Roadside conservation values in the Shire of Bridgetown-Greenbushes

Dalmore Road, above, and Tweed Road, left, contain high conservation value roadside remnants, and are important for maintaining biodiversity, Landcare, cultural and aesthetic values.

Photographs by J. Dewing

November 2004
Roadside Conservation Committee

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EXECUTIVE SUMMARY

The Shire of Bridgetown – Greenbushes supports an extensive network of roads, ie 44.7 km of Highways, 16.9 km of main roads, 723.8 km of Local Government roads and 90.5 km of Forestry roads.

The majority (541 km) of the Shire of Bridgetown-Greenbushes' roadsides were surveyed and assessed for their conservation status throughout the months of March, April, June, September, October and November 2002, and June 2003. The Roadside Conservation Committee then mapped the roadside survey data using Geographic Information Systems, or GIS.

Roadsides of high conservation value covered 33.7% of the roadsides surveyed, medium-high conservation value roadsides accounted for 16.2%, medium-low conservation roadside covered 13.0% and low conservation value roadsides occupied 37.1% of the roadsides surveyed. Further results of the roadside survey are outlined in this report, along with additional detailed information relevant to roadside management and conservation in the Shire of Bridgetown-Greenbushes.

Primarily, the roadside survey data and roadside conservation value (RCV) map is intended for use by the Shire and community groups as a management and planning tool. Applications may range from setting priorities and formulating management strategies to planning on-ground activities and works projects. As well as providing a road reserve planning and management tool, the roadside conservation value map can be used for:

- identifying degraded areas as areas important 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 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; and
- incorporating into Landcare 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 Bridgetown-Greenbushes to utilise the Roadside Conservation Value map into many facets of its Landcare, tourism and road maintenance operations and NRM strategy documents. In addition, the Roadside Conservation Committee is available to provide assistance with the development of roadside vegetation management plans and associated documents.

PART A:

OVERVIEW OF ROADSIDE CONSERVATION

THE VALUES OF ROADSIDES

Since the settlement of Western Australia by Europeans, large areas of native vegetation in the south west of the state have been cleared for agriculture, roads, settlements, and other development. The fragmentation of the more or less continuous expanse of native vegetation communities has resulted in the isolation of plant and animal populations, which have become severely disadvantaged by becoming isolated within a mosaic of man-made biogeographical islands of small native vegetation remnants. These are typically unreliable for sustaining wildlife due to food shortages, disease and reduced genetic diversity caused by a diminishing gene pool. Nevertheless, the presence of native vegetation along roadsides can often assist in alleviating this isolation effect by providing connectivity between bush remnants, thereby facilitating the movement of biota across the landscape.

Remnant vegetation includes more than just trees, comprising a diverse mix of trees, shrubs and ground covers (creepers, grasses and herbs) which when intact provide valuable food and shelter for local flora and fauna. Native vegetation generally requires less maintenance if left undisturbed and is less flammable than exotic species of grasses.

Remnants in transport corridors are valuable because they:

- are often the only remaining example of original vegetation within extensively cleared areas;
- provide habitat for many native species of plants, mammals, reptiles, amphibians and invertebrates;
- 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 and have the potential to improve local tourism and provide a sense of place;

Remnant vegetation includes more than just trees.
Photo by J. Dewing

- 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;
- assist with erosion and salinity control, and not only in the land adjoining the road reserve per se; and
- are a vital source of local seed for revegetation projects in the absence of other alternatives. This is especially pertinent to shrub species, as clearing and grazing beneath farm trees often removes this layer. Approval of the local shire and a CALM permit are required prior to collection.

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

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

THREATS TO ROADSIDES

Lack of Awareness

The general decline of the roadside environment can often be attributed to the lack of awareness of the functional and conservation value of the roadside remnants. As a consequence, there is a paucity of knowledge of threatening processes such as road maintenance, and inappropriate use of fire control 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.

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 the ILZ, twenty one carry less than 10% of the original remnant vegetation, and a further thirty have less than 30% (Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. 2001). 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.

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, 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.

Excessive roadside clearing destroys natural habitat and can create erosion and weed invasion problems.
Photo RCC

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 of native vegetation requires a permit unless it is for exempt purposes. Maintaining *existing* clearances in transport corridors or the maintenance of *existing* infrastructure does not require a permit, while clearing to *establish* a new road or alignment does require a permit. 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.

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/area 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.

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 sustainability of existing native plants, increase flammability of the vegetation and interfere with the engineering structure of the road.

The WA Herbarium records approximately 100 weed species in the Shire of Bridgetown-Greenbushes see Appendix 5. The Blackwood Environment Society (BES) also compiled a preliminary list of roadside weeds for the Shire of Bridgetown–Greenbushes, based on data collected throughout the roadside survey in October 2002 and from herbarium specimens collected by Blackwood Valley Landcare, shown in Appendix 6.

Throughout the roadside survey, 6 weed species were recorded and their locations mapped. They were Blackberry (*Rubus ulmifolius),* Bridal creeper (*Asparagus asparagoides*), Broom Bush (*Genista* spp), Weedy Wattles (*Acacia spp.)*, Watsonia (*Watsonia spp.*), and Victorian tea tree (*Leptospermum laevigatum*).

Roadside weed populations can be observed in the weed overlays provided with the Shire of Bridgetown-Greenbushes Roadside Conservation Value map (2003).

Victorian Tea Tree was observed along 25.2 km of roadsides in the Shire of Bridgetown-Greenbushes.

Photos by C. Hortin. Photo used with the permission of the WA

The Shire of Bridgetown-Greenbushes undertakes annual roadside weed control specifically targeting Blackberry, Watsonia and Bridal Creeper. The 2003-2004 weed control budget for Shire roadsides and reserves set aside:

- $9,663 for Blackberry control programs,
- $2,900 for Bridal Creeper control programs, and
- $5,199 for Watsonia control programs.

See Appendix 7 for the location of roadside control areas for Watsonia, Bridal Creeper and Blackberry infestations.

Bridal Creeper smothers native vegetation.
Photo by K. Jackson

Bridal Creeper Control Programs

1. Chemical control:

In 2002, Blackwood Valley Landcare received funds to assist with controlling Bridal Creeper in the Shires of Bridgetown–Greenbushes, Boyup Brook and Donnybrook–Balingup. A chemical control trial was established within high conservation value roadsides throughout the Bridgetown-Greenbushes Shire, testing low application rates of Brushoff® and Pulse®. Approximately 16 km of roadsides were sprayed in 2002, at a cost of approximately $3,000. The Shire subsequently allocated $2,900 in the 2003-2004 budget to continue the trial, and spraying was carried out again in September 2003. Monitoring plots were also set up in order to evaluate the trial. Roadside areas treated in 2002 and 2003 are shown in Appendix 7. The trial is to be assessed in winter 2004, and may be extended if deemed effective.

2. Biological Control:

Biological control agents for Bridal creeper are the Bridal Creeper rust, a rust fungus, and the Bridal Creeper Leaf Hopper, an insect. Both were released at approximately thirty roadside sites between 2001 and 2003 in the Shire of Bridgetown-Greenbushes. Site assessment details indicated that the rust established and spread more than 50 metres from the release sites, particularly where roadsides were adjacent to the Blackwood River. Bridal Creeper Leaf Hoppers have also persisted at the sites, although their impact was not as significant as the Bridal Creeper rust. The Shire, in partnership with the Blackwood Valley Landcare expects to extend the release of Bridal Creeper Rust. For further information regarding Bridal Creeper control programs in the Shire, contact Mr Clark Ward, Blackwood Valley Landcare, (08) 9761 4277.

Phytophthora Dieback

The Shire of Bridgetown-Greenbushes is a known *Phytophthora* dieback risk area, particularly in the forested, multiple use areas. The *Phytophthora* species dieback is made up of several types of introduced fungi, which infects the roots of native plants and inhibits the uptake of water and nutrients, eventually causing death. 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. It is more widespread and severe in the higher rainfall zone and waterlogged sites.

Human 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 publication, *Managing Phytophthora Dieback in Bushland: A guide for Landholders and Community Conservation Groups* (2000) provides management advice and detailed information on minimising the risk of introducing or spreading *Phytophthora*.

Impact of *Phytophthora* Dieback
Photo by Dieback Working Group

COLLECTION OF NATIVE PLANT MATERIAL FROM ROADSIDES

Under the *Wildlife Conservation Act,* the Department of Conservation and Land Management (CALM) may issue a licence to collect native plant material following Shire approval. The Shire of Bridgetown-Greenbushes does not generally allow the collection of wildflowers or seed from native plants within road reserves. Exceptions may be granted for special cases and for particular species; for instance, the Bridgetown Environment Society was given permission to collect seed within road reserves for *bona fide* revegetation purposes.

It is suggested the RCC's *Guidelines for Managing the Harvesting of Native Flowers, Seed and Timber from Roadsides* is referred to prior to any approval being given, refer to Appendix 9. Collecting seed from a roadside may be the only option in cases where there are no other sources of seed for revegetation, although, it has the potential to impact negatively on the roadside flora. Collection of native plant material from roadsides:

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

SPECIAL ENVIRONMENT AREAS

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

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

Special Environmental Areas can be delineated by the use of site markers. 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.

Special Environmental Area Register

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

Yellow site markers delineate Special Environment Areas.

Photo by K. Jackson

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

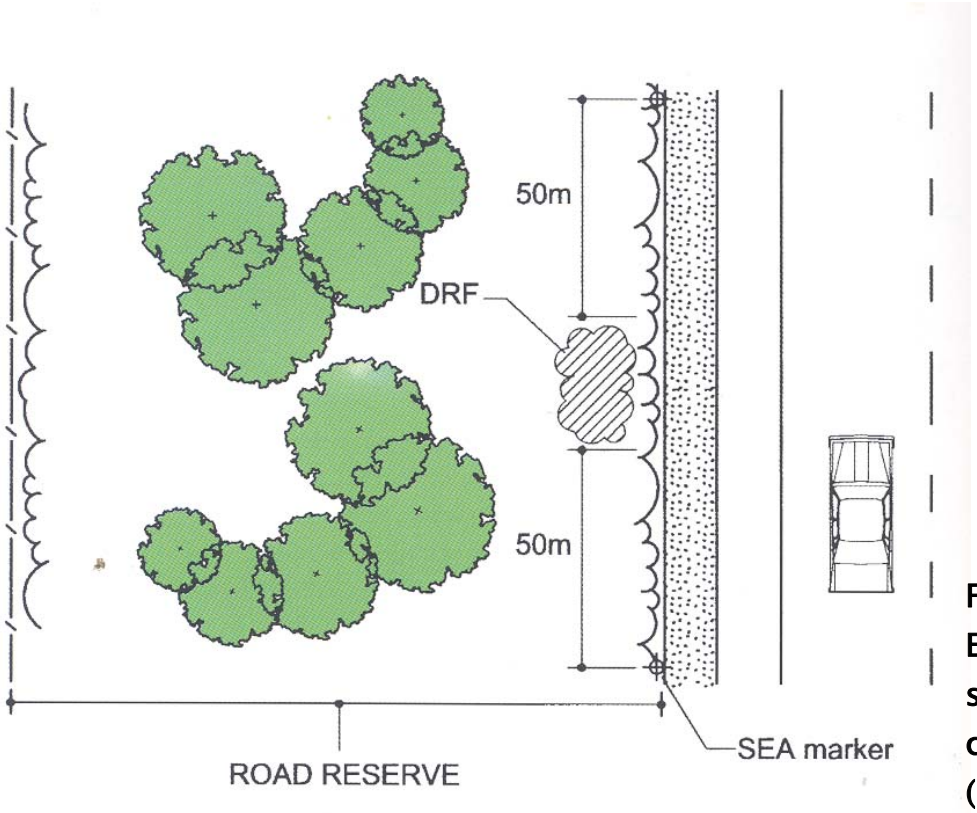


Figure 1 – Marking Special Environment Area (SEA) sites in the field. In this case, a declared rare flora (DRF) site has been marked.

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

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

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*, see Appendix 10.

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

Attractive roadside drives are an important drawcard in W.A., 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).

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

Photo by CALM

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.

*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.

PART B:

The Natural Environment in the Shire of Bridgetown-Greenbushes

INTRODUCTION

The Shire of Bridgetown-Greenbushes is located 270 km south of Perth in the south-west land division and supports a population of approximately 3,934 people. The Shire covers an area of 1,691 square kms, of which 586 square kms (34.6%) is State forest. The area experiences an average annual rainfall of 832.7 mm. Seasonal temperatures are characterised with warm summers with maxima averaging from the mid to high twenties, and cool winters with maxima in the mid teens. Average daily maximum and minimum temperatures and rainfall statistics are shown in Figure 1 below.

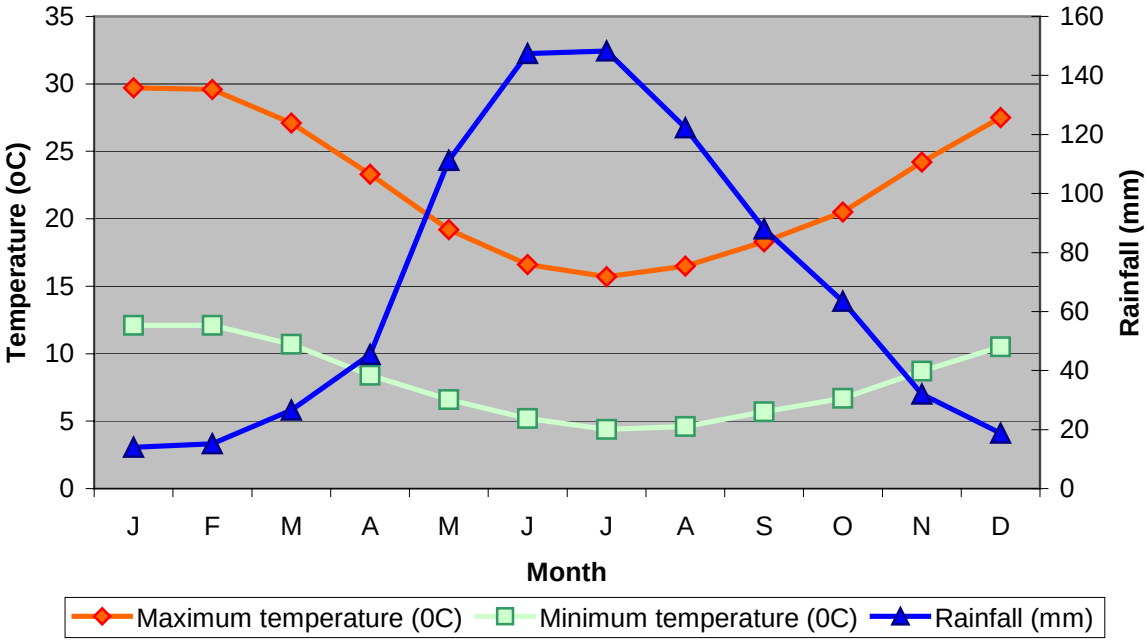


Figure 2 – Mean daily maximum and minimum temperature (ºC) and rainfall (mm) for the shire of Bridgetown-Greenbushes.

Agricultural pursuits such as horticulture, viticulture and grazing are characteristic of the region. Other important industries are logging native forests, hardwood plantations, timber milling and mining. Tourism is also an important industry with the area's spectacular natural resources such as the Blackwood River, Bridgetown Jarrah Park, scenic drives and walk trails being major attractions.

FLORA

On an international scale, by comparison the flora of Western Australia is ten times the total of the British vascular flora of 1200, and represents some 4.8% of the estimated world vascular flora of 250,000 species.

The Western Australian flora is also unique, with the majority of species being endemic, that is, found nowhere else in the world. 75% of the 6,000 species in the south-west, for example, are endemics. Part of the reason for the high level of species diversity and uniqueness, especially in the south west agricultural region, is because this landform is extremely old, and has largely weathered in-situ. This has meant that the soils and habitats in the region tend to be a mosaic, and the flora in them has evolved in isolation over a very long time period. The result is a complex series of different evolutionary paths across the landscape.

The Western Australian Herbarium records over 700 species of plants in the Shire of Bridgetown-Greenbushes. Among the most prolific genera were

- *Acacia*, 30 spp,
- *Caladenia*, 23 spp,
- *Stylidium* and *Hibbertia*, both with 11 spp.

A detailed list of the flora recorded from the Shire can be found in Appendix 5 of this report.

Caladenia christineae is known from roadsides in the Shire of Bridgetown-Greenbushes.

Photo's by I & M Greeve and A. P. Brown Photo used with the permission of the WA

DECLARED RARE FLORA

Existing legislation uses the term "rare flora". It is necessary to continue to use the term "declared rare flora" when quoting the legislation until it is changed, but the term is used for species that are threatened, rather than just rare in numbers. CALM Policy Statement No 9 (Conservation of Threatened Flora in the Wild) lists the policies and strategies for the management of declared rare flora.

Legislation

Rare flora is defined in subsection 23F(1) of the Wildlife Conservation Act as "flora for the time being declared to be rare flora for the purposes of this section." Further clarification is provided in subsection 23F(2):

> "Where the Minister is of opinion that any class or description of protected flora is likely to become extinct or is rare or otherwise in need of special protection, he may, by notice published in the Government Gazette declare that class or description of flora to be rare flora for the purposes of this section throughout the State".

The Schedule of Declared Rare Flora

The Schedule (list) of Declared Rare Flora is reviewed annually.

Plants, which are protected flora, declared under the Wildlife Conservation Act, may be recommended for gazettal as declared rare flora if they satisfy the following criteria:

i) The taxon (species, subspecies, and variety) is well defined, readily identified and represented by a voucher specimen in a State or National Herbarium. It need not necessarily be formally described under conventions in the International Code of Botanical Nomenclature, but such a description is preferred and should be undertaken as soon as possible after listing on the schedule.

ii) Have been searched for thoroughly in the wild by competent botanists during the past five years in most likely habitats, according to guidelines approved by the Executive Director of CALM.

iii) Searches have established that the plant in the wild is either:

- a) rare;

  or

- b) in danger of extinction (including presumed extinct);

  or

- c) deemed to be threatened and in need of special protection.

(Plants which occur on land reserved for nature conservation may be considered less in need of special protection than those on land designated for other purposes).

or

d) presumed extinct.

iv) In the case of hybrids, or suspected hybrids, the following criteria must also be satisfied:

a) they must be a distinct entity, that is, the progeny are consistent within the agreed taxonomic limits for that taxon group;

b) they must be [capable of being] self perpetuating, that is, not reliant on the parent stock for replacement; and

c) they are the product of a natural event, that is, both parents are naturally occurring and cross fertilisation was by natural means.

That status of a rare plant in cultivation has no bearing on this matter. The legislation refers only to the status of plants in the wild. Plants may also be deleted from the schedule of declared rare flora.

There are currently 318 extant, plus 23 presumed extinct, taxa of declared rare flora as listed in the 1998 schedule. Some extant taxa are further subdivided to infraspecific levels, and are managed at these levels. There are 327 extant taxa in total. Currently (November 2004), CALM records indicate that one population of DRF (*Caladenia christineae*) is known to occur within a road reserve vested in the Shire of Bridgetown-Greenbushes.

