

# A SURVEY OF ROADSIDE CONSERVATION VALUES IN THE SHIRE OF MURRAY



## AND ROADSIDE MANAGEMENT GUIDELINES

March 2003 – Roadside Conservation Committee



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Cover Page Photo- Declared Rare Flora, such as *Diuris drummondii* can be found along roadsides in the Shire of Murray.

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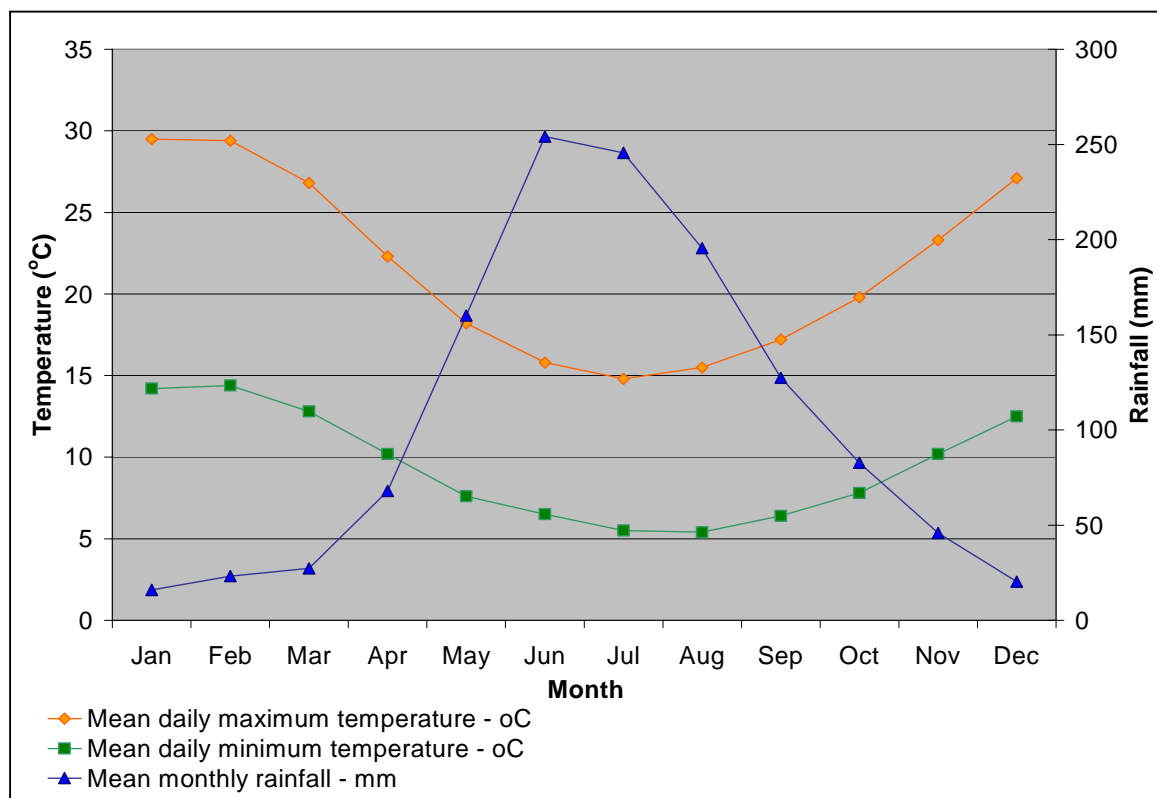
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## INTRODUCTION

The Shire of Murray covers an area of 1,821 square kms and supports a population of approximately 10,340 people. The area experiences a mediterranean climate with an average annual rainfall of 1266 mm. Seasonal temperatures are characterised by warm summers, with maxima averaging from the mid to high twenties, and mild winters, with maxima in the mid teens. Mean daily maximum and minimum temperatures and rainfall statistics are shown below.



**Figure 1 – Mean daily maximum and minimum temperature (°C) and rainfall (mm) in the Shire of Murray, based on climate averages from the Dwellingup Forest weather station 009538.**

The Shire of Murray is located 86 km south of Perth in Western Australia's Peel-Harvey Catchment. The major agricultural pursuits and industries in the area are, cattle, pigs, fruit orchards, forestry, viticulture and Alcoa's aluminium refinery.

Tourism is also an important industry, with the area's spectacular natural resources, such as the Murray and Serpentine Rivers, magnificent forested areas and wildflowers, being a major attraction. The Hotham Valley Tourist Railway, Lane Poole reserve and historic buildings are salient features of the area.

The WA herbarium records more than 1000 different species of plants from the Shire of Murray (see Appendix 4). Of these, 42 are Acacia species, 32 are Styliidium species, 23 are Hibbertia species and 14 are Eucalypt species.

## VALUES OF ROADSIDES

Since the settlement of Western Australia by Europeans, large areas of native vegetation in the south west of the state have been cleared for agriculture, roads, settlements, and other development. The fragmentation of the more or less continuous expanse of native vegetation communities by clearing has resulted in the isolation of plant and animal populations, restricted by man-made biogeographical islands of small remnants. They are prone to food shortages, disease and reduced genetic diversity. However, the presence of native vegetation along roadsides can often assist in alleviating this isolation effect by providing connectivity between bush remnants, thereby facilitating the movement of biota across the landscape.

Remnant vegetation includes more than just trees. Trees, shrubs and ground covers (creepers, grasses and herbs) combine to provide valuable food and shelter for different types of wildlife. Existing native vegetation will require less maintenance if left undisturbed.

### **Trees are good – bush is better**

Local indigenous trees, shrubs and grasses on the roadside are valuable because they:

- are often the only remaining example of original vegetation within extensively cleared areas;
- are easier to maintain and generally less fire prone than introduced vegetation;
- provide habitat for many native species of plants, mammals, reptiles, amphibians and invertebrates;
- provide wildlife corridors linking other areas of native vegetation;
- often contain rare and endangered plants and animals. Currently, roadside plants represent more than 80 per cent of the known populations of 40 of the declared rare species, and three of these are known only to exist in roadside populations;
- provide the basis for our important wildflower tourism industry. The aesthetic appeal of well-maintained roadsides should not be overlooked, and they have the potential to improve local tourism and provide a sense of place;
- often contain sites of historic or cultural significance;
- provide windbreaks and stock shelter areas for adjoining farmland by helping to stabilise temperature and reduce evaporation.
- assist with erosion and salinity control, and not only in the land adjoining the road reserve per se;
- are generally far less of a fire threat than annual weeds;

- provide a benchmark for the study of soil change throughout the advancement of agriculture;
- are a vital source of local seed for revegetation projects in the absence of other alternatives;
- provide a valuable source of seed for regeneration projects. This is especially pertinent to shrub species, as clearing and grazing beneath farm trees often removes this layer;

**Approval of the local shire and a CALM permit are required prior to collection.**

In a time of rapid change, where the demands placed on the natural world are many, it is vital that there is a coordinated management of lands across all tenures and boundaries to ensure the sustainability and integrity of the natural biota and ecosystem processes, agricultural lands and service infrastructure.

*Roadsides are the vital link ..... and a priceless community asset.*

## LEGISLATION

Uncertainty often exists in the minds of many with regard to the 'ownership', control and management of the roadside. When a public road is created, a corridor of land is dedicated for a road, i.e. a road reserve. The road formation and its associated infrastructure are accommodated for within the road reserve. The remaining area on each side of the road is called the road verge or roadside. It is in the control and management responsibilities of this area (and the plants and animals residing within it) that the uncertainty exists.

With the proclamation of the *Wildlife Conservation Act* 1950 the responsibility for flora conservation, including the control of harvesting of protected flora (this includes seed), was given to the Minister of the Crown responsible for Fisheries and Wildlife and the Department of Fisheries and Wildlife. With the formation of the Department of Conservation and Land Management in 1984 and the accompanying *Conservation and Land Management Act* 1984, the conservation and management of all native wildlife passed to the Minister responsible for that Department and the Department itself. As a consequence the Department of Conservation and Land Management has the authority to exert controls.

In addition to the general provisions relating to protected flora under the *Wildlife Conservation Act*, special protection is afforded to flora that is declared as rare or threatened under section 23F of the *Wildlife Conservation Act*.

The legislation pertaining to the management of road reserves is complex and includes those listed below.

### State legislation

- *Aboriginal Heritage Act* 1972
- *Agriculture and Related Resources Protection Act* 1976
- *Bush Fires Act* 1954
- *Conservation and Land Management Act* 1984
- *Environmental Protection Act* 1986
- *Heritage of WA Act* 1990
- *Land Act* 1933
- *Local Government Act* 1995
- *Main Roads Act* 1930
- *Mining Act* 1978
- *Soil and Land Conservation Act* 1945

- *State Energy Commission Supply Act 1979*
- *Water Authority Act 1987*
- *Wildlife Conservation Act 1950-1979*

#### Commonwealth Legislation

- *Environment Protection and Biodiversity Conservation Act 1999*

Other legislation also applies to the activities on roadsides, which may affect the clearing of vegetation or other disturbance to the roadside.

It is recommended that a cautionary approach be taken when working within roadsides or special environment areas, and that the relevant authority be contacted if there is any doubt about the management or protection of heritage or conservation values present in the roadsides.



## **ROADSIDE CONSERVATION IN THE SHIRE OF MURRAY**

### **Collection of native plant material from roadsides**

The Shire of Murray currently allows the collection of seed from native plants within road reserves for bonafide revegetation purposes. Under the *Wildlife Conservation Act* the Department of Conservation and Land Management may issue a licence following Shire approval.

Collecting seed from a roadside may be the only option in cases where there are no other sources of seed for revegetation, although, there are serious flow-on effects that need to be considered. Collection of native plant material from roadsides:

- ♦ further depletes the already scarce resource,
- ♦ takes away from the integrity of the roadside,
- ♦ reduces the amount of seed available for natural regeneration,
- ♦ reduces the ability of the area to regenerate after disturbances such as fire, and
- ♦ threatens roadside plant communities with the potential introduction and spread of two major threats – *Phytophthora* dieback and weeds.

### **Declared Rare Flora (DRF)**

Declared Rare Flora (DRF) refers to species, or populations of native plants that are of great significance and should be treated with special care when road and utility service, construction or maintenance is undertaken. Populations of DRF along roadsides are designated Special Environmental Areas (SEA's) and are marked out by yellow stakes with an identification plate welded on. See figures 10 and 11.

The RCC hosted a *Natural Resource Management in Transport Corridors* workshop with Shire staff in February 2003. It was evident that there was a distinct lack of knowledge about DRF markers and the location of DRF sites along roadsides in the Shire of Murray. This may be due to a lack of awareness, or inadequate information flow between Management and other staff about the importance of and locations of these sites.

DRF sites in the Shire of Murray need to be checked for the presence of appropriate markers, and their locations be made known to Managers and supervisors.

## **Weeds**

Weeds are plants that are growing outside their natural range and competing with native plants for nutrients, space, water and light. Weeds often invade roadsides and interfere with the growth and survival of native plants. The effect of weed infestations on native plant populations is severe, and causes flow on effects for native fauna. Once native plants begin to diminish, due to heavy competition, native fauna suffers due to reduced availability of habitat and food.

Weed invasion along roadsides is an extremely important issue in the Shire of Murray. Once weeds become established in an area, they become a long-term management issue, costing many dollars to control or eradicate. In the Shire of Murray, roadside weeds are currently controlled by the use of herbicides, because the narrow verges are hard to access. During the RCC workshop, the Shire staff were shown different types of machinery that make it easier to mow weeds along narrow verges. Of particular interest was machinery with a mechanical 'arm', which would allow the maintenance staff to drive along the road whilst mowing, rather than driving on the verge itself.

Various weeds were nominated, recorded and mapped along roadsides in the Shire of Murray, as part of the roadside survey, and the locations of 6 weed species can be observed in the weed overlays provided with the Roadside Conservation Values map. The nominated weeds shown on the overlays are African Lovegrass, *Watsonia*, Victorian tea-tree, Kikuyu, Bridal Creeper, and Arum Lily, see Figure 11.

## **Phytophthora Dieback**

The *Phytophthora* species dieback is made up of several types of introduced fungi. About one third of native plants in Western Australia's south-west are susceptible, including species of *Banksia*, *Hakea*, *Eucalyptus*, *Melaleuca*, *Verticordia*, *Acacia* and *Grevillea*.

The *Phytophthora* fungus infects the roots and inhibits the uptake of water and nutrients, eventually causing death. It is more widespread and severe in the higher rainfall zone and waterlogged sites. The Shire of Murray is a known *Phytophthora* dieback risk area, particularly in forested areas.

*Phytophthora* spreads by the movement of spores in water, or by the spread of infected soil. The spores can be introduced to uninfected areas by human activities, particularly through the soil carried on vehicle tyres or footwear.

Human activities, such as harvesting seed or wildflowers, have the potential to spread *Phytophthora* fungi. Currently, there is no practical method of eradicating *Phytophthora* once it is established in an area.

### **Roadside conservation initiatives in the Shire of Murray**

The Dandalup-Murray and Coolup Land Conservation District Committees [LCDCs] and their associated Landcare groups work with the Shire on a number of natural resource management issues, especially through the Weed Strategy Group.

The majority of the Shire's 1800 km of roadsides were assessed and mapped for their conservation status from 1991 to 1994. In 2002, the LCDCs, in partnership with the Shire, organised for Landcare volunteers to undertake the RCC's roadside conservation survey training course and in turn the survey. The Landcare groups and the Shire were keen to see the change in roadside conservation values that had occurred over time. The survey is also seen as an important tool in helping to decide where to undertake future roadside vegetation projects and to help identify areas to focus revegetation efforts on public reserves and private property.

In 1999 Council resolved to eradicate Lovegrass from the Shire. As a first step a "Lovegrass Control by Replacement project" was initiated in 2000 by the Dandalup-Murray LCDC in partnership with the Shire. This project has demonstrated effective methods of controlling lovegrass and has emphasised the importance of establishing indigenous vegetation in its place. The methods used in the initial trial were replicated in 2002 over a 1500m length of roadside along Readheads and Hopelands Roads in North Dandalup.

In 2002/03 the Shire committed \$2,500 in its budget for Roadside Revegetation with a focus on areas disturbed through road construction. This commitment by the Shire was matched/supported by a \$2500 allocation from Alcoa's Rivers, Wetlands and habitats project, for roadside revegetation.

In February 2003 the Shire's Parks and Gardens staff undertook the "Natural Resource Management in Transport Corridors" course conducted by the RCC. This important training course helped raise the awareness within the crew of many values and benefits provided by roadside vegetation.

Over the past decade the Coolup LCDC has encouraged 'roadside widening' projects by private landholders. This is where the landholders establish a bush belt parallel to the

roadside so as to enhance the width of the vegetative corridor and in turn the values provided by the vegetation.

## ASSESSMENT PROCESS

### Methods

The methods to assess and calculate the conservation value of the roadside reserves are described in Hussey (1991). The process involves scoring a set of pre-selected attributes, which, when combined, represent a roadside's conservation status. A list of these attributes is presented on a standard survey sheet, see Appendix 2. This provides both a convenient and uniform method of scoring.

Ideally, the survey is undertaken by a group of local volunteers, who, aided by their knowledge of the area, are able to provide an accurate and cost effective method of data collection. Community participation also ensures a sense of ownership of the end product, which increases the likelihood of its acceptance and use by the local community and road managers (Lamont and Blyth, 1995).

Fieldwork was carried out throughout July to November 2002. The enthusiastic efforts of the volunteer surveyors, of project coordinators Adrian Parker and Colleen Archibald and the support provided by the Shire of Murray ensured that this project was successfully completed. It is now hoped that the data collected will be used by all sectors of the community who have an interest in the roadside environment.

