THE VEGETATION AND FLORA OF THE GOSS AVE BUSHLAND

Andrew Thompson (left), Warwick Boardman (right) and a City of South Perth representative (centre) at the presentation of the 1996 Wildflower Society Bushland Plant Survey of the Flora of Goss Ave Bushland in the Bushland. This report is dedicated to the late Andrew Thompson for many years an active bushland regenerator, especially in the Goss Ave Bushland and Brixton Street Bushland as well as a member of the Society Bushland Plant Survey Program. Photo Brian Moyle, April 1998.

A report for the City of South Perth prepared by Bronwen and Greg Keighery and the Wildflower Society Bushland Plant Survey Group.
The Wildflower Society Bushland Plant Survey Program is a joint program with the Department of Biodiversity, Conservation and Attractions Volunteer Program.
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CONTENTS

1 BACKGROUND

The vegetation and flora of the Swan Coastal Plain has been the subject of a series of studies, reports and publications. This information has been used as a basis for ongoing conservation planning on the Swan Coastal Plain as part of three projects – System 6 and part System 1 Update, Bush Forever and Swan Bioplan. The relationship between these projects, conservation plans and major vegetation and flora survey projects on the Swan Coastal Plain is found in Webb *et al.* (2010). Each of these projects has also gathered additional information on vegetation and flora. Many of the flora and vegetation investigations have been done through a cooperative project between the Department of Biodiversity, Conservation and Attractions (DBCA, formerly DEC and CALM), the Office of the EPA (and its previous iterations DEP, DEWACP, DE and DEC) and the Wildflower Society of WA (Inc.) as part of the Society's Bushland Plant Survey Project (Plant Survey). This project ceased in 2012 and all data from the projects are lodged with DBCA (contact Karen Clarke).

This report brings together current knowledge on the vegetation and flora of Goss Avenue Bushland (Bushland, Figures 1, 2). The Bushland is a local government reserve managed by the City of South Perth in association with the Friends of Goss Avenue Bushland. A number of planting projects have been run in the Bushland over the last 20 years. The City and Friends were interested in further planting but determined before they selected suitable plants they needed more information on the Bushland flora and vegetation. The Plant Survey Program was contracted in 2018 to involve the Friends and City in surveying the Bushland. This report and a field herbarium are the outputs of this project.

The Society Survey Program had previously surveyed the Bushland in 1996 (Tauss 1996). The 1996 survey was done for the South Perth Environmental Association as part of planning for a management plan for the Bushland. The survey was funded thorough a grant to the Society from the federal government under a Save the Bush Grant (then part of the National Landcare Program). The 1996 survey established four 10X10m quadrats established and sampled after Keighery (1994). Three of these quadrats were in the Bushland and one was in the Koonawarra School Bushland to the north. A total of 115 native plant species were listed and 58 weeds and three vegetation units were described for the Bushland:

- *Banksia attenuata/B. menziesii* Low Open Forest on the deep sands of the northern section of the Bushland (quadrat G2) and School Bushland (quadrat Koon 1);
- *Melaleuca preissiana* Low Open Woodland in the seasonally damp area peaty sands in the centre and south of the Bushland (quadrats Goss 3, Man 4); and
- *Melaleuca rhaphiophylla* Scrub in the seasonally inundated area in the southern ends of the Bushland adjacent to the drain (no quadrat observations only).

2 METHODS, TERMINOLOGY AND DEFINITION

Detailed survey work was performed in the Bushland in 2018 and 2019. In 2018 the Bushland was visited by a group of conservation volunteers from the Society, Friends and City as part of the Plant Survey Program on two occasions (28th April and 13th October) and by Society members a week before the April visits and several times in 2019. Three permanent quadrats (GOSA 01, 03, 04) and one relevé (GOSA 01) were located in the Bushland (Figure 2 – quadrats to left label, and Appendix 3) to sample the range of plant communities in the least disturbed areas identified using aerial photographs and field interpretation. Quadrats were sampled on the April and October visits during a Plant Survey session. Quadrat data is found in section 4 and Appendix 3. Additional records flora records were made on all visits.

Photographs were taken on all visits to the Bushland. Appendix 5 contains a selection of these images. Appendix 2 also lists plants with images (Column 5, P) and the plants represented in the Field Herbarium (Column 5, QUAD). The codes used in Appendix 5 are explained in the key to the appendix. Plant species codes are found in Appendix 2, Column 2.

Survey work follows procedures outlined in the Society publication *Bushland Plant Survey* (Keighery 1994). See this publication for explanation of procedures and terminology, some terminology is tabulated in Appendix 1. *Bush Forever Volume 2* (Government of WA 2000) is the reference for other terminology. Maps from the WALGA *et al.* (2015) website were used to prepare Figure 1 and to determine the Bushland's soils, landforms and vegetation complexes, see this website for references.

3 GEOLOGY, LANDFORMS AND SOILS

The Bushland is located on the Swan Coastal Plain near the interface of the Spearwood Dunes and the Bassendean Dunes (Figure 1a). Soils are deep aeolian light grey sands (Figure 1c) on the rises with darker grey sands due to increasing humus content lower in the landscape.

4 VEGETATION

Vegetation Complex Mapping

The vegetation complex mapping maps (Heddle *et al.* 1994) the area entirely within the Bassendean Dunes in the Bassendean Complex – Central and South. In 2014 around 21% (approx. 13,611 ha) of this complex was extant (Government of WA 2014).

Vegetation Map

Two very different plant communities are located in the Goss Ave Bushland: the dryland or upland Banksia woodland and wetland Dampland (Figure 2). These units are comparable with those described by Tauss (1996).

Upland: Banksia Woodland (Quadrats GOSA 01 & 04, Figure 2)
Two quadrats were located in the Banksia woodland as described below. These two quadrats illustrate the variation in the Banksia woodland community. Relatively intact *Banksia* dominated vegetation was sampled at GOSA04. This area of the bushland is dominated by mature healthy tree *Banksia* species: *B. menziesii*, *B. attenuata* and *B. ilicifolia*. To the south the frequency of mature *Banksia* species and other tree species, for example *Allocasuarina fraseriana* and *Nuytsia floribunda*, decline. However the understory remains and is typical of *Banksia* woodlands of the area.

It is expected that analysis of the data for GOSA 04 would identify the Banksia woodland as Swan Coastal Plain floristic community type (SWAFCT) 23a Central *Banksia attenuata — B. menziesii* woodlands. This is the same as that SWAFCT identified in the Kensington Bushland, Bush Forever Site 48 (Government of WA 2000, Figure 1a B).

GOSA 01 Figure 2 (quadrat location is to right of label) and Appendix 3
Site description:Upland, sloping southerly, with white-grey, well drained sand
Vegetation: *Allocasuarina fraseriana* and *Nuytsia floribunda* Low Woodland over *Conostylis aculeata* and *Dasypogon bromeliifolius* Open Herbland and *Lyginia barbarta*, *Desmocladus flexuosus* and *Hypolaena exsulca* Very Open Sedgeland
Vegetation Condition: Good
Notes: Less than expected losses from dieback and/or water table drop. Many weeds. *Banksia* sp. planted
Location: Plot GOSA01, Goss Ave Bushland Manning
WA
Coordinates: 32.009389 S, 115.874167 E
Taxa: 48, 30 natives, 18 weeds
Trees: *Allocasuarina fraseriana, Nuytsia floribunda*
Shrubs: *Acacia pulchella*, *Adenanthos, Dampiera linearis, Dasypogon bromeliifolius, Gompholobium tomentosum, Hakea prostrata, Hovea trisperma* var. *trisperma, Scholtzia involucrata, Stirlingia latifolia*
Herbs: *Anigozanthos manglesii*, *Arnocrinum preissii, Burchardia congesta, Conostylis aculeata, Conostylis aculeata, Crassula colorata, Johnsonia pubescens* subsp. *cygnorum, Laxmannia squarrosa, Lomandra caespitosa, Lomandra hermaphrodita, Patersonia occidentalis, Phlebocarya ciliata*, *Podolepis gracilis, Thysanotus manglesianus, Tricoryne elatior*
Sedges: *Alexgeorgea nitens*, *Desmocladus flexuosus, Hypolaena exsulca, Lyginia imberbis*

Weeds: **Aira cupaniana, *Arctotheca calendula, *Avena barbata, *Briza maxima, *Briza minor, *Ehrharta calycina, *Freesia alba x leichtlinii, *Gladiolus caryophyllaceus *Heliophila pusilla, *Hypochaeris glabra, *Lolium perenne, *Petrorhagia dubia, *Silene gallica, *Senecio condylus, *Urospermum picroides, *Ursinia anthemoides, *Vicia sativa, *Wahlenbergia capensis*

