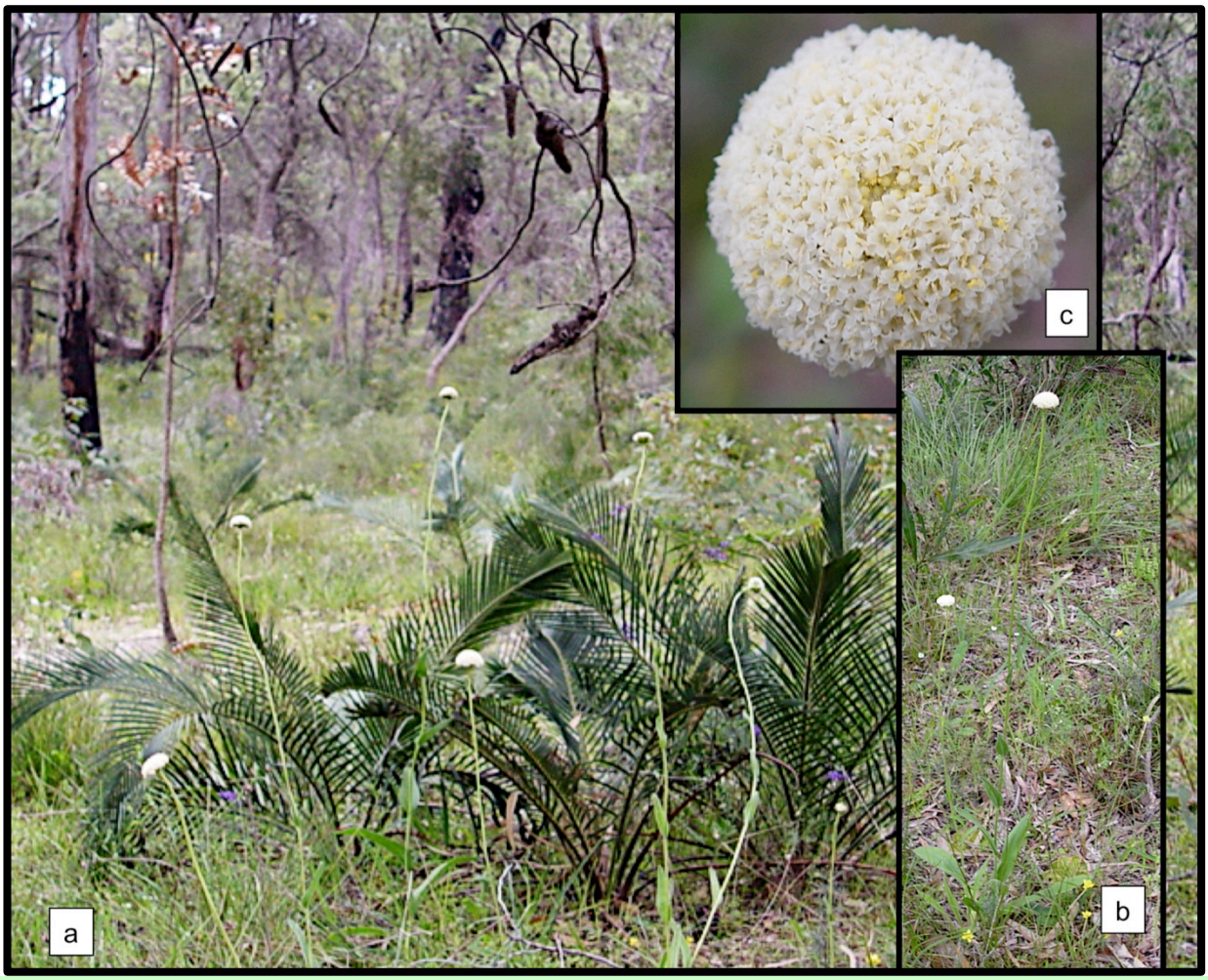



**Figure 91: Did *Craspedia* grow in Perth's Bushland?**
The Swan Coastal Plain sandplain *Craspedia* is currently known from bushland on Spearwood Dunes south of Perth. This population was in the Myalup Bushland (a) surrounding the Myalup Forest Cottages. Plants (b) grow each from a set of tubers and flower (a, b and c) in early spring. Preiss collected the Swan Coastal Plain *Craspedia* at Woodman Point (BFS 331). A related but distinct *Craspedia* species is found in the Jarrah forest and on the east of the Plain. This forest species has brighter yellow flower heads and is less robust.

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Particular mention should be made of - FloraBase and the Australian Virtual Herbarium for access to specimen records; and Lisa Wright from the DPaW Conservation Library help with access to books and reports on the area. Russell Barrett thanked for information and associated and discussions on the plants of Kings and Bold Parks.

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The majority of our work was on public lands and the various managing bodies are thanked for their co-operation.

**Figure 92: Bold Bark Bushland**
This photo was taken at dusk in the early spring in 2015 in bushland to the north of the golf course. Quindalup Dune communities are in the picture, with shrubland on the hills and slopes and Tuart forest in the swales. A natural population of *Agonis flexuosa* is scattered on the slopes and in the swales. *Templetonia retusa* bushes are bright red in the evening light.

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| | |
|---|---|
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**Weston AS and Gibson N** 1997 Report on the limestone vegetation of Wabling Hill area, Reserves 39411 and 39412, and the Ridges extension to Yanchep National Park. Department of Conservation and Land Management, Perth

**Woodman S and Gioia P** 2005 *Max Version 3.* Department of Environment and Conservation, Perth.

**worldwidewattle** A collaborative project involving the Shire of Dawallinu, the Western Australian Department of Conservation and Land Management and the Canberra-based Australian Tree Seed Centre (part CSIRP Forestry and Forest products). Available at http://www.worldwidewattle.com

# 12 APPENDIX 1: PERTH'S BUSHLANDS NATIVE VASCULAR PLANTS

## 12.1 APPENDIX 1a: LOCATION of PERTH'S BUSHLANDS PLANTS

**KEY**

**Column 1 Native vascular plants.**

Grouped in Non-flowering Plants (Lycopods, Ferns and Conifers) and Flowering Plants, then alphabetically in families, then genera then species.

**Columns 2 to 8 Reserves**

**Column 2 Swan Estuary Reserves (BFS 221, 334, 335, 402 and 403)**

**Columns 3 to 4 Lake** (lake margins and water body)

**Column 3: Lake Claremont (BFS 220)**

**Column 4: Herdsman Lake (BFS 281)**

**Columns 4 to 5 Bushland areas mostly on Spearwood Dunes**

**Column 4: Kings Park (BFS 317)**

**Column 5: Shenton Bushland (BFS 218)**

**Columns 6 to 8 Bushland areas mostly on Quindalup Dunes**

**Column 6: Bold Park (BFS 312)**

**Column 7: Floreat Beach (BFS 310)**

**Column 8: Swanbourne Beach (BFS 315)**

**Column 9: General localities**

Other records, mostly from Herbarium material (general localities)

**Column 10 Flora Conservation Significance**

See text for categories

| Scientific name | Swan | Lake | | Spearwood | | Quindalup | | | Other | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| LYCOPODS | | | | | | | | | | |
| Selaginellaceae | | | | | | | | | | |
| *Selaginella gracillima* | | | | | | | | | + | + |
| | | | | | | | | | | |
| FERNS | | | | | | | | | | |
| Dennstaedtiaceae | | | | | | | | | | |
| *Pteridium esculentum* subsp. *esculentum* | + | | | | | | | | | |
| | | | | | | | | | | |
| Pteridaceae | | | | | | | | | | |
| *Adiantum aethiopicum* | | | | | | | | | + | + |
| *Anogramma leptophyllum* | + | | | + | | | | | | |
| *Cheilanthes sieberi* subsp. *sieberi* | | | | + | | | | | | + |
| | | | | | | | | | | |
| Salviniaceae | | | | | | | | | | |
| *Azolla rubra (filiculoides)* | | | + | | | | | | | |
| | | | | | | | | | | |
| CONIFERS or GYMNOSPERMS | | | | | | | | | | |
| Cupressaceae | | | | | | | | | | |
| *Callitris pyramidalis* | | | | | | | | | + | + |
| *Callitris preissii* | + | | | + | | + | | + | | + |
| | | | | | | | | | | |
| Zamiaceae | | | | | | | | | | |
| *Macrozamia fraseri* | + | | + | + | | + | | | | |
| | | | | | | | | | | |
| FLOWERING PLANTS | | | | | | | | | | |
| Aizoaceae | | | | | | | | | | |
| *Carpobrotus virescens* | | | | | | + | + | + | | |
| *Tetragonia implexicoma* | + | | | | | | | | | + |
| *Tetragonia tetragonoides* | + | | | | | | | | | |
| | | | | | | | | | | |
| Amaranthaceae | | | | | | | | | | |
| *Alternanthera denticulata* | | | | | | | | | + | |
| *Alternanthera nodiflora* | + | | + | | | + | | | | |

| Scientific name | Swan | Lake | | Spearwood | | Quindalup | | | Other | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| *Ptilotus drummondii* var. *drummondii* | | | | + | | + | | | | |
| *Ptilotus esquamatus* subsp. *esquamatus* | | | | | | | | | ? | + |
| *Ptilotus manglesii* | | | | + | | | | | | |
| *Ptilotus polystachyus* | + | | + | + | | + | | + | + | |
| *Ptilotus sericostachyus* subsp. *sericostachyus* | | | | | | + | | | | |
| | | | | | | | | | | |
| Anarthriaceae | | | | | | | | | | |
| *Lyginia imberbis* | | | + | + | + | | | | | |
| | | | | | | | | | | |
| Apiaceae | | | | | | | | | | |
| *Apium annuum* | + | | | | | | | | | + |
| *Apium prostratum* subsp. *prostratum* | + | | + | | | | | | | + |
| *Centella asiatica* | | + | + | | | + | | | | + |
| *Daucus glochidiatus* | | | + | + | | + | + | + | | |
| *Eryngium pinnatifidum* subsp. *pinnatifidum* | | | | + | + | + | + | + | | |
| *Homalosciadium homalocarpum* | | | | + | + | + | | | | |
| *Platysace ramosissima* | | | | | | | | | ? | + |
| *Schoenolaena juncea* | | | | | | | | | + | + |
| *Xanthosia candida* | | | | | | | + | | | |
| *Xanthosia ciliata* | | | | | | | | | + | + |
| *Xanthosia huegelii* subsp. *huegelii* | | | | + | + | + | | | | |
| | | | | | | | | | | |
| Apocynaceae | | | | | | | | | | |
| *Alyxia buxifolia* | + | | | | | | | | | + |
| | | | | | | | | | | |
| Araceae | | | | | | | | | | |
| *Landoltia* (was *Spirodela*) *punctata* | | | + | | | | | | | |
| *Lemna disperma* | | | + | | | | | | | |
| | | | | | | | | | | |
| Araliaceae | | | | | | | | | | |
| *Hydrocotyle alata* | | | | | | | | | ? | + |
| *Hydrocotyle blepharocarpa* | | | | + | | | | | | |
| *Hydrocotyle diantha* | | | | | | + | | | | |
| *Hydrocotyle hispidula* | | | | + | | | | | | |
| *Hydrocotyle medicaginoides* | | | | | | + | | | | |
| *Hydrocotyle pilifera* var. *glabrata* | | | | | | | | | + | + |
| *Hydrocotyle tetragonocarpa* | | | | | | | | | + | + |
| *Trachymene coerulea* subsp. *coerulea* | | | | + | | + | | | | |
| *Trachymene pilosa* | | | | + | + | + | | + | | |
| | | | | | | | | | | |
| Asparagaceae | | | | | | | | | | |
| *Acanthocarpus preissii* | + | | | + | | + | + | + | | |
| *Arthropodium capillipes* | + | | + | + | + | + | | | | |
| *Arthropodium preissii* | | | | | | | | | + | + |
| *Chamaescilla corymbosa* var. *corymbosa* | | | + | | | | | | | |
| *Laxmannia ramosa* subsp. *ramosa* | | | | + | | | | | | + |
| *Laxmannia squarrosa* | | | | + | + | | | | | |
| *Lomandra caespitosa* | + | | | + | | + | | | | |
| *Lomandra hermaphrodita* | | | | + | + | | | | | + |
| *Lomandra maritima* | + | | | + | + | + | + | + | | + |
| *Lomandra micrantha* subsp. *micrantha* | | | | + | + | + | | | | |
| *Lomandra nigricans* | | | | + | + | | | | | |
| *Lomandra odora* | | | | | | | | | + | |
| *Lomandra preissii* | | | | + | + | + | | | | |
| *Lomandra purpurea* | | | | + | | | | | | |
| *Lomandra suaveolens* | | | | + | + | | | | | |
| *Sowerbaea laxiflora* | | | + | + | + | + | | | | |
| *Thysanotus arenarius* | | | | + | + | + | | | | |

| Scientific name | Swan | Lake | | Spearwood | | Quindalup | | | Other | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| *Thysanotus dichotomus* | + | | | | | | | | | |
| *Thysanotus manglesianus* | | | | + | + | + | | | | |
| *Thysanotus multiflorus* | | | | | | | | | ? | + |
| *Thysanotus patersonii* | + | | | + | + | + | + | + | | |
| *Thysanotus scaber* | | | | | | | | | ? | + |
| *Thysanotus sparteus* | | | | + | + | + | | | | |
| *Thysanotus tenellus* | | | | | | | | | ? | + |
| *Thysanotus thyrsoideus* | | | | + | | | | | | |
| *Thysanotus triandrus* | | | | + | | + | | | | |
| | | | | | | | | | | |
| Asphodelaceae | | | | | | | | | | |
| *Bulbine semibarbata* | | | | | | | | | + | |
| | | | | | | | | | | |
| Asteraceae | | | | | | | | | | |
| *Angianthus cunninghamii* | | | | | | | | | + | + |
| *Asteridea pulverulenta* | | | | + | | + | | | | |
| *Brachyscome bellidioides* | | | | | | | | | + | + |
| *Brachyscome iberidifolia* | | | | | | + | | | | |
| *Brachyscome pusilla* | | | | | | | | | + | + |
| *Cotula australis* | | | | + | | | | | | |
| *Cotula coronopifolia* | + | | + | | | | | | | |
| *Cotula cotuloides* | | | | | | | | | + | + |
| *Erymophyllum ramosum* subsp. *involucratum* | | | | | | | | | + | + |
| *Euchiton sphaericus* | | | | | | + | | | + | + |
| *Gnephosis angianthoides* | | | | | | | | | + | + |
| *Hyalosperma cotula* | | | | + | | + | | | | |
| *Lagenophora huegelii* | | | | + | + | + | | | | |
| *Leucophyta brownii* | | | | | | + | + | + | | |
| *Millotia myosotidifolia* | | | | + | + | + | | | | |
| *Olearia axillaris* | + | | | + | | + | + | + | | + |
| *Olearia elaeophila* | | | | + | | | | | + | + |
| *Olearia paucidentata* | | | | + | | | | | | |
| *Olearia rudis* | | | | | | + | | | + | |
| *Picris compacta* | | | | | | | | | + | + |
| *Pithocarpa cordata* | | | | + | | + | + | + | | |
| *Podolepis gracilis* | | | | + | | | | | | |
| *Podotheca angustifolia* | | | | + | | + | | | | |
| *Podotheca chrysantha* | | | | + | | | | | | |
| *Podotheca gnaphalioides* | | | | + | | + | | | | |
| *Quinetia urvillei* | | | | + | | | | | | |
| *Rhodanthe chlorocephala* subsp. *rosea* | | | | + | | | | | + | + |
| *Rhodanthe citrina* | | | | + | | | | | | + |
| *Rhodanthe corymbosum* | | | | | | | | | + | + |
| *Senecio condylus* | + | | + | | | + | + | + | | |
| *Senecio hispidulus* | | | | + | | | | + | | |
| *Senecio pinnatifolius* var. *latilobus* | + | | | | | + | + | + | | |
| *Senecio ramosissimus* | | | | | | | | | ? | + |
| *Siloxerus humifusus* | | | + | + | | + | | | | |
| *Sonchus hydrophilus* | + | | | | | + | | | | |
| *Waitzia nitida* | | | | | | + | | | | |
| *Waitzia suaveolens* var. *suaveolens* | | | | + | | + | | | | |
| *Xerochrysum* (was *Helichrysum*) *macranthum* | | | | | | | | | + | + |
| | | | | | | | | | | |
| Boraginaceae | | | | | | | | | | |
| *Heliotropium curassavicum* | | | + | | | | | | | + |
| | | | | | | | | | | |
| Brassicaceae | | | | | | | | | | |
| *Lepidium foliosum* | | | | | | | | | ? | + |

| Scientific name | Swan | Lake | | Spearwood | | Quindalup | | | Other | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| *Lepidium pseudohyssopifolium* | | | + | | | | | | | + |
| *Lepidium rotundum* | | | | | | | | | + | + |
| *Stenopetalum gracile* | | | | | | + | | | | + |
| | | | | | | | | | | |
| Campanulaceae | | | | | | | | | | |
| *Grammatotheca bergiana* | | | | | | | | | + | + |
| *Isotoma hypocrateriformis* | | | | | | | | | + | |
| *Isotoma scapigera* | | | | ? | | | | | + | + |
| *Lobelia anceps* | + | | | + | | + | | | | |
| *Lobelia gibbosa* | | | | + | | + | | | | |
| *Lobelia rhytidosperma* | | | | | | | | | + | + |
| *Lobelia tenuior* subsp. *tenuior* | | | | + | | + | | | | |
| *Wahlenbergia preissii* | | | + | + | | + | | | | |
| | | | | | | | | | | |
| Caryophyllaceae | | | | | | | | | | |
| *Spergularia brevifolia* | | | | | | | | | ? | + |
| *Spergularia nesophila* | | | | | | | | | ? | + |
| | | | | | | | | | | |
| Casuarinaceae | | | | | | | | | | |
| *Allocasuarina fraseriana* | + | | | + | + | + | | | | |
| *Allocasuarina humilis* | + | | | + | + | + | | | | |
| *Allocasuarina lehmanniana* subsp. *lehmanniana* | | | | | | + | | + | | + |
| *Casuarina obesa* | + | | | | | | | | | |
| | | | | | | | | | | |
| Celastraceae | | | | | | | | | | |
| *Stackhousia pubescens* | | | | | | + | | | | |
| *Tripterococcus brunonis* | | | | + | | + | | | | |
| | | | | | | | | | | |
| Centrolepidaceae | | | | | | | | | | |
| *Aphelia cyperoides* | | | | + | | | | | | |
| *Centrolepis aristata* | | | | + | + | | | | | |
| *Centrolepis drummondiana* | + | | | + | | + | | | | |
| *Centrolepis inconspicua* | | | | | | | | | ? | + |
| *Centrolepis polygyna* | | | | | | | | | + | |
| | | | | | | | | | | |
| Chenopodiaceae | | | | | | | | | | |
| *Atriplex cinerea* | | | | | | | | | + | |
| *Atriplex hypoleuca* | + | | | | | | | | | |
| *Atriplex isatidea* | | | | + | | + | | + | | |
| *Chenopodium glaucum* subsp. *ambiguum* | | + | | | | | | | + | + |
| *Dysphania glomulifera* subsp. *glomulifera* | | | | | | | | | + | + |
| *Enchylaena tomentosa* var. tomentosa | + | | | | | + | + | + | | |
| *Rhagodia baccata* subsp. *baccata* | | | | + | | + | | | | |
| *Rhagodia baccata* subsp. *dioica* | + | | | | | + | + | + | | |
| *Salsola australis* | | | | | | | + | + | | |
| *Sarcocornia blackiana* | | | | | | | | | + | |
| *Sarcocornia quinqueflora* | + | | | | | | | | | |
| *Suaeda australis* | + | | | | | | | | | |
| *Tecticornia halocnemoides* subsp. *halocnemoides* | + | | | | | | | | | |
| *Tecticornia indica* subsp. *bidens* | + | | | | | | | | | |
| *Tecticornia lepidosperma* | | | | | | | | | + | |
| *Tecticornia pergranulata* subsp. *pergranulata* | | | | | | | | | + | |
| *Threlkeldia diffusa* | + | | | | | + | + | + | | |
| | | | | | | | | | | |
| Colchicaceae | | | | | | | | | | |
| *Burchardia congesta* | | | + | + | + | + | | | | |
| *Burchardia multiflora* | | | | | | | | | ? | + |

| Scientific name | Swan | Lake | | Spearwood | | Quindalup | | | Other | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| *Wurmbea monantha* | | | | | | + | | | | |
| | | | | | | | | | | |
| Commelinaceae | | | | | | | | | | |
| *Cartonema philydroides* | | | | + | | + | | | | + |
| | | | | | | | | | | |
| Convolvulaceae | | | | | | | | | | |
| *Wilsonia backhousei* | | | | + | | | | | + | + |
| *Wilsonia humilis* | | | | | | | | | ? | + |
| | | | | | | | | | | |
| Crassulaceae | | | | | | | | | | |
| *Crassula colorata* var. *colorata* | | | | + | + | + | + | + | | |
| *Crassula decumbens* | | | | + | | | | + | | |
| *Crassula exserta* | | | | + | | + | | | | |
| *Crassula extrorsa* | | | | + | | + | | | | |
| | | | | | | | | | | |
| Cyperaceae | | | | | | | | | | |
| *Baumea arthrophylla* | | | | | | | | | + | + |
| *Baumea articulata* | | | + | | | | | | | |
| *Baumea juncea* | + | | + | | | + | | | | |
| *Baumea laxa* | | | | | | | | | + | + |
| *Baumea preissii* | | | + | | | | | | + | + |
| *Baumea riparia* | | | | | | | | | ? | + |
| *Baumea vaginalis* | | | | | | | | | + | + |
| *Bolboschoenus caldwellii* | + | | + | | | + | | | | |
| *Carex appressa* | | | + | | | | | | | |
| *Carex fascicularis* | | | + | | | | | | | |
| *Carex thecata* (was *preissii*) | | | | | | + | | + | | |
| *Caustis dioica* | | | | | | | | | + | + |
| *Cyperus gymnocaulos* | + | | | | | ? | | | | + |
| *Ficinia nodosa* | + | | + | + | | + | + | + | + | |
| *Fimbristylis velata* | | | | | | | | | + | + |
| *Gahnia trifida* | | | | | | | | | + | + |
| *Isolepis cernua* var. *cernua* | + | | | | | + | | | | + |
| *Isolepis cernua* var. *setiformis* | | | | + | | + | | | | |
| *Isolepis cyperoides* | | | | | | | | | + | + |
| *Isolepis marginata* | | | | + | + | + | + | | | |
| *Isolepis oldfieldiana* | | | + | | | | + | | | |
| *Isolepis stellata* | | | + | | | | | | | |
| *Lepidosperma calcicola* | | | | | | + | + | + | | |
| *Lepidosperma costale* | | | | + | | + | | | | |
| *Lepidosperma effusum* | | | + | | | | | | | |
| *Lepidosperma gladiatum* | + | | | + | | + | + | + | | |
| *Lepidosperma leptostachyum* | | | | + | + | | | | | |
| *Lepidosperma longitudinale* | | | + | | | | | | | |
| *Lepidosperma pubisquameum* | + | | | | | + | + | + | | |
| *Lepidosperma scabrum* | + | | | + | | + | | | | |
| *Lepidosperma squamatum* | | | + | | | | | | | |
| *Lepidosperma striatum* | | | | | | | | | + | + |
| *Mesomelaena pseudostygia* | + | | | + | + | + | | | | |
| *Schoenoplectus pungens* | | | | | | | | | + | + |
| *Schoenoplectus validus* | | | + | | | + | | | + | |
| *Schoenus benthamii* | | | | ? | | | | | + | + |
| *Schoenus clandestinus* | | | | + | + | + | | | | |
| *Schoenus curvifolius* | | | | + | + | + | | | | |
| *Schoenus grandiflorus* | | | | + | + | + | + | + | | |
| *Schoenus lanatus* | | | | | | + | | | | |
| *Schoenus pedicellatus* | | | | + | | | | | + | + |
| *Schoenus sculptus* | | | | | | | | | + | + |

| Scientific name | Swan | Lake | | Spearwood | | Quindalup | | | Other | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| *Schoenus subbarbatus* | | | | | | + | + | | | |
| *Schoenus subfascicularis* | | | | | | | | | + | + |
| *Tetraria octandra* | | | | + | + | + | | | | |
| *Tricostularia neesii* var. *neesii* | | | | | | + | | | | |
| | | | | | | | | | | |
| Dasypogonaceae | | | | | | | | | | |
| *Calectasia narragara* | | | | + | | | | | | |
| *Dasypogon bromeliifolius* | | | | + | | | | | | |
| | | | | | | | | | | |
| Dilleniaceae | | | | | | | | | | |
| *Hibbertia aurea* | | | | + | | | | | | + |
| *Hibbertia commutata* | | | | | | ? | | | | + |
| *Hibbertia cuneiformis* | | | | | | + | | | | + |
| *Hibbertia huegelii* | | | | + | | + | | | | |
| *Hibbertia hypericoides* | | | | + | + | + | | | | |
| *Hibbertia racemosa* | | | | + | | + | | | | |
| *Hibbertia spicata* subsp. *leptotheca* | | | | | | + | | + | | |
| *Hibbertia subvaginata* | | | | | | + | | | | |
| | | | | | | | | | | |
| Dioscoreaceae | | | | | | | | | | |
| *Dioscorea hastifolia* | | | | + | | | | | | + |
| | | | | | | | | | | |
| Droseraceae | | | | | | | | | | |
| *Drosera erythrorhiza* subsp. *erythrorhiza* | | | | + | + | + | | | | |
| *Drosera gigantea* subsp. *gigantea* | | | | | | | | | ? | + |
| *Drosera glanduligera* | | | | + | + | | | | | + |
| *Drosera macrantha* subsp. *macrantha* | | | | + | | + | | | | |
| *Drosera menziesii* subsp. *penicillaris* | | | | + | | + | | | | |
| *Drosera pallida* | | | | + | | + | | | | |
| *Drosera porrecta* | | | | + | + | + | | | | + |
| | | | | | | | | | | |
| Elaeocarpaceae | | | | | | | | | | |
| *Tetratheca hirsuta* | | | | | | | | | + | + |
| | | | | | | | | | | |
| Ericaceae | | | | | | | | | | |
| *Acrotriche cordata* | | | | | | + | | + | + | |
| *Astroloma ciliatum* | | | | + | | + | | | | |
| *Astroloma macrocalyx* | | | | + | | | | | | |
| *Astroloma microcalyx* | | | | | | + | | | + | |
| *Astroloma pallidum* | | | | + | | + | | | | |
| *Astroloma xerophyllum* | | | | | | + | | | | + |
| *Conostephium pendulum* | | | | + | + | + | | | | |
| *Conostephium preissii* | | | | + | + | + | | | | |
| *Leucopogon australis* | | | | | | | | | + | + |
| *Leucopogon conostephioides* | | | | | | | | | + | + |
| *Leucopogon insularis* | | | | | | + | | | | |
| *Leucopogon parviflorus* | + | | | + | | + | + | + | + | |
| *Leucopogon polymorphus* | | | | | | + | + | | + | + |
| *Leucopogon propinquus* | | | | + | | + | | | | |
| *Leucopogon racemulosus* | | | | + | | | | | | |
| *Leucopogon squarrosus* subsp. *squarrosus* | | | | | | | | | ? | + |
| *Lysinema pentapetalum* | | | | | | + | | | | |
| | | | | | | | | | | |
| Euphorbiaceae | | | | | | | | | | |
| *Adriana quadripartita* | | | | + | | + | + | + | | |
| *Amperea protensa* | | | | | | | | | ? | + |
| *Beyeria cinerea* subsp. *borealis* | | | | | | + | | | | + |
| *Beyeria cinerea* subsp. *cinerea* | ? | | | | | | | | + | + |