### Quantifying Conservation Values

The following attributes were used to produce a quantitative measure of conservation value:

- native vegetation on roadside;
- extent of native vegetation along roadside;
- number of native species;
- weed infestation;
- value as a biological corridor; and
- predominant adjoining land use.

Each of these attributes was given a score ranging from 0 to 2 points. Their combined scores provided a conservation score ranging from 0 to 12. The conservation values, in the form of conservation status categories, are represented by the following colour codes

Conservation Value	Conservation Status	Colour Code
9 – 12	High	Dark Green
7 – 8	Medium High	Light Green
5 – 6	Medium Low	Dark Yellow
0 – 4	Low	Light Yellow

**Table 1: Colour codes used to depict the conservation status of roadsides.**

The following attributes were also noted but did not contribute to the conservation value score:

- width of road reserve;
- width of vegetated roadside;
- presence of utilities/disturbances;
- dominant native species;
- dominant weeds;
- fauna observed;
- general comments.

It is felt that the recording of these attributes will provide a community database that would provide information useful in many spheres local government and community interest.

### **Mapping Conservation Values**

A computer generated map (using a Geographic Information System, or GIS), depicting the conservation status of the roadside vegetation and the width of the road reserves within the Shire of Murray was produced at a scale of 1:100 000. The data used to produce both the map and the following figures and tables are presented in Appendix 3.

Data obtained from the Department of Conservation and Land Management and the Department of Agriculture was used in the base map, and depicts the location of remnant vegetation on both the Crown estate and privately owned land.

The roadside conservation values map initially provides an inventory of the *status quo* of the condition of the roadside vegetation. This is important as quality of roadside vegetation has far reaching implications for sustaining biodiversity, tourism and Landcare values. Moreover the data and map can be incorporated as a management and planning tool for managing the roadsides *per se*, as it enables the condition of roadside vegetation to be easily assessed. This information can then be used to identify environmentally sensitive areas, high conservation roadsides or strategically important areas, and thus ensure their conservation. Conversely, it enables degraded areas to be identified as areas important for strategic rehabilitation or in need of specific management techniques and weed control programs.

The map can also be used as a reference to overlay transparencies of other information relevant to roadside conservation. This enables the roadside vegetation to be assessed in the context of its importance to the shire's overall conservation network. Other overlays, such as the degree of weed infestation, or the location of environmentally sensitive areas or future planned developments, could also be produced as an aid to roadside management.

As well as providing a road reserve planning and management tool, the survey data can also be used for:

- regional or district fire management plans;
- tourist routes - roads depicted as high conservation value would provide visitors to the district with an insight to the flora of the district;
- Landcare / Bushcare projects - would be able to incorporate the information from this survey into 'whole of' landscape projects.

## SURVEY DATA RESULTS

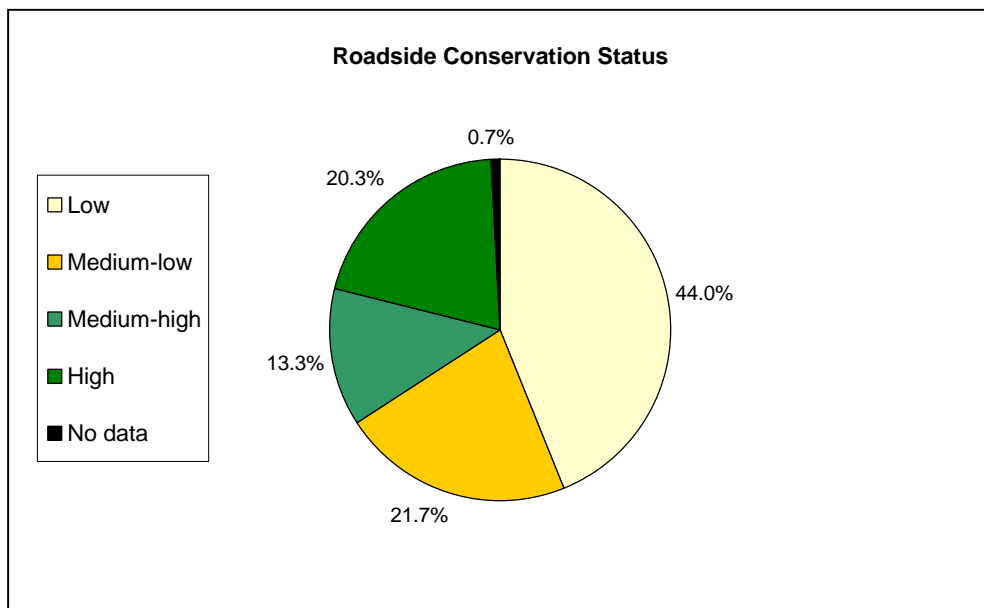
A summary of the general roadside conditions in the Shire of Murray is presented in Table 2. The survey data has been combined to provide the total kilometres, and percentages, of roadside occupied by each of the conservation status categories and the attributes used to calculate the conservation values (see Table 2). As roadsides occur on both sides of the road, roadside distances (km) are equal to twice the actual distance of road travelled.

<b>Summary Roadside Information: Shire of Murray</b>										
<b>Length of roadside surveyed: 1068.8 km</b>										
<i>Conservation Status</i>			<i>Native Vegetation on Roadside</i>			<i>Weed Infestation</i>				
	km	%		km	%		km	%		
Low	470.5	44.0	0 Vegetation layers	203.9	19.1	Heavy	390.0	36.5		
Medium-low	231.7	21.7	1 Vegetation layer	366.7	34.3	Medium	336.2	31.5		
Medium-high	142.3	13.3	2-3 Vegetation layers	484.6	45.3	Light	339.1	31.7		
High	216.8	20.3	No data	13.6	1.3	No data	3.5	0.3		
No data	7.5	0.7								
<b>Total</b>	<b>1068.8</b>	<b>100.0</b>	<b>Total</b>	<b>1068.8</b>	<b>100.0</b>	<b>Total</b>	<b>1068.8</b>	<b>100.0</b>		
<i>Conservation Values</i>			<i>Extent of Native Vegetation</i>			<i>Value as a Biological Corridor</i>				
	km	%		km	%		km	%		
0	11.4	1.1	<20%, Low	612.2	57.3	Low	574.1	53.7		
1	53.3	5.0	20-80%, Med	311.3	29.1	Medium	296.4	27.7		
2	139.3	13.0	>80%, Good	142.3	13.3	High	186.7	17.5		
3	157.7	14.8	No data	2.9	0.3	No data	11.6	1.1		
4	108.9	10.2								
5	134.5	12.6	<b>Total</b>	<b>1068.8</b>	<b>100.0</b>	<b>Total</b>	<b>1068.8</b>	<b>100.0</b>		
6	97.2	9.1	<i>Number of native species</i>			<i>Adjoining landuse</i>				
7	80.5	7.5		km	%		km	%		
8	61.8	5.8	0-5	664.1	62.1	Cleared	294.8	27.6		
9	112.4	10.5	6-19.	264.1	24.8	Drain	11.0	1.0		
10	73.9	6.9	Over 20	132.7	12.4	Industrial/urba	50.0	4.7		
11	28.2	2.6	No data	8.0	0.7	Plantation	9.3	0.9		
12	2.4	0.2				Railway	5.6	0.5		
No data	7.5	0.7	<b>Total</b>	<b>1068.8</b>	<b>100.0</b>	Scattered	482.5	45.1		
						Uncleared	187.8	17.6		
<b>Total</b>	<b>1068.8</b>	<b>100.0</b>				Other	17.1	1.6		
						No data	10.8	1.0		
						<b>Total</b>	<b>1068.8</b>	<b>100.0</b>		

**Table 2: Summary of the roadside conditions in the Shire of Murray.**

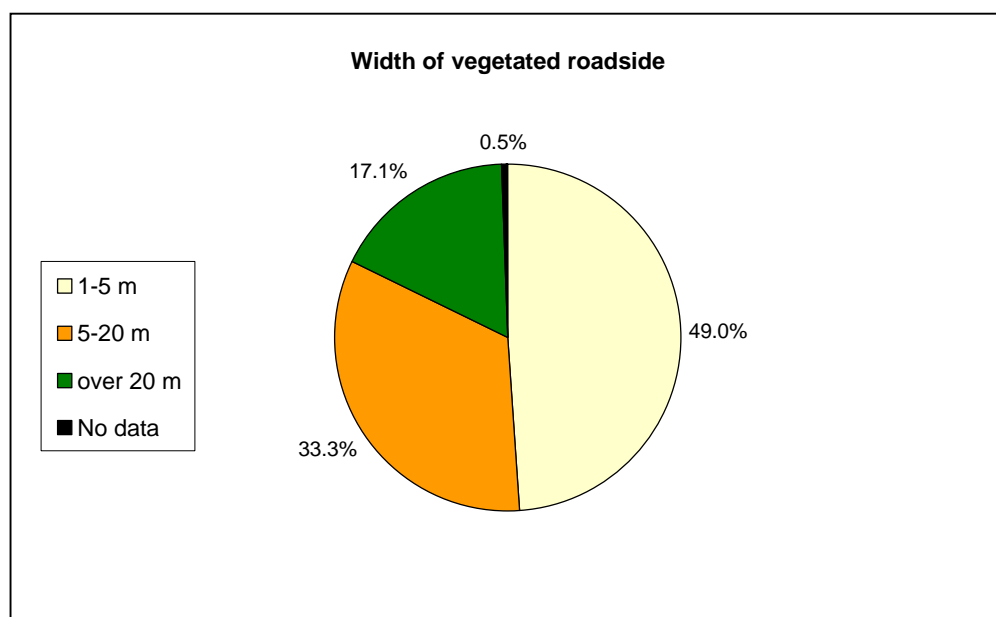


Roadside sections of high conservation value covered 20.3% of the length of roadsides surveyed (216.8 km). Medium-high conservation value roadsides accounted for 13.3% of the total surveyed (142.3 km), medium-low conservation roadside covered 21.7% of the total surveyed (231.7 km). Areas of low conservation value occupied 44% of the roadside surveyed (470.5 km). (Table 2, Figure 2).



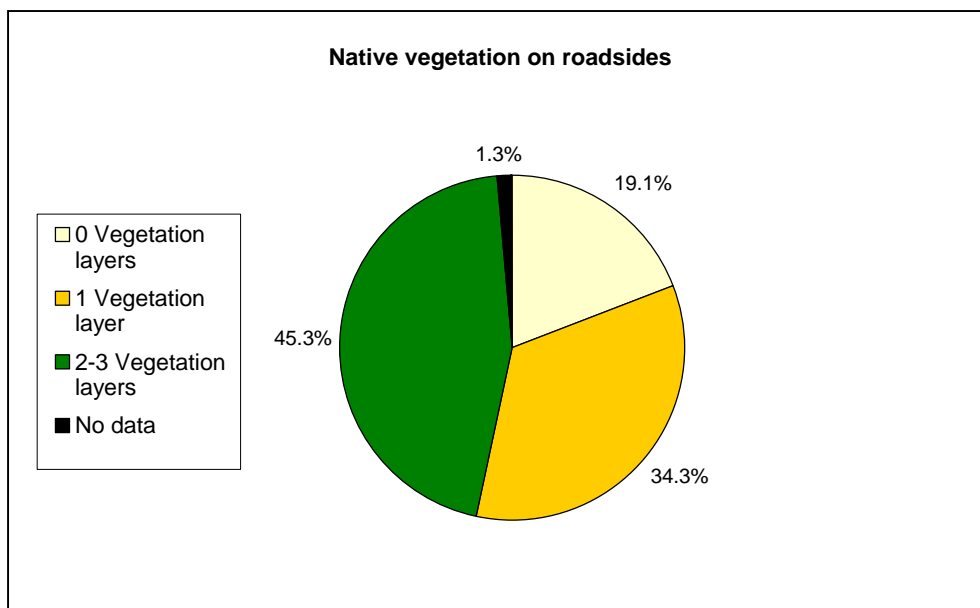
**Figure 2 – Conservation status of roadsides in the Shire of Murray.**

The 'width of vegetated roadside' value provides an insight into the width of vegetation occurring along roadsides in the Shire of Murray. Roadside sections with more than 20m of native vegetation covered 17.1% of the Shire. 33.3% of roadsides supported vegetation between 5-20 m in width, and 49% of the roadsides surveyed contained native vegetation between 1-5 m in width (Table 2, Figure 3).



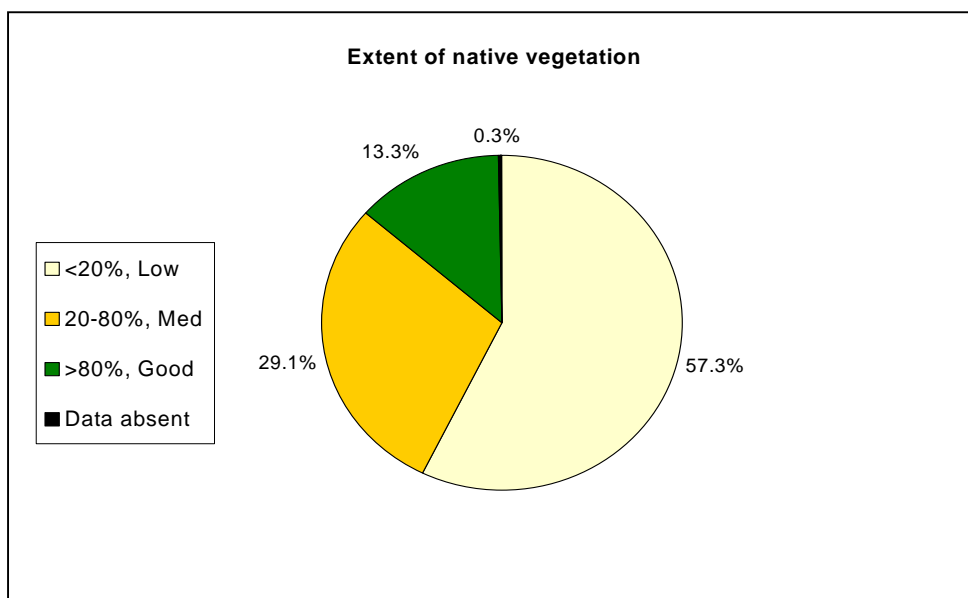
**Figure 3 – Width of vegetated roadside**

The number of native vegetation layers present, either the tree, shrub or ground layers determines the 'native vegetation on roadside' value. Sections with two to three layers of native vegetation covered 45.3% of the roadside. 34.3% had only one layer and 19.1% had no layers of native vegetation (Table 2, Figure 3).



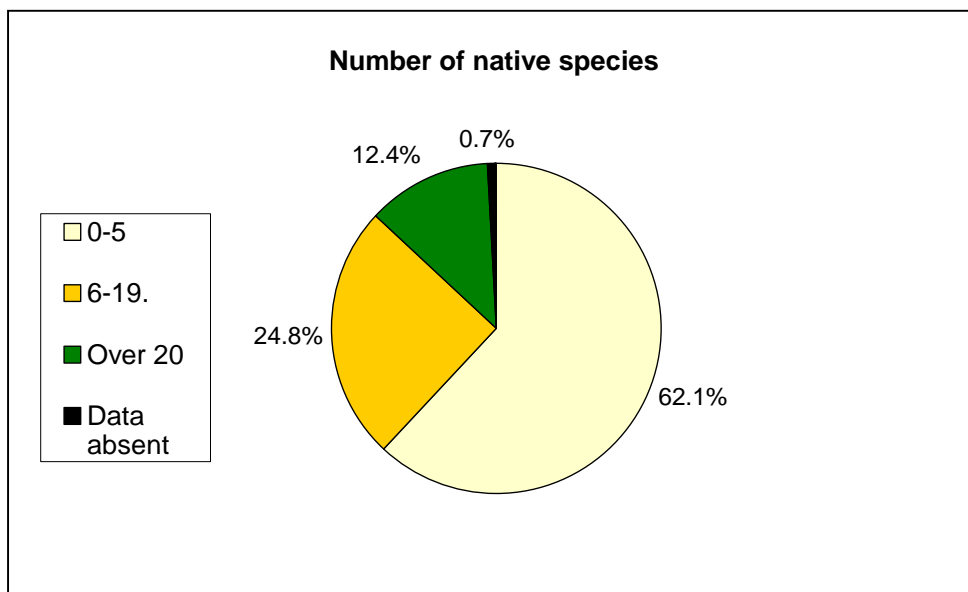
**Figure 4 – Native vegetation on roadsides.**

Roadside vegetation with extensive cover, i.e. greater than 80%, occurred along 13.3% of the length of road surveyed. Survey sections with 20% to 80% vegetation cover accounted for 29.1% of the roadsides. The remaining 57.3% had less than 20% native vegetation, and therefore, a low 'extent of native vegetation' value (Table 2, Figure 5).



