Roadside Vegetation and Conservation Values in the Shire of Beverley

The 'Arches', created by stands of Red Morrell trees in a roadside east of Beverley.
Photo by M. Griffiths.

April 2005

Roadside Conservation Committee

CONTENTS

EXECUTIVE SUMMARY **1**

PART A: OVERVIEW OF ROADSIDE CONSERVATION **2**

1.0 Why is Roadside Vegetation Important? 3
2.0 What are the Threats? 4
2.1 Lack of awareness 4
2.2 Roadside clearing 4
2.3 Fire 5
2.4 Weeds 5
2.5 *Phytophthora* Dieback 6
3.0 Legislative Requirements 7
4.0 Special Environment Areas 8
5.0 Flora Roads 9

PART B: THE NATURAL ENVIRONMENT IN BEVERLEY 10

1.0 Flora 11
2.0 Declared Rare Flora (DRF) 11
3.0 Fauna 11
4.0 Remnant Vegetation Cover 13

PART C: ROADSIDE SURVEYS IN THE SHIRE OF BEVERLEY **15**

1.0 Introduction 16
1.1 Methods 16
1.2 Mapping Roadside Conservation Values 17
1.3 Roadside Conservation Value Categories 17
2.0 Using the RCV MAP 19
3.0 Results 21

PART D: ROADSIDE MANAGEMENT RECOMMENDATIONS **30**

1.0 Management Recommendations 31
1.1 Management Recommendations 31
1.2 Minimising Disturbance 32
2.0 Planning for Roadsides 33
3.0 Setting Objectives 33

REFERENCES **34**

FIGURES

Figure 1. The Roadside Conservation Value (RCV) map depicts roadside conservation values in the Shire of Beverley.
Figure 2. Native vegetation on roadsides in the Shire of Beverley.
Figure 3. Extent of native vegetation in roadsides in the Shire of Beverley.
Figure 4. Number of different native species in roadsides in the Shire of Beverley.
Figure 5. Value as a biological corridor.
Figure 6. Weed infestation.
Figure 7. Predominant adjoining land use.
Figure 8. Presence of nominated weed species along roadsides in the Shire of Beverley.
Figure 9. Roadside conservation value scores of all roadsides surveyed in the Shire of Beverley.
Figure 10. Conservation status of roadsides in the Shire of Beverley.

TABLES

Table 1. Remnant vegetation remaining in Beverley and surrounding Shires.
Table 2 Vegetation associations occurring in the Shire of Beverley, and the percentage of their original extent remaining in Western Australia.
Table 3 Summary of results from the roadside survey in the Shire of Beverley.
Table 4 Width of road reserves and width of vegetation in roadsides in the Shire of Beverley.

APPENDICES

Appendix 1. Standard survey sheet.
Appendix 2. Raw data used to calculate conservation values.
Appendix 3. Road names and lengths: Shire of Beverley.
Appendix 4. Flora species in the Shire of Beverley.
Appendix 5. Fauna Species in the Shire of Beverley.
Appendix 6. Guidelines for Managing the Harvesting of Native Flowers, Seed and Timber from Roadsides.
Appendix 7. Guidelines for the Nomination and Management of Flora Roads.

Executive Summary

This report provides an overview of roadside conservation issues relevant to the Shire of Beverley. Primarily providing detailed results of the roadside survey, with accompanying management recommendations, it also briefly describes the natural environment in the Beverley area.

Aware of the need to conserve roadside remnants, the Beverley Naturalists Club, staff from Greening Australia (WA) and community volunteers, liaised with the Roadside Conservation Committee (RCC) between 2000-2003 to survey roadside vegetation in the Shire. Surveys to assess the conservation values of roadside remnants were conducted from October-December 2000, January 2001 and July 2003. The enthusiastic efforts of the volunteer surveyors; Bert & Norma Wansborough, Ev Seymour, Paula Clynk, Charmain Banks, Mark Ochtman, Phyllis Facey, Mr & Mrs Jenkins, ensured that this project was successfully completed.

The majority (81%) of the Shire's 755 km of roadsides were assessed by the RCC for their conservation status and maps produced via a Geographic Information System (GIS). The survey indicated that high conservation value roadsides covered approximately 35.4% of the roadsides surveyed, with medium-high conservation value roadsides accounting for 29.1%. Medium-low and low conservation value roadsides occupied only 22.9% and 12.6%, respectively. A more detailed analysis of results is presented in this report.

It is envisaged that the prime use of the roadside conservation value (RCV) map will be for use by Shire and community groups as a management and planning tool. Applications may range from prioritising work programs to formulating management strategies. Past experience has shown that this document and the accompanying maps are valuable as a road reserve planning and management tool, for example;

- identifying degraded areas for strategic rehabilitation or in need of specific management techniques and weed control programs;
- prioritising roadside vegetation protection and/or rehabilitation programs;
- establishing habitat linkages throughout the Shire's overall conservation network;
- developing regional or district fire management plans;
- identifying potential tourist routes, i.e. roads with high conservation value would provide visitors with an insight into the remnant vegetation of the district; and
- incorporating into Landcare, Natural Resource Management (NRM) or similar projects for 'whole of' landscape projects.

Progressive surveys of some Shires have revealed an alarming decline in the conservation status of many roadside reserves. In some cases the conservation value has declined at a rate of approximately 10% in 9 years. This trend indicates that without appropriate protection and management, roadside reserves will become veritable biological wastelands within the near future. However, proactive and innovative management of roadside vegetation has the potential to abate and reverse this general decline. Opportunities exist for the Shire of Beverley to utilise the RCV map into many facets of its Landcare, tourism, road maintenance operations and NRM strategy documents. In addition, the RCC is available to provide assistance with the development of roadside vegetation management plans and associated documents.

PART A

OVERVIEW OF ROADSIDE CONSERVATION

1.0 Why is Roadside Vegetation Important?

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. This results in a mosaic of man-made biogeographical islands of small native vegetation remnants.

The flora and fauna in these areas are severely disadvantaged and these habitats are typically unreliable for sustaining wildlife due to limited and scarce food resources, increased disease risk and the reduced genetic diversity caused by a diminishing gene pool. Some habitat fragments may be too small to provide the requirements for even a small population; therefore, it is essential to their survival that they have a means of dispersing throughout the landscape. The presence of native vegetation along roadsides often fulfils an important role in alleviating this isolation effect by providing connectivity between bush remnants. While many roadside reserves are inadequate in size to support many plant and animal communities, they are integral in providing connections between larger areas of potentially more suitable remnant patches. It is therefore important that all native vegetation is protected regardless of the apparent conservation value it contains. It is important to acknowledge that even degraded roadsides have the ability to act as corridors for the dispersal of a variety of fauna.

The Western Brush Wallaby (*Macropus irma)* has been recorded in the Shire of Beverley

Photo by Babs and Bert Wells courtesy of CALM

Other important values of transport corridor remnants are that they:

- are often the only remaining example of original vegetation within extensively cleared areas;
- often contain rare and endangered plants and animals. Currently, roadside plants represent more than 80 per cent of the known populations of DRF and three species 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 Aboriginal /European historic or cultural significance;
- provide windbreaks and stock shelter areas for adjoining farmland by helping to stabilise temperature and reduce evaporation.

High conservation value roadsides form significant tracts of remnant vegetation.

Photo D. Lamont.

- assist with erosion and salinity control, and not only in the land adjoining the road reserve; and
- 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. Guidelines for seed and timber harvesting can be found in Appendix 6.

2.0 What are the Threats?

2.1 Lack of Awareness

The general decline of the roadside environment can, in many instances, be attributed to the lack of awareness of the functional and conservation value of the roadside remnants, both by the general community and those who work in the road reserve environment. As a consequence, there is a lack of knowledge of threatening processes (such as road maintenance and inappropriate use of fire) on the sustainability of the roadside reserve as a fauna corridor and habitat area. This situation can therefore act as a catalyst for decline in environmental quality.

2.2 Roadside Clearing

Western Australia's south-west agricultural region, also known as the Intensive Land-use Zone (ILZ), covers an area of approximately 25,091,622 ha, of which only 29.8% is covered by the original native vegetation. Of the 87 rural Local Government Authorities in this zone, 21 carry less than 10% of the original remnant vegetation, and a further 30 have less than 30% (Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. 2001).

Inappropriate road management practices, particularly the systematic and indiscriminate clearing of roadside vegetation in some areas has caused irreversible damage and impacted enormously upon the conservation value of roadsides in Western Australia. Clearing roadside vegetation reduces the viability of the roadside to act as a biological corridor, the diminished habitat width impeding the movement of wildlife throughout the surrounding landscape matrix. Roadside clearing activities have the potential to introduce and spread weeds, due to the movement and disturbance of soil, thus competing with native vegetation residing in the roadside. When coupled with poor site planning and preparation, road construction and maintenance projects can often introduce and spread weeds into previously undisturbed, weed-free roadsides. Roadsides are, in many cases, the only remaining example of remnant vegetation in agricultural areas, yet they are also at great risk due to ongoing inappropriate clearing.

Amendments to the *Environmental Protection Act* 1986 have put in place a permit application process designed to assess vegetation clearing based upon a number of clearing principles which ensure ecological, conservation and land degradation issues are considered. Under the Act clearing native vegetation requires a permit unless it is for exempt purposes. These amendments are design to provide improved protection for native vegetation, maintain biodiversity and allow for some incidental clearing activities to continue, such as day-to-day farming practices, without the need for a permit.

2.3 Fire

Although Western Australia's flora and fauna have evolved with a tolerance to pre-European fire regimes these are generally not present today. Fire in transport corridors will inevitably alter the native vegetation, but the extent of changes is dependent on a number of factors such as:

- species present;
- intensity of fire;
- frequency of fire; and
- seasonality of the fire.

The RCC's policies on fire management are:

1. Roadside burning should not take place without the consent of the managing authority;
2. Local Government Authorities should adopt by-laws to control roadside burning;
3. Roadside burning should be planned as part of a total Shire/District Fire Management Plan;
4. Only one side of a road should be burnt in any one year;
5. When designing a Fire Management Plan, the two principles which must be kept in mind are the ecological management of vegetation and the abatement of fire hazard;
6. No firebreaks should be permitted unless the width of the roadside vegetation strip is greater than 20m;
7. A firebreak on any road reserve should be permitted only when, in the opinion of the road manager, one is necessary for the protection of the roadside vegetation. The road manager shall specify the maximum width to which the break may be constructed;
8. In the case of any dispute concerning roadside fire management, the Bush Fires Board should be called in to arbitrate.

If a decision is made to use fire, only one side of a road should be burnt at a time, as this will ensure retention of some of the scenic values associated with the road and also provide habitat for associated fauna.

Fire can be particularly destructive to heritage sites, whether they are of Aboriginal or European origin. Before any decision is made to burn a road verge, particularly if threatened flora is present, the proponent should be aware of all values present and the impact the fire will have. It is illegal to burn roadsides where Declared Rare Flora (DRF) is present, without written permission from the Minister for the Environment.

The impact of a fire on natural, cultural and landscape values should be carefully considered.
Photo D. Lamont

2.4 Weeds

Weeds are generally disturbance opportunists and as such the road verge often provides a vacant niche easily colonised. Their establishment can impinge on the survival of existing native plants, increase flammability of the vegetation and interfere with the engineering structure of

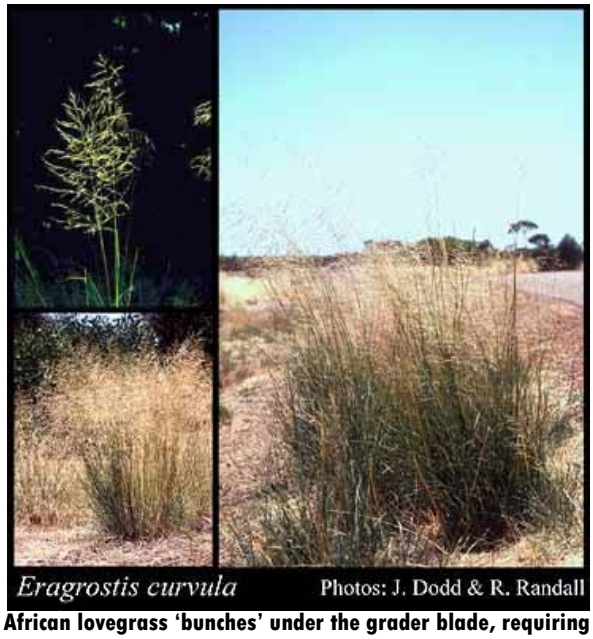
the road. The effect of weed infestations on native plant populations can be severe, often with flow on effects for native fauna such as diminished habitat or food resources.

Once weeds become established in an area, they become a long-term management issue, costing considerable resources to control or eradicate. The WA Herbarium records 52 weed species in the Shire of Beverley, see Appendix 4. The roadside survey recorded populations of 6 weeds, but these were not mapped due to inconsistent records. Nominated weeds data is presented in the results section of this report though.

The 6 nominated weeds were:

- Tagasaste,
- African Lovegrass,
- Bridal Creeper,
- Perennial Veldt Grass,
- Annual Veldt Grass, and
- Caltrop.

African lovegrass (pictured right) is an invasive weed worth noting, as it greatly increases the cost of road maintenance, and is becoming more prevalent on roadsides in many Shires in the Agricultural Districts. African lovegrass tends to grow on the edge of the bitumen, and slowly breaks it up by root penetration thereby allowing moisture to penetrate the road substrate.



African lovegrass 'bunches' under the grader blade, requiring extra runs to remove it.
Photography by J. Dodd and R. Randall. Photo used with the permission of the WA Herbarium, CALM (http://florabase.calm.wa.gov.au/help/photos#reuse).

2.5 *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 Beverley is a known *Phytophthora* dieback risk area, particularly in forested, multiple use 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. Daily activities, such as routine maintenance or construction, have the potential to spread *Phytophthora* fungi. Currently, there is no practical method of eradicating *Phytophthora* once it is established in an area.

The Dieback Working Group published a booklet titled *Managing Phytophthora Dieback in Bushland: A guide for Landholders and Community Conservation Groups* (2000), that provides detailed information on minimising the risk of introducing or spreading *Phytophthora*.

3.0 Legislative Requirements

Uncertainty often exists in the minds of many with regard to the 'ownership', control and management of 'the roadside'. This problem is also exacerbated by the multitude of legislative reference to activities within a transport corridor.

The Department of Conservation and Land Management (CALM) has the legislative responsibility to manage and protect all native flora and fauna in Western Australia. It is important to note that all native flora and fauna is protected under provisions of the *Wildlife Conservation Act* 1950, and cannot be taken unless it is taken in a lawful manner. 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

* The State Government has recently made changes to the *Environmental Protection Act 1986*.

New legalisation has been introduced under the *Environmental Protection Act 1986* which specify that all clearing of native vegetation require a permit, unless it is for an exempt purpose. The Environmental Protection (Clearing of Native Vegetation) Regulations 2004 provide an outline of these exemptions. Clearing applications are assessed against twelve clearing principles, which look at values such as the;

- biological value of the remnant vegetation,
- potential impact on wetlands and drainage,
- existence of rare flora and threatened ecological communities, and
- likely land degradation impacts.

This assessment process is designed to provide a more comprehensive and stringent land clearing control system. There are two land clearing permits available, an area permit and a purpose permit. Where clearing is for a once-off clearing event such as pasture clearing or an agricultural development for example, an area permit is required. Where ongoing clearing is necessary as part of a maintenance program for road or railway reserves for example, a purpose permit is needed. The exemptions are designed to enable farmers and landholders to continue regular incidental clearing without having to apply for a permit. In the case of Shire road construction and maintenance activities, clearing is allowed to occur if it is to the width and height previously cleared for that purpose. A permit will be required if clearing is needed to establish a new road, widen an existing road surface into roadside vegetation or create a new gravel pit on uncleared land for example.

It is recommended that a cautionary approach be taken when working within roadsides, 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.

4.0 Special Environment Areas

A Special Environmental Area is a section of roadside that requires special protection for the following reasons:

- 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 the RCC publication *Guidelines for Managing Special Environmental Areas in Transport Corridors* 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.

To ensure that knowledge of rare flora and other sites does not get lost due, perhaps, to staff changes, the 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 work commencing on any particular road. This will ensure that inadvertent damage does not occur.

Roadside SEA markers are highly visible.
Photo by K. Jackson

Local Government is encouraged to permanently mark Special Environmental Areas to prevent inadvertent or inappropriate 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.

5.0 Flora Roads

A flora road is one which has special conservation value because of the vegetation contained within the road reserve. The managing authority may decide to declare a Flora Road based on the results of the survey of roadside conservation value. The Roadside Conservation Committee has prepared *Guidelines for the Nomination and Management of Flora Roads*, refer to Appendix 7. The Flora Road signs (provided by the RCC) draw the attention of both the tourist and anyone working in the road reserve, to the roadside flora, indicating that it's special and worthy of protection. The program seeks to raise the profile of roadsides within both the community and road management authorities.

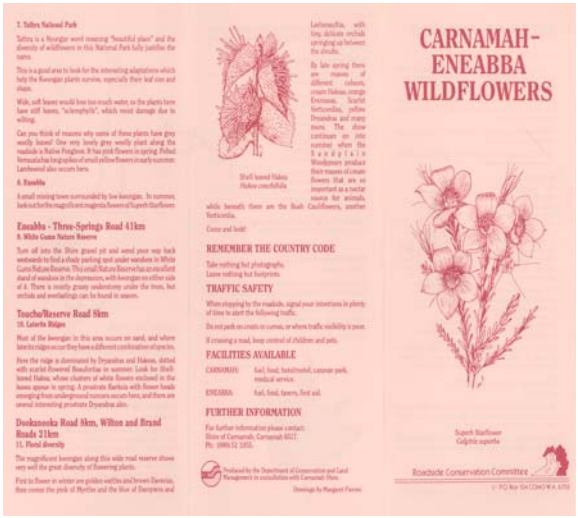
Although presently there are no Flora Roads designated within the Shire of Beverley, the roadside survey and the roadside conservation value (RCV) map highlighted a number of roadsides that have the potential to be declared as Flora Roads. These, and other roads may be investigated further to see if they warrant a declaration as a Flora Road, see Part C of this report. This has the dual effect of drawing the attention of tourists to the high conservation value roadside and also alerting all that work in the roadside environment that the marked section of roadside requires due care to protect the values present.

Roadsides are one of the most accessible places for tourists to view wildflowers.
Photo by CALM

In order to plan roadworks so that important areas of roadside vegetation are not disturbed, road managers should know of these areas. It is important to the sustainability of the designated flora roads, that all road managers are aware of the location of flora roads under their control. It is suggested that the Shire establish a *Special Environmental Area Register* important for conservation.

Attractive roadside drives are an important focus in Western Australia, the "Wildflower State". Declared Flora Roads will, by their very nature, be attractive to tourists and would often be suitable as part of a tourist drive network. Consideration should be given to:

- promoting the road by means of a small brochure or booklet,
- showing all Flora Roads on a map of the region or State,
- using specially designed signs to delineate the Flora Road section (contact the RCC).



Right: The RCC has assisted local communities to produce wildflower drive pamphlets.

PART B

The Natural Environment in Beverley

1.0 Flora

On a global scale, Western Australia has almost ten times the amount of vascular plant varieties than countries such as Great Britain. In fact Western Australia has some 4.8% of the 250,000 known vascular flora present on Earth. The Western Australian flora is also unique, with the majority of species being endemic, that is, found nowhere else in the world. Up to 75% of the 6,000 species in the southwest, are endemic.

The WA Herbarium lists over 830 species of plants present in the Shire of Beverley. These include 50 *Acacia* spp, 22 *Drosera* spp, 18 *Dryandra* spp, 21 *Eucalypt* spp, 21 *Grevillea* spp, 21 *Stylidium* (trigger plants) spp and 21 *Hibbertia* spp. The complete list of recorded flora can bee seen in Appendix 4 of this report.

The Pink fountain triggerplant (*Stylidium brunonianum)* is known to occur in the Shire of Beverley.
Photography by B. Fuhrer and M Hislop. Photo used with the permission of the WA Herbarium, CALM (http://florabase.calm.wa.gov.au/help/photos#reuse).

2.0 Declared Rare Flora (DRF)

Species or populations of Declared Rare Flora (DRF) are of great conservation significance and should therefore 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 delineated by yellow stakes with an identification plate welded on.

It is suggested that the RCC publication *Guidelines for Managing SEA's in Transport Corridors* is used as a guideline for managing these sites. It is the responsibility of the road manager to ensure these markers are installed, and guides for this are available from the Roadside Conservation Committee. For information regarding DRF, contact the CALM Flora Officer for the Narrogin District. If roadworks are to be carried out near DRF sites, it is advisable to contact CALM at least one week in advance.

As at January 2005, three populations of one DRF species (*Acacia brachypoda*) were known from roadside populations within the Shire of Beverley. One site was vested in the Shire of Beverley.