| Scientific name | Swan | Lake | | Spearwood | | Quindalup | | | Other | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| *Beyeria viscosa* | | | | | | | | | + | + |
| *Monotaxis grandiflora* var. *grandiflora* | | | | + | | + | | | | |
| *Ricinocarpus glaucus* | | + | | + | | | | | | |
| | | | | | | | | | | |
| Fabaceae | | | | | | | | | | |
| *Acacia applanata* | | | | + | | | | | | |
| *Acacia benthamii* | | | | + | | | | | | + |
| *Acacia cochlearis* | + | | | + | | + | + | + | | |
| *Acacia cyclops* | | | + | + | + | + | + | + | | |
| *Acacia huegelii* | | | | + | + | + | | | | |
| *Acacia lasiocarpa* var. *lasiocarpa* | + | | | + | | + | + | + | | |
| *Acacia pulchella* var. *glaberrima* | + | | + | + | + | + | | + | | + |
| *Acacia pulchella* var. *goadbyi* | | | | + | | | | + | | |
| *Acacia rostellifera* | + | | | + | | + | + | + | | |
| *Acacia saligna* | + | | + | + | + | + | | + | | |
| *Acacia sessilis* | | | | + | | | | | | |
| *Acacia stenoptera* | | | | + | + | + | | | | |
| *Acacia truncata* | + | | | | | + | | + | | + |
| *Acacia willdenowiana* | | | | + | + | + | | | | |
| *Acacia xanthina* | + | | | | | + | | | | + |
| *Aotus cordifolia* | | | | | | | | | + | + |
| *Aotus gracillima* | | | | | | | | | ? | + |
| *Aotus procumbens* | | | | | | | | | ? | + |
| *Bossiaea eriocarpa* | | | + | + | + | + | | | + | |
| *Chorizema varium* | | | | | | | | | ? | + |
| *Cristonia biloba* subsp. *biloba* | | | | ? | | | | | ? | + |
| *Daviesia decurrens* subsp. *decurrens* | | | + | + | + | + | | | | |
| *Daviesia divaricata* subsp. *divaricata* | + | | | + | | + | | | | |
| *Daviesia nudiflora* subsp. *nudiflora* | + | | | + | | + | | | | |
| *Daviesia physodes* | | | | | | | | | + | |
| *Daviesia triflora* | | | + | + | + | + | | | | |
| *Gastrolobium capitatum* | | | | + | + | + | | | | |
| *Gastrolobium linearifolium* | | | | | | | | | + | + |
| *Gastrolobium nervosum* | | | | | | + | + | + | | |
| *Gompholobium aristatum* | | | | + | | + | + | | | |
| *Gompholobium tomentosum* | + | + | + | + | + | + | + | | | |
| *Hardenbergia comptoniana* | + | + | + | + | + | + | + | + | | |
| *Hovea pungens* | | | | + | | + | | | + | |
| *Hovea trisperma* var. *trisperma* | | | + | + | + | + | | | + | |
| *Isotropis cuneifolia* subsp. *cuneifolia* | + | | + | + | + | + | | | | |
| *Jacksonia calcicola* | + | | | | | + | | | | + |
| *Jacksonia furcellata* | + | | + | + | + | + | | | | |
| *Jacksonia sericea* | + | | | + | + | + | | | | + |
| *Jacksonia sternbergiana* | + | | + | + | + | + | + | | | |
| *Kennedia coccinea* subsp. *calcigena* | | | | | | | | | + | + |
| *Kennedia prostrata* | + | | + | + | + | + | | | | |
| *Labichea lanceolata* | | | | | | | | | + | + |
| *Paraserianthes lophantha* subsp. *lophantha* | | | + | | | | | | | + |
| *Sphaerolobium linophyllum* | | | | | | + | | | | |
| *Sphaerolobium medium* | | | + | | | + | | | | |
| *Templetonia retusa* | + | | | + | | + | | + | | |
| *Viminaria juncea* | | | + | | | | | | | |
| | | | | | | | | | | |
| Frankeniaceae | | | | | | | | | | |
| *Frankenia pauciflora* var. *pauciflora* | + | | | | | | + | + | + | |
| | | | | | | | | | | |
| Gentianaceae | | | | | | | | | | |
| *Schenkia australis* | | | | | | | | | ? | + |

| Scientific name | Swan | Lake | | Spearwood | | Quindalup | | | Other | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| | | | | | | | | | | |
| Geraniaceae | | | | | | | | | | |
| *Geranium retrorsum* | + | | | | | | | | | |
| *Geranium solanderi* | | | | | | + | | | | |
| *Pelargonium littorale* | | | | | | | | | + | |
| | | | | | | | | | | |
| Goodeniaceae | | | | | | | | | | |
| *Anthotium junciforme* | | | | | | | | | ? | + |
| *Dampiera linearis* | | | + | + | + | + | | | | |
| *Goodenia pulchella* | | | | | | | | | + | + |
| *Lechenaultia floribunda* | + | | | + | | | | | | |
| *Lechenaultia linarioides* | + | | | | | + | + | + | | |
| *Scaevola anchusifolia* | | | | + | | + | | | | |
| *Scaevola canescens* | + | | | + | + | + | | | | |
| *Scaevola crassifolia* | | | | + | | + | + | + | | |
| *Scaevola globulifera* | + | | | | | | | | | |
| *Scaevola nitida* | + | | | + | | + | | | | |
| *Scaevola repens* var. *angustifolia* | | | | | | + | | | | |
| *Scaevola repens* var. *repens* | | | | + | + | + | | | | |
| *Scaevola thesioides* subsp. *thesioides* | | | | + | | + | | | | |
| *Velleia trinervis* | | | | | | | | | ? | + |
| | | | | | | | | | | |
| Gyrostemonaceae | | | | | | | | | | |
| *Gyrostemon ramulosus* | | | | | | + | | | | + |
| *Tersonia cyathiflora* | | | | + | | + | | + | | |
| | | | | | | | | | | |
| Haemodoraceae | | | | | | | | | | |
| *Anigozanthos humilis* subsp. *humilis* | | | | + | + | + | | | | + |
| *Anigozanthos manglesii* subsp. *manglesii* | | | | + | + | + | | | | |
| *Arnocrinum preissii* | | | | + | | | | | | |
| *Conostylis aculeata* subsp. *aculeata* | + | | | + | + | + | | | | |
| *Conostylis aculeata* subsp. *bracteata* | | | + | | | | | | | |
| *Conostylis aculeata* subsp. *cygnorum* | | | | + | | | | | | + |
| *Conostylis aculeata* subsp. *preissii* | | | | + | | | | | | |
| *Conostylis candicans* subsp. *calcicola* | + | | | | | + | + | + | + | |
| *Conostylis candicans* subsp. *candicans* | | | + | + | + | + | | + | + | |
| *Conostylis juncea* | | | | | | | | | + | |
| *Conostylis setigera* subsp. *setigera* | + | | | + | | | | | | |
| *Haemodorum laxum* | | | | + | + | + | | | | |
| *Haemodorum paniculatum* | | | | + | + | + | | + | | |
| *Haemodorum spicatum* | | | | + | + | + | | | | |
| *Phlebocarya ciliata* | | | | + | | | | | | + |
| *Tribonanthes longipetala* | | | | | | | | | ? | + |
| *Tribonanthes violacea* | + | | | | | | | | ? | + |
| | | | | | | | | | | |
| Haloragaceae | | | | | | | | | | |
| *Glischrocaryon angustifolium* | | | | + | | | | | | |
| *Glischrocaryon aureum* | | | | | | | | | + | + |
| *Gonocarpus pithyoides* | | | | + | + | | | | | |
| *Haloragis scoparia* | | | | | | | | | ? | + |
| *Meionectes brownii* | | | + | | | | | | | |
| *Myriophyllum crispatum* | | | + | | | | | | | |
| *Myriophyllum tillaeoides* | | | | | | | | | + | + |
| | | | | | | | | | | |
| Hemerocallidaceae | | | | | | | | | | |
| *Agrostocrinum hirsutum* | | | | | | | | | + | + |
| *Caesia micrantha* | + | | + | + | + | + | | | | |
| *Caesia occidentalis* | | | + | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| *Corynotheca micrantha* var. *micrantha* | + | | + | | + | | | | | |
| *Dianella revoluta var. divaricata* | + | | + | + | + | | | | | |
| *Stypandra glauca* | | | | + | | | | | | |
| *Tricoryne elatior* | + | | + | + | + | + | + | + | | |
| *Tricoryne tenella* | | | | | | + | | | | |
| | | | | | | | | | | |
| Hydrocharitaceae | | | | | | | | | | |
| *Halophila australis* | + | | | | | | | | | |
| *Halophila ovalis* | | | | | | | | | | |
| *Najas marina* | | | + | | | | | | | |
| | | | | | | | | | | |
| Hypericaceae | | | | | | | | | | |
| *Hypericum gramineum* | | | | | | + | | | | |
| | | | | | | | | | | |
| Hypoxidaceae | | | | | | | | | | |
| *Pauridia* (was *Hypoxis*) *glabella* var. *glabella* | + | | | | | | | | | |
| *Pauridia* (was *Hypoxis*) *occidentalis* var. *occidentalis* | + | | | | | | | | ? | + |
| *Pauridia* (was *Hypoxis*) *occidentalis* var. *quadriloba* | + | | | | | | | | ? | + |
| | | | | | | | | | | |
| Iridaceae | | | | | | | | | | |
| *Orthrosanthus laxus* var. *laxus* | | | | + | | + | + | | | + |
| *Patersonia occidentalis* var. *occidentalis* | | | | + | + | + | | | | |
| | | | | | | | | | | |
| Juncaceae | | | | | | | | | | |
| *Juncus bufonius* | + | | + | | | | | | | |
| *Juncus caespiticius* | | | | | | | | | + | + |
| *Juncus holoschoenus* | | | + | | | | | | | |
| *Juncus kraussii* subsp. *australiensis* | + | | | | | + | | | | |
| *Juncus pallidus* | + | + | + | + | | + | | | | |
| *Juncus subsecundus* | | | | | | | | | ? | + |
| *Luzula meridionalis* | | | | + | + | + | | | | |
| | | | | | | | | | | |
| Juncaginceae | | | | | | | | | | |
| *Cycnogeton huegelii* | | | + | | | | | | | |
| *Cycnogeton lineare* | | | + | | | | | | | |
| *Triglochin calcitrapa* | + | | | + | + | + | | | | |
| *Triglochin mucronata* | + | | | | | | | | | |
| *Triglochin striata* | + | | + | | | | | | | |
| *Triglochin trichophora* | | | | | | + | | | | |
| | | | | | | | | | | |
| Lamiaceae | | | | | | | | | | |
| *Hemiandra glabra* subsp. *glabra* | | | | + | | + | | | | |
| *Hemiandra linearis* | | | | | | + | | | | |
| *Hemiandra pungens* | | | + | | | + | | | | |
| *Hemigenia sericea* | | | | | | | | | + | + |
| *Mentha satureioides* | | | | | | | | | ? | + |
| *Westringia dampieri* | | | | | | | | + | | |
| | | | | | | | | | | |
| Lauraceae | | | | | | | | | | |
| *Cassytha flava* | | | | | | + | + | + | | |
| *Cassytha glabella* | | | | + | | | | | | |
| *Cassytha pomiformis* | | | + | | | + | | | | |
| *Cassytha racemosa* | + | | + | + | + | + | | + | | |
| | | | | | | | | | | |
| Lentibulariaceae | | | | | | | | | | |
| *Utricularia multifida* | | | | | | | | | ? | + |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| | | | | | | | | | | |
| Loganiaceae | | | | | | | | | | |
| *Logania vaginalis* | + | | | | | + | | | | |
| *Phyllangium paradoxum* | | | + | + | | + | | | | |
| | | | | | | | | | | |
| Loranthaceae | | | | | | | | | | |
| *Amyema linophyllum* subsp. *linophyllum* | + | | + | | | | | | | |
| *Amyema miquelii* | | | | + | | + | | + | | |
| *Amyema preissii* | | | | | + | | | | | + |
| *Lysiana casuarinae* | + | | | | | | | | | |
| *Nuytsia floribunda* | | | | + | | | | | | |
| | | | | | | | | | | |
| Malvaceae | | | | | | | | | | |
| *Alyogyne huegelii* | | | | | | | | | + | + |
| *Guichenotia ledifolia* | ? | | | | | | | | + | + |
| *Hibiscus tridactylites* | | + | | | | | | | | + |
| *Lasiopetalum membranaceum* | | | | + | | + | | | | + |
| *Lawrencia spicata* | | | | | | | | | + | + |
| *Thomasia foliosa* | | | | | | | | | + | + |
| *Thomasia triphylla* | | | | + | | + | | | | |
| | | | | | | | | | | |
| Menyanthaceae | | | | | | | | | | |
| *Liparophyllum* (was *Villarsia*) *capitatum* | | | | | | | | | ? | + |
| *Ornduffia* (was *Villarsia*) *albiflora* | | | | | | | | | ? | + |
| | | | | | | | | | | |
| Molluginaceae | | | | | | | | | | |
| *Macarthuria australis* | | | | + | | | | | | |
| | | | | | | | | | | |
| Myrtaceae | | | | | | | | | | |
| *Agonis flexuosa* var. *flexuosa* | + | | | | | + | + | + | | + |
| *Astartea scoparia* | + | | + | | | | | | | |
| *Calothamnus quadrifidus* subsp. *quadrifidus* | + | | + | + | + | + | + | + | | |
| *Calytrix angulata* | | + | | + | + | | | | | |
| *Calytrix flavescens* | | | | + | | | | | | |
| *Calytrix fraseri* | | | | + | | | | | | |
| *Calytrix leschenaultii* | | | | + | | | | | | + |
| *Calytrix sylvana* | | | | + | | | | | | |
| *Chamelaucium uncinatum* | | | | | | + | | | + | + |
| *Corymbia calophylla* | | | | + | + | + | | | + | |
| *Eremaea asterocarpa* subsp. *asterocarpa* | | | | | | | | | ? | + |
| *Eremaea fimbriata* | | | | | | | | | ? | + |
| *Eremaea pauciflora* var. *pauciflora* | | | | + | | + | | | | |
| *Eucalyptus decipiens* | + | | | + | | + | | | | |
| *Eucalyptus foecunda* | | | | | | + | | | | |
| *Eucalyptus gomphocephala* | + | | + | + | + | + | | + | + | |
| *Eucalyptus marginata* subsp. *marginata* | | | | + | + | + | | | | |
| *Eucalyptus petrensis* | | | | | | + | | | | |
| *Eucalyptus rudis* subsp. *rudis* | + | | + | | | + | | | | |
| *Hypocalymma angustifolium* | + | + | + | | | + | | | | |
| *Hypocalymma robustum* | | | | + | + | + | | | | |
| *Kunzea glabrescens* | + | | | + | | | | | | |
| *Leptospermum spinescens* | | | | | | | | | + | + |
| *Melaleuca cardiophylla* | | | | | | + | | | | + |
| *Melaleuca cuticularis* | + | | | | | | | | | |
| *Melaleuca huegelii* subsp. *huegelii* | | | | + | | + | | | | |
| *Melaleuca lanceolata* | ? | ? | | ? | | ? | | ? | ? | |
| *Melaleuca lateritia* | | | | | | | | | + | + |
| *Melaleuca preissiana* | + | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| *Melaleuca rhaphiophylla* | + | | + | | | | | | | |
| *Melaleuca systena* | | | | + | + | + | + | + | | |
| *Melaleuca thymoides* | | | | | | | | | + | + |
| *Melaleuca viminea* subsp. *viminea* | | | | | | | | | + | + |
| *Pericalymma ellipticum* | | | | | | | | | + | + |
| *Regelia ciliata* | | | | | | | | | + | + |
| *Taxandria linearifolia* | | | + | | | | | | | |
| *Verticordia densiflora* var. *densiflora* | | | | + | | | | | | |
| | | | | | | | | | | |
| Nitrariaceae | | | | | | | | | | |
| *Nitraria billardierei* | | | | | | | + | | | |
| | | | | | | | | | | |
| Olacaceae | | | | | | | | | | |
| *Olax aurantia* | | | | | | | | | ? | + |
| *Olax benthamiana* | | | | | | + | + | + | | |
| | | | | | | | | | | |
| Onagraceae | | | | | | | | | | |
| *Epilobium billardiereanum* subsp. *cinereum* | | | | | | | | | + | + |
| *Epilobium billardiereanum* subsp. *intermedium* | | | + | | | | | | + | + |
| *Epilobium hirtigerum* | + | | + | + | | + | | | | |
| | | | | | | | | | | |
| Orchidaceae | | | | | | | | | | |
| *Caladenia arenicola* | | | | + | + | + | | | | |
| *Caladenia arrecta* | | | | + | | | | | | |
| *Caladenia attingens* subsp. *attingens* | | | | + | | | | | | |
| *Caladenia discoidea* | | | | + | + | + | | | | |
| *Caladenia flava* subsp. *flava* | + | | | + | + | + | | | | |
| *Caladenia georgei* | | | | + | | + | | | | |
| *Caladenia hiemalis* | | | | + | | | | | | |
| *Caladenia hirta* subsp. *hirta* | | | | + | | + | | | | |
| *Caladenia latifolia* | + | | | + | + | + | | + | + | |
| *Caladenia longicauda* subsp. *calcigena* | | | | + | | + | | | | |
| *Caladenia longiclavata* | | | | + | | | | | | |
| *Caladenia macrostylis* | | | | + | | | | | | |
| *Caladenia marginata* | | | | + | | | | | | |
| *Caladenia nana* subsp. *nana* | | | | + | | | | | | |
| *Caladenia paludosa* | | | | + | | + | | | | |
| *Caladenia reptans* subsp. *reptans* | | | | + | | | | | | |
| *Caladenia vulgata* | | | | + | | + | | | | |
| *Cyanicula gemmata* | | | | + | | + | | | | |
| *Cyanicula sericea* | | | | + | + | | | | | |
| *Cyrtostylis huegelii* | | | | + | | | | + | + | |
| *Cyrtostylis robusta* | | | | + | | + | | | | |
| *Diuris brumalis* | | | | + | | | | | | |
| *Diuris corymbosa* | | | + | + | + | + | | + | | |
| *Diuris longifolia* | | | | + | | | | | | |
| *Diuris magnifica* | | | | + | + | | | | | |
| *Elythranthera brunonis* | | | | + | + | + | | | | |
| *Epiblema grandiflora* | | | | | | | | | ? | + |
| *Eriochilus dilatatus* subsp. *dilatatus* | | | | + | + | + | | + | | |
| *Eriochilus dilatatus* subsp. *multiflorus* | | | | + | | | | | | |
| *Leporella fimbriata* | | | | + | + | + | | | | |
| *Leptoceras menziesii* | | | | + | | + | | | | |
| *Lyperanthus serratus* | | | | + | | | | | | |
| *Microtis atrata* | | | | | | | | | ? | + |
| *Microtis media* subsp. *media* | + | | + | + | + | + | | | | |
| *Paracaleana nigrita* | | | | + | | | | | | + |
| *Pheladenia deformis* | | | | + | + | + | | | | |

| Scientific name | Swan | Lake | | Spearwood | | Quindalup | | | Other | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| *Prasophyllum calcicola* | | | | | | + | | | | |
| *Prasophyllum elatum* | | | | + | | | | | | |
| *Prasophyllum giganteum* subsp. *giganteum* | | | | + | + | + | | | | |
| *Prasophyllum hians* | | | | + | | + | | | | |
| *Prasophyllum parvifolium* | | | | + | | + | | | | |
| *Prasophyllum plumiforme* | | | | + | | | | | | |
| *Pterostylis aspera* | + | | | + | | + | | | | |
| *Pterostylis barbata* | | | | + | | | | | | |
| *Pterostylis frenchii* | | | | + | | | | | | + |
| *Pterostylis pyramidalis* | | | | | | | | | ? | + |
| *Pterostylis recurva* | | | | + | + | + | | | | |
| *Pterostylis sanguinea* | | | | + | + | + | | | | |
| *Pterostylis* sp. crinkled leaf (was sp. slender) (G.J. Keighery 13426) | | | | + | | + | | | | |
| *Pterostylis* sp. limestone (B.J. Keighery & G.J. Keighery 65) | | | | + | | + | | | | |
| *Pterostylis* sp. short sepals (W. Jackson BJ259) | + | | | + | | + | | | | |
| *Pterostylis vittata* | | | | + | | + | + | + | | |
| *Pyrorchis nigricans* | | | | + | + | + | | | | |
| *Thelymitra benthamiana* | | | | + | | | | | | |
| *Thelymitra campanulata* | | | | + | | | | | | |
| *Thelymitra crinita* | | | | + | + | + | | | | |
| *Thelymitra fuscolutea* | | | | + | | + | | | + | |
| *Thelymitra paludosa* | | | | + | | + | | | | |
| *Thelymitra vulgaris* | | | | + | | | | | | |
| | | | | | | | | | | |
| Oxalidaceae | | | | | | | | | | |
| *Oxalis exilis* | + | | | | | + | | | | |
| | | | | | | | | | | |
| Phyllanthaceae | | | | | | | | | | |
| *Phyllanthus calycinus* | + | | + | + | + | + | | + | | |
| *Poranthera drummondii* | + | | | + | | | | | | + |
| *Poranthera ericoides* | | | | | | | | | ? | + |
| *Poranthera microphylla* | | | | + | | + | | | | |
| *Poranthera moorokatta* | | | | + | | | | | | + |
| | | | | | | | | | | |
| Pittosporaceae | | | | | | | | | | |
| *Billardiera fraseri* | | | | + | | | | | | |
| *Billardiera fusiformis* (was *Sollya heterophylla*) | | + | | + | | | | | | |
| *Pittosporum ligustrifolium* | + | | | | | | | | | + |
| | | | | | | | | | | |
| Plantaginaceae | | | | | | | | | | |
| *Gratiola pubescens* | | | | | | | | | ? | + |
| *Plantago exilis* | | | | | | | | | ? | + |
| *Veronica distans* (should be *V. stolonifera*) | + | | | | | + | | | | + |
| | | | | | | | | | | |
| Poaceae | | | | | | | | | | |
| *Amphipogon turbinatus* | | | + | + | | | | | | |
| *Austrostipa campylachne* | | | | | | + | | | | |
| *Austrostipa compressa* | | | + | + | + | + | | | | |
| *Austrostipa elegantissima* | + | | + | + | + | + | + | + | + | |
| *Austrostipa flavescens* | + | | + | + | + | + | + | + | | |
| *Austrostipa hemipogon* | | | | + | | | | | | |
| *Austrostipa macalpinei* | | | | ? | | | | | | |
| *Austrostipa nitida* | | | | | | | | | + | + |
| *Austrostipa semibarbata* | | | | + | + | | | | | |
| *Austrostipa tenuifolia* | | | | + | | | | | | |
| *Austrostipa variabilis* | | | | + | | | | | + | + |

| Scientific name | Swan | Lake | | Spearwood | | Quindalup | | | Other | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| *Bromus arenarius* | | | | | | + | + | + | + | |
| *Deyeuxia quadriseta* | | | + | | | | | | | |
| *Dichelachne crinita* | | | | | | | | | + | + |
| *Hemarthria uncinata* var. uncinata | | | + | | | + | | | | |
| *Lachnagrostis aemula* | | | | | | | | | + | + |
| *Lachnagrostis filiformis* | + | | + | | | + | | | | |
| *Lachnagrostis preissii* | + | | | | | + | | | | |
| *Microlaena stipoides* var. stipoides | | + | | + | + | + | | | | |
| *Neurachne alopecuroidea* | | | + | + | + | + | | | | |
| *Paspalum vaginatum* | + | | + | | | | | | | |
| *Paspalidium clementii* | | | | | | | | | + | + |
| *Poa drummondiana* | | | + | + | | | | | | |
| *Poa poiformis* var. poiformis | | | | | | | + | | | |
| *Poa porphyroclados* | + | | + | + | | | + | + | | |
| *Rytidosperma* (was *Austrodanthonia*) *caespitosa* | | | | + | | | | | | |
| *Rytidosperma* (was *Austrodanthonia*) *occidentalis* | | | | + | | | | | + | |
| *Rytidosperma* (was *Austrodanthonia*) *setacea* | | | + | | | | | | | |
| *Spinifex hirsutus* | | | | | | + | + | + | | |
| *Spinifex longifolius* | + | | | | | + | + | + | | |
| *Spinifex x alternifolius* | | | | | | + | + | + | | |
| *Sporobolus virginicus* | + | | | | | + | + | + | | |
| | | | | | | | | | | |
| Polygalaceae | | | | | | | | | | |
| *Comesperma calymega* | | | + | + | + | + | | | | |
| *Comesperma confertum* | | | | | | + | | + | | |
| *Comesperma integerrimum* | + | | + | + | | + | | | | |
| *Comesperma virgatum* | | | | | | + | | | | |
| | | | | | | | | | | |
| Polygonaceae | | | | | | | | | | |
| *Muehlenbeckia adpressa* | | | + | | | | | | | |
| *Muehlenbeckia polybotrya* | | | | | | | | | ? | + |
| *Persicaria decipiens* | | + | + | | | + | | | + | + |
| *Persicaria prostrata* | | | | | | | | | + | |
| | | | | | | | | | | |
| Portulacaceae | | | | | | | | | | |
| *Calandrinia brevipedata* | | | + | | | + | + | + | | |
| *Calandrinia calyptrata* | | | | | | + | | | | |
| *Calandrinia corrigioloides* | + | | + | + | + | + | | | | |
| *Calandrinia granulifera* | | | | + | + | + | | | | |
| *Calandrinia liniflora* | | | + | + | | + | | | | |
| | | | | | | | | | | |
| Potamogetonaceae | | | | | | | | | | |
| *Lepilaena australis* | | | + | | | | | | | |
| *Stuckenia* (was *Potamogeton) pectinatus* | + | | + | | | | | | | |
| | | | | | | | | | | |
| Primulaceae | | | | | | | | | | |
| *Samolus bickfordianus* (was *repens* var. *paucifolius*) | | | | | | | | | + | + |
| *Samolus junceus* | | | + | | | | | | | |
| *Samolus repens* | + | | | | | | | | | |
| | | | | | | | | | | |
| Proteaceae | | | | | | | | | | |
| *Adenanthos cygnorum* subsp. *cygnorum* | + | | | + | + | + | | | | |
| *Banksia attenuata* | + | | + | + | + | + | | | | |
| *Banksia dallanneyi* (was *Dryandra lindleyana*) var. *dallanneyi* | | | + | + | + | + | | | | |
| *Banksia grandis* | + | | + | + | | + | | | | |
| *Banksia ilicifolia* | | | | + | | | | | + | |