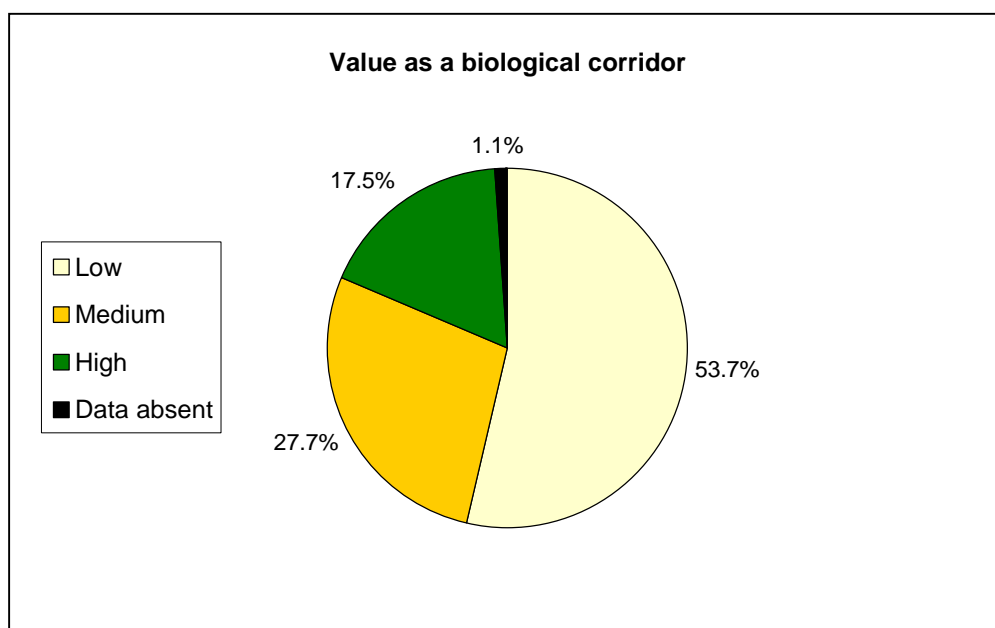
**Figure 5 – Extent of native vegetation.**

The 'number of native species' score provided a measure of the diversity of the roadside vegetation. Survey sections with more than 20 plant species spanned 132.7 km (12.4%) of the roadside. Roadside sections with 6 to 19 plant species accounted for 264.1 km (24.8%) of the roadside. The remaining 664.1 kms (62.1%) had less than 5 plant species. (Table 2, Figure 6).



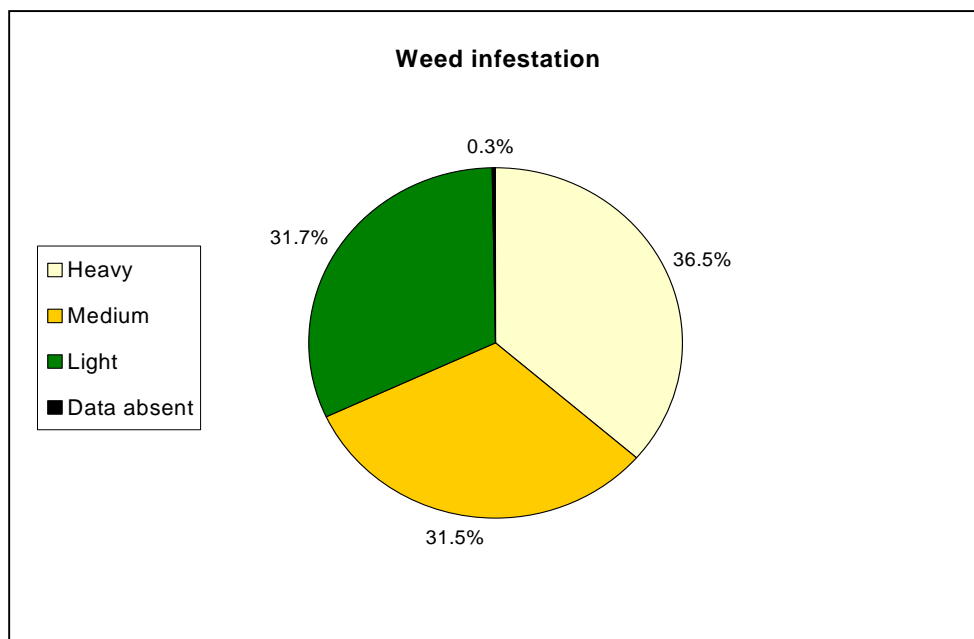
**Figure 6 – Number of native species.**

Roadsides determined to have high value as biological corridors (as determined by the roadside surveyors) were present along 17.5% (186.7 km) of the roadside, medium value made up 27.7 (296.4 km), and roadsides with low value as a biological corridor occurred along 53.7% (574.1 km) of the roadsides surveyed (Table 2, Figure 7).



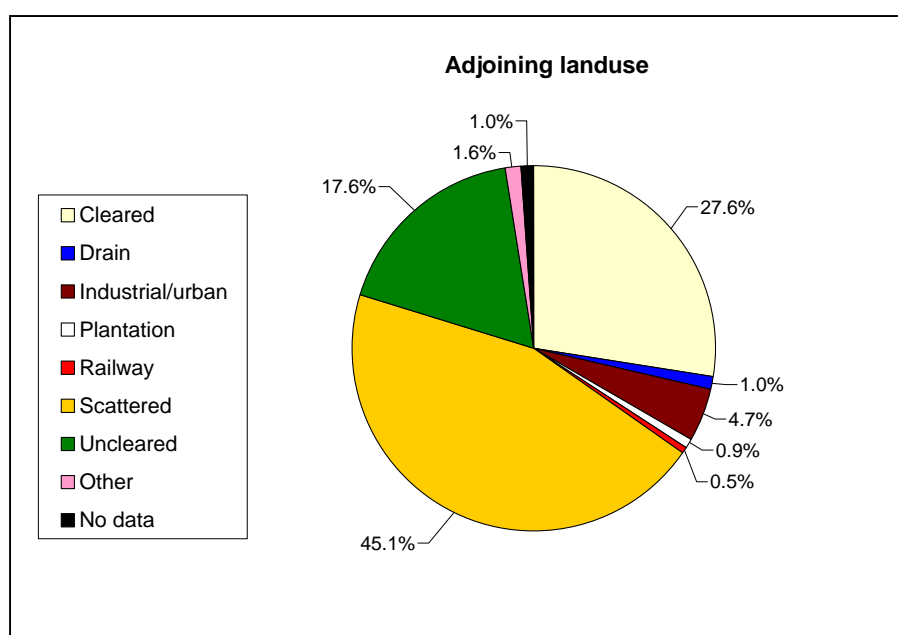
**Figure 7 – Value as a biological corridor.**

31.7% (339.1 km) of the roadsides surveyed were only lightly infested by weeds, medium level weed infestation occurred on 31.5% (336.2 km) of the roadsides. 36.5% (390.0 km) were heavily infested with weeds. (Table 2, Figure 8).



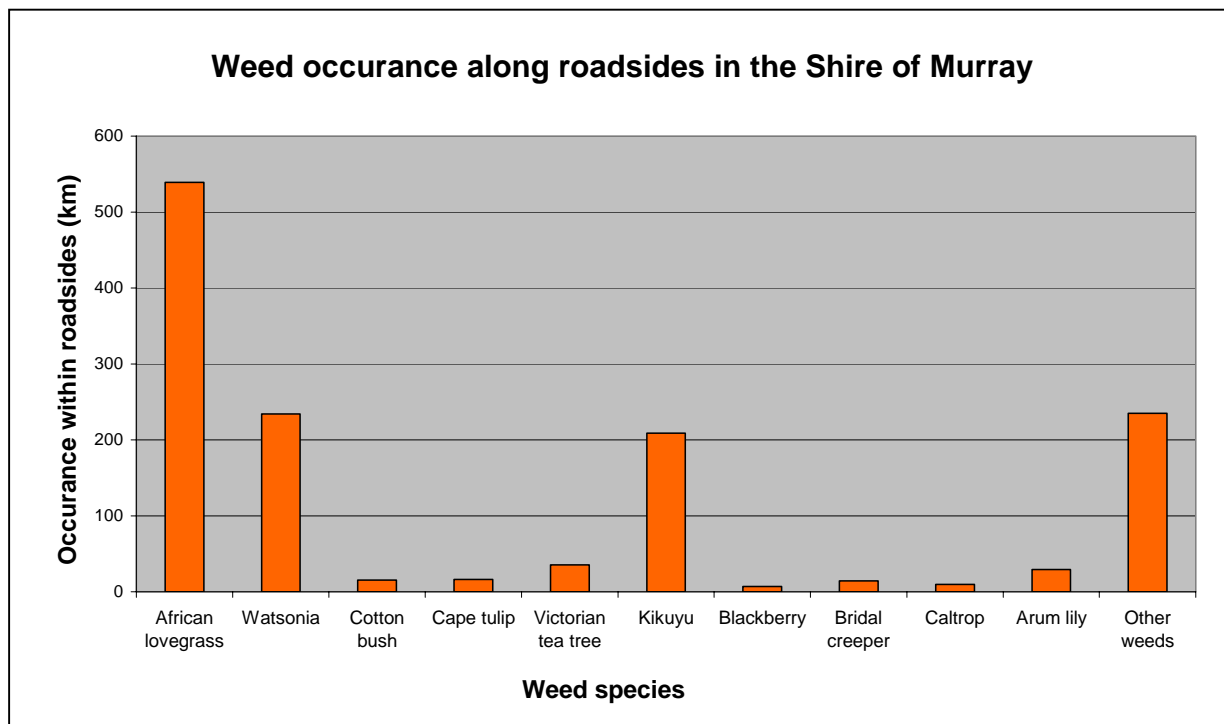
**Figure 8 – Weed infestation.** Light weed infestation = weeds less than 20% of total plants. Medium weed infestation = weeds 20 to 80% of the total plants. Heavy infestation = weeds more than 80% of the total plants.

A scattered distribution of native vegetation was present on 45.1% of the land adjoining roadsides, whilst 17.6% of roadsides surveyed were adjoined by land that had not been cleared. 27.6% of the roadsides surveyed were bordered by land that had been totally cleared of vegetation. Industrial/urban land use adjoined 4.7% of the roadsides surveyed, and railway reserves, plantations, drains and other land uses made up the remaining 4% (Table 2, Figure 9).



**Figure 9 – Predominant adjoining land use.**

African lovegrass was present along 539.0 kms of the roadsides surveyed (50.4%), whilst *Watsonia* was recorded along 234.5 kms of roadside (22%). Kikuyu was the next most commonly recorded weed, occurring along 209 kms (19.5%), Victorian tea tree was present along 35.6 kms (3.3%), Arum Lily 29.4 kms (2.8%), Cape tulip 16.2 kms (1.5%), Cotton bush 15.7 kms (1.5%), Bridal creeper 14.1 kms (1.3%), Caltrop 9.8 kms (0.9%) and Blackberry 7.0 kms (0.65%) of the roadsides surveyed ( See Figure 10).





**Figure 10 – Occurrence of nominated weeds along roadsides in the Shire of Murray**

## MANAGEMENT TECHNIQUES

The following section provides management recommendations that will assist in retaining and enhancing roadside conservation value. These guidelines are taken from the Roadside Conservation Committee's Roadside Manual and or the Roadside Handbook. The Executive Officer of the Roadside Conservation Committee is also available to assist on all roadside conservation matters, and can be contacted on (08) 9334 0423. The primary aim of road management is the creation and maintenance of a safe, efficient road system. However, the following management procedures should be adopted.



### High Conservation Value Roadsides

Management Goal		Maintain and enhance the native plant communities.
Management Guidelines		Minimal disturbance to existing vegetation. Disturbance leads to weed invasion, which downgrades the conservation value, and increases the fire threat.



#### **Minimal disturbance can be achieved by:**

- adopting a road design that occupies the minimum space;
- diverting the line of a table drain to avoid disturbing valuable flora;
- pruning branches, rather than removing the whole tree or shrub;
- not dumping spoil on areas of native flora;
- observing dieback control measures as required;
- apply the Fire Threat Assessment (Roadside Manual) before burning roadside vegetation;
- use methods other than fuel reduction burns to reduce fire threat; if roadside burning must be undertaken, incorporate it into a district fire management program;
- encourage adjacent landholders to set back fences to allow roadside vegetation to proliferate;
- encourage adjacent landholders to plant windbreaks or farm tree lots adjacent to roadside vegetation to create a denser windbreak or shelterbelt;
- encourage revegetation projects by adjacent landholders.

### Medium Conservation Value Roadsides

Management Goal		Maintain native vegetation wherever possible, and encourage its regeneration.
Management Guidelines		Minimise disturbance to existing vegetation.

### Low Conservation Value Roadsides

Management Goal		Retain remnant trees and shrubs and encourage their regeneration. Encourage revegetation projects using indigenous plants.
Management Guidelines		Minimise soil disturbance to reduce weed invasion. Encourage revegetation projects by adjacent landholders.

### **Code of Practice**

A Code of Practice has been developed through collaboration with Main Roads Western Australia, the Western Australian Local Government Association and the Roadside Conservation Committee. This document will provide defined parameters for all roadside management works and also provide the local community with an overview of management practices that will ensure the sustainability of native roadside vegetation. Please contact the Roadside Conservation Committee Executive Officer on 9334 0423 for further information.

### **Tree Roads**

Tree roads are defined as those roadsides with a sufficient density of mature trees to create an attractive tunnel effect. Besides the aesthetic benefits, these areas also provide valuable habitat for birds and other arboreal fauna. Since mature trees are slow growing and hard to replace, care should be taken to conserve these avenues wherever possible. The following points should be considered when working on tree roads:

- prune offending branches rather than remove the whole tree;
- cut branches off close to limb or tree trunk;
- divert line of table drain to avoid disturbing tree roots;
- import fill to build up formation, rather than using side-borrow from roadside;
- when using herbicide for weed control on the roadside do not use a soil residual type, such as Simazine or Atrazine. Eucalypts are especially sensitive to these;
- encourage the adjoining landholders to plant shelter belts on their property that will complement the roadside vegetation.

## Flora Roads and Roads Important for Conservation

Flora Roads are significant sections of road having a special conservation value due to the vegetation growing on the road reserve. Signs are available to mark these roads as Flora Roads. This has a twofold effect of drawing the attention of tourists to the high conservation value roadside and it also alerts all that work in the roadside environment that the marked section of roadside requires due care to protect the values present.

In order to plan roadworks so that important areas of roadside vegetation are not disturbed, road managers should know of these areas. It is suggested that the Shire establish a *Register of Roads Important for Conservation*. The following guidelines should be considered prior to establishing this registrar.