GOSA 04 Figure 2 (quadrat location is to right of label) and Appendix 3
Site description:Very gentle sloping dune with pale grey well drained sand over cream subsurface soil; 80% litter cover
Vegetation: *Banksia menziesii* Open Low Forest over over **Ehrharta calycina* Open Grassland, *Podolepis gracilis* and **Ursinia anthemoides* Open Herbland and *Alexgeorgea nitens* Open Sedgeland
Vegetation Condition: Good to Very Good
Notes: Diversity native species, significant cover **Ursinia anthemoides*
Location: Site GOSA04, Goss Avenue Bushland Manning WA
Coordinates: 32.0088 S 115.8742 E
Taxa: 46, 35 native, 11 weeds
Trees: *Banksia ilicifolia, Banksia menziesii*
Shrubs: *Adenanthos cygnorum, Allocasuarina humilis, Bossiaea eriocarpa, Conostephium pendulum, Dampiera linearis, Dasypogon bromeliifolius, Daviesia triflora Gompholobium tomentosum, Hibbertia hypericoides, Hibbertia racemosa, Jacksonia furcellata, Lechenaultia floribunda, Lepidosperma squamatum, Leptomeria empetriformis, Leucopogon conostephioides Petrophile linearis, Stirlingia latifolia*
Herbs: *Anigozanthos manglesii, Burchardia congesta Caesia occidentalis, Dianella brevicaulis, Laxmannia ramosa* subsp. *ramosa, Lomandra hermaphrodita, Patersonia Phlebocarya ciliata, Podolepis gracilis, Poranthera microphylla, Stylidium repens, Trachymene pilosa*
Sedges: *Alexgeorgea nitens, Desmocladus flexuosus, Isolepis marginata, Lyginia imberbis, Mesomelaena pseudostygia*

Weeds: **Briza maxima, *Ehrharta calycina, *Euphorbia peplus, *Gladiolus caryophyllaceus, *Heliophila pusilla, *Hypochaeris glabra, *Oxalis pes-caprae, *Romulea rosea, *Urospermum picroides, *Ursinia anthemoides, *Wahlenbergia capensis*

Dampland (Quadrat GOSA 03 & relevé GOSA 02, Figure 2)
The vegetation of this area suppoorts species that show a preference for damp areas where the soils are seasonally waterlogged and/or inundated. In the wettest area along the creek or drain is dominated by *Melaleuca rhaphiophylla* (Figure 2 GOSA 02), Here the diversity of the understory is very low with patches dominated by a few species such as *Lepidosperma longitudinale* and *Centella asiatica.* To the north of the creek the density of *Melaleuca rhaphiophylla* declines and *M. preissiana* is more common (GOSA 03). Species found in this area are recognised dampland species including: *Astartea zephyra, Hypocalymma angustifolium,* and *Regelia ciliata*

GOSA02 Figure 2 (relevé location is to right of label, approximate 10X10m in trees in quadrat image background) and Appendix 3
Site description: Gently sloping southern bank shallowly incised drain, gentle northerly sloping humus rich dune with dark grey poorly drained sand (near winter watertable)
Vegetation: *Melaleuca rhaphiophylla* Low Forest over *Lepidosperma longitudinale* Sedgeland
Vegetation Condition: Very Good
Notes: Reduced species diversity, caused by massive disturbance associated with the drain maintenance
Location: Plot GOSA02, Goss Avenue Bushland Manning WA
Coordinates: 32.010920 S 115.873815 E

GOSA03 Figure 2 (quadrat location is to right of label) and Appendix 3
Site description: Base of gentle southerly sloping dune with dark grey well drained sand
Vegetation: *Melaleuca preissiana* Very Open Low Woodland over *Adenanthos cygnorum* and *Jacksonia furcellata* Open Tall Shrubland over **Ehrharta calycina* Open Grassland and *Hypolaena exsulca* Very Open Sedgeland
Vegetation Condition: Good
Notes: **Ehrharta calycina* dominates understory, many other weed species
Location: Plot GOSA03, Goss Avenue Bushland Manning WA
Coordinates: 32.01011 S 115.87418 E
Taxa: 34 natives, 2 non-local native taxa, 20 weeds
Trees: *Allocasuarina fraseriana, Banksia attenuata, Banksia ilicifolia, Banksia menziesii,* ***Melaleuca preissiana***

Shrubs: *Acacia pulchella, Acacia stenoptera, Adenanthos cygnorum, Astartea zephyra, Boronia ramosa*, *Dampiera linearis, Gastrolobium linearifolium, Gompholobium tomentosum, Gonocarpus pithyoides, Hemiandra linearis, Hypocalymma angustifolium, Jacksonia furcellata, Lechenaultia floribunda, Opercularia vaginata, Regelia ciliata, Stirlingia latifolia*
Herbs: *Anigozanthos manglesii, Conostylis aculeata, Crassula colorata, Lomandra caespitosa, Microtis media, Phlebocarya ciliata, Podotheca gnaphalioides, Poranthera microphylla, Thysanotus patersonii, Trachymene pilosa*
Sedges: *Centrolepis aristata, Hypolaena exsulca, Lyginia barbata*

Planted species: *Banksia nivea, Dodonaea hackettiana*

Weeds: **Acacia trigonophylla, Aira cupaniana, *Arctotheca calendula, *Briza minor, *Disa bracteata, *Ehrharta calycina, *Freesia alba x leichtlinii, *Fumaria capreolata, *Galium murale, *Gladiolus caryophyllaceus, *Heliophila pusilla, *Hypochaeris glabra, *Monoculus monstrosus, *Petrorhagia dubia, *Romulea rosea, *Senecio condylus, *Trachyandra divaricata, *Trifolium arvense, *Ursinia anthemoides, *Wahlenbergia capensis*

5 FLORA

Total Flora

The survey recorded 128 local native plants in the Bushland (Appendix 2). The largest families are: 17 Myrtaceae; 16 Fabaceae; 10 Proteaceae; 11 Asparagaceae; 8 Hemerocallidaceae; and 7 in Haemodoraceae and Cyperaceae. This is a diverse flora for a small patch of bushland. The majority of the species in the area are typical of Perth's Banksia woodland.

Tauss (1996) does not record a number of native Western Australian taxa found in this study (Appendix 2 underlined taxa). A significant proportion of these taxa (16) have been introduced through plantings and/or accidental introduction to the Bushland since the Tauss study these include: *Acacia lasiocarpa* var. *lasiocarpa, Acacia trigonophylla**, Anigozanthos manglesii*** **subsp. *manglesii,*** *Conostylis candicans* subsp. *candicans, Agonis flexuosa* var. *flexuosa, Chamelaucium uncinatum, Eucalyptus gomphocephala,* ***Eremaea pauciflora*** **var. *pauciflora*,** ***Eucalyptus todtiana, Orthrosanthus laxus*** **var. *laxus, Phyllanthus calycinus*, *Banksia littoralis***, *Banksia nivea* , *Dodonaea hackettiana, Anthocercis littorea* and *Pimelea rosea* subsp. *rosea.* Those in **bold** are could have been in the area of the Bushland however the others should be removed and/or allowed to die out. Of particular concern are the following that are well known to invade areas when they are found outside their natural range: *Agonis flexuosa* var. *flexuosa, Chamelaucium uncinatum* and *Eucalyptus gomphocephala.* An additional taxon, *Acacia trigonophylla* has recently been recognised as a highly invasive weed when planted outside its natural range. *Acacia trigonophylla* is already spreading from seed and all plants should be removed and noted for following up seedling removal each year, especially after a fire.

The other taxa added to the list are listed below under their growth form. Most of these are small inconspicuous plants (herbs and grasses). Some of the shrubs are uncommon in the Bushland.
Shrubs: *Acacia cyclops, Jacksonia sternbergiana, Gastrolobium linearifolium, Regelia inops, Boronia ramosa* subsp. *anethifolia* and *Synaphea spinulosa* subsp. *spinulosa*
Herbs: *Trachymene pilosa, Lomandra preissii, Thysanotus patersonii*, *Thysanotus thyrsoideus, Laxmannia ramosa* subsp. *ramosa, Podotheca gnaphalioides, Lobelia anceps, Isolepis marginata, Dianella brevicaulis, Caladenia flava* subsp. *flava, Poranthera microphylla,* and *Stylidium repens.*
Grasses: *Austrostipa compressa.*

Tauss (1996) listed four other native species not found in 2018. One of these ,*Senecio lautus* subsp. *maritimus,* was considered to be a native species in 1996 however it has now been identified as *Senecio condylus* a weedy species. The other natives not relocated in 2018 are *Isolepis cernua*, *Acacia applanata* and *Melaleuca thymoides*.

Significant Flora

Several taxa in the Bushland are of particular conservation interest.

Dianella brevicaulis (Hemerocallidaceae**,** Appendix 5 DIABRE)
The population of *Dianella brevicaulis* is the most northern known population on the Swan Coastal Plain (SWA). This species currently has an unusual distribution with a series of populations on the: SWA (to south of Mandurah); Leeuwin Naturaliste Ridge; and east of the Jarrah Forest (with a marked absence from the Jarrah Forest). The population in the Bushland is an attractive feature of the Bushland and would be a good species to feature in revegetation. Material should be collected from the Reserve as it is expected that it will be genetically distinct from the closest known natural populations.

Johnsonia pubescens* subsp. *cygnorum (Asparagaceae, Appendix 5 JOHPUBCYG)
This population of the Priority 2 *Johnsonia pubescens* subsp. *cygnorum* is a new record for the subspecies and is in the area of the most northern known locality. The nearby population is on Kent Street and is not in a conservation area. This interesting attractive plant is a Swan Coastal Plain endemic as well as being endemic to the Perth area. The population in the Bushland is an attractive feature of the Bushland and would be a good species to feature in revegetation. Material should be collected from the Reserve as it is expected that it will be genetically distinct from the closest known natural populations.