| Scientific name | Swan | Lake | | Spearwood | | Quindalup | | | Other | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| *Banksia littoralis* | | | + | | | + | | | | |
| *Banksia menziesii* | + | | + | + | + | + | | | + | |
| *Banksia prionotes* | | | | + | + | + | | | | |
| *Banksia* (was *Dryandra*) *sessilis* var. *cygnorum* | | | | + | + | + | | | + | |
| *Conospermum canaliculatum* subsp. *canaliculatum* | | | | ? | | | | | | |
| *Conospermum stoechadis* subsp. *stoechadis* | | | | + | | | | | | |
| *Conospermum triplinervium* | | | | + | + | + | | | | |
| *Grevillea crithmifolia* | + | | | + | + | + | | | + | |
| *Grevillea pilulifera* | | | | ? | | | | | | + |
| *Grevillea preissii* subsp. *preissii* | + | | | + | | + | | | + | + |
| *Grevillea* sp (Oldfield 306A) | | | | | | | | | + | + |
| *Grevillea vestita* subsp. *vestita* | | | + | + | + | + | | | + | + |
| *Hakea costata* | | | + | | | | | | | |
| *Hakea lissocarpha* | | | | + | + | + | | | | |
| *Hakea prostrata* | + | | + | + | + | + | | | | |
| *Hakea ruscifolia* | | | + | | | + | | | + | |
| *Hakea trifurcata* | | | + | | | + | | | + | |
| *Hakea varia* | + | | + | | | | | | | |
| *Persoonia saccata* | | | | + | | + | | | | |
| *Petrophile axillaris* | + | | + | + | | + | | | | |
| *Petrophile brevifolia* | | | + | + | | | | | | |
| *Petrophile linearis* | | | | + | + | + | | | | |
| *Petrophile macrostachya* | + | | + | + | + | + | | | | |
| *Petrophile striata* | | | + | | | | | | | |
| *Stirlingia latifolia* | | | + | + | + | + | | | | |
| *Synaphea spinulosa* subsp. *spinulosa* | | | + | + | + | + | | | + | + |
| | | | | | | | | | | |
| Ranunculaceae | | | | | | | | | | |
| *Clematis linearifolium* | | | | + | | + | | + | | |
| *Clematis pubescens* | | | + | | | + | | | | |
| *Ranunculus colonorum* | | + | | | | + | | | | |
| *Ranunculus sessiliflorus* var. *sessiliflorus* | | | | | | | | | + | + |
| | | | | | | | | | | |
| Restionaceae | | | | | | | | | | |
| *Alexgeorgea nitens* | | | | + | + | + | | | | |
| *Desmocladus asper* | | | + | + | + | + | | | | |
| *Desmocladus fasciculatus* | | | | + | | + | | | | |
| *Desmocladus flexuosus* | + | | + | + | | + | | | | |
| *Hypolaena exsulca* | | | + | + | + | | | | | |
| *Lepidobolus preissianus* subsp. *preissianus* | | | | + | | | | | | + |
| *Lepyrodia muirii* | | | + | | | | | | | |
| *Loxocarya cinerea* | | | | | | + | | | | |
| | | | | | | | | | | |
| Rhamnaceae | | | | | | | | | | |
| *Cryptandra arbutiflora* var. *arbutiflora* | | | | | | | | | + | + |
| *Cryptandra arbutiflora* var. *tubulosa* | | | | + | | | | | | |
| *Cryptandra mutila* | | | | | | + | | | | |
| *Cryptandra pungens* | | | | | | | | | + | + |
| *Cryptandra scoparia* | | | | | | | | | + | + |
| *Spyridium globulosum* | + | | + | + | + | + | + | + | | + |
| *Stenanthemum notiale* subsp. *chamelum* | | | | + | | | | | | + |
| *Trymalium ledifolium* var. *ledifolium* | + | | | + | | + | | | + | + |
| *Trymalium odoratissimum* subsp. *odoratissimum* | | | | | | | | | + | + |
| | | | | | | | | | | |
| Rubiaceae | | | | | | | | | | |
| *Opercularia hispidula* | | | + | + | | + | | | | |
| *Opercularia vaginata* | + | | + | + | + | + | + | | + | |

| Scientific name | Swan | Lake | | Spearwood | | Quindalup | | | Other | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| | | | | | | | | | | |
| Ruppiaceae | | | | | | | | | | |
| *Ruppia megacarpa* | + | | | | | | | | | |
| | | | | | | | | | | |
| Rutaceae | | | | | | | | | | |
| *Boronia alata* | + | | | + | | | | | | + |
| *Boronia crenulata* subsp. *crenulata* | | | + | | | | | | | |
| *Boronia ramosa* subsp. *anethifolia* | | | | + | | + | | | | |
| *Diplolaena angustifolia* | | | | | | | | | + | + |
| *Diplolaena dampieri* | | | | + | | | | | | + |
| *Philotheca spicata* | | | + | + | + | + | | | | |
| | | | | | | | | | | |
| Santalaceae | | | | | | | | | | |
| *Exocarpos sparteus* | + | | + | + | | + | | + | | |
| *Leptomeria empetriformis* | | | | + | | + | | | | |
| *Leptomeria pauciflora* | | | | | | | | | + | + |
| *Leptomeria preissiana* | | | | | | + | | + | | + |
| *Santalum acuminatum* | | | | | | + | + | + | + | + |
| | | | | | | | | | | |
| Sapindaceae | | | | | | | | | | |
| *Diplopeltis huegelii* subsp. *huegelii* | | | | | | + | | | | |
| *Dodonaea aptera* | + | | | | | + | | | | |
| *Dodonaea hackettiana* | | | | + | | | | | | + |
| *Dodonaea viscosa* subsp. *angustissima* | | | | | | | | | + | + |
| | | | | | | | | | | |
| Scrophulariaceae | | | | | | | | | | |
| *Eremophila glabra* subsp. *albicans* | + | | | + | | + | + | + | | |
| *Myoporum caprarioides* | + | | + | + | | + | | | | |
| *Myoporum insulare* | + | | | + | | + | | + | | |
| | | | | | | | | | | |
| Solanaceae | | | | | | | | | | |
| *Anthocercis ilicifolia* subsp. *ilicifolia* | | | | + | | + | | + | | |
| *Anthocercis littorea* | | | | + | | + | | + | | |
| *Solanum simile* | | | | | | | | | + | + |
| *Solanum symonii* | | | + | | | + | | + | | |
| | | | | | | | | | | |
| Stylidiaceae | | | | | | | | | | |
| *Levenhookia pusilla* | | | + | + | | | | | | |
| *Levenhookia stipitata* | | | + | + | + | | | | | |
| *Stylidium adpressum* | | | | | | | | | | |
| *Stylidium androsaceum* | | | + | + | + | | | | | |
| *Stylidium bulbiferum* | | | | | | | | | ? | + |
| *Stylidium carnosum* | | | | + | | | | | ? | + |
| *Stylidium cygnorum* | | | | | | | | | ? | + |
| *Stylidium despectum* | | | | | | | | | ? | + |
| *Stylidium hesperium* | | | | | | + | | | ? | + |
| *Stylidium inundatum* | | | | | | | | | + | + |
| *Stylidium maritimum* | | | | | | + | + | | | + |
| *Stylidium neurophyllum* | | | + | + | | + | | | | |
| *Stylidium piliferum* | | | + | + | + | + | | | | |
| *Stylidium repens* | | | + | + | + | + | | | | |
| *Stylidium rigidulum* | | | | | | + | | | + | + |
| *Stylidium roseoalatum* | | | | | | | | | + | + |
| *Stylidium schoenoides* | | | | + | | + | | | | |
| | | | | | | | | | | |
| Thymelaeaceae | | | | | | | | | | |
| *Pimelea argentea* | | | + | | | + | | | | |
| *Pimelea calcicola* | | | | | | + | | | | + |

| Scientific name | Swan | Lake | | Spearwood | | Quindalup | | | Other | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LC | HL | KP | SB | Bold | Floreat | Swanb. | | |
| *Pimelea imbricata* var. *piligera* | | | | | | | | | ? | + |
| *Pimelea leucantha* | | | | + | | | | | | |
| *Pimelea rosea* subsp. *rosea* | | | | + | | + | | + | | |
| *Pimelea sulphurea* | | | | + | | | | | | |
| | | | | | | | | | | |
| Typhaceae | | | | | | | | | | |
| *Typha domingensis* | + | + | + | | | | | | | |
| *Typha orientalis* | | + | + | | | | | | + | + |
| | | | | | | | | | | |
| Urticaceae | | | | | | | | | | |
| *Parietaria cardiostegia* | | | | + | | | | | | |
| *Parietaria debilis* | + | | | + | | + | | + | | |
| | | | | | | | | | | |
| Violaceae | | | | | | | | | | |
| *Hybanthus calycinus* | | | | + | + | + | | | | |
| | | | | | | | | | | |
| Xanthorrhoeaceae | | | | | | | | | | |
| *Xanthorrhoea brunonis* subsp. *brunonis* | | | | + | | | | | | |
| *Xanthorrhoea preissii* | + | | + | + | + | + | | | + | |
| | | | | | | | | | | |
| Zosteraceae | | | | | | | | | | |
| *Zostera muelleri* subsp. *mucronata* | | | | | | | | | + | |
| | | | | | | | | | | |
| Zygophyllaceae | | | | | | | | | | |
| *Zygophyllum fruticulosum* | | | | | | | + | + | | |

## 12.2 APPENDIX 1b: ATTRIBUTES of PERTH'S BUSHLANDS PLANTS

### KEY

Column 1 — NAME ID

NAME_IDs are from the Census of Western Australian Plants (Western Australian Herbarium 1998- and 2015; Gioia 2005), # indicates that this species is yet to be listed on the Census or is yet to be listed as a native species.

Column 2 — SPECIES CODE

SPECIES CODEs are from the Census of Western Australian Plants (Western Australian Herbarium 1998- and 2015; Gioia 2005)

Column 3 — Family

Families are listed alphabetically

Column 4 — Scientific Name

Genus + Species + Infra Species Rank + Infra Species Name + Informal Name from BJ Keighery *et al.* (2009). Some species names may be modified from original sources of information: DEP (1996) and Gibson *et al.* (1994) and various reports. Some taxa yet to be formally described and named may have a reference collection number from the relevant collector. Taxa (species, sub-species and varieties) are listed alphabetically within genera.

| | |
|---|---|
| subsp. | Subspecies |
| var. | Variety |
| MS | A manuscript name yet to be published |
| PN | A phrase name for a taxon yet to be described and published. |

Column 5 — Endemic (State)

Taxa (species, sub-species and varieties) endemic to Western Australia (WA) or Australia (AUST; or >AUST = cosmopolitan).

Column 6 — CONS = Western Australian Listed Taxa

Significant plant taxa (species, sub-species and varieties) listed under the State *Wildlife Conservation Act 1950* (Government of Western Australia 2015) and by the Department of Environment and Conservation. Priority taxa conservation code listings are current as at March 2009 (Western Australian Herbarium 2009). See Appendix 3 for further descriptions of the categories below.

| | |
|---|---|
| R | Declared Rare Flora: Extant Taxa |
| X | Declared Rare Flora: Presumed Extinct Taxa |
| 1 | Priority 1: Poorly Known Taxa |
| 2 | Priority 2: Poorly Known Taxa |
| 3 | Priority 3: Poorly Known Taxa |
| 4 | Priority 4: Rare Taxa |

Column 7 — Growth Form 1 (See Key to Growth Forms at the end of this key for definitions)

Woody Plants

| | |
|---|---|
| T | Tree |
| M | Mallee |
| SH/T | Shrub/tree |
| SH | Shrub |
| SH-H | Shrub which is often called a herb |

Non-woody Plants: non-grass-like

| | |
|---|---|
| H | Herb |
| H-SH | Herb which is often called a shrub |

Non-woody Plants: grass-like

| | |
|---|---|
| G | Grass |
| S-C | Sedge - Cyperaceae and others |
| S-R | Sedge - Restionaceae |
| S-J | Sedge - Juncaceae and others |

Column 8 Growth Form 2 (See Key to terms at the end of this key for definitions)

| | |
|---|---|
| CL | Climber |
| PR | Prostrate |

Column 9 Life Form – aquatic

| | |
|---|---|
| AQD | Aquatic – damp flowering. Grows in water, flowers in damp mud |
| AQE | Aquatic – emergent. Grows and flowers in water with some parts emergent above water (e.g. leaves, flowers) |
| AQF | Aquatic – floating. Whole plant floats on water |
| AQS | Aquatic – supported. Grows and flowers in water with most parts supported by water (e.g. leaves); flowers may be emergent above water |

Column 10 Common Swan Coastal Plain Wetland Species
Most commonly encountered wetland species on the Southern Swan Coastal Plain based on an analysis of >1000 plots. Commonly encountered species were determined to be those that occurred in 10 or more plots of wetland floristic community types 75% or more of the time.

Column 11 Common Name/Aboriginal Name

## KEY TO GROWTH FORM DEFINTIONS

Definitions adapted from BJ Keighery (1994), McDonald *et al.* (1990) and Executive Steering Committee for Australian Vegetation Information (2003).

## GROWTH FORM 1

### WOODY PLANTS

**Plants with special thick-walled cells in their trunks and stems that form wood to support the plant. Trees are able to build up layer upon layer of this woody support tissue to form trunks and branches. All woody plants are perennial.**

| | |
|---|---|
| Tree | Plants with a single trunk and a canopy. The canopy is less than or equal to two thirds of the height of the trunk. No lignotuber is evident. |
| Shrub/Tree | Shrub or tree |
| Mallee | Plants with many trunks (usually 2-5) arising from a lignotuber. The canopy is usually well above the base of the plant. Most are from the genus Eucalyptus. |
| Shrub | Plants with one or more woody stems and foliage all or part of the total height of the plant. Includes palms, grass trees (*Xanthorrhoea* and *Kingia* species) and cycads (*Zamia* species). |
| Shrub-Herb | Shrub that appears herb-like. Plants with a woody stem/s that is lax enough to give the shrub a non-woody herb-like appearance, often called sub-shrubs. |

### NON-WOODY PLANTS

**Plants with no (or insufficient) special thick-walled support cells in their stems to form wood for support. May be either annuals or perennials. Sub-divided according to growth form, pollination method and plant family.**

NON-WOODY PLANTS – NON GRASS-LIKE Generally not pollinated by wind, monocots and dicots

| | |
|---|---|
| Herb | Plants with non-woody stems that are not grasses or sedges. Generally under half a metre tall. Most monocots are herbs except for the larger ones which are classed as shrubs such as palms, grass trees (*Xanthorrhoea* and *Kingia* species) and cycads (*Zamia* species). |
| Herb-Shrub | Herb that appears shrub-like. Plants with non-woody stems that are stiff enough to give the herb a woody shrub-like appearance, often called sub-shrubs. |

NON-WOODY PLANTS – GRASS-LIKE Generally pollinated by wind and from the families Poaceae, Cyperaceae, Centrolepidaceae, Hydatellaceae, Juncaginaceae, Restionaceae, Juncaceae, Typhaceae or Xyridaceae.

| | |
|---|---|
| Grasses | Leaf sheath always split, ligule present, leaf usually flat, stem cross-section circular, evenly spaced internodes. |
| Grass | Tufted or spreading plants from the family Poaceae. Some species form hummocks but none of these occur in south-west Western Australia. |

| | |
|---|---|
| Sedges | Leaf sheath never split (except in some Restionaceae), usually no ligule, leaf not always flat, extended internode below inflorescence. |
| Sedge – Cyperaceae and others | Tufted or spreading plants from the families Cyperaceae, Centrolepidaceae, Hydatellaceae or Juncaginaceae. |
| Sedge – Restionaceae | Tufted or spreading plants from the family Restionaceae. Commonly called rushes. |
| Sedge – Juncaceae and others | Tufted or spreading plants from the families Juncaceae, Typhaceae or Xyridaceae. Some of these are also called rushes. |

**GROWTH FORM 2**

| | |
|---|---|
| Climber | Plants in need of other plants or objects for support. |
| Prostrate | Spreading plants, often supported by the ground. |

| NAME | SPECIES | FAMILY | SPECIES NAME | AUST | CONS | GF | GF 2 | AQU | WET | COMMON NAME/ ABORIGINAL NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 2798 | CARVIR | Aizoaceae | Carpobrotus virescens | WA | | SH-H | PR | | | Kolboko |
| 2823 | TETIMP | Aizoaceae | Tetragonia implexicoma | AUST | | H-SH | PR | | | Bower Spinach |
| 40680 | TETTET | Aizoaceae | Tetragonia tetragonioides | >AUST | | H-SH | PR | | | New Zealand Spinach |
| 2648 | ALTDEN | Amaranthaceae | Alternanthera denticulata | | | H-SH | PR | | | Lesser Joyweed |
| 2652 | ALTNOD | Amaranthaceae | Alternanthera nodiflora | WA | | H | PR | | | Common Joyweed |
| 11260 | PTIDRUDRU | Amaranthaceae | Ptilotus drummondii var. drummondii | WA | | H | | | | Narrowleaf Mulla Mulla |
| 2720 | PTIESQ | Amaranthaceae | Ptilotus esquamatus | WA | | H | | | | Mulla Mulla |
| 2742 | PTIMAN | Amaranthaceae | Ptilotus manglesii | WA | | H | | | | Mulla Mulla |
| 2751 | PTIPOL | Amaranthaceae | Ptilotus polystachyus | | | H-SH | | | | Prince of Wales Feather |
| 15856 | PTISERSER | Amaranthaceae | Ptilotus sericostachyus subsp. sericostachyus | WA | | H-SH | PR | | | Mulla Mulla |
| 18049 | LYGIMB | Anarthriaceae | Lyginia imberbis | WA | | S-R | | | | Lyginia |
| 6210 | APIANN | Apiaceae | Apium annuum | AUST | | H | | | | Annual Apium |
| 12040 | APIPROPRO | Apiaceae | Apium prostratum subsp. prostratum | AUST | | H | | | | Sea Celery |
| 6214 | CENASI | Apiaceae | Centella asiatica | >AUST | | H | PR | | | Centella |
| 6218 | DAUGLO | Apiaceae | Daucus glochidiatus | >AUST | | H | | | | Australian Carrot |
| 15446 | ERYPINPIN | Apiaceae | Eryngium pinnatifidum subsp. pinnatifidum | WA | | H | | | | Sand Devil |
| 6222 | HOMHOM | Apiaceae | Homalosciadium homalocarpum | WA | | H | | | | Homahoma |
| 11132 | PLARAM | Apiaceae | Platysace ramosissima | WA | 3 | H-SH | | | | Platysace |
| 6284 | XANCAN | Apiaceae | Xanthosia candida | WA | | H-SH | | | | Xanthosia |
| 6285 | XANCIL | Apiaceae | Xanthosia ciliata | WA | | H-SH | | | | Xanthosia |
| 15968 | XANHUEHUE | Apiaceae | Xanthosia huegelii subsp. huegelii | WA | | H-SH | | | | Xanthosia |
| 6565 | ALYBUX | Apocynaceae | Alyxia buxifolia | AUST | | SH | | | | Dysentery Bush |
| 28342 | LANPUN | Araceae | Landoltia punctata | >AUST | | H | | AQF | | Tiny Duckweed |
| 1051 | LEMDIS | Araceae | Lemna disperma | >AUST | | H | | AQF | | Duckweed |
| 6223 | HYDALA | Araliaceae | Hydrocotyle alata | WA | | H | | | y | Pennywort |
| 6224 | HYDBLE | Araliaceae | Hydrocotyle blepharocarpa | WA | | H | | | | Pennywort |
| 6229 | HYDDIA | Araliaceae | Hydrocotyle diantha | WA | | H | | | | Pennywort |
| 6232 | HYDHIS | Araliaceae | Hydrocotyle hispidula | WA | | H | | | | Pennywort |
| 6234 | HYDMED | Araliaceae | Hydrocotyle medicaginoides | AUST | | H | | | | Pennywort |

| NAME | SPECIES | FAMILY | SPECIES NAME | AUST | CONS | GF | GF 2 | AQU | WET | COMMON NAME/ ABORIGINAL NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 11546 | HYDPILGLA | Araliaceae | Hydrocotyle pilifera var. glabrata | WA | | H | | | | Pennywort |
| 6241 | HYDTET | Araliaceae | Hydrocotyle tetragonocarpa | WA | | H | | | | Pennywort |
| 19041 | TRACOECOE | Araliaceae | Trachymene coerulea subsp. coerulea | WA | | H | | | | Blue Laceflower |
| 6280 | TRPIL | Araliaceae | Trachymene pilosa | AUST | | H | | | | Small Laceflower |
| 1208 | ACAPRE | Asparagaceae | Acanthocarpus preissii | WA | | H-SH | | | | Prickle Lily |
| 8786 | ARTCAP | Asparagaceae | Arthropodium capillipes | WA | | H | | | | Summer Lily |
| 8787 | ARTPRE | Asparagaceae | Arthropodium preissii | WA | | H | | | y | Swamp Lily |
| 11299 | CHACORCOR | Asparagaceae | Chamaescilla corymbosa var. corymbosa | AUST | | H | | | | Blue Squill |
| 11911 | LAXRAMRAM | Asparagaceae | Laxmannia ramosa subsp. ramosa | WA | | H | | | | Paper Lily |
| 2791 | LAXSQU | Asparagaceae | Laxmannia squarrosa | WA | | H | | | | Paper Lily |
| 1223 | LOMCAE | Asparagaceae | Lomandra caespitosa | WA | | H | | | | Tufted Lomandra |
| 1228 | LOMHER | Asparagaceae | Lomandra hermaphrodita | WA | | H | | | | Lomandra |
| 1231 | LOMMAR | Asparagaceae | Lomandra maritima | WA | | H | | | | Coast Lomandra |
| 14542 | LOMMICMIC | Asparagaceae | Lomandra micrantha subsp. micrantha | AUST | | H | | | | Lomandra |
| 1234 | LOMNIG | Asparagaceae | Lomandra nigricans | WA | | H | | | | Lomandra |
| 1236 | LOMODO | Asparagaceae | Lomandra odora | WA | | H | | | | Tiered Lomandra |
| 1239 | LOMPRE | Asparagaceae | Lomandra preissii | WA | | H | | | | Preiss's Lomandra |
| 1240 | LOMPUR | Asparagaceae | Lomandra purpurea | WA | | H | | | | Purple Lomandra |
| 1246 | LOMSUA | Asparagaceae | Lomandra suaveolens | WA | | H | | | | Lomandra |
| 1312 | SOWLAX | Asparagaceae | Sowerbaea laxiflora | WA | | H | | | | Purple Tassels |
| 1319 | THYARE | Asparagaceae | Thysanotus arenarius | WA | | H | | | | Limestone Fringed Lily |
| 1328 | THYDIC | Asparagaceae | Thysanotus dichotomus | WA | | H | | | | Branching Fringed Lily |
| 1338 | THYMAN | Asparagaceae | Thysanotus manglesianus | WA | | H | CL | | | Twining Fringed Lily |
| 1339 | THYMUL | Asparagaceae | Thysanotus multiflorus | WA | | H | | | | Fringed Lily |
| 1343 | THYPAT | Asparagaceae | Thysanotus patersonii | WA | | H | CL | | | Twining Fringed Lily |
| 1350 | THYSCA | Asparagaceae | Thysanotus scaber | WA | | H | | | | Rough Fringed Lily |
| 1351 | THYSPA | Asparagaceae | Thysanotus sparteus | WA | | H | | | | Fringed Lily |
| 1354 | THYTEN | Asparagaceae | Thysanotus tenellus | WA | | H | | | | Fringed Lily |
| 1357 | THYTHY | Asparagaceae | Thysanotus thyrsoideus | WA | | H | | | | Fringed Lily |
| 1358 | THYTRI | Asparagaceae | Thysanotus triandrus | WA | | H | | | | Fringed Lily |
| 1366 | BULSEM | Asphodelaceae | Bulbine semibarbata | AUST | | H | | | | Bulbine |
| 7827 | ANGCUN | Asteraceae | Angianthus cunninghamii | WA | | SH | | | | Coast Angianthus |
| 7851 | ASTPUL | Asteraceae | Asteridea pulverulenta | WA | | H | | | | Common Bristle Daisy |
| 7867 | BRABEL | Asteraceae | Brachyscome bellidioides | WA | | H | | | y | Brachyscome |
| 7878 | BRAIBE | Asteraceae | Brachyscome iberidifolia | AUST | | H | | | | Swan River Daisy |
| 7883 | BRAPUS | Asteraceae | Brachyscome pusilla | WA | | H | | | | Brachyscome |
| 7943 | COTAUS | Asteraceae | Cotula australis | AUST | | H | | | | Common Cotula |
| 7945 | COTCOR | Asteraceae | Cotula coronopifolia | AUST | | H | | AQD/AQE | | Waterbuttons |

| NAME | SPECIES | FAMILY | SPECIES NAME | AUST | CONS | GF | GF 2 | AQU | WET | COMMON NAME/ ABORIGINAL NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 7946 | COTCOT | Asteraceae | Cotula cotuloides | AUST | | H | | AQD/AQE | y | Smooth Cotula |
| 14377 | ERYRAMRAM | Asteraceae | Erymophyllum ramosum subsp. ramosum | WA | | H | | | | Tiny Everlasting Daisy |
| 15137 | EUCSPH | Asteraceae | Euchiton sphaericus | >AUST | | H | | | | Cudweed |
| 12624 | GNEANG | Asteraceae | Gnephosis angianthoides | WA | | H | | | | Cudweed |
| 12741 | HYACOT | Asteraceae | Hyalosperma cotula | WA | | H | | | | Hyalosperma |
| 18585 | LAGHUE | Asteraceae | Lagenophora huegelii | AUST | | H | | | | Western Lagenophora |
| 16449 | LEUBRO | Asteraceae | Leucophyta brownii | AUST | | SH | | | | Cushion Bush |
| 8105 | MILMYO | Asteraceae | Millotia myosotidifolia | AUST | | H | | | | Broadleaf Millotia |
| 8127 | OLEAXI | Asteraceae | Olearia axillaris | AUST | | SH | | | | Coastal Daisybush |
| 8133 | OLEELA | Asteraceae | Olearia elaeophila | WA | | SH | | | | Swamp Daisybush |
| 8143 | OLEPAU | Asteraceae | Olearia paucidentata | WA | | SH | | | | Autumn Daisybush |
| 8149 | OLERUD | Asteraceae | Olearia rudis | AUST | | SH | | | | Rottnest Island Daisybush |
| 14180 | PICCOM | Asteraceae | Picris compacta | WA | X | H | | | | Crawley Picrus |
| 42281 | PITCOR | Asteraceae | Pithocarpa cordata | WA | | SH | | | | Pithocarpa |
| 8175 | PODGRA | Asteraceae | Podolepis gracilis | AUST | | H | | | | Slender Podolepis |
| 8182 | PODANG | Asteraceae | Podotheca angustifolia | AUST | | H | | | | Sticky Podotheca |
| 8183 | PODCHR | Asteraceae | Podotheca chrysantha | WA | | H | | | | Yellow Podotheca |
| 8184 | PODGNA | Asteraceae | Podotheca gnaphalioides | WA | | H | | | | Golden Podotheca |
| 8195 | QUIURV | Asteraceae | Quinetia urvillei | AUST | | H | | | | Quinetia |
| 13241 | RHOCHLROS | Asteraceae | Rhodanthe chlorocephala subsp. rosea | WA | | H | | | | Rosy Rhodanthe |
| 13300 | RHOCIT | Asteraceae | Rhodanthe citrina | AUST | | H | | | | Yellow Rhodanthe |
| 15035 | RHOCOR | Asteraceae | Rhodanthe corymbosa | WA | | H | | | | White Rhodanthe |
| 25878 | SENCON | Asteraceae | Senecio condylus | WA | | H | | | | Coastal Groundsel |
| 8208 | SENHIS | Asteraceae | Senecio hispidulus | >AUST | | H | | | | Hispid Groundsel |
| 25884 | SENPINLAT | Asteraceae | Senecio pinnatifolius var. latilobus | WA | | H | | | | Common Groundsel |
| 8218 | SENRAM | Asteraceae | Senecio ramosissimus | WA | | SH-H | | | | Forest Groundsel |
| 8225 | SILHUM | Asteraceae | Siloxerus humifusus | WA | | H | | | | Siloxerus |
| 9367 | SONHYD | Asteraceae | Sonchus hydrophilus | AUST | | H | | AQD/AQE | | Native Sowthistle |
| 13328 | WAINIT | Asteraceae | Waitzia nitida | WA | | H | | | | Yellow Immortelle |
| 13333 | WAISUASUA | Asteraceae | Waitzia suaveolens var. suaveolens | WA | | H | | | | Fragrant Immortelle |
| 44861 | XERMAC | Asteraceae | Xerochrysum macranthum | WA | | H | | | | Everlasting Daisy |
| 6707 | HELCUR | Boraginaceae | Heliotropium curassavicum | >AUST | | H | | AQD | | Smooth Heliotrope |
| 3027 | LEPFOL | Brassicaceae | Lepidium foliosum | AUST | | H | | | | Island Peppercress |
| 3040 | LEPPSE | Brassicaceae | Lepidium pseudohyssopifolium | >AUST | | H | | | | Native Peppercress |
| 3044 | LEPROT | Brassicaceae | Lepidium rotundum | AUST | | H | | | | Veined Peppercress |
| 19403 | STEGRA | Brassicaceae | Stenopetalum gracile | WA | | H | | | | Thread Petlas |
| 1753 | GRABER | Campanulaceae | Grammatotheca bergiana | >AUST | | H | | | | Grammatotheca |
| 7396 | ISOHYP | Campanulaceae | Isotoma hypocrateriformis | WA | | H | | | | Woodbridge Poison |