- the roadside must contain a significant population of native vegetation (introduced trees and grasses are not important for conservation),
- the native vegetation must be in as near to its natural condition as possible,
- in undisturbed vegetation, several layers of plants occur, i.e. trees, shrubs and groundcovers (herbs or native grasses). If one or more of the expected layers are missing, the conservation value is reduced,
- the roadside may be the only remaining example of original vegetation within a cleared area. It thus assists in vegetation mapping and distribution studies, provides a benchmark for study of soil change during agricultural development, may provide a source of local seed for revegetation projects and acts as wildlife habitat , protecting fauna,
- rare or endangered plants and animals may occur on the roadside,
- it may provide nest sites and refuges for native animals. Dense vegetation provides habitat for avifauna and invertebrates.



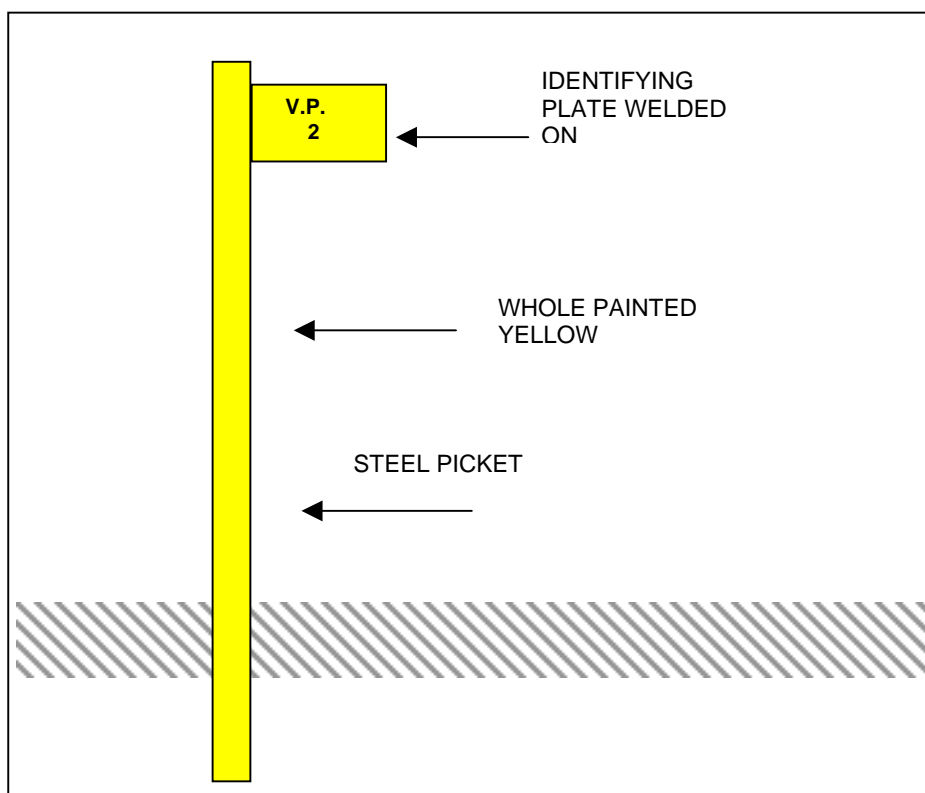
## Special Environment Areas

A Special Environmental Area is a section of roadside, which has such significance that it requires special protection. Reasons for establishing Special Environmental Areas can include:

- protection of rare or threatened species of native plants;
- protection of sites that have other high conservation, scientific or aesthetic values;
- Protection of Aboriginal or European cultural sites.

Special Environmental Areas can be delineated by the use of site markers. See Figures 9 and 10 for design and placement of SEA markers. Workers who come across a 'Special Environmental Area' marker in the field should not disturb the area between the markers unless specifically instructed. If in doubt, the Supervisor, Shire Engineer or CEO should be contacted.

Western Power and West Net rail also have systems for marking sites near power or rail lines. Examples of these are seen in the figure below.



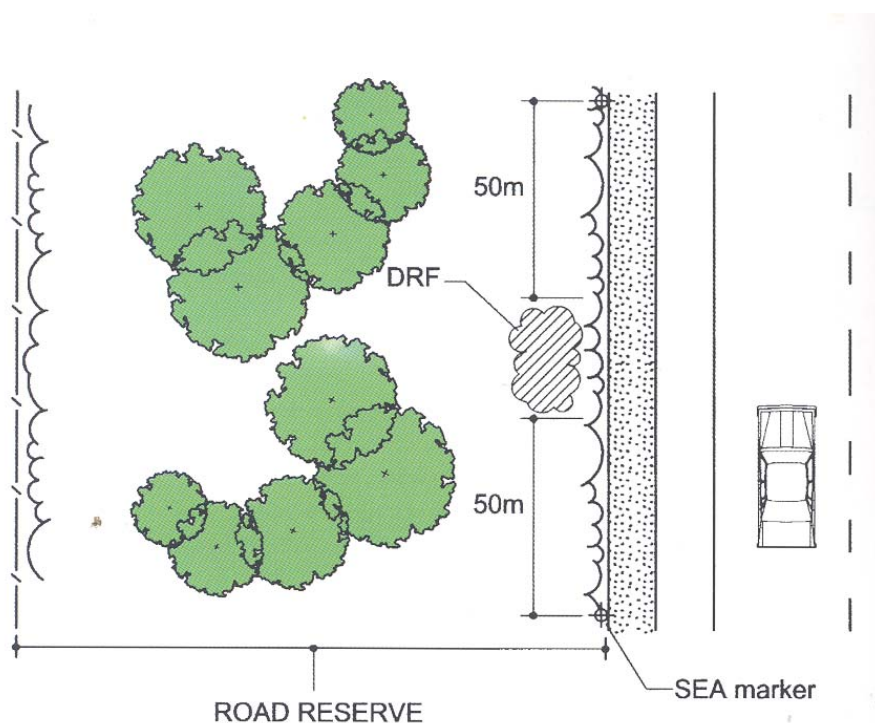
**Figure 11 - Special Environmental Area site marker.**

## Special Environmental Area Register

To ensure that knowledge of rare flora and other sites does not get lost due, perhaps, to staff changes, a Local Authority should establish a Special Environmental Area Register. This should outline any special treatment, which the site should receive, and be consulted prior to any work being initiated in the area.

The Special Environmental Area Register should be consulted by the appropriate person prior to starting work on any particular road, to ensure that inadvertent damage does not occur. All Special Environment Area sites should be marked on the Shire map, which records Roadside Conservation Value

Local Government is encouraged to permanently mark Special Environmental Areas to prevent inadvertent damage to the rare flora or other values being protected. Markers of a uniform shape and colour will make recognition easier for other authorities using road reserves.



**Figure 12 - Marking Special Environment Area (SEA) sites in the field. In this case, a declared rare flora (DRF) site has been marked.**

When notified of a population needing marking, the Local Authority should contact the appropriate Department of Conservation and Land Management Regional or District office for assistance to ensure the exact site location and correct positioning of marker posts.

## Roadside Management Planning and Strategies

### Planning

The RCC is able to provide good models of Roadside Management Plans and encourages all shires to adopt this practice of planning for roadside conservation. The following actions greatly enhance likelihood of a plan that changes behaviour and results in on-ground actions:

- ❖ community support encourage ongoing community involvement and commitment by establishing a local Roadside Advisory Committee or working group within the Shire Environmental Committee;
- ❖ contract specifications maintain roadside values by developing environmental specifications for inclusion in all tender documents or work practices;
- ❖ community education use of innovative and pertinent material can increase community understanding of roadside values;
- ❖ training promote local roadside planning initiatives and gain acceptance and understanding by involving shire staff, contractors, utility provider staff and the community in workshops, seminars or training days. The Roadside Conservation Committee can provide this training.

Training develops recognition and understanding of roadside values and highlights best work practices. Workshops are developed to ensure that local issues and environments are dealt with and they include site visits to high conservation remnants, current projects and works.

The objective of all roadside management planning should be to:

- **Protect**
  - native vegetation
  - rare or threatened flora or fauna
  - cultural and heritage values
  - community assets from fire
  
- **Enhance**
  - indigenous vegetation communities
  - fauna habitats and corridors
  
- **Maintain**
  - safe function of the road
  - native vegetation communities

- fauna habitats and corridors
- visual amenity and landscape qualities
- water quality
  
- **Minimise**
- land degradation
- spread of weeds and vermin
- spread of soil borne pathogens
- risk and impact of fire
- disturbance during installation and maintenance of service assets

### Strategies

The development of a strategy enables potentially competing uses to coexist and ensures that roadsides are managed in a coordinated approach. When producing regional strategies the RCC suggests that:

- organisational support from local government is essential from the outset;
- strategies should take no longer than 12 months to produce (including a period for community comment);
- communities need to be provided with background information to make formal decisions.

Management strategies should be produced to address local issues, rather than be to a standard format. Issues can be categorised as:

#### ❖ **Functional**

- |  |                                     |
|--|-------------------------------------|
| - Fire prevention                          | - Stockpile and dumpsite management |
| - Installation and maintenance of services | - Vegetation removal                |
| - Road construction and maintenance        | - Vehicle and machinery activity    |
|  | - Water supply catchments           |

#### ❖ **Cultural and Recreational**

- |                                |                                       |
|--------------------------------|---------------------------------------|
| - Cultural and heritage values | - Visual amenity and landscape values |
| - Horse riding                 | - Wayside stops                       |

#### ❖ **Landcare**

- |                |  |
|----------------|--|
| - Apiculture   | - Ploughing, cultivating or grading    |
| - Insect Pests | - Revegetation and site rehabilitation |
| - Pest animals | - Weeds                                |

❖ **Conservation**

- Protecting and conserving remnant native vegetation
- Rare, threatened or significant flora and fauna
- Regeneration of native plant communities
- Roadside marking of special environmental areas
- Unused road reserves
- Wetlands
- Wildlife habitat
- Wildlife corridors

## **Roadside Action Plans**

A Roadside Action Plan is prepared for an individual road and contains a works program that will enable conservation values and other road uses to be managed compatibly.

Roadside Action Plans are based on the guidelines that are produced as part of the roadside strategy.

The RCC suggests that Roadside Action Plans be:

- short term documents (to be reviewed within 2 years);
- prepared on a need basis;
- prepared after consultation with major stakeholders;
- a maximum of 2 pages per road;
- names a person or agency responsible for implementing the management recommendations.

## References

Beeston, G., Mlodawski, G., Saunders, A and True, D. (1993, unpub.). *Remnant Vegetation Inventory in the Southern Agricultural Areas of Western Australia*. Western Australian Department of Agriculture, South Perth.

Hussey, B.M.J. (1991). The flora roads survey - volunteer recording of roadside vegetation in Western Australia. In *Nature Conservation 2: The Role of Corridors*, ed by Saunders, D.A and Hobbs, R.J. Surrey Beatty & Sons, 1991.

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Lamont, D.A. and Blyth, J.D. (1995). Roadside corridors and community networks, pp 425-35. In *Nature Conservation 4: The Role of Networks*, ed by Saunders, D.A., Craig J.L., and Matiske E.M. Surrey Beatty & Sons, 1995.

Lamont D A (1998) *Western Australian Roadside Handbook, Environmental guidelines for road construction and maintenance workers*. Roadside Conservation Committee, Kensington, Western Australia.

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Roadside Conservation Committee. (1990). *Roadside Manual* Roadside Conservation Committee, Como WA

# Appendix

# 1



# APPENDIX 1

## Definitions of Remnant Vegetation Types, Beeston et al (1993).

Vegetation classed as "**remnant vegetation**" has one or more of the following characteristics:

- \* Most closely reflects the natural state of vegetation for a given area.
- \* Has an intact understorey (if forest or woodland).
- \* Has minimal disturbance by agents of human activity.

Vegetation classed as "**modified vegetation**" has one or more of the following characteristics:

- \* Degraded understorey (i.e. reduction in the number of native species, includes weeds).
- \* Obvious human disturbance, i.e. clearing, mining, grazing, weeds.
- \* Affected by salt.
- \* Narrow corridors of vegetation (usually along roads and railway lines or windbreaks), which are more likely to be affected by edge effects.

Vegetation classed as "**scattered vegetation**" has:

- \* No understorey
- \* Parkland cleared i.e. scattered single trees.
- \* No significant signs or chance of regeneration.

# Appendix

## 2

# APPENDIX 2

## Standard Survey Sheet



SURVEY TO DETERMINE THE CONSERVATION VALUE OF  
ROADSIDES IN THE SHIRE OF MURRAY

Roadside Conservation Committee  
c/- Locked Bag 104  
Bentley Delivery Centre WA 6983

(08) 9334 0423  
Fax: (08) 9334 0199

Date <u>7.7.02</u> Observer(s) <u>John + Joy Hareop</u> Road Name <u>HUSBAND RD</u> Shire of Murray Nearest named Place Direction of travel (N,S,E,W) <u>N</u> Section No. <u>2</u> Starting Point <u>HUSBAND RD</u> odometer reading <u>204066.5</u> Ending Point <u>HOLGATE RD</u> odometer reading <u>204068.2</u> Length of section <u>1.7 km.</u>		WIDTH OF ROAD RESERVE (m) Side of the road      Left      Right WIDTH OF VEGETATED ROADSIDE 1 - 5 m <input checked="" type="checkbox"/> 0 <input checked="" type="checkbox"/> 0 5 - 20 m <input type="checkbox"/> <input type="checkbox"/> over 20 m <input type="checkbox"/> <input type="checkbox"/>	
NATIVE VEGETATION ON ROADSIDE Tree layer <input checked="" type="checkbox"/> Shrub layer <input checked="" type="checkbox"/> Ground layer <input checked="" type="checkbox"/> 2 EXTENT OF NATIVE VEGETATION ON ROADSIDE Less than 20% <input type="checkbox"/> 20 - 80% <input checked="" type="checkbox"/> 1 <input type="checkbox"/> over 80% <input type="checkbox"/> <input checked="" type="checkbox"/> 1		No. OF DIFFERENT NATIVE SPECIES 0-5      Left      Right 6-19 <input type="checkbox"/> <input checked="" type="checkbox"/> 1 Over 20 <input type="checkbox"/> <input checked="" type="checkbox"/> 1 Dominant species (if known) <u>BANKSIAS - VARIOUS</u> <u>RED GUMS, CASUARINA</u> <u>JACKSONIA, ACACIA SALICINA</u> <u>+ ACACIOLA, KUNzea</u> <u>ERICACOLAIA, ZAMIA PALM</u>	
VALUE AS A BIOLOGICAL CORRIDOR Connects uncleared areas <input checked="" type="checkbox"/> Left <input type="checkbox"/> Right Flowering shrubs <input checked="" type="checkbox"/> <input type="checkbox"/> Large trees with hollows <input checked="" type="checkbox"/> <input type="checkbox"/> Hollow logs <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 2		WEEDS Left      Right Few weeds (<20% total plants) <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 2 Half weeds (20 - 80% total) <input type="checkbox"/> <input type="checkbox"/> Mostly weeds (>80% total) <input type="checkbox"/> <input type="checkbox"/> Ground layer totally weeds <input type="checkbox"/> <input type="checkbox"/> Complete the reverse side of this form to record the weed species present.	
FAUNA OBSERVED <u>BIRDS - WHITE TAILED + RED</u> <u>TAILED COCCATO, 25 BIRDS</u>		PREDOMINANT ADJOINING LANDUSE Agricultural crop or pasture: <input type="checkbox"/> Left <input type="checkbox"/> Right - completely cleared <input type="checkbox"/> <input type="checkbox"/> - scattered <input type="checkbox"/> <input type="checkbox"/> Uncleared land <input type="checkbox"/> <input type="checkbox"/> Plantation of non-native trees <input type="checkbox"/> <input type="checkbox"/> Urban or industrial <input type="checkbox"/> <input type="checkbox"/> Railway Reserve parallel to road <input type="checkbox"/> <input type="checkbox"/> Drain Reserve parallel to road <input type="checkbox"/> <input type="checkbox"/> Other <input type="checkbox"/> <input type="checkbox"/> <u>MOIST PRAIRYLAND CLEARED</u> ✓	
LANDSCAPE VALUE High <input type="checkbox"/> <input type="checkbox"/> Medium <input type="checkbox"/> <input checked="" type="checkbox"/> 1 Low <input type="checkbox"/> <input checked="" type="checkbox"/> 1 Avenue of trees <input type="checkbox"/> <input type="checkbox"/> Reasons		UTILITIES / DISTURBANCES Disturbances continuous <input type="checkbox"/> <input type="checkbox"/> Disturbances isolated <input type="checkbox"/> <input checked="" type="checkbox"/> 0 Disturbances absent <input type="checkbox"/> <input checked="" type="checkbox"/> 0 Type	
CONSERVATION VALUE High <input type="checkbox"/> <input checked="" type="checkbox"/> 1 Medium <input type="checkbox"/> <input checked="" type="checkbox"/> 1 Low <input type="checkbox"/> <input type="checkbox"/> Avenue of trees <input type="checkbox"/> <input type="checkbox"/> Reasons		OFFICE USE ONLY Conservation value score <input type="checkbox"/> 8 <input type="checkbox"/> 8	
GENERAL COMMENTS			