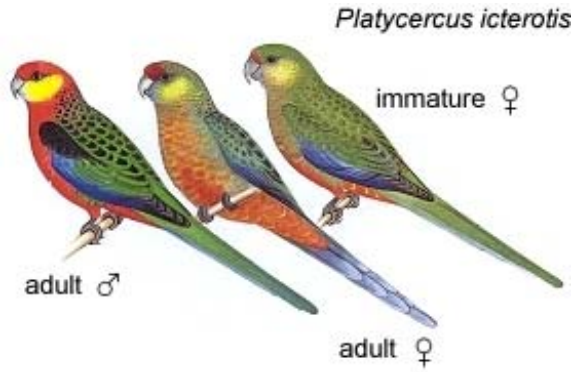
3.0 Fauna

The Western Australian Museum records 150 species of native fauna from the Beverley area, these are listed in Appendix 5. WA Museum fauna records comprise specimen records, museum collections and observations from 1850 to present; therefore it is intended to act only as a general representation of the fauna in the area, rather than a comprehensive list. Of the native fauna species recorded in the Beverley area, there were 55 bird, 16 amphibia, 21 mammal and 58 reptile species.

A number of the fauna species recorded from Beverley are classified as endemic to the wheatbelt region of Western Australia, or smaller regions within the State. For example, the Western Rosella (*Platycercus icterotis*) is endemic to WA and is distributed throughout south western forests and woodlands, including those in the Shire of Beverley.

The *Wildlife Conservation Act* 1950 provides for native fauna (and flora) to be specially protected where they are under identifiable threat of extinction, and as such, are considered to be "threatened". Based on distributional data from the Department of CALM, eight species of threatened and priority fauna have been recorded or sighted throughout the Shire of Beverley, and these are listed below.

- Chuditch (*Dasyurus geoffroii*)
- Quenda (*Isoodon obesulus fusiciventer*)
- Bush Stonecurlew (*Burhinus grallarius*)
- Numbat (*Myrmecobius fasciatus*)
- Bilby (*Macrotis lagotis*)
- Western Brush Wallaby (*Macropus irma*)
- Woylie (*Bettongia penicillata ogilbyi*)
- A rare Cricket (*Ixalodectes flectocercus*)



The Western Rosella is endemic to the south west forest and woodlands of WA.
Photo by Martin Thompson, photo used with permission of the WA Museum, Faunabase http://www.museum.wa.gov.au/faunabase/prod/index.htm

The Chuditch (*Dasyurus geoffroii)* is known to occur in the Shire of Beverley.
Photo by Babs and Bert Wells courtesy of CALM

Mature trees in roadsides provide valuable habitat, particularly hollows for nesting birds.
Photo by L McMahon

Note - records from CALM's Threatened and Priority Fauna Database are not an accurate representation of the species present in the Shire, simply those for which there are records for in the database.

Many fauna species, particularly small birds need continuous corridors of dense vegetation to move throughout the landscape. Roadsides therefore are of particular importance to these avifauna because they usually contain the only continuous linear vegetation connection in some areas.

4.0 Remnant Vegetation Cover

The Shire of Beverley retains only 31.9% of its original native vegetation, and these are located in a variety of tenures, from nature and crown reserves to privately owned bushland. Smaller, more isolated patches of remnant vegetation exist in the more heavily cleared eastern areas, in the hinterlands of townsites such as Beverley, Mawson and Mt Kokeby, resulting in a matrix of man-made and natural landscapes. Flora and fauna living in these isolated remnants require connectivity throughout the landscape to find nesting sites, food, shelter and to breed. As a consequence, the presence of native vegetation in transport corridors is of vital importance. The presence of bush corridors to connect these areas is paramount to the survival of our native flora and fauna.

A comparison of remnant vegetation in Beverley and with surrounding Shires can be seen in Table 1. These remaining remnants are in a variety of tenures and a range of conditions (some in a degraded state), and therefore these levels may be depleted if proactive measures are not taken to manage this priceless resource.

Shire	Total Area (ha)	Vegetation Cover Remaining (ha)	Vegetation Cover Remaining (%)
Beverley	239, 896	76, 566	31.9%
York	214, 963	66, 264	30.8%
Quairading	200, 489	7, 307	3.6%
Wandering	188, 407	115, 462	61.3%
Brookton	161, 283	26, 207	23.1%

Table 1. Remnant vegetation remaining in Beverley and surrounding Shires (Shepherd, Beeston and Hopkins, 2001).

The continued presence of the flora and fauna living in these fragmented remnants is dependant on the connectivity throughout the landscape. This enables access to habitat and food resources essential for the survival of species and the overall biodiversity of the region. In many situations remnant native vegetation in transport corridors is of vital importance as it provides the only continuos link throughout the landscape.

National Objectives and Targets for Biodiversity Conservation 2001-2005 (Environment Australia, 2001) stated that vegetation associations represented by less than 30% remnant vegetation cover are considered ecologically endangered and in need of protection and restoration wherever they are located.

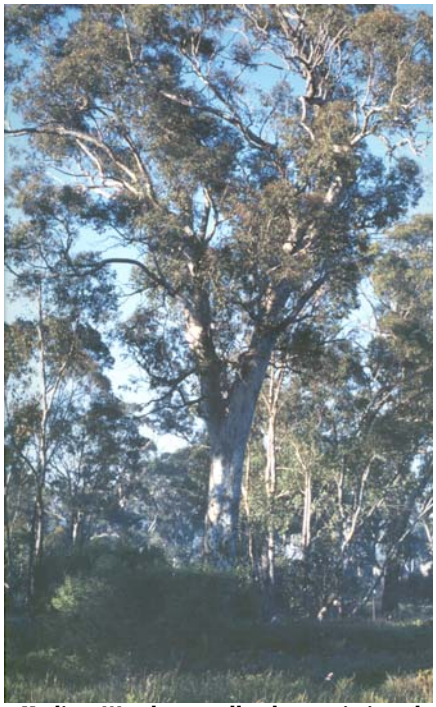
The 20 broad vegetation associations known from the Shire of Beverley, noted in Table 2, provide an indication of the assemblages of native vegetation present prior to European settlement. It should be noted that these assemblages are indicative of the Shire per se and not specifically representative of roadside remnants.

As seen in Table 2, there are 10 vegetation associations below the 30% target of vegetation coverage and 3 vegetation associations with less than 10% remaining in the Shire of Beverley. National objectives and targets for biodiversity conservation (2001-2005) stated the need to have protection measures in place for those

vegetation associations that are below 30%. Vegetation associations with less than 10% were considered endangered, those with between 10-30% were considered vulnerable and between 30-50% were considered depleted (of the pre 1750 extent).

Beard's Vegetation Association #	Description of Vegetation Association	% Remaining
3	Medium forest; jarrah-marri	72.1
4	Medium woodland; marri and wandoo	23.5
7	Medium woodland; York gum (*Eucalyptus loxophleba*) and wandoo	10.0
13	Medium open woodland; wandoo	70.6
25	Low woodland; *Allocasuarina heugeliana* and *York gum*	12.0
49	Shrublands; mixed heath	40.4
51	Sedgeland; reed swamps, occasionally with heath	21.7
125	Bare areas; salt lakes	89.8
128	Bare areas; rock outcrops	79.1
352	Medium woodland; York gum	15.2
946	Medium woodland; wandoo	17.9
947	Medium woodland; powderbark and mallet	25.5
948	Medium woodland; York gum and river gum	8.1
949	Low woodland banksia	82.6
950	Medium woodland; *Casuarina obesa*	37.8
951	Succulent steppe with woodland and thicket; York gum and Kondinin blackbutt over tea-tree thicket and samphire	30.9
1002	Medium open woodland; jarrah	95.3
1003	Medium forest; jarrah, marri and wandoo	64.6
1049	Medium woodland; wandoo, York gum, salmon gum, morel and gimlet	3.1
1147	Shrublands; scrub-heath in the south-east Avon-Wheatbelt Region	5.2

Table 2. Vegetation associations occurring in the Shire of Beverley, and the percentage of their original extent remaining in Western Australia. (Shepherd, Beeston and Hopkins, 2001).



Medium Wandoo woodlands remain in only 17.9% of their original extent.

Photo B.M. Hussey

PART C

ROADSIDE SURVEYS IN THE SHIRE OF BEVERLEY

1.0 Introduction

The roadside survey and mapping program was developed to provide a method of readily determining the conservation status of roadsides. Using this method, community volunteers are able to participate in a 'snap-shot' survey of roadside vegetation to identify a range of attributes that, when combined, give an overall indication of the conservation status of the vegetation.

The majority (81%) of the Shire of Beverley's 755 km of roadsides were assessed and subsequently mapped to determine the conservation status of the road reserves. Fieldwork was carried out throughout the months of October, November and December in 2000, January 2001, July 2003. The enthusiastic efforts of the volunteer surveyors; Bert & Norma Wansborough, Ev Seymour, Paula Clynk, Charmain Banks, Mark Ochtman, Phyllis Facey, Mr & Mrs Jenkins, ensured that this project was successfully completed.

1.1 Methods

The methods to assess and calculate the conservation value of the roadside reserves are described in *Assessing Roadsides: A guide for Rating Conservation Value* (Jackson, 2002). 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 in Appendix 1. This provides both a convenient and uniform method of scoring.

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

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

Each of these 6 attributes was given a score ranging from 0 to 2 points. Their combined scores provided a conservation value score ranging from 0 to 12. The conservation values, in the form of conservation status categories, are represented on the roadside conservation value map by the following colour codes.

Conservation Value Score	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

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
- general comments

It is felt that the recording of these attributes will provide a dataset capable of being used by a broad range of community land management interests.

1.2 Mapping Roadside Conservation Values

The RCC produced a computer-generated map (using a Geographic Information System, or GIS), at a scale of 1:100,000 for the Shire of Beverley. Known as the Roadside Conservation Value (RCV) map, it depicts the conservation status of the roadside vegetation and the width of the road reserves within the Shire of Beverley. The data used to produce both the map and the following figures and tables are presented in Appendix 2. Road names and length information can be found in Appendix 3.

Digital information was obtained from the Department of CALM, Main Roads WA and the Department of Agriculture WA and used in the map, depicting the location of remnant vegetation on both the Crown estate and privately owned land. Watercourses are also depicted on the RCV map.

1.3 Roadside Conservation Value Categories

1.3.1 High conservation value

High conservation value roadsides are those with a score between 9-12, and generally display the following characteristics:

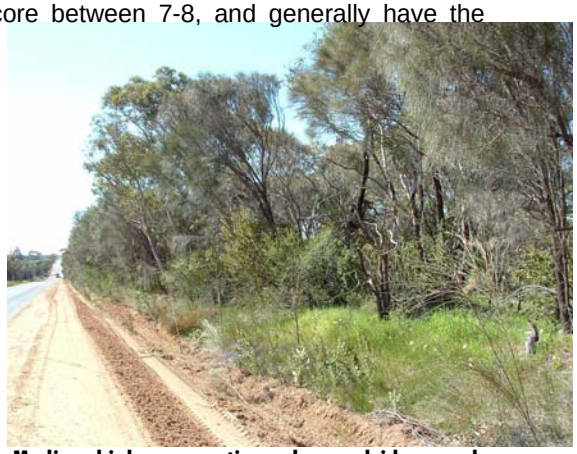
- intact natural structure consisting of a number of layers, i.e. ground, shrub, tree layers,
- extent of native vegetation greater than 80%, i.e. little or no disturbance,
- high diversity of native flora, i.e. greater than 20 different species,
- few weeds, i.e. less than 20% of the total plants, and
- high value as a biological corridor, i.e. may connect uncleared areas, contain flowering shrubs, tree hollows and/or hollow logs for habitat.

This high conservation value roadside contains relatively intact, diverse remnant vegetation and important habitat trees.
Photo B.M. Hussey

1.3.2 Medium-high conservation value

Medium-high conservation value roadsides are those with a score between 7-8, and generally have the following characteristics:

- generally intact natural structure, with one layer disturbed or absent,
- extent of native vegetation between 20-80%,
- medium to high diversity of native flora, i.e. between 6-19 species,
- few to half weeds i.e. between 20-80% of the total plants, and
- medium to high value as a biological corridor.



Medium-high conservation value roadsides may have some disturbance and weed invasion, but a relatively intact natural structure and a moderate number of native species,.
Photo RCC.

1.3.3 Medium-low conservation value

Medium-low conservation value roadsides are those with a score between 5-6, and generally have the following characteristics:

- natural structure disturbed, i.e. one or more vegetation layers absent,
- extent of native vegetation between 20-80%,
- medium to low diversity of native flora, i.e. between 0-5 species,
- half to mostly weeds, i.e. between 20-80% of total plants, and
- medium to low value as a biological corridor.

Medium-low conservation value roadsides may contain Declared Rare Flora (DRF).
Photo by RCC

1.3.4 Low conservation value

Low Conservation Value roadsides are those with a score between 0-4, and generally have the following characteristics:

- no natural structure i.e. two or more vegetation layers absent,
- low extent of native vegetation, i.e. less than 20%,
- low diversity of native flora, i.e. between 0-5 different species,
- mostly weeds, i.e. more than 80% of total plants, or ground layer totally weeds, and
- low value as a biological corridor.

Low conservation value roadsides are typically dominated by weeds and have little or no native vegetation.
Photo by K. Jackson

2.0 USING THE RCV MAP

The RCV map initially provides an inventory of the condition of the roadside vegetation. This is important as the 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, 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.

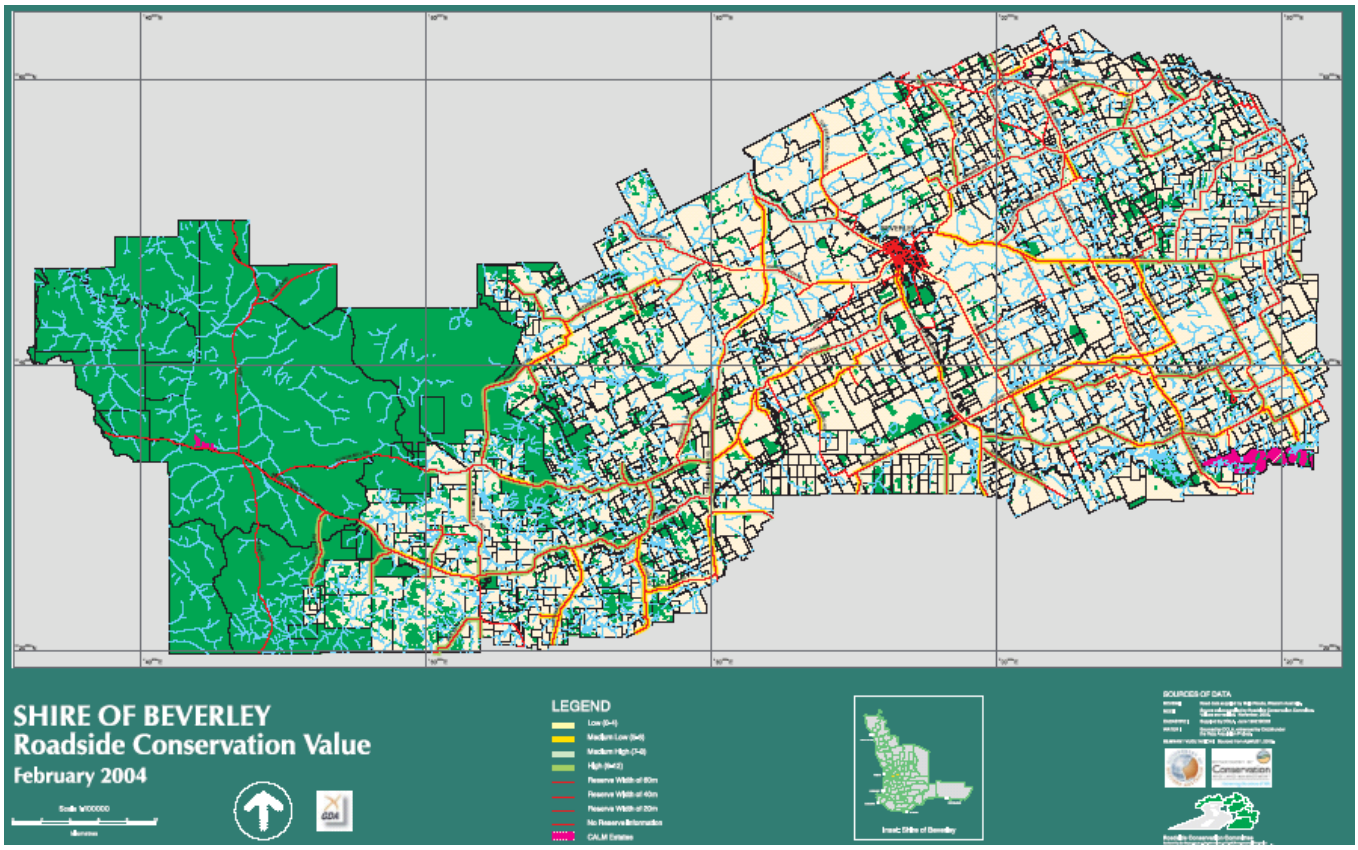


Figure 1- The Roadside Conservation Value (RCV) map depicts roadside conservation values in the Shire of Beverley.

As well as providing a road reserve planning and management tool, the roadside conservation value map can also be used for developing:

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

Weed control along a roadside
Photo MRWA

Catchment recovery projects, such as revegetation programs can utilise the information conveyed on roadside conservation value maps.
Photo by RCC

The road manager can declare high conservation value roads as Flora Roads.
Photo by D. Lamont.

The survey data and map can be used in developing regional or district fire management plans
Photo by CALM

3.0 RESULTS

Using the information collected by the roadside survey, totals of the 6 attributes used to calculate conservation values in the Shire of Beverley are presented in Table 3. Other attributes such as the width of road reserve and width of vegetated roadside are presented in Table 4. 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. As roadsides occur on both sides of the road, roadside distances (km) are equal to *twice* the actual distance of road travelled.

Summary Roadside Information: Shire of Beverley

Length of roadsides surveyed: 1,228.3 km

Roadside Conservation Status

	Total (km)	(%)
Low	154.5	12.6
Medium-low	281.4	22.9
Medium-high	357.2	29.1
High	435.1	35.4
Total	1228.3	100.0

Roadside Conservation Values

	Total (km)	(%)
1	13.5	1.1
2	32.6	2.7
3	42.8	3.5
4	65.6	5.3
5	144.5	11.8
6	136.9	11.1
7	208.5	17.0
8	148.7	12.1
9	195.0	15.9
10	156.5	12.7
11	45.4	3.7
12	38.2	3.1
Total	1228.3	100.0

Predominant Adjoining Landuse

	Total (km)	(%)
Completely cleared	410.4	33.4
Drain	9.8	0.8
Plantation	0.7	0.1
Scattered vegetation	760.6	61.9
Uncleared	46.8	3.8
Total	1228.3	100.0

Native Vegetation on Roadside

	Total (km)	(%)
0 vegetation layers	34.8	2.8
1 vegetation layer	296.7	24.2
2-3 vegetation layers	896.7	73.0
Total	1228.3	100.0

Extent of Native Vegetation

	Total (km)	(%)
<20%, Low	375.8	30.6
20-80%, Medium	598.4	48.7
>80%, Good	254.1	20.7
Total	1228.3	100.0

Number of Native Plant Species

	Total (km)	(%)
0 - 5 native species	215.7	17.6
6 - 19 native species	798.1	65.0
Over 20 native species	214.5	17.5
Total	1228.3	100.1

Weed Infestation

	Total (km)	(%)
Heavy	337.9	27.5
Medium	515.1	41.9
Light	375.3	30.6
Total	1228.3	100.0

Value as a Biological Corridor

	Total (km)	(%)
Low	198.4	16.2
Medium	375.2	30.6
High	654.6	53.3
Total	1228.3	100.1

Data was collected in the Beverley Shire throughout 2000, 2001 & 2003

Table 3: Summary of results from the roadside survey in the Shire of Beverley.

Width of Road Reserve			Width of Vegetated Roadside		
	Total km	%		Total km	%
20 m	369.5	60.2	1-5 m	1159.78	94.4
40 m	0.5	0.1	5-20 m	26.43	2.2
No Data	244.1	39.7	Over 20 m	35.35	2.9
			Unknown	6.7	0.5
Total	614.1	100.0	Total	1228.26	100

Table 4: Width of road reserves and width of vegetation in roadsides in the Shire of Beverley.

Width of Road Reserve

This attribute was recorded inconsistently throughout the roadside survey, and this is demonstrated in Table 4 by the large proportion where no data is available. The majority of road reserves were 20 metres in width, with 369.5 km, or 60.2% of roads falling into this category. Of the remaining roads, 0.5 km, or 0.1%, were 40 metres in width and no data was recorded for 244.1 km, or 39.7% of the roadsides surveyed.

Width of Vegetated Road Reserve

The surveyor selected one of three categories, 1-5 metres, 5-20 metres or over 20 metres in width to record the 'width of vegetated roadside' attribute. The left and right hand sides were recorded independently, and then combined to establish the total figures shown in Table 4. The majority of roadside vegetation was between 1 to 5 metres in width (94.4%) and roadsides where the vegetation fell between 5 to 20 metres in width accounted for 2.2%. Roadside vegetation over 20 metres in width spanned 2.9% of the roadsides surveyed, whilst no data was recorded for 0.5% of the roadsides surveyed.

Native Vegetation on Roadsides

The number of native vegetation layers present, either the tree, shrub or ground layers, determined the 'native vegetation on roadside' value. Sections with two to three layers of native vegetation covered 73.0% of the roadside (896.7 km), while 24.2% had only one layer (296.7 km) and 2.8% had no layers of native vegetation (34.8 km), Table 3, Figure 2.