| NAME | SPECIES | FAMILY | SPECIES NAME | AUST | CONS | GF | GF 2 | AQU | WET | COMMON NAME/ ABORIGINAL NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 7399 | ISOSCA | Campanulaceae | Isotoma scapigera | WA | | H | | | | Isotoma |
| 9289 | LOBANC | Campanulaceae | Lobelia anceps | >AUST | | H | | | y | Angled Lobelia |
| 7402 | LOBGIB | Campanulaceae | Lobelia gibbosa | WA | | H | | | | Tall Lobelia |
| 7407 | LOBRHY | Campanulaceae | Lobelia rhytidosperma | WA | | H | | | | Wrinkled Lobelia |
| 36840 | LOBTENTEN | Campanulaceae | Lobelia tenuior subsp. tenuior | WA | | H | | | | Slender Lobelia |
| 7389 | WAHPRE | Campanulaceae | Wahlenbergia preissii | AUST | | H | | | | Preiss's Native Bluebell |
| 33636 | SPEBRE | Caryophyllaceae | Spergularia brevifolia | AUST | | H | | | | Austrlaian Spergularia |
| 18111 | SPENES | Caryophyllaceae | Spergularia nesophila | WA | 3 | H | | | | WA Spergularia |
| 1728 | ALLFRA | Casuarinaceae | Allocasuarina fraseriana | WA | | T | | | | Fraser's Sheoak |
| 1732 | ALLHUM | Casuarinaceae | Allocasuarina humilis | WA | | SH | | | | Dwarf Sheoak |
| 13908 | ALLLEHLEH | Casuarinaceae | Allocasuarina lehmanniana subsp. lehmanniana | WA | | SH | | | | Dune Sheoak |
| 1742 | CASOBE | Casuarinaceae | Casuarina obesa | WA | | T | | AQE | y | Swamp Sheoak |
| 9070 | STAPUB | Celastraceae | Stackhousia pubescens | WA | | H-SH | | | | Downy Stackhousia |
| 4737 | TRIBRU | Celastraceae | Tripterococcus brunonis | WA | | H-SH | | | | Tripterococcus |
| 1117 | APHCYP | Centrolepidaceae | Aphelia cyperoides | WA | | S-C | | | y | Hairy Aphelia |
| 1121 | CENARI | Centrolepidaceae | Centrolepis aristata | AUST | | S-C | | | y | Pointed Centrolepis |
| 1125 | CENDRU | Centrolepidaceae | Centrolepis drummondiana | AUST | | S-C | | | | Sand Centrolepis |
| 1131 | CENINC | Centrolepidaceae | Centrolepis inconspicua | WA | | S-C | | | | Centrolepis |
| 1134 | CENPOL | Centrolepidaceae | Centrolepis polygyna | AUST | | S-C | | | | Wiry Centrolepis |
| 2452 | ATRCIN | Chenopodiaceae | Atriplex cinerea | AUST | | SH | | | | Grey Saltbush |
| 2336 | ATRHYP | Chenopodiaceae | Atriplex hypoleuca | WA | | H | | | | Saltbush |
| 2463 | ATRISA | Chenopodiaceae | Atriplex isatidea | WA | | SH | | | | Coast Saltbush |
| # | CHEGLA | Chenopodiaceae | Chenopodium glaucum sunsp. ambiguum (not considered a weed) | >AUST | | H | | | | Oak-leaved Goosefoot |
| 11368 | DYSGLOGLO | Chenopodiaceae | Dysphania glomulifera subsp. glomulifera | WA | | H | | | | Dysphania |
| 12064 | ENCTOMTOM | Chenopodiaceae | Enchylaena tomentosa var. tomentosa | AUST | | H-SH | | | | Barrier Saltbush |
| 11341 | RHABACBAC | Chenopodiaceae | Rhagodia baccata subsp. baccata | WA | | SH | | | | Berry Saltbush |
| 11930 | RHABACDIO | Chenopodiaceae | Rhagodia baccata subsp. dioica | WA | | SH | | | | Berry Saltbush |
| 30434 | SALAUS | Chenopodiaceae | Salsola australis | | | SH | | | | Tumblebush |
| 2591 | SARBLA | Chenopodiaceae | Sarcocornia blackiana | AUST | | SH | | AQD | | Samphire |
| 2639 | SUAAUS | Chenopodiaceae | Suaeda australis | AUST | | H-SH | | AQD | | Seablite |
| 33237 | TECHALHAL | Chenopodiaceae | Tecticornia halocnemoides subsp. halocnemoides | AUST | | SH | | AQD | | Samphire |
| 33319 | TECINDBID | Chenopodiaceae | Tecticornia indica subsp. bidens | >AUST | | SH | | AQD | | Samphire |
| 31718 | TECLEP | Chenopodiaceae | Tecticornia lepidosperma | AUST | | SH | | AQD | | Samphire |
| 33297 | TECPERPER | Chenopodiaceae | Tecticornia pergranulata subsp. pergranulata | AUST | | SH | | AQD | | Blackseed Samphire |
| 2644 | THRDIF | Chenopodiaceae | Threlkeldia diffusa | AUST | | H- | | | | Wallaby Saltbush |

| NAME | SPECIES | FAMILY | SPECIES NAME | AUST | CONS | GF | GF 2 | AQU | WET | COMMON NAME/ ABORIGINAL NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | SH | | | | |
| 12770 | BURCON | Colchicaceae | Burchardia congesta | WA | | H | | | | Kara |
| 1385 | BURMUL | Colchicaceae | Burchardia multiflora | WA | | H | | | y | Kara |
| 1398 | WURMON | Colchicaceae | Wurmbea monantha | WA | | H | | | | Wurmbea |
| 1162 | CARPHI | Commelinaceae | Cartonema philydroides | WA | | H | | | | Cartonema |
| 6658 | WILBAC | Convolvulaceae | Wilsonia backhousei | AUST | | H | PR | AQD | | Narrowleaf Wilsonia |
| 6659 | WILHUM | Convolvulaceae | Wilsonia humilis | AUST | | H | PR | | | Silky Wilsonia |
| 11563 | CRACOLCOL | Crassulaceae | Crassula colorata var. colorata | >AUST | | H | | | | Dense Stonecrop |
| 11349 | CRADECDEC | Crassulaceae | Crassula decumbens var. decumbens | >AUST | | H | | | | Rufous Stonecrop |
| 3139 | CRAEXS | Crassulaceae | Crassula exserta | AUST | | H | | | | Stonecrop |
| 20271 | CRAEXT | Crassulaceae | Crassula extrorsa | WA | | H | | | | Flat Stonecrop |
| 96 | CALPRE | Cupressaceae | Callitris preissii | WA | | T | | | | Rottnest Island Cypress |
| 36600 | CALPYR | Cupressaceae | Callitris pyramidalis | WA | | T | | | | Swamp Cypress |
| 740 | BAUART | Cyperaceae | Baumea arthrophylla | >AUST | | S-C | | AQE | | Baumea |
| 741 | BAUART | Cyperaceae | Baumea articulata | >AUST | | S-C | | AQE | y | Jointed Twigrush |
| 743 | BAUJUN | Cyperaceae | Baumea juncea | >AUST | | S-C | | | y | Bare Twigrush |
| 744 | BAULAX | Cyperaceae | Baumea laxa | WA | | S-C | | AQE | | Lax Twigrush |
| 745 | BAUPRE | Cyperaceae | Baumea preissii | WA | | S-C | | AQE | | Preiss's Baumea |
| 746 | BAURIP | Cyperaceae | Baumea riparia | WA | | S-C | | AQE | | River Baumea |
| 748 | BAUVAG | Cyperaceae | Baumea vaginalis | WA | | S-C | | AQE | | Sheath Twigrush |
| 749 | BOLCAL | Cyperaceae | Bolboschoenus caldwellii | >AUST | | S-C | | AQE | | Marsh Clubrush |
| 753 | CARAPP | Cyperaceae | Carex appressa | >AUST | | S-C | | AQE | | Tall Sedge |
| 755 | CARFAS | Cyperaceae | Carex fascicularis | >AUST | | S-C | | AQE | | Tassel Sedge |
| 43241 | CARTHE | Cyperaceae | Carex thecata | WA | | S-C | | | | Preiss's Carex |
| 760 | CAUDIO | Cyperaceae | Caustis dioica | WA | | S-C | | | | Caustis |
| 794 | CYPGYM | Cyperaceae | Cyperus gymnocaulos | AUST | | S-C | | | | Spiny Flat Sedge |
| 20216 | FICNOD | Cyperaceae | Ficinia nodosa | >AUST | | S-C | | | | Knotted Clubrush |
| 894 | FIMVEL | Cyperaceae | Fimbristylis velata | >AUST | | S-C | | | | Fimbristylis |
| 907 | GAHTRI | Cyperaceae | Gahnia trifida | AUST | | S-C | | | y | Coast Sawsedge |
| 20199 | ISOCERCER | Cyperaceae | Isolepis cernua var. cernua | >AUST | | S-C | | | | Fine Clubrush |
| 20199 | ISOCERCER | Cyperaceae | Isolepis cernua var. setiformis | >AUST | | S-C | | | | Fine Clubrush |
| 912 | ISOCYP | Cyperaceae | Isolepis cyperoides | WA | | S-C | | | | Clubrush |
| 917 | ISOMAR | Cyperaceae | Isolepis marginata | AUST | | S-C | | | | Coarse Clubrush |
| 919 | ISOOLD | Cyperaceae | Isolepis oldfieldiana | WA | | S-C | | | y | Oldfield's Clubrush |
| 924 | ISOSTE | Cyperaceae | Isolepis stellata | AUST | | S-C | | | | Star Clubrush |
| 42742 | LEPCAL | Cyperaceae | Lepidosperma calcicola | WA | | S-C | | | | Lepidosperma |
| 930 | LEPCOS | Cyperaceae | Lepidosperma costale | WA | | S-C | | | | Lepidosperma |
| 932 | LEPEFF | Cyperaceae | Lepidosperma effusum | WA | | S-C | | | | Spreading Swordsedge |
| 933 | LEPGLA | Cyperaceae | Lepidosperma gladiatum | AUST | | S-C | | | | Coast Swordsedge/ Kerbin |

| NAME | SPECIES | FAMILY | SPECIES NAME | AUST | CONS | GF | GF 2 | AQU | WET | COMMON NAME/ ABORIGINAL NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 936 | LEPLEP | Cyperaceae | Lepidosperma leptostachyum | WA | | S-C | | | | Lepidosperma |
| 937 | LEPLON | Cyperaceae | Lepidosperma longitudinale | AUST | | S-C | | | y | Swamp Swordsedge |
| 940 | LEPPUB | Cyperaceae | Lepidosperma pubisquameum | WA | | S-C | | | | Lepidosperma |
| 944 | LEPSCA | Cyperaceae | Lepidosperma scabrum | WA | | S-C | | | | Rough Lepidosperma |
| 945 | LEPSQU | Cyperaceae | Lepidosperma squamatum | WA | | S-C | | | | Common Lepidosperma |
| 946 | LEPSTR | Cyperaceae | Lepidosperma striatum | WA | | S-C | | | | Lepidosperma |
| 955 | MESPSE | Cyperaceae | Mesomelaena pseudostygia | WA | | S-C | | | | Semaphore Sedge |
| 968 | SCHPUN | Cyperaceae | Schoenoplectus pungens | AUST | | S-C | | AQE | | Sharpleaf Clubrush |
| 969 | SCHVAL | Cyperaceae | Schoenoplectus validus | >AUST | | S-C | | AQE | | Lake Clubrush |
| 974 | SCHBEN | Cyperaceae | Schoenus benthamii | WA | 3 | S-C | | | | Bentham's Schoenus |
| 982 | SCHCLA | Cyperaceae | Schoenus clandestinus | WA | | S-C | | | | Schoenus |
| 984 | SCHCUR | Cyperaceae | Schoenus curvifolius | WA | | S-C | | | | Schoenus |
| 992 | SCHGRA | Cyperaceae | Schoenus grandiflorus | WA | | S-C | | | | Schoenus |
| 997 | SCHLAN | Cyperaceae | Schoenus lanatus | WA | | S-C | | | | Schoenus |
| 1007 | SCHPED | Cyperaceae | Schoenus pedicellatus | WA | | S-C | | | | Schoenus |
| 1013 | SCHSCU | Cyperaceae | Schoenus sculptus | AUST | | S-C | | | | Schoenus |
| 1016 | SCHSUB | Cyperaceae | Schoenus subbarbatus | WA | | S-C | | | | Schoenus |
| 1018 | SCHSUB | Cyperaceae | Schoenus subfascicularis | WA | | S-C | | | | Schoenus |
| 1036 | TETOCT | Cyperaceae | Tetraria octandra | WA | | S-C | | | | Tetraria |
| 1038 | TRINEE | Cyperaceae | Tricostularia neesii | WA | | S-C | | | | Tricostularia |
| 19309 | CALNAR | Dasypogonaceae | Calectasia narragara | WA | | H-SH | | | | Blue Tinsel Lily |
| 1218 | DASBRO | Dasypogonaceae | Dasypogon bromeliifolius | WA | | H | | | | Pineapple bush |
| 41651 | PTEESCESC | Dennstaedtiaceae | Pteridium esculentum subsp. esculentum | | | H | | | | Bracken |
| 5112 | HIBAUR | Dilleniaceae | Hibbertia aurea | WA | | SH | | | | Hibbertia |
| 5114 | HIBCOM | Dilleniaceae | Hibbertia commutata | WA | | SH | | | | Hibbertia |
| 5117 | HIBCUN | Dilleniaceae | Hibbertia cuneiformis | WA | | SH | | | | Cutleaf Hibbertia |
| 5134 | HIBHUE | Dilleniaceae | Hibbertia huegelii | WA | | SH | | | | Huegel's Hibbertia |
| 5135 | HIBHYP | Dilleniaceae | Hibbertia hypericoides | WA | | SH | | | | Common Hibbertia |
| 5162 | HIBRAC | Dilleniaceae | Hibbertia racemosa | WA | | SH | | | | Stalked Hibbertia |
| 11461 | HIBSPILEP | Dilleniaceae | Hibbertia spicata subsp. leptotheca | WA | 3 | SH | | | | Limestone Hibbertia |
| 5173 | HIBSUB | Dilleniaceae | Hibbertia subvaginata | WA | | SH | | | | Hibbertia |
| 1509 | DIOHAS | Dioscoreaceae | Dioscorea hastifolia | WA | | H | CL | | | Wararn/ Wararn |
| 13217 | DROERYERY | Droseraceae | Drosera erythrorhiza subsp. erythrorhiza | WA | | H | | | | Red Ink Sundew |
| 15453 | DROGIGGIG | Droseraceae | Drosera gigantea subsp. gigantea | WA | | H | | AQD | y | Giant Sundew |
| 3098 | DROGLA | Droseraceae | Drosera glanduligera | AUST | | H | | | y | Sundew |
| 14298 | DROMACMAC | Droseraceae | Drosera macrantha subsp. macrantha | WA | | H | | | | Rainbow |
| 13216 | DROMENPEN | Droseraceae | Drosera menziesii subsp. penicillaris | WA | | H | | | | Menzies' Rainbow |
| 3118 | DROPAL | Droseraceae | Drosera pallida | WA | | H | | | | Rainbow |

| NAME | SPECIES | FAMILY | SPECIES NAME | AUST | CONS | GF | GF 2 | AQU | WET | COMMON NAME/ ABORIGINAL NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 29178 | DROPOR | Droseraceae | Drosera porrecta | WA | | H | | | | Sundew |
| 4535 | TETHIR | Elaeocarpaceae | Tetratheca hirsuta | WA | | SH | | | | Tetratheca |
| 6295 | ACRCOR | Ericaceae | Acrotriche cordata | AUST | | SH | | | | Acrotriche |
| 6323 | ASTCIL | Ericaceae | Astroloma ciliatum | WA | | SH | | | | Astroloma |
| 6330 | ASTMAC | Ericaceae | Astroloma macrocalyx | WA | | SH | | | | Astroloma |
| 6331 | ASTMIC | Ericaceae | Astroloma microcalyx | WA | | SH | | | | Astroloma |
| 6334 | ASTPAL | Ericaceae | Astroloma pallidum | WA | | SH | | | | Astroloma |
| 6339 | ASTXER | Ericaceae | Astroloma xerophyllum | WA | | SH | | | | Tall White Astroloma |
| 6348 | CONPEN | Ericaceae | Conostephium pendulum | WA | | SH | | | | Pearlflower |
| 6349 | CONPRE | Ericaceae | Conostephium preissii | WA | | SH | | | | Preiss's Pearlflower |
| 6360 | LEUAUS | Ericaceae | Leucopogon australis | AUST | | SH | | | | Beard Heath |
| 6374 | LEUCON | Ericaceae | Leucopogon conostephioides | WA | | SH | | | | Beard Heath |
| 6405 | LEUINS | Ericaceae | Leucopogon insularis | WA | | SH | | | | Beard Heath |
| 6427 | LEUPAR | Ericaceae | Leucopogon parviflorus | WA | | SH | | | | Beard Heath |
| 6434 | LEUPOL | Ericaceae | Leucopogon polymorphus | WA | | SH | | | | Beard Heath |
| 6436 | LEUPRO | Ericaceae | Leucopogon propinquus | WA | | SH | | | | Beard Heath |
| 6440 | LEURAC | Ericaceae | Leucopogon racemulosus | WA | | SH | | | | Beard Heath |
| 40803 | LEUSQUSQU | Ericaceae | Leucopogon squarrosus subsp. squarrosus | WA | | SH | | | | Beard Heath |
| 34736 | LYSPEN | Ericaceae | Lysinema pentapetalum | WA | | SH | | | | Curry Lysinema |
| 4582 | ADRQUA | Euphorbiaceae | Adriana quadripartita | WA | | SH | | | | Bitter Bush |
| 4587 | AMPPRO | Euphorbiaceae | Amperea protensa | WA | | H-SH | P | | | Amperea |
| 34237 | BEYCINBOR | Euphorbiaceae | Beyeria cinerea subsp. borealis | WA | | SH | | | | Beyeria |
| 34236 | BEYCINCIN | Euphorbiaceae | Beyeria cinerea subsp. cinerea | WA | 3 | SH | | | | Beyeria |
| 4601 | BEYVIS | Euphorbiaceae | Beyeria viscosa | AUST | | SH | | | | Beyeria |
| 19585 | MONGRAGRA | Euphorbiaceae | Monotaxis grandiflora var. grandiflora | WA | | H | | | | Monotaxis |
| 4695 | RICGLA | Euphorbiaceae | Ricinocarpos glaucus | WA | | SH | | | | Wedding Bush |
| 15466 | ACAAPP | Fabaceae | Acacia applanata | WA | | SH | | | | Yellow Grass Wattle |
| 3237 | ACABEN | Fabaceae | Acacia benthamii | WA | 2 | SH | | | | Bentham's Wattle |
| 3262 | ACACOC | Fabaceae | Acacia cochlearis | WA | | SH | | | | Rigid Wattle |
| 3282 | ACACYC | Fabaceae | Acacia cyclops | AUST | | SH | | | | Red-eyed Wattle |
| 3374 | ACAHUE | Fabaceae | Acacia huegelii | WA | | SH | | | | Huegel's Wattle |
| 11611 | ACALASLAS | Fabaceae | Acacia lasiocarpa var. lasiocarpa | WA | | SH | | | | Dune Moses/ Panjang |
| 15481 | ACAPULGLA | Fabaceae | Acacia pulchella var. glaberrima | WA | | SH | | | | Prickly Moses |
| 15482 | ACAPULGOA | Fabaceae | Acacia pulchella var. goadbyi | WA | | SH | | | | Prickly Moses |
| 3525 | ACAROS | Fabaceae | Acacia rostellifera | WA | | SH/T | | | | Summer-scented Wattle |
| 3527 | ACASAL | Fabaceae | Acacia saligna | WA | | SH | | | | Coojong/ Kudjong |
| 3541 | ACASES | Fabaceae | Acacia sessilis | WA | | SH | | | | Wattle |
| 3557 | ACASTE | Fabaceae | Acacia stenoptera | WA | | SH | | | | Narrow-winged Wattle |

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|---|---|---|---|---|---|---|---|---|---|---|
| 3584 | ACATRU | Fabaceae | Acacia truncata | WA | | SH | | | | Wattle |
| 3602 | ACAWIL | Fabaceae | Acacia willdenowiana | WA | | SH-H | | | | White Grass Wattle |
| 3604 | ACAXAN | Fabaceae | Acacia xanthina | WA | | SH | | | | White-stemmed Wattle |
| 3686 | AOTCOR | Fabaceae | Aotus cordifolia | WA | | SH | | | | Swamp Aotus |
| 3688 | AOTGRA | Fabaceae | Aotus gracillima | WA | | SH | | | | Aotus |
| 3692 | AOTPRO | Fabaceae | Aotus procumbens | WA | | SH | PR | | | Prostrate Aotus |
| 3710 | BOSERI | Fabaceae | Bossiaea eriocarpa | WA | | SH | | | | Common Bossiaea |
| 3764 | CHOVAR | Fabaceae | Chorizema varium | WA | T | SH | | | | Coast Flame Pea |
| 35838 | CRIBILBIL | Fabaceae | Cristonia biloba subsp. biloba | WA | | SH | | | | Brown Templetonia |
| 19747 | DAVDECDEC | Fabaceae | Daviesia decurrens subsp. decurrens | WA | | SH | | | | Daviesia |
| 18560 | DAVDIVDIV | Fabaceae | Daviesia divaricata subsp. divaricata | WA | | SH | | | | Daviesia/ Marno |
| 16585 | DAVNUDNUD | Fabaceae | Daviesia nudiflora subsp. nudiflora | WA | | SH | | | | Leafy Daviesia |
| 3832 | DAVPHY | Fabaceae | Daviesia physodes | WA | | SH | | | | Daviesia |
| 3845 | DAVTRI | Fabaceae | Daviesia triflora | WA | | SH | | | | Three-flowered Daviesia |
| 20475 | GASCAP | Fabaceae | Gastrolobium capitatum | WA | | SH | | | | Common Gastrolobium |
| 20483 | GASLIN | Fabaceae | Gastrolobium linearifolium | WA | | SH | | | | Gastrolobium |
| 20482 | GASNER | Fabaceae | Gastrolobium nervosum | WA | | SH | | | | Gastrolobium |
| 3945 | GOMARI | Fabaceae | Gompholobium aristatum | WA | | SH | | | | Yellow Gompholobium |
| 3957 | GOMTOM | Fabaceae | Gompholobium tomentosum | WA | | SH | | | | Common Gompholobium |
| 3961 | HARCOM | Fabaceae | Hardenbergia comptoniana | WA | | SH | CL | | | Hardenbergia |
| 3966 | HOVPUN | Fabaceae | Hovea pungens | WA | | SH | | | | Prickly Hovea/ Puyenak |
| 12859 | HOVTRITRI | Fabaceae | Hovea trisperma var. trisperma | WA | | SH | | | | Common Hovea |
| 19700 | ISOCUNCUN | Fabaceae | Isotropis cuneifolia subsp. cuneifolia | WA | | H-SH | | | | Granny's Bonnets |
| 14783 | JACCAL | Fabaceae | Jacksonia calcicola | WA | | SH | | | | Limestone Jacksonia |
| 4012 | JACFUR | Fabaceae | Jacksonia furcellata | WA | | SH/T | | | | Grey Stinkwood |
| 4027 | JACSER | Fabaceae | Jacksonia sericea | WA | 4 | SH | PR | | | Perth's Jacksonia/ Waldjumi |
| 4029 | JACSTE | Fabaceae | Jacksonia sternbergiana | WA | | SH/T | | | | Green Stinkwood/ Kapur |
| 4044 | KENPRO | Fabaceae | Kennedia prostrata | AUST | | H | PR | | | Running Postman |
| 11289 | LABLANLAN | Fabaceae | Labichea lanceolata subsp. lanceolata | WA | | SH | | | | Tall Labichea |
| 17114 | PARLOPLOP | Fabaceae | Paraserianthes lophantha subsp. lophantha | WA | | SH | | | | Albizia |
| 4205 | SPHLIN | Fabaceae | Sphaerolobium linophyllum | WA | | SH-H | | | | Slender Sphaerolobium |
| 4207 | SPHMED | Fabaceae | Sphaerolobium medium | WA | | SH | | | | Common Sphaerolobium |
| 4256 | TEMRET | Fabaceae | Templetonia retusa | AUST | | SH | | | | Cockies' Tongues |
| 4325 | VIMJUN | Fabaceae | Viminaria juncea | AUST | | SH/T | | | y | Swishbush/ Koweda |
| 14297 | FRAPAUPAU | Frankeniaceae | Frankenia pauciflora var. pauciflora | AUST | | SH | | | | Sea Heath |
| 41660 | SCHAUS | Gentianaceae | Schenkia australis | AUST | | H | | | | Spike Centaury |