Astartea species (Myrtaceae, Appendix 5 AST)
Two species of *Astartea* are recorded for the Bushland: *Astartea scoparia* and *Astartea zephyra. Astartea* aff. *fascicularis* was reported for the Bushland by Tauss. Recent work has identified a number of species in the group under *Astartea* aff. *fascicularis.* It is expected that one was associated with the wet-flat adjacent to the drain, and when the drain was a creek, the other with the creek. They now occur in the same habitat. *Astartea zephyra* is rarely recorded on the coastal plain in the Perth region.

Local species and forms of local species

The Swan Coastal Plain Bioregion (SWA) has a diverse and complex flora with around 2500 plants recorded for the SWA. A large number of plants are associated with particular landforms/soils on the SWA and another group are endemic to (ie only found on) the SWA. In addition a number of species having distinct subspecies, varieties and forms associated with the SWA and other bioregions and/or associated with different landforms and/or soils of the SWA. With the SWA stretching from Jurien Bay to Dunsborough populations of the same species may differ significantly from north to south and from east to west. Each of these categories can be illustrated with plants from the Bushland, keeping in mind that the Bushland is on the Bassendean Dunes, but near the western Spearwood Dunes.

Different Bioregions
Acacia trigonophylla (Appendix 5 *ACATRI) is not naturally found on the SWA and is associated with granite rocks in the Avon Wheatbelt, Jarrah Forest and Mallee Bioregions.

Different landforms
The following species planted in the Bushland are typically found on Spearwood Dunes associated with outcropping Tamala Limestone not in Bassendean Dunes: *Acacia lasiocarpa* var. *lasiocarpa, Conostylis candicans* subsp. *candicans, Agonis flexuosa* var. *flexuosa, Chamelaucium uncinatum, Eucalyptus gomphocephala, Dodonaea hackettiana, Anthocercis littorea* and *Pimelea rosea* subsp. *rosea. Banksia nivea* is also planted and is normally on lateritic soils in the Jarrah Forest.

Species variation
Three different *Hemiandra* taxa (Appendix 5 @HEM) were observed in the Bushland. *Hemiandra linearis* is the name given here for the naturally occurring prostrate *Hemiandra* in the bushland (Appendix 5 @HEMHAIRY LOCAL). Propagation material should be collected from the form growing naturally in the Bushland. Several other forms of *Hemiandra* have been introduced from planting, these are not named but referred to as ‘HEMPALE’ and ‘HEMPURPLE’. These three taxa well illustrate the variation within a group recognised as a single ‘species’. The old plantings of *Banksia attenuata* (Appendix 5 @BANATT) and *B. menziesii* (Appendix 5 @BANMEN) were sourced from the north of their range on the SWA where they are shrubs rather than trees.

6 WEEDS

A total of 82 weeds (30 Monocotyledons and 52 Dicotyledons) are recorded for the Bushland (Appendix 4). This is to be expected as the remnant has a long edge to area ratio for the movement weed seed into Bushland. The weeds most impacting the regeneration of native local taxa are: *Ehrharta calycina* (Perennial Veldt Grass), *Acacia trigonophylla*, and *Freesia alba x leichtlinii* (Freesia, Appendix 5 *FREX). There is a small infestation of *Euphorbia terracina* (Geraldton Carnation Weed) that should be completely removed (Appendix 5 *EUPTER) as seed from this species can be spread into natural areas by ants.

Mounds of soil are favourite locations for weeds (Appendix 5 #GOSSAVE WEED MOUND) and should be removed. The bare soil after the removal will most likely need planting with appropriate local natives.

7 CONSERVATION

Conservation Value

The Goss Ave Bushland is well worthy of retention and management for conservation. This small area supports: both wetland and upland species; a diverse native flora; and a number of unusual species. The relatively intact area of Banksia woodland is a representation of the federally listed Endangered threatened ecological community 'Banksia woodlands of the Swan Coastal Plain' (DAWE 2016). There are only three significant areas of Banksia woodland in the adjacent cities of Victoria Park and South Perth: Kensington Bushland in Victoria Park; and Goss Ave Bushland and Mt Henry Bushland in South Perth (Bush Forever Site XX). Goss Ave is the smallest of the areas and was not included with the other two in Perth's most recent conservation plan *Bush Forever* (Government WA 2000). However since 2000 when *Bush Forever* was finalised the threats to *Banksia* woodland are now so significant that it has been recognised as endangered. As a consequence all remnants should now be considered as regionally significant. In addition our bushland is so variable that each patch often has its own own particular features. In this case: the combination of wetland and upland habitats; populations of locally uncommon species (*Johnsonia pubescens* subsp. *cygnorum* and *Dianella brevicaulis*); and the co-occurrence of two *Astartea* species.

Management for Conservation

Conservation activities in bushland should focus on maintaining the features of the bushland. On the SWA the genetic variation in many species is so large that to maintain the local population of a species material from the actual area should be used in restoration activities. The best way to do this is to control the weeds so seeds of native species in the soil are given the best chance to germinate and grow. If there is a need to plant material the first option should be to use propagules from the Bushland. If this is not feasible the next source should be from the same land-surface (match soil and landform) within a reasonable distance. The closest most similar patch of bushland is the Kensington Bushland (Figure 1a, b). In some cases it is better not to plant.

Over the years it is evident that there has been a number of restoration activities in the Bushland. A series of different planting activities have occurred and have created a number of problems (section 5). The species from a different bioregion should be removed. Plantings from other land-surfaces on the SWA and non-local variants should be left to die out.

8 ACKNOWLEDGEMENTS

This project was supported by a grant from the City of South Perth to the Wildflower Society of WA (Inc). Adele Scarfone from the City of South assisted with both volunteer survey sessions and liaised with the Friends of Goss Ave Bushland. Volunteers from the Society Bushland Survey Program, Friends of Goss Ave Bushland and Friends of Queens Park Bushland assisted with both field days. Volunteers included: Melanie Baister, Warwick Boardman, Angela and Bill Briggs, Alison Bunker, Lucy Commander, Kade Ehlers, Judith Harvey, Jennifer Hawkes, Bronwen Keighery, Margaret Langley, Sian Mawson, Shola Clarke-Thomson, Vanessa Clarke, Bec Ryan, Meg Turnbull and Lindsay Yeomans

Society Bushland Survey Program volunteers participating in the Wednesday sessions at the WA Herbarium completed identifications of plant material and photographs, and prepared the Goss Ave

Bushland Field Herbarium. Wednesday volunteers included: Melanie Baister, Anne Bellman, Hazel Dempster, Judith Harvey, Kay Kelly, Bronwen and Greg Keighery, Margaret Larke and Margaret Langley. Melanie Baister databased the quadrat data. Thanks to the WA Herbarium DBCA for hosting the Society Wednesday group in the Reference Herbarium. Volunteers from the Society Plant Survey Program contributed at least 150 hours to this project.

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DBCA – Department of Biodiversity, Conservation and Attractions