# Appendix

## 3

## APPENDIX 3

### Raw data used to calculate roadside conservation values

SHIRE# AND ROAD#	SECTION #	SECTION LENGTH (km)	RESERVE WIDTH (m)	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		CONSERVATION VALUE SCORE (0-12)		ADJOINING LANDUSE		VALUE AS A CORRIDOR	
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
2150002	1	1.3		2	2	0	2	0	0	1	0	5	1	S	C	1	1
2150002	2	0.9	20	2	1	1	0	1	0	0	0	1	3	C	S	0	1
2150002	3	0.7	20	2	1	0	2	0	0	2	1	5	3	S,D	S	2	0
2150003	1	3	20	2	0	0	1	0	2	1	1	9	8	S	C	1	0
2150003	2	0.9	20	1	0	0	0	0	2	1	1	4	2	C	U	0	0
2150003	3	1	20	2	2	2	2	0	2	0	2	0	1	I,D	S	1	0
2150003	4	2.49	20	1	1	0	0	0	0	1	1	6	6	S,P	S	0	1
2150004	1	5.13	20	2	0	0	1	1	2	2	2	2	7	C	S	0	2
2150004	2	2.3	20	2	1	1	0	0	0	1	1	6	6	S	C	2	0
2150004	3	3.3	20	2	1	0	1	1	0	1	0	6	10	U	S	0	0
2150004	4	1		1	0	1	1	0	1	0	2	2	2	C	S	1	1
2150004	5	0.5	20	2	0	0	1	0	0	2	2	5	4	S	S	0	2
2150007	1	0.8	20	2	1	1	2	0	0	0	2	11	3	P	D,O	2	2
2150007	2	1.5	20		2	0	1	0	0	1	0	3	2	C	D	1	0
2150007	3	1.9	20	2	1	0	0	0	0	2	2	4	7	C	C	1	2
2150007	4	3.3	20	1	2	0	0	1	0	2	0	4	3	S	U	2	0
2150007	5	1.12	20	1	1	0	0	0	0	0	0	11	8	S	C	2	1
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2150008	2	1.5	20	1	2	0	1	0	1	2	0	5	10	S	C	0	0
2150008	3	3	20	0	1	0	0	2	0	0	2	10	6	S	C	0	0
2150008	4	1.5	20	2	1	1	2	0	2	1	0	9	1	U	S	0	0
2150009	1	3.58		2	0	0	0	1	0	0	1	3	10	S, D	U	0	2
2150009	2	3.48		0	0	0	0	0	0	0	0	2	2	C	C	2	0
2150009	3	1.6		1	1	0	1	1	0	0	2	4	6	S	I	0	0
2150009	4	3.4		1	1	0	0	0	0	0	1	6	3	S	S	0	1
2150009	5	2.1	20	1	1	0	1	1	0	0	0	2	1	C	C	0	1
2150009	6	2.4		2	0	1	1	1	1	0	1	5	7	C	C	1	0
2150009	7	1	20	1	2	0	2	0	0	1	1	3	5	C	C,D	2	1
2150010	1	0.5		0	2	1	1	0	0	2	1	10	3	U	C	2	0
2150010	2	8.3		2		0	2	0	0	1	1	2	3	C	C	1	0
2150012	1	1.2		1	2	1	0	1	1	0	0	8	12	C	S	2	0
2150012	2	1.39		1	2	0	0	0	1	2	0	3	2	S, D	S	0	0
2150012	3	0.3		0	2	1	0	0	1	1	1	5	2	S	C	0	0
2150012	4	0.8		0	2	0	1	0	0	1	1	1	3	S	I	0	1
2150012	5	0.2		2	0	0	0	1	0	2	2	0	3	I	U	1	0
2150012	6	0.4		1	2	1	0	0	0	0	0	8	10	C	S	1	0
2150012	7	1		0	2	1	0	0	0	2	2	3	2	U	S	0	2
2150013	1	1		1	0	0	2	0	1	1	0	6	5	C	S,D	0	0
2150013	2	2		2	2	0	1	0	1	0	1	7	5	S	S	1	2
2150013	3	1	20	1	1	2	0	0	2	2	0	9	9	U,D	U		2
2150013	4	0.5	20	1	2	1	0	1	0	1	1	3	7	S	U	0	2
2150013	5	2.1	20	1	1	1	1	0	0	1	2	8	10	U,D	S	1	0
2150013	6	3.9	20	2	1	0	0	0	0	0	0	5	8	S	S	2	0
2150013	7	2.4	20	1	0	2	0	2		2	0	7	10	S	C	1	0
2150013	8	0.95	20	2	0	0	0	0	0	1	0	5	2	C	U	0	2
2150014	1	1		2	2	0	1	0	0	1	0	5	5	C	S,D	0	1
2150014	2	1.05		2	2	0	0	0	0	1	2	4	6	C	C	0	2
2150014	3	2.01		1	2	0	2	1	0	0	1	9	3	S, D	C	1	0
2150015	1	2.6		2	2	1	0	0	1	2	2	13	7		S	2	0

A survey of the roadside conservation values in the Shire of Murray and roadside management guidelines

2150015	2	2.2		2	0	0	1	0	0	1	0	4	9	C	S,D	1	2
2150015	3	1.4		2	1	1	1	0	0	2	0	9	6	S	U	0	1
2150016	1	2.9	20	2	2	1	0	0	0	0	2	9	8	C	C	0	0
2150016	2	0.9		2	2	0	0	0	0	0	1	9	3	S	S	2	2
2150016	3	1.6		2	1	0	1	0	0	2	1	5	4	C	C	0	1
2150017	1	2.8		0	1	1	0	0	0	2	2	1	2	S	S	0	0
2150017	2	1.1	20	2	0	1	0	1	0	0	0	7	3	C,D	U	2	0
2150017	3	1.18	20	2	0	0	0	0	0	2	2	2	4	C	C	0	1
2150018	1	2.1	20	2	1	0	0	0	0	1	0	5	9	S, R	C	1	0
2150018	2	2	20	1	0	0	0	0	0	0	0	5	2	C	S	0	0
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2150019	1	0.8		1	2	2	0	0	1	2	0	4	6	S	S	1	0
2150019	2	3.45		1	2	0	0	0	0	1	2	11	2	I,D	S	1	0
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2150020	1	2	20	2	0	0	0	1	0	2	2	3	5	R	S	0	1
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2150020	3	2.2	20	2	1	2	0	1	0	0	1	2	5	S	S	0	0
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2150024	1	3.14		2	1	1	0	0	1	1	2	5	5	U	C	1	0
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2150026	1	0.7	20	2	0	1	0	1	0	2	2	5	5	U	P	0	0
2150026	2	1.3	20	2	1	0	1	1	0	2	0	3	4	C	C,D	0	0
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2150026	5	2	20	0	2	0	2	1	0	1	0	3	2	C	C,D	1	2
2150053	1	0.8	20	1	1	0	1	2	0	2	2	5	7	C	S	0	0
2150053	2	1.6	20	1	1	0	1	0	0	1	1	8	3	S	C	1	2
2150053	3	2	20	1	1	2	0	0	2	1	1	1	6	S	C	1	2
2150053	4	3.52	20	2	2	1	0	0	0	0	2	5	2	C	S	0	2
2150055	1	4.71	20	1	2	0	0	0	0	1	2	9	4	U,D	U	1	0
2150056	1	3.22		0	1	1	1	1	0	2	1	2	5	C	C	0	0
2150056	2	1.42		1	1	0	1	1	0	1	1	1	7	R	C	0	1
2150057	1	1.2		2	2	1	0	1	1	1	0	8	0	I,D	C	0	1
2150059	1	1	20	0	1	0	0	0	0	0	0	4	7	S	C	1	1
2150059	2	3	20	2	2	0	0	2	0	0	1	8	2	S	S	1	2
2150059	3	2	20	0	1	0	1	2	0	0	0	4	2	C	U	0	2
2150059	4	2	20	1	2	0	0	1	1	2	1	10	8	U	C	2	0
2150060	1	1.46	20	2	0	1	1	0	0	2	2	1	3	S	S	2	
2150060	2	5	20	2	2	0	0	0	0	1	0	2	11	S	S	0	0
2150061	1	2.2	20	1	2	1	1	0	2	0	0	6	8	S	S	0	1
2150061	2	0.5	20	1	0	1	0	2	1	0	0	8	9	S	S	0	0
2150061	3	0.2	20	2	0	0	0	0	1	1	1	5	2	C	U	2	1
2150061	4	2.6	20	2	1	0	0	1	1	2	2	7	7	P	U,D	1	2
2150061	5	2.5	20	2	0	0	0	1	0	1	2	9	9	U	C	1	0
2150072	1	3	20	2	0	0	1	0	0	0	0	2	6	S	S	0	0
2150072	2	2.33	20	2	0	2	0	0	0	0	0	3	5	C	I,D	2	0
2150091	1	2.5	20	2	2	2	2	1	0	0	0	3	7	C	S	1	0
2150091	2	0.35	20	1	2	0	1	1	0	1	0	8	2	C	S,D	0	0
2150091	3	2.24	20	0	0	0	0	0	0	1	0	2	2	U	C	2	0
2150093	1	1.55	20	0	2	1	0	0	0	0	0	4	5	S	S	1	0
2150093	2	0.7		2	1	0	1	1	0	1	1	4	9	R	S	0	0
2150093	3	5.02		2	2	0	2	0	0	0	2	3	7	S,P	U	0	2
2150094	1	2.82	20	0	2	1	0	1	0	0	0	2	6	S	S	0	0
2150095	1	2.42		1	1	1	1	0	1	2	0	5	6	S	S	0	2
2150095	2	1.7		0	1	2	0	1	2	2	2	3	3	S	S	2	1
2150096	1	3.51		1	1	0	0	0	2	1	2	4	1	S	S	0	2

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2150097	1	1.72	20	2	2	1	0	0	1	0	2	6	6	U	C	0	1
2150098	1	3		0	1	0	1	0	0	1	1	4	8	S	S	1	1
2150104	1	0.53		2	2		1	0	1	2	2	3	4	C	S	0	2
2150104	2	1.7		1	2	0	0	1	0	0	2	3	9	I	S	1	1
2150105	1	1		2	2	1	0	0	0	0	1	8	4	U, D	U	2	0
2150105	2	0.5		2	2	0	0	0	0	0	2	4	4	C	S	1	0
2150108	1	2.05		0	2	0	0	0	0	2	1	7	3	I	U	0	0
2150109	1	0.9		1	1	2	0	0	1	0	1	10	5	U	D	0	0
2150109	2	2.1		0	1	1	1	2		2	0	7	6	C	S	2	0
2150109	3	2.2		1	1	2	1	2	2	0	1	9	0	U	O	0	2
2150109	4	1		1	1	2	0	1	0	1	2	1	7	S	S,P	0	2
2150110	1	2.9	20	0	1	0	0	0	1	0	2	7	8	S	S	0	0
2150110	2	1.7	20	1	2	0	0	1	1	1	0	5	9	U	C	0	0
2150110	3	2.91	20	2	0	1	0	1	0	0	0	3	7	S,D	I	0	0
2150112	1	2.25		1	2	0	0	1	0	2	1	4	8	C,P	S	1	1
2150112	2	3.4		0	2	0	2	0	0	1	0	2	9	S	S	0	0
2150112	3	2.1		0	0	1	0	2	1	0	1	6	11	S	C	2	0
2150112	4	1.35		1	1	2	0	2	0	1	1	2	7	S	C	1	0
2150112	5	2.5		1	2	0	1	0	0	0	0	6	5	S,D	I	0	0
2150113	1	0.8	20	1	2	0	1	0	1	0	2	2	6	C	S	0	1
2150113	2	1.5		0	1	1	0	0	1	1	2	3	9	S	I	0	1
2150113	3	0.8	20	0	0	1	0	2	0	1	1	7	2	U	D	0	1
2150113	4	2.2	20	1	2	0	1	1	0	2	0	5	5	S,D	U	0	1
2150114	1	3.3	20	2	1	1	1	2	2	2	0	5	2	S	C	1	1
2150114	2	0.5	20	1	2	2	0	0	1	2	0	6	2	C	I	0	0
2150117	1	1.2	20	1	2	0	0	0	0	1	0	2	4	S	S	0	0
2150117	2	0.5	20	2	2	1	0	1	2		2	2	4	D	C	0	2
2150117	3	0.93	20	1	2	0	0	0	0	0	0	6	9	S	S	1	0
2150117	4	0.6	20	1	2	0	1	0	0	0	1	4	3	S	U	0	2
2150118	1	3.01	20	2	1	0	0	0	2	0	1	11	9	S	S	0	0
2150121	1	2	20	1	2	0	0	1	0	1	2	2	3	C	C	0	1
2150121	2	3.7	20	2	0	0	1	0	0	0	0	9	3	U	C	1	0
2150121	3	0.2	40	2	2	1	0	0	2	2	2	9	6	U	S	1	1
2150127	1	0.3		2	1	1	0	1	0	1	2	4	2	S	S	1	2
2150127	2	3.12		2	1	2	0	2	0	1	1	7	4	C	S	1	1
2150127	3	1.9		2	2	2	2	2	0	0	0	2	7	S	S	0	1
2150128	1	2.3	20	0	0	0	1	0	0	1	0	10	3	C	U	1	0
2150128	2	1.42	20	2	1	1	0	1	1	2		3	6	S	O	2	0
2150129	1	0.6	20	0	1	1	1	1	0	2	2	3	5	C	S	0	0
2150130	1	0.45	20	1	2	2	2	2	0	2	0	4	4	S, D	S	0	2
2150130	2	0.8	20	2	0	1	0	1	0	0	1	7	7	C, D	U	0	2
2150130	3	1.02		2	2	1	2		2	0	0	4	9	S	S	0	1
2150130	4	2.2		2	0	1	0	1	2	2	2	9	13	U		0	1
2150131	1	0.3		2	1	1	0	1	0	0	0	10	5	U	S	0	0
2150131	2	0.5		2	2	0	2	0	0	0	2	3	10	S,P	S	0	2
2150131	3	0.3		2	1	2	0	2	0	0	0	3	3	C	C	0	2
2150131	4	2.9		2	1	0	1	0	1	1	2	9	9	S,U	S,U	0	0
2150133	1	0.6		0	2	0	2	0	0	1	2	2	3	I	S	0	2
2150133	2	0.8		2	1	0	2	0	0	1	0	7	11	S	S,R	0	0
2150133	3	0.9		2	1	2	0	0	1	2	2	6	2	C	C	2	0
2150135	1	0.8	20	2	2	1	2	2	0	0	0	4	1	C	S	2	
2150135	2	0.58	20	1	0	0	1	1	0	0	1	1	6	D	C	0	0
2150137	1	1.54	20	2	1	0	1	2	0	2	0	6	6	C	S	0	1
2150137	2	2.14	20	0	2	0	0	0	0	1	1	11	8	P	O	0	0
2150138	1	3.41		2	1	0	1	0	1	2	0	7	4	I	C	1	1
2150139	1	1.4	20	0	2	1	1	0	1	2	2	2	1	C	C	2	0
2150139	2	0.75	20	0	2	0	2	0	0	0	1	3	9	C	C	0	1
2150142	1	2.5	20	1	2	1	2	0	1	2	2	5	1	S,R	S	1	2
2150143	1	1	20	2	1	0	0	0	0	0	0	5	1	I,D	S,D	0	0
2150143	2	2.2	20	2	2	1	1	0	2	0	0	2	4	S	S	0	2