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|---|---|---|---|---|---|---|---|---|---|---|
| 4340 | GERRET | Geraniaceae | Geranium retrorsum | >AUST | | H | | | | Native Geranium |
| 4341 | GERSOL | Geraniaceae | Geranium solanderi | AUST | | H | | | | Native Geranium |
| 4346 | PELLIT | Geraniaceae | Pelargonium littorale | AUST | | H | | | | Pelargonium |
| 12724 | ANTJUN | Goodeniaceae | Anthotium junciforme | WA | | H | | | | Anthotium |
| 7454 | DAMLIN | Goodeniaceae | Dampiera linearis | WA | | H-SH | | | | Dampiera |
| 7538 | GOOPUL | Goodeniaceae | Goodenia pulchella | WA | | H | | | | Goodenia |
| 7574 | LECFLO | Goodeniaceae | Lechenaultia floribunda | WA | | H-SH | | | | Leschenaultia |
| 7580 | LECLIN | Goodeniaceae | Lechenaultia linarioides | WA | | SH-H | | | | Leschenaultia |
| 7595 | SCAANC | Goodeniaceae | Scaevola anchusifolia | WA | | SH-H | | | | Fanflower |
| 7603 | SCACAN | Goodeniaceae | Scaevola canescens | WA | | H-SH | | | | Fanflower |
| 7606 | SCACRA | Goodeniaceae | Scaevola crassifolia | AUST | | SH | | | | Fanflower |
| 7614 | SCAGLO | Goodeniaceae | Scaevola globulifera | WA | | SH | | | | Fanflower |
| 7626 | SCANIT | Goodeniaceae | Scaevola nitida | AUST | | SH | | | | Fanflower |
| 13181 | SCAREPANG | Goodeniaceae | Scaevola repens var. angustifolia | WA | | H-SH | | | | Fanflower |
| 13182 | SCAREPREP | Goodeniaceae | Scaevola repens var. repens | WA | | H-SH | PR | | | Fanflower |
| 13152 | SCATHETHE | Goodeniaceae | Scaevola thesioides subsp. thesioides | WA | | SH-H | | | | Fanflower |
| 7665 | VELTRI | Goodeniaceae | Velleia trinervis | WA | | H | | | y | Velleia |
| 2784 | GYRRAM | Gyrostemonaceae | Gyrostemon ramulosus | AUST | | SH | | | | Corkybark |
| 2791 | TERCYA | Gyrostemonaceae | Tersonia cyathiflora | WA | | SH-H | PR | | | Button Runner |
| 11434 | ANIHUMHUM | Haemodoraceae | Anigozanthos humilis subsp. humilis | WA | | H | | | | Catspaw |
| 11261 | ANIMANMAN | Haemodoraceae | Anigozanthos manglesii subsp. manglesii | WA | | H | | | | Kangaroopaw |
| 11826 | CONACUACU | Haemodoraceae | Conostylis aculeata subsp. aculeata | WA | | H | | | | Prickly Conostylis |
| 11414 | CONACUBRE | Haemodoraceae | Conostylis aculeata subsp. breviflora | WA | | H | | | | Prickly Conostylis |
| 11513 | CONACUCYG | Haemodoraceae | Conostylis aculeata subsp. cygnorum | WA | | H | | | | Prickly Conostylis |
| 12109 | CONACUPRE | Haemodoraceae | Conostylis aculeata subsp. preissii | WA | | H | | | | Prickly Conostylis |
| 12027 | CONCANCAL | Haemodoraceae | Conostylis candicans subsp. calcicola | WA | | H | | | | Grey Conostylis |
| 11438 | CONCANCAN | Haemodoraceae | Conostylis candicans subsp. candicans | WA | | H | | | | Grey Conostylis |
| 1436 | CONJUN | Haemodoraceae | Conostylis juncea | WA | | H | | | | Conostylis |
| 11597 | CONSETSET | Haemodoraceae | Conostylis setigera subsp. setigera | WA | | H | | | | Conostylis |
| 1468 | HAELAX | Haemodoraceae | Haemodorum laxum | WA | | H | | | | Haemodorum/Mardja |
| 1470 | HAEPAN | Haemodoraceae | Haemodorum paniculatum | WA | | H | | | | Haemodorum/Mardja |

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|---|---|---|---|---|---|---|---|---|---|---|
| 1475 | HAESPI | Haemodoraceae | Haemodorum spicatum | WA | | H | | | | Haemodorum/Mardja |
| 1478 | PHLCIL | Haemodoraceae | Phlebocarya ciliata | WA | | H | | | | Phlebocarya |
| 1483 | TRILON | Haemodoraceae | Tribonanthes longipetala | WA | | H | | | | Tribonanthes |
| 1485 | TRIVIO | Haemodoraceae | Tribonanthes violacea | WA | | H | | | | Tribonanthes |
| 33620 | GLIANG | Haloragaceae | Glischrocaryon angustifolium | AUST | | H-SH | | | | Popflower |
| 6143 | GLIAUR | Haloragaceae | Glischrocaryon aureum | AUST | | H-SH | | | | Common Popflower |
| 6161 | GONPIT | Haloragaceae | Gonocarpus pithyoides | WA | | H | | | | Gonocarpus |
| 6178 | HALSCO | Haloragaceae | Haloragis scoparia | WA | 1 | H | | | | Haloragis |
| 34676 | MEIBRO | Haloragaceae | Meionectes brownii | WA | | H | | AQE | | Haloragis |
| 6189 | MYRCRI | Haloragaceae | Myriophyllum crispatum | AUST | | H | | AQE | | Myriophyllum |
| 6199 | MYRTIL | Haloragaceae | Myriophyllum tillaeoides | WA | | H | | AQD | | Myriophyllum |
| 23474 | AGRHIR | Hemerocallidaceae | Agrostocrinum hirsutum | WA | | H | | | | Grasslily |
| 1276 | CAEMIC | Hemerocallidaceae | Caesia micrantha | WA | | H | | | | Pale Grasslily |
| 1277 | CAEOCC | Hemerocallidaceae | Caesia occidentalis | WA | | H | | | | Tall Grasslily |
| 11283 | CORMICMIC | Hemerocallidaceae | Corynotheca micrantha var. micrantha | WA | | H | | | | Tangled Lily |
| 11636 | DIAREVDIV | Hemerocallidaceae | Dianella revoluta var. divaricata | WA | | H | | | | Common Dianella |
| 1260 | STYGLA | Hemerocallidaceae | Stypandra glauca | AUST | | H | | | | Western Stypandra |
| 1361 | TRIELA | Hemerocallidaceae | Tricoryne elatior | AUST | | H | | | | Yellow Summer Lily |
| 1363 | TRITEN | Hemerocallidaceae | Tricoryne tenella | WA | | H | | | | Yellow Summer Lily |
| 161 | | Hydrocharitaceae | Halophila australis | AUST | | H | | AQS | | Oval Sea Wrack |
| 164 | | Hydrocharitaceae | Halophila ovalis | AUST | | H | | AQS | | Sea Wrack |
| 138 | NAJMAR | Hydrocharitaceae | Najas marina | >AUST | | H | | AQS | | Prickly Water Nymph |
| 5180 | HYPGRA | Hypericaceae | Hypericum gramineum | >AUST | | SH | | | | Small St John's Wort |
| 43765 | PAUGLAGLA | Hypoxidaceae | Pauridia glabella var. glabella | AUST | | H | | AQD | | Small Yellow Star |
| 43761 | PAUOCCOCC | Hypoxidaceae | Pauridia occidentalis var. occidentalis | WA | | H | | AQD | | Yellow Star |
| 43762 | PAUOCCQUA | Hypoxidaceae | Pauridia occidentalis var. quadriloba | WA | | H | | AQD | | Yellow Star |
| 11749 | ORTLAXLAX | Iridaceae | Orthrosanthus laxus var. laxus | WA | | H | | | | Common Orthrosanthus |
| 30472 | PATOCCOCC | Iridaceae | Patersonia occidentalis var. occidentalis | WA | | H | | | | Purple Flag |
| 20854 | JUNBUF | Juncaceae | Juncus bufonius | >AUST | | S-J | | | | Toadrush |
| 1179 | JUNCAE | Juncaceae | Juncus caespiticius | >AUST | | S-J | | | | Grassy Rush |
| 1184 | JUNHOL | Juncaceae | Juncus holoschoenus | >AUST | | S-J | | AQD | | Jointed Rush |
| 11922 | JUNKRAAUS | Juncaceae | Juncus kraussii subsp. australiensis | >AUST | | S-J | | AQD/AQE | y | Salt Rush |
| 1188 | JUNPAL | Juncaceae | Juncus pallidus | >AUST | | S-J | | | y | Giant Rush |
| 1195 | JUNSUB | Juncaceae | Juncus subsecundus | AUST | | S-J | | | | Finger Rush |
| 1198 | LUZMER | Juncaceae | Luzula meridionalis | AUST | | S-J | | | | Woodrush |
| 40660 | CYCHUE | Juncaginaceae | Cycnogeton huegelii | WA | | S-C | | AQE | | Water Ribbons |
| 40661 | CYCLIN | Juncaginaceae | Cycnogeton lineare | WA | | S-C | | AQE | | Water Ribbons |

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|---|---|---|---|---|---|---|---|---|---|---|
| 33676 | TRICAL | Juncaginaceae | Triglochin calcitrapa | WA | | S-C | | | | Triglochin |
| 147 | TRIMUC | Juncaginaceae | Triglochin mucronata | AUST | | S-C | | | y | Triglochin |
| 151 | TRISTR | Juncaginaceae | Triglochin striata | >AUST | | S-C | | AQD | | Triglochin |
| 152 | TRITRI | Juncaginaceae | Triglochin trichophora | WA | | S-C | | | | Triglochin |
| 16934 | HEMGLAGLA | Lamiaceae | Hemiandra glabra subsp. glabra | WA | | SH | | | | Snakebush |
| 6838 | HEMLIN | Lamiaceae | Hemiandra linearis | WA | | SH | PR | | | Snakebush |
| 6839 | HEMPUN | Lamiaceae | Hemiandra pungens | WA | | SH | PR | | | Snakebush |
| 6871 | HEMSER | Lamiaceae | Hemigenia sericea | WA | | SH | | | | Hemigenia |
| # | MENSAT | Lamiaceae | Mentha satureioides | AUST | | H | PR | | | Native Mint |
| 6939 | WESDAM | Lamiaceae | Westringia dampieri | AUST | | SH | | | | Coastal Westringia |
| 2951 | CASFLA | Lauraceae | Cassytha flava | WA | | H | CL | | | Dodder Laurel |
| 2952 | CASGLA | Lauraceae | Cassytha glabella | WA | | H | CL | | | Dodder Laurel |
| 2956 | CASPOM | Lauraceae | Cassytha pomiformis | WA | | H | CL | | | Dodder Laurel |
| 2957 | CASRAC | Lauraceae | Cassytha racemosa | AUST | | H | CL | | | Dodder Laurel |
| 7148 | UTRMUL | Lentibulariaceae | Utricularia multifida | WA | | H | | AQD | y | Pink Petticoats |
| 6515 | LOGVAG | Loganiaceae | Logania vaginalis | WA | | SH | | | | White Spray |
| 16177 | PHYPAR | Loganiaceae | Phyllangium paradoxum | WA | | H | | | | Phyllangium |
| 13267 | AMYLINLIN | Loranthaceae | Amyema linophylla subsp. linophylla | AUST | | SH | | | | Slender Mistletoe |
| 2380 | AMYMIQ | Loranthaceae | Amyema miquelii | AUST | | SH | | | | Broad-leaved Mistletoe |
| 2383 | AMYPRE | Loranthaceae | Amyema preissii | AUST | | SH | | | | Preiss's Mistletoe |
| 2396 | LYSCAS | Loranthaceae | Lysiana casuarinae | WA | | SH | | | | Sheoak Mistletoe |
| 2401 | NUYFLO | Loranthaceae | Nuytsia floribunda | WA | | T | | | | Christmas Tree/ Mudja |
| 4906 | ALYHUE | Malvaceae | Alyogyne huegelii | AUST | | SH | | | | Native Hibiscus |
| 5011 | GUILED | Malvaceae | Guichenotia ledifolia | WA | | SH | | | | Guichenotia |
| 43080 | HIBTRI | Malvaceae | Hibiscus tridactylites | AUST | | H-SH | | | | Native Hibiscus |
| 5038 | LASMEM | Malvaceae | Lasiopetalum membranaceum | WA | 3 | SH | | | | Bunbury Lasiopetalum |
| 4958 | LAWSPI | Malvaceae | Lawrencia spicata | AUST | | H-SH | | | | Salt Lawrencia |
| 5080 | THOFOL | Malvaceae | Thomasia foliosa | WA | | SH | | | | Thomasia |
| 5105 | THOTRI | Malvaceae | Thomasia triphylla | WA | | SH | | | | Thomasia |
| 36160 | LIPCAP | Menyanthaceae | Liparophyllum capitatum | WA | | H | | AQD | | Annual Villarsia |
| 36177 | ORNALB | Menyanthaceae | Ornduffia albiflora | | | H | | AQE | | White Villarsia |
| 2839 | MACAUS | Molluginaceae | Macarthuria australis | WA | | H-SH | | | | Macarthuria |
| 17202 | AGOFLEFLE | Myrtaceae | Agonis flexuosa var. flexuosa | WA | | T | | | | Peppermint |
| 20283 | ASTSCO | Myrtaceae | Astartea scoparia | WA | | SH | | | | Common Astartea |
| 35816 | CALQUAQUA | Myrtaceae | Calothamnus quadrifidus subsp. quadrifidus | WA | | SH | | | | Freeway Calothamnus |
| 5439 | CALANG | Myrtaceae | Calytrix angulata | WA | | SH | | | | Yellow Starflower |

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|---|---|---|---|---|---|---|---|---|---|---|
| 5458 | CALFLA | Myrtaceae | Calytrix flavescens | WA | | SH | | | | Yellow Summer Starflower |
| 5460 | CALFRA | Myrtaceae | Calytrix fraseri | WA | | SH | | | | Pink Summer Starflower |
| 5465 | CALLES | Myrtaceae | Calytrix leschenaultii | WA | | SH | | | | Leschenault's Starflower |
| 5481 | CALSYL | Myrtaceae | Calytrix sylvana | WA | | SH | | | | Starflower |
| 5498 | CHAUNC | Myrtaceae | Chamelaucium uncinatum | WA | | SH | | | | Geraldton Wax |
| 17104 | CORCAL | Myrtaceae | Corymbia calophylla | WA | | T | | | | Marri |
| 13950 | EREASTAST | Myrtaceae | Eremaea asterocarpa subsp. asterocarpa | WA | | SH | | | | Star-fruited Eremaea |
| 5540 | EREFIM | Myrtaceae | Eremaea fimbriata | WA | | SH | | | | Pink-flowered Eremaea |
| 14104 | EREPAUPAU | Myrtaceae | Eremaea pauciflora var. pauciflora | WA | | SH | | | | Sandplain Eremaea |
| 5615 | EUCDEC | Myrtaceae | Eucalyptus decipiens | WA | | M | | | | Limestone Marlock |
| 5649 | EUCFOE | Myrtaceae | Eucalyptus foecunda | WA | | M | | | | Fremantle Mallee |
| 5659 | EUCGOM | Myrtaceae | Eucalyptus gomphocephala | WA | | T | | | | Tuart |
| 13547 | EUCMARMAR | Myrtaceae | Eucalyptus marginata subsp. marginata | WA | | T | | | | Jarrah/ Djara |
| 13541 | EUCPET | Myrtaceae | Eucalyptus petrensis | WA | | M | | | | Rock Mallee |
| 13511 | EUCRUDRUD | Myrtaceae | Eucalyptus rudis subsp. rudis | WA | | T | | AQD | y | Flooded Gum/ Kulurda |
| 5817 | HYPANG | Myrtaceae | Hypocalymma angustifolium | WA | | SH | | | | White Myrtle/ Kudjid |
| 5825 | HYPROB | Myrtaceae | Hypocalymma robustum | WA | | SH | | | | Swan River Myrtle |
| 15498 | KUNGLA | Myrtaceae | Kunzea glabrescens | WA | | SH | | | | Spearwood/ Pondil |
| 5857 | LEPSPI | Myrtaceae | Leptospermum spinescens | WA | | SH | | | | Spiny Leptospermum |
| 5887 | MELCAR | Myrtaceae | Melaleuca cardiophylla | WA | | SH | | | | Melaleuca |
| 5900 | MELCUT | Myrtaceae | Melaleuca cuticularis | WA | | T | | AQD | y | Melaleuca |
| 13271 | MELHUEHUE | Myrtaceae | Melaleuca huegelii subsp. huegelii | WA | | SH | | | | Chenille Honeymyrtle |
| 5922 | MELLAN | Myrtaceae | Melaleuca lanceolata | AUST | | SH/T | | | | Rottnest Teatree/ Moonah |
| 5926 | MELLAT | Myrtaceae | Melaleuca lateritia | WA | | SH | | AQD | y | Robin Redbreast Bush |
| 5952 | MELPRE | Myrtaceae | Melaleuca preissiana | WA | | T | | | y | Preiss's Paperbark/ Modong |
| 5959 | MELRHA | Myrtaceae | Melaleuca rhaphiophylla | WA | | SH | | AQD | y | Freshwater Paperbark |
| 18598 | MELSYS | Myrtaceae | Melaleuca systena | WA | | SH | | | | Yellow Honeymyrtle |
| 5980 | MELTHY | Myrtaceae | Melaleuca thymoides | WA | | SH | | | | Yellow Honeymyrtle |
| 13280 | MELVIMVIM | Myrtaceae | Melaleuca viminea subsp. viminea | WA | | SH | | AQD | y | Swamp Honeymyrtle |
| 6012 | REGCIL | Myrtaceae | Regelia ciliata | WA | | SH | | | y | Mouse Plant |
| 20135 | TAXLIN | Myrtaceae | Taxandria linearifolia | WA | | SH | | | y | Creek Peppermint |
| 15432 | VERDENDEN | Myrtaceae | Verticordia densiflora var. densiflora | WA | | SH | | | | Compacted Featherflower |
| 4366 | NITBIL | Nitrariaceae | Nitraria billardierei | AUST | | SH | | | | Nitre Bush |
| 2364 | OLAAUR | Olacaceae | Olax aurantia | WA | | SH | | | | Olax |
| 2365 | OLABEN | Olacaceae | Olax benthamiana | AUST | | SH | | | | Bentham's Olax |
| 11756 | EPIBILCIN | Onagraceae | Epilobium billardiereanum subsp. cinereum | WA | | H | | | | Willow Herb |
| 11992 | EPIBILINT | Onagraceae | Epilobium billardiereanum subsp. intermedium | WA | | H | | | | Glabrous Willow Herb |
| 6133 | EPIHIR | Onagraceae | Epilobium hirtigerum | WA | | H | | | | Hairy Willow Herb |
| 15330 | CALARE | Orchidaceae | Caladenia arenicola | WA | | H | | | | Carousel Spider Orchid |

| NAME | SPECIES | FAMILY | SPECIES NAME | AUST | CONS | GF | GF 2 | AQU | WET | COMMON NAME/ ABORIGINAL NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 13853 | CALARR | Orchidaceae | Caladenia arrecta | WA | | H | | | | Spider Orchid |
| 15332 | CALATTATT | Orchidaceae | Caladenia attingens subsp. attingens | WA | | H | | | | Forest Mantis Orchid |
| 1586 | CALDIS | Orchidaceae | Caladenia discoidea | WA | | H | | | | Bee Orchid |
| 15348 | CALFLAFLA | Orchidaceae | Caladenia flava subsp. flava | WA | | H | | | | Cowslip Orchid |
| 15352 | CALGEO | Orchidaceae | Caladenia georgei | WA | | H | | | | Tuart Spider Orchid |
| 17980 | CALHIE | Orchidaceae | Caladenia hiemalis | WA | | H | | | | Spider Orchid |
| 15354 | CALHIRHIR | Orchidaceae | Caladenia hirta subsp. hirta | WA | | H | | | | Sugar Candy Orchid |
| 1599 | CALLAT | Orchidaceae | Caladenia latifolia | WA | | H | | | | Pink Fairy Orchid |
| 15361 | CALLONCAL | Orchidaceae | Caladenia longicauda subsp. calcigena | WA | | H | | | | Coastal White Spider Orchid |
| 1603 | CALLON | Orchidaceae | Caladenia longiclavata | WA | | H | | | | Clubbed Spider Orchid |
| 1604 | CALMAC | Orchidaceae | Caladenia macrostylis | WA | | H | | | | Leaping Spider Orchid |
| 1605 | CALMAR | Orchidaceae | Caladenia marginata | WA | | H | | | | White Fairy Orchid |
| 15371 | CALNANNAN | Orchidaceae | Caladenia nana subsp. nana | WA | | H | | | | Little Pink Fan Orchid |
| 15503 | CALPAL | Orchidaceae | Caladenia paludosa | WA | | H | | AQD | | Swamp Spider Orchid |
| 15377 | CALREPREP | Orchidaceae | Caladenia reptans subsp. reptans | WA | | H | | | | Little Pink Fairy Orchid |
| 18019 | CALVUL | Orchidaceae | Caladenia vulgata | WA | | H | | | | Common Spider Orchid |
| 15114 | CYAGEM | Orchidaceae | Cyanicula gemmata | WA | | H | | | | Blue China Orchid |
| 15404 | CYASER | Orchidaceae | Cyanicula sericea | WA | | H | | | | Silky Blue Orchid |
| 10916 | CYRHUE | Orchidaceae | Cyrtostylis huegelii | WA | | H | | | | Midge Orchid |
| 10964 | CYRROB | Orchidaceae | Cyrtostylis robusta | AUST | | H | | | | Mosquito Orchid |
| 12943 | DIUBRU | Orchidaceae | Diuris brumalis | WA | | H | | | | Winter Donkey Orchid |
| 11049 | DIUCOR | Orchidaceae | Diuris corymbosa | WA | | H | | | | Common Donkey Orchid |
| 1635 | DIULON | Orchidaceae | Diuris longifolia | WA | | H | | | | Purple Pansy Orchid |
| 12939 | DIUMAG | Orchidaceae | Diuris magnifica | WA | | H | | | | Pansy Orchid |
| 1643 | ELYBRU | Orchidaceae | Elythranthera brunonis | WA | | H | | | | Purple Enamel Orchid |
| 1645 | EPIGRA | Orchidaceae | Epiblema grandiflorum | WA | | H | | | | Babe-in-a-cradle |
| 15410 | ERIDILDIL | Orchidaceae | Eriochilus dilatatus subsp. dilatatus | WA | | H | | | | White Bunny Orchid |
| 15412 | ERIDILMUL | Orchidaceae | Eriochilus dilatatus subsp. multiflorus | WA | | H | | | | White Bunny Orchid |
| 1653 | LEPFIM | Orchidaceae | Leporella fimbriata | WA | | H | | | | Hare Orchid |
| 15418 | LEPMEN | Orchidaceae | Leptoceras menziesii | AUST | | H | | | | Rabbit Orchid |
| 1656 | LYPSER | Orchidaceae | Lyperanthus serratus | WA | | H | | | | Rattle Beaks |
| 1658 | MICATR | Orchidaceae | Microtis atrata | AUST | | H | | AQD | | Swamp Mignonette Orchid |
| 12761 | MICMEDMED | Orchidaceae | Microtis media subsp. media | WA | | H | | | | Common Mignonette Orchid |
| 1667 | PARNIG | Orchidaceae | Paracaleana nigrita | WA | | H | | | | Flying Duck Orchid |
| 20460 | PHEDEF | Orchidaceae | Pheladenia deformis | WA | | H | | | | Blue Fairy Orchid |
| 15425 | PRACAL | Orchidaceae | Prasophyllum calcicola | AUST | | H | | | | Limestone Leek Orchid |
| 1671 | PRAELA | Orchidaceae | Prasophyllum elatum | WA | | H | | | | Tall Leek Orchid |
| 17429 | PRAGIGFUL | Orchidaceae | Prasophyllum giganteum subsp. fuligineum | WA | | H | | | | Bronze Leek Orcjid |
| 1676 | PRAHIA | Orchidaceae | Prasophyllum hians | WA | | H | | | | Yawning Leek Orchid |

| NAME | SPECIES | FAMILY | SPECIES NAME | AUST | CONS | GF | GF 2 | AQU | WET | COMMON NAME/ ABORIGINAL NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 1680 | PRAPAR | Orchidaceae | Prasophyllum parvifolium | WA | | H | | | | Autumn Leek Orchid |
| 10853 | PRAPLU | Orchidaceae | Prasophyllum plumiforme | WA | | H | | | | Dainty Leek Orchid |
| 15426 | PTEASP | Orchidaceae | Pterostylis aspera | WA | | H | | | | Brown-veined Shell Orchid |
| 1686 | PTEBAR | Orchidaceae | Pterostylis barbata | WA | | H | | | | Bird Orchid |
| 31731 | PTEFRE | Orchidaceae | Pterostylis frenchii | WA | 2 | H | | | | French's Snail Orchid |
| 11118 | PTEPYR | Orchidaceae | Pterostylis pyramidalis | WA | | H | | AQD | | Tall Snail Orchid |
| 1693 | PTEREC | Orchidaceae | Pterostylis recurva | WA | | H | | | | Jug Orchid |
| 12217 | PTESAN | Orchidaceae | Pterostylis sanguinea | AUST | | H | | | | Dark Banded Greenhood |
| 18655 | PTESP. | Orchidaceae | Pterostylis sp. crinkled leaf (G.J. Keighery 13426) PN | WA | | H | | | | Greenhood |
| 18645 | PTESP. | Orchidaceae | Pterostylis sp. limestone (B.J. Keighery & G.J. Keighery 65) PN | WA | | H | | | | Greenhood |
| 18658 | PTESP. | Orchidaceae | Pterostylis sp. short sepals (W. Jackson BJ259) PN | WA | | H | | | | Greenhood |
| 1698 | PTEVIT | Orchidaceae | Pterostylis vittata | WA | | H | | | | Banded Greenhood |
| 16367 | PYRNIG | Orchidaceae | Pyrorchis nigricans | AUST | | H | | | | Red Beaks |
| 10856 | THEBEN | Orchidaceae | Thelymitra benthamiana | WA | | H | | | | Leopard Orchid |
| 1702 | THECAM | Orchidaceae | Thelymitra campanulata | WA | | H | | | | Shirt Orchid |
| 1705 | THECRI | Orchidaceae | Thelymitra crinita | WA | | H | | | y | Blue Lady Orchid |
| 1708 | THEFUS | Orchidaceae | Thelymitra fuscolutea | WA | | H | | | | Chestnut Sun Orchid |
| 20730 | THEPAL | Orchidaceae | Thelymitra paludosa | WA | | H | | | | Sun Orchid |
| 20731 | THEVUL | Orchidaceae | Thelymitra vulgaris | WA | | H | | | | Sun Orchid |
| 30375 | OXAEXI | Oxalidaceae | Oxalis exilis | AUST | | H | | | | Native Oxalis |
| 4675 | PHYCAL | Phyllanthaceae | Phyllanthus calycinus | WA | | H | | | | Phyllanthus |
| 4688 | PORDRU | Phyllanthaceae | Poranthera drummondii | WA | | H | | | | Poranthera |
| 4689 | PORERI | Phyllanthaceae | Poranthera ericoides | AUST | | SH | | | | Poranthera |
| 4691 | PORMIC | Phyllanthaceae | Poranthera microphylla | WA | | H | | | | Poranthera |
| 42022 | PORMOO | Phyllanthaceae | Poranthera moorokatta | WA | 2 | H | | | | Poranthera |
| 25788 | BILFRA | Pittosporaceae | Billardiera fraseri | WA | | SH | CL | | | Fraser's Billardiera |
| 25798 | BILFUS | Pittosporaceae | Billardiera fusiformis | WA | | SH | CL | | | Sollya |
| 19745 | PITLIG | Pittosporaceae | Pittosporum ligustrifolium | WA | | SH/T | | | | Native Pittosporum |
| 14282 | GRAPUB | Plantaginaceae | Gratiola pubescens | AUST | | H | | AQD | y | Gratiola |
| 7301 | PLAEXI | Plantaginaceae | Plantago exilis | AUST | | H | | | | Native Plantago |
| 7110 | VERDIS | Plantaginaceae | Veronica distans | WA | | H-SH | | | | Native creeping Veronica |
| 200 | AMPTUR | Poaceae | Amphipogon turbinatus | WA | | G | | | | Amphipogon |
| 17233 | AUSCAM | Poaceae | Austrostipa campylachne | WA | | G | | | | Hairy Speargrass |
| 17234 | AUSCOM | Poaceae | Austrostipa compressa | WA | | G | | | | Golden Speargrass |
| 17237 | AUSELE | Poaceae | Austrostipa elegantissima | AUST | | G | | | | Feather Speargrass |
| 17240 | AUSFLA | Poaceae | Austrostipa flavescens | AUST | | G | | | | Tall Speargrass |
| 17241 | AUSHEM | Poaceae | Austrostipa hemipogon | WA | | G | | | | Speargras |