Populations of DRF along roadsides are designated Special Environmental Areas (SEA's) and are commonly marked out by yellow stakes with an identification plate welded on (See Figure 1).

Road managers such as the Shire of Bridgetown – Greenbushes are strongly advised to ensure that DRF markers are installed at any DRF sites managed by them. A publication produced by the Roadside Conservation Committee, *Guidelines for Managing Special Environmental Areas in Transport Corridors* (2000), provides guidelines for the installation of these markers and is available from the Roadside Conservation Committee.

For more information regarding DRF it is advisable to contact the CALM Flora Officer for the Blackwood District (08) 9752 5555. If roadworks are to be carried out near DRF sites, or the markers have been disturbed, it is advisable to contact CALM at least one week in advance.

FAUNA

Fauna records from the Western Australian Museum indicated the presence of approximately 150 species of native fauna from the Bridgetown-Greenbushes area. These are detailed in Appendix 8. Importantly, 16 of these species were classified as being endemic to the southwest of Western Australia, i.e. occurring only within, and restricted to, that particular geographical area. Endemic bird species included the Western Thornbill (*Acanthiza inornata)*, the Red-winged Fairy Wren *(Malurus elegans),* Red-eared Firetail (*Stagonopleura oculata)*, and the Western Rosella (*Platycercus icterotis).* Other types of endemic fauna included reptiles such as the Speckled Stone Gecko (*Diplodactylus polyophthalmus)* and mammals such as the Western Brush Wallaby (*Macropus irma)*, the Grey-bellied Dunnart (*Sminthopsis griseoventer griseoventer)* and the Western Ringtail Possum (*Pseudocheirus occidentalis).*

The Red-eared firetail is endemic to south western WA.

Photo by M. Thompson, courtesy of FaunaBase http://www.museum.wa.gov.au/faunabase/prod/index.htm

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, 16 species of threatened fauna have been recorded or sighted throughout the Shire of Bridgetown-Greenbushes. These include:

Quokka
Photo by CALM

- Baudin's Black-Cockatoo (*Calyptorhynchus baudinii*)
- Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*)
- Masked Owl (*Tyto novaehollandiae novaehollandiae)*
- Chuditch (*Dasyurus geoffroii*)
- Numbat (*Myrmecobius fasciatus*)
- Quenda (*Isoodon obesulus fusciventer*)
- Quokka (*Setonix brachyurus*)
- Southern Brush Tailed Phascogale (*Phascogale tapoatafa tapoatafa*)
- Western Brush Wallaby (*Macropus irma*)
- Tammar Wallaby (*Macropus eugenii derbianus*)
- Western Ringtail Possum (*Pseudocheirus occidentalis*)
- Woylie (*Bettongia penicillata ogilbyi*)

Note - records from CALM's Threatened and Priority Fauna Database should not be considered as a definitive list of fauna presence but rather a representation of species present in the Shire for which there are records in the database.

REMNANT VEGETATION COVER

The Shire of Bridgetown-Greenbushes retains nearly 68% of its original native vegetation, and these are located in a range of tenures, e.g. nature and crown reserves and privately owned land. Table 1 provides a comparison between the native vegetation remaining in the Shire of Bridgetown-Greenbushes and surrounding Shires.

Shire	Native Vegetation Cover Remaining
Bridgetown-Greenbushes	67.9%
Boyup Brook	45.2%
Manjimup	83.9%
Nannup	94.0%
Donnybrook-Balingup	72.0%

Table 1. Native remnant vegetation remaining in the Shire of Bridgetown-Greenbushes and surrounding Shires (Shepherd, Beeston and Hopkins, 2001).

Flora and fauna living in isolated remnants require connectivity throughout the landscape in order to find nesting sites, food and shelter. As a consequence, the presence of native vegetation in transport corridors is often of vital importance for their sustainability.
The Beard system of vegetation classification indicates 6 broad vegetation associations within the Shire of Bridgetown-Greenbushes, and these are noted in Table 2. It should be noted that these assemblages are indicative of the Shire *per se* and not specifically representative of roadside remnants.

Description of Vegetation Association	% Remaining throughout WA
Tall forest; karri (*Eucalyptus diversicolor*)	66.2
Medium forest; jarrah - marri	72.1
Low woodland; paperbark (*Melaleuca sp.*)	66.1
Medium Forest; jarrah & wandoo (*E. wandoo*)	22.4
Tall forest; jarrah (*E. marginata*)	75.6
Tall forest; karri & marri (*Corymbus calophylla*)	69.7

Table 2. Vegetation associations present in the Shire of Bridgetown-Greenbushes (Shepherd, Beeston and Hopkins, 2001).

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.

In the Shire of Bridgetown-Greenbushes, one vegetation association falls below the 30% target of vegetation coverage see Table 2. National targets for biodiversity conservation (2001-2005) state the need to have protection measures in place for those vegetation associations that are below 30%. Vegetation associations with between 10-30% are considered vulnerable, between 30-50% are considered depleted (of the pre 1750 extent).

Tall Karri (*Eucalyptus diversicolor*) forests remain within only 66.2% of their original extent throughout W.A.

Photography by S. D. Hopper. Photo used with the permission of the WA Herbarium, CALM (http://florabase.calm.wa.gov.au/help/photos#reuse).

High conservation value roadsides form significant tracts of remnant vegetation. **Photo S. Smith**

PART C

ROADSIDE SURVEYS IN THE SHIRE OF BRIDGETOWN-GREENBUSHES

INTRODUCTION

The majority (541 km) of the Shire of Bridgetown-Greenbushes' 814 km of roadsides were assessed for their conservation status and then mapped. Fieldwork was carried out throughout the months of March, April, June, September, October and November in 2002, and June 2003. The Bridgetown Environment Society designed a computer program, based on the RCC's roadside survey, to assist with carrying out roadside surveys and other mapping projects within the Shire. They elected to collect the roadside survey data digitally, i.e. with the program installed on a laptop computer, due to the additional GPS and mapping capabilities. The enthusiastic efforts of the Bridgetown Environment Society, in particular, Jenny Dewing and Clarke Ward, ensured that this project was completed successfully.

METHODS

The method of data collection for the roadside survey in Bridgetown-Greenbushes differed from the standard RCC procedure, in that, it was carried out with a laptop computer rather than paper survey sheets. Despite this, the program used was based almost entirely on the RCC methods to assess and calculate the conservation value of the roadside reserves, as 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, see Appendix 2. This provides both a convenient and uniform method of scoring.

Calculating Conservation Values

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

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

Each of these 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. Due to the software program used by the Bridgetown Environment Society, conservation value scores differed slightly from the RCC's standard scores. The conservation values, in the form of conservation status categories, are represented by the colour codes shown in Table 3.

Conservation Value	Conservation Status	Colour Code
0	High	Dark Green
1	Medium High	Light Green
2	Medium Low	Dark Yellow
3	Low	Light Yellow

Table 3: Colour codes used to depict the conservation status of roadsides in the Shire of Bridgetown-Greenbushes.

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

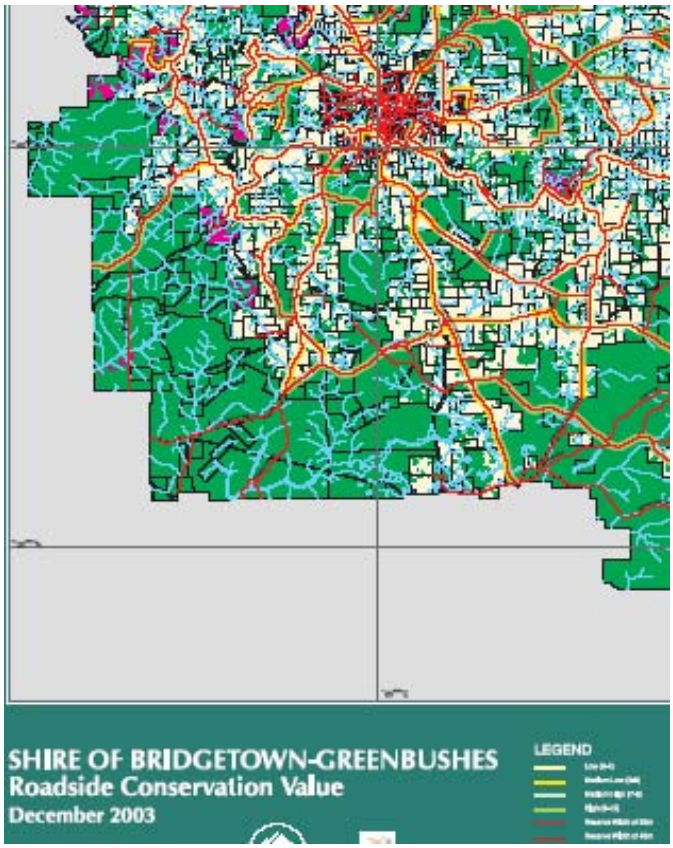
- width of road reserve;
- width of vegetated roadside;
- presence of utilities/disturbances;
- fauna observed; and
- general comments.

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

Mapping 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 Bridgetown-Greenbushes. 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. The data used to produce both the map and the following figures and tables are presented in Appendix 3.

Data obtained from the Department of CALM, Main Roads WA and the Department of Agriculture WA was used in the RCV map, and depicts the location of remnant vegetation on both the Crown estate and privately owned land.



The RCV map depicts conservation values of roadside vegetation.

USING THE RCV MAP

The roadside conservation value map initially provides an inventory of the *status quo* 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 *per se*, as it enables the condition of roadside vegetation to be easily assessed. This information can then be used to identify environmentally sensitive areas, high conservation roadsides or strategically important areas, and thus ensure their conservation. Conversely, it enables degraded areas to be identified as areas important for strategic rehabilitation or in need of specific management techniques and weed control programs.

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

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

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

Weed control along a roadside.
Photo MRWA

SURVEY DATA RESULTS

A summary of the general roadside conditions in the Shire of Bridgetown-Greenbushes is 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, width of vegetated roadside 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 Information: Shire of Bridgetown-Greenbushes 2003

Length of roadsides surveyed: 1051.8 km

Conservation Status

	Total (km)	%
High	354.8	33.7
Medium-high	170.0	16.2
Medium-low	136.7	13.0
Low	390.3	37.1
Total	1051.8	100.0

Native Vegetation on Roadsides

	Total (km)	%
2-3 vegetation layers	546.8	52.0
1 vegetation layer	250.7	23.8
0 vegetation layers	254.3	24.2
Total	1051.8	100.0

Width of Vegetated Roadside

	Total (km)	%
1 to 5 m	660.7	62.8
5 to 20 m	38.6	3.7
over 20 m	352.4	33.5
Total	1051.8	100.0

Extent of Native Vegetation

	Total (km)	%
Over 80%	329.6	31.3
20% to 80%	363.1	34.5
Less than 20%	359.2	34.1
Total	1051.8	100.0

Weed Infestation

	Total (km)	%
Light	322.59	30.7
Medium	375.68	35.7
Heavy	353.53	33.6
Total	1051.8	100.0

Number of Different Native Species

	Total (km)	%
Over 20	349.2	33.2
6 to 19	215.8	20.5
0 to 5	486.8	46.3
Total	1051.8	100.0

Adjoining Land use

	Total (km)	%
Completely Cleare	515.7	49.0
Scattered	50.6	4.8
Uncleared	335.7	31.9
Plantation	107.7	10.2
Urban/Industrial	33.2	3.2
Railway	8.8	0.8
Drain	0.0	0.0
Other	0.0	0.0
Total	1051.8	100.0

Value as a Biological Corridor

	Total (km)	%
High	515.37	49.0
Medium	26.93	2.6
Low	509.5	48.4
Total	1051.8	100.0

Data was collected in Bridgetown-Greenbushes Shire throughout 2002-2003

Table 4: Summary of the roadside conditions in the Shire of Bridgetown-Greenbushes.

The width of vegetated roadside data provided an insight into the width of vegetation occurring along roadsides in the Shire of Bridgetown-Greenbushes. Roadside sections with more than 20m of native vegetation spanned 33.5% (352.4km) of the roads surveyed. 3.7% (38.6 km) supported native vegetation between 5-20m in width, and 62.8% (660.7km) contained native vegetation within 1-5 m, (Table 4, Figure 3).

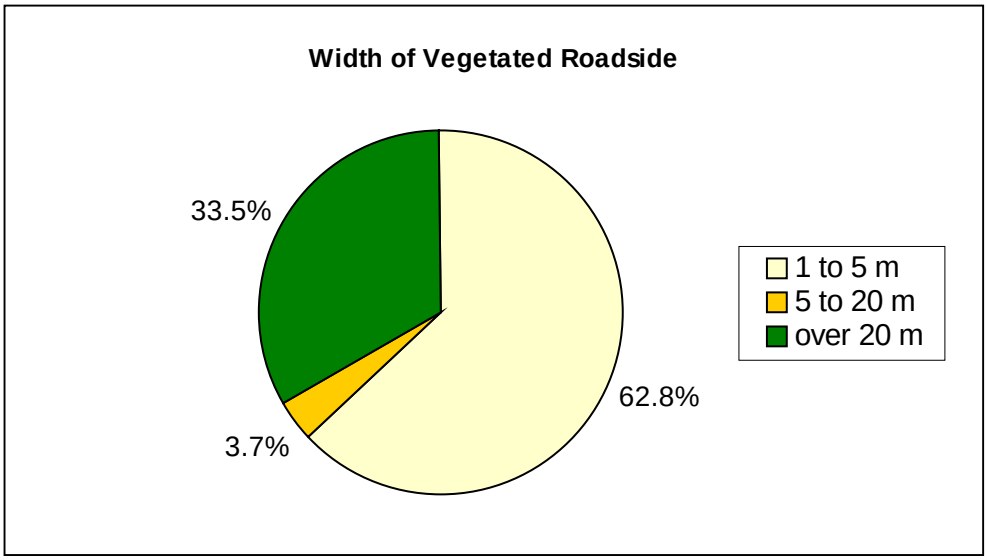


Figure 3– Width of vegetated roadside.

Roadside sections of high conservation value covered 33.7% (354.8 km) of the roadsides surveyed. Medium-high conservation value roadsides accounted for 16.2% (170.0 km) of the total surveyed, medium-low conservation roadside covered 13.0% (136.7 km) of the total surveyed. Areas of low conservation value occupied 37.1% of the roadsides surveyed (390.3 km), Table 4, Figure 4.

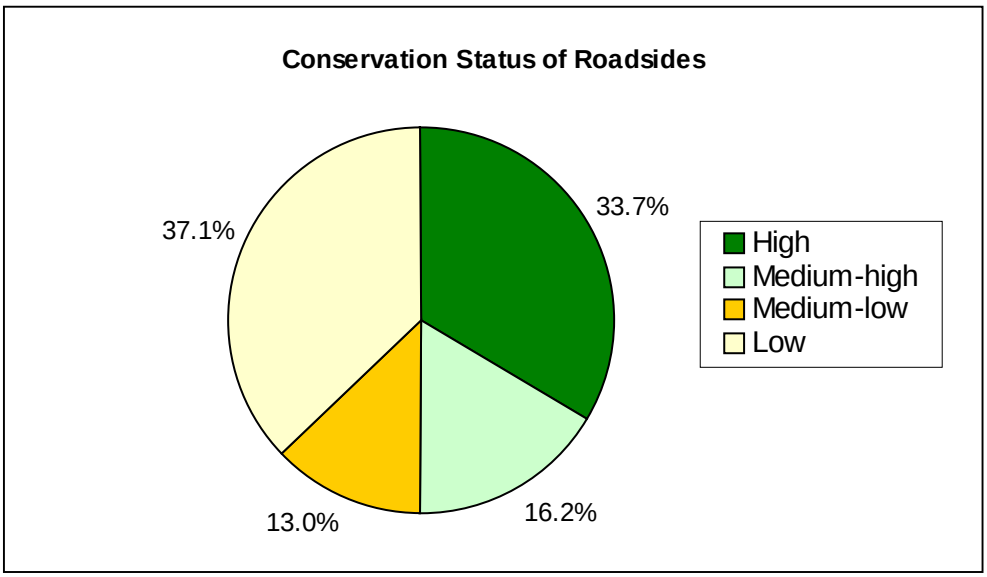


Figure 4 – Conservation status of roadsides in the Shire of Bridgetown-Greenbushes.

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 52.0% (546.8 km) of the roadside. 23.8% (250.7 km) had only one layer and 24.2% (254.3 km) had no layers of native vegetation, Table 4, Figure 5.

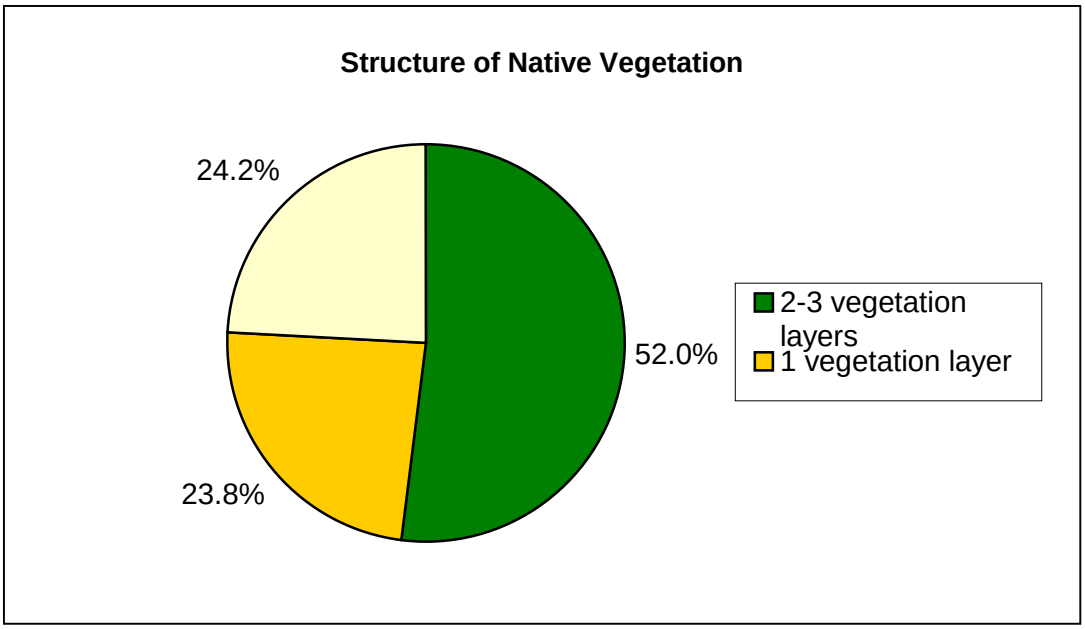


Figure 5- Native vegetation on roadsides.

Roadsides with extensive vegetation cover, i.e. greater than 80%, occurred along 31.3% (329.6 km) of the roadsides surveyed. Survey sections with 20% to 80% vegetation cover accounted for 34.5% (363.1 km) of the roadsides. The remaining 34.1% (359.2 km) had less than 20% native vegetation, and therefore, a low 'extent of native vegetation' value, see Table 4, Figure 6.