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2150143	3	1	20	1	2	1	0	0	0	0	0	7	4	U	C	0	0
2150144	1	1.69	20	2	1	1	0	0	0	0	1	2	5	C	S	1	2
2150145	1	1.72		2	1	1	0	1	1	2	2	11	1	U,R	S	0	1
2150148	1	0.3		2	1	0	0	0	1	2	2	3	4	I	S	0	2
2150148	2	1.8		2	2	1	0	0	2	0	2	3	10	S	U	0	1
2150148	3	0.37	20	2	2	0	0	1	0	2	2	0	10	O	S,D	0	0
2150152	1	1.6		2	1	0	0	0	1	2	2	5	2	C	S	2	0
2150152	2	1.2		1	1	0	1	0	1	1	0	9	6	U	C	1	0
2150153	1	1.08		2	1	1	0	1	0	1	2	2	2	S	S,P	1	0
2150154	1	1.08	20	2	2	1	0	0	2	2	0	11	9	D,O	U	1	1
2150159	1	1	20	0	1	1	1	0	0	2	2	3	4	C	S	0	1
2150159	2	3.24	20	0	2	0	2	1	0	1	1	2	4	C	S	0	0
2150160	1	1.3		1	2	1	0	1	0	0	0	1	6	S	C	0	0
2150160	2	2.15		1	1	2	1	1	0	2	2	4	6	I	S	0	2
2150160	3	1.4		2	2	0	1	0	1	1	1	7	2	S	S	0	2
2150164	1	0.4		2	2	2	2	0	1	0	1	5	8	C	C	0	2
2150166	1	2.31	20	2	2	1	0	0	1	1	0	10	4	U	U	2	0
2150170	1	0.6		1	1	2	0	2	0	1	1	4	2	S	C	0	0
2150170	2	0.47		2	2	0	0	0	0	0	0	6	9	S	U	2	0
2150173	1	0.48		1	0	0	1	1	0	2	2	7	10	O	U,O	0	0
2150178	1	2.18		2	0	0	2	1	0	2	1	3	9	C	S	0	0
2150179	1	0.5		2	2	0	2	0	1	2	2	9	6	D,U	P	1	0
2150179	2	0.68		0	2	0	2	0	0	1	2	0	5	I	U	0	0
2150181	1	2	20	2	1	1	2	2	2	0	2	7	1	U	C	0	0
2150181	2	0.8	20	2	0	1	1	0	0	2	0	9	4	U	U	1	0
2150191	1	1.4	20	2	0	0	0	0	1	2	1	2	7	C, D	U	1	0
2150194	1	3.13		2	1	0	0	0	1	1	0	7	5	S	U	1	0
2150197	1	0.68		1	2	2		0	0	0	0	5	10	S,D	I	2	2
2150200	1	0.4		1	2	1	1	0	2		1	3	3	C	S	0	1
2150200	2	0.58		2	2		2	0	0	0	2	6	3	I, D	C	1	0
2150200	3	0.34		1	2	1	0	0	1	0	2	5	6	S	C	0	0
2150200	4	1.16		1	2	0	0	0	0	0	0	3	2	C	C	0	2
2150209	1	0.5	20	0	1	1	0	0	1	0	1	8	1	S	S	1	0
2150209	2	1.4		0	1	0	0	0	1	0	1	2	5	S	C	0	0
2150209	3	0.65		1	2	0	1	0	0	0	0	0	2	O	C,P	1	0
2150213	1	3.45		2	1	2	0	1	0	2	0	2	3	S	C	0	0
2150214	1	2.3	20	2	1	1	0	2	0	1	0	5	10	S, D	D	2	0
2150214	2	0.8		0	1	0	0	0	1	0	1	4	7	S	C	2	0
2150214	3	6.1	20	2	0	0	0	1	1	2	2	4	8	S,R	O	0	2
2150220	1	0.7		1	2	0	0	0	0	2	0	8	9	U	C	0	1
2150226	1	4.5		0	1	1	2	0	0	1	2	2	2	C	C	0	0
2150226	2	8.32		2	1	0	0	1	0	2	2	7	1	S	U		1
2150304	1	0.79		1	1	2	1	0	0	2	0	10	3	S	S	2	1
2150315	1	0.43		1	2	2	1	0	0	2	0	9	1	U	U	1	0
2150332	1	0.73		0	1	0	0	0	1	0	2	3	9	S	C	0	1
2150332	1	1.3		2	2	1	0	1	0	1	0	4	5	S	S	0	2
2150334	1	1.19		1	2	1	2	1	0	0	1	3	9	S, D	U	0	0
2150353	1	0.8		0	1	0	0	0	1	1	0	4	2	S, D	S,U	0	1
2150353	2	1		2	0	0	0	0	0	0	1	6	4	S	C	2	2
2150353	3	1.5		0	1	1	2	0	1	0	2	8	3	S,D	S	2	1
2150363	1	0.67		0	2	0	2	0	1	0	2	3	9	O	I	1	0
2150364	1	0.9		2	1	1	1	0	1	2	0	2	2	S,D	C	1	0
2150364	2	1.45		1	2	0	0	0	0	0	1	7	3	U	I	0	0
2150366	1	1.26		0	1	0	0	2	0	1	0	5	7	S	I	0	1
2150392	1	0.83		1	2	1	2	2	1	0	0	7	3	C	S	1	0
2150396	1	1.65		2	1	0	0	0	0	0	0	3	3	C	C	2	0
2150397	1	1.1	20	2	1	2		0	2	0	2	4	3	S, D	U,D	1	1
2150397	2	0.8	20	0	1	0	0	0	0	0	2	2	2	U	I	0	0
2150397	3	0.66	20	2	0	1	0	2	0	0	2	6	2	S	S	0	1
2150403	1	0.44		1	2	0	0	0	0	0	1	3	7	S	C	2	0

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2150406	1	1.6	20	2	2	0	1	1	2	2	2	2	8	S	C	0	0
2150413	1	3		2		0	0	0	0	1	0	4	11	S		0	0
2150428	1	2		2	2	0	1	0	0	1	2	8	10	U,D	U	2	0
2150439	1	1.1		1	2	0	0	0	0	0	0	3	6	C	U	0	1
2150439	2	1.29		0	2	0	2	1	1	2	1	6	2	C	U	0	1
2150440	1	1.18		2	2	0	1	0	0	2	1	8	5	I	U	0	1
2150440	2	1.18		1	2	1	1	0	2	2	2	9	3	U	U	1	1
2150442	1	1.5		1	2	2	1	2	2	0	0	8	4	C	S	0	0
2150444	1	1.5		1	2	0	0	2	1	2	2	13	11		R	1	2
2150453	1	0.43		2	2	0	1	0	0	2	1	2	8	C	S	2	0
2150454	1	1.57	20	0	2	0	2	1	0	2	2	8	2	I,D	S	1	0
2150460	1	1.69		1	0	1	1	0	1	0	2	5	1	S,D	P,I	0	2
2150465	1	0.87		0	0	2	1	1	0	1	0	4	5	S	C	1	0
2150466	1	0.84		2	2	0	1	0	1	0	1	2	3	C	S	0	2
2150507	1	1.04		2	1	0	1	0	0	0	0	6	6	S,D	S,D	0	0
2150531	1	0.94		1	1	1	2	0	0	2	2	5	8	C	U	1	0
2150532	1	2.68		2	2	1	1	0	1	2	2	5	3	C	S	0	1
2150532	2	0.5		2	2	0	1	1	1	2	0	1	6	U,O	C	0	1
2150533	1	1.5	20	1	2	0	0	0	0	0	2	4	7	U		0	0
2150533	2	4.5	40	1	2	1	0	1	1	0	1	8	1	S	S	0	1
2150533	3	16.8		1	0	1	0	2	0	1	1	3	8	U	C	2	1
2150533	4	1.4		2	1	0	2	0	0	2	2	10	13	S,D	U	0	0
2150536	1	3.6	20	1	2	0	1	0	1	2	2	3	1	C	S	0	1
2150536	2	1.3		2	0	0	2	0	2	0	0	6	0	S	S,D	0	1
2150536	3	0.5		1	2	0	0	1	0	1	1	3	6	S	U	2	0
2150536	4	1.3		1	2	0	1	0	1	0	1	2	5	C	C	0	2
2150536	5	1.7		0	1	1	0	0	0	2	2	8	8	U	C	1	1
2150536	6	1.5	20	1	1	0	0	0	0	2	0	8	3	U	C	0	0
2150536	7	2.6	20	2	0	0	1	0	1	2	0	6	3	I	U	1	0
2150536	8	0.8	20	1	1	0	0	2	0	1	0	2	9	S	S	0	2
2150536	9	0.8	20	0	1	1	0	0	2	2	0	9	3	O	I	1	2
2150536	10	2.3		1	1	1	0	0	0	2	2	5	2	U	C	0	0
2150539	1	1.57	20	1	2	0	0	0	0	0	0	7	9	U	S	0	0
2150545	1	1.22	20	1	1	0	1	2	1	1	2	5	8	O	S,D	0	1
2150563	1	2.13		2	2	2	0	0	0	1	0	8	8	C	S	0	2
2150582	1	1.8	20	0	1	1	0	0	0	2	2	5	3	S	S	0	0
2150582	2	0.55		2	0	0	0	1	0	2	2	6	8	U	S	0	0
H009	1	7		1	2	2	0	0	0	1	0	1	1	S	U	1	0
H009	2	5.2	60	2	2	0	0	0	0	0	1	2	4	S	S	1	0
H009	3	1	60	0	2	1	0	1	0	0	0	9	5	S	S	0	0
H009	4	5.5	60	2	0	0	1	0	1	2	1	9	3	S	U,R	0	1
H009	5	4.7	60	2	0	1	1	0	0	2	0	10	5	S	S	0	0
H009	6	0.6	60	2	1	0	0	0	0	0	0	3	4	S,D	U,D	1	2
M023	1	0.9		1	2	0	2	0	1	0	2	1	4	D	I,D	0	1
M023	2	0.6		1	0	1	1	0	1	1	1	3	9	C	S	0	2
M023	3	0.6		2	1	1	0	1	0	0	0	4	6	S	C	1	0
M023	4	0.5		1	2	1	0	0	0	0	2	2	7	S	I	0	0
M023	5	1.3		1	0	0	0	2	0	0	0	5	2	S	S	2	1
M023	6	1.3		2	0	1	1	0	1	1	0	5	11	S	U	0	1
M023	7	2.1		1	2	0	0	0	0	1	0	5	7	C	C	0	0
M023	8	1		2	2	0	0	0	1	1	0	8	2	S	S	0	2
M023	9	1.9		2	2	1	0	1	2	2	2	8	2	U	U	2	0
M023	10	0.8		1	1	0	1	0	1	1	2	3	4	S	I	2	2
M023	11	1	20	1	2	0	1	2	2	2	0	5	9	C	C	1	0
M023	12	1.4	20	1	2	0	0	0	0	2	0	7	3	U	U,D	0	0
M023	13	1.4		2	0	0	1	1	0	0	0	3	2	S	S	2	1
M053	1	1.02		0	0	1	0	2	1	0	1	7	6	S	S	0	0
M053	2	1.4		2	2	0	0	2	0	0	0	3	4	S	S	1	2
M053	3	2.1		0	1	0	0	0	2	0	1	10	5	U	I	1	0
M053	4	1.9	20	2	2	0	0	0	0	0	1	8	2	S	S	0	0

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M053	5	2	20	0	1	1	1	0	2	2	2	10	9	S	C	0	1
M053	6	0.9	20	1	2	1	2	2	0	1	2	3	9	S	P	1	0
M053	7	1.1	20	1	1	1	0	0	1	0	1	2	4	D	C	2	0
M053	8	3.5		2	1	1	1	0	0	1	0	2	1	S	C	1	0
M053	9	4.4		1	1	0	0	1	2	1	0	9	5	U	S	0	0
M053	10	3.2		2	2	2	2	0	1	0	2	2	5	S,D	S	0	2
M053	11	1		2	2	2	0	0	0	0	1	1	3	S	S	1	0
M053	12	1		0	1	2	2	1	1	1	2	10	9	O	S	0	0
M053	13	0.81		1	2	0	1	0	0	1	1	9	0	U	S	0	0
M053	14	2.5	20	2	2	2	0	0	0	1	1	9	0	U	S	0	1
M053	15	1.2	20	2	1	2	0	0	1	2	1	6	1	C	S	1	1
M053	16	0.8	20		2	0	1	0	0	2	2	1	7	S	S	2	2
M053	17	3.5	20	2	2	2	0	0	0	0	1	6	10	C	S	2	0
M053	18	2.4	20	2	2	0	2		1	0	0	5	7	S	S	2	0