Department of Biodiversity, Conservation and Attractions – refer to DBCA

Environmental Protection Authority – refer to the EPA

EPA – Environmental Protection Authority

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10 FIGURES

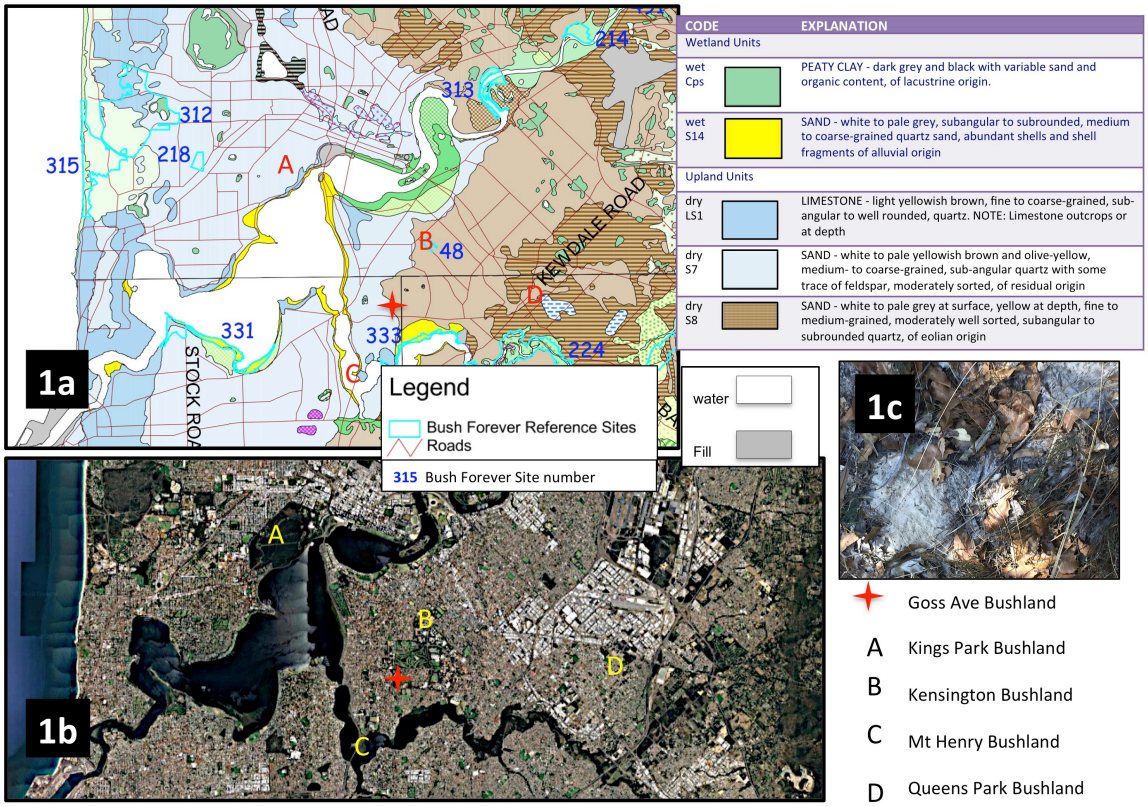

Figure 1: Location, landforms and soils

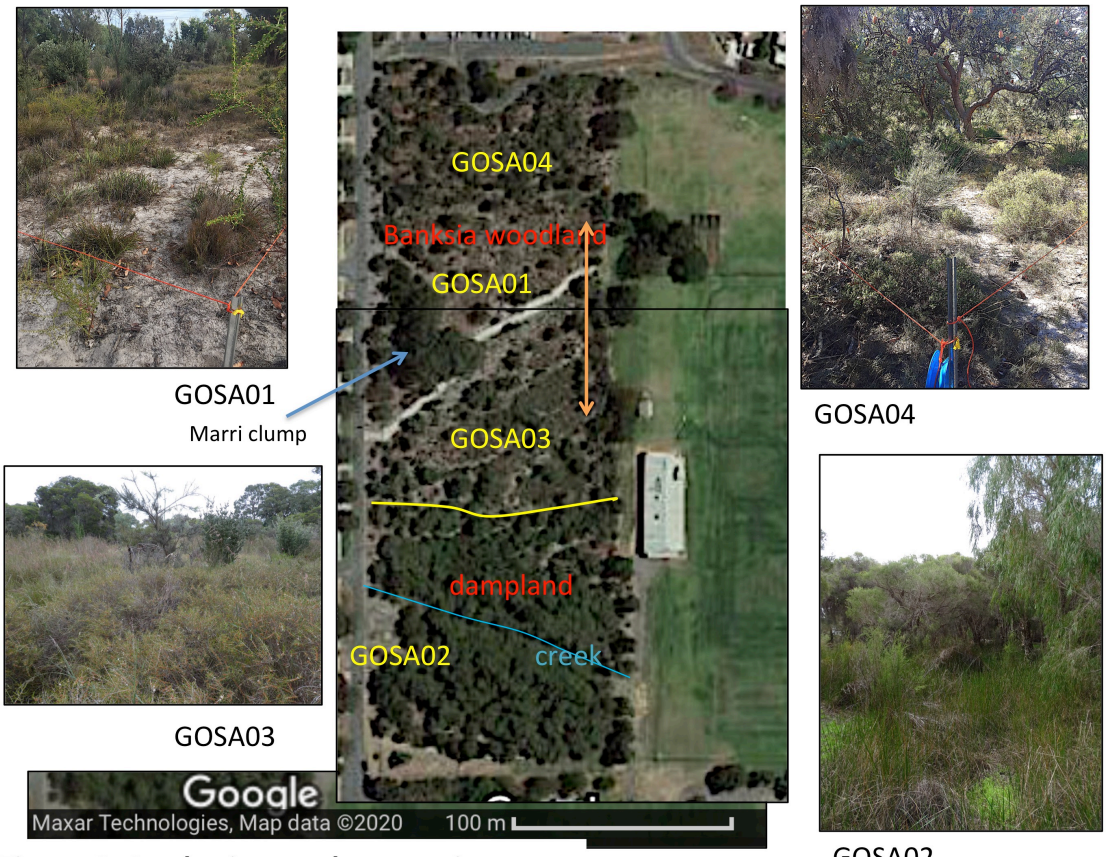

Figure 2: Study sites and vegetation map

11 APPENDIX 1: VEGETATION AND FLORA 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** Pristine or nearly so, no obvious signs of disturbance
2	**Excellent** Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
3	**Very Good** Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
4	**Good** Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate it. 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** Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. 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** 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** 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** 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** 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** 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** 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** 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 **Presumed Totally Destroyed** 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 **Critically Endangered** 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 **Endangered** 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 **Vulnerable** 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 **Data Deficient** 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. (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 **Lower Risk** 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.

12 APPENDIX 2: GOSS AVE BUSHLAND NATIVE VASCULAR PLANTS

KEY (terms follow WALGA et al 2005)

Underlined new record

Blue native planted NOT local

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 Photos/Specimen Field Herbarium

P = photos in Appendix 5

Specimens in the Field Herbarium are listed against quadrat in which located. Pages may have multiple specimens from different quadrats.

Column 6 Endemic (State)

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

Column 7 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 8 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 9 Growth Form 2 (See Key to terms at the end of this key for definitions)

CL	Climber
PR	Prostrate

Column 10 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 11 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 12 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 ID	SPECIES CODE	FAMILY	SPECIES NAME	P/ QUAD	AUST	CON	GF/ GF 2	WET	COMMON NAME/ ABORIGINAL NAME
3282	ACACYC	Fabaceae	Acacia cyclops		AUST		SH		Red-eyed Wattle
3374	ACAHUE	Fabaceae	Acacia huegelii	P	WA		SH		Huegel's Wattle
11611	ACALASLAS	Fabaceae	Acacia lasiocarpa var. lasiocarpa		WA		SH		Dune Moses/ Panjang
15481	ACAPULGLA	Fabaceae	Acacia pulchella var. glaberrima	03			SH		Prickly Moses
3527	ACASAL	Fabaceae	Acacia saligna		WA		SH		Coojong/ Kudjong
3557	ACASTE	Fabaceae	Acacia stenoptera	P	WA		SH		Narrow-winged Wattle
11837	PCYG	Proteaceae	Adenanthos cygnorum subsp. cygnorum	P/03, 04	WA		SH		Woollybush
17202	AGOFLEFLE	Myrtaceae	Agonis flexuosa var. flexuosa		WA		T		Peppermint
1056	ALENIT	Restionaceae	Alexgeorgea nitens	P	WA		S-R		Alexgeorgea
1728	ALLFRA	Casuarinaceae	Allocasuarina fraseriana	P/01	WA		T		Fraser's Sheoak
1732	ALLHUM	Casuarinaceae	Allocasuarina humilis	04	WA		SH		Dwarf Sheoak
200	AMPTUR	Poaceae	Amphipogon turbinatus		WA		G		Amphipogon
11434	ANIHUMHUM	Haemodoraceae	Anigozanthos humilis subsp. humilis		WA		H		Catspaw
11261	ANIMANMAN	Haemodoraceae	Anigozanthos manglesii subsp. manglesii	P	WA		H		Kangaroopaw
6949	ANTLIT	Solanaceae	Anthocercis littorea		WA		SH		Yellow Tailflower
1264	ARNPRE	Hemerocallidaceae	Arnocrinum preissii	P/01	WA		H-SH		Arnocrinum
20283	ASTSCO	Myrtaceae	Astartea scoparia	P/03	WA		SH		Common Astartea
42801	ASTZEP	Myrtaceae	Astartea zephyra	P	WA		SH		Astartea
17234	AUSCOM	Poaceae	Austrostipa compressa	P	WA		G		Golden Speargrass
1800	BANATT	Proteaceae	Banksia attenuata		WA		T		Candle Banksia/ Piara
1822	BANILI	Proteaceae	Banksia ilicifolia	P	WA		T		Hollyleaf Banksia
1830	BANLIT	Proteaceae	Banksia littoralis		WA		T	y	Swamp Banksia/ Pungura
1834	BANMEN	Proteaceae	Banksia menziesii	P/04	WA		T		Firewood Banksia
32203	BANNIVNIV	Proteaceae	Banksia nivea subsp. nivea		WA		SH/ PR		Couch Honeypot
743	BAUJUN	Cyperaceae	Baumea juncea		>AUST		S-C	y	Bare Twigrush
11381	BORRAMANE	Rutaceae	Boronia ramosa subsp. anethifolia	P/03	WA		SH-H		Blue Boronia
3710	BOSERI	Fabaceae	Bossiaea eriocarpa	P	WA		SH		Common Bossiaea
12770	BURCON	Colchicaceae	Burchardia congesta	P/03	WA		H		Kara
1277	CAEOCC	Hemerocallidaceae	Caesia occidentalis	P	WA		H		Tall Grasslily
15348	CALFLAFLA	Orchidaceae	Caladenia flava subsp. flava (leaf only to be confirmed)		WA				Cowslip Orchid
19309	CALNAR	Dasypogonaceae	Calectasia narragara		WA		H-SH		Blue Tinsel Lily
5458	CALFLA	Myrtaceae	Calytrix flavescens		WA		SH		Yellow Summer Starflower
2957	CASRAC	Lauraceae	Cassytha racemosa (App 6 CASRAC)	P	AUST		H/ CL		Dodder Laurel
6214	CENASI	Apiaceae	Centella asiatica	P	>AUST		H/ PR		Centella
1121	CENARI	Centrolepidaceae	Centrolepis aristata	03	AUST		S-C	y	Pointed Centrolepis
5498	CHAUNC	Myrtaceae	Chamelaucium uncinatum		WA		SH		Geraldton Wax
6348	CONPEN	Ericaceae	Conostephium pendulum	04	WA		SH		Pearlflower
11826	CONACUACU	Haemodoraceae	Conostylis aculeata subsp. aculeata	P/01	WA		H		Prickly Conostylis
11438	CONCANCAN	Haemodoraceae	Conostylis candicans subsp. candicans	P	WA		H		Grey Conostylis
1436	CONJUN	Haemodoraceae	Conostylis juncea		WA		H		Conostylis
11597	CONSETSET	Haemodoraceae	Conostylis setigera subsp. setigera		WA		H		Conostylis
17104	CORCAL	Myrtaceae	Corymbia calophylla		WA		T		Marri
11283	CORMICMIC	Hemerocallidaceae	Corynotheca micrantha var. micrantha		WA		H		Tangled Lily
11709	CRACOLACU	Crassulaceae	Crassula colorata var. acuminata	03	AUST		H		Dense Stonecrop
11563	CRACOLCOL	Crassulaceae	Crassula colorata var. colorata		>AUST		H		Dense Stonecrop