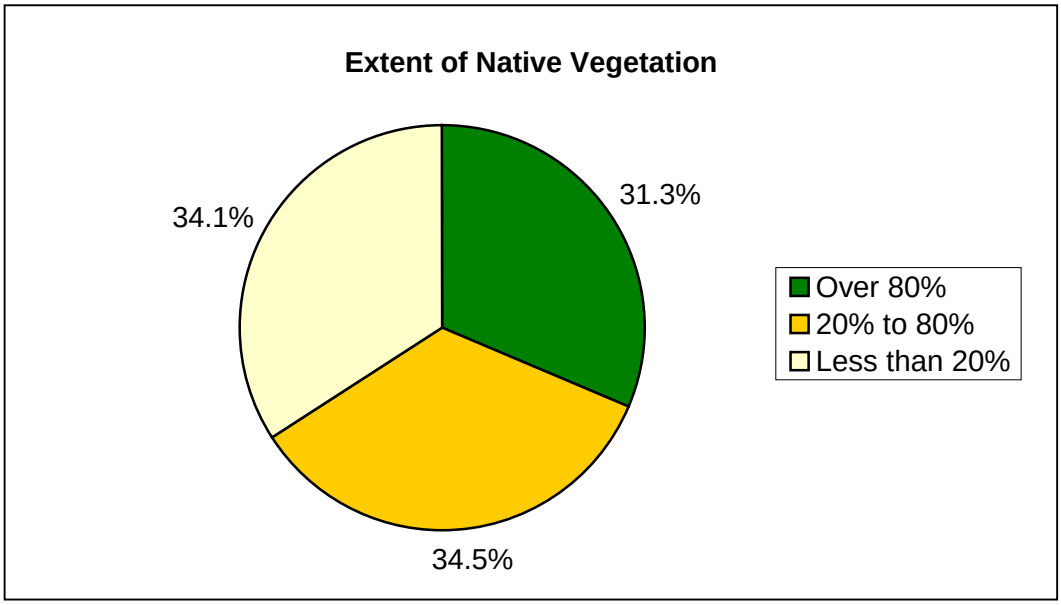


Figure 6 – Extent of native vegetation.

The ‘number of native species’ score provided a measure of the diversity of the roadside vegetation. Survey sections with more than 20 plant species spanned 349.2 km (33.2%) of the roadside. Roadside sections with 6 to 19 plant species accounted for 215.8 km (20.5%) of the roadside. The remaining 486.8 kms (46.3%) contained less than 5 plant species, see Table 4, Figure 7.

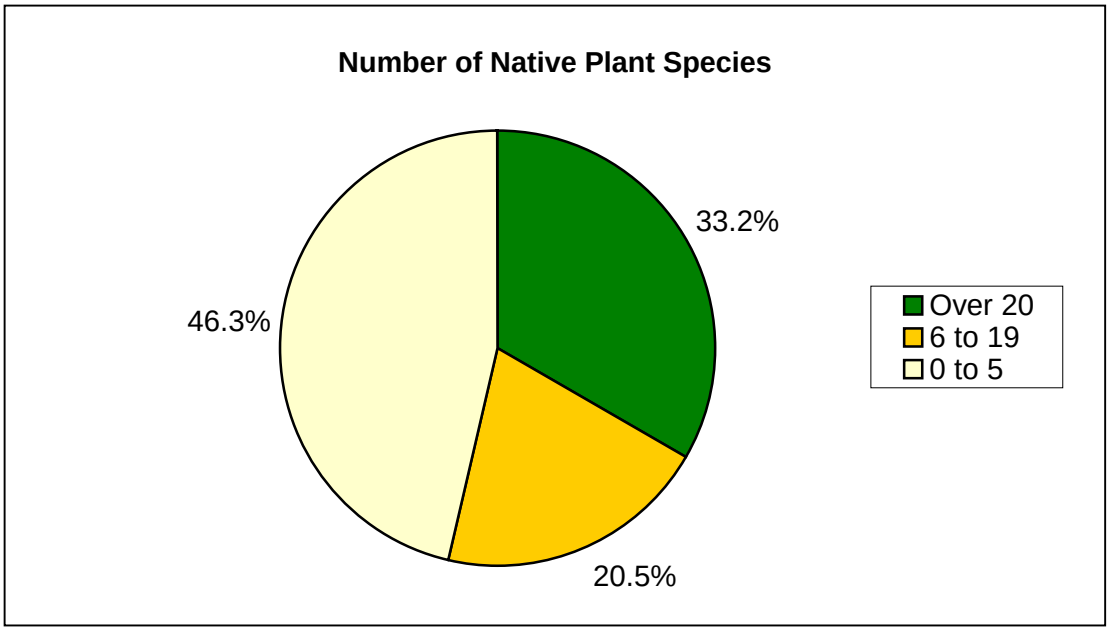


Figure 7 – Number of native species.

Roadsides determined to have high value as biological corridors (as determined by the roadside surveyors) were present along 49.0% (515.37 km) of the roadside, medium value made up 2.6% (26.93 km), and roadsides with low value as a biological corridor occurred along 48.4% (509.5 km) of the roadsides surveyed, see Table 4, Figure 8.

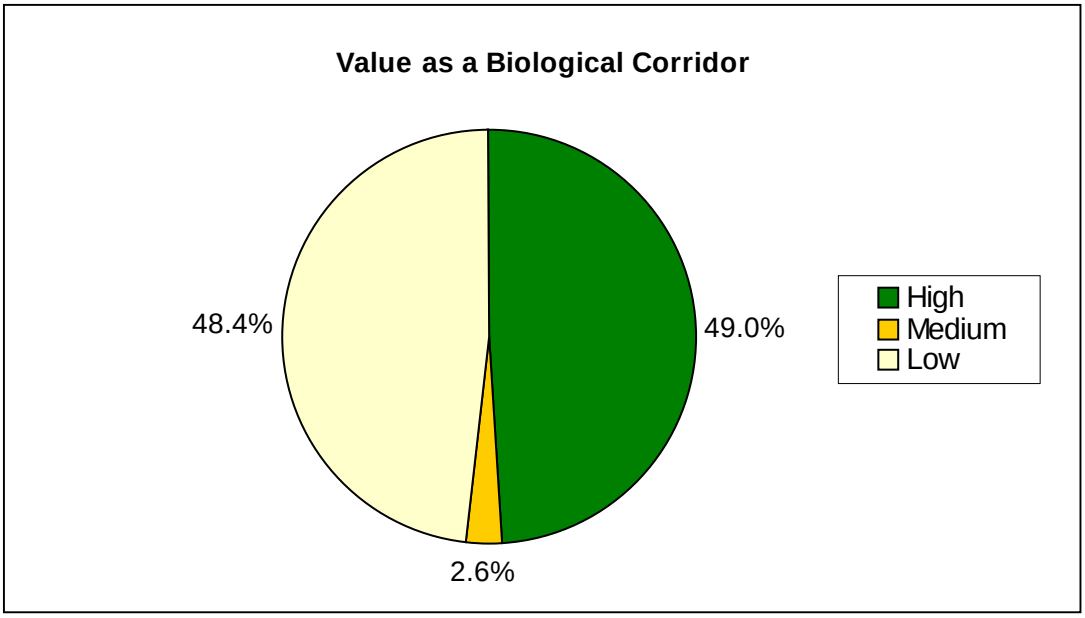


Figure 8 – Value as a biological corridor.

Light levels of weed infestation were observed on 30.7% (322.59 km) of the roadsides surveyed, medium level weed infestation occurred on 35.7% (375.68 km) of the roadsides and 33.6% (353.53 km) were heavily infested with weeds, see Table 4, Figure 9.

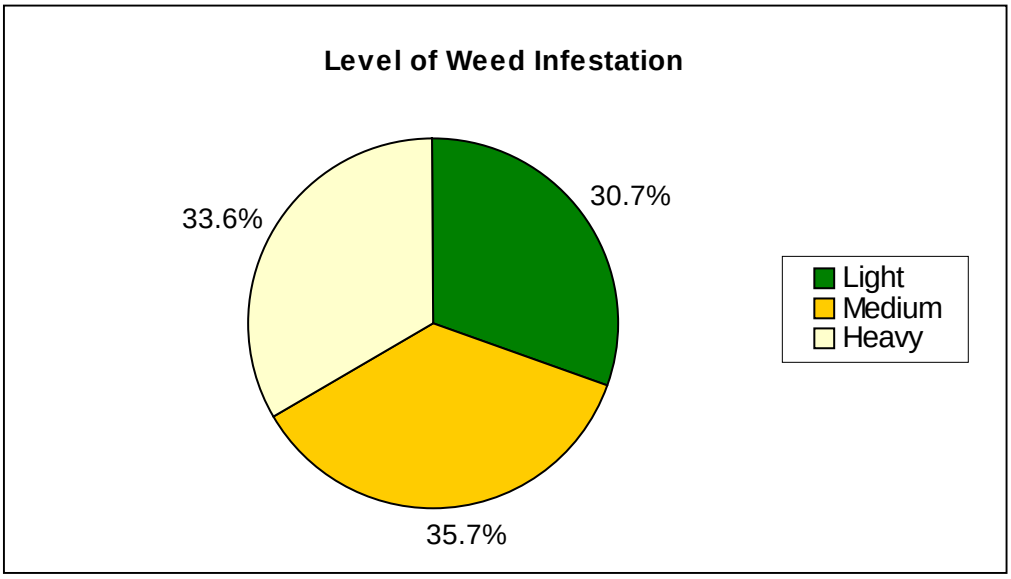


Figure 9 – Weed infestation. Light weed infestation = weeds less than 20% of total plants. Medium weed infestation = weeds 20 to 80% of the total plants. Heavy infestation = weeds more than 80% of the total plants.

Of the roadsides surveyed, 49% adjoined agricultural land that was completely cleared. A scattered distribution of native vegetation was present on 4.8% of the land adjoining roadsides, whilst 31.9% of roadsides surveyed were adjoined by land that had not been cleared. Plantations adjoined 10.2% of roadsides, urban/industrial land uses adjoined 3.2%, and railway reserves adjoined 0.8% of the roadsides surveyed, Table 4, Figure 10.

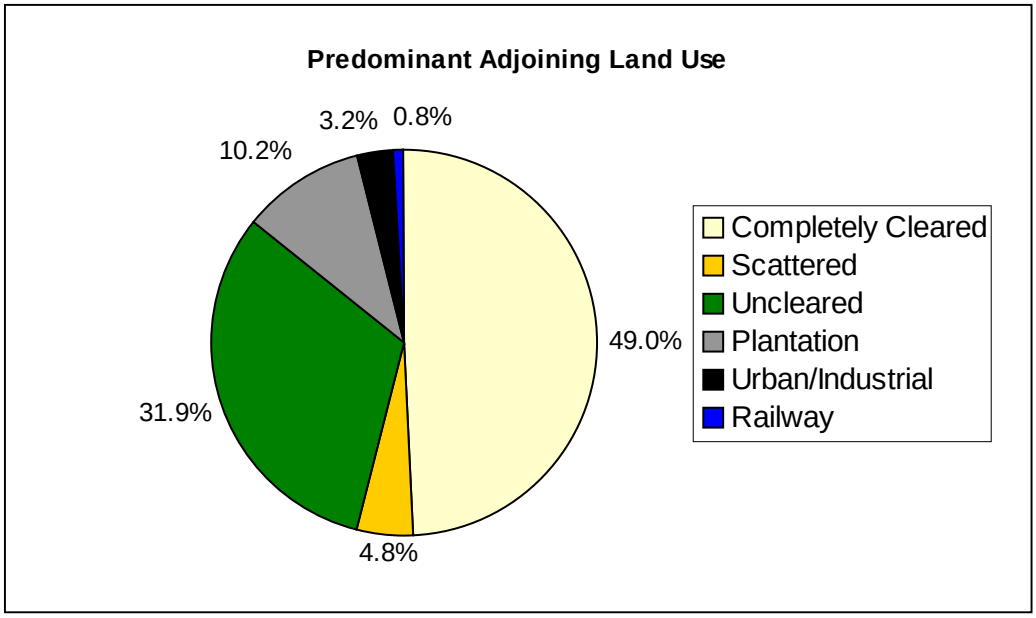


Figure 10 – Predominant adjoining land use.

The following nominated weeds are depicted on clear overlays accompanying the 2003 RCV map:

- Blackberry (*Rubus ulmifolius),*
- Bridal creeper (*Asparagus asparagoides*),
- Broom Bush (*Genista* spp),
- Weed Wattles (*Acacia spp*),
- Watsonia (*Watsonia marginata*), and
- Victorian tea tree (*Leptospermum laevigatum*).

Of the 6 nominated weeds surveyed throughout 2002-2003, Bridal Creeper was present along 267.5 kms of the roadsides surveyed, whilst weed Wattles were recorded along 165.8 kms of roadside. Watsonia was the next most commonly recorded weed, occurring along 100.8 kms, Blackberry was present along 74.6 kms, Broome Bush 54 kms and Victorian Tea tree 25.2kms, see Figure 11.

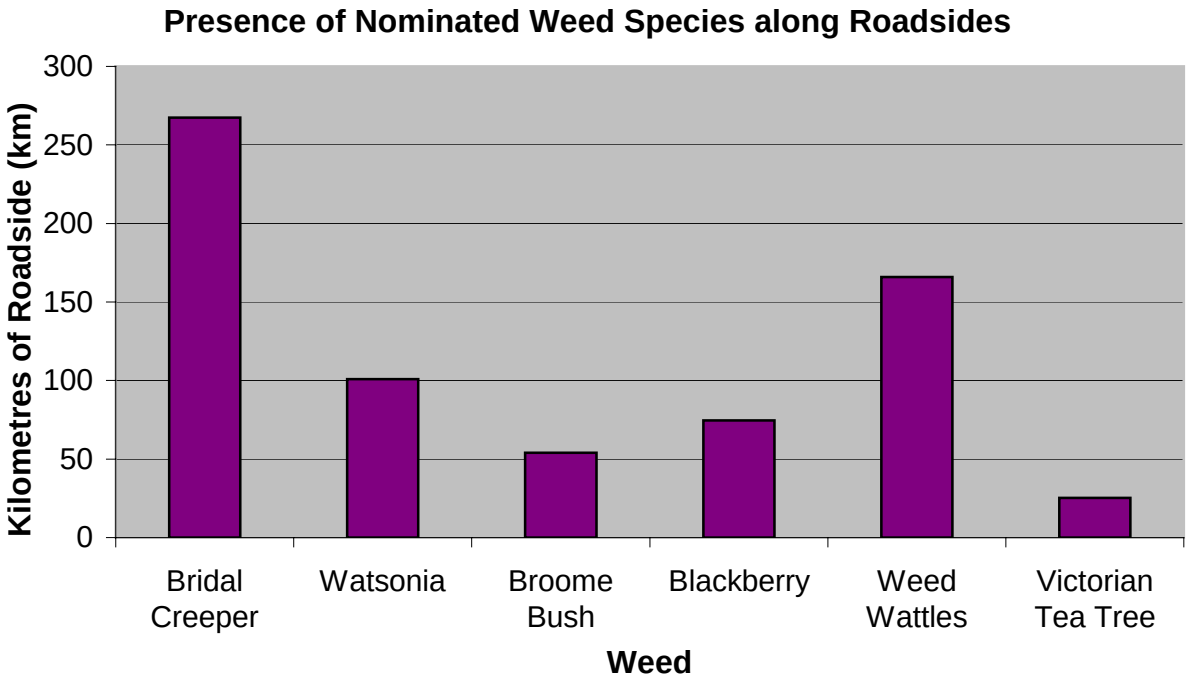


Figure 11 – Occurrence of nominated weeds along roadsides in the Shire of Bridgetown-Greenbushes.

Note- As roadsides occur on both sides of the road, roadside distances (km) of weed infestation are equal to *twice* the actual distance of road travelled.

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*, see Appendix 10.

Although presently there are no Flora Roads designated within the Shire of Bridgetown-Greenbushes, the roadside survey and the roadside conservation value (RCV) map highlighted a number of roadsides determined as having high conservation value. These, and other roads may be investigated further to see if they warrant a declaration as a Flora Road.

Roads, or sections of roadsides, determined as having high conservation value in the Shire of Bridgetown-Greenbushes include:

- Break O Day Rd
- Bridgetown Nannup Rd
- Catterick Rd
- Dalmore Rd
- Daronch Rd
- Donelly Mill Rd
- Elwin Rd
- Forest Park Rd
- Greenbushes Boyup Brook Rd
- Hay Rd
- Hester Cascades Rd
- Hester Rd
- Kendall Rd
- Kloppers Mill Rd
- McCorkindale Rd
- Polina Rd
- Rifle Range Rd
- Seaton Ross Rd
- Spring Gully Rd
- Tinkers Flat Rd
- Wilga Rd
- Winnejup Rd

Flora Roads are often high conservation value roadsides, and may also link major tourist routes.
Photo D. Lamont.

PAST ROADSIDE SURVEYS

With assistance from the Roadside Conservation Committee (RCC), the majority of the Shire of Bridgetown-Greenbushes' roadsides were surveyed throughout 1989-1991 and again in 2000-2002. A comparison between the conservation status categories of roadsides in both surveys in the Shire of Bridgetown-Greenbushes is presented in Figure 11 and Table 5.

The first roadside survey in the Shire of Bridgetown-Greenbushes, carried out between 1989-1991, resulted in 1084.5km of roadsides being surveyed. The roadside survey data was processed and mapped by the RCC and Main Roads WA in 1994. The second roadside survey, conducted between 2000-2002, resulted in 1051.8 km of roadsides being surveyed, and was mapped by the RCC in 2003.