# Appendix

## 4

## APPENDIX 4

### Native Plant species in the Shire of Murray

Acacia alata var. alata	Actinostrobus pyramidalis	Aotus gracillima
Acacia applanata	Actinotus glomeratus	Aotus procumbens
Acacia assimilis subsp. assimilis	Actinotus leucocephalus	Aphelia drummondii
Acacia barbinervis subsp. barbinervis ms	Adenanthos barbiger subsp. barbiger ms	Apium annuum
Acacia biflora	Adenanthos cygnorum subsp. cygnorum	Apium prostratum var. prostratum
Acacia browniana	Adenanthos meisneri	Aponogeton hexatepalus R
Acacia celastrifolia	Adenanthos obovatus	Arctotheca populifolia
Acacia cochlearis	Adiantum aethiopicum	Aristida contorta
Acacia decurrens	Agonis flexuosa	Asclepias curassavica
Acacia dentifera	Agonis flexuosa var. flexuosa	Asparagus asparagoides
Acacia divergens	Agonis grandiflora	Astartea fascicularis
Acacia drummondii subsp. candolleana	Agonis hypericifolia	Astartea sp. Brixton Rd (G.J. Keighery 5389)
Acacia drummondii subsp. elegans	Agonis linearifolia	Aster subulatus
Acacia ericifolia	Agrostis avenacea	Asterolasia pallida subsp. pallida
Acacia extensa	Agrostocrinum scabrum	Astroloma ciliatum
Acacia hemiteles	Aira caryophylla	Astroloma epacridis
Acacia horridula P3	Aira praecox	Astroloma pallidum
Acacia huegelii	Alisma lanceolatum	Astroloma stomarrhena
Acacia incurva	Allium neapolitanum	Atriplex hypoleuca
Acacia insolita subsp. insolita	Allium triquetrum	Atriplex isatidea
Acacia lasiocarpa	Allocasuarina fraseriana	Atriplex prostrata
Acacia lasiocarpa var. bracteolata long peduncle variant (G.J P1)	Allocasuarina humilis	Atriplex prostrata
Acacia lasiocarpa var. lasiocarpa	Allocasuarina thuyoides	Austrodanthonia acerosa
Acacia lateriticola	Alternanthera nodiflora	Austrodanthonia occidentalis
Acacia longifolia	Amaranthus caudatus	Austrostipa campylachne
Acacia microbotrya	Amaranthus viridis	Austrostipa compressa
Acacia myrtifolia	Amaryllis belladonna	Austrostipa flavescens
Acacia nervosa	Amphipogon turbinatus	Austrostipa pycnostachya
Acacia obovata	Amyema linophylla subsp. linophylla	Austrostipa semibarbata
Acacia oncinophylla subsp. patulifolia P2	Amyema miquelii	Austrostipa tenuifolia
Acacia preissiana	Anagallis arvensis	Avena barbata
Acacia pulchella	Andersonia aristata	Baeckea camphorosmae
Acacia pulchella var. glaberrima	Andersonia heterophylla	Banksia attenuata
Acacia pulchella var. pulchella	Andersonia involucrata	Banksia grandis
Acacia rostellifera	Andersonia lehmanniana	Banksia ilicifolia
Acacia saligna	Andersonia sprengelioides	Banksia littoralis
Acacia sessilis	Angianthus preissianus	Banksia seminuda
Acacia stenoptera	Anigozanthos bicolor	Banksia sphaerocarpa var. sphaerocarpa
Acacia teretifolia	Anigozanthos humilis	Baumea arthrophylla
Acacia truncata	Anigozanthos humilis subsp. humilis	Baumea juncea
Acacia uliginosa	Anigozanthos manglesii	Baumea rubiginosa
Acacia urophylla	Anigozanthos manglesii manglesii	Beaufortia macrostemon
Acacia willdenowiana	Anigozanthos viridis	Beyeria cinerea
Acanthocarpus canaliculatus	Anigozanthos viridis subsp. viridis	Billardiera floribunda
Acrotriche cordata	Anthocercis gracilis R	Billardiera variifolia
	Anthocercis ilicifolia subsp. ilicifolia	Blennospora sp. Ruabon (B.J. Keighery & N. Gibson 20)
	Anthocercis littorea	Bolboschoenus caldwellii
	Anthotium junciforme P4	Boronia crenulata
	Aotus cordifolia P3	Boronia crenulata subsp. viminea ms

Boronia crenulata var. crenulata	Caladenia uliginosa subsp. uliginosa ms	Comesperma flavum
Boronia defoliata	Caladenia varians subsp. varians ms	Comesperma virgatum
Boronia dichotoma	Caladenia xantha ms	Conium maculatum
Boronia fastigiata	Calandrinia brevipedata	Conospermum capitatum
Boronia fastigiata subsp. fastigiata ms	Calandrinia granulifera	Conospermum incurvum
Boronia molloyae	Calectasia cyanea	Conospermum stoechadis
Boronia ramosa subsp. anethifolia	Callistachys lanceolata	Conostephium pendulum
Boronia spathulata	Callistemon glaucus	Conostephium preissii
Boronia tenuis P4	Callitriche stagnalis	Conostylis aculeata
Borya scirpoidea	Calothamnus graniticus	Conostylis aculeata subsp. aculeata
Borya sphaerocephala	Calothamnus graniticus subsp. leptophyllus P4	Conostylis aculeata subsp. preissii
Bossiaea aquifolium subsp. aquifolium	Calothamnus lateralis	Conostylis candicans subsp. candicans
Bossiaea eriocarpa	Calothamnus quadrifidus	Conostylis juncea
Bossiaea ornata	Calothamnus quadrifidus var. "unsorted"	Conostylis pauciflora subsp. pauciflora P4
Brachyloma preissii	Calytrix acutifolia	Conostylis pusilla
Brachyscome bellidioides	Calytrix angulata	Conostylis serrulata
Brachyscome iberidifolia	Calytrix aurea	Conostylis setigera
Brachyscome lineariloba	Calytrix fraseri	Conostylis setigera subsp. setigera
Briza maxima	Calytrix leschenaultii	Conostylis setosa
Briza minor	Carex preissii	Corrigiola litoralis
Bromus diandrus	Carpobrotus virescens	Cortaderia seloana
Brunonia australis	Cassytha flava	Corymbia calophylla
Buddleja madagascariensis	Cassytha micrantha	Corymbia haematoxylon
Bulbine semibarbata	Cassytha racemosa	Craspedia variabilis
Burchardia congesta	Cassytha racemosa forma racemosa	Crassula closiana
Burchardia monantha	Casuarina obesa	Crassula decumbens var. decumbens
Burchardia multiflora	Centaurea melitensis	Crepis vesicaria
Caesia micrantha	Centaurium erythraea	Crypsis schoenoides
Cakile maritima	Centaurium spicatum	Cryptandra arbutiflora
Caladenia arenicola ms	Centipeda cunninghamii	Cryptandra arbutiflora var. arbutiflora
Caladenia arrecta ms P4	Centrolepis alepyroides	Cryptandra mutila
Caladenia caesarea subsp. caesarea ms	Centrolepis aristata	Cryptostylis ovata
Caladenia denticulata	Centrolepis caespitosa R	Cuscuta europaea
Caladenia discoidea	Centrolepis drummondiana	Cyanicula deformis ms
Caladenia ferruginea	Centrolepis glabra	Cyanicula gemmata ms
Caladenia flava	Centrolepis mutica	Cyathochaeta avenacea
Caladenia flava subsp. flava ms	Centrolepis pilosa	Cynodon dactylon
Caladenia flava subsp. sylvestris ms	Centrolepis polygyna	Cyperus brevifolius
Caladenia georgei ms	Chaetanthus aristatus ms	Cyperus tenellus
Caladenia hirta subsp. hirta ms	Chamaecytisus palmensis	Cyrtostylis huegelii
Caladenia huegelii R	Chamaescilla corymbosa	Cytogonidium
Caladenia longicauda subsp. calcigena ms	Chamaescilla corymbosa var. corymbosa	leptocarpoides ms
Caladenia longicauda subsp. clivicola ms P1	Chamaescilla spiralis	Dactylis glomerata
Caladenia longicauda subsp. longicauda ms	Chasmanthe floribunda	Dampiera linearis
Caladenia macrostylis	Chenopodium album	Dampiera trigona
Caladenia marginata	Chenopodium ambrosioides	Darwinia citriodora
Caladenia nana subsp. nana ms	Chenopodium macrospermum	Darwinia thymoides
Caladenia paludosa ms	Chenopodium multifidum	Dasyogon bromeliifolius
Caladenia radiata	Chenopodium murale	Datura metel
Caladenia serotina ms	Chordifex microcodon ms	Daucus glochidiatus
Caladenia speciosa ms P4	Chorizandra enodis	Daviesia angulata
Caladenia uliginosa subsp. candicans ms	Chorizema cordatum	Daviesia cordata
	Chorizema ilicifolium	Daviesia costata
	Chorizema rhombeum	Daviesia decurrens
	Chorizema ulotropis P3	Daviesia horrida
	Cicendia filiformis	Daviesia longifolia
	Clematis pubescens	Daviesia physodes
	Coleonema album	Daviesia preissii
	Comesperma calymega	Daviesia rhombifolia
	Comesperma confertum	

Desmocladus fasciculatus ms	Dryandra sessilis var. sessilis	Gonocarpus cordiger
Desmocladus flexuosus ms	Ehrharta calycina	Gonocarpus diffusus
Dianella revoluta	Eichhornia crassipes	Gonocarpus nodulosus
Dianella revoluta var. divaricata	Elythranthera brunonis	Gonocarpus pithyoides
Dichelachne crinita	Elythranthera emarginata	Goodenia caerulea
Digitaria didactyla	Emex australis	Grevillea bipinnatifida
Dillwynia dillwynioides P3	Eragrostis elongata	Grevillea crithmifolia
Dillwynia sp.A Perth Flora(R.Coveny 8036)	Eremaea asterocarpa	Grevillea diversifolia subsp. diversifolia
Diplolaena dampieri	Eremophila glabra subsp. albicans	Grevillea manglesii subsp. dissectifolia P1
Dischisma arenarium	Eriochilus dilatatus subsp. dilatatus ms	Grevillea manglesii subsp. ornithopoda P2
Dittrichia graveolens	Eriochilus dilatatus subsp. multiflorus ms	Grevillea obtusifolia
Diuris drummondii R	Eriostemon spicatus	Grevillea pilulifera
Diuris laxiflora	Eryngium pinnatifidum	Grevillea preissii subsp. preissii
Diuris purdiei R	Eryngium pinnatifidum subsp. palustre ms P2	Grevillea quercifolia
Dodonaea viscosa subsp. angustissima	Eryngium pinnatifidum subsp. pinnatifidum ms	Grevillea trifida
Dodonaea viscosa subsp. spatulata	Eryngium subdecumbens ms P1	Grevillea uncinata
Drakaea elastica R	Eucalyptus accedens	Grevillea variifolia subsp. bunderra ms
Drakaea glyptodon	Eucalyptus aspersa P4	Grevillea wilsonii
Drakaea livida	Eucalyptus calophylla	Haemodorum brevisepalum
Drakaea micrantha ms R	Eucalyptus camaldulensis	Haemodorum laxum
Drosera bulbigena	Eucalyptus gomphocephala	Haemodorum simplex
Drosera erythrorhiza	Eucalyptus laeliae	Haemodorum sparsiflorum
Drosera erythrorhiza subsp. collina	Eucalyptus lane-poolei	Hakea amplexicaulis
Drosera erythrorhiza subsp. erythrorhiza	Eucalyptus marginata	Hakea ceratophylla
Drosera gigantea subsp. geniculata	Eucalyptus marginata subsp. marginata	Hakea lasianthoides
Drosera gigantea subsp. gigantea	Eucalyptus marginata subsp. thalassica	Hakea lissocarpha
Drosera glanduligera	Eucalyptus marginata subsp. thalassica	Hakea petiolaris
Drosera macrantha	Eucalyptus megacarpa	Hakea prostrata
Drosera macrantha subsp. macrantha	Eucalyptus patens	Hakea stenocarpa
Drosera marchantii subsp. marchantii P4	Eucalyptus rudis	Hakea trifurcata
Drosera microphylla	Eucalyptus rudis subsp. cratyantha P4	Hakea undulata
Drosera paleacea	Euchilopsis linearis	Hakea varia
Drosera pallida	Euchiton gymnocephalus P3	Haloragis tenuifolia P1
Drosera pulchella	Euphorbia australis	Halosarcia halocnemoides
Drosera rosulata	Eutaxia virgata	Halosarcia indica subsp. bidens
Drosera stolonifera	Exocarpos sparteus	Halosarcia lepidosperma
Drosera stolonifera subsp. porrecta	Ferraria crispa subsp. crispa	Halosarcia leptoclada subsp. inclusa
Drosera stolonifera subsp. stolonifera	Fimbristylis velata	Halosarcia syncarpa
Drosera tubaestylis	Gahnia decomposita	Hedypnois rhagadioloides
Dryandra lindleyana	Gahnia trifida	Heliophila pusilla
Dryandra lindleyana subsp. media	Gastrolobium calycinum	Hemiandra pungens
Dryandra lindleyana subsp. sylvestris	Geranium molle	Hemigenia incana
Dryandra lindleyana var. lindleyana	Geranium retrorsum	Hemigenia microphylla P3
Dryandra lindleyana var. mellicula	Gladiolus angustus	Hemigenia rigida
Dryandra nivea subsp. nivea	Gladiolus caryophyllaceus	Hemigenia sericea
Dryandra praemorsa var. praemorsa P3	Gladiolus undulatus	Hibbertia acerosa
Dryandra sessilis	Glinus lotoides	Hibbertia amplexicaulis
	Glossostigma diandrum	Hibbertia argentea P3
	Glyceria declinata	Hibbertia commutata
	Gnephosis drummondii	Hibbertia cuneiformis
	Gomphocarpus fruticosus	Hibbertia glomerata
	Gompholobium confertum	Hibbertia huegelii
	Gompholobium knightianum	Hibbertia hypericoides
	Gompholobium marginatum	Hibbertia inconspicua
	Gompholobium polymorphum	Hibbertia lasiopus
	Gompholobium preissii	Hibbertia mylnei
	Gompholobium tomentosum	Hibbertia ovata
		Hibbertia perfoliata
		Hibbertia quadricolor

Hibbertia racemosa	Johnsonia acaulis	Leucopogon polymorphus
Hibbertia rhadinopoda	Johnsonia pubescens	Leucopogon propinquus
Hibbertia serrata	Juncus bufonius	Leucopogon pulchellus
Hibbertia silvestris P4	Juncus caespiticius	Leucopogon squarrosus
Hibbertia spicata subsp. leptotheca P3	Juncus kraussii	Leucopogon strictus
Hibbertia stellaris	Juncus microcephalus	Leucopogon tenuis
Hibbertia subvaginata	Juncus pallidus	Leucopogon verticillatus
Hibbertia teretifolia	Juncus pauciflorus	Levenhookia pusilla
Hibbertia vaginata	Juncus subsecundus	Levenhookia stipitata
Holcus setiger	Kennedia coccinea	Limonium sinuatum
Hovea chorizemifolia	Kennedia nigricans	Lindsaea linearis
Hovea trisperma	Kennedia prostrata	Linum trigynum
Hyalosperma cotula	Kunzea glabrescens ms	Lobelia alata
Hybanthus calycinus	Kunzea micrantha	Lobelia rhombifolia
Hybanthus debilissimus	Lachnostachys	Lobelia rhytidosperra
Hybanthus floribundus	verbascifolia var.	Lobelia tenuior
Hybanthus floribundus subsp. floribundus	verbascifolia	Logania serpyllifolia
Hydatella dioica R	Lactuca saligna	subsp. angustifolia
Hydrocotyle alata	Lagenifera huegelii	Lolium multiflorum
Hydrocotyle blepharocarpa	Lagurus ovatus	Lolium perenne
Hydrocotyle callicarpa	Lambertia multiflora var. darlingensis P3	Lolium rigidum
Hydrocotyle diantha	Lantana camara	Lomandra brittanii
Hydrocotyle pilifera var. glabrata	Lasiopetalum floribundum	Lomandra caespitosa
Hydrocotyle pilifera var. pilifera	Lasiopetalum glabratum P3	Lomandra drummondii
Hydrocotyle	Lasiopetalum membranaceum P2	Lomandra hermaphrodita
tetragonocarpa	Lasiopetalum molle	Lomandra integra
Hyparrhenia hirta	Lathyrus latifolius	Lomandra maritima
Hypericum gramineum	Latrobea tenella	Lomandra micrantha
Hypericum perforatum var. "unsorted"	Lavandula stoechas	Lomandra micrantha subsp. micrantha
Hypocalymma angustifolium	Lavatera arborea	Lomandra nigricans
Hypocalymma cordifolium	Lavatera cretica	Lomandra odora
Hypochaeris glabra	Lawrencia chrysoderma	Lomandra purpurea
Hypolaena exsulca	Lawrencia spicata	Lomandra sericea
Hypoxis occidentalis	Laxmannia ramosa subsp. ramosa	Lomandra sonderi
Hypoxis occidentalis var. occidentalis	Laxmannia sessiliflora	Lomandra spartea
Hypoxis occidentalis var. quadriloba	subsp. australis	Lomandra suaveolens
Hypoxis vaginata	Laxmannia squarrosa	Lotus suaveolens
Ipomoea cairica	Lechenaultia biloba	Loxocarya cinerea
Isolepis cernua	Lechenaultia expansa	Loxocarya striata ms
Isolepis cyperoides	Lechenaultia floribunda	Lupinus luteus
Isolepis hystrix	Lepidosperma costale	Lycium australe
Isolepis marginata	Lepidosperma gladiatum	Lyginia barbata
Isolepis nodosa	Lepidosperma	Lyperanthus serratus
Isolepis oldfieldiana	leptostachyum	Macarthuria apetala
Isolepis producta	Lepidosperma	Macarthuria australis
Isolepis setiformis	longitudinale	Macrozamia riedlei
Isolepis stellata	Lepidosperma pubisquameum	Marianthus coeruleo- punctatus
Isopogon sphaerocephalus	Lepidosperma squamatum	Marsilea sp.A Perth Flora(G.N.Lowe s.n. 16 Jan
Isotoma hypocrateriformis	Lepidosperma tetraquetrum	Medicago sativa
Isotoma pusilla	Lepilaena cylindrocarpa	Meeboldina coangustata ms
Isotropis cuneifolia	Leptoceras menziesii	Meeboldina roycei ms
Isotropis drummondii	Leptomeria cunninghamii	Meeboldina scariosa ms
Ixia maculata	Leptomeria empetrififormis	Melaleuca brevifolia
Ixiolaena viscosa	Leptomeria preissiana	Melaleuca incana subsp. incana
Jacksonia densiflora	Leptorhynchos scaber	Melaleuca lateriflora subsp. acutifolia ms
Jacksonia furcellata	Leptospermum laevigatum	Melaleuca pauciflora
Jacksonia lehmannii	Lepyrodia glauca	Melaleuca preissiana
Jacksonia sericea P3	Leucopogon capitellatus	Melaleuca raphiophylla
Jacksonia sternbergiana	Leucopogon	Melaleuca scabra
	conostephioides	Melaleuca teretifolia
	Leucopogon insularis	
	Leucopogon nutans	
	Leucopogon parviflorus	