NAME ID	SPECIES CODE	FAMILY	SPECIES NAME	P/ QUAD	AUST	CON	GF/ GF 2	WET	COMMON NAME/ ABORIGINAL NAME
11349	CRADECDEC	Crassulaceae	Crassula decumbens var. decumbens		>AUST		H		Rufous Stonecrop
7454	DAMLIN	Goodeniaceae	Dampiera linearis	P/01	WA		H-SH		Dampiera
1218	DASBRO	Dasypogonaceae	Dasypogon bromeliifolius	P/01	WA		H		Pineapple Bush
3832	DAVPHY	Fabaceae	Daviesia physodes		WA		SH		Daviesia
3845	DAVTRI	Fabaceae	Daviesia triflora	P/04	WA		SH		Three-flowered Daviesia
16595	DESFLE	Restionaceae	Desmocladus flexuosus	P	WA		S-R		Desmocladus
16326	DIABRE	Hemerocallidaceae	Dianella brevicaulis	P	AUST	N, D	H		Dianella
11636	DIAREVDIV	Hemerocallidaceae	Dianella revoluta var. divaricata		WA		H		Common Dianella
4763	DODHAC	Sapindaceae	Dodonaea hackettiana	P/03	WA	4	SH/T		Hackett's Hopbush
13217	DROERYERY	Droseraceae	Drosera erythrorhiza subsp. erythrorhiza		WA		H		Red Ink Sundew
3114	DRONIT	Droseraceae	Drosera nitidula		AUST		H		Sundew
11756	EPIBILCIN	Onagraceae	Epilobium billardiereanum subsp. cinereum (App 6 EPIBIL)	P	WA		H		Willow Herb
14104	EREPAUPAU	Myrtaceae	Eremaea pauciflora var. pauciflora		WA		SH		Sandplain Eremaea
5659	EUCGOM	Myrtaceae	Eucalyptus gomphocephala		WA		T		Tuart
13547	EUCMARMAR	Myrtaceae	Eucalyptus marginata subsp. marginata		WA		T		Jarrah/ Djara
5790	EUCTOD	Myrtaceae	Eucalyptus todtiana	P	WA		T		Prickly Bark
3880	EUTVIR	Fabaceae	Eutaxia virgata (App 6 AOTGRA)	P	WA		sh		Eutaxia
20483	GASLIN	Fabaceae	Gastrolobium linearifolium		WA		SH		Gastrolobium
3957	GOMTOM	Fabaceae	Gompholobium tomentosum	P/03	WA		SH		Common Gompholobium
6160	GONPAN	Haloragaceae	Gonocarpus paniculatus		WA		H-SH		Gonocarpus
6161	GONPIT	Haloragaceae	Gonocarpus pithyoides (App 6, GONPITH)	P/03	WA		H		Gonocarpus
7538	GOOPUL	Goodeniaceae	Goodenia pulchella (App 6 GOOPUL)	P	WA		H		Goodenia
1475	HAESPI	Haemodoraceae	Haemodorum spicatum (App 6 HAESPI)	P	WA		H		Haemodorum/Mardja
6839	HEMPUN	Lamiaceae	Hemiandra linearis[1] (APP 6 *HEMHAIRY)	P	WA		SH/PR		Snakebush
5134	HIBHUE	Dilleniaceae	Hibbertia huegelii (App 6 HIBHUE)	P	WA		SH		Huegel's Hibbertia
5135	HIBHYP	Dilleniaceae	Hibbertia hypericoides	P/04	WA		SH		Common Hibbertia
5162	HIBRAC	Dilleniaceae	Hibbertia racemosa	P/04	WA		SH		Stalked Hibbertia
6222	HOMHOM	Apiaceae	Homalosciadium homalocarpum		WA		H		Homahoma
12859	HOVTRITRI	Fabaceae	Hovea trisperma var. trisperma	P/04	WA		SH		Common Hovea
5216	HYBCAL	Violaceae	Hybanthus calycinus (App 6 HYBCAL)	P	WA		H-SH		Native Violet
5817	HYPANG	Myrtaceae	Hypocalymma angustifolium	P/03	WA		SH		White Myrtle/ Kudjid
5825	HYPROB	Myrtaceae	Hypocalymma robustum (App 6 HYPANG)	P	WA		SH		Swan River Myrtle
1070	HYPEXS	Restionaceae	Hypolaena exsulca	P/01, 03, 04	WA		S-R		Common Hypolaena
917	ISOMAR	Cyperaceae	Isolepis marginata	04	AUST		S-C		Coarse Clubrush
924	ISOSTE	Cyperaceae	Isolepis stellata		AUST		S-C		Star Clubrush
4012	JACFUR	Fabaceae	Jacksonia furcellata	P/03	WA		SH/T		Grey Stinkwood
4029	JACSTE	Fabaceae	Jacksonia sternbergiana		WA		SH/T		Green Stinkwood/ Kapur
19632	JOHPUBPUB	Hemerocallidaceae	Johnsonia pubescens subsp. cygnorum	P/03	WA	2, N	H		
1188	JUNPAL	Juncaceae	Juncus pallidus		>AUST		S-J	y	Giant Rush
4044	KENPRO	Fabaceae	Kennedia prostrata		AUST		H/PR		Running Postman

[1] *Hemiandra linearis* is the name given here for the naturally occurring prostrate *Hemiandra* in the bushland. Propagation material should be collected from the form growing naturally in the bushland, this can be determined by matching to this specimen. Several forms of *Hemiandra* have been introduced from planting, these are not named.

NAME ID	SPECIES CODE	FAMILY	SPECIES NAME	P/ QUAD	AUST	CON	GF/ GF 2	WET	COMMON NAME/ ABORIGINAL NAME
20019	LACFIL	Poaceae	Lachnagrostis filiformis		>AUST		G	y	Blown Grass
11911	LAXRAMRAM	Asparagaceae	Laxmannia ramosa subsp. ramosa	P/04 adj	WA		H		Paper Lily
2791	LAXSQU	Asparagaceae	Laxmannia squarrosa	P/01	WA		H		Paper Lily
7574	LECFLO	Goodeniaceae	Lechenaultia floribunda	P	WA		H-SH		Leschenaultia
937	LEPLON	Cyperaceae	Lepidosperma longitudinale		AUST		S-C	y	Swamp Swordsedge
945	LEPSQU	Cyperaceae	Lepidosperma squamatum		WA		S-C		Common Lepidosperma
2344	LEPEMP	Santalaceae	Leptomeria empetriformis	04 adj	WA		SH		Currant Bush
6374	LEUCON	Ericaceae	Leucopogon conostephioides	P/04	WA		SH		Beard Heath
7677	LEVSTI	Stylidiaceae	Levenhookia stipitata		WA		H		Common Stylewort
9289	LOBANC	Campanulaceae	Lobelia anceps	P	>AUST		H	y	Angled Lobelia
1223	LOMCAE	Asparagaceae	Lomandra caespitosa	03	WA		H		Tufted Lomandra
1228	LOMHER	Asparagaceae	Lomandra hermaphrodita	01	WA		H		Lomandra
1239	LOMPRE	Asparagaceae	Lomandra preissii		WA		H		Preiss's Lomandra
1246	LOMSUA	Asparagaceae	Lomandra suaveolens		WA		H		Lomandra
18049	LYGIMB	Anarthriaceae	Lyginia imberbis	P/03	WA		S-R		Lyginia
2839	MACAUS	Macarthuriaceae	Macarthuria australis	P	WA		SH		Macarthuria
85	MACRIE	Zamiaceae	Macrozamia riedlii		WA		SH		Zamia Palm
5952	MELPRE	Myrtaceae	Melaleuca preissiana	P/03	WA		T	y	Preiss's Paperbark/ Modong
5959	MELRHA	Myrtaceae	Melaleuca rhaphiophylla	P	WA		SH	y	Freshwater Paperbark
5964	MELSER	Myrtaceae	Melaleuca seriata (App 6 MELSER)	P	WA		SH		Pink Melaleuca
5980	MELTHY	Myrtaceae	Melaleuca thymoides		WA		SH		Yellow Honeymyrtle
955	MESPSE	Cyperaceae	Mesomelaena pseudostygia	04	WA		S-C		Semaphore Sedge
12761	MICMEDMED	Orchidaceae	Microtis media subsp. media	P/03	WA		H		Common Mignonette Orchid
2401	NUYFLO	Loranthaceae	Nuytsia floribunda	P/01	WA		T		Christmas Tree/ Mudja
18255	OPEVAG	Rubiaceae	Opercularia vaginata	P/03	WA		SH-H		Opercularia
11749	ORTLAXLAX	Iridaceae	Orthrosanthus laxus var. laxus ?planted	P	WA		H		Common Orthrosanthus
30472	PATOCCOCC	Iridaceae	Patersonia occidentalis var. occidentalis		WA		H		Purple Flag
6006	PERELL	Myrtaceae	Pericalymma ellipticum (App 6 PERELL)	P	WA		SH		
2273	PERSAC	Proteaceae	Persoonia saccata		WA		SH		Snottygobble
2299	PETLIN	Proteaceae	Petrophile linearis	P/04	WA		SH		Pixie Mops
18529	PHISPI	Rutaceae	Philotheca spicata (App 6 PHILIN)	P	AUST		SH		Salt and Pepper
1478	PHLCIL	Haemodoraceae	Phlebocarya ciliata	01	WA		H		Phlebocarya
4675	PHYCAL	Phyllanthaceae	Phyllanthus calycinus	P	WA		H		Phyllanthus
18117	PIMROSROS	Thymelaeaceae	Pimelea rosea subsp. rosea		WA		SH		Rose Banjine/Banjin
8175	PODGRA	Asteraceae	Podolepis gracilis	01	AUST		H		Slender Podolepis
8184	PODGNA	Asteraceae	Podotheca gnaphalioides	03	WA		H		Golden Podotheca
4691	PORMIC	Phyllanthaceae	Poranthera microphylla	04	WA		H		Poranthera
1698	PTEVIT	Orchidaceae	Pterostylis vittata		WA		H		Banded Greenhood
6012	REGCIL	Myrtaceae	Regelia ciliata	P	WA		SH	y	Mouse Plant
6014	REGINO	Myrtaceae	Regelia inops	P	WA		SH		
13182	SCAREPREP	Goodeniaceae	Scaevola repens var. repens (App 6 SCAREP)	P	WA		H-SH/PR		Fanflower
1007	SCHPED	Cyperaceae	Schoenus pedicellatus (App 6 SCHPED)		WA		S-C		Schoenus
1018	SCHSUB	Cyperaceae	Schoenus subfascicularis		WA		S-C		Schoenus
6033	SCHINV	Myrtaceae	Scholtzia involucrata	P/03	WA		SH		
8225	SILHUM	Asteraceae	Siloxerus humifusus		WA		H		Siloxerus