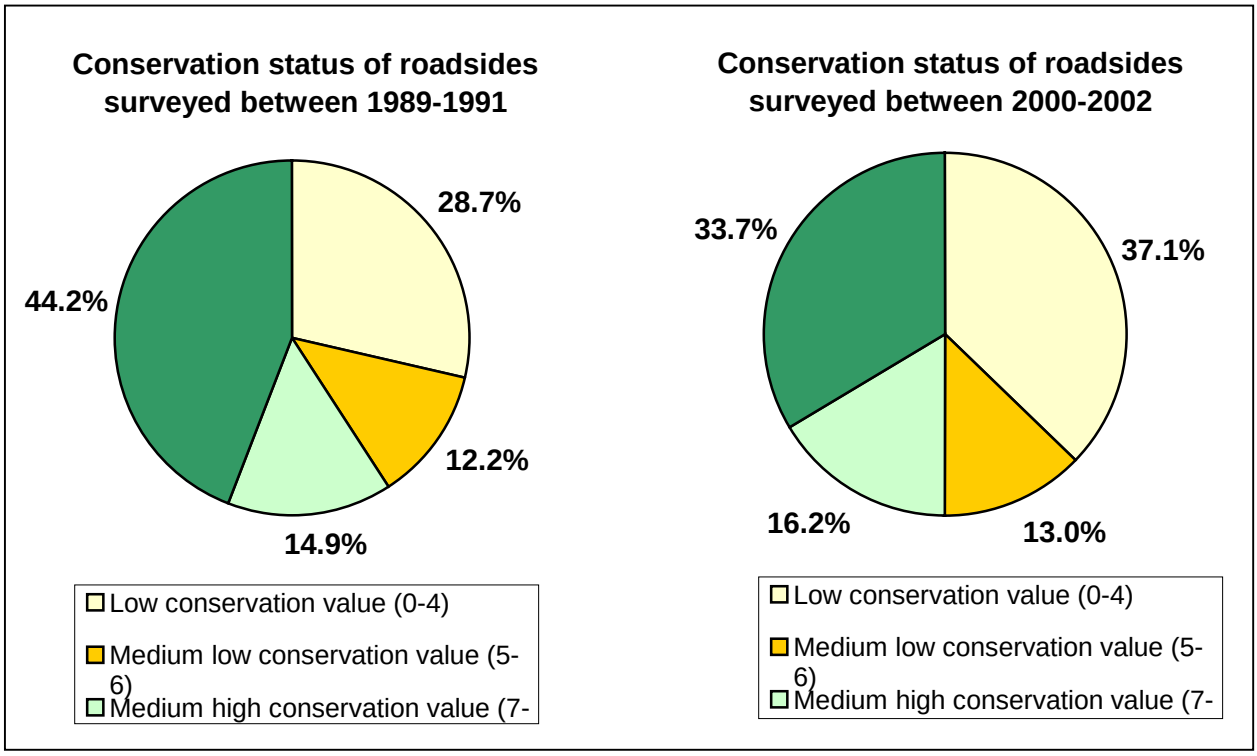


Figure 12- Comparison between the conservation status categories of roadsides surveyed in the Shire of Bridgetown-Greenbushes between 1989-1991 and 2000-2002.

Figure 12 shows that, over time, there was a 10.3% decline in high conservation value roadsides and an 8.1% increase in low conservation value roadsides. The number of roadsides with conservation values of medium-high and medium-low also increased over time, by 1.2% and 1% respectively.

Conservation Status	First survey 1989-1991	Second survey 2002-2003	Increase or Decrease	Difference (km)
	Total (km)	Total (km)		
Low conservation value (0-4)	311.0	390.3	Increase	+79.3 km
Medium low conservation value (5-6)	132.9	136.7	Increase	+3.8 km
Medium high conservation value (7-8)	161.5	170.0	Increase	+8.5 km
High conservation value (9-12)	480.0	354.8	Decrease	-125.2 km
Total	1085.4	1051.8		

Table 5- Roadside conservation status categories in the Shire of Bridgetown-Greenbushes between the first (1989-1991) and second (2000-2002) roadside surveys.

Table 5 outlines the change in roadside conservation value scores in the Shire of Bridgetown-Greenbushes between the first (1989-1991) and second (2000-2002) roadside survey. Over time, there was a decline in high conservation value roadsides of 125.2 km and an increase in low conservation values roadsides was also obvious, rising by 79.3 km. The number of roadsides with conservation values of medium-high and medium-low also increased over time, by 8.5 km and 3.8 km respectively.

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 and should be adopted. The following section provides management recommendations that will assist in retaining and enhancing roadside conservation value. These guidelines are taken from the Roadside Conservation Committee's *Roadside Manual* and the *Roadside Handbook*.

The Executive Officer of the Roadside Conservation Committee is also available to assist on all roadside conservation matters, and can be contacted on (08) 9334 0423.

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

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

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

Minimal disturbance can be achieved by:

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

Planning

The RCC can 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.

The objective of all roadside management planning should be to:

- **Protect**
- native vegetation
- rare or threatened flora or fauna
- cultural and heritage values
- community assets from fire

- **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

Strategies

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

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

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

- **Functional:**
  - fire prevention;
  - installation and maintenance of services;
  - road construction and maintenance;
  - stockpile and dumpsite management;
  - vegetation removal;
  - vehicle and machinery activity;
  - water supply catchments.
- **Cultural and Recreational:**
  - cultural and heritage values;
  - horse riding;
  - visual amenity and landscape values;
  - wayside stops.
- **Landcare:**
  - apiculture;
  - insect pests;
  - pest animals;
  - ploughing, cultivating or grading;
  - revegetation and site rehabilitation;
  - weeds.
- **Conservation:**
  - protecting and conserving remnant native vegetation;
  - rare, threatened or significant flora and fauna;
  - regeneration of native plant communities;
  - roadside marking of special environmental areas;
  - unused road reserves;
  - wetlands;
  - wildlife habitat;
  - wildlife corridors.

CASE STUDY: BiG.liNCS, Bridgetown–Greenbushes Nature Conservation Strategy.

Information provided by Jenny Dewing, Bridgetown Environment Society.

The Bridgetown–Greenbushes Nature Conservation Strategy (BiG.liNCS), managed by the Blackwood Environment Society (BES), commenced in 1999 with Natural Heritage Trust funding and support from the Shire of Bridgetown–Greenbushes and the Department of Agriculture WA (DAWA). The objectives of Big.liNCS are to:

- link fragmented landscapes;
- link landholders, community groups and government agencies; and
- link professional and community science.

The Shire of Bridgetown-Greenbushes is a highly fragmented landscape mosaic of human and remnant natural systems. The natural elements of this mosaic, as shown in Figure 12, comprises:

large areas of forest to the south, west and north, comprising approximately 75% of the total native vegetation cover in the Shire,

small forest blocks and reserves to the east, nestled inside the larger forest areas, containing another 18% of the total vegetation cover,

approximately 1,500 privately owned bush remnants scattered between these other vegetation elements, accounting for the remaining 7% of vegetation cover. The majority are less than 20 hectares, and many are modified by frequent fire and/or grazing, and

the Blackwood River, which divides the Shire in two from east to west.

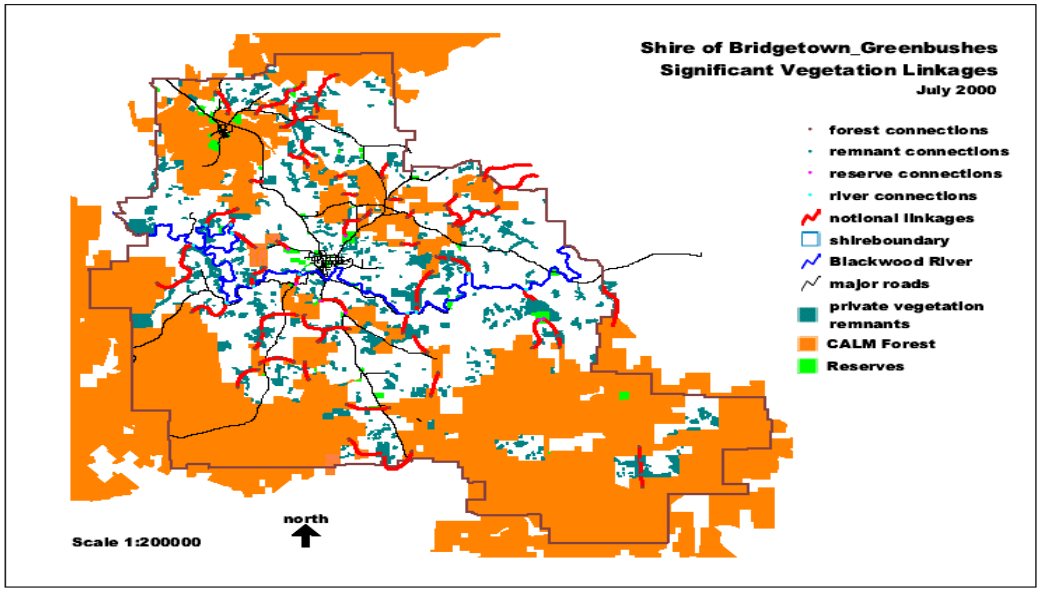


Figure 13 – Significant vegetation linkages. Brown=shire boundary, Orange=public forest, Light green= reserves, Dark green=private remnants. Blue=Blackwood River).

A computer based Geographic Information System (GIS) was created by the Bridgetown Environment Centre to capture and collate spatial data into formats useful to the project. The Department of Land Information (DOLI), Agriculture WA and the Blackwood Basin Group obtained a variety of spatial data, including:

- property boundaries and associated landholder details,
- soil types,
- contours,
- location of forests and reserves,
- private vegetation remnants,
- rivers and streams,
- local roads, and
- aerial and satellite photography.

Once the landscape mosaic maps were available, important habitat elements and the location of potential linkages were identified. The BES worked with Western Australian ecologists to develop a criteria based on sound ecological principles, allowing the identification of important linkage locations. These outlined that:

- vegetation remnants greater than 40 ha and the Blackwood river were all potentially important remnant habitats;
- vegetation linkages should be established between all of these important remnant habitats;

at least two linkages should connect each remnant habitat, ideally at opposing ends to avoid 'dead ends' in the network; and

- existing natural features such as watercourses, ridges and smaller vegetation remnants should be incorporated into linkages.

Applying these criteria to the shire landscape mosaic maps enabled the project team to identify 'ideal' locations for potential linkages. The network of linkages identified by this process became known as the *BiG.liNCS Notional Linkage Plan*, and identified 49 interconnected linkages, located principally within 7 groups.

The Notational Linkages map was incorporated into the Shire of Bridgetown-Greenbushes *Draft Rural Planning Strategy* in 2001. A number of roadside vegetation corridors were identified as important linkages in the *BiG.liNCS Notional Linkage Plan*. The RCC roadside conservation value survey to identify high conservation value roadsides, may become important elements in landscape conservation at a shire wide scale.

For further information refer to:

- Dewing, J & Singe, D *Linking Bush Remnants*, in Western Wildlife Volume 4 Issue 3, 2001, and
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Appendix

1

Definitions of Remnant Vegetation Types

(Source- Beeston et al, 1993).

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

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

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

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

Modified remnant vegetation

Photo by K. Jackson

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

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

Scattered remnant vegetation

Photo by D. Lamont

Appendix

2

Standard Survey Sheet

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	☐	☐

Appendix

3

Raw data used to calculate roadside conservation values and dominant weeds

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
2030001	1	0.90	Winnejup Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	WATSONIA WEED_WATTLES
2030001	2	0.50	Winnejup Rd	2	2	1	2	1	2	1	2	2	2	2	0	0	0	
2030001	3	0.40	Winnejup Rd	0	2	0	1	0	1	1	2	0	3	1	0	3	1	BROOM_BUSH
2030001	4	0.45	Winnejup Rd	0	2	0	1	0	1	0	1	0	3	2	0	3	2	BRIDAL_CREEPER
2030001	5	1.20	Winnejup Rd	2	2	1	1	1	1	1	1	2	3	2	0	0	1	BROOM_BUSH
2030001	6	1.10	Winnejup Rd	1	2	0	1	1	1	0	0	0	3	2	1	3	1	
2030001	7	0.55	Winnejup Rd	1	2	0	1	1	2	1	1	2	3	1	2	2	0	WATSONIA WEED_WATTLES
2030001	8	1.05	Winnejup Rd	2	2	1	1	1	2	1	1	2	3	2	2	1	0	
2030001	9	0.65	Winnejup Rd	2	2	2	2	2	2	2	2	3	3	0	0	0	0	
2030001	10	0.10	Winnejup Rd	2	1	2	0	2	0	2	1	3	0	0	2	0	3	
2030001	11	0.40	Winnejup Rd	2	2	1	1	2	2	1	1	3	3	0	0	0	0	WATSONIA BROOM_BUSH WEED_WATTLES
2030001	12	2.50	Winnejup Rd	2	2	1	1	2	2	1	1	2	3	2	2	0	0	BROOM_BUSH
2030001	13	2.20	Winnejup Rd	2	2	1	1	1	1	1	1	2	3	2	2	1	1	BRIDAL_CREEPER WATSONIA
2030001	14	0.60	Winnejup Rd	2	1	1	0	1	0	1	0	2	0	1	2	1	3	BRIDAL_CREEPER BROOM_BUSH
2030001	15	2.20	Winnejup Rd	1	1	0	0	0	0	0	0	3	0	2	2	3	3	WEED_WATTLES
2030001	16	0.65	Winnejup Rd	2	2	2	2	1	1	1	1	2	2	0	0	0	0	
2030001	17	1.55	Winnejup Rd	2	1	2	0	1	0	1	0	3	0	0	2	1	3	BRIDAL_CREEPER WATSONIA WEED_WATTLES
2030001	18	2.50	Winnejup Rd	1	1	0	0	0	0	0	1	0	0	2	2	3	3	BRIDAL_CREEPER
2030002	1	1.20	Hester Rd	1	2	1	1	1	1	1	1	0	0	1	2	2	1	BRIDAL_CREEPER WATSONIA
2030002	2	2.60	Hester Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	WATSONIA
2030002	3	0.30	Hester Rd	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
2030002	4	0.70	Hester Rd	1	1	0	1	0	0	0	1	0	0	0	0	3	3	WEED_WATTLES
2030002	5	0.80	Hester Rd	2	1	2	1	2	1	1	1	2	0	0	2	0	2	WATSONIA
2030002	6	0.90	Hester Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030002	7	0.75	Hester Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030003	1	1.60	Tweed Rd	1	1	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER
2030003	2	0.80	Tweed Rd	1	0	1	0	1	0	1	0	2	0	0	2	2	3	
2030003	3	2.61	Tweed Rd	0	0	0	0	0	0	1	1	0	0	2	2	3	3	
2030003	4	2.10	Tweed Rd	1	1	0	0	0	0	1	1	0	0	2	1	3	3	
2030003	5	1.00	Tweed Rd	2	2	1	1	1	1	1	1	3	3	0	2	1	0	BRIDAL_CREEPER BLACKBERRY WEED_WATTLES

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
2030003	6	1.90	Tweed Rd	1	0	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER BLACKBERRY WEED_WATTLES
2030003	7	2.25	Tweed Rd	1	0	0	0	0	0	0	0	0	0	2	2	3	3	WEED_WATTLES
2030003	8	1.45	Tweed Rd	2	1	1	1	1	0	1	1	2	0	0	2	1	2	BRIDAL_CREEPER BROOM_BUSH
2030003	9	6.80	Tweed Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER
2030003	10	1.15	Tweed Rd	1	2	0	1	0	2	1	1	0	2	2	0	3	1	BRIDAL_CREEPER
2030003	11	2.60	Tweed Rd	0	0	2	0	0	0	0	0	0	0	2	2	3	3	
2030003	12	0.35	Tweed Rd	2	2	2	2	1	1	1	1	0	0	0	0	1	1	BRIDAL_CREEPER
2030004	1	1.90	Kingston Rd	0	2	0	1	0	1	0	0	0	0	2	2	3	2	WEED_WATTLES
2030004	2	1.00	Kingston Rd	0	2	0	1	0	1	0	0	0	2	2	1	3	2	
2030004	3	1.40	Kingston Rd	0	0	0	0	0	0	0	0	0	0	1	2	3	3	
2030004	4	0.90	Kingston Rd	2	2	1	1	1	1	0	0	0	0	1	2	2	2	
2030005	1	0.90	Kingston Rd	2	2	1	1	1	1	0	0	0	0	1	2	2	2	
2030005	2	1.20	Kingston Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030005	3	3.20	Kingston Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	
2030005	4	16.45	Kingston Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030005	5	1.95	Kingston Rd	0	0	0	0	0	0	0	0	0	0	1	1	3	3	
2030005	6	0.70	Kingston Rd	2	0	2	0	2	0	2	0	2	0	0	1	0	3	
2030005	7	2.60	Kingston Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030006	1	2.00	Mockerdillup Rd	2	2	2	2	2	2	2	2	2	3	0	0	0	0	WEED_WATTLES VICTORIAN_TEA_TREE
2030006	2	0.60	Mockerdillup Rd	2	2	2	1	2	1	2	1	3	2	0	2	0	1	
2030006	3	0.90	Mockerdillup Rd	0	0	2	0	1	1	1	1	3	0	2	2	1	3	BROOM_BUSH WEED_WATTLES VICTORIAN_TEA_TREE
2030006	4	1.60	Mockerdillup Rd	2	1	1	1	1	0	1	1	3	0	2	2	1	2	WEED_WATTLES
2030006	5	1.50	Mockerdillup Rd	0	2	0	1	0	1	0	1	0	3	2	2	3	1	WEED_WATTLES
2030006	6	1.30	Mockerdillup Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	WATSONIA
2030006	7	0.40	Mockerdillup Rd	0	2	0	2	0	2	1	2	0	2	0	0	3	0	
2030006	8	0.80	Mockerdillup Rd	0	2	0	2	0	2	1	2	0	2	2	0	3	0	
2030006	9	1.30	Mockerdillup Rd	1	1	1	1	0	0	1	1	0	0	1	1	3	3	
2030006	10	2.65	Mockerdillup Rd	1	0	1	0	0	0	1	0	2	0	1	2	2	3	WEED_WATTLES
2030007	1	1.90	Jayes Rd	1	1	1	1	1	1	1	1	0	0	2	2	2	2	
2030007	2	0.80	Jayes Rd	2	2	1	2	1	2	1	2	0	2	2	0	1	0	
2030007	3	1.10	Jayes Rd	2	2	1	2	0	2	0	2	0	2	2	0	2	0	BRIDAL_CREEPER BROOM_BUSH