| NAME | SPECIES | FAMILY | SPECIES NAME | AUST | CONS | GF | GF 2 | AQU | WET | COMMON NAME/ ABORIGINAL NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 17244 | AUSMAC | Poaceae | Austrostipa macalpinei | WA | | G | | | | Speargrass |
| 17246 | AUSNIT | Poaceae | Austrostipa nitida | AUST | | G | | | | Speargras |
| 17253 | AUSSEM | Poaceae | Austrostipa semibarbata | AUST | | G | | | | Bearded Speargrass |
| 17254 | AUSTEN | Poaceae | Austrostipa tenuifolia | AUST | | G | | | | Rough Speargrass |
| 17257 | AUSVAR | Poaceae | Austrostipa variabilis | AUST | | G | | | | Variable Speargrass |
| 247 | BROARE | Poaceae | Bromus arenarius | >AUST | | G | | | | Native Sand Brome |
| 299 | DEYQUA | Poaceae | Deyeuxia quadriseta | AUST | | G | | | | Reed Bentgrass |
| 306 | DICCRI | Poaceae | Dichelachne crinita | >AUST | | G | | | | Plumegrass |
| 11451 | HEMUNCUNC | Poaceae | Hemarthria uncinata var. uncinata | AUST | | G | | AQD/AQE | | Hemarthria |
| 19954 | LACAEM | Poaceae | Lachnagrostis aemula | AUST | | G | | | | Blown Grass |
| 20019 | LACFIL | Poaceae | Lachnagrostis filiformis | >AUST | | G | | AQD | y | Blown Grass |
| 19956 | LACPRE | Poaceae | Lachnagrostis preissii | WA | | G | | AQD | | Preiss's Blowngrass |
| 11747 | MICSTISTI | Poaceae | Microlaena stipoides var. stipoides | >AUST | | G | | | | Weeping Grass |
| 492 | NEUALO | Poaceae | Neurachne alopecuroidea | AUST | | G | | | | Foxtail Mulga Grass |
| 518 | PASCLE | Poaceae | Paspalidium clementii | AUST | | G | | | | Paspalidium |
| # | PASVAG | Poaceae | Paspalum vaginatum (not considered a weed) | >AUST | | G | | AQD/AQE | | Saltwater Couch |
| 573 | POADRU | Poaceae | Poa drummondiana | AUST | | G | | | | Drummond's Poa |
| 16098 | POAPOIPOI | Poaceae | Poa poiformis var. poiformis | AUST | | G | | | | Coastal Tussock Poa |
| 578 | POAPOR | Poaceae | Poa porphyroclados | WA | | G | | | | Tussock Poa |
| 40425 | RYTCAE | Poaceae | Rytidosperma caespitosum | WA | | G | | | | Common Wallaby Grass |
| 40426 | RYTOCC | Poaceae | Rytidosperma occidentale | WA | | G | | | | Western Wallaby Grass |
| 40427 | RYTSET | Poaceae | Rytidosperma setaceum | WA | | G | | | | Smalll-flower Wallaby Grass |
| 624 | SPIHIR | Poaceae | Spinifex hirsutus | WA | | G | | | | Western Hairy Spinifex |
| 625 | SPILON | Poaceae | Spinifex longifolius | >AUST | | G | | | | Long-leaved Spinifex |
| 627 | SPIX A | Poaceae | Spinifex x alterniflorus | | | G | | | | Hybrid Spinifex |
| 635 | SPOVIR | Poaceae | Sporobolus virginicus | >AUST | | G | | AQD | y | Salt Couch |
| 4550 | COMCAL | Polygalaceae | Comesperma calymega | AUST | | SH-H | | | | Blue Comesperma |
| 4552 | COMCON | Polygalaceae | Comesperma confertum | WA | | SH-H | | | | Coastal Comesperma |
| 4555 | COMINT | Polygalaceae | Comesperma integerrimum | WA | | SH | CL | | | Vine Comesperma |
| 4564 | COMVIR | Polygalaceae | Comesperma virgatum | WA | | SH-H | | | | Pink Comesperma |
| 2412 | MUEADP | Polygonaceae | Muehlenbeckia adpressa | AUST | | SH | CL | | | Muehlenbeckia |
| 2415 | MUEPOL | Polygonaceae | Muehlenbeckia polybotrya | WA | | SH-H | PR | | | Pretty Muehlenbeckia |
| 13911 | PERDEC | Polygonaceae | Persicaria decipiens | >AUST | | H | | | | Common Persicaria |
| 11052 | PERPRO | Polygonaceae | Persicaria prostrata | AUST | | H | | | | Creeping Persicaria |
| 2845 | CALBRE | Portulacaceae | Calandrinia brevipedata | AUST | | H | | | | Short-stalked Purslane |
| 2848 | CALCOR | Portulacaceae | Calandrinia corrigioloides | AUST | | H | | | | Strap Purslane |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 2854 | CALGRA | Portulacaceae | Calandrinia granulifera | AUST | | H | | | | Pygmy Purslane | |
| 2856 | CALLIN | Portulacaceae | Calandrinia liniflora | WA | | H | | | | Parakeelya | |
| 118 | LEPAUS | Potamogetonaceae | Lepilaena australis | AUST | | H | | AQS | | Austral Water Mat | |
| 44492 | STUPEC | Potamogetonaceae | Stuckenia pectinata | >AUST | | H | | AQS | | Fennel Pondweed | |
| 6483 | SAMJUN | Primulaceae | Samolus junceus | WA | | H | | AQD/AQE | y | Reed Samolus | |
| 14107 | SAMREPPAU | Primulaceae | Samolus repens var. paucifolius (= S. bickfordianus) | WA | | H | | AQD/AQE | | Bickford's Samolus | |
| 11647 | SAMREPREP | Primulaceae | Samolus repens var. repens | >AUST | | H | | AQD/AQE | | Creeping Samolus | |
| 11837 | ADECYGCYG | Proteaceae | Adenanthos cygnorum subsp. cygnorum | WA | | SH | | | | Woollybush | |
| 1800 | BANATT | Proteaceae | Banksia attenuata | WA | | T | | | | Candle Banksia/ Piara | |
| 32580 | BANDALDAL | Proteaceae | Banksia dallanneyi var. dallanneyi | WA | | SH | PR | | | Couch Honeypot | |
| 1819 | BANGRA | Proteaceae | Banksia grandis | WA | | T | | | | Bull Banksia | |
| 1822 | BANILI | Proteaceae | Banksia ilicifolia | WA | | T | | | | Hollyleaf Banksia | |
| 1830 | BANLIT | Proteaceae | Banksia littoralis | WA | | T | | | y | Swamp Banksia/ Pungura | |
| 1834 | BANMEN | Proteaceae | Banksia menziesii | WA | | T | | | | Firewood Banksia | |
| 1842 | BANPRI | Proteaceae | Banksia prionotes | WA | | T | | | | Acorn Banksia | |
| 32077 | BANSESCYG | Proteaceae | Banksia sessilis var. cygnorum | WA | | SH | | | | Parrotbush | |
| 15516 | CONCANCAN | Proteaceae | Conospermum canaliculatum subsp. canaliculatum | WA | | SH | | | | Smokebush | |
| 15611 | CONSTOSTO | Proteaceae | Conospermum stoechadis subsp. stoechadis | WA | | SH | | | | Common Smokebush | |
| 1885 | CONTRI | Proteaceae | Conospermum triplinervium | WA | | SH | | | | Tree Smokebush | |
| 1982 | GRECRI | Proteaceae | Grevillea crithmifolia | WA | | SH | | | | Grevillea | |
| 2066 | GREPILOCC | Proteaceae | Grevillea pilulifera | | | | | | | Woolly-flowered Grevillea | |
| 15839 | GREPREPRE | Proteaceae | Grevillea preissii subsp. preissii | WA | | SH | | | | Limestone Spider-net Grevillea | |
| # | GRESP. | Proteaceae | Grevillea sp. (Oldfield 306A) | WA | | SH | | | | Grevillea | Grevillea |
| 12824 | GREVESVES | Proteaceae | Grevillea vestita subsp. vestita | WA | | SH | | | | Grevillea | |
| 2146 | HAKCOS | Proteaceae | Hakea costata | WA | | SH | | | | Ribbed Hakea | |
| 2175 | HAKLIS | Proteaceae | Hakea lissocarpha | WA | | SH | | | | Honeybush | |
| 2197 | HAKPRO | Proteaceae | Hakea prostrata | WA | | SH | | | | Harsh Hakea | |
| 2203 | HAKRUS | Proteaceae | Hakea ruscifolia | WA | | SH | | | | Candle Hakea | |
| 2214 | HAKTRI | Proteaceae | Hakea trifurcata | WA | | SH | | | | Two-leaf Hakea | |
| 2216 | HAKVAR | Proteaceae | Hakea varia | WA | | SH | | | y | Variable-leaved Hakea | |
| 2273 | PERSAC | Proteaceae | Persoonia saccata | WA | | SH | | | | Snottygobble | |
| 20368 | PETAXI | Proteaceae | Petrophile axillaris | WA | | SH | | | | Limestone Petrophile | |
| 2286 | PETBRE | Proteaceae | Petrophile brevifolia | WA | | SH | | | | Sandplain Petrophile | |
| 2299 | PETLIN | Proteaceae | Petrophile linearis | WA | | SH | | | | Pixie Mops | |
| 2301 | PETMAC | Proteaceae | Petrophile macrostachya | WA | | SH | | | | Petrophile | |
| 2312 | PETSTR | Proteaceae | Petrophile striata | WA | | SH | | | | Petrophile | |
| 2316 | STILAT | Proteaceae | Stirlingia latifolia | WA | | SH | | | | Blueboy | |
| 15532 | SYNSPISPI | Proteaceae | Synaphea spinulosa subsp. spinulosa | WA | | SH | | | | Synaphea | |

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|---|---|---|---|---|---|---|---|---|---|---|
| 25 | ADIAET | Pteridaceae | Adiantum aethiopicum | AUST | | H | | | | Common Maidenhair |
| 29 | ANOLEP | Pteridaceae | Anogramma leptophylla | >AUST | | H | | | | Annual Fern |
| 12818 | CHESIESIE | Pteridaceae | Cheilanthes sieberi subsp. sieberi | AUST | | H | | | | Mulga Fern |
| 10804 | CLELIN | Ranunculaceae | Clematis linearifolia | WA | | H-SH | CL | | | Old Man's Beard |
| 2929 | CLEPUB | Ranunculaceae | Clematis pubescens | WA | | H-SH | CL | | | Old Man's Beard |
| 2932 | RANCOL | Ranunculaceae | Ranunculus colonorum | WA | | H | | | | Buttercup |
| 11927 | RANSESSES | Ranunculaceae | Ranunculus sessiliflorus var. sessiliflorus | AUST | | H | | | | Small-flowered Buttercup |
| 1056 | ALENIT | Restionaceae | Alexgeorgea nitens | WA | | S-R | | | | Alexgeorgea |
| 17663 | DESASP | Restionaceae | Desmocladus asper | WA | | S-R | | | | Desmocladus |
| 17691 | DESFAS | Restionaceae | Desmocladus fasciculatus | WA | | S-R | | | | Desmocladus |
| 16595 | DESFLE | Restionaceae | Desmocladus flexuosus | WA | | S-R | | | | Desmocladus |
| 1070 | HYPEXS | Restionaceae | Hypolaena exsulca | WA | | S-R | | | | Common Hypolaena |
| 18074 | LEPPREPRE | Restionaceae | Lepidobolus preissianus subsp. preissianus | WA | | S-R | | | | Lepidobolus |
| 1090 | LEPMUI | Restionaceae | Lepyrodia muirii | WA | | S-R | | AQD/AQE | y | Muir's Lepyrodia |
| 1092 | LOXCIN | Restionaceae | Loxocarya cinerea | WA | | S-R | | AQD/AQE | | Loxocarya |
| 13470 | CRYARBARB | Rhamnaceae | Cryptandra arbutiflora var. arbutiflora | WA | | SH | | | | Cryptandra |
| 13484 | CRYARBTUB | Rhamnaceae | Cryptandra arbutiflora var. tubulosa | WA | | SH | | | | Cryptandra |
| 4802 | CRYMUT | Rhamnaceae | Cryptandra mutila | WA | | SH | | | | Cryptandra |
| 4809 | CRYPUN | Rhamnaceae | Cryptandra pungens | WA | | SH | | | | Cryptandra |
| 4810 | CRYSCO | Rhamnaceae | Cryptandra scoparia | WA | | SH | | | | Cryptandra |
| 4828 | SPYGLO | Rhamnaceae | Spyridium globulosum | AUST | | SH | | | | Basket Bush |
| 15066 | STENOTCHA | Rhamnaceae | Stenanthemum notiale subsp. chamelum | WA | | SH | PR | | | Stenanthemum |
| 11665 | TRYLEDLED | Rhamnaceae | Trymalium ledifolium var. ledifolium | WA | | SH | | | | Coastal Trymalium |
| 33418 | TRYODOODO | Rhamnaceae | Trymalium odoratissimum subsp. odoratissimum | WA | | SH/T | | | | River Trymalium |
| 7348 | OPEHIS | Rubiaceae | Opercularia hispidula | AUST | | SH-H | | | | Opercularia |
| 18255 | OPEVAG | Rubiaceae | Opercularia vaginata | WA | | SH-H | | | | Opercularia |
| 115 | RUPMEG | Ruppiaceae | Ruppia megacarpa | >AUST | | H | | AQS | | Ruppia |
| 4403 | BORALA | Rutaceae | Boronia alata | WA | | SH | | | | Winged Boronia |
| 29274 | BORCRECRE | Rutaceae | Boronia crenulata subsp. crenulata | WA | | SH | | | | Pink Boronia |
| 11381 | BORRAMANE | Rutaceae | Boronia ramosa subsp. anethifolia | WA | | SH-H | | | | Blue Boronia |
| 4453 | DIPANG | Rutaceae | Diplolaena angustifolia | WA | | SH | | | | Northern Diplolaena |
| 4454 | DIPDAM | Rutaceae | Diplolaena dampieri | WA | | SH | | | | Southern Diplolaena |
| 18529 | PHISPI | Rutaceae | Philotheca spicata | AUST | | SH | | | | Salt and Pepper |
| 80 | AZOFIL | Salviniaceae | Azolla filiculoides | AUST | | H | | AQF | | Pacific Azolla |
| 6 | SELGRA | Selaginellaceae | Selaginella gracillima | >AUST | | H | | AQD | y | Tiny Clubmoss |

| NAME | SPECIES | FAMILY | SPECIES NAME | AUST | CONS | GF | GF 2 | AQU | WET | COMMON NAME/ ABORIGINAL NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 10765 | EXOSPA | Santalaceae | Exocarpos sparteus | AUST | | SH | | | | Broom Ballart/ Djuk |
| 2344 | LEPEMP | Santalaceae | Leptomeria empetriformis | WA | | SH | | | | Currant Bush |
| 2350 | LEPPAU | Santalaceae | Leptomeria pauciflora | WA | | SH | | | | Currant Bush |
| 2352 | LEPPRE | Santalaceae | Leptomeria preissiana | WA | | SH | | | | Currant Bush |
| 2356 | SANACU | Santalaceae | Santalum acuminatum | AUST | | SH/T | | | | Quandong/ Warnga |
| 18541 | DIPHUEHUE | Sapindaceae | Diplopeltis huegelii subsp. huegelii | WA | | SH | | | | Coastal Diplopeltis |
| 4754 | DODAPT | Sapindaceae | Dodonaea aptera | WA | | SH | | | | Coast Hopbush |
| 4763 | DODHAC | Sapindaceae | Dodonaea hackettiana | WA | 4 | SH/T | | | | Hackett's Hopbush |
| 11247 | DODVISANG | Sapindaceae | Dodonaea viscosa subsp. angustissima | AUST | | SH/T | | | | Sticky Hopbush |
| 17175 | EREGLAALB | Scrophulariaceae | Eremophila glabra subsp. albicans | WA | | SH | | | | Eremophila |
| 7289 | MYOCAP | Scrophulariaceae | Myoporum caprarioides | WA | | SH | | | | Slender Myoporum |
| 7291 | MYOINS | Scrophulariaceae | Myoporum insulare | AUST | | SH | | | | Boobialla |
| 11725 | ANTILIILI | Solanaceae | Anthocercis ilicifolia subsp. ilicifolia | | | | | | | Yellow Tailflower |
| 6949 | ANTLIT | Solanaceae | Anthocercis littorea | WA | | SH | | | | Yellow Tailflower |
| 7034 | SOLSIM | Solanaceae | Solanum simile | | | | | | | Solanum |
| 7037 | SOLSYM | Solanaceae | Solanum symonii | AUST | | SH | | | | Symon's Solanum |
| 7676 | LEVPUS | Stylidiaceae | Levenhookia pusilla | AUST | | H | | | | Midget Stylewort |
| 7677 | LEVSTI | Stylidiaceae | Levenhookia stipitata | WA | | H | | | | Common Stylewort |
| 7679 | STYADP | Stylidiaceae | Stylidium adpressum | WA | | H | | | | Creeping Triggerplant |
| 30278 | STYAND | Stylidiaceae | Stylidium androsaceum | WA | | H | | | | Bookleaf Triggerplant |
| | | | Stylidium brunonianum | WA | | H | | | | Pink Fountain Triggerplant |
| 7694 | STYBUL | Stylidiaceae | Stylidium bulbiferum | WA | | H | | | | Circus Triggerplant |
| 7699 | STYCAR | Stylidiaceae | Stylidium carnosum | WA | | H | | | | Fleshy-leaved Triggerplant |
| 7710 | STYCYG | Stylidiaceae | Stylidium cygnorum | WA | | H | | | | Triggerplant |
| 7712 | STYDES | Stylidiaceae | Stylidium despectum | AUST | | H | | | | Dwarf Triggerplant |
| 7742 | STYINU | Stylidiaceae | Stylidium inundatum | AUST | | H | | AQD | y | Hundreds-and-thousands |
| 13127 | STYMAR | Stylidiaceae | Stylidium maritimum | WA | 3 | H | | | | Coastal Queen Triggerplant |
| 25829 | STYNEU | Stylidiaceae | Stylidium neurophyllum | WA | | H | | | | Pink Triggerplant |
| 7774 | STYPIL | Stylidiaceae | Stylidium piliferum | WA | | H | | | | Common Butterfly Triggerplant |
| 7785 | STYREP | Stylidiaceae | Stylidium repens | WA | | H | | | | Matted Triggerplant |
| 20521 | STYRIG | Stylidiaceae | Stylidium rigidulum | WA | | H | | | | Flagon Triggerplant |
| 7790 | STYROS | Stylidiaceae | Stylidium roseoalatum | WA | | H | | AQD | | Pink-wing Triggerplant |
| 7798 | STYSCH | Stylidiaceae | Stylidium schoenoides | WA | | H | | | | Cow-kicks |
| 5232 | PIMARG | Thymelaeaceae | Pimelea argentea | WA | | SH | | | | Silver-leaved Banjine/Banjin |
| 5237 | PIMCAL | Thymelaeaceae | Pimelea calcicola | WA | 3 | SH | | | | Limestone Banjine/Banjin |
| 11402 | PIMIMBPIL | Thymelaeaceae | Pimelea imbricata var. piligera | WA | | SH | | | y | Downy Banjine/Banjin |
| 5254 | PIMLEU | Thymelaeaceae | Pimelea leucantha | WA | | SH | | | | White Banjine/Banjin |
| 18117 | PIMROSROS | Thymelaeaceae | Pimelea rosea subsp. rosea | WA | | SH | | | | Rose Banjine/Banjin |

| NAME | SPECIES | FAMILY | SPECIES NAME | AUST | CONS | GF | GF 2 | AQU | WET | COMMON NAME/ ABORIGINAL NAME |
|---|---|---|---|---|---|---|---|---|---|---|
| 5268 | PIMSUL | Thymelaeaceae | Pimelea sulphurea | WA | | SH | | | | Yellow Banjine/Banjin |
| 98 | TYPDOM | Typhaceae | Typha domingensis | >AUST | | S-J | | AQE | | Native Bulrush/ Yanjidi |
| 99 | TYPORI | Typhaceae | Typha orientalis | | | S-J | | AQE | | Bulrush |
| 12670 | PARCAR | Urticaceae | Parietaria cardiostegia | AUST | | H | | | | Native Pellitory |
| 1762 | PARDEB | Urticaceae | Parietaria debilis | >AUST | | H | | | | Native Pellitory |
| 5216 | HYBCAL | Violaceae | Hybanthus calycinus | WA | | H-SH | | | | Native Violet |
| 14544 | XANBRUBRU | Xanthorrhoeaceae | Xanthorrhoea brunonis subsp. brunonis | WA | | SH | | | | Balga |
| 1256 | XANPRE | Xanthorrhoeaceae | Xanthorrhoea preissii | WA | | SH | | | | Balga/ Balga |
| 18119 | MACFRA | Zamiaceae | Macrozamia fraseri | WA | | SH-H | | | | Fraser's Zamia |
| 29603 | ZOSMUEMUC | Zosteraceae | Zostera muelleri subsp. mucronata | AUST | | H | | AQS | | Zostera |
| 4390 | ZYGFRU | Zygophyllaceae | Zygophyllum fruticulosum | WA | | SH | CL | | | Shrubby Twinleaf |

# 13 APPENDIX 2: *BUSH FOREVER* SITE DESCRIPTIONS

From *Bush Forever* Volume 2 Government of WA 2000), for the Maps see Volume 1. Sites are arranged in same landforms and bushland areas as Appendix 1a. Bold Park (BFS 312) is in the Spearwood Dune section in Bush Forever.

## QUINDALUP DUNES BUSHLAND AREAS

## BOLD PARK AND ADJACENT BUSHLAND, CITY BEACH

**Boundary Definition:** protected area/management/bushland boundary (Areas of bushland within the boundaries of the Site are not accurately mapped. The boundary has been drawn to include any unmapped bushland; Boundary adjusted from that in draft *Perth's Bushplan*.)