NAME ID	SPECIES CODE	FAMILY	SPECIES NAME	P/ QUAD	AUST	CON	GF/ GF 2	WET	COMMON NAME/ ABORIGINAL NAME
2316	STILAT	Proteaceae	Stirlingia latifolia	P/01	WA		SH		Blueboy
7785	STYREP	Stylidiaceae	Stylidium repens	P/04 adj					
15532	SYNSPISPI	Proteaceae	Synaphea spinulosa subsp. spinulosa	P	WA		SH		Synaphea
1338	THYMAN	Asparagaceae	Thysanotus manglesianus	P/01	WA		H/CL		Twining Fringed Lily
1339	THYMUL	Asparagaceae	Thysanotus multiflorus (APP 6 THYMUL)	P	WA		H		Fringed Lily
1343	THYPAT	Asparagaceae	Thysanotus patersonii		WA		H/CL		Twining Fringed Lily
1351	THYSPA	Asparagaceae	Thysanotus sparteus		WA		H		Fringed Lily
1357	THYTHY	Asparagaceae	Thysanotus thyrsoideus		WA		H		Fringed Lily
6280	TRPIL	Araliaceae	Trachymene pilosa	P/04	AUST		H		Small Laceflower
1361	TRIELA	Hemerocallidaceae	Tricoryne elatior	P/01, 04	AUST		H		Yellow Summer Lily
1363	TRITEN	Hemerocallidaceae	Tricoryne tenella		WA		H		Yellow Summer Lily
14544	XANBRUBRU	Xanthorrhoeaceae	Xanthorrhoea brunonis subsp. brunonis		WA		SH		Balga

13 APPENDIX 3: GOSS AVE BUSHLAND QUADRAT DATA

Quadrat GOSA01

NAME_ID	FAMILY NAME	SPECIES_ NAME	QUAD
3502	Fabaceae	Acacia pulchella	GOSA01
1775	Proteaceae	Adenanthos cygnorum	GOSA01
185	Poaceae	Aira cupaniana	GOSA01
1056	Restionaceae	Alexgeorgea nitens	GOSA01
1728	Casuarinaceae	Allocasuarina fraseriana	GOSA01
1411	Haemodoraceae	Anigozanthos manglesii	GOSA01
7838	Asteraceae	Arctotheca calendula	GOSA01
1264	Hemerocallidaceae	Arnocrinum preissii	GOSA01
233	Poaceae	Avena barbata	GOSA01
244	Poaceae	Briza maxima	GOSA01
245	Poaceae	Briza minor	GOSA01
12770	Colchicaceae	Burchardia congesta	GOSA01
1418	Haemodoraceae	Conostylis aculeata	GOSA01
1418	Haemodoraceae	Conostylis aculeata	GOSA01
3137	Crassulaceae	Crassula colorata	GOSA01
7454	Goodeniaceae	Dampiera linearis	GOSA01
1218	Dasypogonaceae	Dasypogon bromeliifolius	GOSA01
16595	Restionaceae	Desmocladus flexuosus	GOSA01
347	Poaceae	Ehrharta calycina	GOSA01
18392	Iridaceae	Freesia alba x leichtlinii	GOSA01
1520	Iridaceae	Gladiolus caryophyllaceus	GOSA01
3957	Fabaceae	Gompholobium tomentosum	GOSA01
2197	Proteaceae	Hakea prostrata	GOSA01
3016	Brassicaceae	Heliophila pusilla	GOSA01
12859	Fabaceae	Hovea trisperma var. trisperma	GOSA01
8086	Asteraceae	Hypochaeris glabra	GOSA01
1070	Restionaceae	Hypolaena exsulca	GOSA01
19272	Hemerocallidaceae	Johnsonia pubescens subsp. cygnorum	GOSA01
1309	Asparagaceae	Laxmannia squarrosa	GOSA01
476	Poaceae	Lolium perenne	GOSA01
1223	Asparagaceae	Lomandra caespitosa	GOSA01
1228	Asparagaceae	Lomandra hermaphrodita	GOSA01
18049	Anarthriaceae	Lyginia imberbis	GOSA01
2401	Loranthaceae	Nuytsia floribunda	GOSA01
1550	Iridaceae	Patersonia occidentalis	GOSA01
19825	Caryophyllaceae	Petrorhagia dubia	GOSA01
1478	Haemodoraceae	Phlebocarya ciliata	GOSA01
8175	Asteraceae	Podolepis gracilis	GOSA01
6033	Myrtaceae	Scholtzia involucrata	GOSA01
6033	Myrtaceae	Scholtzia involucrata	GOSA01
25878	Asteraceae	Senecio condylus	GOSA01
2909	Caryophyllaceae	Silene gallica	GOSA01
2316	Proteaceae	Stirlingia latifolia	GOSA01
1338	Asparagaceae	Thysanotus manglesianus	GOSA01
1361	Hemerocallidaceae	Tricoryne elatior	GOSA01
8254	Asteraceae	Urospermum picroides	GOSA01
8255	Asteraceae	Ursinia anthemoides	GOSA01

NAME_ID	FAMILY NAME	SPECIES_ NAME	QUAD
4322	Fabaceae	Vicia sativa	GOSA01
7384	Campanulaceae	Wahlenbergia capensis	GOSA01

Quadrat GOSA03

NAME_ID	FAMILY NAME	SPECIES_ NAME	QUAD
3502	Fabaceae	Acacia pulchella	GOSA03
3557	Fabaceae	Acacia stenoptera	GOSA03
3581	Fabaceae	Acacia trigonophylla	GOSA03
1775	Proteaceae	Adenanthos cygnorum	GOSA03
185	Poaceae	Aira cupaniana	GOSA03
1728	Casuarinaceae	Allocasuarina fraseriana	GOSA03
1411	Haemodoraceae	Anigozanthos manglesii	GOSA03
7838	Asteraceae	Arctotheca calendula	GOSA03
42801	Myrtaceae	Astartea zephyra	GOSA03
1800	Proteaceae	Banksia attenuata	GOSA03
1822	Proteaceae	Banksia ilicifolia	GOSA03
1834	Proteaceae	Banksia menziesii	GOSA03
32202	Proteaceae	Banksia nivea	GOSA03
4438	Rutaceae	Boronia ramosa	GOSA03
245	Poaceae	Briza minor	GOSA03
1121	Centrolepidaceae	Centrolepis aristata	GOSA03
1418	Haemodoraceae	Conostylis aculeata	GOSA03
3137	Crassulaceae	Crassula colorata	GOSA03
7454	Goodeniaceae	Dampiera linearis	GOSA03
19649	Orchidaceae	Disa bracteata	GOSA03
4763	Sapindaceae	Dodonaea hackettiana	GOSA03
347	Poaceae	Ehrharta calycina	GOSA03
18392	Iridaceae	Freesia alba x leichtlinii	GOSA03
2969	Papaveraceae	Fumaria capreolata	GOSA03
7323	Rubiaceae	Galium murale	GOSA03
20483	Fabaceae	Gastrolobium linearifolium	GOSA03
1520	Iridaceae	Gladiolus caryophyllaceus	GOSA03
3957	Fabaceae	Gompholobium tomentosum	GOSA03
6161	Haloragaceae	Gonocarpus pithyoides	GOSA03
3016	Brassicaceae	Heliophila pusilla	GOSA03
6839	Lamiaceae	Hemiandra pungens	GOSA03
5817	Myrtaceae	Hypocalymma angustifolium	GOSA03
8086	Asteraceae	Hypochaeris glabra	GOSA03
1070	Restionaceae	Hypolaena exsulca	GOSA03
4012	Fabaceae	Jacksonia furcellata	GOSA03
7574	Goodeniaceae	Lechenaultia floribunda	GOSA03
1223	Asparagaceae	Lomandra caespitosa	GOSA03
1097	Anarthriaceae	Lyginia barbata	GOSA03
5952	Myrtaceae	Melaleuca preissiana	GOSA03
10954	Orchidaceae	Microtis media	GOSA03
29418	Asteraceae	Monoculus monstrosus	GOSA03
18255	Rubiaceae	Opercularia vaginata	GOSA03
19825	Caryophyllaceae	Petrorhagia dubia	GOSA03
1478	Haemodoraceae	Phlebocarya ciliata	GOSA03
8184	Asteraceae	Podotheca gnaphalioides	GOSA03