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
2030007	4	0.20	Jayes Rd	1	1	1	1	0	0	0	0	0	1	2	2	2	2	BRIDAL_CREEPER
2030007	5	0.80	Jayes Rd	1	2	1	2	0	2	0	2	0	2	2	0	3	0	BRIDAL_CREEPER
2030007	6	0.40	Jayes Rd	2	2	1	2	1	2	1	2	0	2	2	0	1	0	
2030007	7	1.30	Jayes Rd	2	2	1	1	1	1	1	1	0	0	2	2	1	1	BRIDAL_CREEPER
2030007	8	0.97	Jayes Rd	1	1	1	1	0	0	0	1	0	0	2	2	3	2	
2030008	1	1.00	Peninsula rd	0	0	0	0	0	0	0	0	0	0	0	0	3	3	WATSONIA WEED_WATTLES
2030008	2	0.60	Peninsula rd	0	1	0	1	0	0	0	0	0	0	0	2	3	3	BRIDAL_CREEPER WATSONIA
2030008	3	1.40	Peninsula rd	2	2	1	1	1	1	1	1	2	3	0	1	1	1	BRIDAL_CREEPER WATSONIA
2030008	4	0.50	Peninsula rd	0	2	0	1	0	1	0	1	0	3	1	1	3	1	WATSONIA
2030008	5	1.20	Peninsula rd	2	2	2	2	2	2	2	2	2	3	0	0	0	0	
2030008	6	1.60	Peninsula rd	1	1	1	1	0	0	0	0	3	3	1	1	3	3	
2030008	7	1.00	Peninsula rd	1	0	1	0	0	0	0	0	0	0	2	2	3	3	
2030008	8	0.40	Peninsula rd	1	1	0	0	0	0	0	0	3	3	2	2	3	3	
2030009	10	1.09	Glentulloch Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	
2030009	9	0.80	Glentulloch Rd	2	2	2	2	1	1	2	2	2	2	2	2	0	0	WATSONIA
2030009	8	1.00	Glentulloch Rd	2	2	1	1	1	1	1	1	1	1	2	2	1	1	BRIDAL_CREEPER
2030009	7	1.05	Glentulloch Rd	2	2	1	1	1	1	1	1	1	1	2	2	1	1	BRIDAL_CREEPER WATSONIA
2030009	6	1.35	Glentulloch Rd	1	1	0	0	0	0	0	0	1	1	2	2	3	3	BRIDAL_CREEPER
2030009	5	0.90	Glentulloch Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030009	4	2.00	Glentulloch Rd	0	0	0	0	0	0	0	0	2	0	0		3	3	
2030009	3	0.45	Glentulloch Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	WEED_WATTLES
2030009	2	0.60	Glentulloch Rd	1	1	1	1	0	0	1	1	1	1	2	2	2	1	BRIDAL_CREEPER WEED_WATTLES
2030009	1	0.85	Glentulloch Rd	1	2	1	0	0	2	1	2	0	2	2	0	2	0	BRIDAL_CREEPER WATSONIA
2030010	1	1.10	Maranup Ford Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER
2030010	2	1.20	Maranup Ford Rd	2	2	1	1	0	0	1	1	2	2	2	2	1	1	
2030010	3	1.30	Maranup Ford Rd	2	2	1	1	0	0	1	1	0	2	2	2	2	1	BRIDAL_CREEPER
2030010	4	1.60	Maranup Ford Rd	1	1	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER
2030010	5	1.10	Maranup Ford Rd	1	1	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER
2030010	6	1.90	Maranup Ford Rd	0	0	0	0	0	0	0	0	0	0	1	2	3	3	BRIDAL_CREEPER WEED_WATTLES
2030010	7	1.00	Maranup Ford Rd	2	2	1	1	0	0	1	1	3	3	2	2	1	1	
2030010	8	1.40	Maranup Ford Rd	1	1	1	1	1	1	1	1	0	0	1	1	2	2	WEED_WATTLES
2030010	9	0.80	Maranup Ford Rd	2	1	2	1	2	1	2	1	2	0	0	2	0	2	

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
2030010	10	2.70	Maranup Ford Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030010	11	1.70	Maranup Ford Rd	1	1	1	1	0	0	0	0	1	1	0	0	3	3	
2030010	12	0.80	Maranup Ford Rd	1	1	1	1	1	1	1	1	1	1	0	0	2	2	
2030010	13	0.90	Maranup Ford Rd	2	2	1	1	1	0	1	1	2	2	0	0	1	2	
2030011	1	2.50	Seaton Ross Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030011	2	2.30	Seaton Ross Rd	2	0	2	0	2	0	2	0	2	0	0	1	0	3	
2030011	3	6.40	Seaton Ross Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030011	4	0.90	Seaton Ross Rd	0	1	0	0	0	0	0	0	0	0	1	1	3	3	
2030011	5	1.45	Seaton Ross Rd	0	0	0	0	0	0	0	0	0	0	1	1	3	3	
2030011	6	1.70	Seaton Ross Rd	2	2	1	1	1	1	1	1	2	2	2	1	0	1	WATSONIA BROOM_BUSH
2030011	7	6.90	Seaton Ross Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	WATSONIA
2030011	8	4.00	Seaton Ross Rd	0	0	0	0	0	0	2	2	0	0	2	2	0	0	
2030011	9	0.25	Seaton Ross Rd	0	0	0	0	0	0	2	2	0	0	2	2	0	0	
2030012	1	3.10	Westbourne Rd	1	1	0	0	0	1	1	1	0	0	2	2	3	2	BRIDAL_CREEPER WATSONIA
2030012	2	0.76	Westbourne Rd	2	2	2	1	2	2	1	2	2	2	2	2	0	0	
2030013	1	1.72	Carbanup Brook Rd	0	1	0	1	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER WATSONIA BLACKBERRY
2030013	2	5.87	Carbanup Brook Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER WATSONIA BLACKBERRY WEED_WATTLES
2030014	1	0.35	Donelly Mill Rd	1	1	0	0	0	0	0	0	0	0	0	0	3	3	WATSONIA BROOM_BUSH VICTORIAN_TEA_TREE
2030014	2	0.75	Donelly Mill Rd	2	2	1	1	1	1	1	1	2	2	0	2	2	1	WATSONIA BROOM_BUSH
2030014	3	0.60	Donelly Mill Rd	2	2	1	1	2	2	2	2	2	2	0	2	0	0	
2030014	4	1.00	Donelly Mill Rd	0	2	0	2	0	2	0	2	0	2	1	2	3	0	WATSONIA
2030014	5	0.75	Donelly Mill Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030014	6	0.55	Donelly Mill Rd	2	2	1	1	1	1	1	1	2	2	1	1	1	1	BRIDAL_CREEPER WATSONIA
2030014	7	2.05	Donelly Mill Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030014	8	1.10	Donelly Mill Rd	2	2	2	1	2	1	2	1	2	2	0	1	0	1	
2030014	9	0.30	Donelly Mill Rd	2	1	2	1	2	0	2	1	2	0	0	1	0	3	
2030014	10	0.85	Donelly Mill Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030014	11	0.60	Donelly Mill Rd	2	2	1	1	1	1	1	1	2	2	1	1	1	1	
2030014	12	1.00	Donelly Mill Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030015	1	1.25	Dalmore Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	WEED_WATTLES
2030015	2	1.30	Dalmore Rd	2	2	1	1	2	2	1	1	2	2	2	2	0	0	

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
2030015	3	0.50	Dalmore Rd	2	2	1	1	1	1	1	1	2	2	2	2	1	1	BROOM_BUSH
2030015	4	1.30	Dalmore Rd	1	1	1	1	1	1	1	1	3	3	2	2	1	1	
2030015	5	0.75	Dalmore Rd	1	1	1	1	1	1	1	1	0	0	2	2	2	2	BROOM_BUSH
2030015	6	0.35	Dalmore Rd	2	2	1	1	1	1	1	1	0	0	2	2	1	1	BRIDAL_CREEPER
2030015	7	0.40	Dalmore Rd	0	0	0	0	0	0	0	0	0	0	2	1	3	3	
2030015	8	1.40	Dalmore Rd	1	1	1	1	1	1	1	1	3	3	2	1	1	2	
2030015	9	1.94	Dalmore Rd	0	0	0	0	0	0	0	0	0	0	1	1	3	3	
2030016	1	1.25	Flax Rd	1	0	1	0	0	0	1	0	2	0	1	2	2	3	
2030016	2	2.82	Flax Rd	0	0	0	0	0	0	0	0	0	0	1	2	3	3	
2030017	1	1.15	Falnash Rd	2	2	2	2	2	2	2	2	2	2	1	1	0	0	
2030017	2	0.65	Falnash Rd	2	2	2	2	2	2	2	2	2	2	0	1	0	0	
2030017	3	0.90	Falnash Rd	0	0	0	0	0	0	0	0	0	0	1	1	3	3	
2030017	4	1.34	Falnash Rd	0	0	0	0	0	0	0	0	0	0	2	1	3	3	BRIDAL_CREEPER
2030019	1	0.80	Blackwood Park Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER WEED_WATTLES
2030019	2	0.50	Blackwood Park Rd	1	1	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER WATSONIA BLACKBERRY
2030019	3	1.35	Blackwood Park Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER WATSONIA BLACKBERRY
2030020	1	0.80	Wheatley Giblett Rd	2	2	2	1	2	1	1	1	2	2	0	2	0	1	BROOM_BUSH
2030020	2	1.90	Wheatley Giblett Rd	1	2	1	1	1	1	1	1	0	3	2	2	2	1	
2030020	3	0.60	Wheatley Giblett Rd	1	1	0	0	0	0	0	0	0	0	2	2	3	3	
2030020	4	3.60	Wheatley Giblett Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	
2030020	5	0.70	Wheatley Giblett Rd	2	2	1	1	1	1	1	1	3	3	2	2	1	1	
2030021	1	0.75	Kangaroo Gully Rd	1	1	0	1	0	1	0	0	0	3	0	0	3	3	BRIDAL_CREEPER WATSONIA BLACKBERRY WEED_WATTLES
2030021	2	1.15	Kangaroo Gully Rd	0	1	0	1	0	1	0	1	0	3	2	0	3	2	BRIDAL_CREEPER WEED_WATTLES
2030021	3	0.35	Kangaroo Gully Rd	1	1	0	1	0	0	0	1	0	3	2	2	3	2	BRIDAL_CREEPER
2030021	4	1.40	Kangaroo Gully Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	
2030024	1	1.60	Wheatley Crowd Rd	1	2	1	1	0	1	1	1	0	0	1	1	2	1	
2030024	2	1.20	Wheatley Crowd Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030024	3	1.50	Wheatley Crowd Rd	1	1	1	1	0	0	1	1	0	0	2	1	2	3	
2030024	4	1.37	Wheatley Crowd Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	
2030028	1	1.90	Henderson Rd	1	1	1	1	0	0	1	1	3	3	2	0	2	3	BRIDAL_CREEPER

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
																		WEED_WATTLES
2030028	2	0.90	Henderson Rd	1	1	1	1	0	0	0	1	3	3	2	2	2	2	BRIDAL_CREEPER BROOM_BUSH WEED_WATTLES
2030034	1	3.30	Rifle Range Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030034	2	0.30	Rifle Range Rd	2	2	1	1	1	1	1	1	2	2	1	2	1	1	WATSONIA
2030034	3	0.34	Rifle Range Rd	2	2	1	1	1	1	1	1	2	2	0	2	1	1	BRIDAL_CREEPER WATSONIA BLACKBERRY
2030035	1	0.50	Grange Rd	2	2	1	1	1	1	1	1	2	2	2	2	1	1	
2030035	2	0.60	Grange Rd	2	0	1	0	1	0	1	0	2	0	2	2	1	3	BRIDAL_CREEPER WATSONIA
2030035	3	0.40	Grange Rd	2	1	1	1	1	1	1	1	2	0	2	2	1	2	
2030035	4	0.85	Grange Rd	2	2	1	1	1	1	1	1	2	0	1	1	1	2	BROOM_BUSH
2030035	5	0.45	Grange Rd	2	1	1	1	0	0	1	1	0	0	2	2	2	2	
2030035	6	1.00	Grange Rd	2	0	1	0	1	0	1	0	2	0	1	2	0	3	BROOM_BUSH
2030035	7	1.55	Grange Rd	0	0	0	0	0	0	0	0	0	0	1	1	3	3	BROOM_BUSH
2030035	8	0.75	Grange Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BROOM_BUSH
2030035	9	0.50	Grange Rd	1	1	0	0	0	0	0	0	0	0	1	2	3	3	BRIDAL_CREEPER BROOM_BUSH BLACKBERRY
2030035	10	0.50	Grange Rd	0	0	0	0	0	0	0	0	0	0	1	1	3	3	BLACKBERRY
2030035	11	0.25	Grange Rd	2	1	1	0	1	0	1	0	3	0	0	1	2	3	
2030035	12	1.49	Grange Rd	2	2	2	2	2	2	2	2	3	2	0	1	0	0	
2030036	1	0.80	Blackboy Flat Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER
2030036	2	2.25	Blackboy Flat Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BLACKBERRY
2030036	3	1.46	Blackboy Flat Rd	1	1	0	0	0	0	0	0	0	0	2	2	3	3	
2030037	1	0.71	Kendall Rd	1	2	0	1	0	1	0	1	0	0	2	2	3	1	
2030037	2	1.11	Kendall Rd	0	2	0	1	0	2	0	1	0	3	2	2	3	0	WEED_WATTLES
2030037	3	0.81	Kendall Rd	2	2	1	2	0	1	0	2	0	2	2	0	2	0	
2030037	4	2.11	Kendall Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030037	5	0.71	Kendall Rd	2	2	1	2	1	2	1	2	0	2	1	0	1	0	WATSONIA
2030038	1	1.55	Krsuls Rd	1	2	0	2	0	2	1	2	0	2	2	0	3	0	WATSONIA BROOM_BUSH
2030038	2	0.95	Krsuls Rd	1	1	1	1	1	1	1	1	0	0	2	2	2	2	
2030039	1	0.80	Warburtons Rd	1	0	1	0	0	0	0	0	0	0	0	2	3	3	BRIDAL_CREEPER
2030039	2	0.40	Warburtons Rd	1	1	1	1	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER
2030040	1	0.80	Walter Willis Rd	0	0	0	0	0	0	0	0	3	3	2	2	3	3	
2030040	2	1.90	Walter Willis Rd	0	1	0	0	0	0	0	0	3	3	2	1	3	3	

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
2030040	3	2.10	Walter Willis Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	
2030040	4	1.40	Walter Willis Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030041	1	0.70	Hester North Rd	2	1	1	1	1	1	1	0	0	0	1	2	2	2	WEED_WATTLES
2030041	2	1.60	Hester North Rd	2	1	2	1	2	1	1	0	2	0	1	2	0	2	WEED_WATTLES
2030041	3	0.40	Hester North Rd	2	1	2	1	2	1	1	0	2	0	1	2	0	2	WEED_WATTLES
2030042	1	0.60	Elwin Rd	2	2	1	2	1	2	1	2	2	2	2	0	1	0	BROOM_BUSH
2030042	2	0.90	Elwin Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030042	3	1.00	Elwin Rd	2	2	1	2	2	2	1	2	2	2	1	0	0	0	
2030042	4	1.00	Elwin Rd	2	2	1	1	1	1	1	1	2	2	1	2	1	1	BROOM_BUSH
2030042	5	2.10	Elwin Rd	1	2	0	1	0	1	1	1	0	2	1	2	3	1	BRIDAL_CREEPER BROOM_BUSH WEED_WATTLES
2030042	6	0.60	Elwin Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BROOM_BUSH WEED_WATTLES
2030043	1	1.00	Polina Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER
2030043	2	1.10	Polina Rd	1	1	0	0	0	1	0	1	0	3	2	2	3	2	BRIDAL_CREEPER
2030043	3	0.45	Polina Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	
2030043	4	0.45	Polina Rd	0	0	0	0	0	0	0	0	0	0	2	1	3	3	
2030043	5	1.50	Polina Rd	2	2	2	2	2	2	2	2	3	2	0	0	0	0	
2030043	6	0.80	Polina Rd	2	2	2	2	2	2	2	2	3	2	0	2	0	0	
2030043	7	1.10	Polina Rd	2	2	2	2	2	2	2	2	3	2	0	0	0	0	
2030043	8	0.50	Polina Rd	2	2	2	2	2	2	2	2	1	2	0	0	0	0	
2030045	1	0.56	Campbell Rd	2	2	2	1	2	2	2	1	3	3	2	2	0	0	
2030045	2	2.00	Campbell Rd	1	1	1	1	1	1	1	1	3	3	2	2	1	1	BRIDAL_CREEPER WATSONIA BROOM_BUSH WEED_WATTLES
2030045	3	1.10	Campbell Rd	1	1	1	1	0	0	1	1	3	3	0	0	3	3	BRIDAL_CREEPER WATSONIA BROOM_BUSH WEED_WATTLES
2030046	1	3.20	Cascades Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	WATSONIA
2030046	2	0.60	Cascades Rd	2	2	1	2	1	2	1	2	0	2	2	0	1	0	
2030046	3	1.40	Cascades Rd	1	1	1	1	0	0	1	1	0	0	2	2	2	2	BRIDAL_CREEPER BLACKBERRY
2030046	4	2.80	Cascades Rd	1	1	1	1	1	1	1	1	0	0	2	2	1	1	BRIDAL_CREEPER
2030047	1	1.82	Kloppers Mill Rd	2	2	1	2	2	2	2	2	3	2	2	0	0	0	WATSONIA
2030048	1	0.60	Forest Park Rd	2	2	2	1	2	1	2	1	2	0	0	2	0	1	
2030048	2	1.20	Forest Park Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030048	3	0.20	Forest Park Rd	2	2	2	1	2	1	2	1	2	0	0	2	0	1	BRIDAL_CREEPER

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
2030050	1	2.13	Elphick Fleeton Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER
2030050	2	1.33	Elphick Fleeton Rd	2	2	0	1	2	1	1	1	2	1	0	1	1	1	BRIDAL_CREEPER
2030051	1	1.00	Doust Rd	2	2	1	1	1	1	1	1	0	3	2	2	1	1	
2030051	2	1.01	Doust Rd	1	1	0	0	0	0	0	0	0	0	2	2	3	3	
2030057	1	0.90	Ford Rd North	0	0	0	0	0	0	0	0	0	0	0	0	3	3	BRIDAL_CREEPER WATSONIA BLACKBERRY WEED_WATTLES
2030059	1	0.35	Bolton Gale Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	WEED_WATTLES
2030059	2	0.40	Bolton Gale Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	
2030061	1	0.83	Davies Rd	1	1	0	1	0	0	0	0	0	0	1	0	3	3	BRIDAL_CREEPER BLACKBERRY
2030067	1	2.10	Giblett Bolton Rd	0	0	0	0	0	0	0	0	0	0	2	1	3	3	BLACKBERRY
2030068	1	1.30	Klause Rd	2	2	2	2	2	2	2	2	2	2	2	2	0	0	
2030068	2	0.60	Klause Rd	1	1	1	1	0	0	0	0	3	3	1	2	3	2	
2030072	1	0.20	Press Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030072	2	0.55	Press Rd	2	2	1	2	1	2	1	2	2	2	2	0	1	0	BRIDAL_CREEPER
2030072	3	0.15	Press Rd	0	0	0	0	0	0	0	0	0	0	1	2	3	3	
2030077	1	0.90	Blackwood Tce East	2	2	1	2	0	1	1	1	0	1	2	0	2	0	BRIDAL_CREEPER WEED_WATTLES
2030077	2	0.91	Blackwood Tce East	0	2	0	1	0	1	0	1	0	2	2	0	3	1	BRIDAL_CREEPER WEED_WATTLES
2030078	1	0.40	MOTTRAM RD	0	2	0	1	0	1	0	1	0	2	2	0	3	1	BRIDAL_CREEPER WEED_WATTLES
2030079	1	0.70	Suttons Rd	0	2	0	2	0	1	0	1	0	2	2	0	3	0	BRIDAL_CREEPER BLACKBERRY WEED_WATTLES
2030080	1	0.40	Greenfields Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030080	2	1.25	Greenfields Rd	2	2	1	1	1	1	1	1	0	3	0	0	2	2	WATSONIA
2030081	1	2.00	Strathmore Rd	2	2	2	1	2	1	2	1	3	2	0	1	0	1	
2030081	2	1.45	Strathmore Rd	2	2	2	2	2	2	2	2	3	2	0	0	0	0	
2030093	1	0.45	Wilkins Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER BROOM_BUSH WEED_WATTLES
2030094	1	0.70	Palmers Rd	0	0	0	0	0	0	0	0	0	0	0	0	3	3	WEED_WATTLES
2030097	1	1.58	Breakoday Rd	2	2	2	2	2	2	2	2	3	3	0	0	0	0	WATSONIA WEED_WATTLES
2030098	1	1.27	McCorkindale Rd	2	2	2	2	2	2	2	2	3	3	0	0	0	0	
2030101	1	0.30	Old Mockerdillup Rd	0	1	0	0	0	0	0	0	0	0	1	1	3	3	
2030101	2	0.55	Old Mockerdillup Rd	2	1	2	0	2	0	1	0	2	0	0	1	0	3	
2030101	3	0.70	Old Mockerdillup Rd	2	2	1	1	1	0	1	0	0	0	1	1	2	3	