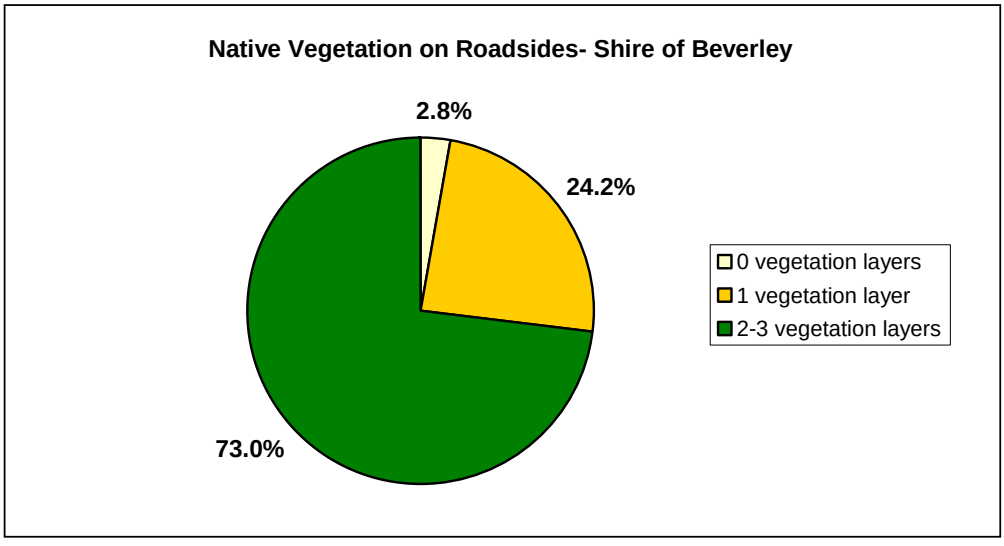


Figure 2- Native vegetation on roadsides in the Shire of Beverley.

Extent of Native Vegetation

Roadsides with extensive vegetation cover, i.e. greater than 80%, occurred along 20.7% of the length of road surveyed (254.1 km). Survey sections with 20% to 80% vegetation cover accounted for 48.7% of the roadsides (598.4 km). The remaining 30.6% had less than 20% native vegetation (375.8 km), and therefore, a low 'extent of native vegetation' value, see Table 3, Figure 3.

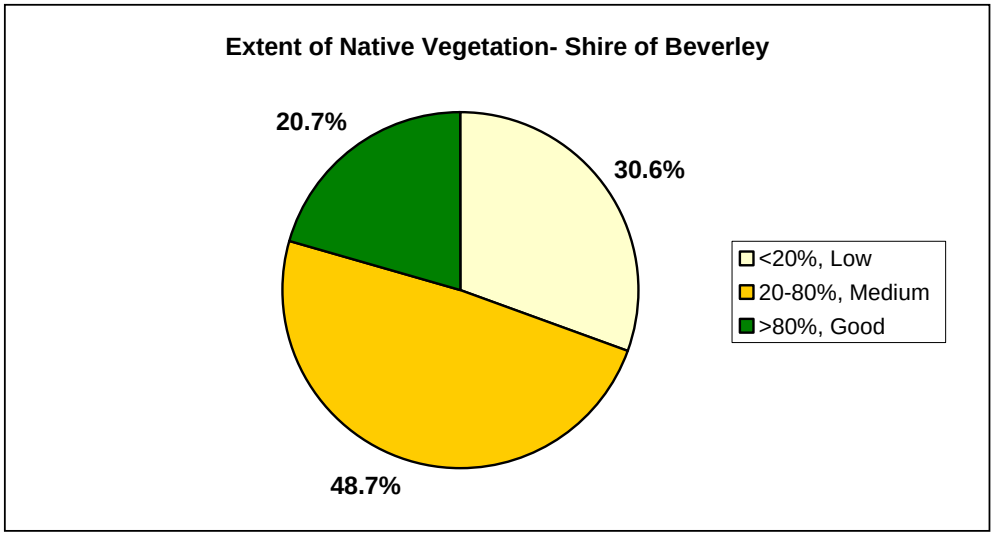


Figure 3 – Extent of native vegetation.

Number of Native Plant Species

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 17.5% (214.5 km) of the roadside. Roadside sections with 6 to 19 plant species accounted for 65.0 % (798.1 km) of roadsides. The remaining 17.6% (215.7 km) contained less than 5 plant species, see Table 3, Figure 4.

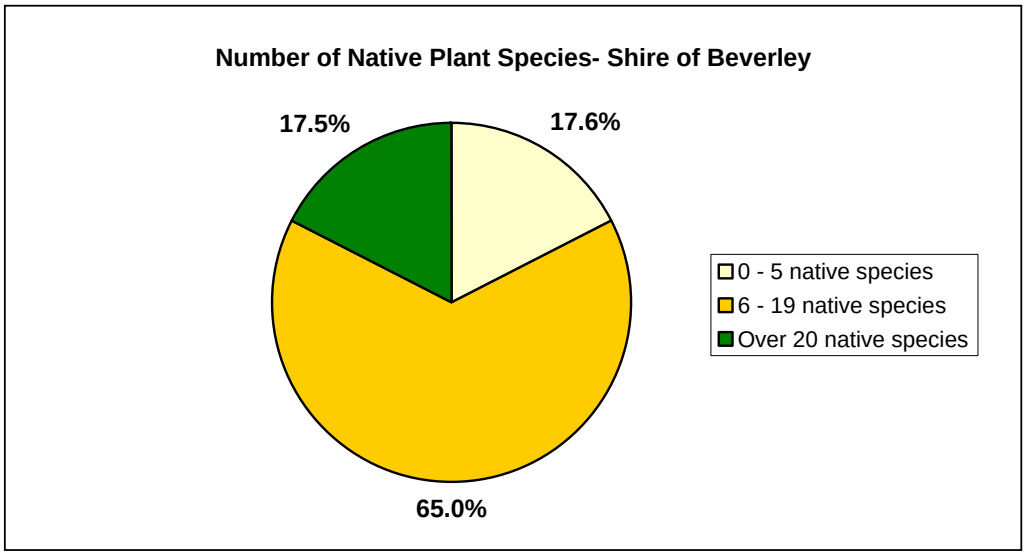


Figure 4 – Number of native plant species on roadsides in the Shire of Beverley.

Value as a Biological Corridor

Four attributes contribute to a roadside having 'value as a biological corridor'. These are: the presence of flowering shrubs, large trees with hollows, hollow logs and whether the road section connected other uncleared areas. Roadsides determined to have high value as biological corridors were present along 53.3% (654.6 km) of the roadside, medium value made up 30.6% (375.2 km), and roadsides with low value as a biological corridor occurred along 16.2% (198.4 km) of the roadsides surveyed, see Table 3, Figure 5.

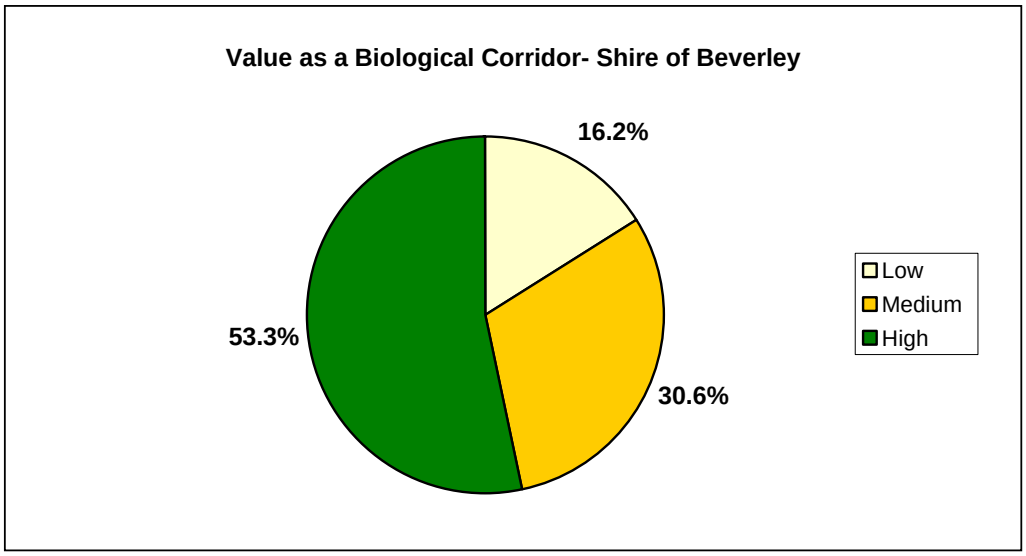


Figure 5 – Value as a biological corridor.

Weed Infestation.

Roadsides containing light levels of weed infestation were those where less than 20% of the total plants were weeds, and these were recorded on 30.6% (375.3 km) of the roadsides surveyed. Medium level weed infestation (weeds were 20-80% of total plants) occurred on 41.9% (515.1 km) of the roadsides and 27.5% (337.9 km) were heavily infested with weeds (more than 80% of the total plants), see Table 3, Figure 6.

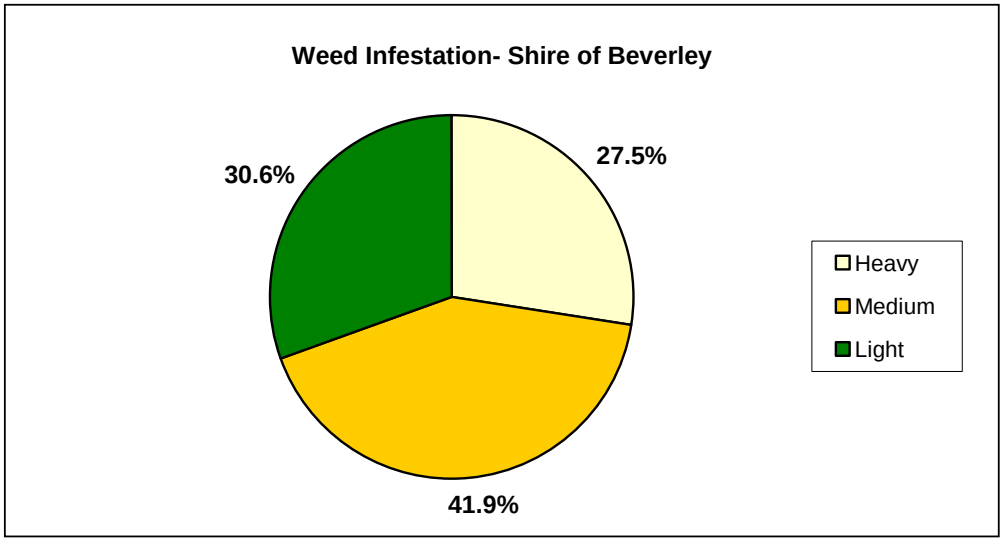


Figure 6 – Weed infestation in roadsides.

Predominant Adjoining Land Use

A scattered distribution of native vegetation was present on 61.9% of agricultural land adjoining roadsides, whilst 33.4% of roadsides surveyed were adjoined by land that had been completely cleared for agriculture. 3.8% of the roadsides surveyed were bordered by land that was uncleared native vegetation. Plantations adjoined 0.1% and drains adjoined 0.8% of the roadsides surveyed, see Table 3, Figure 7.

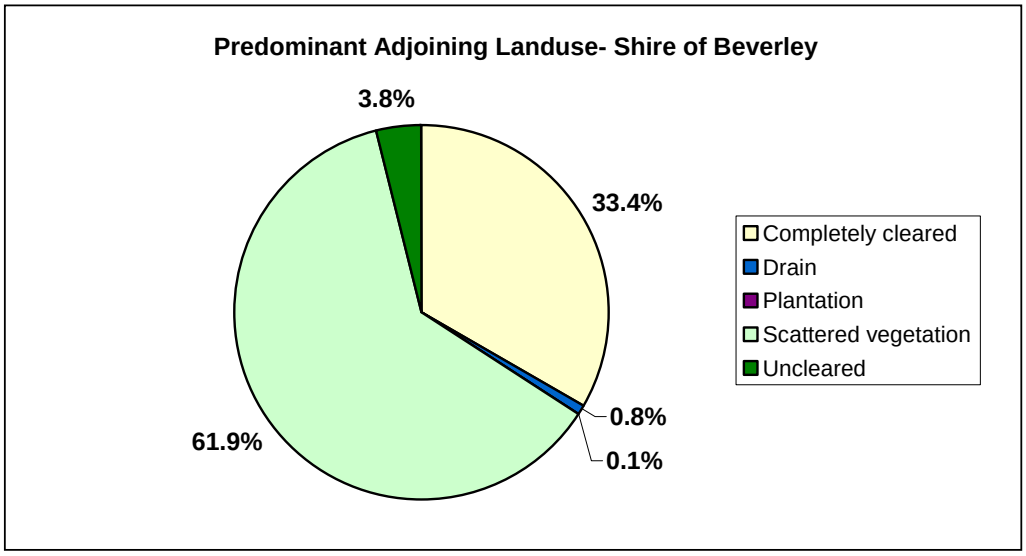


Figure 7 – Predominant adjoining land use.

Nominated Weeds

The following weeds were nominated and recorded throughout the roadside survey.

- Tagasaste,
- African Lovegrass,
- Bridal Creeper,
- Perennial Veldt Grass,
- Annual Veldt Grass,
- Caltrop, and
- Other weeds.

Upon closer analysis, the nominated weeds results appeared to be inconsistent across the Shire and subsequently; the weed survey data was not mapped. We recommend that another roadside weed survey be carried out in the near future. Inconsistencies may have been due to the different times of year the surveys were carried out, the nominated weeds may have been 'forgotten' in a subsequent year or by a proportion of the surveyors, the identification of some weeds may not have been possible or some volunteers may have 'skipped' this section unintentionally. A general category called 'Other Weeds' was also included in the results of the 6 nominated weeds recorded throughout the survey.

The general category of 'Other Weeds' was the most prevalent, and was recorded along 296.7 km of the roadsides surveyed. The majority of the 'other weeds' listed by surveyor's inlcuded wild oats, wheat, grasses, melon, nightshade, and Paterson's curse.

Perennial Veldt Grass was the most commonly recorded of the 6 nominated weeds, and was present along 88.3 km of roadsides. Bridal creeper was recorded along 11.2 km of roadsides, and African Lovegrass was present along 8.1 km of roadsides surveyed. Tagasaste was recorded along 4.9 km, Annual Veldt Grass and Caltrop were not recorded at all, refer to Figure 8.

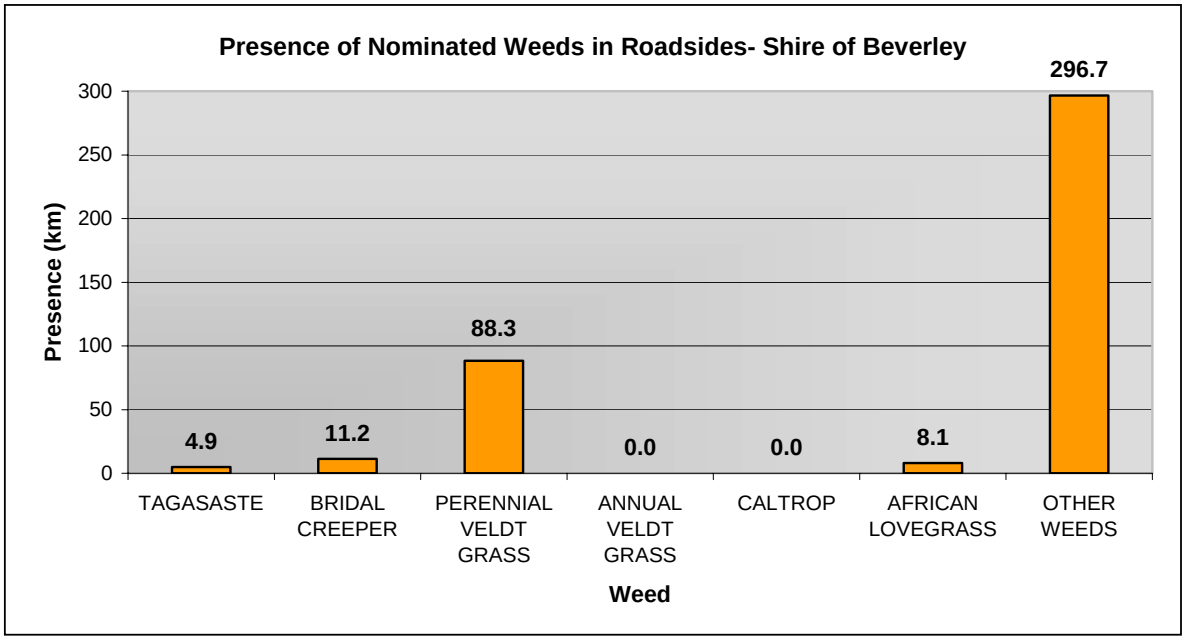


Figure 8- Presence of nominated and other weeds along roadsides in the Shire of Beverley.

Location of Nominated Weeds:

- Tagasaste was only recorded on the Beverley East Road.
- Bridal creeper was only recorded along Bremner Road.
- Perennial Veldt grass was recorded on Waterhatch Road, York-Williams Road, Dale Kokeby Road, Springhill Road, Maitland Road, Carrs Road, Smith Road, Hills Road, Bennets Road, Bellrock Road and Beverley Westdale (Dale Mawson) Road.
- African lovegrass was only recorded on the Top Beverley York Road.

Conservation Value Scores

Conservation value scores were calculated for each section of roadside surveyed. Scores range from 1 to 12, from the lowest to highest conservation value respectively, these are shown in Figure 9. The most occurring roadside conservation value was 7 (208.5 km), followed by a score of 9 (195.0 km), then 10 (156.5 km). Roadsides with a conservation value score of 8 covered 148.7 km, a score of 5 covered 144.5 km, and a score of 6 spanned 136.9 km of roadsides. Roadsides scoring 4 covered 65.6 km, scores of 11 covered 45.4 km, scores of 3 accounted for 42.8 km, while roadsides with a score of 12 spanned 38.2 km. 32.6 km of roadsides scored 2 and 13.5 km of roadsides scored 1.

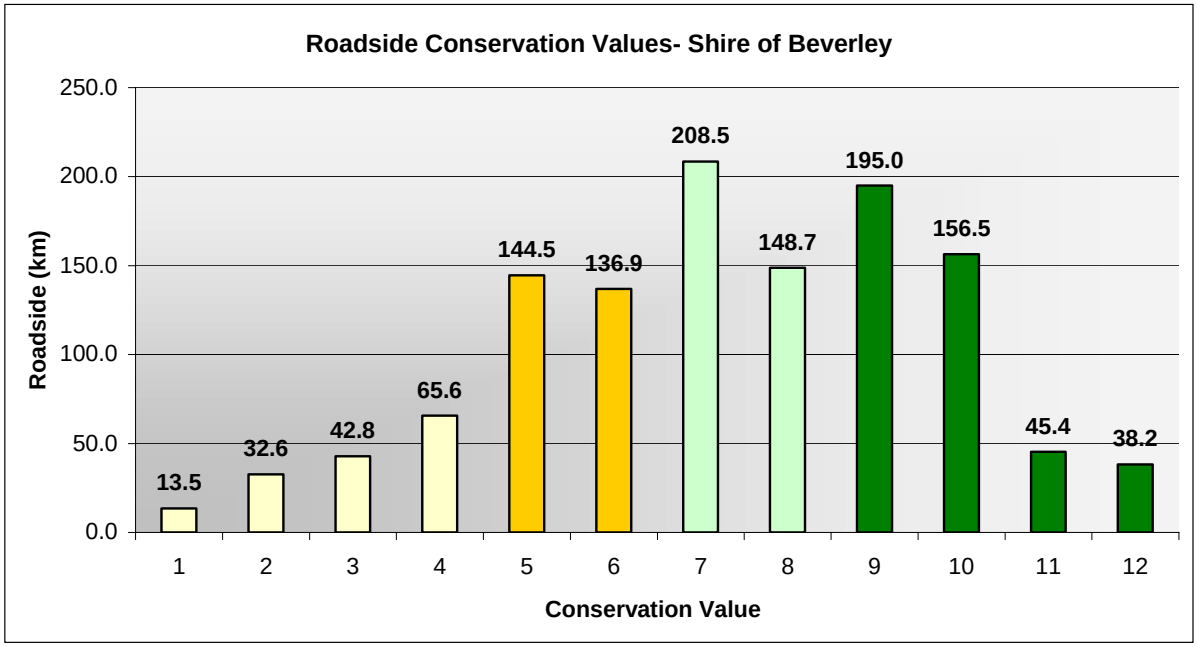


Figure 9- Conservation value scores of roadsides surveyed in the Shire of Beverley.

Conservation Status

The conservation status category indicated the combined conservation values of roadsides that were surveyed in the Shire of Beverley. Roadside sections of high conservation value covered 35.4% of the roadsides surveyed (435.1 km). Medium-high conservation value roadsides accounted for 29.1% of the total surveyed (357.2 km), medium-low conservation roadside covered 22.9% of the total surveyed (281.4 km). Areas of low conservation value occupied 12.6% of the roadsides surveyed (154.5 km), Table 3, Figure 10.