NAME_ID	FAMILY NAME	SPECIES_ NAME	QUAD
4691	Phyllanthaceae	Poranthera microphylla	GOSA03
6012	Myrtaceae	Regelia ciliata	GOSA03
1556	Iridaceae	Romulea rosea	GOSA03
25878	Asteraceae	Senecio condylus	GOSA03
2316	Proteaceae	Stirlingia latifolia	GOSA03
1343	Asparagaceae	Thysanotus patersonii	GOSA03
1368	Asphodelaceae	Trachyandra divaricata	GOSA03
6280	Araliaceae	Trachymene pilosa	GOSA03
4291	Fabaceae	Trifolium arvense	GOSA03
8255	Asteraceae	Ursinia anthemoides	GOSA03
7384	Campanulaceae	Wahlenbergia capensis	GOSA03

Quadrat GOSA04

NAME_ID	FAMILY NAME	SPECIES_ NAME	QUAD
1775	Proteaceae	Adenanthos cygnorum	GOSA04
1056	Restionaceae	Alexgeorgea nitens	GOSA04
1732	Casuarinaceae	Allocasuarina humilis	GOSA04
1411	Haemodoraceae	Anigozanthos manglesii	GOSA04
1822	Proteaceae	Banksia ilicifolia	GOSA04
1834	Proteaceae	Banksia menziesii	GOSA04
3710	Fabaceae	Bossiaea eriocarpa	GOSA04
244	Poaceae	Briza maxima	GOSA04
12770	Colchicaceae	Burchardia congesta	GOSA04
1277	Hemerocallidaceae	Caesia occidentalis	GOSA04
6348	Ericaceae	Conostephium pendulum	GOSA04
7454	Goodeniaceae	Dampiera linearis	GOSA04
1218	Dasypogonaceae	Dasypogon bromeliifolius	GOSA04
3845	Fabaceae	Daviesia triflora	GOSA04
16595	Restionaceae	Desmocladus flexuosus	GOSA04
16326	Hemerocallidaceae	Dianella brevicaulis	GOSA04
347	Poaceae	Ehrharta calycina	GOSA04
4638	Euphorbiaceae	Euphorbia peplus	GOSA04
1520	Iridaceae	Gladiolus caryophyllaceus	GOSA04
3957	Fabaceae	Gompholobium tomentosum	GOSA04
3016	Brassicaceae	Heliophila pusilla	GOSA04
5135	Dilleniaceae	Hibbertia hypericoides	GOSA04
5162	Dilleniaceae	Hibbertia racemosa	GOSA04
8086	Asteraceae	Hypochaeris glabra	GOSA04
917	Cyperaceae	Isolepis marginata	GOSA04
4012	Fabaceae	Jacksonia furcellata	GOSA04
11911	Asparagaceae	Laxmannia ramosa subsp. ramosa	GOSA04
7574	Goodeniaceae	Lechenaultia floribunda	GOSA04
945	Cyperaceae	Lepidosperma squamatum	GOSA04
2344	Santalaceae	Leptomeria empetriformis	GOSA04
6374	Ericaceae	Leucopogon conostephioides	GOSA04
1228	Asparagaceae	Lomandra hermaphrodita	GOSA04
18049	Anarthriaceae	Lyginia imberbis	GOSA04
955	Cyperaceae	Mesomelaena pseudostygia	GOSA04
4356	Oxalidaceae	Oxalis pes-caprae	GOSA04
1550	Iridaceae	Patersonia occidentalis	GOSA04

NAME_ID	FAMILY NAME	SPECIES_ NAME	QUAD
2299	Proteaceae	Petrophile linearis	GOSA04
1478	Haemodoraceae	Phlebocarya ciliata	GOSA04
8175	Asteraceae	Podolepis gracilis	GOSA04
4691	Phyllanthaceae	Poranthera microphylla	GOSA04
1556	Iridaceae	Romulea rosea	GOSA04
2316	Proteaceae	Stirlingia latifolia	GOSA04
7785	Stylidiaceae	Stylidium repens	GOSA04
6280	Araliaceae	Trachymene pilosa	GOSA04
8254	Asteraceae	Urospermum picroides	GOSA04
8255	Asteraceae	Ursinia anthemoides	GOSA04
7384	Campanulaceae	Wahlenbergia capensis	GOSA04

14 APPENDIX 4: GOSS AVE BUSHLAND WEEDS (NATURALIZED VASCULAR PLANTS)

Based on Keighery, G.J. & Longman, V. (2004) The naturalised vascular plants of Western Australia 1: Checklist, environmental weeds and distribution in IBRA regions. *Plant Protection Quarterly* **19**: (1) 12-32.

Key

Families
Listed in alphabetical order under the major groupings of Ferns, Gymnosperms, Monocotyledons and Dicotyledons.

Genera and species
Listed alphabetically within families. The scientific name of each taxon commences the individual listing, followed by the common name (if one is commonly used).

Distribution – natural regions
The distribution of each taxon is listed in IBRA regions recorded. Some of the distributions have been obtained from FloraBase (Western Australian Herbarium 1998-).
Some taxa are native to Western Australia but can also behave as weeds. The IBRA regions in which these native taxa have been found to behave as weeds are prefixed by an asterisk (*). For these taxa, the regions without the asterisk indicate native non-weedy distribution of the taxa.

AMARYLLIDACEAE
Amaryllis belladonna (Easter Lily) – (SWA, JF, WAR).

ASPHODELACEAE
Asphodelus fistulosus (Onion Weed) – (PIL, CAR, GAS, MUR, GS, YAL, SWA, JF, COO, NUL, MAL, ESP, HAM).

CYPERACEAE
Cyperus polystachyos (Bunchy Sedge) – (VB, CK, DL, PIL, *SWA, *JF). Native to the tropics.
Cyperus tenellus (Tiny Flatsedge) – (GS, YAL, AW, SWA, JF, COO, MAL, WAR, ESP).
Cyperus tenuiflorus (Scaly Sedge) – (CAR, AW, SWA, JF, WAR).

IRIDACEAE
Ferraria crispa subsp. crispa (Black Flag) – (AW, SWA, JF, WAR, ESP).
Freesia alba x leichtlinii (Freesia) – (AW, SWA, JF, MAL, WAR, ESP). APP 6 *FREX
Gladiolus caryophyllaceus (Pink Gladiolus) – (GS, AW, SWA, MAL, JF). APP 6 *GLACAR
Gladiolus undulatus (Wavy Gladiolus) – (SWA, JF, WAR, ESP).
Romulea rosea var. australis (Guildford Grass) – (GS, AW, SWA, JF, MAL, WAR, COO, ESP).

JUNCACEAE
Juncus bufonius (Toad Rush) – (CAR, MUR, GS, AW, SWA, JF, COO, NUL, MAL, WAR, ESP, HAM). A complex of native and introduced taxa in this species. The form with congested inflorescences corresponding to *Juncus hybridus* is the weedy type around Perth.
Juncus microcephalus – (SWA, JF, WAR, ESP).

ORCHIDACEAE
Disa (Monadenia) bracteata (South African Orchid) – (GS, AW, SWA, JF, WAR, ESP).

POACEAE
Avena barbata (Bearded Oat) – (CAR, GS, YAL, AW, SWA, JF, COO, NUL, MAL, WAR, ESP).
Avena fatua (Wild Oat) – (GD, CAR, MUR, GS, AW, SWA, JF, COO, WAR, ESP).
Briza maxima (Blowfly Grass, Quaking Grass) – (GS, AW, SWA, JF, MAL, WAR, ESP).
Briza minor (Shivery Grass) – (MUR, GS, YAL, AW, SWA, JF, COO, MAL, WAR, ESP).
Cenchrus clandestinus (Kikuyu) – (SWA, JF, WAR).
Cenchrus (Pennisetum) villosum (Feather Top) – (GS, SWA, JF).