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
2030101	4	0.55	Old Mockerdillup Rd	2	2	1	1	1	1	1	1	2	2	2	1	1	1	
2030103	1	0.70	Lynns Rd	0	2	0	2	0	2	0	2	0	2	0	1	3	0	
2030103	2	0.60	Lynns Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030120	1	0.30	Eedle Tce	0	1	0	1	0	0	0	0	0	0	0	0	3	3	WEED_WATTLES
2030120	2	0.75	Eedle Tce	1	1	1	1	1	1	1	1	0	0	0	0	3	3	BRIDAL_CREEPER WATSONIA WEED_WATTLES
2030120	3	1.35	Eedle Tce	0	0	0	0	0	0	0	1	0	0	0	1	3	3	BRIDAL_CREEPER WATSONIA WEED_WATTLES
2030122	1	1.65	Old Glentulloch Rd	1	1	1	1	0	0	1	0	2	2	2	2	2	2	BLACKBERRY
2030122	2	0.80	Old Glentulloch Rd	2	2	1	2	2	2	1	2	2	2	2	2	0	0	BLACKBERRY
2030122	3	1.10	Old Glentulloch Rd	2	0	0	0	0	0	0	0	0	0	2	2	3	3	BLACKBERRY
2030125	1	0.33	Lowe Rd	0	2	0	2	0	2	0	1	0	2	1	0	3	0	
2030126	1	0.72	Smith St	1	0	0	0	0	0	0	0	0	0	1	1	3	3	
2030128	1	0.74	Tillman Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	WATSONIA
2030129	1	0.80	Naylor Yates Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	WATSONIA
2030129	2	0.80	Naylor Yates Rd	2	2	1	1	1	1	1	1	0	0	1	2	1	1	BRIDAL_CREEPER BLACKBERRY
2030129	3	0.11	Yates Rd	1	1	0	0	0	0	0	0	0	0	1	2	3	3	
2030130	1	0.38	Young Tillman Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	BRIDAL_CREEPER WATSONIA BLACKBERRY
2030136	1	0.55	Old Bridgetown Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	
2030136	2	0.35	Old Bridgetown Rd	0	1	0	0	0	0	0	0	0	0	2	1	3	3	WEED_WATTLES
2030137	1	1.25	Waters Ford Rd	0	0	0	0	0	0	0	0	0	3	2	2	3	3	
2030139	1	0.73	Vlahov Rd	2	2	1	1	1	1	1	1	3	3	2	2	0	0	WEED_WATTLES
2030200	1	8.05	Tinkers Flat Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030209	1	1.00	Old Padbury Rd	2	2	2	2	2	2	2	2	2	2	0	1	0	0	
2030209	2	1.10	Hay Rd	2	2	2	2	2	2	2	2	2	2	2	0	0	0	
2030209	3	0.70	Hay Rd	2	2	1	1	1	1	1	1	2	2	2	2	0	1	
2030210	1	0.70	Old Padbury Rd	1	1	1	1	0	0	1	1	0	0	1	1	3	3	BRIDAL_CREEPER WATSONIA BROOM_BUSH
2030210	2	1.00	Old Padbury Rd	0	1	0	1	0	0	1	1	0	0	2	2	3	2	
2030212	1	0.30	Daronch Rd	1	1	1	1	1	1	1	1	0	0	2	0	2	3	
2030212	2	0.50	Daronch Rd	2	2	1	2	2	2	2	2	2	2	2	0	0	0	
2030212	3	0.30	Daronch Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	WATSONIA
2030212	4	1.00	Daronch Rd	2	2	1	2	2	2	2	2	2	2	0	0	0	0	WATSONIA

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
2030212	5	0.40	Daronch Rd	1	1	1	1	0	0	0	1	0	0	0	2	3	2	WEED_WATTLES
2030214	1	1.14	Greenbushes Grimwade Rd	2	2	1	1	1	1	1	1	0	0	0	0	2	2	
2030215	1	0.26	Greenbushes Grimwade Rd	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
2030215	2	0.60	Greenbushes Grimwade Rd	2	2	1	1	0	0	1	1	2	2	1	1	2	2	BRIDAL_CREEPER WEED_WATTLES
2030215	3	0.50	Greenbushes Grimwade Rd	2	2	1	1	0	0	1	1	2	2	1	1	2	2	BRIDAL_CREEPER WEED_WATTLES
2030215	4	0.50	Greenbushes Grimwade Rd	2	2	2	1	1	0	1	1	2	0	0	1	1	2	BRIDAL_CREEPER WEED_WATTLES
2030215	5	1.00	Greenbushes Grimwade Rd	2	2	2	1	2	0	2	1	2	2	0	2	0	1	BROOM_BUSH WEED_WATTLES
2030217	1	0.80	Old Mill Rd	0	1	1	1	1	1	1	1	0	0	1	0	2	3	WEED_WATTLES
2030218	1	1.00	Spring Gully Rd	2	2	1	1	1	1	1	1	2	2	0	0	1	1	WEED_WATTLES
2030218	2	3.55	Spring Gully Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030218	3	0.75	Spring Gully Rd	2	1	2	1	2	0	1	1	2	0	0	2	0	2	WEED_WATTLES
2030221	1	2.00	Huitson Rd	2	2	2	2	2	2	2	2	2	2	2	2	0	0	
2030221	2	3.40	Huitson Rd	2	2	1	1	1	1	1	1	0	0	1	1	1	1	
2030221	3	0.20	Huitson Rd	1	2	0	1	0	1	0	1	0	2	2	1	0	2	
2030227	1	1.70	Greenbushes Boyup Brook Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030227	2	0.80	Greenbushes Boyup Brook Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030227	3	0.50	Greenbushes Boyup Brook Rd	1	2	1	2	1	2	1	2	0	2	2	0	2	0	BRIDAL_CREEPER WEED_WATTLES
2030227	4	2.50	Greenbushes Boyup Brook Rd	0	1	0	1	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER BLACKBERRY
2030227	5	0.80	Greenbushes Boyup Brook Rd	1	1	0	0	0	0	0	0	0	0	1	1	3	3	BRIDAL_CREEPER BLACKBERRY
2030227	6	0.50	Greenbushes Boyup Brook Rd	0	0	0	0	0	0	0	0	0	0	1	1	3	3	BRIDAL_CREEPER
2030227	7	1.60	Greenbushes Boyup Brook Rd	1	1	1	1	0	0	1	1	0	0	2	2	2	2	BRIDAL_CREEPER
2030227	8	1.00	Greenbushes Boyup Brook Rd	0	2	0	1	0	1	1	1	0	2	2	2	3	1	BRIDAL_CREEPER
2030227	9	0.50	Greenbushes Boyup Brook Rd	2	2	1	1	1	1	1	1	2	2	1	1	1	1	BRIDAL_CREEPER

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
2030227	10	1.10	Greenbushes Boyup Brook Rd	2	2	1	1	2	0	2	1	2	0	2	1	0	2	
2030227	11	1.10	Greenbushes Boyup Brook Rd	1	1	0	0	0	0	0	0	0	0	2	2	3	3	WEED_WATTLES
2030227	12	0.90	Greenbushes Boyup Brook Rd	1	1	0	0	0	0	1	1	0	0	1	2	3	3	
2030227	13	1.30	Greenbushes Boyup Brook Rd	1	1	0	0	0	0	1	1	0	0	1	2	3	3	
2030227	14	1.20	Greenbushes Boyup Brook Rd	1	1	1	1	0	0	1	1	0	0	2	2	2	2	WATSONIA
2030227	15	2.30	Greenbushes Boyup Brook Rd	2	2	1	1	0	0	1	1	2	2	2	2	1	1	BRIDAL_CREEPER WATSONIA VICTORIAN_TEA_TREE
2030227	16	0.80	Greenbushes Boyup Brook Rd	2	2	1	1	1	1	1	1	3	2	2	2	1	1	
2030229	1	1.00	Catterick Rd	2	1	2	1	2	1	2	1	2	0	0	2	0	2	
2030229	2	0.50	Catterick Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030229	3	1.30	Catterick Rd	2	2	1	1	1	1	1	1	3	0	2	2	0	1	BRIDAL_CREEPER
2030229	4	0.90	Catterick Rd	2	1	1	1	1	1	1	1	3	0	1	2	1	1	BRIDAL_CREEPER WATSONIA BLACKBERRY
2030229	5	0.80	Catterick Rd	2	1	1	1	1	0	1	0	3	0	1	2	1	2	BRIDAL_CREEPER BLACKBERRY
2030229	6	0.30	Catterick Rd	2	2	1	2	1	2	1	2	3	2	1	0	1	0	BRIDAL_CREEPER BLACKBERRY WEED_WATTLES
2030229	7	0.50	Catterick Rd	2	2	1	1	1	1	1	1	3	2	2	2	0	0	BRIDAL_CREEPER
2030229	8	1.20	Catterick Rd	2	2	2	1	2	1	2	1	3	0	0	2	0	1	BRIDAL_CREEPER
2030229	9	1.20	Catterick Rd	2	2	2	2	2	2	1	2	3	2	2	1	0	0	
2030229	10	0.65	Catterick Rd	2	2	1	1	1	2	1	1	3	2	2	2	1	0	
2030229	11	0.50	Catterick Rd	2	2	1	1	1	1	1	1	2	2	2	2	1	1	BRIDAL_CREEPER
2030229	12	0.35	Catterick Rd	2	2	1	1	1	1	1	1	2	2	2	2	1	1	
2030230	1	0.35	Wilkes Rd	1	2	1	1	0	1	1	1	0	0	2	0	2	1	BLACKBERRY WEED_WATTLES
2030231	1	1.75	Fullerton Rd	2	2	1	1	1	1	1	1	0	0	2	2	1	1	
2030233	1	2.20	Papalias Rd	2	2	1	1	2	2	1	1	2	2	1	1	0	0	
2030233	2	0.50	Papalias Rd	1	1	1	1	0	0	1	1	0	0	2	2	2	2	BRIDAL_CREEPER WEED_WATTLES
2030234	1	0.50	Boyles Rd	2	2	1	1	1	1	1	1	0	0	2	2	1	1	WEED_WATTLES
2030234	2	0.90	Boyles Rd	2	2	1	1	2	2	1	1	2	2	1	0	0	1	WEED_WATTLES
2030235	1	0.70	Kings Rd	2	2	1	1	2	2	1	1	2	2	2	2	0	0	VICTORIAN_TEA_TREE
2030236	1	0.35	Kondos Rd	2	2	1	1	1	1	1	1	0	0	2	2	1	1	BRIDAL_CREEPER

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
2030237	1	0.90	Perks Rd	2	2	1	1	0	0	1	1	0	0	1	1	2	2	BRIDAL_CREEPER
2030238	1	1.50	Carters Rd	0	2	0	1	0	1	0	1	0	2	1	1	3	0	BRIDAL_CREEPER
2030239	1	0.40	Angus Rd	2	0	1	0	1	0	1	0	2	0	1	1	0	3	
2030239	2	0.30	Angus Rd	2	2	2	2	2	2	2	2	2	3	0	0	0	0	BRIDAL_CREEPER WATSONIA
2030239	3	1.40	Angus Rd	2	2	2	1	2	1	2	1	2	3	0	1	0	1	BRIDAL_CREEPER WATSONIA
2030239	4	1.60	Angus Rd	2	2	1	1	1	1	1	1	0	0	2	2	1	1	BRIDAL_CREEPER
2030241	1	1.10	McKelvie Rd	1	1	1	1	0	0	1	1	0	0	2	2	2	2	BRIDAL_CREEPER WATSONIA
2030241	2	2.10	McKelvie Rd	1	0	1	0	0	0	1	0	0	0	2	2	2	3	BRIDAL_CREEPER
2030241	3	0.55	McKelvie Rd	2	1	1	0	1	0	1	0	0	0	1	1	2	3	
2030242	1	1.10	Dilkes Rd	2	2	1	1	1	1	1	1	0	0	2	1	1	1	
2030243	1	0.70	Blackbutt Rd	1	1	0	0	0	0	0	1	0	0	2	2	3	3	
2030243	2	2.80	Blackbutt Rd	2	2	1	1	0	0	1	1	3	3	2	2	1	1	
2030243	3	3.10	Blackbutt Rd	2	2	1	1	0	0	1	1	0	0	2	2	2	2	
2030247	1	2.06	Eastcott Rd	1	1	1	1	1	1	1	1	0	0	2	2	1	1	BRIDAL_CREEPER BLACKBERRY
2030248	1	1.02	Wilkinson Rd	2	2	1	1	1	0	1	1	2	2	2	1	1	1	
2030249	1	1.00	Nolle Rd	2	2	1	1	1	1	1	1	2	2	1	1	1	1	WATSONIA
2030249	2	1.40	Nolle Rd	2	2	1	1	1	1	1	1	2	2	1	1	2	1	BROOM_BUSH WEED_WATTLES VICTORIAN_TEA_TREE
2030250	1	1.08	Fairgreaves Rd	0	0	2	0	0	0	0	0	0	0	1	2	3	3	
2030256	1	0.70	Wilga Rd	2	2	1	2	2	2	2	2	2	2	1	0	0	0	VICTORIAN_TEA_TREE
2030256	2	0.40	Wilga Rd	2	2	1	1	1	1	1	1	2	2	2	1	1	1	BRIDAL_CREEPER WEED_WATTLES
2030256	3	0.90	Wilga Rd	2	2	1	2	1	2	1	2	1	2	2	0	1	0	
2030256	4	1.40	Wilga Rd	2	2	1	1	1	1	1	1	1	2	2	2	0	0	BRIDAL_CREEPER BLACKBERRY
2030256	5	0.40	Wilga Rd	2	2	1	1	1	1	1	1	1	2	2	2	1	1	BRIDAL_CREEPER BLACKBERRY
2030256	6	0.80	Wilga Rd	1	1	1	1	1	1	1	1	0	0	2	2	2	2	BRIDAL_CREEPER BLACKBERRY
2030256	7	0.70	Wilga Rd	1	2	0	2	1	2	1	2	0	3	2	0	2	0	
2030256	8	0.90	Wilga Rd	2	1	2	1	2	0	2	1	2	0	0	2	0	2	
2030256	9	0.60	Wilga Rd	1	1	1	1	0	0	1	1	0	0	1	2	3	2	
2030256	10	1.80	Wilga Rd	1	1	0	0	0	0	0	0	0	0	2	2	3	3	
2030256	11	4.65	Wilga Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030274	1	0.59	Old Mill Rd	2	2	2	2	2	1	2	2	2	2	0	1	0	0	WATSONIA
2030298	1	0.74	Flintoff Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	
2030303	1	0.40	Bevan St	2	2	2	2	2	2	2	2	2	2	2	2	0	0	WEED_WATTLES

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
2030303	2	0.38	Bevan St	2	1	2	1	2	0	2	1	2	0	0	2	0	2	BROOM_BUSH WEED_WATTLES
2030304	1	0.30	Cardinal Rd	2	2	2	2	2	2	2	2	1	2	0	0	0	0	
2030304	2	1.40	Cardinal Rd	1	2	1	2	0	2	1	2	0	2	2	0	2	0	
2030304	3	0.81	Cardinal Rd	2	2	2	2	2	2	2	2	2	2	2	0	0	0	
2030313	1	0.60	Forest Park Rd	0	1	0	1	0	0	0	1	0	0	1	2	3	2	BRIDAL_CREEPER
2030313	2	1.60	Forest Park Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
2030335	1	1.07	Trotts Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	
2030353	1	3.30	Five Gates Rd	1	1	0	1	0	0	0	1	0	1	1	0	3	2	BLACKBERRY
2030353	2	0.40	Five Gates Rd	0	1	0	1	0	0	0	1	0	1	1	0	3	2	BLACKBERRY
2030363	1	0.35	Bridgetown Nannup Rd	1	1	1	0	1	0	1	0	0	0	2	1	2	3	BRIDAL_CREEPER WEED_WATTLES
2030363	2	0.35	Bridgetown Nannup Rd	2	1	1	0	1	0	1	0	0	0	1	1	2	3	BRIDAL_CREEPER WATSONIA WEED_WATTLES
2030363	3	0.70	Bridgetown Nannup Rd	2	1	1	0	0	0	1	0	0	1	1	2	2	3	BRIDAL_CREEPER WATSONIA WEED_WATTLES
2030363	4	0.60	Bridgetown Nannup Rd	1	2	0	1	0	1	1	0	0	0	2	2	3	2	BRIDAL_CREEPER WEED_WATTLES
2030363	5	0.80	Bridgetown Nannup Rd	1	2	0	1	0	1	0	1	0	0	2	1	3	2	WEED_WATTLES
2030363	6	0.50	Bridgetown Nannup Rd	2	2	1	1	2	1	1	1	2	2	0	1	1	1	
2030363	7	0.90	Bridgetown Nannup Rd	2	2	2	1	2	1	2	1	2	0	0	2	0	1	VICTORIAN_TEA_TREE
2030363	8	2.00	Bridgetown Nannup Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER WEED_WATTLES
2030363	9	1.50	Bridgetown Nannup Rd	1	1	0	0	0	0	0	0	0	1	2	0	3	3	WATSONIA BLACKBERRY WEED_WATTLES
2030363	10	1.00	Bridgetown Nannup Rd	1	1	0	0	0	0	0	0	0	1	2	0	3	3	BRIDAL_CREEPER WATSONIA BLACKBERRY
2030363	11	1.30	Bridgetown Nannup Rd	0	0	0	0	0	0	0	0	0	1	2	2	3	3	BRIDAL_CREEPER WATSONIA BLACKBERRY WEED_WATTLES
2030363	12	1.20	Bridgetown Nannup Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER BLACKBERRY WEED_WATTLES
2030363	13	1.10	Bridgetown Nannup Rd	1	1	0	0	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER
2030363	14	1.80	Bridgetown Nannup Rd	2	2	1	1	0	1	1	1	0	2	2	2	2	1	BRIDAL_CREEPER WEED_WATTLES
2030363	15	0.90	Bridgetown Nannup Rd	2	2	1	1	1	1	1	1	2	0	2	2	1	1	
2030363	16	6.00	Bridgetown Nannup Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
H009	1	0.44	South West Hwy	1	1	1	1	0	0	1	1	0	0	1	1	3	3	BRIDAL_CREEPER WATSONIA
H009	2	2.30	South West Hwy	2	2	1	2	1	2	1	1	2	2	1	0	1	1	