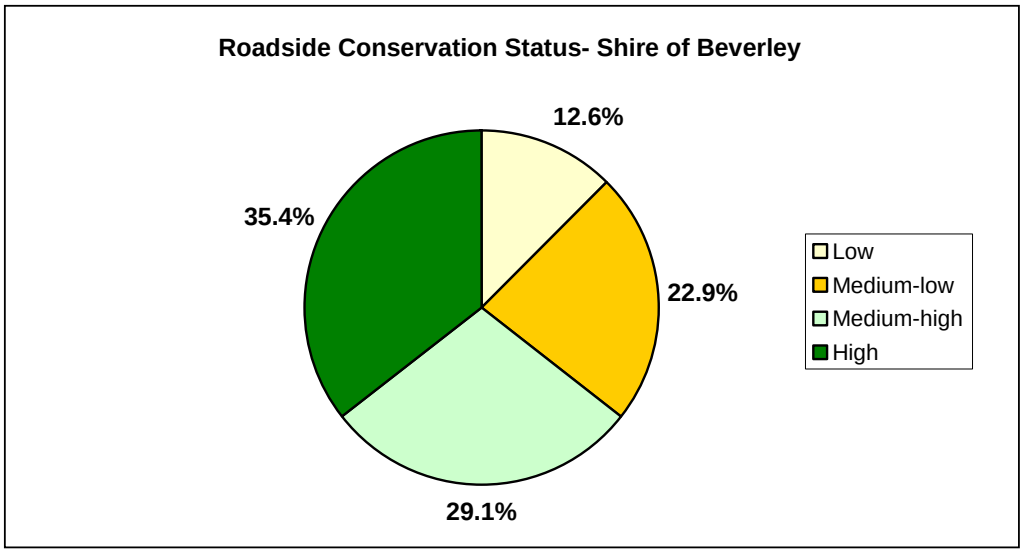


Figure 10– Conservation status of roadsides in the Shire of Beverley.

Flora Roads

A flora road is one which has special conservation value because of the vegetation contained within the road reserve. The Roadside Conservation Committee has prepared *Guidelines for the Nomination and Management of Flora Roads*, refer to Appendix 7.

Although presently there are no Flora Roads designated within the Shire of Beverley, the roadside survey and the roadside conservation value (RCV) map highlighted a number of roadsides that have the potential to be declared as Flora Roads.

Roadsides, or large sections of roadsides, determined as being potential Flora Roads in the Shire of Beverley include:

- Bally Bally Country Peak road
- Beverley East road
- Collins road
- Dalebin North road
- Edison Mill road (Dale West road)
- Ewerts road
- Jones road
- Murrays road
- Pike road
- Qulandry road
- Southern Branch road
- Warradale road
- Westdale road (Dale Mawson road)
- Yenyenning Lakes road

These roadsides were identified as potential Flora roads because they were:

a. high conservation value roadside remnants,
b. within close proximity to a main road, highway and/or town site,
c. of a significant length to warrant a 'flora road' declaration, and
d. were the only examples of the original remnant vegetation in an area.

The Roadside Conservation Committee can assist in producing Wildflower Drive brochures and also provide Flora Road signs.

Register of Roads Important for Conservation

Using the results of the roadside survey, the road manager can establish a register of roads important for conservation within the Shire of Beverley. Only 35.4% of the roadsides surveyed in Beverley were recognised as being high conservation value. Progressive surveys of some Shires have revealed an alarming decline in the conservation status of many roadside reserves. In some cases the conservation value has declined at a rate of approximately 10% in 9 years, with the greatest decline being high conservation value roadsides. This trend indicates that without appropriate protection and management, roadside reserves will become veritable biological wastelands within the near future. However, proactive and innovative management of roadside vegetation has the potential to abate and reverse this general decline.

Roads, or sections of these roads, determined to have high value in the Shire of Beverley include the following:

- *Bally Bally Country Peak road
- *Beverley East road
- *Collins road
- *Dalebin North road
- *Edison Mill road (Dale West road)
- *Ewerts road
- *Jones road
- *Murrays road
- *Pike road
- *Qulandry road
- *Southern Branch road
- *Warradale road
- *Westdale road (Dale Mawson road)
- *Yenyenning Lakes road
- Balkuling road
- Blackburn road
- Carrs road
- Dale Kokeby road
- East Lynne road
- Glencoe road
- Greenhills South road
- Kilpatrick road
- Kokedin road
- McDonalds road
- Millers road
- Patten road
- Potts road
- Rigoll road
- Rogers road
- Springhill road

(* Indicates roads that were listed previously in the ‘Flora Roads’ section)

The register should be consulted by the appropriate person prior to work commencing on any particular road. This will ensure that inadvertent damage does not occur. It is important to the sustainability of roadside remnants, that all road managers are aware of the location of high conservation value roads under their control.

PART D

MANAGEMENT RECOMMENDATIONS

1.0 Management Recommendations

The primary aim of road management is the creation and maintenance of a safe, efficient road system. However, the following management procedures are recommended. The following section provides general management recommendations that will assist in retaining and enhancing roadside conservation values.

The Executive Officer of the Roadside Conservation Committee is also available to provide assistance on all roadside conservation matters, and can be contacted on (08) 9334 0423. The following RCC publications provide guidelines and management recommendations that will assist Local Government Authorities:

- *RCC Roadside Manual,*
- *The Roadside Handbook,* and
- *Guidelines for Managing Special Environmental Areas in Transport Corridors.*

1.1 Management Recommendations

1. Protect high conservation value roadsides by maintaining and enhancing the native plant communities. This can be achieved by:

- retaining remnant vegetation,
- minimising disturbance to existing roadside vegetation,
- minimising disturbance to soil, and
- preventing or controlling the introduction of weeds.

2. Promote and raise awareness of the conservation value associated with roadside vegetation by:

- establishing a register of Shire roads important for conservation,
- declaring suitable roadsides as Flora Roads,
- incorporating into tourist, wildflower and/or scenic drives.

3. Improve roadside sections of medium to low conservation value by:

- minimising disturbance caused by machinery, adjoining land practices and incidences of fire,
- carrying out a targeted weed control program,
- retaining remnant trees and shrubs,
- allowing natural regeneration,
- spreading local native seed to encourage regeneration, and
- encourage revegetation projects by adjacent landholders.

On-site inspections, consultation and cooperation with stakeholders (such as adjoining land owners; the RCC and Landcare) can result in better environmental, social and economic outcomes overall.

1.2 Minimising Disturbance

Minimal disturbance can be achieved by:

1.2.1 Adopting a road design that occupies the minimum space;

1.2.2 Diverting the line of a table drain to avoid disturbing valuable flora;

1.2.3 Pruning branches, rather than removing the whole tree or shrub;

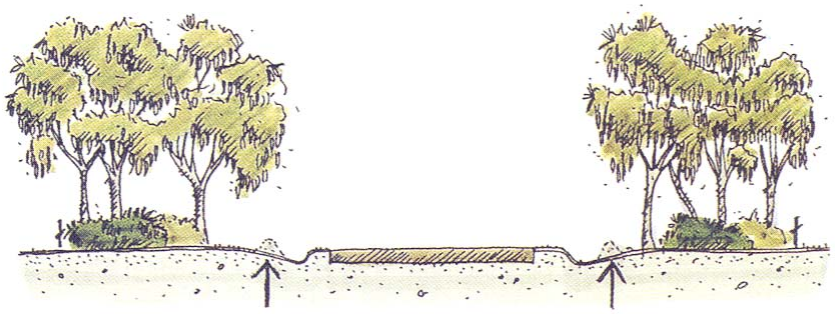
1.2.4 Not dumping spoil on areas of native flora;

1.2.5 Apply the Fire Threat Assessment (RCC 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;

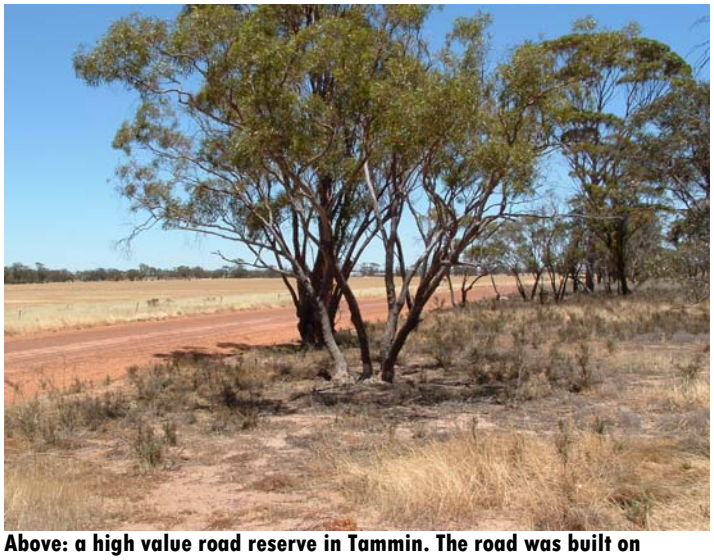
1.2.6 Encourage adjacent landholders to set back fences to allow roadside vegetation to proliferate;

1.2.7 Encourage adjacent landholders to plant windbreaks or farm tree lots adjacent to roadside vegetation to create a denser windbreak or shelterbelt;

1.2.8 Encourage revegetation projects by adjacent landholders.

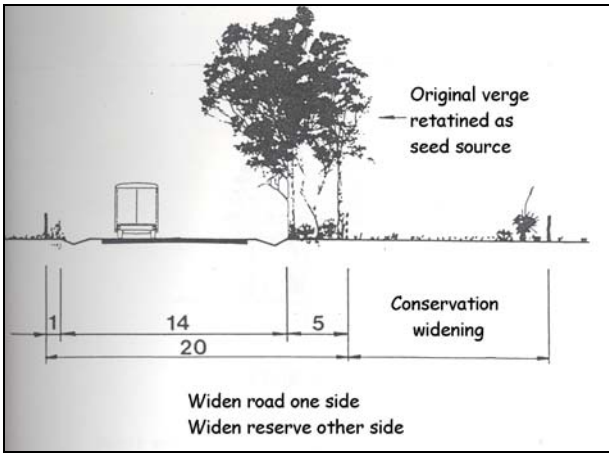


Avoid windrowing drain material into vegetation



Above: a high value road reserve in Tammin. The road was built on adjoining farmland in order to retain the important remnant bushland existing in the undeveloped road reserve.

Below right: Widening a road to one side only so that a wider section of roadside vegetation is retained on the other side of the road reserve.



2.0 Planning for Roadsides

The RCC is able to provide comprehensive 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.

3.0 Setting Objectives

The objective of all roadside management should be to:

- **Protect**
  - native vegetation
  - rare or threatened flora or fauna
  - cultural and heritage values
  - community assets from fire
- **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
- **Enhance**
  - indigenous vegetation communities
  - fauna habitats and corridors

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.

Environment Australia. (2001), *National Objectives and Targets for Biodiversity Conservation 2001-2005*. Environment Australia, Canberra, Australia.

Jackson, K A (2002) *Assessing Roadsides A Guide to Rating Conservation Value*, Roadside Conservation Committee, Kensington, Western Australia

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 Mattiske 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.

Lamont D A and Atkins K (2000) *Guidelines for Managing Special Environmental Areas in Transport Corridors*. Roadside Conservation Committee, Kensington, Western Australia.

Platt, S.J. and Lowe, K.W., (2002). Biodiversity Action Planning: Action planning for native biodiversity at multiple scales – catchment, bioregional, landscape, local. Department of Natural Resources and Environment, Melbourne.

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

Shepherd, D. P., Beeston, G.R. and Hopkins, A. J. M. (2001). Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture, Western Australia, South Perth

Western Australian Museum (2005) Fauna Base, www.museum.wa.gov.au/faunabase/prod/index.htm

APPENDICES

Appendix

1

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

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

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

Date ______________________

Observer(s) ______________________

Road Name ______________________

Shire ______________________

Nearest named place ______________________

Direction of travel (N,S,E,W) ____________

Section No. ______________________

Starting Point ______________________

Odometer reading ______________________

Ending Point ______________________

Odometer reading ______________________

Length of section ______________________

WIDTH OF ROAD RESERVE (m) ________

Side of the road	Left	Right

WIDTH OF VEGETATED ROADSIDE

1 – 5 m	☐	☐
5 – 20 m	☐	☐
Over 20 m	☐	☐

NATIVE VEGETATION ON ROADSIDE

Tree layer	☐	☐
Shrub layer	☐	☐
Ground layer	☐	☐

EXTENT OF NATIVE VEGETATION ON ROADSIDE

Less than 20%	☐	☐
20 – 80%	☐	☐
Over 80%	☐	☐

No. OF DIFFERENT NATIVE SPECIES

0 – 5	☐	☐
6 – 19	☐	☐
Over 20	☐	☐

FAUNA OBSERVED

____

____

VALUE AS A BIOLOGICAL CORRIDOR

Connects uncleared areas	☐	☐
Flowering shrubs	☐	☐
Large trees with hollows	☐	☐
Hollow logs	☐	☐

PREDOMINANT ADJOINING LANDUSE

Agricultural crop or pasture:		
- Completely cleared	☐	☐
- Scattered	☐	☐
Uncleared land	☐	☐
Plantation of non-native trees	☐	☐
Urban or industrial	☐	☐
Railway Reserve parallel to road	☐	☐
Drain Reserve parallel to road	☐	☐
Other:		

____

UTILITIES / DISTURBANCES

Disturbances continuous	☐	☐
Disturbances isolated	☐	☐
Disturbances absent	☐	☐
Type:		

____

GENERAL WEEDS

Few weeds (<20% total plants)	☐	☐
Half weeds (20 - 80% total)	☐	☐
Mostly weeds (>80% total)	☐	☐
Ground layer totally weeds	☐	☐

NOMINATED WEEDS

____

< 20% total weeds	☐	☐
20 – 80% total weeds	☐	☐
> 80% total weeds	☐	☐

____

< 20% total weeds	☐	☐
20 – 80% total weeds	☐	☐
> 80% total weeds	☐	☐

____

< 20% total weeds	☐	☐
20 – 80% total weeds	☐	☐
> 80% total weeds	☐	☐

____

< 20% total weeds	☐	☐
20 – 80% total weeds	☐	☐
> 80% total weeds	☐	☐

____

< 20% total weeds	☐	☐
20 – 80% total weeds	☐	☐
> 80% total weeds	☐	☐

____

< 20% total weeds	☐	☐
20 – 80% total weeds	☐	☐
80% total weeds	☐	☐

GENERAL COMMENTS

____

____

OFFICE USE ONLY

Conservation value score	☐	☐

A survey of the roadside conservation values in the Shire of Beverley

Appendix

2

								Native vegetation		Extent of vegetation		# Native plant species		Weeds		Value as a corridor		Adjoining landuse		Conservation Value Score (0-12)	
Road #	Section #	Start (km)	End (km)	Road Name	Date	Observer	Width of Road Reserve (m)	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
4010001	1	0.00	15.00	BEVERLEY EAST	30/10/2000	B & N WANSBROUGH	20	1	1	0	0	1	1	0	0	1	1	2	2	5	5
4010001	2	15.00	21.00	BEVERLEY EAST	14/01/2001	MO DS RM	20	2	2	2	2	2	2	2	2	2	2	2	2	12	12
4010001	3	21.00	22.70	BEVERLEY EAST	14/01/2001	MO DS RM	20	2	2	1	1	1	1	1	1	2	2	2	2	9	9
4010001	4	22.70	27.60	BEVERLEY EAST	14/01/2001	MO DS RM	20	2	2	0	0	1	1	1	1	2	2	2	2	8	8
4010002	1	0.00	3.80	WATERHATCH	14/01/2001	MO DS RM	20	1	1	0	0	0	0	0	0	0	0	1	1	2	2
4010002	2	3.80	6.10	WATERHATCH	14/01/2001	MO DS RM	20	2	2	0	0	0	0	1	1	1	1	1	1	5	5
4010002	3	6.10	6.90	WATERHATCH	14/01/2001	MO DS RM	20	0	0	0	0	0	0	0	0	0	0	1	1	1	1
4010002	4	6.90	10.00	WATERHATCH	14/01/2001	MO DS RM	20	2	2	1	1	0	0	1	1	2	2	1	1	7	7
4010002	5	10.00	11.30	WATERHATCH	14/01/2001	MO DS RM	20	1	1	0	0	0	0	0	0	0	0	1	1	2	2
4010002	6	11.30	13.81	WATERHATCH	14/01/2001	MO DS RM	20	1	1	0	0	1	1	0	0	0	0	1	1	3	3
4010003	1	0.20	2.70	YORK WILLIAMS	14/01/2001	MO DS RM	20	2	2	0	0	0	0	0	0	2	2	1	1	5	5
4010003	2	2.70	6.70	YORK WILLIAMS	14/01/2001	MO DS RM	20	1	1	0	0	0	0	1	1	2	2	1	1	5	5
4010003	3	6.70	8.10	YORK WILLIAMS	14/01/2001	MO DS RM	20	2	2	0	0	0	0	1	1	1	1	1	1	5	5
4010003	4	8.10	8.80	YORK WILLIAMS	14/01/2001	MO DS RM	20	0	0	0	0	0	0	0	0	0	0	1	1	1	1
4010003	5	8.80	10.50	YORK WILLIAMS	14/01/2001	MO DS RM	20	2	2	0	0	0	0	1	1	2	2	1	1	6	6
4010003	6	10.50	12.00	YORK WILLIAMS	14/01/2001	MO DS RM	20	1	1	0	0	0	0	1	1	0	0	1	1	3	3
4010003	7	12.00	12.50	YORK WILLIAMS	14/01/2001	MO DS RM	20	2	2	1	1	0	0	2	2	2	2	1	1	8	8
4010003	8	12.50	14.10	YORK WILLIAMS	14/01/2001	MO DS RM	20	2	2	0	0	0	0	2	2	2	1	1	1	7	6
4010003	9	14.10	15.70	YORK WILLIAMS	14/01/2001	MO DS RM	20	2	2	1	1	1	1	1	1	2	2	1	1	8	8
4010003	10	15.70	20.30	YORK WILLIAMS	14/01/2001	MO DS RM	20	2	2	1	1	1	1	2	2	2	2	1	1	9	9
4010003	11	20.30	23.00	YORK WILLIAMS	14/01/2001	MO DS RM	20	2	2	1	1	1	1	2	2	2	2	1	1	9	9
4010003	12	23.00	24.70	YORK WILLIAMS	14/01/2001	MO DS RM	20	1	1	0	0	0	0	1	1	0	0	1	1	3	3
4010003	13	24.70	28.65	YORK WILLIAMS	14/01/2001	MO DS RM	20	2	2	0	0	0	0	1	1	1	1	1	1	5	5
4010004	1	0.00	1.95	KOKEBY EAST	19/01/2001	MO DS RM	20	2	2	1	0	1	0	1	0	2	0	1	2	8	4
4010004	2	1.95	3.45	KOKEBY EAST	19/01/2001	MO DS RM	20	1	1	0	0	1	1	0	0	0	0	2	2	4	4
4010004	3	3.45	13.84	KOKEBY EAST	14/01/2001	MO DS RM	20	1	2	1	1	1	1	0	0	1	1	1	1	5	6
4010005	1	0.00	6.90	DALE WEST	20/11/2000	JENKINS		2	2	1	1	1	1	2	2	2	2	1	1	9	9
4010005	2	6.90	8.80	DALE WEST	20/11/2000	JENKINS		2	2	2	2	2	2	2	2	1	1	0	1	9	10
4010005	3	8.80	11.10	DALE WEST	20/11/2000	JENKINS		2	0	2	1	2	1	2	2	1	1	0	1	9	6
4010005	4	11.10	16.00	DALE WEST	20/11/2000	JENKINS		1	1	2	2	1	1	2	2	1	1	1	1	8	8
4010005	5	16.00	16.80	DALE WEST	20/11/2000	JENKINS		2	2	2	1	2	1	2	2	1	1	0	0	9	7
4010006	1	0.00	11.23	BREMNER	30/10/2000	B & N WANSBROUGH	20	1	1	0	0	1	1	0	0	1	1	1	1	4	4
4010007	1	0.00	3.90	YENYENNING LAKES	30/10/2000	B & N WANSBROUGH	20	2	2	2	2	2	2	2	2	2	2	1	2	11	12
4010007	2	3.90	9.50	YENYENNING LAKES	30/10/2000	B & N WANSBROUGH	20	2	2	1	1	2	2	1	1	2	2	2	2	10	10