Cynodon dactylon (Couch) – (perhaps native to tropics, NK, VB, OVP, CK, DL, PIL, *CAR, *MUR, *GS, *AW, *SWA, *JF, *COO, *MAL, *WAR, *ESP).
Ehrharta calycina (Perennial Veldt Grass) – (GS, AW, SWA, JF, MAL, ESP).
Ehrharta longiflora (Annual Veldt Grass) – (CAR, GS, AW, SWA, JF, COO, MAL, WAR, ESP, HAM).
Holcus lanatus (Yorkshire Fog) – (SWA, JF, AW, WAR).
Lagurus ovatus (Hare's Tail Grass) – (GS, AW, SWA, JF, MAL, WAR, ESP).
Lolium perenne (Perennial Ryegrass) – (SWA, JF, WAR, ESP).
Lolium rigidum (Annual Ryegrass) – (CAR, GS, AW, SWA, JF, WAR).
Paspalum dilatatum (Paspalum) – (VB, GS, AW, SWA, JF, WAR).
?Phalaris minor (Lesser Canary Grass) – (GS, AW, SWA, JF, WAR).
Polypogon monspeliensis (Annual Barbgrass) – (CAR, YAL, AW, COO, MUR, NUL, GS, AW, SWA, JF, WAR, ESP).
Stenotaphrum secundatum (Buffalo Grass) – (SWA, JF, WAR).
Vulpia myuros (Rat's Tail Fescue, Silver Grass) – (GS, AW, COO, SWA, JF, MAL, WAR, ESP).

ASTERACEAE
Arctotheca calendula (Capeweed) – (CAR, MUR, GS, YAL, AW, SWA, JF, MAL, WAR, COO, ESP, HAM).
Conyza sumatrensis (Tall Fleabane) – (GS, AW, COO, SWA, JF, WAR, ESP).
Cotula coronopifolia (Waterbuttons) – (GS, AW, SWA, JF, WAR, ESP). This ?native species is spreading in nutrient enriched wetlands.
Cotula turbinata (Funnel Weed) **–** (AW, SWA, JF, WAR).
Gazania linearis (Gazania) – (GS, AW, SWA, JF, COO, WAR, ESP).
Hypochaeris glabra (Smooth Catsear) – (CAR, MUR, GS, YAL, AW, SWA, JF, COO, MAL, WAR, ESP, HAM).
Lactuca serriola (Prickly Lettuce) – (CAR, MUR, GS, AW, SWA, JF, COO, MAL, WAR, ESP).
Leontodon rhagadioloides (Cretan Weed) – (CAR, MUR, GS, YAL, AW, SWA, JF, COO, WAR, ESP).
Senecio condylus (Variable Groundsel) – (SWA). APP 6 *SENCON
Sonchus oleraceus (Sowthistle) – (OVP, DL, GSD, PIL, CR, CAR, GAS, MUR, GVD, GS, YAL, AW, SWA,
Symphyotrichum subulatum (Bushy Starwort) – (GS, AW, SWA, JF, COO, WAR, ESP).
Ursinia anthemoides subsp. anthemoides (Ursinia) – (GS, AW, SWA, JF, COO, MAL, WAR, ESP). APP 6 *URSANT
Vellereophyton dealbatum (White Cudweed) – (GS, AW, SWA, JF, COO, MAL, WAR, ESP).

BRASSICACEAE
Heliophila pusilla – (SWA, JF, WAR, ESP).

CAMPANULACEAE
Grammatotheca bergiana var. bergiana– (SWA, JF, WAR).
Monopsis debilis var depressa – (GS, AW, SWA, JF, WAR, ESP).
Wahlenbergia capensis (Cape Bluebell) – (GS, AW, SWA, JF, MAL, WAR, ESP).

CARYOPHYLLACEAE
Petrorhagia dubia (Velvet Pink) – (GS, AW, SWA, JF, MAL, WAR, ESP).
Silene gallica var. gallica (French Catchfly) – (CAR, MUR, GS, YAL, SWA, JF, COO, MAL, WAR, ESP).

EUPHORBIACEAE
Euphorbia peplus (Petty Spurge) – (GS, AW, SWA, JF, WAR, ESP).
Euphorbia terracina (Geraldton Carnation Weed) – (MUR, GS, SWA, JF, AW, MAL, WAR, ESP). APP 6 *EUPTER

FABACEAE
Acacia iteaphylla (Flinders Range Wattle) – (SWA, JF, WAR).
Acacia longifolia subsp. longifolia (Sydney Golden Wattle) – (SWA, JF, WAR, ESP).
Acacia podalyriifolia (Queensland Silver Wattle) – (SWA, JF).
Acacia trigonophylla (GS, AW, MAL, *SWA) APP 6 *ACATRI
Erythrina x sykesii (Coral Tree) – (SWA, JF).
Lotus subbiflorus (Hairy Birds Foot Trefoil) – (GS, AW, SWA, JF, WAR, ESP).
Medicago polymorpha (Burr Medic) – (CAR, MUR, GS, YAL, AW, SWA, JF, COO, NUL, MAL, WAR, ESP).
Ornithopus compressus (Yellow Serradella) – (GS, SWA, JF, WAR, ESP).
Trifolium angustifolium var. angustifolium (Narrowleaf Clover) – (GS, AW, SWA, JF, MAL, WAR, ESP).
Trifolium arvense var. arvense (Hare's Foot Clover) – (GS, AW, SWA, JF, MAL, WAR, ESP).

Trifolium campestre var. campestre (Hop Clover) – (GS, AW, SWA, JF, MAL, WAR, ESP).
Trifolium dubium (Suckling Clover) – (GS, AW, SWA, JF, MAL, WAR, ESP).
Trifolium hirtum (Rose Clover) – (GS, AW, SWA, JF, MAL, ESP).
Vicia sativa subsp. nigra (Common Vetch) – (SWA, JF, AW, WAR, COO, NUL).

GERANIACEAE
Geranium molle (Dove's Foot Cranesbill) – (SWA, JF, WAR).
Pelargonium capitatum (Rose Pelargonium) – (GS, SWA, JF, WAR, ESP).

MYRTACEAE
Agonis flexuosa (Peppermint) – (SWA, JF, WAR, *SWA).
Chamelaucium uncinatum (Geraldton Wax) – (GS, SWA, *SWA, *JF, *AW).
Corymbia citriodora (Lemon Scented Gum) – (SWA, JF).

ONAGRACEAE
Oenothera laciniata – (SWA)
Oenothera mollissima – (SWA, JF).

OXALIDACEAE
Oxalis pes-caprae (Soursob) – (CAR, GS, YAL, AW, SWA, JF, COO, MAL, WAR, ESP).
Oxalis purpurea (Largeflower Wood Sorrel, Four O'Clock, Purple Wood Sorrel) – (GS, AW, SWA, JF, MAL, WAR, ESP).

PAPAVERACEAE
Fumaria capreolata (Climbing Fumitory) – (GS, AW, SWA, JF, MAL, WAR, ESP).
Fumaria muralis subsp. muralis (Wall Fumitory) – (AW, SWA, JF, MAL, WAR, ESP).

PLANTAGINACEAE
Callitriche stagnalis (Common Starwort) – (CAR, MUR, GS, AW, SWA, JF, COO, WAR, ESP).
Misopates orontium (Lesser Snapdragon) – (GS, AW, SWA, JF, MAL).

PRIMULACEAE
These varieties have been placed in the genus **Lysmachia** without the varieties, this is a loss of information as the 2 forms behave differently in WA, hence they are retained under **Anagallis**.
Anagallis arvensis var. arvensis (Scarlet Pimpernel) – (CAR, MUR, GS, YAL, AW, SWA, JF, COO, MAL, WAR, ESP, HAM).
Anagallis arvensis var. caerulea (Blue Pimpernel) – (CAR, MUR, GS, YAL, AW, SWA, JF, COO, MAL, WAR, ESP, HAM).

RUBIACEAE
Galium murale (Bedstraw) – (GS, AW, SWA, JF, COO, NUL, MAL, WAR, ESP, HAM).

SCROPHULARIACEAE
Dischisma arenarium – (GS, SWA, JF, WAR, ESP).
SOLANACEAE
Solanum nigrum (Black Berry Nightshade) – (CK, DL, GVD, PIL, CAR, GS, AW, MUR, YAL, SWA, JF, COO, NUL, MAL, WAR, ESP, HAM).

15 APPENDIX 5: GOSS AVE BUSHLAND PHOTOS

Folder Appendix 5 GOSS AVE 2018 0428 1013 20190113 contains jpg images by Bronwen Keighery of a selection of plants from the Bushland.

KEY
Plant names plant species names are in code as shown in Appendix 2, Column 2 and highlighted in yellow below

Plant images are in 3 groups
Local Native plants plant species codes followed by annotations indicating part of the plant illustrated, for example ACAHUE P01 as for key below

P01 = 'flower', the part of the plant/flower generally recognised first
P02 = plant, whole plant
P03/4 = detail flower and/or leaf
P05 = Fruit

@ Planted species plant species codes are prefixed with @, for example @ANIMAN P01

* Weeds weed plant species codes are prefixed with a *, for example *ACATRI P03

Bushland images
Quadrat photos quadrat codes are prefixed with a # for example #GOSA01 AREA BAN COM NO BAN

16 APPENDIX 6: GOSS AVE BUSHLAND FIELD HERBARIUM

Folder Appendix 6 GOSS AVE FIELD HERB contains jpg images of plants from the Bushland represented in the Field Herbarium.

KEY
Plant names plant species sheets are in code as shown in Appendix 2, Column 2