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
H009	3	2.60	South West Hwy	2	2	2	2	2	2	2	2	2	2	1	0	0	0	BRIDAL_CREEPER WEED_WATTLES
H009	4	1.30	South West Hwy	0	0	0	0	0	0	0	0	0	0	1	0	3	3	WEED_WATTLES
H009	5	1.60	South West Hwy	2	2	1	2	2	2	1	1	2	2	0	0	1	0	WEED_WATTLES VICTORIAN_TEA_TREE
H009	6	1.50	South West Hwy	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
H009	7	2.30	South West Hwy	2	2	2	2	2	2	2	2	2	2	0	0	0	0	WEED_WATTLES VICTORIAN_TEA_TREE
H009	8	2.00	South West Hwy	1	1	0	0	0	0	0	0	0	0	2	2	3	3	WEED_WATTLES VICTORIAN_TEA_TREE
H009	9	2.90	South West Hwy	0	0	0	0	0	0	0	0	0	0	1	1	3	3	BRIDAL_CREEPER WEED_WATTLES
H009	10	1.80	South West Hwy	0	0	0	0	0	0	0	0	0	0	2	1	3	3	
H009	11	2.60	South West Hwy	1	1	0	1	0	0	0	1	0	2	2	2	3	2	BRIDAL_CREEPER WATSONIA BLACKBERRY WEED_WATTLES
H009	12	1.30	South West Hwy	1	1	0	0	0	0	0	0	0	0	2	1	3	3	BRIDAL_CREEPER WATSONIA BLACKBERRY WEED_WATTLES
H009	13	0.80	South West Hwy	0	0	0	0	0	0	0	0	0	0	0	0	3	3	WATSONIA
H009	14	0.45	South West Hwy	0	0	0	0	0	0	0	0	0	0	0	0	3	3	WEED_WATTLES
H009	15	0.50	South West Hwy	1	1	1	1	0	0	0	0	0	0	0	2	3	3	BRIDAL_CREEPER WATSONIA BLACKBERRY WEED_WATTLES
H009	16	0.50	South West Hwy	0	1	0	1	0	0	0	0	0	0	2	2	3	3	BRIDAL_CREEPER WATSONIA BLACKBERRY WEED_WATTLES
H009	17	1.05	South West Hwy	1	1	0	1	0	0	1	1	0	0	2	2	3	2	BRIDAL_CREEPER WATSONIA BLACKBERRY WEED_WATTLES
H009	18	0.60	South West Hwy	1	1	1	1	0	1	1	1	0	2	2	0	2	2	BRIDAL_CREEPER WATSONIA BROOM_BUSH BLACKBERRY
H009	19	1.50	South West Hwy	1	1	0	1	0	1	1	1	0	0	2	2	3	2	BRIDAL_CREEPER WATSONIA BROOM_BUSH BLACKBERRY WEED_WATTLES
H009	20	0.60	South West Hwy	2	2	2	1	0	0	1	1	0	0	0	2	2	2	BRIDAL_CREEPER WATSONIA BROOM_BUSH BLACKBERRY
H009	21	1.10	South West Hwy	2	1	2	1	0	0	1	1	0	0	0	2	2	2	BRIDAL_CREEPER
H009	22	0.80	South West Hwy	2	1	2	1	0	0	1	1	0	0	0	2	2	2	BRIDAL_CREEPER
H009	23	1.25	South West Hwy	0	1	0	1	0	0	0	0	2	0	2	2	3	3	BRIDAL_CREEPER WATSONIA BROOM_BUSH WEED_WATTLES
H009	24	2.45	South West Hwy	0	1	0	1	0	0	0	1	0	0	2	2	3	2	BRIDAL_CREEPER WATSONIA BLACKBERRY WEED_WATTLES
H009	25	0.50	South West Hwy	0	1	0	1	0	0	0	1	0	0	0	0	3	3	BRIDAL_CREEPER WEED_WATTLES

SHIRE# AND ROAD#	SECTION#	SECTION LENGTH (KM)	ROAD NAME	NATIVE VEGETATION		EXTENT OF VEGETATION		NUMBER OF PLANT SPECIES		WEEDS		VALUE AS A CORRIDOR		ADJOINING LANDUSE		CONSERVATION VALUE SCORE (0-3)		DOMINANT WEEDS
				Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
H009	26	2.05	South West Hwy	0	2	0	1	0	0	0	1	0	0	2	2	3	2	WEED_WATTLES
H009	27	0.75	South West Hwy	2	2	2	1	2	0	2	1	0	0	0	2	0	2	
H009	28	0.70	South West Hwy	0	1	0	0	0	0	0	0	0	0	2	2	3	3	WATSONIA
H009	29	0.30	South West Hwy	2	2	2	0	2	1	2	2	2	3	0	0	0	1	WEED_WATTLES
H009	30	0.50	South West Hwy	2	1	2	1	2	0	2	1	2	0	0	2	0	2	
H009	31	1.85	South West Hwy	0	1	0	1	0	0	0	0	0	2	2	2	3	2	WATSONIA
H009	32	2.40	South West Hwy	2	1	2	1	2	0	2	1	2	2	0	2	0	2	
H009	33	0.50	South West Hwy	2	2	2	2	2	1	2	2	2	2	0	0	0	0	
M006	1	1.90	Bridgetown Boyup Brook Rd	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
M006	2	0.79	Bridgetown Boyup Brook Rd	2	2	1	1	0	1	1	1	0	0	1	0	2	2	WATSONIA VICTORIAN_TEA_TREE
M006	3	1.50	Bridgetown Boyup Brook Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	WATSONIA VICTORIAN_TEA_TREE
M006	4	1.63	Bridgetown Boyup Brook Rd	2	2	1	2	2	2	1	2	2	2	0	0	0	0	WATSONIA
M006	5	1.64	Bridgetown Boyup Brook Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	WATSONIA VICTORIAN_TEA_TREE
M006	6	1.30	Bridgetown Boyup Brook Rd	2	2	1	2	1	2	1	2	0	2	2	0	1	0	WATSONIA
M006	7	1.20	Bridgetown Boyup Brook Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	WATSONIA
M006	8	0.20	Bridgetown Boyup Brook Rd	2	2	2	2	2	2	2	2	2	2	0	0	0	0	
M006	9	2.70	Bridgetown Boyup Brook Rd	0	0	0	0	0	0	0	0	0	0	2	2	3	3	
M006	10	2.12	Bridgetown Boyup Brook Rd	2	0	1	0	1	0	1	0	2	0	2	2	0	3	BRIDAL_CREEPER BROOM_BUSH WEED_WATTLES

Appendix

4

Shire of Bridgetown-Greenbushes Road names and lengths

(source- Main Roads WA)

Road #	Road Name	Length (km)
2030296	ABBOTTS ST	0.09
2030071	ADAMS RD	0.32
2030203	ALCO RD	0.35
2030154	ALLNUTT ST	1.43
2030239	ANGUS RD	3.62
2030366	APEX GROVE	0.21
2030380	ARCHER PLACE	0.07
2030264	ARGENT ST	0.27
2030331	ARKLE RD	0.54
2030280	ARMSTRONG ST	0.16
2030258	ASHCROFT RD	2.06
2030350	BALBARRUP RD	0.50
2030167	BARLEE ST	0.90
2030303	BEVAN ST	0.78
2030036	BLACKBOY FLAT RD	4.51
2030243	BLACKBUTT RD	6.45
2030077	BLACKWOOD EAST TCE	1.81
2030019	BLACKWOOD PARK RD	2.65
2030286	BLACKWOOD RD	1.95
2030076	BLACKWOOD WEST TCE	2.23
2030182	BLECHYNDEN ST	2.00
2030059	BOLTON GALE RD	0.87
2030289	BOVELL ST	0.42
2030234	BOYLES RD	1.37
2030385	BRAMLEY PLACE	0.35
2030113	BRAND RD	0.64
2030097	BREAK O DAY RD	1.58
2030363	BRIDGETOWN-NANNUP RD	21.00
2030149	BROCKMAN ST	0.24
2030033	BROOKES MCALINDEN RD	2.16
2030096	BROOKES RD	1.12
2030277	BROOMEFIELD RD	2.15
2030060	BROWNE WHEATLEY RD	1.49
2030354	BUCHANAN RD	0.88
2030164	BUNBURY ST	0.34
2030283	BUSSELL ST	1.23
2030073	BUTLERS RD	2.21
2030063	BUXBURY RD	0.80
2030045	CAMBELLS RD	3.66
2030157	CAMPBELL ST	1.07
2030013	CARBUNUP BROOK RD	7.59
2030304	CARDINAL RD	2.51
2030160	CAREY ST	0.84
2030238	CARTERS RD	1.80
2030352	CATTERICK FORM RD	1.36
2030229	CATTERICK RD	9.01
2030257	CHARNLEY RD	0.97
2030332	CHEVIS COURT	0.43
2030368	CLEOPATRA CRES	0.31
2030267	COLLINS	0.35
2030194	CONTO RD_(F)	6.95
2030085	COOYARUP RD	1.21
2030032	CORBALUP RD	16.96
2030173	CORONATION RD	0.35
2030371	CORRIEDALE COURT	0.27
2030384	COVERLEY RD	0.82
2030291	CROSSING ST	0.12
2030374	CULLEN ST	0.40
2030088	CURWENS RD	1.46
2030359	CUTMORE CRESCENT	0.43
2030015	DALMORE RD	9.19
2030048	DANIELS RD	3.25
2030212	DARONCHS RD	2.69
2030119	DAVIDSON RD	0.15
2030338	DAVIES ST	0.70

Road #	Road Name	Length (km)
2030185	DEAN ST	0.91
2030369	DEMOCRAT CLOSE	0.27
2030246	DEZOTTI RD	1.22
2030242	DILKES RD	1.45
2030262	DIORITE ST	0.80
2030382	DOHERTY COURT	0.22
2030014	DONNELLY MILL RD	17.65
2030051	DOUST RD	2.01
2030075	DOUST ST	1.00
2030070	DRAPER ST	0.18
2030107	DREYFUS RD	1.37
2030364	DUSTING DRIVE	0.12
2030282	EASTCOTT AVE	0.44
2030247	EASTCOTTS RD	2.06
2030362	ECCLESIASTIC CLOSE	0.73
2030281	EDWARD RD	0.29
2030197	EDWARDS RD_(F)	4.35
2030120	EEDLE TCE	3.16
2030050	ELPHICK FLEETON RD	3.46
2030132	ELWIN TAYLOR	0.32
2030042	ELWINS RD	6.20
2030180	ETHEL ST	0.18
2030322	EVANS FORD RD	0.70
2030372	EVERINGHAM RD	0.26
2030294	EWING PL	0.17
2030250	FAIRGREAVES RD	1.08
2030017	FALNASH RD	4.04
2030355	FARMERS LA	0.10
2030127	FARRELL ST	1.61
2030099	FAULKNERS RD	0.26
2030114	FELLOWES RD	0.25
2030360	FIMISTER LANE	0.09
2030353	FIVE GATES RD	5.10
2030016	FLAX RD	4.07
2030086	FLETCHER'S RD	1.01
2030298	FLINTOFF RD	0.74
2030056	FORD RD	0.30
2030057	FORD RD NORTH	0.90
2030313	FOREST PARK AVE	2.24
2030375	FOREST VIEW COURT	0.70
2030178	FORREST ST	1.42
2030116	FOX RD	0.16
2030231	FULLERTON RD	1.25
2030159	GALE RD	1.13
2030268	GALENA ST	0.27
2030175	GEORGE ST	0.19
2030259	GEORGE ST	0.73
2030067	GIBLETT BOLTON RD	2.60
2030177	GIBLETT RD	0.91
2030165	GIFFORD RD	0.30
2030134	GLENLYNN SIDING RD	0.48
2030009	GLENTULOOCK RD	10.09
2030058	GOLF CLUB RD	0.45
2030004	GOMMES LA	6.17
2030035	GRANGE RD	8.84
2030299	GRANGE ST	0.50
2030023	GRAYS HILL RD	0.81
2030227	GREENBUSHES BOYUP BROOK RD	18.72
2030215	GREENBUSHES GRIMWADE RD	2.85
2030080	GREENFIELDS RD	1.61
2030189	GREGORY RD	3.21
2030065	GREVILLE RD_(F)	7.12
2030138	GREYSTONES RD	0.26
2030031	HACKETT ST	1.08

Road #	Road Name	Length (km)
2030255	HAINES RD	3.29
2030084	HALLS RD	2.27
2030030	HAMILTON RD	8.68
2030172	HAMPTON RD	0.31
2030209	HAY RD	2.80
2030028	HENDERSON RD	3.40
2030156	HENRY ST	0.86
2030358	HEREFORD HEIGHTS	0.14
2030046	HESTER CASCADES RD	8.00
2030143	HESTER DAM EAST RD	1.13
2030142	HESTER DAM WEST RD	0.92
2030092	HESTER HALL RD	1.14
2030041	HESTER NORTH RD	5.15
2030002	HESTER RD	7.25
2030153	HESTER RD	0.43
2030140	HESTER SIDING EAST RD	0.22
2030141	HESTER SIDING WEST RD	0.21
2030365	HILLCREST RISE	0.12
2030308	HUGGETT PL	0.12
2030221	HUITSON RD	7.09
2030184	INGLIS ST	0.48
2030316	JAMES ST	0.71
2030007	JAYES RD	7.47
2030260	JEPHSON ST	0.72
2030174	JOHN RD	0.24
2030225	KANDALEE RD	1.92
2030021	KANGAROO GULLY RD	3.62
2030066	KARLAKERLUP RD	3.07
2030193	KELLY RD_(F)	5.21
2030037	KENDALL RD	5.45
2030235	KINGS RD	2.21
2030005	KINGSTON RD	28.10
2030068	KLAUSE RD	1.89
2030047	KLOPPERS MILL RD	1.82
2030236	KONDOS RD	1.66
2030038	KRSULS RD	2.50
2030337	LANDSDOWN VIEW	0.45
2030121	LANE RD	0.92
2030106	LAVERTY RD	0.35
2030145	LAYMAN RD	0.40
2030192	LE JEUNE RD	5.17
2030317	LEASE RD	0.70
2030104	LEFROY ST	0.75
2030208	LEW RD	1.99
2030314	LINDSAY RD	0.61
2030163	LOCKLEY AVE	0.32
2030155	LOFTIE ST	0.40
2030055	LONGS RD	2.24
2030245	LONGS RD	5.37
2030125	LOWE RD	0.33
2030285	LYNMAN RD	0.13
2030103	LYNNS RD	2.34
2030010	MARANUP FORD RD	17.15
2030105	MASLIN RD	1.97
2030022	MATTAMATTUP ST	0.89
2030025	MAY ST	2.34
2030161	MCALINDEN ST	0.30
2030098	MCCORKINDALES RD	1.27
2030323	MCDONALD'S LANE	0.34
2030124	MCDONALDS RD	0.75
2030241	MCKELVIE RD	3.81
2030288	MCLARTY ST	1.74
2030348	MEARES DWALGARUP RD	1.23
2030083	MEARES RD	1.49
2030195	MERSEA RD	5.24
2030266	MICA ST	0.26
2030186	MILL RD_(F)	4.05
2030305	MIRIMIRI ST	0.48

Road #	Road Name	Length (km)
2030006	MOKERDILLUP RD	13.05
2030295	MOLYNEUX WY	0.12
2030150	MOORE PL	0.12
2030204	MORIARTY RD_(F)	3.25
2030265	MORT ST	0.13
2030078	MOTTRAM RD	0.40
2030287	MOULTON ST	0.55
2030147	MOUNT RD	0.17
2030207	MUIRS RD	1.79
2030129	NAYLOR YATES RD	1.71
2030027	NELSON ST	1.81
2030274	NELSON ST	0.59
2030381	NICKAJACK PLACE	0.53
2030064	NOLANS RD_(F)	1.15
2030249	NOLLE RD	2.40
2030110	NORTH BOUNDARY RD_(F)	5.10
2030136	OLD BRIDGETOWN RD	1.86
2030095	OLD CATTERICK RD	2.48
2030122	OLD GLENTULLOCH RD (F)	9.09
2030386	OLD GRIMWADE RD	0.13
2030217	OLD MILL RD	0.80
2030101	OLD MOKERDILLUP RD	2.09
2030210	OLD PADBURY RD	1.70
2030290	ORCHARD CL	0.11
2030183	PADBURY RD	0.89
2030094	PALMERS RD	0.83
2030233	PAPALIAS RD	3.06
2030008	PENINSULA RD	7.66
2030237	PERKS RD	0.90
2030226	PERRYS RD	3.51
2030334	PETTERSEN RD	1.25
2030162	PHILLIPS RD	1.09
2030061	POCOCK FARM RD	0.83
2030043	POLINA RD	6.88
2030351	POLLARD RD	1.55
2030376	POLLY DAKIN DR	0.52
2030328	POOL RD	0.20
2030072	PRESS RD	0.89
2030321	RADIATA ST	0.23
2030171	RAILWAY PARADE	0.42
2030144	RAILWAY TCE	1.40
2030347	RECREATION RD	0.35
2030346	RECYCLED RD	0.15
2030284	REIDS RD	0.61
2030112	RESERVOIR RD	0.33
2030361	REVERANDS RAMBLE	0.81
2030034	RIFLE RANGE RD	3.94
2030108	RIVER RD	0.96
2030170	ROE ST	2.76
2030367	ROKEWOOD HTS	0.67
2030169	ROSE ST	0.29
2030302	ROWAN CL	0.13
2030181	ROWLEY RD	0.22
2030326	RUBBISH TIP RD	0.30
2030293	RUSSELL RD	1.65
2030118	SAVAGES CREEK RD	1.60
2030074	SAWYER RD	0.60
2030179	SCHOOL RD	0.07
2030082	SCOTT MEARES RD	0.75
2030111	SCOTT ST	0.32
2030307	SCRIVENS RD	0.40
2030011	SEATON ROSS RD	27.58
2030115	SELLS RD	2.05
2030342	SHEPHARD ST	1.21
2030292	SHOE RD_(F)	5.45
2030117	SLADES RD	5.00
2030126	SMITH ST	0.72
2030319	SMITH ST	2.20

Road #	Road Name	Length (km)
2030151	SOMME ST	0.22
2030158	SPENCER ST	1.61
2030218	SPRING GULLY RD	5.19
2030270	STANIFER ST	1.29
2030377	STATESMAN COURT	0.68
2030214	STATION ST	1.14
2030176	STEERE ST	0.49
2030373	STEPHENS ST	0.65
2030306	STINTON AVE	0.48
2030081	STRATHMORE RD	4.14
2030052	STRETCH RD	0.47
2030349	SUNNYSIDE RD	0.74
2030333	SUTTONS CL	0.16
2030079	SUTTONS RD	1.35
2030379	TANGINUP RD	1.66
2030091	TASSOS RD	0.64
2030300	TATE RD	0.65
2030100	TAYLORS RD	0.96
2030198	TELEPHONE RD_(F)	8.05
2030261	TELLURIDE ST	1.35
2030069	THOMPSON RD	1.47
2030133	THOMPSON ST	0.17
2030202	THORNTON RD_(F)	5.40
2030275	THROSSELL ST	0.44
2030206	THROUGH RD	1.30
2030128	TILLMANS RD	0.74
2030205	TIN MINE RD_(F)	6.65
2030200	TINKERS FLAT RD_(F)	8.05
2030269	TOURMALINE ST	0.97
2030199	TOWER RD_(F)	5.79
2030148	TOYER RD	0.22
2030335	TROTTS RD	1.07
2030026	TURNER ST	1.31
2030003	TWEED RD	24.61
2030139	VLAMOV RD	0.73
2030339	WAGEBADENUP RIDGE	0.46
2030201	WALCOTT RD_(F)	5.71
2030109	WALTER RD	1.49
2030146	WALTER ST	0.45
2030276	WALTER ST	0.12
2030040	WALTER-WILLIS RD	6.20
2030320	WANDOO WAY	0.16
2030039	WARBURTONS RD	2.42
2030297	WARNER ST	0.48
2030089	WARRANINNI RD	3.54
2030137	WATERS FORD RD	1.25
2030053	WATERS RD	3.60
2030102	WATSON RD	2.54
2030012	WESTBOURNE RD	3.86
2030224	WET-KOPJE RD	0.80
2030024	WHEATLEY CROWD RD	5.67
2030020	WHEATLEY GIBLETT RD	7.60
2030087	WHEATLEY RD	0.82
2030343	WHEATLEY ST	1.15
2030196	WHIM LANDING RD_(F)	11.43
2030049	WHITTELLS RD	1.20
2030256	WILGA RD	13.25
2030123	WILGARUP RD	4.99
2030230	WILKES RD	0.35
2030093	WILKINS RD	0.45
2030248	WILKINSONS RD	1.02
2030152	WILLIAM ST	0.90
2030278	WILLIAMS RD	0.23
2030054	WILLMOTT RD	0.68
2030383	WINESAP VIEW	0.45
2030001	WINNIJUP RD	20.40
2030240	WOOD RD	0.58
2030166	WOODHEAD RD	0.60
2030357	WOODLANDS VIEW	0.77
2030271	WOODWARD ST	0.49
2030062	YERRILEE RD	3.65
2030135	YORNUP SIDING RD	0.13
2030130	YOUNG TILLMAN RD	0.38
2030318	YOUNG'S LANE	0.59
2030131	YOVANCHE RD	1.15

APPENDIX

5

Flora species in the Shire of Bridgetown-Greenbushes

(Source – WA Herbarium)

Note: not a comprehensive list, * = exotic species.