								Native vegetation		Extent of vegetation		# Native plant species		Weeds		Value as a corridor		Adjoining landuse		Conservation Value Score (0-12)	
Road #	Section #	Start (km)	End (km)	Road Name	Date	Observer	Width of Road Reserve (m)	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
4010007	3	9.50	11.20	YENYENNING LAKES	30/10/2000	B & N WANSBROUGH	20	2	2	2	2	2	2	1	1	2	2	2	2	11	11
4010007	4	11.20	12.60	YENYENNING LAKES	30/10/2000	B & N WANSBROUGH	20	2	2	0	0	0	0	0	0	1	1	2	2	5	5
4010007	5	12.60	17.30	YENYENNING LAKES	30/10/2000	B & N WANSBROUGH	20	2	2	2	2	2	2	1	1	2	2	1	1	10	10
4010007	6	17.30	18.60	YENYENNING LAKES	30/10/2000	B & N WANSBROUGH	20	1	1	0	0	0	0	0	0	2	2	2	2	5	5
4010007	7	18.60	20.80	YENYENNING LAKES	30/10/2000	B & N WANSBROUGH	20	1	1	1	1	1	1	1	1	2	2	1	2	7	8
4010007	8	20.80	22.20	YENYENNING LAKES	30/10/2000	B & N WANSBROUGH	20	1	1	0	0	1	1	0	0	2	2	1	1	5	5
4010007	9	22.20	25.60	YENYENNING LAKES	30/10/2000	B & N WANSBROUGH	20	2	2	1	1	1	1	1	1	2	2	2	2	9	9
4010008	1	0.00	8.10	TOP BEVERLEY YORK	30/10/2000	B & N WANSBROUGH	20	1	1	0	1	1	1	0	0	2	2	2	2	6	7
4010009	1	0.00	7.40	BALLY BALLY	30/10/2000	B & N WANSBROUGH	20	1	1	0	0	1	1	0	0	1	1	1	1	4	4
4010009	2	7.40	13.80	BALLY BALLY	19/01/2001	MO DS RM	20	1	1	1	1	1	1	1	1	0	0	2	2	6	6
4010010	1	0.40	2.30	DALE KOKEBY	19/01/2001	MO DS RM	20	2	2	2	2	1	1	2	2	2	2	1	1	10	10
4010010	2	2.30	4.40	DALE KOKEBY	19/01/2001	MO DS RM	20	2	2	1	1	1	1	1	1	2	2	1	1	8	8
4010010	3	4.40	5.35	DALE KOKEBY	19/01/2001	MO DS RM	20	0	0	0	0	0	0	0	0	0	0	1	1	1	1
4010010	4	5.35	9.91	DALE KOKEBY	19/01/2001	MO DS RM	20	2	2	1	1	1	1	0	0	2	1	1	1	7	6
4010011	1	0.00	3.70	KOKEDIN	19/01/2001	MO DS RM		2	2	1	1	1	1	2	2	0	0	1	1	7	7
4010011	2	3.70	4.90	KOKEDIN	19/01/2001	MO DS RM		1	1	0	0	1	1	1	1	0	0	2	2	5	5
4010011	3	4.90	6.30	KOKEDIN	19/01/2001	MO DS RM		2	2	2	2	1	1	2	2	2	2	1	2	10	11
4010011	4	6.30	6.90	KOKEDIN	19/01/2001	MO DS RM		2	2	2	2	1	1	2	2	1	1	1	1	9	9
4010011	5	6.90	7.30	KOKEDIN	19/01/2001	MO DS RM		2	2	2	2	1	1	2	2	1	2	1	0	9	9
4010011	6	7.30	8.30	KOKEDIN	19/01/2001	MO DS RM		2	2	2	2	1	1	2	2	0	0	1	1	8	8
4010011	7	8.30	16.10	KOKEDIN	19/01/2001	MO DS RM		2	2	2	2	1	1	2	2	2	2	1	1	10	10
4010012	1	0.00	6.38	TALBOT W	24/11/2000	MO DS RM		2	2	1	1	1	1	1	1	1	1	1	1	7	7
4010012	2	6.38	7.48	TALBOT W	24/11/2000	MO DS RM		2	2	1	1	1	1	1	1	1	1	1	1	7	7
4010013	1	0.00	1.20	BARRINGTON RD	24/11/2000	MO DS RM	20	1	1	1	1	0	0	0	0	1	1	1	1	4	4
4010013	2	1.20	7.82	BARRINGTON RD	24/11/2000	MO DS RM	20	2	2	1	1	1	1	1	1	2	2	1	1	8	8
4010014	1	0.00	1.20	POTTS RD	24/11/2000	MO DS RM	20	2	2	2	2	2	2	2	2	2	2	1	1	11	11
4010014	2	1.20	1.50	POTTS RD	24/11/2000	MO DS RM	20	2	2	1	1	1	1	2	2	2	2	2	2	10	10
4010014	3	1.50	2.70	POTTS RD	24/11/2000	MO DS RM	20	2	2	2	2	2	2	2	2	2	2	1	1	11	11
4010014	4	2.70	3.40	POTTS RD	24/11/2000	MO DS RM	20	1	1	1	1	0	0	0	0	0	0	2	1	4	3
4010014	5	3.40	3.70	POTTS RD	24/11/2000	MO DS RM	20	0	1	0	1	0	0	0	0	0	0	2	2	2	4
4010014	6	3.70	4.20	POTTS RD	24/11/2000	MO DS RM	20	1	1	1	1	0	0	0	0	0	0	2	1	4	3
4010014	7	4.20	4.30	POTTS RD	24/11/2000	MO DS RM	40	1	1	2	2	2	2	2	2	1	1	1	2	9	10
4010014	8	4.30	4.70	POTTS RD	24/11/2000	MO DS RM	40	0	2	0	0	0	0	0	0	0	2	2	2	2	6
4010014	9	4.70	7.57	POTTS RD	24/11/2000	MO DS RM	20	2	2	2	2	2	2	1	1	1	1	1	1	9	9

								Native vegetation		Extent of vegetation		# Native plant species		Weeds		Value as a corridor		Adjoining landuse		Conservation Value Score (0-12)	
Road #	Section #	Start (km)	End (km)	Road Name	Date	Observer	Width of Road Reserve (m)	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
4010015	1	0.00	1.10	JACOBS WELL	9/11/2001	PAULA & CHARMIAN	20	2	2	1	1	1	1	1	1	2	2	2	2	9	9
4010015	2	1.10	1.60	JACOBS WELL	9/11/2001	PAULA & CHARMIAN	20	0	2	0	1	0	1	0	1	0	2	2	2	2	9
4010015	3	1.60	2.50	JACOBS WELL	24/11/2000	MO DS RM	20	2	2	1	1	1	1	1	1	2	2	2	2	9	9
4010015	4	2.50	11.55	JACOBS WELL	9/11/2001	PAULA & CHARMIAN		2	2	1	1	1	1	1	1	1	2	1	1	7	8
4010015	5	11.55	14.35	JACOBS WELL	9/11/2001	PAULA & CHARMIAN		2	2	1	1	1	1	1	1	2	1	1	1	8	7
4010016	1	0.00	13.00	CLELOWS	9/11/2001	PAULA & CHARMIAN		2	2	1	1	2	2	1	1	0	1	1	1	7	8
4010017	1	0.00	5.66	OAKDALE	9/11/2001	PAULA & CHARMIAN		2	2	1	1	1	1	1	1	2	2	1	1	8	8
4010018	1	0.00	8.89	DONGADILLING	9/11/2001	PAULA & CHARMIAN		2	2	1	1	1	1	1	1	2	2	1	1	8	8
4010019	1	0.00	1.55	QUALANDRY	9/11/2001	PAULA & CHARMIAN	20	2	2	1	1	1	1	1	1	2	2	2	2	9	9
4010019	2	1.55	2.90	QUALANDRY	9/11/2001	PAULA & CHARMIAN	20	2	2	2	2	1	1	1	1	2	2	2	2	10	10
4010019	3	2.90	3.40	QUALANDRY	9/11/2001	PAULA & CHARMIAN	20	2	2	2	2	2	2	2	2	2	2	0	1	10	11
4010019	4	3.40	6.18	QUALANDRY	9/11/2001	PAULA & CHARMIAN	20	1	1	0	0	1	1	0	0	0	0	1	1	3	3
4010020	1	0.00	6.70	BUTCHERS	9/11/2001	PAULA & CHARMIAN		2	2	0	0	1	1	0	0	2	2	1	1	6	6
4010020	2	6.70	7.51	BUTCHERS	9/11/2001	PAULA & CHARMIAN		2	2	1	1	1	1	0	0	0	0	1	1	5	5
4010021	1	0.00	2.60	VALENTINES	9/11/2001	PAULA & CHARMIAN		2	2	0	0	1	1	0	0	0	0	2	2	5	5
4010021	2	2.60	5.29	VALENTINES	9/11/2001	PAULA & CHARMIAN		1	1	0	0	0	0	1	1	0	0	2	2	4	4
4010022	1	0.00	7.52	LUPTONS	9/11/2001	PAULA & CHARMIAN		2	2	0	0	1	1	1	1	0	0	2	2	6	6
4010023	1	0.00	0.50	SPRINGHILL	9/11/2001	PAULA & CHARMIAN		1	1	1	1	1	1	2	2	1	1	1	1	7	7
4010023	2	0.50	1.20	SPRINGHILL	9/11/2001	PAULA & CHARMIAN		1	1			0	0	0	0	0	0	1	1	2	2
4010023	3	1.20	6.01	SPRINGHILL	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	1	1	2	2	2	2	1	1	9	9
4010024	1	0.00	0.40	DALE BIN N	3/12/2000	PAULA & CHARMIAN		2	2	2	2	2	2	2	2	2	2	0	0	10	10
4010024	2	0.40	2.00	DALE BIN N	3/12/2000	PAULA & CHARMIAN		1	1	1	1	1	1	2	2	2	1	2	1	9	7
4010024	3	2.00	2.30	DALE BIN N	3/12/2000	PAULA & CHARMIAN		1	1			2	2	2	2	0	0	1	1	6	6
4010024	4	2.30	4.20	DALE BIN N	3/12/2000	PAULA & CHARMIAN		2	2	1	1	1	1	2	2	1	1	1	1	8	8
4010024	5	4.20	7.95	DALE BIN N	3/12/2000	PAULA & CHARMIAN		2	2	2	2	1	1	2	2	1	1	1	1	9	9
4010025	1	0.00	4.44	BALLY BALLY COUNTRYPEAK	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	1	1	1	1	2	2	2	2	9	9
4010025	2	4.44	7.44	BALLY BALLY COUNTRYPEAK	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	2	2	1	1	2	2	2	2	10	10
4010025	3	7.44	8.24	BALLY BALLY COUNTRYPEAK	3/12/2000	PAULA & CHARMIAN	20	0	0	0	0	0	0	0	0	0	0	2	2	2	2
4010025	4	8.24	10.24	BALLY BALLY COUNTRYPEAK	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	1	1	1	1	2	2	2	2	9	9
4010026	1	0.00	1.50	ATHOL FEEDER	3/12/2000	PAULA & CHARMIAN	20	0	0	0	0	0	0	0	0	0	0	2	2	2	2
4010026	2	1.50	2.90	ATHOL FEEDER	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1			1	1	2	2	2	2	8	8

								Native vegetation		Extent of vegetation		# Native plant species		Weeds		Value as a corridor		Adjoining landuse		Conservation Value Score (0-12)	
Road #	Section #	Start (km)	End (km)	Road Name	Date	Observer	Width of Road Reserve (m)	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
4010026	3	2.90	5.55	ATHOL FEEDER	3/12/2000	PAULA & CHARMIAN	20	2	2	0	0	1	1	0	0	2	2	2	2	7	7
4010026	4	5.55	8.00	ATHOL FEEDER	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	1	1	1	1	2	2	2	2	9	9
4010026	5	8.00	12.74	ATHOL FEEDER	3/12/2000	PAULA & CHARMIAN	20	2	2	0	0	0	0	0	0	1	1	2	2	5	5
4010027	1	0.00	3.10	EWERTS	3/12/2000	PAULA & CHARMIAN	20	2	2	2	2	2	2	2	2	2	2	2	2	12	12
4010027	2	3.10	8.10	EWERTS	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	2	2	1	1	2	2	2	2	10	10
4010027	3	8.10	8.90	EWERTS	3/12/2000	PAULA & CHARMIAN	20	0	0	0	0	0	0	0	0	0	0	2	2	2	2
4010027	4	8.90	9.80	EWERTS	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	1	1	1	1	2	2	2	2	9	9
4010029	1	0.00	8.89	BERRINGER	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	1	1	0	0	1	1	1	1	6	6
4010031	1	0.00	1.89	THOMAS	3/12/2000	PAULA & CHARMIAN		2	2	1	1	1	1	2	2	0	1	2	2	8	9
4010032	1	0.00	1.20	BALKULING RD	3/12/2000	PAULA & CHARMIAN	20	2	2	2	2	2	2	2	2	2	2	1	1	11	11
4010032	2	1.20	2.20	BALKULING RD	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	2	2	2	2	2	2	1	1	10	10
4010032	3	2.20	2.80	BALKULING RD	3/12/2000	PAULA & CHARMIAN	20	1	1	0	0	1	1	0	0	0	0	2	2	4	4
4010032	4	2.80	5.82	BALKULING RD	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	1	1	1	1	1	1	1	1	7	7
4010033	1	0.00	0.50	GLENCOE RD	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	1	1	1	1	1	1	2	2	8	8
4010033	2	0.50	1.20	GLENCOE RD	3/12/2000	PAULA & CHARMIAN	20	0	0	0	0	0	0	0	0	0	0	2	2	2	2
4010033	3	1.20	2.20	GLENCOE RD	3/12/2000	PAULA & CHARMIAN	20	2	2	2	2	2	2	2	2	0	0	2	2	10	10
4010033	4	2.20	4.60	GLENCOE RD	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	2	2	1	1	2	2	1	1	9	9
4010033	5	4.60	5.80	GLENCOE RD	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	1	1	1	1	2	2	1	1	8	8
4010033	6	5.80	6.10	GLENCOE RD	3/12/2000	PAULA & CHARMIAN	20	2	2	0	0	1	1	1	1	1	1	1	1	6	6
4010033	7	6.10	6.74	GLENCOE RD	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	0	0	1	1	1	1	1	1	6	6
4010035	1	0.00	0.80	RICKEYS RD	3/12/2000	PAULA & CHARMIAN	20	1	1	1	1	0	0	0	0	1	1	1	1	4	4
4010035	2	0.80	1.70	RICKEYS RD	3/12/2000	PAULA & CHARMIAN	20	1	1	1	1	1	1	1	1	1	1	1	1	6	6
4010035	3	1.70	2.70	RICKEYS RD	3/12/2000	PAULA & CHARMIAN	20	1	1	0	0	0	0	0	0	1	1	2	2	4	4
4010035	4	2.70	4.43	RICKEYS RD	3/12/2000	PAULA & CHARMIAN	20	1	1	0	0	0	0	0	0	0	0	2	2	3	3
4010036	1	0.00	1.75	GREENHILLS STH RD	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	2	2	2	2	2	2	2	1	11	10
4010036	2	1.75	2.15	GREENHILLS STH RD	3/12/2000	PAULA & CHARMIAN	20	1	1	1	1	1	1	1	1	1	1	2	2	7	7
4010036	3	2.15	5.05	GREENHILLS STH RD	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	1	1	1	1	1	1	1	1	7	7
4010036	4	5.05	6.85	GREENHILLS STH RD	3/12/2000	PAULA & CHARMIAN	20	1	1	0	0	0	0	0	0	0	0	2	2	3	3
4010036	5	6.85	8.35	GREENHILLS STH RD	3/12/2000	PAULA & CHARMIAN	20	2	2	1	1	2	2	1	1	2	2	2	2	10	10
4010037	1	0.00	3.00	MANUELS	3/12/2000	PAULA & CHARMIAN		2	2	1	1	1	1	1	1	2	2	1	1	8	8
4010038	1	0.00	6.74	PETCHELLS	3/12/2000	PAULA & CHARMIAN		2	2	1	1	1	1	1	1	1	1	1	1	7	7
4010039	1	1.15	8.95	MAITLAND	3/12/2000	PAULA & CHARMIAN	20	2	2	0	0	1	1	0	0	2	2	1	1	6	6
4010040	1	0.00	4.87	HOBBS	3/12/2000	PAULA & CHARMIAN		2	2	1	1	0	0	1	1	2	2	1	1	7	7
4010041	1	0.00	0.50	SOUTHERN BRANCH	19/01/2001	PAULA & CHARMIAN	20	2	2	2	2	2	2	2	2	2	2	1	0	11	10

								Native vegetation		Extent of vegetation		# Native plant species		Weeds		Value as a corridor		Adjoining landuse		Conservation Value Score (0-12)	
Road #	Section #	Start (km)	End (km)	Road Name	Date	Observer	Width of Road Reserve (m)	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
4010041	2	0.50	3.00	SOUTHERN BRANCH	19/01/2001	PAULA & CHARMIAN	20	2	2	1	1	2	2	1	1	2	2	1	1	9	9
4010041	3	3.00	5.20	SOUTHERN BRANCH	19/01/2001	PAULA & CHARMIAN	20	2	2	1	1	2	2	1	1	2	2	2	1	10	9
4010042	1	0.00	3.55	WALGY	19/01/2001	PAULA & CHARMIAN	20	1	1	0	0	0	0	0	0	0	0	2	2	3	3
4010043	1	0.00	0.62	CORBERDING	19/01/2001	PAULA & CHARMIAN	20	2	2	1	1	0	0	1	1	2	2	1	1	7	7
4010043	2	0.62	2.02	CORBERDING	19/01/2001	PAULA & CHARMIAN	20	1	1	1	1	1	1	1	1	2	1	1	1	7	6
4010043	3	2.02	4.42	CORBERDING	19/01/2001	PAULA & CHARMIAN	20	1	1	0	0	1	1	1	1	1	0	1	1	5	4
4010045	1	0.00	5.15	PIKE	21/11/2000	PAULA & CHARMIAN		2	2	1	1	1	1	2	2	2	2	2	2	10	10
4010046	1	0.00	2.04	BLACKBURN RD	30/07/2003	M OCHTMAN & P FACEY	20	2	2	2	2	1	1	2	2	2	2	2	2	11	11
4010047	1	0.00	0.60	CARRS	2/12/2000	M OCHTMAN & P FACEY	20	2	2	0	0	1	1	2	2	2	2	1	1	8	8
4010047	2	0.60	0.90	CARRS	2/12/2000	M OCHTMAN & P FACEY	20	0	0	0	0	0	0	0	0	1	1	1	1	2	2
4010047	3	0.90	4.38	CARRS	2/12/2000	M OCHTMAN & P FACEY	20	2	2	2	2	1	1	2	2	2	2	1	1	10	10
4010048	1	0.00	2.80	CARRS	2/12/2000	M OCHTMAN & P FACEY		2	2	2	2	1	1	2	2	2	2	1	1	10	10
4010048	2	2.80	3.16	CARRS	2/12/2000	M OCHTMAN & P FACEY		2	2	2	2	2	1	2	2	2	2	0	1	10	10
4010049	1	0.00	3.28	CARRS	2/12/2000	M OCHTMAN & P FACEY	20	1	1	1	1	2	2	2	1	2	2	2	2	10	9
4010050	1	0.00	2.28	NEGUS	14/01/2001	MO DS RM	20	1	1	1	1	1	1	1	1	2	2	2	2	8	8
4010051	1	0.00	0.50	AIKENS	14/01/2001	MO DS RM	20	2	2	2	2	2	2	2	2	2	0	0	2	10	10
4010051	2	0.50	2.20	AIKENS	14/01/2001	MO DS RM	20	2	2	1	1	1	1	0	0	2	2	2	2	8	8
4010052	1	0.00	2.31	EAST LYNN	2/12/2000	M OCHTMAN & P FACEY	20	2	2	2	2	1	1	2	2	2	2	2	2	11	11
4010053	1	0.00	1.69	PATTEN	14/01/2001	M OCHTMAN & P FACEY	20	2	2	2	2	2	2	2	2	2	2	1	2	11	12
4010053	2	1.69	2.49	PATTEN	14/01/2001	M OCHTMAN & P FACEY	20	0	1	0	0	0	1	0	1	0	1	2	1	2	5
4010053	3	2.49	3.39	PATTEN	14/01/2001	M OCHTMAN & P FACEY	20	2	2	2	2	2	2	2	2	2	2	2	1	12	11
4010054	1	0.00	2.60	MCDONALDS RD	14/01/2001	M OCHTMAN & P FACEY	20	2	2	2	2	2	2	2	2	2	2	1	1	11	11
4010054	2	2.60	3.00	MCDONALDS RD	14/01/2001	M OCHTMAN & P FACEY	20	1	1	0	0	0	0	0	0	0	0	2	2	3	3
4010054	3	3.00	4.44	MCDONALDS RD	14/01/2001	M OCHTMAN & P FACEY	20	2	2	1	1	2	2	1	1	2	2	1	1	9	9
4010055	1	0.00	0.50	KIEARA	14/01/2001	M OCHTMAN & P		1	1	1	1	1	1	1	1	1	1	2	2	7	7