### *SECTION 1: LOCATION INFORMATION*

**Bush Forever Site no.** 312
**Area (ha):** bushland 361.7 (Site also includes open water.)
**Map no.** 45, 46
**Map sheet series ref. no.** 2034–II SW
**Other Names:** not known
**Local Authorities (Suburb):** Town of Cambridge (City Beach, Floreat), City of Nedlands (Mt Claremont)
**System 6 (1983):** M47 part System area bushland and part scattered native plants (canopy), all vegetation described

### *SECTION 2: REGIONAL INFORMATION*

**LANDFORMS AND SOILS**
**Spearwood Dunes**
Sands derived from Tamala Limestone (Qts: S7)
Tamala Limestone (Qtl: LS1)
**Quindalup Dunes** (Holocene dunes)
Safety Bay Sands (Qhs: S2)
**Wetlands (within the Quindalup/Spearwood Dunes)**
Holocene Swamp Deposits (Qhw**:** Cps)

**VEGETATION AND FLORA**
**Vegetation Complexes**
**Spearwood Dunes** (near the interface with the Quindalup Complex)
Karrakatta Complex — Central and South
Cottesloe Complex — Central and South
**Floristic Community Types**
**Supergroup 2: Seasonal Wetlands**
S7 Northern woodlands to forests over tall sedgelands alongside permanent wetlands
**Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes**
24 Northern Spearwood shrublands and woodlands
25 Southern *Eucalyptus gomphocephala — Agonis flexuosa* woodlands
27 Species-poor mallees and shrublands on limestone
29b *Acacia* shrublands on taller dunes
30a2 Woodlands and shrublands on Holocene dunes
S11 Northern *Acacia rostellifera — Melaleuca acerosa* shrublands

**WETLANDS**
**Wetland Types:** lake, sumpland
**Natural Wetland Groups**
**Spearwood Dunes**
Balcatta (S.2)
**Wetland Management Objectives:** Conservation (12ha)
**Swan Coastal Plain Lakes EPP:** 18.2ha

**THREATENED ECOLOGICAL COMMUNITIES**
Not assessed, Not determined

### *SECTION 3: SPECIFIC SITE DETAIL*

**Landscape Features:** coastal dunes, inland dunes, limestone ridge, open water, vegetated wetlands
**Vegetation and Flora:** limited survey (ECOS Consulting Pty Ltd 1999, part Site — Clarke and Keighery 2000e, Dames and Moore 1986, Gibson *et al*. 1994 (plots Bold 01–04), Griffin 1993, Griffin 1994 (plots SW 01–11), Keighery, GJ, 1996 D (plots M46 01–02)); detailed survey (part Site — Keighery, GJ, *et al*. 1990, Keighery, GJ, and Keighery 1993c, Kinhill Engineers Pty Ltd 1987, Mitchell McCotter and Ecoscape 1993)

**Wild Perth: Perth's Bushland**

**Structural Units:** mapping (ECOS Consulting Pty Ltd 1999, Keighery, GJ, *et al*. 1990, Mitchell McCotter and Ecoscape 1993, Kinhill Engineers Pty Ltd 1987)
Spearwood Dunes
Uplands — Sands derived from Tamala Limestone: *Eucalyptus gomphocephala* Open Forest to Woodland; *Banksia attenuata* and *B. menziesii* Low Woodland; *Eucalyptus decipiens* Low Woodland; *Eucalyptus gomphocephala* and *E. marginata* Woodland; *Eucalyptus marginata* and *E. calophylla* Woodland; Closed Low Heaths and Closed to Open Heaths dominated by *Acacia truncata*, *Melaleuca systena*, *Calothamnus quadrifidus*, *Allocasuarina humilis* and combinations of these
Uplands — Tamala Limestone: Closed Low Heaths, Closed to Open Heaths and Tall Scrub dominated by *Acacia truncata*, *Melaleuca systena, Calothamnus quadrifidus*, *Dryandra sessilis* var. *cygnorum*, *Grevillea crithmifolia*, *Acacia lasiocarpa*, *A. xanthina* and combinations of these; *Eucalyptus foecunda* Closed Shrub Mallee
Wetlands: *Eucalyptus rudis* Woodland; *Bolboschoenus caldwellii* Sedgelands; Mixed Herblands (on dry lake bed)
Quindalup Dunes
Uplands — Safety Bay Sands: Oldest dunes — Open Heaths dominated by *Melaleuca systena*, *Acacia rostellifera, Chamelaucium uncinatum*, *Calothamnus quadrifidus*, *Olearia axillaris*, *Acacia xanthina* and combinations of these over Herblands dominated by *Lomandra* sp.; *Agonis flexuosa* Low Closed Forest

**Scattered Native Plants:** *Eucalyptus gomphocephala* Woodland; *Eucalyptus marginata* and *E. calophylla* Woodland — regionally significant vegetation recognised as being in the area of Site in need of protection

**Vegetation Condition:** >60% Very Good to Excellent, <40% Good to Degraded

**Total Flora:** 268 native taxa, 134 weed taxa (compilation by Gibson *et al*. 1994 D, Keighery, GJ, *et al*. 1990, Keighery, GJ, and Keighery 1993c, Mitchell McCotter and Ecoscape, 1993) (estimated 90% expected flora)

**Significant Flora:** *Beyeria cygnorum* (2), *Jacksonia sericea* (3), *Hibbertia spicata* subsp. *leptotheca* (3), *Stylidium maritimum* (3); Keighery, GJ, *et al*. 1990 — most southern populations of *Chamelaucium uncinatum*, *Melaleuca cardiophylla*, *Allocasuarina lehmanniana, Gyrostemon ramulosus* (uncommon on the
Plain, poorly reserved), most northern population of *Agonis flexuosa*; *Fimbristylis vittata* (uncommon on the Plain, a species of the dry lake bed community); typical Tamala Limestone taxa — *Astroloma microcalyx*, *Grevillea crithmifolia*, *Grevillea preissii*, *Beyeria cygnorum*, *Melaleuca cardiophylla*, *Trymalium ledifolium* var. *ledifolium, Diplopeltis huegelii* var. *huegelii*, *Stylidium junceum* (limestone variant), *Pimelea calcicola*

**Fauna:** structured surveys for birds (106 species), native mammals (1 species), reptiles (33 species) and amphibians (3 species) (How and Dell 1990, How *et al*. 1996). Significant populations of Blue-billed Duck, Musk Duck, Hardhead, Splendid and Variegated Fairy-wrens and a large assemblage of honeyeaters. Significant bird species: category 1 (1), category 2 (6), category 3 (13) and category 4 (8). Many burrowing and fossorial reptiles including five species of snake

**Linkage:** adjacent bushland to the south (Site 315, part across road); part of Greenways 18, 19, 20 (Tingay, Alan & Associates 1998a); part of a regionally significant fragmented bushland/wetland linkage (Part A, Map 7)

**Other Special Attributes:** Quindalup/Spearwood Dune System interface, significant fauna habitat, rich in reptiles and birds; National Trust of Australia (WA) Classification

### *SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE*

Indicative place (AHC 2000 D); Location for JAMBA/CAMBA species; subject to protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

### *SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS*

**Criteria:** Representation of ecological communities, Diversity, Rarity, Maintaining ecological processes or natural systems, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values

**Recommendation:** Site with Some Existing Protection; the existing purpose, care, control and management of this Site is endorsed (see Table 3, Volume 1).

## FLOREAT BEACH BUSHLAND, CITY BEACH/SCARBOROUGH

**Boundary Definition:** protected area/bushland taken to cadastre boundary (Areas of bushland within the boundaries of the Site are not accurately mapped. The boundary has been drawn to include any unmapped bushland.)

### *SECTION 1: LOCATION INFORMATION*

**Bush Forever Site no.** 310 **Area (ha):** bushland 51.7
**Map no.** 39, 45 **Map sheet series ref. no.** 2034–II SW
**Other Names:** not known
**Local Authorities (Suburb):** Town of Cambridge (City Beach), City of Stirling (Scarborough)

## *SECTION 2: REGIONAL INFORMATION*

**LANDFORMS AND SOILS**
**Spearwood Dunes**
Tamala Limestone (Qtl: LS1)
**Quindalup Dunes** (Holocene dunes)
Safety Bay Sands (Qhs: S1, S2)

**VEGETATION AND FLORA**
**Vegetation Complexes**
**Spearwood Dunes**
Cottesloe Complex — Central and South
**Quindalup Dunes**
Quindalup Complex
**Floristic Community Types:** *not sampled, types inferred
*29b *Acacia* shrublands on taller dunes
*S13 Northern *Olearia axillaris — Scaevola crassifolia* shrublands
*S14 *Spinifex longifolius* grassland and low shrubland

**WETLANDS**
No wetlands mapped

**THREATENED ECOLOGICAL COMMUNITIES**
Not assessed, Not determined

## *SECTION 3: SPECIFIC SITE DETAIL*

**Landscape Features:** vegetated uplands
**Vegetation and Flora:** limited survey (Connell 1995)
**Structural Units**
Quindalup Dunes
Youngest dunes: Open Low Heaths dominated by *Scaevola crassifolia*, *Olearia axillaris*, *Acacia rostellifera*, *A. lasiocarpa* and combinations of these
Strand: *Spinifex longifolius* Grassland
**Scattered Native Plants:** not assessed
**Vegetation Condition:** Very Good (Connell 1995)
**Total Flora:** not known
**Significant Flora:** none recorded
**Fauna:** not known
**Linkage:** adjacent bushland to the south; part of Greenway 1 (Tingay, Alan & Associates 1998a); part of a regionally significant fragmented bushland/wetland linkage (Part A, Map 7)
**Other Special Attributes**
Site constrained in meeting the specific coastal reserve criteria; four met to a limited extent —
(i) Quindalup Dune types: younger dunes
(ii) Continuing natural processes: 107.7ha (49.3ha bushland) of Quindalup Dunes extending to 1km (0.9km bushland) inland, dunes mostly truncated
(iii) Shoreline: soft (sandy)
(iv) Linkage: part of semi-contiguous North—South vegetated coastal strip

## *SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE*

Not listed

## *SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS*

**Criteria:** Representation of ecological communities, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values
**Recommendation:** Part A: Site with Some Existing Protection; the existing care, control and management intent of the reserve is endorsed. The purpose of the reserve should be amended to include conservation and appropriate mechanisms applied in consultation with the management body. Part B: Local Reserve Mechanism (see Table 3, Volume 1).

# SWANBOURNE BUSHLAND, SWANBOURNE/CITY BEACH

**Boundary Definition:** protected area/bushland boundary

## *SECTION 1: LOCATION INFORMATION*

**Bush Forever Site no.** 315
**Area (ha):** bushland 174.9
**Map no.** 45
**Map sheet series ref. no.** 2034–II SW

**Wild Perth: Perth's Bushland**
**Other Names:** not known
**Local Authorities (Suburb):** City of Nedlands (Swanbourne, Mt Claremont), Town of Cambridge (City Beach, Mt Claremont)
**System 6 (1983):** M46 area of bushland goes beyond System area boundaries, all bushland described

## *SECTION 2: REGIONAL INFORMATION*

**LANDFORMS AND SOILS**
**Spearwood Dunes**
Tamala Limestone (Qtl: LS1)
**Quindalup Dunes** (Holocene dunes)
Safety Bay Sands (Qhs: S1, S2)

**VEGETATION AND FLORA**
**Vegetation Complexes**
**Spearwood Dunes**
Karrakatta Complex — Central and South
Cottesloe Complex — Central and South
**Quindalup Dunes**
Quindalup Complex
**Floristic Community Types**
**Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes**
29b *Acacia* shrublands on taller dunes
S11 Northern *Acacia rostellifera — Melaleuca systena* shrublands
S13 Northern *Olearia axillaris — Scaevola crassifolia* shrublands
S14 *Spinifex longifolius* grassland and low shrubland

**WETLANDS**
No wetlands mapped

**THREATENED ECOLOGICAL COMMUNITIES**
Not assessed, Not determined

## *SECTION 3: SPECIFIC SITE DETAIL*

**Landscape Features:** coastal dunes
**Vegetation and Flora:** detailed survey (part Site — Keighery, GJ, and Keighery 1993; Mitchell McCotter and Ecoscape 1993); limited survey (DEP 1999, Dames and Moore 1986, Griffin and Trudgen 1994 (SW 01–11), Keighery, GJ, 1996 D (M46 01–02))
**Structural Units:** mapping (part Site — Mitchell McCotter and Ecoscape 1993)
Spearwood Dunes
Uplands — Sands derived from Tamala Limestone and Tamala Limestone: limited in area and vegetation; reflects Quindalup Dunes floristic influence
Quindalup Dunes
Uplands — Oldest dunes and plains (limited area): *Eucalyptus gomphocephala* Woodland; *Callitris preissii* Low Closed Forest to Low Woodland; *Agonis flexuosa* Low Woodland; Open Low Heaths dominated by *Melaleuca systena*, *Acacia rostellifera*, *A. lasiocarpa*, *Calothamnus quadrifidus* over Herblands dominated by *Lomandra maritima*; *Allocasuarina lehmanniana* subsp. *lehmanniana* Closed Tall Scrub; *Acacia rostellifera* Closed Tall Scrub
Uplands — Youngest dunes: Open Low Heaths to Closed Tall Scrub dominated by *Myoporum insulare*, *Scaevola crassifolia*, *Acacia rostellifera*, *Olearia axillaris*
Uplands — Strand: *Spinifex hirsutus* Grassland
**Vegetation Condition:** >75% Very Good to Good, <25% Good to Degraded
**Total Flora:** 117 native taxa, 58 weed taxa (Keighery, GJ, and Keighery, 1993c) (estimated >75% expected flora)
**Significant Flora:** *Lechenaultia linarioides*, *Allocasuarina lehmanniana* (most southern significant population), *Chamelaucium uncinatum* (with Bold Park most southern population), *Callitris preissii*, *Agonis flexuosa* (with Bold Park most northern population)
**Fauna:** structured survey for birds (57 species), native mammals (1 species) and reptiles (19 species) (How *et al.* 1996). Significant populations of insectivorous passerine birds including Splendid, Variegated and White-winged Fairy-wrens and White-browed Scrubwren. Significant bird species: category 1 (1), category 3 (8) and category 4 (5). Significant reptile species: Bardick (*Echiopsis curtus*)
**Linkage:** adjacent bushland to the north (Site 312, across road); part of Greenways 1, 18, 20 (Tingay, Alan & Associates 1998a); part of a regionally significant fragmented bushland/wetland linkage (Part A, Map 7)
**Other Special Attributes**
Meets all six specific coastal reserve criteria —

(i) Quindalup Dune types: 'moderate to tall, moderate aged dunes perched on gently undulating Spearwood (Tamala) Limestone surface, with little plain between them; moderate sized coastal Q4 (youngest) dunes' (Griffin and Trudgen 1994)
(ii) Continuing natural processes: 220.3ha (174.8ha bushland) of Quindalup Dunes extending to 1.6km inland
(iii) Shoreline: soft (sandy)
(iv) Linkage: adjacent to area containing Quindalup/Spearwood Dunes interface; part of semi-contiguous North—South vegetated coastal strip
(v) Vegetation: four regional floristic groups, diversity of structural groups
(vi) Habitats: see Fauna section above

### *SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE*

Not listed

### *SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS*

**Criteria:** Representation of ecological communities, Rarity, Maintaining ecological processes or natural systems, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation
**Recommendation:** Part A: Site with Some Existing Protection; the existing care, control and management intent of the reserve is endorsed. The purpose of the reserve should be amended to include conservation and appropriate mechanisms applied in consultation with the management body. Part B: Local Reserve Mechanism. Part C: Other Government Land Mechanism (see Table 3, Volume 1).

## SPEARWOOD DUNES BUSHLAND AREAS

# KINGS PARK

**Boundary Definition:** protected area boundary (Areas of bushland within the boundaries of the Site are not accurately mapped.)

### *SECTION 1: LOCATION INFORMATION*

**Bush Forever Site no.** 317 **Area (ha):** bushland 320.8
**Map no.** 46, 47 **Map sheet series ref. no.** 2034–II SW
**Other Names:** not known
**Local Authorities (Suburb):** City of Perth (West Perth)
**System 6 (1983):** M49 part System area bushland and part scattered native plants (canopy), all vegetation described

### *SECTION 2: REGIONAL INFORMATION*

**LANDFORMS AND SOILS**
**Pinjarra Plain**
Guildford Formation (Qha: S14) (not naturally vegetated)
**Spearwood Dunes**
Sands derived from Tamala Limestone (Qts: S7)
Tamala Limestone (Qtl: LS1)
**VEGETATION AND FLORA**
**Vegetation Complexes**
**Spearwood Dunes**
Karrakatta Complex — Central and South
**Marine (Lagoonal and Estuarine) Deposits**
Vasse Complex (not vegetated)
**Floristic Community Types:** *not sampled, type inferred
**Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes**
*27 Species-poor mallees and shrublands on limestone (scarp)
28 Spearwood *Banksia attenuata* or *B. attenuata—Eucalyptus* woodlands
**WETLANDS**
**Wetland Types:** artificial lake
**Swan Coastal Plain Lakes EPP:** none identified
**THREATENED ECOLOGICAL COMMUNITIES**
Not assessed

### *SECTION 3: SPECIFIC SITE DETAIL*

**Landscape Features:** river — limestone cliff, vegetated uplands

**Wild Perth: Perth's Bushland**
**Vegetation and Flora:** limited survey (Anon. 1993, Beard 1967, Kings Park and Botanic Garden 1995, part Site — Gibson *et al*. 1994 (King 01–02), Main and Serventy 1957, Mattiske EM & Associates 1987); detailed survey (part Site — Baird 1977, Bennett 1988, 1995)

**Structural Units:** mapping (Anon. 1993, Bennett 1988, Mattiske EM and Associates 1987)
Uplands — Sands derived from Tamala Limestone: *Eucalyptus marginata* Open Forest to Woodland with *Banksia menziesii* and *Xanthorrhoea preissii*; *Eucalyptus gomphocephala*, *E. marginata, E. calophylla* Woodland with *Banksia grandis* and *Hibbertia hypericoides*; *Eucalyptus marginata*, *Banksia ilicifolia* Open Forest to Woodland with *Xanthorrhoea preissii*, *Mesomelaena pseudostygia*; *Eucalyptus gomphocephala* Open Woodland; all of these structural units have eucalypts with *Allocasuarina fraseriana*, *Banksia attenuata* and at least one other *Banksia* species
Uplands — Tamala Limestone: *Melaleuca huegelii* Mixed Closed Heath with *Grevillea preissii* and *Templetonia retusa*
**Scattered Native Plants:** *Eucalyptus gomphocephala*, *E. calophylla*, *E. marginata* Open Forest to Woodland; 10 — 20% of Park
**Vegetation Condition:** >15% Excellent, <85% Very Good to Good, with small areas of severe localised disturbance
**Total Flora:** 293 native taxa, 172 weed taxa (estimated >95% expected flora) (Bennett 1995)
**Significant Flora:** *Acacia benthamii* (2), *Lasiopetalum membranaceum* (2), *Jacksonia sericea* (3), *Dodonaea hackettiana* (4); *Callitris preissii*, *Conospermum triplinervium*, *Gnephosis angianthoides* (= *Calocephalus angianthoides*, not recently recorded, probably associated with sandy flats beside the river, see Site 368), *Acacia alata* var. *tetrantha*, *Trachymene coerulea*, *Astroloma macrocalyx*, *Ricinocarpos glaucus*, *Lechenaultia linarioides*, *Grevillea preissii*, *Trymalium ledifolium* var. *ledifolium*, *Glischrocaryon aureum*; rare or uncommon on coastal plain in PMR — *Pterostylis picta* (only occurrence in PMR), *Caladenia attingens* subsp. *attingens*, *Amyema miquelii* (uncommon on the Plain), *Cartonema philydroides* and the fern *Anogramma leptophylla*; typical Tamala Limestone taxa — *Melaleuca huegelii*, *Grevillea preissii*, *Trymalium ledifolium* var. *ledifolium*, *Caladenia longicauda* subsp. *calcigena* ms, *Petrophile serruriae* subsp. nov. (GJK 11421)

**Fauna:** structured surveys for birds (61 species) (Western Australian Museum 1996 D and others (e.g. Recher and Serventy 1991)), native mammals (1 species) (How *et al*. 1993), and reptiles (25 species) and amphibians (4 species) (How and Dell 1994). Significant birds: Carnaby's Cockatoo, Weebill, Broad-tailed, Western and Yellow-rumped Thornbills and Australian Sittella. Good assemblage of nectar feeders. Significant bird species: category 1 (1), category 3 (8) and category 4 (8). Significant reptile species: a skink (*Cyclodomorphus celatus*). Important research and teaching site for assessment of faunal changes
**Linkage:** no adjacent bushland; part of Greenways 19, 24 (Tingay, Alan & Associates 1998a); part of a regionally significant potential bushland/wetland linkage (Part A, Map 7)

### *SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE*
Subject to protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

### *SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS*
**Criteria:** Representation of ecological communities, Rarity, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values
**Recommendation:** Site with Some Existing Protection; the existing care, control and management intent of the reserve is endorsed. The purpose of the reserve should be amended to include conservation and appropriate mechanisms applied in consultation with the management body (see Table 3, Volume 1).

## SHENTON BUSHLAND, SHENTON PARK
**Boundary Definition:** protected area boundary

### *SECTION 1: LOCATION INFORMATION*
**Bush Forever Site no.** 218 **Area (ha):** bushland 19.7
**Map no.** 46 **Map sheet series ref. no.** 2034–II SW
**Other Names:** not known
**Local Authorities (Suburb):** City of Nedlands (Karrakatta)

### *SECTION 2: REGIONAL INFORMATION*
**LANDFORMS AND SOILS**
**Spearwood Dunes**
Sands derived from Tamala Limestone (Qts: S7)
**VEGETATION AND FLORA**
**Vegetation Complexes**

**Spearwood Dunes**
Karrakatta Complex — Central and South
**Floristic Community Types**
**Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes**
28 Spearwood *Banksia attenuata* or *B. attenuata — Eucalyptus* woodlands
**WETLANDS**
No wetlands mapped
**THREATENED ECOLOGICAL COMMUNITIES**
Not assessed

### *SECTION 3: SPECIFIC SITE DETAIL*

**Landscape Features:** vegetated uplands
**Vegetation and Flora:** limited survey (DEP 1999, Gibson *et al*. 1994 (Shent 01)); detailed survey (Ecoscape 1994a)
**Structural Units**
Uplands: *Eucalyptus marginata* Woodland over *Banksia attenuata*, *B. menziesii* and *Allocasuarina fraseriana* Low Woodland; *Banksia attenuata*, *B. menziesii* and *Allocasuarina fraseriana* Low Woodland with scattered emergent *Eucalyptus marginata* and with occasional emergent *E. gomphocephala*
**Scattered Native Plants:** from above communities — regionally significant vegetation recognised as being in the area of Site in need of protection
**Vegetation Condition:** >50% Very Good to Excellent, <50% Good to Degraded, with areas of severe localised disturbance
**Total Flora:** 109 native taxa, 40 weed taxa (estimated >90% expected flora, Wildflower Society and CALM in Ecoscape 1994a)
**Significant Flora:** *Jacksonia sericea* (3)
**Fauna:** structured survey for birds (43 species), reptiles (17 species) and amphibians (3 species) (O. Berry and P. Berry pers. comm.). Significant bird species: category 1 (1), category 3 (3) and category 4 (3). Rich reptile assemblage for the size of reserve. Significant reptile species: Gould's Goanna (*Varanus gouldii*)
**Linkage:** adjacent bushland/canopy to the north, south, east and west; part of a regionally significant potential bushland/wetland linkage (Part A, Map 7)
**Other Special Attributes:** National Trust of Australia (WA) Classification

### *SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE*

Subject to protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

### *SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS*

**Criteria:** Representation of ecological communities, Rarity, Maintaining ecological processes or natural systems, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values
**Recommendation:** Site with Some Existing Protection; the existing care, control and management intent of the reserve is endorsed. The purpose of the reserve should be amended to include conservation and appropriate mechanisms applied in consultation with the management body (see Table 3, Volume 1).

## UNDERWOOD AVENUE BUSHLAND, SHENTON PARK

**Boundary Definition:** bushland (part taken to cadastre) boundary (Boundary proposed to be adjusted after vegetation survey and negotiations with land owner(s) in response to a submission to draft *Perth's Bushplan*.)

### *SECTION 1: LOCATION INFORMATION*

**Bush Forever Site no.** 119
**Area (ha):** bushland 31.5 (Proposed boundary circumscribes 8.2ha bushland.)
**Map no.** 46 **Map sheet series ref. no.** 2034–II SW
**Other Names:** not known
**Local Authorities (Suburb):** City of Nedlands (Shenton Park)

### *SECTION 2: REGIONAL INFORMATION*

**LANDFORMS AND SOILS**
**Spearwood Dunes**
Sands derived from Tamala Limestone (Qts: S7)
**VEGETATION AND FLORA**
**Vegetation Complexes**
**Spearwood Dunes**
Karrakatta Complex — Central and South
**Floristic Community Types:** *not sampled, type inferred

**Wild Perth: Perth's Bushland**

**Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes**

*28 Spearwood *Banksia attenuata* or *B. attenuata — Eucalyptus* woodlands

**WETLANDS**

No wetlands mapped

**THREATENED ECOLOGICAL COMMUNITIES**

Not assessed

### *SECTION 3: SPECIFIC SITE DETAIL*

**Landscape Features:** tall dune, vegetated uplands

**Vegetation and Flora:** limited survey (DEP 1999, Tingay, Alan & Associates 1999)

**Structural Units**

Uplands: Woodland dominated by *Eucalyptus marginata* or *E. gomphocephala* over *Banksia attenuata*, *B. menziesii* and *Allocasuarina fraseriana* Low Woodland; Woodland dominated by *Eucalyptus marginata* or *E. calophylla* over *Banksia prionotes* Low Woodland; *Banksia attenuata*, *B. menziesii* and *Allocasuarina fraseriana* Low Woodland generally with scattered emergent *Eucalyptus marginata* or *E. gomphocephala* or, rarely, *Eucalyptus calophylla*

**Vegetation Condition:** >50% Very Good, <50% Good to Degraded, with areas of severe localised disturbance

**Significant Flora:** *Jacksonia sericea* (3) (Tingay, Alan & Associates 1999)

**Fauna:** structured survey for birds (37 species), reptiles (16 species) and amphibians (3 species) (P. Berry pers. comm.). Significant bird species: category 1 (1), category 3 (3) and category 4 (3)

**Linkage:** adjacent bushland/canopy to the south; part of Greenway 19 (Tingay, Alan & Associates 1998a); part of a regionally significant potential bushland/wetland linkage (Part A, Map 7)

### *SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE*

Not listed

### *SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS*

**Criteria:** Representation of ecological communities

**Recommendation:** Urban Negotiated Planning Solution (see Table 3, Volume 1).

# WETLAND AREAS

## HERDSMAN LAKE

**Boundary Definition:** protected area/conservation wetland boundary

### *SECTION 1: LOCATION INFORMATION*

**Bush Forever Site no.** 281

**Area (ha):** bushland 22.6 (Site also includes open water.)

**Map no.** 40, 46

**Map sheet series ref. no.** 2034–II SW

**Other Names:** part of Herdsman Regional Park

**Local Authorities (Suburb):** City of Stirling (Herdsman, Churchlands, Glendalough)

**Includes CALM Managed Land:** Reserve 31906 (Environmental Education and Conservation of Flora and Fauna)

**System 6 (1983):** M43 part System area bushland, only bushland described

### *SECTION 2: REGIONAL INFORMATION*

**LANDFORMS AND SOILS**

**Spearwood Dunes**

Sands derived from Tamala Limestone (Qts: S7)

**Wetlands (within the Spearwood Dunes)**

Holocene Swamp Deposits (Qhw: Cps)

**VEGETATION AND FLORA**

**Vegetation Complexes**

**Wetlands**

Herdsman Complex

**Floristic Community Types:** not sampled, insufficient vegetation

**WETLANDS**

**Wetland Types:** lake, artificial channel

**Natural Wetland Groups**

**Spearwood Dunes**

Balcatta (S.2)

**Wetland Management Objectives:** Conservation (307.5ha)

**Swan Coastal Plain Lakes EPP:** 252.3ha

**THREATENED ECOLOGICAL COMMUNITIES**
Not determined

### *SECTION 3: SPECIFIC SITE DETAIL*

**Landscape Features:** open water, vegetated wetland
**Vegetation and Flora**
**Structural Units:** mapping (EPA and WAWA 1990)
Wetlands: *Eucalyptus rudis* Woodland; *Melaleuca* sp. Low Woodland; *Melaleuca rhaphiophylla* Low Open Forest, *Baumea articulata* Sedgeland
**Scattered Native Plants:** *Eucalyptus rudis* Woodland and *Melaleuca* sp. Low Woodland — regionally significant vegetation recognised as being in the area of Site in need of protection
**Vegetation Condition:** <10% Good, >90% Degraded to Completely Degraded
**Total Flora:** not known
**Significant Flora:** none recorded
**Fauna:** multiple survey for birds (107 species) (RAOU 1996 D, 51 visits), limited survey for reptiles (7 species) (J. Dell pers. comm.). Good assemblage of ducks and other waterfowl including Hardhead, Australasian Shoveler, Blue-billed, Pink-eared and Musk Ducks, and Dusky Moorhen. Important feeding site for birds of prey, including Swamp Harrier, and aerial insectivores, including Tree Martin and Welcome Swallow (J. Dell pers. comm.). Significant bird species: category 1 (2), category 2 (6), category 3 (9), and category 4 (4). Significant reptile species: Mourning Skink (*Egernia luctuosa*). Important research and teaching site
**Linkage:** no adjacent bushland; part of Greenways 23, 30 (Tingay, Alan & Associates 1998a); part of a regionally significant potential bushland/wetland linkage (Part A, Map 7)
**Other Special Attributes:** to become the 'Herdsman Lake Regional Park' (State Government Cabinet Minute 5 May 1997)

### *SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE*

Directory of Important Wetlands in Australia; Entered in the Register of the National Estate; Location for JAMBA/CAMBA species; subject to protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

### *SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS*

**Criteria:** Rarity, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values
**Recommendation:** Site with Some Existing Protection; The care, control and management of this area for conservation purposes within Herdsman Lake Regional Park is endorsed (see Table 3, Volume 1).