Melaleuca thymoides	Parapholis incurva	Pimelea sylvestris
Melaleuca uncinata	Paraserianthes lophantha subsp. lophantha	Pinus pinaster
Melaleuca viminea	Parentucellia latifolia	Pithocarpa pulchella
Melaleuca viminea subsp. viminea	Parentucellia viscosa	Pithocarpa pulchella var. pulchella
Melilotus albus	Parsonsia diaphanophleba P4	Platysace filiformis
Melilotus indicus	Paspalum distichum	Platysace juncea
Menkea australis	Passiflora filamentosa	Platysace tenuissima
Mentha pulegium	Patersonia babianoides	Poa poiformis
Mesomelaena graciliceps	Patersonia juncea	Poa porphyroclados
Mesomelaena pseudostygia	Patersonia occidentalis	Podolepis gracilis
Mesomelaena stygia subsp. stygia	Patersonia pygmaea	Podolepis lessonii
Microtis alba	Patersonia rudis	Podotheca gnaphalioides
Microtis atrata	Patersonia rudis subsp. rudis	Pogonolepis stricta
Microtis brownii	Patersonia umbrosa	Polygonum aviculare
Microtis media	Pelargonium capitatum	Polypogon monspeliensis
Microtis media subsp. densiflora	Pelargonium littorale	Poranthera microphylla
Microtis media subsp. media	Pentapeltis peltigera	Praecoxanthus aphyllus ms
Microtis orbicularis	Pericalymma crassipes	Prasophyllum cyphochilum
Millotia tenuifolia	Pericalymma ellipticum var. ellipticum ms	Prasophyllum drummondii
Minuria cunninghamii	Pericalymma ellipticum var. floridum ms	Prasophyllum giganteum
Mirbelia dilatata	Persicaria hydropiper	Prasophyllum gracile
Monadenia bracteata	Persicaria prostrata	Prasophyllum hians
Monopsis debilis	Persoonia angustiflora	Prasophyllum macrostachyum
Monotaxis occidentalis	Persoonia longifolia	Prasophyllum parvifolium
Muellerolimon salicorniaceum	Persoonia saccata	Prasophyllum ringens
Myoporum tetrandrum	Petrophile biloba	Pteridium esculentum
Myriocephalus helichrysoides	Petrophile linearis	Pterochaeta paniculata
Myriophyllum verrucosum	Petrophile media	Pterostylis barbata
Nemcia dilatata	Petrophile seminuda	Pterostylis recurva
Nemcia retusa	Petrophile serruriae	Ptilotus divaricatus var. divaricatus
Neurachne alopecuroidea	Petrophile striata	Ptilotus sericostachyus subsp. roseus
Notodanthonia caespitosa	Phalaris minor	Ptilotus sericostachyus subsp. sericostachyus
Nuytsia floribunda	Philydrella drummondii	Pultenaea ochreatea
Oenothera drummondii subsp. drummondii	Philydrella pygmaea	Pultenaea reticulata
Oenothera glazioviana	Phlebocarya ciliata	Pyrorchis forrestii
Oenothera laciniata	Phyllangium palustre P1	Pyrorchis nigricans
Oenothera mollissima	Phyllangium sulcatum	Quinetia urvillei
Oenothera stricta subsp. stricta	Phyllanthus calycinus	Ranunculus colonorum
Olea europaea	Phytolacca octandra	Ranunculus muricatus
Olearia heliophila	Pilostyles hamiltonii	Ranunculus pumilio
Olearia paucidentata	Pilularia novae-hollandiae	Ranunculus pumilio var. pumilio
Opercularia apiciflora	Pimelea argentea	Ranunculus sessiliflorus var. sessiliflorus
Opercularia echinocephala	Pimelea brevistyla subsp. brevistyla	Ranunculus trilobus
Opercularia hispidula	Pimelea ciliata subsp. ciliata	Regelia ciliata
Opercularia vaginata	Pimelea imbricata var. major	Restio sinuosus ms
Ophioglossum gramineum	Pimelea imbricata var. piligera	Rhodanthe citrina
Ornithopus pinnatus	Pimelea lehmanniana subsp. nervosa	Rhodanthe corymbosa
Orobanche minor	Pimelea leucantha	Rhodanthe manglesii
Ottelia ovalifolia subsp. ovalifolia	Pimelea preissii	Rhodanthe stricta
Oxalis corniculata	Pimelea rara R	Romulea flava
Oxalis glabra	Pimelea rosea subsp. rosea	Rubus discolor
Oxalis perennans	Pimelea rosea subsp. rosea	Rumex crispus
Oxalis pes-caprae	Pimelea suaveolens subsp. suaveolens	Rumex pulcher
Oxalis purpurea		Ruppia polycarpa
Oxylobium lineare		Salsola kali
Ozothamnus cordatus		Salvinia molesta
Paracaleana nigrita		Samolus repens var. paucifolius
		Sarcocornia quinqueflora



<i>Scaevola anchlussifolia</i>	<i>Stenanthemum emarginatum</i>	<i>Thelymitra crinita</i>
<i>Scaevola calliptera</i>	<i>Stenopetalum robustum</i>	<i>Thelymitra flexuosa</i>
<i>Scaevola canescens</i>	<i>Stenotaphrum secundatum</i>	<i>Thelymitra fuscolutea</i>
<i>Scaevola cunninghamii</i>	<i>Stirlingia latifolia</i>	<i>Thelymitra holmesii</i>
<i>Scaevola lanceolata</i>	<i>Stylidium amoenum</i>	<i>Thelymitra nuda</i>
<i>Scaevola nitida</i>	<i>Stylidium breviscapum</i>	<i>Thelymitra pauciflora</i>
<i>Scaevola pilosa</i>	<i>Stylidium brunonianum</i>	<i>Thelymitra spiralis</i>
<i>Scaevola repens</i>	<i>Stylidium brunonianum</i>	<i>Thomasia foliosa</i>
<i>Scaevola revoluta</i> subsp.	subsp. <i>brunonianum</i>	<i>Thomasia paniculata</i>
<i>stenostachya</i>	<i>Stylidium bulbiferum</i>	<i>Thomasia pauciflora</i>
<i>Schoenolaena juncea</i>	<i>Stylidium bulbiferum</i> var.	<i>Thysanotus arbuscula</i>
<i>Schoenoplectus validus</i>	<i>ciliatum</i>	<i>Thysanotus arenarius</i>
<i>Schoenus asperocarpus</i>	<i>Stylidium calcaratum</i>	<i>Thysanotus dichotomus</i>
<i>Schoenus brevisetis</i>	<i>Stylidium canaliculatum</i>	<i>Thysanotus fastigiatus</i>
<i>Schoenus caespititius</i>	<i>Stylidium carnosum</i>	<i>Thysanotus multiflorus</i>
<i>Schoenus capillifolius</i> P2	<i>Stylidium ciliatum</i>	<i>Thysanotus sparteus</i>
<i>Schoenus grammatophyllus</i>	<i>Stylidium crassifolium</i>	<i>Thysanotus tenellus</i>
<i>Schoenus grandiflorus</i>	<i>Stylidium diuroides</i>	<i>Thysanotus thyrsoideus</i>
<i>Schoenus lanatus</i>	<i>Stylidium diuroides</i>	<i>Thysanotus triandrus</i>
<i>Schoenus maschalinus</i>	subsp. <i>diuroides</i>	<i>Tolpis barbata</i>
<i>Schoenus natans</i> R	<i>Stylidium divaricatum</i>	<i>Trachymene coerulea</i> var.
<i>Schoenus nitens</i>	<i>Stylidium ecorne</i>	<i>coerulea</i>
<i>Schoenus odontocarpus</i>	<i>Stylidium hispidum</i>	<i>Trachymene pilosa</i>
<i>Schoenus plumosus</i>	<i>Stylidium inundatum</i>	<i>Tribonanthes longipetala</i>
<i>Schoenus sculptus</i>	<i>Stylidium irenae</i> P1	<i>Tribonanthes violacea</i>
<i>Schoenus</i>	<i>Stylidium junceum</i>	<i>Trichocline spathulata</i>
<i>sp. Waroona</i> (G.J. Keighery	<i>Stylidium junceum</i> subsp.	<i>Tricoryne elatior</i>
12235) P3	<i>junceum</i>	<i>Tricoryne humilis</i>
<i>Schoenus subfascicularis</i>	<i>Stylidium lineatum</i>	<i>Tricoryne tenella</i>
<i>Schoenus tenellus</i>	<i>Stylidium longitubum</i> P3	<i>Trifolium arvense</i> var.
<i>Schoenus unispiculatus</i>	<i>Stylidium mimeticum</i> P3	<i>arvense</i>
<i>Schoenus variicellae</i>	<i>Stylidium periscelanthum</i>	<i>Trifolium campestre</i> var.
<i>Senecio diaschides</i>	<i>Stylidium petiolare</i>	<i>campestre</i>
<i>Senecio glossanthus</i>	<i>Stylidium piliferum</i>	<i>Trifolium hirtum</i>
<i>Senecio hispidulus</i>	<i>Stylidium piliferum</i>	<i>Trifolium incarnatum</i> var.
<i>Senecio hispidulus</i> var.	subsp. <i>piliferum</i>	<i>incarnatum</i>
<i>hispidulus</i>	<i>Stylidium pritzelianum</i>	<i>Trifolium ligusticum</i>
<i>Senecio lautus</i> subsp.	<i>Stylidium pulchellum</i>	<i>Trifolium repens</i> var.
<i>dissectifolius</i>	<i>Stylidium roseonatum</i>	<i>repens</i>
<i>Senecio leucoglossus</i> P4	<i>Stylidium schoenoides</i>	<i>Trifolium scabrum</i>
<i>Senecio minimus</i>	<i>Stylidium uniflorum</i>	<i>Trifolium subterraneum</i>
<i>Senna artemisioides</i>	<i>Styphandra glauca</i>	<i>Triglochin calcitrapum</i>
subsp. <i>filifolia</i>	<i>Styphelia tenuiflora</i>	<i>Triglochin calcitrapum</i>
<i>Setaria palmifolia</i>	<i>Styphelia tenuifolia</i>	subsp. <i>incurvum</i> ms
<i>Silene gallica</i> var.	<i>Suaeda australis</i>	<i>Triglochin centroparpum</i>
<i>gallica</i>	<i>Swainsona oliveri</i>	<i>Triglochin minutissimum</i>
<i>Siloxerus filifolius</i>	<i>Synaphea gracillima</i>	<i>Triglochin mucronatum</i>
<i>Siloxerus humifusus</i>	<i>Synaphea petiolaris</i>	<i>Triglochin sp. A Perth</i>
<i>Siloxerus multiflorus</i>	subsp. <i>petiolaris</i>	<i>Flora</i> (A.S. George 4100)
<i>Sisymbrium officinale</i>	<i>Synaphea stenoloba</i> P1	<i>Triglochin trichophorum</i>
<i>Solanum lasiophyllum</i>	<i>Taraxacum officinale</i>	<i>Tripterococcus brunonis</i>
<i>Solanum nigrum</i>	<i>Taraxis grossa</i>	<i>Trithuria submersa</i>
<i>Solanum simile</i>	<i>Templetonia retusa</i>	<i>Tritonia lineata</i>
<i>Sollya heterophylla</i>	<i>Tetragonia decumbens</i>	<i>Tropaeolum majus</i>
<i>Sonchus asper</i>	<i>Tetragonia decumbens</i>	<i>Trymalium floribundum</i>
<i>Sonchus oleraceus</i>	<i>Tetragonia capillaris</i>	subsp. <i>floribundum</i>
<i>Sparaxis bulbifera</i>	<i>Tetragonia octandra</i>	<i>Trymalium ledifolium</i> var.
<i>Sparaxis pillansii</i>	<i>Tetragonia laevis</i>	<i>ledifolium</i>
<i>Sphaerolobium medium</i>	<i>Tetragonia hirsuta</i>	<i>Trymalium ledifolium</i> var.
<i>Sphaerolobium vimineum</i>	<i>Tetragonia hispidissima</i>	<i>rosmarinifolium</i>
<i>Spinifex longifolius</i>	<i>Tetragonia nuda</i>	<i>Urospermum picroides</i>
<i>Sporobolus indicus</i> var.	<i>Tetragonia pilifera</i> P3	<i>Ursinia anthemoides</i>
<i>capensis</i>	<i>Tetragonia setigera</i>	<i>Utricularia menziesii</i>
<i>Sporobolus virginicus</i>	<i>Tetragonia similis</i> P2	<i>Utricularia multifida</i>
<i>Stachystemon vermicularis</i>	<i>Thelymitra antennifera</i>	<i>Utricularia violacea</i>
<i>Stackhousia monogyna</i>	<i>Thelymitra campanulata</i>	<i>Velleia trinervis</i>
	<i>Thelymitra cornicina</i>	

Vellereophyton dealbatum  
Verbena bonariensis  
Verbesina encelioides  
Veronica arvensis  
Verticordia acerosa var.  
acerosa  
Verticordia acerosa var.  
preissii  
Verticordia densiflora  
var. densiflora  
Verticordia huegelii var.  
huegelii  
Verticordia huegelii var.  
stylosa  
Verticordia nitens  
Verticordia pennigera  
Verticordia plumosa var.  
brachyphylla  
Verticordia plumosa var.  
plumosa  
Vicia hirsuta  
Vicia sativa subsp.  
sativa  
Villarsia capitata  
Villarsia submersa P4  
Villarsia violifolia  
Viminaria juncea  
Vinca major  
Viola odorata  
Vulpia myuros  
Wahlenbergia capensis  
Watsonia meriana  
Watsonia meriana var.  
bulbillifera  
Wilsonia humilis  
Wurmbea dioica  
Wurmbea monantha  
Xanthorrhoea brunonis  
subsp. semibarbata  
Xanthorrhoea gracilis  
Xanthorrhoea preissii  
Xanthosia atkinsoniana  
Xanthosia candida  
Xanthosia huegelii  
Xanthosia huegelii subsp.  
huegelii ms  
Xylomelum occidentale  
Zostera mucronata  
Zygophyllum apiculatum