								Native vegetation		Extent of vegetation		# Native plant species		Weeds		Value as a corridor		Adjoining landuse		Conservation Value Score (0-12)	
Road #	Section #	Start (km)	End (km)	Road Name	Date	Observer	Width of Road Reserve (m)	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
						FACEY															
4010055	2	0.50	1.19	KIEARA	14/01/2001	M OCHTMAN & P FACEY		2	2	2	2	1	1	2	2	2	2	1	2	10	11
4010055	3	1.19	1.29	KIEARA	14/01/2001	M OCHTMAN & P FACEY		2	2	2	2	1	1	2	2	1	1	0	1	8	9
4010055	4	1.29	1.49	KIEARA	14/01/2001	M OCHTMAN & P FACEY		1	1	1	1	1	1	1	1	1	1	1	1	6	6
4010056	1	0.00	1.80	RIFLE RANGE	14/01/2001	M OCHTMAN & P FACEY		1	1	1	1	1	1	1	1	1	1	1	1	6	6
4010059	1	0.00	1.20	MANNS	3/12/2000	M OCHTMAN & P FACEY	20	0	0	0	0	0	0	0	0	0	0	1	1	1	1
4010060	1	0.00	4.45	BATTYS	3/12/2000	M OCHTMAN & P FACEY		2	2	1	1	1	1	1	1	2	2	1	1	8	8
4010061	1	0.00	1.50	COOKS	3/12/2000	M OCHTMAN & P FACEY		2	2	1	1	1	1	2	2	0	0	2	2	8	8
4010062	1	0.00	1.59	ROGERS	3/12/2000	M OCHTMAN & P FACEY		2	2	1	1	1	1	2	2	2	2	1	1	9	9
4010063	1	0.00	0.84	WILLIAMSONS	3/12/2000	M OCHTMAN & P FACEY		2	2	1	1	1	1	0	0	2	2	2	2	8	8
4010064	1	0.00	1.38	FERGUSONS	3/12/2000	M OCHTMAN & P FACEY		1	1	1	1	1	1	1	1	0	0	2	2	6	6
4010065	1	0.00	1.20	SCHILLINGS	3/12/2000	M OCHTMAN & P FACEY		2	2	2	2	1	1	2	2	1	1	1	1	9	9
4010066	1	0.00	1.80	COLLINS	3/12/2000	M OCHTMAN & P FACEY		2	2	2	2	2	2	2	2	2	2	0	0	10	10
4010066	2	1.80	2.60	COLLINS	3/12/2000	M OCHTMAN & P FACEY		2	2	2	2	2	1	2	2	2	2	0	1	10	10
4010066	3	2.60	3.75	COLLINS	3/12/2000	M OCHTMAN & P FACEY		2	2	2	2	2	2	2	2	2	2	2	2	12	12
4010067	1	0.00	5.73	WARRADALE	3/12/2000	M OCHTMAN & P FACEY		2	2	2	2	2	2	2	2	2	2	0	0	10	10
4010068	1	0.00	0.50	WOODS RD	3/12/2000	M OCHTMAN & P FACEY	20	2	2	1	1	1	1	2	2	2	2	1	1	9	9
4010068	2	0.50	1.00	WOODS RD	3/12/2000	M OCHTMAN & P FACEY	20	0	0	0	0	0	0	0	0	0	0	1	1	1	1
4010068	3	1.00	1.90	WOODS RD	3/12/2000	M OCHTMAN & P FACEY	20	2	2	1	1	1	1	2	2	2	2	1	1	9	9
4010068	4	1.90	2.44	WOODS RD	3/12/2000	M OCHTMAN & P FACEY	20	1	1	0	0	0	0	0	0	1	2	2	2	4	5
4010071	1	0.00	1.60	MURRAYS RD	3/12/2000	M OCHTMAN & P FACEY	20	2	2	1	1	2	2	2	2	2	2	1	1	10	10

								Native vegetation		Extent of vegetation		# Native plant species		Weeds		Value as a corridor		Adjoining landuse		Conservation Value Score (0-12)	
Road #	Section #	Start (km)	End (km)	Road Name	Date	Observer	Width of Road Reserve (m)	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
4010071	2	1.60	4.62	MURRAYS RD	3/12/2000	M OCHTMAN & P FACEY	20	2	2	1	1	2	2	1	1	2	2	1	1	9	9
4010072	1	0.00	2.15	SMITH	3/12/2000	M OCHTMAN & P FACEY	20	2	2	0	0	0	0	0	0	0	0	1	1	3	3
4010074	1	0.00	1.10	KILPATRICK	3/12/2000	M OCHTMAN & P FACEY	20	2	2	2	2	2	2	2	2	2	2	2	2	12	12
4010074	2	1.10	2.30	KILPATRICK	3/12/2000	M OCHTMAN & P FACEY	20	1	0	0		0		0	0	2	0	2	2	5	2
4010074	3	2.30	3.12	KILPATRICK	3/12/2000	M OCHTMAN & P FACEY	20	0	0	0	0	0	0	0	0	0	0	2	2	2	2
4010075	1	0.00	1.85	FISHERS	3/12/2000	M OCHTMAN & P FACEY	20	2	2	1	1	1	1	1	1	2	2	2	2	9	9
4010075	2	1.85	2.31	FISHERS	3/12/2000	M OCHTMAN & P FACEY	20	1	1	0	0	0	0	0	0	0	0	2	2	3	3
4010076	1	0.00	1.10	HILLS	3/12/2000	M OCHTMAN & P FACEY	20	2	2	0	0	1	1	2	2	2	2	1	1	8	8
4010077	1	0.00	2.35	WANSBROUGH	3/12/2000	M OCHTMAN & P FACEY	20	2	2	0	0	1	1	1	1	2	2	2	2	8	8
4010082	1	0.00	0.50	DEEP POOL	3/12/2000	M OCHTMAN & P FACEY	20	1	1	0	0	0	0	0	0	0	0	1	1	2	2
4010083	1	0.00	1.15	SKI	3/12/2000	M OCHTMAN & P FACEY	20	1	1	0	0	0	0	0	0	0	0	2	2	3	3
4010084	1	0.00	2.08	MCLEAN	3/12/2000	M OCHTMAN & P FACEY	20	2	2	0	0			0	0	1	1	2	2	5	5
4010085	1	0.00	4.52	K1	3/12/2000	M OCHTMAN & P FACEY	20	2	2	2	2	2	2	2	2	2	2	2	2	12	12
4010085	2	4.52	5.92	K1	3/12/2000	M OCHTMAN & P FACEY	20	0	0	0	0	0	0	0	0	0	0	2	2	2	2
4010085	3	5.92	6.72	K1	3/12/2000	M OCHTMAN & P FACEY	20	2	2	1	1	1	1	1	1	2	2	2	2	9	9
4010087	1	0.00	1.93	MANDIACAN	3/12/2000	M OCHTMAN & P FACEY	20	2	2	0	0	0	0	0	0	2	2	1	1	5	5
4010091	1	0.00	2.10	BENNETS	3/12/2000	M OCHTMAN & P FACEY	20	2	2	0	0	0	0	1	1	1	1	1	1	5	5
4010092	2	0.00	0.83	KENNEDY RD	3/12/2000	M OCHTMAN & P FACEY	20	2	2	2	2	2	2	2	2	2	2	1	1	11	11
4010094	1	0.00	1.70	BUCKINGHAM	3/12/2000	M OCHTMAN & P FACEY		2	2	2	2	1	1	2	2	1	1	2	2	10	10
4010095	1	0.32	1.32	HEALS	3/12/2000	M OCHTMAN & P FACEY		1	1	1	1	0	0	1	1	0	0	1	1	4	4
4010098	1	0.00	1.95	AVOCA	3/12/2000	M OCHTMAN & P	20	2	2	1	1	1	1	2	2	2	2	2	1	10	9

								Native vegetation		Extent of vegetation		# Native plant species		Weeds		Value as a corridor		Adjoining landuse		Conservation Value Score (0-12)	
Road #	Section #	Start (km)	End (km)	Road Name	Date	Observer	Width of Road Reserve (m)	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
						FACEY															
4010102	1	0.00	5.10	DOBADERRY	3/12/2000	M OCHTMAN & P FACEY		1	1	1	1	1	1	1	1	0	0	1	1	5	5
4010102	2	5.10	11.30	DOBADERRY	3/12/2000	M OCHTMAN & P FACEY		2	2	2	2	1	1	2	2	2	2	0	0	9	9
4010102	3	11.30	13.27	DOBADERRY	3/12/2000	M OCHTMAN & P FACEY		2	2	2	2	1	1	2	2	2	2	1	1	10	10
4010102	4	13.27	13.67	DOBADERRY	3/12/2000	M OCHTMAN & P FACEY		2	2	2	2	1	1	2	2	0	0	1	1	8	8
4010157	1	0.00	1.50	RIGOLL	3/12/2000	M OCHTMAN & P FACEY		2	2	2	2	1	1	2	2	2	2	1	1	10	10
4010157	2	1.50	3.30	RIGOLL	3/12/2000	M OCHTMAN & P FACEY		2	1	2	2	1	1	2	2	2	1	1	1	10	8
4010158	1	0.00	2.00	BELLROCK	3/12/2000	M OCHTMAN & P FACEY	20	0	0	0	0	0	0	0	0	0	0	1	1	1	1
4010166	1	0.00	0.60	DALE MAWSON	20/11/2000	JENKINS		2	0	1	1	0	1	2	2	1	1	2	0	8	5
4010166	2	0.60	2.10	DALE MAWSON	20/11/2000	JENKINS		2	2	2	2	2	2	2	2	2	2	0	0	10	10
4010166	3	2.10	10.50	DALE MAWSON	20/11/2000	JENKINS		2	2	2	2	1	1	2	2	1	1	1	1	9	9
4010166	4	10.50	11.00	DALE MAWSON	20/11/2000	JENKINS		2	2	2	1	2	1	2	2	2	1	0	2	10	9
4010166	5	11.00	17.70	DALE MAWSON	20/11/2000	JENKINS		2	2	2	2	1	1	2	2	2	2	1	2	10	11
4010166	6	17.70	20.50	DALE MAWSON	20/11/2000	JENKINS		2	2	1	1	1	1	2	2	2	2	2	1	10	9
4010166	7	20.50	21.75	DALE MAWSON	20/11/2000	JENKINS		2	2	2	2	1	2	2	2	2	2	2	0	11	10
4010166	8	21.75	22.80	DALE MAWSON	20/11/2000	JENKINS		2	2	2	2	1	1	2	2	1	1	2	1	10	9
4010166	9	22.80	25.20	DALE MAWSON	3/12/2000	M OCHTMAN & P FACEY	20	2	2	0	0	0	0	2	2	1	1	1	1	6	6
4010166	10	25.20	28.80	DALE MAWSON	3/12/2000	M OCHTMAN & P FACEY	20	2	2	0	0	1	1	1	2	1	1	1	1	6	7
4010166	11	28.80	29.90	DALE MAWSON	3/12/2000	M OCHTMAN & P FACEY	20	2	2	1	1	0	0	1	1	2	2	1	1	7	7
4010166	12	29.90	32.40	DALE MAWSON	3/12/2000	M OCHTMAN & P FACEY	20	1	1	0	0	0	0	1	1	2	2	1	1	5	5
4010166	13	32.40	33.70	DALE MAWSON	3/12/2000	M OCHTMAN & P FACEY	20	0	0	0	0	0	0	0	0	1	1	1	1	2	2
4010166	14	33.70	34.90	DALE MAWSON	3/12/2000	M OCHTMAN & P FACEY	20	2	2	1	1	1	1	2	2	2	2	1	1	9	9
4010166	15	34.90	38.70	DALE MAWSON	3/12/2000	M OCHTMAN & P FACEY	20	2	2	0	0	1	1	1	1	2	2	1	1	7	7
4010166	16	38.70	41.40	DALE MAWSON	3/12/2000	M OCHTMAN & P FACEY	20	2	2	1	1	1	1	1	1	0	1	1	1	6	7

								Native vegetation		Extent of vegetation		# Native plant species		Weeds		Value as a corridor		Adjoining landuse		Conservation Value Score (0-12)	
Road #	Section #	Start (km)	End (km)	Road Name	Date	Observer	Width of Road Reserve (m)	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
4010167	1	0.00	2.18	BEVERLEY MAWSON	9/11/2000	PAULA & CHARMIAN		1	1	1	1	1	1	0	0	0	0	1	1	4	4
4010167	2	2.18	3.18	BEVERLEY MAWSON	9/11/2000	PAULA & CHARMIAN		2	2	1	1	1	1	1	1	1	0	0	1	6	6
4010167	3	3.18	24.18	BEVERLEY MAWSON	9/11/2000	PAULA & CHARMIAN		2	2	1	1	1	1	1	1	1	1	1	1	7	7
H052	1	57.15	60.35	BROOKTON	30/11/2000	PAULA & CHARMIAN		2	2	2	2	1	1	2	2	2	2	1	0	10	9
H052	2	60.35	66.81	BROOKTON	30/11/2000	PAULA & CHARMIAN		1	2	1	1	1	1	1	1	0	1	1	1	5	7
M031	1	53.73	63.73	GS HWY	14/01/2001	MO DS RM		1	1	1	1	1	1	0	0	2	2	2	2	7	7
M031	2	63.73	64.53	GS HWY	14/01/2001	MO DS RM	20	1	1	1	0	1	0	0	0	0	0	2	2	5	3
M031	3	64.53	65.73	GS HWY	14/01/2001	MO DS RM	20	1	0	0	0	0	0	0	0	0	0	1	1	2	1
M031	4	67.55	70.45	GS HWY	2/11/2000	E SEYMOUR & P FACEY	20	2	2	0	0	0	0	0	0	2	2	1	1	5	5
M031	5	70.45	74.65	GS HWY	2/11/2000	E SEYMOUR & P FACEY	20	2	2	0	0	0	0	2	2	2	2	1	1	7	7
M031	6	74.65	76.10	GS HWY	2/11/2000	E SEYMOUR & P FACEY	20	1	1	0	0	0	0	2	2	1	1	1	1	5	5
M031	7	76.10	77.20	GS HWY	2/11/2000	E SEYMOUR & P FACEY	20	2	2	1	1	1	1	1	1	2	2	1	1	8	8
M031	8	77.20	78.64	GS HWY	2/11/2000	E SEYMOUR & P FACEY	20	2	2	1	1	1	1	1	1	2	2	1	1	8	8
M031	9	78.64	79.31	GS HWY	2/11/2000	E SEYMOUR & P FACEY	20	1	1	0	0	0	0	0	0	1	1	1	1	3	3
M031	10	79.31	85.30	GS HWY	2/11/2000	E SEYMOUR & P FACEY	20	2	2	0	0	0	0	2	2	2	1	1	1	7	6

Appendix

3

APPENDIX 3

Road names and lengths: Shire of Beverley (source- Main Roads WA 2003)

Road #	Road Name	Road length (km)
4010001	BEVERLEY EAST RD	27.13
4010002	WATERHATCH RD	14.36
4010003	YORK-WILLIAMS RD	29.10
4010004	KOKEBY EAST RD	13.50
4010005	EDISON MILL RD	28.07
4010006	BREMNER RD	11.26
4010007	YENYENING LAKES RD	26.90
4010008	TOP BEVERLEY YORK RD	8.02
4010009	BALLY-BALLY RD	13.86
4010010	DALE KOKEBY RD	9.93
4010011	KOKENDIN RD	16.65
4010012	TALBOT WEST RD	7.48
4010013	BARRINGTON RD	7.82
4010014	POTTS RD	7.57
4010015	JACOBS WELL RD	14.41
4010016	CLULOWS RD	13.04
4010017	OAKDALE RD	5.66
4010018	DONGADILLING RD	8.89
4010019	QUALANDARY RD	7.21
4010020	BUTCHERS RD	7.51
4010021	VALLENTINE RD	5.29
4010022	LUPTONS RD	7.52
4010023	SPRINGHILL RD	6.04
4010024	DALEBIN NORTH RD	7.95
4010025	BALLYBALLY COUNTYPEAK RD	10.31
4010026	ATHOL RD	12.79
4010027	EWERTS RD	9.85
4010028	NORTHBOURNE RD	6.92
4010029	BERINGER RD	8.93
4010030	GORS RD	4.45
4010031	THOMAS RD	1.89
4010032	BALKULING RD	5.82
4010033	GLENCOE RD	6.74
4010034	ST JACKS RD	1.42
4010035	RICKEYS RD	4.43
4010036	GREENHILLS SOUTH RD	8.35
4010037	MANUELS RD	4.00
4010038	PETCHELLS RD	6.74
4010039	MAITLAND RD	10.65
4010040	HOBBS RD	4.87
4010041	SOUTHERN BRANCH RD	6.80
4010042	WALGY RD	3.55
4010043	CORBERDING RD	4.42
4010044	SPAVENS RD	2.68
4010045	PIKE RD	4.70
4010046	BLACKBURN RD	2.04
4010047	CARRS RD	4.38
4010048	JONES RD	3.16
4010049	MILLERS RD	3.28
4010050	NEGUS RD	2.28
4010051	AIKENS RD	3.74
4010052	EAST LYNNE RD	2.31
4010053	PATTEN RD	3.43
4010054	MCDONALDS RD	4.44
4010055	KIEARA RD	1.49
4010056	RIFLE RANGE RD	3.04
4010057	JACKSONS RD	1.15
4010058	LENNARD RD	6.75
4010059	MANNS RD	1.22
4010060	BATYS RD	4.50
4010061	COOKES RD	1.48
4010062	ROGERS RD	1.59

Road #	Road Name	Road length (km)
4010063	WILLIAMSONS RD	0.84
4010064	FERGUSONS RD	1.38
4010065	SCHILLINGS RD	1.20
4010066	COLLINS RD	3.75
4010067	WARRADALE RD	5.73
4010068	WOODS RD	2.44
4010069	KEVILLS RD	1.95
4010070	PICCADILLY RD	2.12
4010071	MURRAYS RD	3.01
4010072	SMITH RD	2.15
4010073	JOHNSONS RD	2.09
4010074	KILPATRICKS RD	3.16
4010075	FISHERS RD	2.31
4010076	HILLS RD	1.22
4010077	WANSBROUGH RD	2.38
4010078	BATEMANS RD	1.81
4010079	DRAPERS RD	1.36
4010080	MILLS RD	2.40
4010081	YOUNG RD	0.41
4010082	DEEP POOL RD	2.60
4010083	SKI RD	1.15
4010084	MCLEAN RD	2.09
4010085	KI RD	6.77
4010086	WALKERS RD	0.45
4010087	MANDIAKIN RD	1.95
4010088	MOULTONS RD	0.95
4010090	SHEAHANS RD	4.02
4010091	BENNETTS RD	2.50
4010092	KENNEDYS RD	0.83
4010093	MCKELLARS RD	0.53
4010094	BUCKINGHAMS RD	1.20
4010095	HEALS RD	1.32
4010096	COUNTY PEAK RD	1.81
4010098	AVOCA RD	1.64
4010100	MAWSON RD	0.35
4010101	SIMMONS RD	1.13
4010102	DOBADERRY RD	13.67
4010103	FORREST ST	2.34
4010104	LUKIN ST	2.02
4010105	JOHN ST	0.91
4010106	DAWSON ST	0.45
4010107	EDWARD ST	0.70
4010108	SMITH ST	0.74
4010109	HARPER ST	0.93
4010110	QUEEN ST	0.40
4010111	DEMPSTER ST	1.20
4010112	MORRISON ST	0.21
4010113	LENNARD ST	0.50
4010114	BARTRAM ST	0.60
4010115	HOPE ST	0.17
4010116	MONGER ST	0.31
4010117	HUSKING ST	0.26
4010118	SEABROOK ST	0.61
4010119	SEWELL ST	0.47
4010120	DELISLE ST	0.41
4010121	SHORT ST	0.15
4010122	BROOKING ST	1.07
4010123	NICHOLAS ST	3.16
4010124	RICHARDSON ST	1.67
4010125	VINCENT ST	3.88
4010126	CHIPPER ST	0.57
4010127	HORLEY ST	0.23
4010128	HOPKIN ST	0.09
4010129	BROCKMAN ST	0.27
4010130	HAMERSLEY ST	1.03
4010131	ELIZABETH ST	0.20
4010132	YARRA RD (F)	17.81
4010133	QUALEN RD (F)	6.47

Road #	Road Name	Road length (km)
4010134	METRO RD (F)	14.48
4010135	ERNEST DR	0.21
4010136	SHED ST	0.10
4010137	RICKEYS SIDING RD	4.70
4010138	CHOCOLATE HILLS RD	0.27
4010139	CHESTILLION CT	0.12
4010140	CAUDLE RD	1.91
4010141	MCNEIL ST	0.45
4010143	LUDGATE ST	0.58
4010144	BROUN ST	0.57
4010145	GEORGE ST SOUTH	0.40
4010146	RAILWAY ST	0.61
4010147	RAILWAY PDE	0.16
4010148	BETHANY RD	1.52
4010149	COUNCIL RD	0.28
4010150	WRIGHT ST	0.30
4010151	QUELICAN RD	0.21
4010152	LANGSFORD ST	0.82
4010153	COURTNEY ST	0.27
4010154	UNNAMED (LODGE RD)	0.57
4010155	UNNAMED (SIMS RD)	0.56
4010156	UNNAMED (ROSSI RD)	1.09
4010157	UNNAMED (RIGOLL RD)	2.17
4010158	BELLROCK RD	1.29
4010160	DUFFIELD ST	0.47
4010161	GEORGE ST NORTH	0.26
4010162	BARNSLEY ST	0.23
4010163	WRIGHT ST	0.24
4010164	UNNAMED	0.99
4010165	TAYLOR ST	0.25
4010166	WESTDALE RD	41.62
4010167	MAWSON RD	24.18
4010168	HUTCHINSON ST	0.30
4010169	TURNER GULLY RD	0.22
4010170	UNNAMED RD	1.06
4010171	PLANTATION DRV	1.69
4010172	GRIGSON ST	0.13
H0052	BROOKTON HWY	
M0031	NORTHAM-CRANBROOK RD	31.57

Appendix

4

APPENDIX 4

Flora species in the Shire of Beverley (W.A Herbarium)

Note: not a comprehensive list.
* = Weed species
P = Priority species
R = Rare species