## LAKE CLAREMONT, CLAREMONT/SWANBOURNE

**Boundary Definition:** protected area boundary (native vegetation after EPA and WAWA 1990; Lantzke *et al*. 1989)

### *SECTION 1: LOCATION INFORMATION*

**Bush Forever Site no.** 220
**Area (ha):** bushland 0 (Site also includes open water; note comment under Boundary Definition.)
**Map no.** 45, 46
**Map sheet series ref. no.** 2034–II SW
**Other Names:** Butlers Swamp
**Local Authorities (Suburb):** Town of Claremont (Claremont, Swanbourne)
**System 6 (1983):** M48 part System area bushland and part scattered native plants (canopy), all vegetation described

### *SECTION 2: REGIONAL INFORMATION*

**LANDFORMS AND SOILS**
**Spearwood Dunes**
Sands derived from Tamala Limestone (Qts: S7)
Tamala Limestone (Qtl: LS1)
**Quindalup Dunes** (Holocene Dunes)
Safety Bay Sands (Qhs: S2)
**Wetlands (within the Spearwood Dunes)**
Holocene Swamp Deposits (Qhw: Cps)
**VEGETATION AND FLORA**
**Vegetation Complexes**
**Spearwood Dunes**
Karrakatta Complex — Central and South

**Wild Perth: Perth's Bushland**
**Floristic Community Types:** not sampled, insufficient vegetation
**WETLANDS**
**Wetland Types:** sumpland
**Natural Wetland Groups**
**Spearwood Dunes**
Balcatta (S.2)
**Wetland Management Objectives:** Conservation (16.3ha)
**Swan Coastal Plain Lakes EPP:** 15.8ha
**THREATENED ECOLOGICAL COMMUNITIES**
Not determined

### *SECTION 3: SPECIFIC SITE DETAIL*
**Landscape Features:** open water, vegetated wetland
**Vegetation and Flora:** limited survey (EPA and WAWA 1990)
**Structural Units:** mapping (EPA and WAWA 1990, Lantzke *et al*. 1989)
Wetlands: *Melaleuca rhaphiophylla* Low Closed Forest
**Scattered Native Plants:** *Eucalyptus gomphocephala* Open Woodland to Open Forest; *Eucalyptus gomphocephala* and *Agonis flexuosa* Open Woodland — regionally significant vegetation recognised as being included in the area of Site in need of protection
**Vegetation Condition:** >25% Good, <75% Degraded to Completely Degraded (Lantzke *et al*. 1989)
**Total Flora:** not known
**Significant Flora:** none recorded
**Fauna:** multiple surveys for birds (57 species) (Lantzke *et al*. 1989; RAOU 1996 D, 6 visits). Good assemblage of ducks including Hardhead, Australasian Shoveler, Blue-billed, Pink-eared and Musk and several JAMBA/CAMBA species. Significant bird species: category 1 (1), category 2 (4) category 3 (6) and category 4 (2)
**Linkage:** no adjacent bushland

### *SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE*
Location for JAMBA/CAMBA species; subject to protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

### *SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS*
**Criteria:** Rarity, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values
**Recommendation:** Site with Some Existing Protection; the existing care, control and management intent of the reserve is endorsed. The purpose of the reserve should be amended to include conservation and appropriate mechanisms applied in consultation with the management body (see Table 3, Volume 1).

## ESTUARINE MARGINS

# CHIDLEY POINT AND ADJACENT BUSHLAND, MOSMAN PARK

**Boundary Definition:** protected area/bushland taken to cadastre boundary (Areas of bushland/native vegetation within the boundaries of the Site are not accurately mapped; Boundary adjusted from that in draft *Perth's Bushplan*.)

### *SECTION 1: LOCATION INFORMATION*
**Bush Forever Site no.** 334 **Area (ha):** bushland 3.2
**Map no.** 51, 52 **Map sheet series ref. no.** 2033–I NW
**Other Names:** not known
**Local Authorities (Suburb):** Town of Mosman Park (Mosman Park)
**System 6 (1983):** M56 part System area bushland and part scattered native plants (canopy), all vegetation described

### *SECTION 2: REGIONAL INFORMATION*
**LANDFORMS AND SOILS**
**Spearwood Dunes**
Tamala Limestone (Qtl: LS1)
**VEGETATION AND FLORA**
**Vegetation Complex**
**Spearwood Dunes**
Cottesloe Complex — Central and South

**Floristic Community Types**

**Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes**

24 Northern Spearwood shrublands and woodlands

**WETLANDS**

**Wetland Types:** estuary (waterbody)

**Natural Wetland Groups**

**Estuaries**

Swan River (E.2)

**Wetland Management Objectives:** Conservation (0.3ha)

**Swan Coastal Plain Lakes EPP:** none identified

**THREATENED ECOLOGICAL COMMUNITIES**

Not assessed

### *SECTION 3: SPECIFIC SITE DETAIL*

**Landscape Features:** estuary — limestone cliff, vegetated wetland, vegetated uplands

**Vegetation and Flora:** limited survey (Gibson *et al*. 1994 (Chidpt 01), detailed survey (Keighery, GJ, and Keighery 1998)

**Structural Units**

Uplands (slopes) — Sands derived from Tamala Limestone: *Eucalyptus gomphocephala* and *Banksia* species Open Woodland

Uplands — Tamala Limestone: *Dryandra sessilis* var. *cygnorum* and *Acacia xanthina* Tall Open Scrub

Wetlands (wetflats): *Juncus kraussii* Sedgeland

**Scattered Native Plants:** *Eucalyptus gomphocephala* and *Banksia* species Open Woodland

**Vegetation Condition:** >30% Very Good to Excellent, <70% Degraded to Good, with areas of severe localised disturbance

**Total Flora:** 69 native species (Keighery, GJ, and Keighery 1998, Gibson *et al*. 1994) (estimated >90% of flora)

**Significant Flora:** (Keighery, GJ, and Keighery 1998) taxa of restricted distribution on the Swan Coastal Plain associated with Swan/Canning estuarine bushland remnants — *Acacia truncata, A. xanthina*

**Fauna:** not known

**Linkage:** no adjacent bushland; part of Greenway 24 (Tingay, Alan & Associates 1998a); part of a regionally significant contiguous bushland/wetland linkage (Part A, Map 7)

**Other Special Attributes:** National Trust of Australia (WA) Classification; Quaternary Site, as exposures of limestone cliffs (Lemmon *et al*. 1979); one of a very limited number of bushland areas on the Swan Estuary, naturally vegetated areas on the Swan Estuary having particular conservation value in providing habitat for fauna and linkage between areas of bushland; one of the few naturally vegetated areas on the Swan Estuary; open space of regional significance (DCE 1983)

### *SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE*

Directory of Important Wetlands in Australia

### *SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS*

**Criteria:** Representation of ecological communities, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values

**Recommendation:** Site with Some Existing Protection; the existing care, control and management intent of the reserve is endorsed. Long-term security and support for conservation management of the Site to be enhanced by: amending the purpose of the reserve to include conservation; and applying appropriate mechanisms in consultation with the reserve management body (see Table 3, Volume 1).

## PELICAN POINT, CRAWLEY

**Boundary Definition:** protected area/management boundary (Areas of bushland/native vegetation within the boundaries of the Site are not accurately mapped. The boundary has been drawn to include any unmapped bushland/native vegetation.)

### *SECTION 1: LOCATION INFORMATION*

**Bush Forever Site no.** 402

**Area (ha):** bushland 0 (note comment under Boundary Definition)

**Map no.** 46 **Map sheet series ref. no.** 2034–II SW

**Other Names:** not known

**Local Authorities (Suburb):** City of Subiaco (Crawley)

**Includes CALM Managed Land:** Reserve 17375 (Recreation), Reserve 40891 (Marine Park)

**System 6 (1983):** M62 part System area bushland and part scattered native plants (canopy), all vegetation described

### *SECTION 2: REGIONAL INFORMATION*

**LANDFORMS AND SOILS**

**Pinjarra Plain**

Guildford Formation (Qha: S14)

**Spearwood Dunes**

Sands derived from Tamala Limestone (Qts: S7) (not naturally vegetated)

**VEGETATION AND FLORA**

**Vegetation Complex**

**Marine (Lagoonal and Estuarine) Deposits**

Vasse Complex

**Floristic Community Types:** not sampled, types not inferred

**WETLANDS**

**Wetland Types:** estuary (waterbody), estuary (shoreline and peripheral)

**Natural Wetland Groups**

**Estuaries**

Swan River (E.2)

**Wetland Management Objectives:** Conservation (17.1ha)

**Swan Coastal Plain Lakes EPP:** none identified

**THREATENED ECOLOGICAL COMMUNITIES**

Not determined

### *SECTION 3: SPECIFIC SITE DETAIL*

**Landscape Features:** vegetated wetland, vegetated uplands, estuary

**Vegetation and Flora:** limited survey (CALM 1992b); detailed survey (Keighery, GJ, 1990b)

**Structural Units:** mapping (CALM 1992b)

Wetlands: *Eucalyptus rudis* Woodland; *Melaleuca rhaphiophylla* Open Woodland; *Melaleuca cuticularis* Low Woodland; *Juncus kraussii* Closed Sedgeland; *Bolboschoenus caldwellii*, *Cyperus gymnocaulos* and *C. tenuiflora* Mixed Closed Sedgeland

**Scattered Native Plants:** *Eucalyptus rudis* Woodland; *Acacia saligna* Tall Open Shrubland — regionally significant vegetation recognised as being included in the area of Site in need of protection

**Vegetation Condition:** >20% Excellent to Very Good, <80% Good to Degraded, with areas of severe localised disturbance

**Total Flora:** 27 native taxa (Keighery, GJ, 1990) (estimated >80% expected flora)

**Significant Flora:** none identified

**Fauna:** structured surveys for birds (90 species) (Job 1972; RAOU 1996 D, 13 visits). Large assemblage (17 species) and population levels of trans-equatorial wading birds protected under the JAMBA/CAMBA treaties. Significant bird species: category 1 (1), category 2 (17), category 3 (2) and category 4 (5); Significant amphibian species: Moaning Frog (BJ and GJ Keighery pers. comm.)

**Linkage:** no adjacent bushland; part of Greenway 24 (Tingay, Alan & Associates 1998a); part of a regionally significant contiguous bushland/wetland linkage (Part A, Map 7)

**Other Special Attributes:** is one of a very limited number of bushland areas on the Swan Estuary, naturally vegetated areas on the Swan Estuary having particular conservation value in providing habitat for fauna and linkage between areas of bushland; open space of regional significance (DCE 1983)

### *SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE*

Entered in the Register of the National Estate; Directory of Important Wetlands in Australia (Swan–Canning Estuary System); location for JAMBA/CAMBA species; subject to protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

### *SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS*

**Criteria:** Representation of ecological communities, Rarity, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values

**Recommendation:** Site with Some Existing Protection; the existing purpose, care, control and management of Reserves 17375, 40891 is endorsed (see Table 3, Volume 1).

## PEPPERMINT GROVE FORESHORE

**Boundary Definition:** protected area/bushland (part taken to zoning) boundary

### *SECTION 1: LOCATION INFORMATION*

**Bush Forever Site no.** 403 **Area (ha):** bushland 1.7

**Map no.** 45 **Map sheet series ref. no.** 2033–I NW, 2034–II SW
**Other Names:** Part Submission Area 190
**Local Authorities (Suburb):** Shire of Peppermint Grove (Peppermint Grove)
**System 6 (1983):** M54 part System area bushland and part scattered native plants (canopy), all vegetation described

## *SECTION 2: REGIONAL INFORMATION*

**LANDFORMS AND SOILS**
**Pinjarra Plain**
Guildford Formation (Qha: S14)
**Spearwood Dunes**
Tamala Limestone (Qtl: LS1)

**VEGETATION AND FLORA**
**Vegetation Complexes**
**Spearwood Dunes**
Cottesloe Complex — Central and South
**Floristic Community Types**
**Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes**
30a2 Woodlands and shrublands on Holocene Dunes (DEP 1996, re-allocated from 30a, equivalent to 30a in Gibson *et al*. 1994, English and Blyth 1997)

**WETLANDS**
**Wetland Types:** estuary (waterbody)
**Natural Wetland Groups**
**Estuaries**
Swan River (E.2)
**Wetland Management Objectives:** Conservation (0.3ha)
**Swan Coastal Plain Lakes EPP:** none identified

**THREATENED ECOLOGICAL COMMUNITIES**
Endangered (floristic community type 30a as defined by Gibson *et al*. 1994)

## *SECTION 3: SPECIFIC SITE DETAIL*

**Landscape Features:** estuary — limestone cliff, vegetated wetland, vegetated uplands

**Vegetation and Flora:** limited survey (Gibson *et al*. 1994 (Pepgrv 01–02)); detailed survey (Keighery, GJ and Keighery 1998)

**Structural Units**
Uplands — Tamala Limestone: *Eucalyptus gomphocephala* Woodland over *Callitris preissii* Low Woodland; *Callitris preissii* Low Woodland
**Scattered Native Plants:** *Eucalyptus gomphocephala* and *Banksia* species Low Open Woodland
**Vegetation Condition:** >40% Very Good to Good, <60% Degraded, with areas of severe localised disturbance
**Total Flora:** 59 native taxa (Keighery, GJ, and Keighery 1998, Gibson *et al*. 1994) (estimated >75% expected flora)
**Significant Flora:** *Dodonaea hackettiana* (4); Keighery, GJ, and Keighery 1998 (taxa of restricted distribution on the Swan Coastal Plain associated with Swan/Canning estuarine bushland remnants) — *Callitris preissii*, *Acacia xanthina*, *Alyxia buxifolia*, *Pittosporum phylliraeoides* var. *phylliraeoides*

**Fauna:** not known
**Linkage:** adjacent bushland to the north; part of Greenway 24 (Tingay, Alan & Associates 1998a); part of a regionally significant contiguous bushland/wetland linkage (Part A, Map 7)
**Other Special Attributes:** National Trust of Australia (WA) Classification; Peppermint Grove Limestone, a Middle Pleistocene emergent shell bed deposited during the Mindel-Riss interglacial period, is the most informative and well preserved natural outcrop in and around the Swan River District (Lemmon *et al*. 1979); one of a very limited number of bushland areas on the Swan Estuary, naturally vegetated areas on the Swan Estuary having particular conservation value in providing habitat for fauna and linkage between areas of bushland; open space of regional significance (DCE 1983)

## *SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE*

Directory of Important Wetlands in Australia

## *SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS*

**Criteria:** Representation of ecological communities, Rarity, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values
**Recommendation:** Site with Some Existing Protection; the existing care, control and management intent of the reserve is endorsed. Long-term security and support for conservation management of the Site to be enhanced by: amending the purpose of the reserve to include conservation; and applying appropriate mechanisms in consultation with the reserve management body (see Table 3, Volume 1).

# POINT RESOLUTION RESERVE, DALKEITH

**Boundary Definition:** protected area/bushland taken to cadastre boundary

## *SECTION 1: LOCATION INFORMATION*

**Bush Forever Site no.** 221 **Area (ha):** bushland 3.3
**Map no.** 46 **Map sheet series ref. no.** 2033–I NW
**Other Names:** not known
**Local Authorities (Suburb):** City of Nedlands (Dalkeith)
**System 6 (1983):** M59 part System area bushland and part scattered native plants (canopy), all vegetation described

## *SECTION 2: REGIONAL INFORMATION*

**LANDFORMS AND SOILS**
**Spearwood Dunes**
Sands derived from Tamala Limestone (Qts: S7)
Tamala Limestone (Qtl: LS1)

**VEGETATION AND FLORA**
**Vegetation Complex**
**Spearwood Dunes**
Karrakatta Complex — Central and South
**Floristic Community Types:** not sampled, types not inferred

**WETLANDS**
**Wetland Types:** estuary (waterbody)
**Natural Wetland Groups**
**Estuaries**
Swan River (E.2)
**Wetland Management Objectives:** Conservation (0.3ha)
**Swan Coastal Plain Lakes EPP:** none identified

**THREATENED ECOLOGICAL COMMUNITIES**
Not determined

## *SECTION 3: SPECIFIC SITE DETAIL*

**Landscape Features:** vegetated uplands, vegetated wetlands, estuary

**Vegetation and Flora:** limited survey (Ecoscape 1991); detailed survey (Keighery, GJ, and Keighery 1998)
**Structural Units:** mapping (Ecoscape 1991)
Uplands (slopes) — Sands derived from Tamala Limestone: *Eucalyptus gomphocephala* Open Woodland; *Agonis flexuosa*, *Banksia* sp. and *Callitris preissii* Low Woodland; *Eucalyptus decipiens* Low Open Woodland
Uplands (slopes) — Tamala Limestone: *Dryandra sessilis* var. *cygnorum* Open Heath
Wetlands (wetflats): *Juncus kraussii* Sedgeland; *Isolepis nodosus* Sedgeland
**Scattered Native Plants:** Mixed *Eucalyptus gomphocephala, E. marginata* and *E. calophylla* Tall Open Woodland with a remnant understorey of *Xanthorrhoea preissii* and *Macrozamia riedlei*
**Vegetation Condition:** >20% Very Good, <80% Degraded, with areas of severe localised disturbance
**Total Flora:** 60 native taxa (Ecoscape 1991, Keighery, GJ, and Keighery 1998) (estimated >90% expected flora)
**Significant Flora:** none recorded

**Fauna:** limited survey for birds (43 species), native mammals (2 species) and reptiles (6 species) (Ecoscape 1991). Significant bird species: category 1 (1), category 2 (3), category 3 (2) and category 4 (1)
**Linkage:** no adjacent bushland; part of Greenway 24 (Tingay, Alan & Associates 1998a); part of a regionally significant contiguous bushland/wetland linkage (Part A, Map 7)
**Other Special Attributes:** naturally vegetated areas on the Swan Estuary have particular conservation value in providing habitat for fauna and linkage between larger, more intact areas of bushland; one of the few naturally vegetated areas on the Swan Estuary; open space of regional significance (DCE 1983)

## *SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE*

Directory of Important Wetlands in Australia (Swan–Canning Estuaries); location for JAMBA/CAMBA species; subject to protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

## *SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS*

**Criteria:** Representation of ecological communities, Rarity, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having

similar values

**Recommendation:** Site with Some Existing Protection; the existing care, control and management intent of the reserve is endorsed. The purpose of the reserve should be amended to include conservation and appropriate mechanisms applied in consultation with the management body (see Table 3, Volume 1).

## MINIM COVE, MOSMAN PARK

**Boundary Definition:** protected area boundary (Areas of bushland/native vegetation within the boundaries of the Site are not accurately mapped.)

### *SECTION 1: LOCATION INFORMATION*

**Bush Forever Site no.** 335
**Area (ha):** bushland 0 (note comment under Boundary Definition)
**Map no.** 51, 52
**Map sheet series ref. no.** 2033–I NW
**Other Names:** not known
**Local Authorities (Suburb):** Town of Mosman Park (Mosman Park)
**System 6 (1983):** M57 part System area bushland and part scattered native plants (canopy), all vegetation described

### *SECTION 2: REGIONAL INFORMATION*

**LANDFORMS AND SOILS**
**Spearwood Dunes**
Tamala Limestone (Qtl: LS1)
**VEGETATION AND FLORA**
**Vegetation Complex**
**Spearwood Dunes**
Cottesloe Complex — Central and South
**Floristic Community Types:** not sampled, types not inferred
**WETLANDS**
**Wetland Types:** estuary (waterbody)
**Natural Wetland Groups**
**Estuaries**
Swan River (E.2)
**Wetland Management Objectives:** Conservation (0.01ha)
**Swan Coastal Plain Lakes EPP:** none identified
**THREATENED ECOLOGICAL COMMUNITIES**
Not determined

### *SECTION 3: SPECIFIC SITE DETAIL*

**Landscape Features:** estuary — limestone cliff, vegetated wetland, vegetated uplands
**Vegetation and Flora:** detailed survey (Keighery, GJ, and Keighery 1998)
**Structural Units**
Uplands (slopes) — Sands derived from Tamala Limestone: *Eucalyptus gomphocephala* and *Banksia* species Woodland
Uplands (slopes) — Tamala Limestone: *Dryandra sessilis* var. *cygnorum* Open Heath
Wetlands (wetflats): *Juncus kraussii* Closed Sedgeland
**Scattered Native Plants:** *Eucalyptus gomphocephala* and *Banksia* species Open Woodland
**Vegetation Condition:** >50% Very Good to Excellent, <50% Good to Degraded, with areas of severe localised disturbance
**Total Flora:** 71 native species (Keighery, GJ, and Keighery 1998) (estimated >80% expected flora)
**Significant Flora:** (Keighery, GJ, and Keighery 1998) taxa of restricted distribution on the Swan Coastal Plain associated with Swan/Canning estuarine bushland remnants — *Boronia alata* (disjunct north from Cape Naturaliste, only population on the mainland in the Perth Region; also recorded from two other locations in the Perth area — Rottnest and Garden Islands), *Acacia xanthina*, *A. truncata*, *Alyxia buxifolia*
**Fauna:** limited survey for reptiles (7 species) (B. Maryan and R. Browne-Cooper pers. comm.)
**Linkage:** no adjacent bushland; part of Greenway 24 (Tingay, Alan & Associates 1998a); part of a regionally significant contiguous bushland/wetland linkage (Part A, Map 7)
**Other Special Attributes:** National Trust of Australia (WA) Classification; exposed Marine Shell Beds containing fossil fauna which have yet to be completely examined. Overlaid by aeolian limestones of the Tamala Limestone, they

are a significant reference point for the study of sea level changes during the Quaternary (Lemmon *et. al*. 1979); is one of a very limited number of bushland areas on the Swan Estuary, naturally vegetated areas on the Swan Estuary having particular conservation value in providing habitat for fauna and linkage between areas of bushland; open space of regional significance (DCE 1983)

## *SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE*

Directory of Important Wetlands in Australia; Entered in the Register of the National Estate

## *SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS*

**Criteria:** Representation of ecological communities, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values

**Recommendation:** Site with Some Existing Protection; The existing care, control and management intent of the reserve is endorsed. Long-term security and support for conservation management of the Site to be enhanced by: amending the purpose of the reserve to include conservation; and applying appropriate mechanisms in consultation with the reserve management body (see Table 3, Volume 1).

# 14 APPENDIX 3: THREATENED FLORA AND ECOLOGICAL COMMUNITY CODES

**Table 1: Vegetation structure**

The classification system used to describe vegetation structure (based on BJ Keighery 1994, as adapted from Muir 1977 and Aplin 1979). Each row indicates a different vegetation layer.

| Growth Form/Height Class | Canopy Cover | | | |
|---|---|---|---|---|
| | **100-70%** | **70-30%** | **30-10%** | **10-2%** |
| **Trees over 30m** | Closed Tall Forest **CTF** | Open Tall Forest **OTF** | Tall Woodland **TW** | Open Tall Woodland **OTW** |
| **Trees 10-30m** | Closed Forest **CF** | Open Forest **OF** | Woodland **W** | Open Woodland **OW** |
| **Trees under 10m** | Closed Low Forest **CLF** | Open Low Forest **OLF** | Low Woodland **LW** | Open Low Woodland **OLW** |
| **Mallee over 8m (Tree Mallee)** | Closed Tree Mallee **CTM** | Tree Mallee **TM** | Open Tree Mallee **OTM** | Very Open Tree Mallee **VOTM** |
| **Mallee under 8m (Shrub Mallee)** | Closed Shrub Mallee **CSM** | Shrub Mallee **SM** | Open Shrub Mallee **OSM** | Very Open Shrub Mallee **VOSM** |
| **Shrubs over 2m** | Closed Scrub **CSC** | Open Scrub **OSC** | Tall Shrubland **TS** | Open Tall Shrubland **OTS** |
| **Shrubs 1-2m** | Closed Heath **CH** | Open Heath **OH** | Shrubland **S** | Open Shrubland **OS** |
| **Shrubs under 1m** | Closed Low Heath **CLH** | Open Low Heath **OLH** | Low Shrubland **LS** | Open Low Shrubland **OLS** |
| **Grasses** | Closed Grassland **CG** | Grassland **G** | Open Grassland **OG** | Very Open Grassland **VOG** |
| **Herbs** | Closed Herbland **CHB** | Herbland **HB** | Open Herbland **OHB** | Very Open Herbland **VOHB** |
| **Sedges** | Closed Sedgeland **CSG** | Sedgeland **SG** | Open Sedgeland **OSG** | Very Open Sedgeland **VOSG** |
| **Ferns** | Closed Fernland **CFL** | Fernland **FL** | Open Fernland **OFL** | Very Open Fernland **VOFL** |
| **Climbers** | Closed Climbers **CC** | Climbers **C** | Open Climbers **OC** | Very Open Climbers **VOC** |

**Table 2: Vegetation condition scale** (BJ Keighery 1994).

| Vegetation Condition Scale | |
|---|---|
| **1** | **Pristine**<br>Pristine or nearly so, no obvious signs of disturbance |
| **2** | **Excellent**<br>Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. |
| **3** | **Very Good**<br>Vegetation structure altered, obvious signs of disturbance.<br>For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing. |
| **4** | **Good**<br>Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate it.<br>For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing |
| **5** | **Degraded**<br>Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management.<br>For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing. |
| **6** | **Completely Degraded**<br>The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs. |

**Table 3: State categories used to define the conservation status of flora taxa**
Under the *Wildlife Conservation Act 1950,* as defined in Atkins (2006)

| **Western Australian Flora Conservation Codes** | |
|---|---|
| **R** | **Declared Rare Flora – Extant Taxa**<br>Taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such. |
| **X** | **Declared Rare Flora - Presumed Extinct Taxa**<br>Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such. |
| **P1** | **Priority One - Poorly Known Taxa**<br>Taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey |
| **P2** | **Priority Two - Poorly Known Taxa**<br>Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey |
| **P3** | **Priority Three - Poorly Known Taxa**<br>Taxa which are known from several populations, and the taxa are not believed to be under immediate threat (i.e. not currently endangered), either due to the number of known populations (generally >5), or known populations being large, and either widespread or protected. Such taxa are under consideration for declaration as 'rare flora' but are in need of further survey. |
| **P4** | **Priority Four – Rare Taxa**<br>Taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years. |

Note, the need for further survey of poorly known taxa is prioritised into the three categories depending on the perceived urgency for determining the conservation status of those taxa, as indicated by the apparent degree of threat to the taxa based on the current information.

**Table 4: Western Australian Ecological Community Conservation Codes**
From English and Blyth (1999). These ecological communities have been assessed through a procedure (co-ordinated by DPaW) and assigned to one of the following categories related to the status of the threat to the community. One of the criteria used to determine the categories of threatened ecological community is an estimate of the geographic range and/or the total area occupied and/or the number of discrete occurrences reduced since European settlement.

| **Western Australian Ecological Community Conservation Codes** |
|---|
| **Category 1**<br>**Presumed Totally Destroyed**<br>An ecological community which has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future. |
| **Category 2**<br>**Critically Endangered**<br>An ecological community which has been adequately surveyed and found to have been subject to a major contraction in area and/or which was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated. |
| **Category 3**<br>**Endangered**<br>An ecological community which has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future. |
| **Category 4**<br>**Vulnerable**<br>An ecological community which has been adequately surveyed and found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not been assured and/or a community which is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range. |
| **Category 5**<br>**Data Deficient**<br>An ecological community for which there is inadequate data to assign it to one of the above categories and/or which is not yet evaluated with respect to status of threat.<br>(Usually an ecological community with poorly known distribution or biology that is suspected to belong to any of the above categories. These ecological communities have a high priority for survey and/or research.) |
| **Category 6**<br>**Lower Risk**<br>A community which has been adequately surveyed and evaluated and available information suggests that it does not qualify for one of the above categories of threat. |