Acacia acanthoclada subsp. acanthoclada
Acacia acanthoclada subsp. glaucescens ms P3
Acacia acuaria
Acacia acuminata
Acacia acuminata subsp. acuminata ms
Acacia acuminata subsp. burkittii ms
Acacia acutata
Acacia aestivalis
Acacia aff. coolgardiensis
Acacia ancistrophylla var. perarcuata P3
Acacia andrewsii
Acacia anthochaera
Acacia ascendens P2
Acacia assimilis
Acacia assimilis subsp. assimilis
Acacia beauverdiana
Acacia brumalis
Acacia chrysella
Acacia cochlocarpa subsp. velutinosa ms P1
Acacia colletioides
Acacia consanguinea ms
Acacia coolgardiensis
Acacia coolgardiensis subsp. coolgardiensis
Acacia coolgardiensis subsp. effusa
Acacia crenulata ms P3
Acacia cylindrica P3
Acacia denticulosa R
Acacia dielsii
Acacia enervia subsp. enervia
Acacia enervia subsp. explicata
Acacia ericksoniae ms
Acacia erinacea
Acacia fauntleroyi
Acacia fragilis
Acacia gibbosa
Acacia graniticola ms
Acacia hemiteles
Acacia heteroneura var. heteroneura
Acacia heteroneura var. jutsonii
Acacia heteroneura var. prolixa
Acacia inaequiloba
Acacia inceana subsp. conformis P1
Acacia intricata
Acacia jennerae
Acacia jibberdingensis
Acacia kalgoorliensis P3
Acacia kochii
Acacia lasiocalyx
Acacia leptopetala
Acacia ligustrina
Acacia longispinea
Acacia mackeyana
Acacia masliniana
Acacia merrallii
Acacia merrickiae P4
Acacia microbotrya
Acacia multispicata
Acacia murrayana
Acacia neurophylla
Acacia neurophylla subsp. neurophylla
Acacia nigripilosa subsp nigripilosa ms
Acacia nigripilosa subsp. nigripilosa ms
Acacia nyssophylla
Acacia obtecta
Acacia oswaldii
Acacia prainii
Acacia ramulosa
Acacia resinimarginea
Acacia restiacea
Acacia saligna
Acacia sciophanes R
Acacia sclerophylla var. sclerophylla
Acacia sessilispica
Acacia signata
Acacia stanleyi ms
Acacia steedmanii
Acacia stereophylla var. stereophylla
Acacia subrigida P2
Acacia tetragonophylla
Acacia tratmaniana
Acacia tysonii
Acacia yorkrakinensis subsp. acrita
Actinobole uliginosum
Actites megalocarpa
**Allium ampeloprasum*
Allocasuarina acutivalvis
Allocasuarina acutivalvis subsp. acutivalvis
Allocasuarina acutivalvis subsp. prinsepiana
Allocasuarina campestris
Allocasuarina corniculata
Allocasuarina spinosissima
Alyogyne huegelii
Alyxia buxifolia
Amphipogon strictus
Amyema gibberula var. tatei
Amyema miquelii
Amyema preissii
Angianthus micropodioides P3
Angianthus tomentosus
Anthocercis anisantha subsp. anisantha
Anthocercis genistoides
**Arctotheca calendula*
Argyroglottis turbinata
Aristida contorta
Arthropodium curvipes
Arthropodium dyeri
**Asphodelus fistulosus*
Asteridea athrixioides
Astroloma serratifolium
Atriplex hymenotheca
Atriplex paludosa subsp. baudinii
Atriplex stipitata
Atriplex vesicaria
Austrodanthonia caespitosa
Austrostipa compressa
Austrostipa elegantissima
Austrostipa nitida
Austrostipa trichophylla
**Avena barbata*
**Avena fatua*
Baeckea benthamii ms
Baeckea crispiflora
Baeckea cryptonoma ms
Baeckea elderiana
Baeckea grandibracteata
Baeckea muricata

Baeckea recurva ms
Baeckea sp.Bencubbin-Koorda(M.E.Trudgen 5421)
Baeckea tenuiramea
Balaustion pulcherrimum
Beaufortia interstans
Bellida graminea
Blennospora drummondii
**Borago officinalis*
Boronia adamsiana R
Boronia coerulescens subsp. spicata
Boronia coerulescens subsp. spinescens
Boronia ternata
Boronia ternata var. ternata
Borya constricta
Borya sphaerocephala
Bossiaea walkeri
Brachychiton gregorii
Brachyscome iberidifolia
Brachyscome perpusilla
Brachysema subcordatum P4
**Bromus diandrus*
**Bromus rubens*
Brunonia australis
Bursaria occidentalis
Caladenia dimidia ms
Caladenia footeana ms
Caladenia incensa ms
Caladenia roei
Caladenia saccharata
Callistemon phoeniceus
**Callitris glaucophylla*
**Callitris preissii subsp. verrucosa*
Calothamnus gilesii
Calothamnus quadrifidus
Calothamnus quadrifidus var. "unsorted"
Calotis multicaulis
Calycopeplus paucifolius
Calytrix breviseta subsp. stipulosa
Calytrix depressa
Calytrix gracilis
Calytrix leschenaultii
Calytrix merrelliana
Calytrix plumulosa P3
Calytrix violacea
Centrolepis cephaloformis subsp. cephaloformis
Cephalipterum drummondii
Chamaexeros fimbriata
Chamelaucium drummondii subsp. hallii ms
Chamelaucium halophilum ms
Chamelaucium micranthum
Chamelaucium pauciflorum subsp. thryptomenioides ms
Chamelaucium pauciflorum thryptomenioides ms
Cheilanthes aff. austrotenuifolia
Cheilanthes distans
Cheilanthes lasiophylla
Chenopodium cristatum
**Chenopodium murale*
Chondropyxis halophila
Chorizema genistoides
Chrysocoryne trifida
Chthonocephalus pseudevax
**Citrullus lanatus*
Clematis delicata ms
Codonocarpus cotinifolius
Coleanthera myrtoides
Comesperma drummondii
Comesperma integerrimum
Comesperma scoparium
Comesperma volubile
Commersonia pulchella
Conospermum floribundum
Conostephium preissii
Cotula cotuloides
Crassula colorata var. colorata
**Crassula natans var. minus*
Cratystylis subspinescens
Cryptandra imbricata ms P3
Cryptandra micrantha ms
Cryptandra wilsonii
**Cucumis myriocarpus*
Cullen discolor
**Cuscuta epithymum*
Cyanicula amplexans ms
Cyanostegia angustifolia
Cyanostegia microphylla
Cyanostegia microphylla
Cymbopogon ambiguus
Cyphanthera odgersii subsp. occidentalis R
Dactyloctenium radulans
Dampiera eriocephala
Dampiera haematotricha subsp. dura
Dampiera juncea
Dampiera lavandulacea
Dampiera linearis
Dampiera luteiflora
Dampiera oligophylla
Dampiera sacculata
Dampiera scaevolina P1
Dampiera stenostachya
Dampiera tenuicaulis var. curvula
Dampiera tenuicaulis var. tenuicaulis
Dampiera wellsiana
Darwinia purpurea
Daucus glochidiatus
Daviesia benthamii subsp. acanthoclona ms
Daviesia hakeoides subsp. subnuda ms
Daviesia nematophylla
Dianella revoluta var. divaricata
Dichopogon capillipes
Dicrastylis fulva
Dicrastylis parvifolia
Didymanthus roei
Diplachne parviflora
Diplolaena velutina
Disphyma crassifolium subsp. clavellatum
Dithyrostegia amplexicaulis
Dodonaea adenophora
Dodonaea inaequifolia
Dodonaea larreoides
Dodonaea pinifolia
Dodonaea rigida
Dodonaea viscosa subsp. angustissima
Drakonorchis mesocera ms
Drosera andersoniana
Drosera glanduligera
Drosera macrantha subsp. macrantha
Drosera subhirtella subsp. subhirtella
Drummondita hassellii
Dryandra shanklandiorum P4
Duboisia hopwoodii
Ecdeiocolea monostachya
**Echium plantagineum*
Enchylaena lanata
**Eragrostis cilianensis*
**Eragrostis curvula*
Eragrostis dielsii
Eremophila caperata ms
Eremophila clarkei
Eremophila decipiens
Eremophila decipiens subsp. decipiens ms
Eremophila decipiens subsp. linearifolia ms
Eremophila drummondii
Eremophila eriocalyx

Eremophila forrestii subsp. forrestii ms
Eremophila georgei
Eremophila glabra
Eremophila granitica
Eremophila ionantha
Eremophila metallicorum
Eremophila miniata
Eremophila oldfieldii subsp. angustifolia ms
Eremophila oppositifolia subsp. angustifolia ms
Eremophila oppositifolia var. angustifolia ms
Eremophila papillata ms
Eremophila psilocalyx
Eremophila resinosa R
Eremophila scoparia
Eremophila subfloccosa subsp. lanata ms
Eremophila virens R
Eremophila viscida R
Eriachne ovata
Eriostemon brucei subsp. brucei
Eriostemon coccineus
Eriostemon deserti
Eriostemon nutans P1
Eriostemon rhomboideus
Eriostemon sericeus
Eriostemon thryptomenoides
Eriostemon tomentellus
Erymophyllum glossanthus
Erymophyllum tenellum
Eucalyptus brachycorys
Eucalyptus brevipes R
Eucalyptus burracoppinensis
Eucalyptus calycogona var. calycogona
Eucalyptus capillosa subsp. polyclada
Eucalyptus celastroides subsp. virella
Eucalyptus ceratocorys
Eucalyptus crucis subsp. crucis R
Eucalyptus crucis subsp. lanceolata
Eucalyptus educta P2
Eucalyptus eremophila subsp. eremophila
Eucalyptus ewartiana
Eucalyptus exigua P3
Eucalyptus flocktoniae
Eucalyptus hypochlamydea subsp. hypochlamydea ms
Eucalyptus kochii subsp. kochii
Eucalyptus kochii subsp. plenissima
Eucalyptus leptopoda subsp. arctata
Eucalyptus leptopoda subsp. leptopoda
Eucalyptus loxophleba subsp. lissophloia
Eucalyptus loxophleba subsp. loxophleba
Eucalyptus loxophleba subsp. supralaevis
Eucalyptus melanoxylon
Eucalyptus myriadena
Eucalyptus myriadena subsp. myriadena
Eucalyptus oldfieldii
Eucalyptus oleosa
Eucalyptus orbifolia
Eucalyptus petraea
Eucalyptus rigidula
Eucalyptus rudis
Eucalyptus salicola
Eucalyptus salmonophloia
Eucalyptus salubris
Eucalyptus semivestita ms
Eucalyptus sheathiana
Eucalyptus spathulata subsp. spathulata
Eucalyptus stowardii
Eucalyptus striaticalyx
Eucalyptus subangusta
Eucalyptus subangusta subsp. pusilla
Eucalyptus subangusta subsp. subangusta
Eucalyptus suggrandis subsp. alipes
Eucalyptus synandra R
Eucalyptus tenera
Eucalyptus transcontinentalis
Eucalyptus websteriana
Eucalyptus yilgarnensis
Euphorbia tannensis subsp. eremophila
**Euphorbia terracina*
Exocarpos aphyllus
Exocarpos sparteus
Frankenia laxiflora
Gahnia drummondii
Gastrolobium bennettsianum
Gastrolobium floribundum
Gastrolobium laytonii
Gastrolobium parviflorum
Gastrolobium spinosum var. grandiflorum
Gilberta tenuifolia
Gilruthia osbornei
Glinus lotoides
Glischrocaryon aureum
Glischrocaryon aureum var. angustifolium
Glischrocaryon aureum var. aureum
Glischrocaryon flavescens
Glycine clandestina
Glycyrrhiza acanthocarpa
Gnephosis tenuissima
Gnephosis trifida
Gompholobium gompholobioides
Gonocarpus confertifolius var. helmsii
Goodenia affinis
Goodenia helmsii
Goodenia incana
Goodenia mimuloides
Goodenia perryi P1
Goodenia pinifolia
Goodenia tripartita
Goodenia watsonii subsp. watsonii
Goodenia xanthosperma
Granitites intangendus
Grevillea acuaria
Grevillea anethifolia
Grevillea apiciloba subsp. apiciloba
Grevillea biformis subsp. biformis
Grevillea didymobotrya subsp. didymobotrya
Grevillea eremophila
Grevillea eriobotrya P3
Grevillea eryngioides
Grevillea excelsior
Grevillea extorris
Grevillea hakeoides subsp. stenophylla
Grevillea haplantha subsp. recedens
Grevillea huegelii
Grevillea levis
Grevillea minutiflora P1
Grevillea nana
Grevillea nana subsp. abbreviata P2
Grevillea nana subsp. nana
Grevillea nematophylla
Grevillea obliquistigma subsp. obliquistigma
Grevillea paniculata
Grevillea paradoxa
Grevillea pterosperma
Grevillea rosieri P2
Grevillea shuttleworthiana subsp. obovata
Grevillea shuttleworthiana subsp. shuttleworthiana
Grevillea teretifolia
Grevillea yorkrakinensis
Guichenotia macrantha
Guichenotia micrantha
Gunniopsis glabra
Gunniopsis quadrifida
Gunniopsis rodwayi
Gunniopsis septifraga

Gyrostemon ramulosus
Gyrostemon subnudus
Hakea erecta
Hakea francisiana
Hakea invaginata
Hakea meisneriana
Hakea minyma
Hakea preissii
Hakea recurva subsp. recurva
Hakea rigida ms P2
Halgania anagalloides var. anagalloides ms
Halgania cyanea
Halgania cyanea var. cyanea
Halgania cyanea var. latisepala ms
Halgania cyanea var. tuberculosa ms
Halgania gustafsenii var. compactus ms
Halgania integerrima
Halgania lavandulacea
Halosarcia halocnemoides
Halosarcia halocnemoides subsp. catenulata
Halosarcia halocnemoides subsp. caudata
Halosarcia indica subsp. bidens
Halosarcia leptoclada subsp. inclusa
Halosarcia lylei
Halosarcia peltata
Halosarcia pergranulata
Halosarcia pruinosa
Hannafordia bissillii subsp. latifolia ms
Hemigenia brachyphylla
Hemigenia dielsii
Hemigenia sp.Paynes Find(A.C.Beauglehole 49138)
Hemiphora elderi
Hibbertia aff. crassifolia
Hibbertia aff. gracilipes
Hibbertia aff. rostellata
Hibbertia arcuata
Hibbertia commutata
Hibbertia drummondii
Hibbertia eatoniae
Hibbertia exasperata
Hibbertia glomerosa
Hibbertia lividula
Hibbertia rupicola
Hibbertia subvaginata
Homalocalyx coarctatus
Homalocalyx thryptomenoides
Hyalochlamys globifera
Hyalosperma demissum
Hyalosperma glutinosum
Hyalosperma glutinosum subsp. glutinosum
Hyalosperma glutinosum subsp. venustum
Hybanthus epacroides
Hybanthus floribundus subsp. floribundus
**Hydrocotyle bonariensis*
Hypocalymma angustifolium
**Hypochaeris glabra*
Isotoma hypocrateriformis
Isotoma petraea
Isotropis drummondii
Isotropis juncea
Jacksonia arida ms
Jacksonia nematoclada
Jacksonia rhadinoclada
Juncus aridicola
Juncus flavidus
Keraudrenia cacaobrunnea ms
Keraudrenia integrifolia
Kunzea pulchella
Labichea lanceolata
Labichea lanceolata subsp. brevifolia
Lachnostachys coolgardiensis
**Lactuca serriola*
**Lamarckia aurea*
Lawrencella davenportii
Lawrencella rosea
Lawrencia squamata
Lechenaultia biloba
Lechenaultia stenosepala
**Lepidium africanum*
Lepidium genistoides P2
Lepidosperma viscidum
Leptomeria preissiana
Leptosema aphyllum ms
Leptosema daviesioides
Leptospermum erubescens
Leptospermum roei
Leucochrysum fitzgibbonii
Levenhookia leptantha
Lobelia heterophylla
Lobelia rarifolia
Lobelia winfridae
Logania flaviflora
Lomandra collina
Lomandra effusa
Lysiana casuarinae
Lysinema ciliatum forma Central wheatbelt(S.Paust 898)
Lysiosepalum rugosum
Maireana atkinsiana
Maireana carnosa
Maireana diffusa
Maireana georgei
Maireana thesioides
Maireana tomentosa subsp. tomentosa
Maireana trichoptera
Malleostemon roseus
Malleostemon tuberculatus
Mallophora globiflora
Mallophora rugosifolia
Marianthus erubescens
**Medicago minima*
**Medicago truncatula*
Melaleuca acerosa
Melaleuca acuminata subsp. acuminata ms
Melaleuca adnata
Melaleuca conothamnoides
Melaleuca cordata
Melaleuca coronicarpa
Melaleuca eleuterostachya
Melaleuca fulgens subsp. fulgens
Melaleuca halmaturorum
Melaleuca hamulosa
Melaleuca holosericea
Melaleuca lateriflora subsp. lateriflora ms
Melaleuca laxiflora
Melaleuca leiocarpa
Melaleuca macronychia subsp. macronychia
Melaleuca pauperiflora subsp. fastigiata
Melaleuca platycalyx
Melaleuca radula
Melaleuca sclerophylla P3
Melaleuca sp.Wongan Hills(R.Davis 1959)
Melaleuca uncinata
**Mentha spicata*
**Mesembryanthemum nodiflorum*
Microcorys sp.Mt Gibson(S.Patrick 2098)
Micromyrtus flaviflora
Micromyrtus obovata
Mirbelia depressa
Mirbelia magentea ms
Mirbelia microphylla
Mirbelia multicaulis
Mirbelia ramulosa
Mirbelia trichocalyx

Monachather paradoxus
**Muehlenbeckia adpressa*
Myriocephalus occidentalis
Neosciadium glochidiatum
Neurachne alopecuroidea
Nicotiana cavicola
Olearia dampieri subsp. eremicola ms
Olearia humilis
Olearia incondita
Olearia muelleri
Olearia pimeleoides
Olearia propinqua
Olearia stuartii
Opercularia spermacocea
Opercularia vaginata
**Osteospermum clandestinum*
**Oxalis pes-caprae*
**Parietaria cardiostegia*
Patersonia drummondii subsp. drummondii ms
**Pentaschistis airoides*
**Pentzia globifera*
Persicaria prostrata
Persoonia angustiflora
Persoonia coriacea
Persoonia inconspicua
Persoonia leucopogon P1
Persoonia saundersiana
Petrophile incurvata
Petrophile pauciflora ms
Petrophile shuttleworthiana
**Petrorhagia velutina*
Phebalium canaliculatum
Phebalium drummondii P1
Phebalium filifolium
Phebalium laevigatum ms
Phebalium megaphyllum ms
Phebalium tuberculosum
Phyllota luehmannii
Pimelea aeruginosa
Pimelea angustifolia
Pimelea avonensis
Pimelea imbricata var. piligera
Pimelea microcephala subsp. microcephala
Pimelea spiculigera var. thesioides
Pimelea suaveolens subsp. flava
Pittosporum phylliraeoides
Pittosporum phylliraeoides var. microcarpa
Pityrodia halganiacea
Pityrodia lepidota
Pityrodia teckiana
Pityrodia terminalis
Plantago debilis
Platysace trachymenioides
Podolepis canescens
Podolepis capillaris
Podolepis lessonii
Podotheca gnaphalioides
Podotheca uniseta P2
Pogonolepis muelleriana
Pogonolepis stricta
**Polygonum arenastrum*
Prasophyllum gracile
Prostanthera althoferi subsp. althoferi
Prostanthera campbellii
Prostanthera eckersleyana
Prostanthera magnifica P4
Prostanthera semiteres subsp. intricata
Psammomoya choretroides
Pseudactinia sp.Bungalbin Hill(F.H.& M.P.Mollemans P1
Pseudanthus intricatus ms
**Pseudognaphalium luteo-album*
Pterochaeta paniculata
Ptilotus divaricatus var. divaricatus
Ptilotus drummondii var. drummondii
Ptilotus eriotrichus
Ptilotus exaltatus var. villosus
Ptilotus gaudichaudii var. "unsorted"
Ptilotus gaudichaudii var. gaudichaudii
Ptilotus holosericeus
Ptilotus obovatus var. obovatus
Quinetia urvillei
Regelia cymbifolia P4
Rhagodia drummondii
Rhagodia preissii subsp. preissii
Rhodanthe battii
Rhodanthe chlorocephala subsp. rosea
Rhodanthe chlorocephala subsp. splendida
Rhodanthe citrina
Rhodanthe heterantha
Rhodanthe laevis
Rhodanthe manglesii
Rhodanthe maryonii
Rhodanthe rubella
Rhodanthe spicata
Rhodanthe stricta
Ricinocarpos velutinus
**Rostraria pumila*
Roycea divaricata
Rulingia luteiflora
**Salsola kali*
Santalum acuminatum
Santalum spicatum
Scaevola humifusa
Scaevola restiacea
Scaevola restiacea subsp. restiacea
Scaevola spinescens
**Schismus barbatus*
Schoenia cassiniana
Schoenia filifolia subsp. filifolia
Scholtzia drummondii
Sclerolaena eurotioides
Sclerolaena fusiformis
Sclerostegia disarticulata
Sclerostegia moniliformis
Senecio glossanthus
**Senecio lautus*
**Senecio lautus subsp. dissectifolius*
Senna artemisioides subsp. filifolia
Senna artemisioides subsp. stricta
Senna cardiosperma subsp. flexuosa
Senna cardiosperma subsp. stowardii
Senna glutinosa subsp. charlesiana
Senna glutinosa subsp. chatelainiana
Senna pleurocarpa var. angustifolia
Sida calyxhymenia
Siloxerus pygmaeus
**Sisymbrium irio*
Solanum cleistogamum
Solanum hoplopetalum
Solanum lasiophyllum
**Solanum nigrum*
Solanum nummularium
Solanum oldfieldii
**Sonchus asper subsp. glaucescens*
**Sonchus oleraceus*
**Sonchus tenerrimus*
Spartochloa scirpoidea
Spartothamnella puberula P2
Spiculaea ciliata
Stackhousia monogyna
Stenanthemum pomaderroides
Stenopetalum filifolium
Stipa flavescens

Stipa trichophylla
Stipa variabilis
Stylidium calcaratum
Stylidium dielsianum
Stylidium leptophyllum
Stylidium limbatum
Stylidium merrallii R
Stylidium nungarinense
Stylidium piliferum
Stylidium yilgarnense
Stypandra glauca
Swainsona beasleyana
Swainsona colutoides
Swainsona elegans
Templetonia sulcata
Tetratheca efoliata
Thelymitra antennifera
Thelymitra nuda
Thelymitra sargentii
Thelymitra x macmillanii
Thomasia tremandroides
Thryptomene aff. kochii
Thryptomene aspera subsp. Gabbin(S.B.Rosier 368) P1
Thryptomene aspera subsp. Mukinbudin(N.& P.Moyle s.n.) P1
Thryptomene aspera subsp. Paynes Find(C.A.Gardner 11996)
Thryptomene australis
Thryptomene kochii
Thryptomene mucronulata
Thysanotus manglesianus
Thysanotus patersonii
Thysanotus pyramidalis
Thysanotus rectantherus
Thysanotus speckii
Trachymene cyanopetala
Trachymene ornata
Tragus australianus
Trichanthodium skirrophorum
Trichodesma zeylanicum
Tricoryne tuberosa ms P1
**Trifolium cherleri*
**Trifolium hirtum*
Triglochin stowardii P2
Triodia rigidissima
Tripogon loliiformis
Tripterococcus brunonis
Triraphis mollis
Trymalium angustifolium
Trymalium daphnifolium
Urodon capitatus
Urodon dasyphyllus
**Ursinia anthemoides*
Velleia cycnopotamica
Velleia discophora
Velleia rosea
Verticordia auriculata
Verticordia brachypoda
Verticordia chrysantha
Verticordia chrysanthella
Verticordia insignis subsp. compta
Verticordia interioris
Verticordia mitchelliana
Verticordia monadelpha var. monadelpha
Verticordia picta
Verticordia pritzelii
Verticordia rennieana
Verticordia roei subsp. meiogona P1
Verticordia serrata var. serrata
Verticordia venusta P3
Vittadinia gracilis
**Vulpia myuros*
Waitzia acuminata
Waitzia acuminata var. acuminata
Waitzia nitida
Westringia cephalantha
Westringia rigida
Wrixonia prostantheroides
Wurmbea densiflora
Wurmbea tenella
Xanthorrhoea nana
Xerolirion divaricata
**Zaluzianskya divaricata*
Zygophyllum apiculatum
Zygophyllum billardierei
Zygophyllum fruticulosum

Appendix

5

APPENDIX 5

Fauna species in the Shire of Beverley (source- W.A Museum)

Information provided by Western Australian Museum, Fauna Base, latitude/longitude coordinates -31.9666, 116.2666 and -32.3500, 117.2500

Note- not a comprehensive list.

* represents an introduced species.

BIRD SPECIES

Acanthizidae
Acanthiza chrysorrhoa
Pyrrholaemus brunneus

Accipitridae
Elanus caeruleus axillaris
Hamirostra isura

Ardeidae
Nycticorax caledonicus hilli

Artamidae
Artamus cyanopterus

Campephagidae
Lalage tricolor

Casuariidae
Dromaius novaehollandiae

Charadriidae
Charadrius rubricollis

Climacteridae
Climacteris rufa

Columbidae
Geopelia cuneata

Corvidae
Corvus bennetti
Corvus splendens

Cracticidae
Cracticus tibicen
Cracticus tibicen dorsalis

Cuculidae
Chrysococcyx basalis

Falconidae
Falco cenchroides cenchroides

Halcyonidae
Dacelo novaeguineae

Maluridae
Amytornis textilis
Amytornis textilis textilis

Malurus lamberti assimilis

Meliphagidae
Lichenostomus ornatus
Lichenostomus virescens
Lichmera indistincta indistincta
Melithreptus brevirostris leucogenys
Phylidonyris nigra gouldii

Motacillidae
Anthus australis

Pardalotidae
Pardalotus striatus

Petroicidae
Petroica cucullata
Petroica multicolor
Petroica multicolor campbelli

Podargidae
Podargus strigoides

Psittacidae
Barnardius zonarius
Cacatua pastinator

PSITTACIDAE
Calyptorhynchus banksii naso

Psittacidae
Calyptorhynchus baudinii

PSITTACIDAE
Calyptorhynchus baudinii

Psittacidae
Calyptorhynchus latirostris

PSITTACIDAE
Calyptorhynchus latirostris
Calyptorhynchus spp

Psittacidae
Neophema elegans
Platycercus icterotis
Platycercus spurius
Platycercus zonarius
Platycercus zonarius semitorquatus
Platycercus zonarius zonarius
Polytelis anthopeplus anthopeplus

Rallidae
Gallirallus philippensis mellori
Porzana fluminea

Scolopacidae
Calidris subminuta

Strigidae
Ninox novaeseelandiae
Ninox novaeseelandiae boobook

Tytonidae
Tyto alba delicatula
Tyto novaehollandiae

Zosteropidae
Zosterops lateralis gouldi

MAMMAL SPECIES

Burramyidae
Cercartetus concinnus

Canidae
Canis lupus familiaris

Dasyuridae
Antechinus flavipes
Dasyurus geoffroii
Phascogale calura
Phascogale tapoatafa tapoatafa
Sminthopsis dolichura
Sminthopsis gilberti
Sminthopsis griseoventer

Macropodidae
Macropus fuliginosus
Macropus irma

Muridae
Hydromys chrysogaster
**Mus musculus*
Notomys mitchellii
Pseudomys albocinereus
***Rattus rattus*

Potoroidae
Bettongia lesueur graii
Bettongia penicillata ogilbyi

Tarsipedidae
Tarsipes rostratus

Vespertilionidae
Chalinolobus gouldii
Nyctophilus geoffroyi
Scotorepens balstoni
Vespadelus regulus

REPTILE SPECIES

Agamidae
Ctenophorus ornatus
Ctenophorus reticulatus
Pogona minor
Pogona minor minor

Boidae
Morelia spilota imbricata

Cheluidae
Chelodina oblonga

Elapidae
Acanthophis antarcticus
Brachyurophis semifasciata
Demansia psammophis reticulata
Echiopsis curta
Notechis scutatus
Parasuta gouldii
Parasuta nigriceps
Pseudechis australis
Pseudonaja affinis affinis
Pseudonaja modesta
Pseudonaja nuchalis
Simoselaps bertholdi
Vermicella bertholdi

Gekkonidae
Christinus marmoratus
Crenadactylus ocellatus
Crenadactylus ocellatus ocellatus
Diplodactylus granariensis
Diplodactylus granariensis granariensis
Diplodactylus polyophthalmus
Diplodactylus pulcher
Gehyra variegata
Oedura reticulata
Underwoodisaurus milii

Pygopodidae
Aprasia pulchella
Aprasia repens
Christinus marmoratus
Delma fraseri fraseri
Gehyra variegata
Lialis burtonis
Pygopus lepidopodus

Scincidae
Acritoscincus trilineatum
Cryptoblepharus plagiocephalus
Ctenotus delli
Ctenotus fallens
Ctenotus impar
Ctenotus labillardieri
Egernia multiscutata
Egernia napoleonis
Eremiascincus richardsonii
Hemiergis initialis initialis
Lerista distinguenda
Menetia greyii
Morethia lineoocellata
Morethia obscura
Tiliqua occipitalis
Tiliqua rugosa rugosa

Typhlopidae
Ramphotyphlops australis
Ramphotyphlops pinguis
Ramphotyphlops sp
Ramphotyphlops waitii

Varanidae
Varanus gouldii
Varanus tristis

AMPHIBIA SPECIES

Hylidae
Litoria moorei

Myobatrachidae
Crinia georgiana
Crinia glauerti
Crinia pseudinsignifera
Geocrinia leai
Heleioporus albopunctatus
Heleioporus barycragus
Heleioporus eyrei
Heleioporus inornatus
Heleioporus psammophilus
Heleioporus sp
Limnodynastes dorsalis
Myobatrachus gouldii
Neobatrachus kunapalari
Neobatrachus pelobatoides
Pseudophryne guentheri

Appendix

6

ROADSIDE CONSERVATION COMMITTEE

GUIDELINES FOR MANAGING THE HARVESTING OF NATIVE FLOWERS, SEED AND TIMBER FROM ROADSIDES

Preamble

The diversity of values associated with roadside vegetation is well documented and acknowledged. In landscapes that have been extensively cleared, roadside vegetation provides essential wildlife corridors and habitat for local flora and fauna, including a number of threatened species. Hence it is highly desirable that this asset is managed in such a way as to ensure its conservation and sustainability.

The control and management of roadside vegetation is the responsibility of the road manager. Local government authorities, as road managers, are often approached for 'permission' to take various flora products from the roadside. These requests are mainly for wildflowers, native seed and firewood. Other products which may be sought includes material for making didgeridoos, other types of craftwood, and stakes or poles for various purposes.

Although road managers are primarily concerned about the maintenance of the running surface itself, through the implementation of these simple guidelines for the removal of flora and timber material from the roadsides, the vegetated roadside reserve should be maintained for its biodiversity values, and the benefit of the community and road users.

In some instances the Roadside Conservation Committee (RCC) is supportive of the sustainable harvesting of flora, such as salvage (removal of dead material that is not significant wildlife habitat or is material to be destroyed by road works), or the selective collection of seed for revegetation. However, each case should be viewed on its merits and any decision to facilitate harvesting from roadsides should be referred to the Department of Conservation and Land Management (CALM) and/or the RCC for advice. Licences allowing the taking of roadside flora may be issued by CALM when supported by the road managing authority.

Legislation

All Western Australian native flora is protected under the *Wildlife Conservation Act 1950*. Native flora includes all parts of a native plant, including its flowers, seed, and timber. Protection of native flora under the Act has the effect of requiring a person to only take (cut or remove) native flora from Crown land under a licence.

Road and rail reserves are Crown land, and hence a licence is required to cut or remove any native flora from a roadside or rail line. There is, however, a legal provision by which the road manager or their agent (contractor) does not require a licence whilst undertaking legitimate road management activities. This provision does not extend to other persons who wish to take protected flora from roadsides.

There are two types of licences that apply to the taking of protected flora from Crown land –Commercial Purposes Licences where the flora is being taken for any commercial purpose, and Scientific or Other Prescribed Purposes Licences where the protected flora is being taken for specific non-commercial purposes.
These licences are issued by CALM. In issuing a licence, CALM is required to be assured that the activity will not compromise the conservation of the flora. In determining this, CALM will seek advice from the land manager for which the application relates to determine the potential impact of the activity, and how the activity relates to the management objectives being applied to that land.

A licence application may be refused if the activity is either a conservation concern, or does not fit in with the management objectives of the road manager. Once issued with a licence, a licensee must comply with the conditions of the licence that are designed to ensure the activity does not adversely impact on the conservation of the flora or the natural environment in which it occurs.

Commercial Wildflower Harvesting

Western Australia is referred to as the *'Wildflower State'*, and its wildflowers attract a significant number of tourists each year. Roadside vegetation provides the most accessible, and hence the most commonly viewed, array of wildflowers, and as such are an important feature of regional tourism and can provide a significant financial boost to local economies.

The RCC considers that the flora on roadsides is reserved and maintained for public benefit. It is therefore seen as a contradiction of purpose to allow wildflowers on roadsides to be harvested, particularly for private gain, and this activity should not be permitted.

Wildflower harvesting in many instances detracts from the biodiversity and tourism values of the roadside. It is often the case that flora is harvested from roadsides because of the convenience of access, and harvesters should be directed to find alternative locations.
There are situations where some harvesting may be considered, such as in very wide road reserves where the activity can be screened from road users, but mostly road managers have been discouraged from supporting or allowing such harvesting to occur. If harvesting is to be approved, then the points provided at the end of these guidelines should be considered.

Seed Collection

Throughout much of the south west, revegetation of the native flora is being undertaken to redress the problems that historic clearing has created. Increasingly, this revegetation is aimed at using local native flora so as to recreate the native vegetation to support biodiversity objectives. The paradox is that in many areas the native vegetation has been

cleared to such an extent that adequate sources of native seed cannot be found for undertaking this work. Roadside vegetation may be a source of such seed.

Native seed is an important component of remnant vegetation. It is critical for the regeneration of certain species, called re-seeder species, when plants are either killed by an event, such as fire, storm damage, or die as part of their natural cycle. The maintenance of adequate seed of these species is necessary as a precaution to ensure the sustainability of the flora biodiversity.

Native seed is also an important food source for native fauna living in roadside vegetation, from ants to birds and mammals. The maintenance of this fauna is important for the continuing survival of the vegetation, especially where the fauna is required to pollinate the flora.

When seed is needed for *bona fide* revegetation projects within the local community, and no other source of local seed is available, then the controlling authority may consider giving permission for collection of seed from roadsides. Such collection must be under the appropriate licence issued by CALM and the harvesting should be done in a way that does not endanger the long-term survival of the roadside vegetation.

Where seed collection is to be authorised on roadsides, the road manager should consider the points listed at the end of these guidelines. Specific consideration should be given to the methods that are approved for harvesting the seed, the quantity of seed that may be taken, and the species from which the seed is to be sourced.

Timber Harvesting from Roadsides.

Timber is harvested for a range of reasons, including saw logs, firewood and craftwood. Due to the ease of access, timber harvesters may wish to source timber from roadside vegetation for these purposes.

The RCC seeks to encourage roadside managers to retain timber on roadsides as an important component of the natural habitat, which fulfils ecological, aesthetic and land management functions. The value of fallen logs and branches within the roadside is often not realised, but this material forms an important habitat for many species of insects, reptiles, mammals and birds, thus enhancing the roadside biodiversity. Insects and reptiles that live in fallen timber are also important elements of the food chain, and are very important to the functioning of natural systems, and the survival of many other native animals.

The RCC believes that harvesting of timber from roadsides should not be permitted except in defined road safety, fence line or service clearance zones, or where a tree has fallen, or appears likely to fall into clearance zones.

Where timber removal is to be allowed, consideration should be given to the points raised at the end of these guidelines, especially in relation to safety issues related to timber cutting. Permission to remove timber should be specific to certain sections of roadsides where the removal is necessary for other planned road management purposes.

Guidelines For Harvesting On Roadsides

- ✓ In all cases the permission of the managing authority, i.e. Main Roads WA, Local Government or CALM, must be sought before native flora is removed from a roadside.
- ✓ Flora removal should be from only designated roads, which have wider vegetated road verges i.e. vegetation width > 3metres
- ✓ The number of operators authorised to remove flora from a roadside should be strictly limited to that which can be sustained and managed. The determination of this is at the judgement of the managing authority, but consideration should be taken of the type of flora being harvested and an evaluation of monitoring of the impact of the harvest activity. Advice may be sought from CALM.
- ✓ Approval for flora harvesting should be for a set period, with a review of the impact and operation before renewal.
- ✓ Approval should also stipulate approved methods of harvesting, the species which may be harvested, and the quantity of material to be taken. Advice on harvest conditions may be obtained from CALM.
- ✓ Any flora removed should not affect the viability of the residual seed bank. It is recommended that no more than 20% of the flowers or seed on a plant should be taken, unless it is in an area that is scheduled to be cleared as part of road management.
- ✓ Methods of harvesting flora should not jeopardise the survival of the plant/tree, unless it is in an area that is scheduled to be cleared as part of road management.
- ✓ The removal of whole plants should be restricted to areas that are scheduled to be cleared as part of road management. Note, some species of flora such as zamia palms and grass trees can not be removed for commercial purposes without a special endorsement on the Commercial Purposes Licence issued by CALM.
- ✓ No flora of special conservation concern (Declared Rare Flora or Priority Flora) should be removed without special authorisation through CALM.
- ✓ No commercial harvesting of any plant product should be allowed for any reason between the markers that delineate a Special Environmental Area.
- ✓ Flora harvesting should be prohibited from designated Flora Roads.
- ✓ Care should be taken that access to Dieback infected areas is limited to the drier months of the year, and vehicular access disallowed.
- ✓ Safety should always be of prime concern and every effort should be made to ensure that personal safety is a key consideration in any harvesting operation.
- ✓ Flora harvesters should not operate from the road side in areas where the vegetation is close to the road, where vehicles can not be safely parked off the road, or where there is poor driver visibility.

Appendix

7

Guidelines for the Nomination and Management of Flora Roads

Introduction

The Flora Roads program began as an initiative of the Roadside Conservation Committee (RCC), as a means of encouraging road managers to protect and conserve roadside vegetation of high conservation value. Flora Roads also highlight areas of high conservation flora as a tourist asset to local communities and are easily identified to passing travellers as areas worthy of an inspection to view the local flora.

The Roadside Conservation Committee has defined Flora Roads as "those roads which have conservation value owing to the vegetation growing within the reserve".

Principle Conservation Values of Flora Roads:

- 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 – trees, shrubs and herbs are present in woodlands, for example. 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
  - Provides a source of local seed for revegetation projects
  - Acts as a wildlife habitat for the protection of fauna.
  - Rare or endangered plants may occur on the roadside.
  - May provide nest sites and refuges for native animals.
  - May act as a biological corridor.

Identification and Nomination of Flora Roads

The RCC has been coordinating a volunteer roadside survey program since 1989, which provides a list of high conservation value roads within many Shires in the agricultural areas of this state. These roadsides can be investigated further to see of they warrant declaration as a Flora Road. Nevertheless, roadsides that have not been surveyed may still be nominated.

Any person may suggest to the managing authority or to the RCC that a road, or a section of road fits the criteria of a Flora Road. However, only the managing authority in whom care, control and management of the road is vested can officially declare it a Flora Road.

A road may be nominated as a Flora Road by submitting a written request to the RCC.
The RCC requires the following information:

- Endorsement from the managing authority;
- Name of the road, LGA, and the road manager (MRWA, Local Government or DCLM);
- Distance of the proposed Flora Road; and
- Width of the road reserve.

The following information would also be useful:

- Photograph(s) of the road;
- A list of the dominant plant species;
- Threats (weeds, disturbances, etc).

This information will be stored in the RCC Flora Roads Register, a database which is maintained by the RCC Technical Officer (Mapping).

Establishment of a Flora Road

Given that only the managing authority can officially declare a road, or section of road as a Flora Road, it is important to have the support of the road manager.

The RCC will provide two Flora Road signs to the managing authority. The signs are in the tourist sign colours of white letters and symbols on a leaf brown background. It is the responsibility of the managing authority to erect the signs, and to provide signposts, auxiliary signs and carry out maintenance. One sign may be placed at each approach to the area.

Management Implications

A standard sign was developed by Main Roads WA in the late 1980's, a policy for the erection of Flora Road signage was developed shortly afterwards. See Appendix 1

Part16 of the RCC *Roadside Manual* details the establishment and management of Flora Roads. The RCC's *Guidelines for Managing Special Environment Areas in Transport Corridors* and the *Roadside Handbook* also provide information on Flora Road establishment.

The aim of all management should be to minimise any disturbance to the roadside flora, consistent with the provision of a safe and efficient roadway.

The managing authority will be expected to take into consideration the high conservation values present, and take special care when working within the Flora Road road reserve and the surrounding area. More specifically though;

- Council may choose to adopt a policy on Roadside Conservation.
- Environmental assessments (pre-construction checklists) should be completed prior to any upgrade work, to assist with planning for flora preservation.
- Fire Management should be undertaken in such a way so as to take into account the ecological needs of the flora.
- Where rehabilitation is contemplated, local native species should be used.

Tourism Implications

Declared Flora Roads will, by their very nature, be attractive to tourists, and would often be suitable as part of a tourist drive network. Consideration should be given to:

- Promoting the road by means of a small brochure or booklet;
- Eventually showing all Flora Roads on a map of the region or State;
- Using specially designed signs to delineate the Flora Road section; and
- Constructing roadside flora rest areas where people can get out and enjoy the flora. Walk trails could be made from these, and information brochures produced;

Flora Road Register

To ensure that knowledge of Flora Roads sites does not get lost, due perhaps to staff changes, the RCC has established a Flora Roads Register. Information pertaining to each Flora Road (i.e. road name, location, length, etc) will be stored in the Flora Roads database, and updated as necessary.

In order to plan roadworks so that these important areas of roadside vegetation are not disturbed, road managers should also know of these areas. Therefore, it is suggested that the Managing Authority (Shire, MRWA, DCLM) establish a *Register of Roads Important for Conservation* also. This register should be consulted prior to any works being initiated in the area.

Flora Roads highlight the value of the roadside vegetation present, alerting both travellers and those working in the road reserve of the high conservation values present.
Photo D. Lamont