**Abutilon theophrasti*
Acacia alata var. alata
Acacia applanata
Acacia biflora
Acacia browniana
Acacia browniana var. obscura
Acacia dentifera
Acacia divergens
Acacia drummondii
Acacia drummondii subsp. drummondii
Acacia extensa
Acacia gilbertii
Acacia huegelii
Acacia incurva
Acacia insolita
Acacia insolita subsp. insolita
Acacia lateriticola
Acacia lullfitziorum ms P3
Acacia myrtifolia
Acacia nervosa
Acacia oncinophylla subsp. patulifolia P2
Acacia pulchella
Acacia pulchella var. glaberrima
Acacia pulchella var. goadbyi
Acacia pulchella var. pulchella
**Acacia pycnantha*
Acacia saligna
Acacia scalpelliformis
Acacia stenoptera
Acacia teretifolia
Acacia urophylla
Acacia varia
**Acaena echinata var. echinata*
**Acetosella vulgaris*
Adenanthos obovatus
Adiantum aethiopicum
Agonis linearifolia
Agonis parviceps
Agonis sp.Coarse Agonis(J.R.Wheeler 2939)
Allium triquetrum
Allocasuarina humilis
**Amaryllis belladonna*
Amperea ericoides
Amperea simulans
Amperea volubilis
Amphibromus nervosus
Amphipogon amphipogonoides
Amyema miquelii
**Anagallis arvensis*
**Anagallis arvensis var. "unsorted"*
Anarthria laevis
Anarthria prolifera
Andersonia caerulea
Anigozanthos bicolor subsp. decrescens
Anigozanthos flavidus
Anigozanthos manglesii subsp. manglesii
Aotus gracillima
Aphelia drummondii
Apium prostratum
Apium prostratum var. prostratum
Astartea sp.Gingalup(N.Gibson & M.Lyons 119)
Astartea sp.juniperina(G.J.Keighery 9558)
Astartea sp.Rivers(K.Newbey 1740)
Aster subulatus
Asteridea nivea
Astroloma baxteri
Astroloma ciliatum
Astroloma drummondii
Astroloma pallidum
Austrodanthonia acerosa
Austrodanthonia setacea
Austrostipa campylachne
Austrostipa elegantissima
Austrostipa semibarbata
Azolla pinnata
Baeckea camphorosmae
Banksia grandis
Banksia littoralis
Banksia seminuda
Banksia sphaerocarpa var. sphaerocarpa
Baumea articulata
Baumea juncea
Baumea preissii
Baumea rubiginosa
Baumea vaginalis
Billardiera coeruleo-punctata
Billardiera drummondiana
Billardiera floribunda
Billardiera variifolia
Bolboschoenus caldwellii
**Borago officinalis*
Boronia crenulata
Boronia crenulata var. crenulata
Boronia defoliata
Boronia fastigiata
Boronia fastigiata subsp. tenuior ms
Boronia megastigma
Boronia nematophylla
Boronia spathulata
Boronia subsessilis

Borya scirpoidea
Borya sphaerocephala
Bossiaea aquifolium subsp. aquifolium
Bossiaea aquifolium subsp. laidlawiana
Bossiaea eriocarpa
Bossiaea linophylla
Bossiaea ornata
Bossiaea rufa
Brachyscome iberidifolia
Brachysema melanopetalum
Brachysema praemorsum
Brachysema sericeum
Bracteantha bracteata
Brassica tournefortii
**Bromus hordeaceus*
Burchardia congesta
Burchardia monantha
Burchardia multiflora
Caesia micrantha
Caladenia arrecta ms P4
Caladenia brownii ms
Caladenia caesarea subsp. caesarea ms
Caladenia cairnsiana
Caladenia christineae ms R
Caladenia corynephora
Caladenia flava
Caladenia flava subsp. flava ms
Caladenia harringtoniae ms R
Caladenia infundibularis
Caladenia lobata
Caladenia longiclavata
Caladenia macrostylis
Caladenia nana subsp. nana ms
Caladenia nana subsp. unita ms
Caladenia paludosa ms
Caladenia radiata
Caladenia reptans subsp. reptans ms
Caladenia serotina ms
Caladenia splendens ms
Caladenia uliginosa subsp. uliginosa ms
Caladenia varians subsp. hiemalis ms
Caladenia x lavandulacea
Callistachys lanceolata
Callistemon phoeniceus
**Callitriche stagnalis*
Calothamnus lateralis
Calytrix flavescens
Calytrix tetragona
Calytrix variabilis
Camelina sativa
Carduus pycnocephalus
**Carduus tenuiflorus*
Carex tereticaulis P1
Cassytha glabella
Cassytha racemosa
**Centaurium erythraea*
**Centranthus ruber*
Centrolepis aristata
Centrolepis glabra
Chaetanthus aristatus ms
**Chamaecytisus palmensis*
Chamaescilla corymbosa
Chamaescilla corymbosa var. corymbosa
**Chenopodium glaucum*
**Chenopodium pumilio*
Chordifex laxus ms
Choretrum lateriflorum
Chorizandra cymbaria
Chorizandra enodis
Chorizema cordatum
Chorizema ilicifolium
Chorizema nanum
Chorizema rhombeum
Cichorium intybus
**Cirsium vulgare*
Clematis pubescens
Comesperma calymega
Comesperma flavum
Conospermum filifolium subsp. filifolium
Conospermum flexuosum
Conospermum flexuosum subsp. laevigatum
Conostephium preissii
Conostylis aculeata subsp. aculeata
Conostylis pusilla
Conostylis serrulata
Conostylis setigera
Conostylis setigera subsp. setigera
**Conyza albida*
**Coronopus didymus*
**Corrigiola litoralis*
Corybas recurvus
Corymbia calophylla
**Cotula coronopifolia*
Craspedia variabilis
Crassula decumbens var. decumbens
Cryptandra arbutiflora
Cryptandra arbutiflora var. tubulosa
Cryptostylis ovata
Cucumis myriocarpus
Cyanicula sericea ms
Cyathochaeta avenacea
Cyperus tenellus
Cyrtostylis huegelii
Cyrtostylis robusta
Dampiera alata
Dampiera heteroptera P3
Dampiera linearis
Darwinia citriodora
Darwinia inconspicua ms
Darwinia thymoides
Dasypogon bromeliifolius
Daucus glochidiatus

Daviesia cordata
Daviesia incrassata subsp. incrassata
Daviesia preissii
Desmocladus fasciculatus ms
Desmocladus flexuosus ms
Deyeuxia quadriseta
Deyeuxia quadriseta var. quadriseta
Dianella revoluta
Dichelachne crinita
Dichondra repens
Dillwynia sp.A Perth Flora(R.Coveny 8036)
Diplolaena graniticola
Diplolaena microcephala
Diplopogon setaceus
**Dittrichia graveolens*
Drakaea glyptodon
Drakaea livida
Drakonorchis barbarossa ms
Drosera erythrorhiza
Drosera gigantea subsp. gigantea
Drosera glanduligera
Drosera macrantha subsp. macrantha
Drosera menziesii subsp. penicillaris
Drosera pallida
Drosera platypoda
Drosera rosulata
Dryandra armata var. armata
Dryandra bipinnatifida
Dryandra formosa
Dryandra lindleyana subsp. sylvestris
Dryandra lindleyana var. mellicula
Dryandra nana
Dryandra sessilis var. sessilis
Dysphania glomulifera subsp. glomulifera
**Echinochloa esculenta*
**Echinochloa oryzoides*
Elymus scaber
Elythranthera emarginata
Epilobium billardierianum subsp. billardierianum
Epilobium hirtigerum
Eragrostis brownii
Eragrostis elongata
Erigeron karvinskianus
Eriochilus dilatatus subsp. multiflorus ms
Eriochilus helonomos ms
Eriostemon gardneri subsp. globosa ms P1
Eriostemon nodiflorus
Eriostemon nodiflorus subsp. lasiocalyx
Eriostemon spicatus
Eryngium pinnatifidum
Eucalyptus aspersa P4
Eucalyptus decipiens
Eucalyptus decipiens subsp. chalara
Eucalyptus diversicolor
Eucalyptus drummondii
Eucalyptus falcata
Eucalyptus marginata
Eucalyptus marginata subsp. marginata
Eucalyptus patens
Euchiton gymnocephalus P3
Euchiton sphaericus
**Euphorbia lathyrus*
Eutaxia virgata
Franklandia triaristata P4
**Fumaria muralis*
Gahnia aristata
Gahnia lanigera
**Galium divaricatum*
Gastrolobium calycinum
Gastrolobium glabratum ms P4
Gastrolobium spinosum
**Genista monspessulana*
Geranium retrorsum
Geranium solanderi
**Gladiolus cardinalis*
Glischrocaryon roei
Gnephosis drummondii
Gompholobium marginatum
Gompholobium ovatum
Gompholobium preissii
Gompholobium scabrum
Gonocarpus benthamii
Gonocarpus diffusus
Gonocarpus hexandrus
Gonocarpus paniculatus
Goodenia caerulea
Goodenia eatoniana
Goodenia pulchella
Goodenia pusilla
Goodenia scapigera
Gratiola pubescens
Grevillea centristigma
Grevillea cirsiifolia P4
Grevillea disjuncta
Grevillea drummondii P4
Grevillea leptobotrys
Grevillea manglesioides
Grevillea pulchella
Grevillea ripicola P4
Grevillea trifida
Grevillea vestita
**Gynandriris setifolia*
Haemodorum laxum
Haemodorum simplex
Haemodorum sparsiflorum
Hakea amplexicaulis
Hakea ceratophylla
Hakea cyclocarpa
Hakea lissocarpha
Hakea oleifolia
Hakea prostrata
Hakea ruscifolia

Hakea undulata
Hakea varia
Hardenbergia comptoniana
Hemarthria uncinata
Hemarthria uncinata var. uncinata
Hemigenia incana
Hemigenia podalyrina
Hemigenia rigida
Hibbertia amplexicaulis
Hibbertia commutata
Hibbertia cunninghamii
Hibbertia furfuracea
Hibbertia hypericoides
Hibbertia inconspicua
Hibbertia nymphaea
Hibbertia pulchra
Hibbertia racemosa
Hibbertia rupicola
Hibbertia stellaris
Homalosciadium homalocarpum
Homalospermum firmum
Hovea chorizemifolia
Hovea elliptica
Hovea trisperma
Hyalosperma demissum
Hyalosperma simplex
Hybanthus calycinus
Hybanthus debilissimus
Hybanthus floribundus subsp. floribundus
Hydrocotyle alata
Hydrocotyle callicarpa
Hydrocotyle plebeya
**Hyparrhenia hirta*
**Hypericum perforatum*
**Hypericum perforatum var. "unsorted"*
Hypocalymma angustifolium
**Hypochaeris glabra*
**Hypochaeris radicata*
Hypolaena exsulca
Hypoxis occidentalis var. quadriloba
Isoetes drummondii
Isolepis cernua
Isolepis cyperoides
Isolepis fluitans
**Isolepis marginata*
Isopogon attenuatus
Isopogon sphaerocephalus
Isotoma hypocrateriformis
Isotropis cuneifolia
**Ixia paniculata*
Jacksonia furcellata
Jacksonia horrida
Jacksonia sparsa ms P3
Johnsonia lupulina
**Juncus articulatus*
**Juncus bufonius*
Juncus gregiflorus
Juncus holoschoenus
Juncus kraussii
Juncus kraussii subsp. australiensis
**Juncus microcephalus*
**Juncus oxycarpus*
Juncus pallidus
Juncus planifolius
Juncus subsecundus
Kennedia carinata
Kennedia coccinea
Kennedia prostrata
**Kickxia elatine subsp. crinita*
**Kickxia spuria subsp.*
Kunzea micrantha
Kunzea micrantha subsp. oligandra
Kunzea recurva
Labichea punctata
Lagenifera huegelii
**Lamium amplexicaule*
Lasiopetalum floribundum
**Lathyrus latifolius*
Latrobea tenella var. tenella
**Lavandula stoechas*
Laxmannia squarrosa
Lechenaultia expansa
Lechenaultia formosa
**Lepidium africanum*
Lepidosperma effusum
Lepidosperma gracile
Lepidosperma leptostachyum
Lepidosperma longitudinale
Lepidosperma squamatum
Lepidosperma squamatum
Leporella fimbriata
Leptocarpus crebriculmis ms
Leptocarpus kraussii ms
Leptocarpus ramosissimus ms
Leptocarpus tenax
Leptoceras menziesii
Leptomeria cunninghamii
Leptospermum erubescens
Leptospermum laevigatum
Lepyrodia drummondiana
Lepyrodia muirii
**Leucojum aestivum*
Leucopogon australis
Leucopogon capitellatus
Leucopogon cymbiformis
Leucopogon obovatus
Leucopogon oxycedrus
Leucopogon pendulus
Leucopogon polymorphus
Leucopogon propinquus
Leucopogon pulchellus
Leucopogon strictus

Leucopogon verticillatus
Lindsaea linearis
Linum marginale
**Linum trigynum*
Lobelia alata
Lobelia gibbosa
Lobelia heterophylla
Lobelia rhombifolia
Lobelia rhytidosperma
Logania campanulata
Logania serpyllifolia
Logania tortuosa
Lomandra brittanii
Lomandra caespitosa
Lomandra drummondii
Lomandra hermaphrodita
Lomandra integra
Lomandra micrantha
Lomandra odora
Lomandra pauciflora
Lomandra preissii
Lomandra sericea
Lomandra sonderi
Lomandra spartea
**Lonicera japonica*
**Lotus uliginosus*
Loxocarya flexuosa
Luzula meridionalis
Lyginia barbata
Lyperanthus serratus
Lythrum hyssopifolia
Macrozamia riedlei
**Marrubium vulgare*
Marsilea mutica
Meeboldina coangustata ms
Meeboldina kraussii ms
Meeboldina roycei ms
Meeboldina sp.white(C.A.Gardner s.n.)
Melaleuca densa
Melaleuca incana subsp. incana
Melaleuca lateritia
Melaleuca microphylla
Melaleuca preissiana
Melaleuca rhaphiophylla
Melaleuca striata
Melaleuca thymoides
Melaleuca viminea
**Mentha pulegium*
**Mentha x piperita nothovar. citrata*
Mesomelaena stygia
Mesomelaena tetragona
Microtis orbicularis
Millotia tenuifolia
Moluccella laevis
**Monadenia bracteata*
**Monopsis debilis*
**Muscari comosum*
Myoporum tetrandrum
Myosotis australis
Myriophyllum drummondii
**Narcissus pseudonarcissus*
Needhamiella pumilio
Neurachne alopecuroidea
Notodanthonia setacea
**Oenothera glazioviana*
**Oenothera stricta subsp. stricta*
Olax benthamiana
Olearia elaeophila
Olearia paucidentata
Opercularia echinocephala
Opercularia hispidula
Opercularia vaginata
**Oxalis corniculata*
**Oxalis incarnata*
Ozothamnus lepidophyllus
Paracaleana nigrita
Paraserianthes lophantha subsp. lophantha
**Parentucellia viscosa*
**Passiflora filamentosa*
Patersonia babianoides
Patersonia juncea
Patersonia pygmaea
Pelargonium littorale
Pelargonium littorale subsp. littorale
**Pennisetum villosum*
Pentapeltis peltigera
Pentapeltis silvatica
Persicaria prostrata
Persoonia elliptica
Persoonia longifolia
Persoonia saccata
Petrophile diversifolia
**Phalaris aquatica*
Phebalium obovatum ms
Philydrella drummondii
Phyllanthus calycinus
Phylloglossum drummondii
Picris angustifolia subsp. angustifolia
Pilularia novae-hollandiae
Pimelea ciliata subsp. ciliata
Pimelea cracens subsp. glabra
Pimelea imbricata
Pimelea lanata
Pimelea longiflora subsp. longiflora
Pimelea rara R
Pimelea spectabilis
Pimelea sulphurea
**Plantago coronopus subsp. commutata*
Platysace tenuissima
Platytheca galioides
Poa drummondiana
Poa porphyroclados

Podocarpus drouynianus
Podolepis gracilis
Potamogeton ochreatus
Prasophyllum brownii
Prasophyllum gracile
Prasophyllum macrostachyum
**Pseudognaphalium luteoalbum*
**Pteridium esculentum*
Pterostylis barbata
Pterostylis concava
Pterostylis recurva
Pterostylis sanguinea
Pterostylis vittata
Ptilotus drummondii
Ptilotus manglesii
Ptilotus sericostachyus subsp. sericostachyus
Pultenaea adunca
Pultenaea ochreata
Pultenaea reticulata
Pyrorchis nigricans
Ranunculus colonorum
**Ranunculus muricatus*
Ranunculus sessiliflorus
**Raphanus raphanistrum*
**Rapistrum rugosum*
Restio applanatus
Rhodanthe citrina
Romneya trichocalyx
Rorippa nasturtium-aquaticum
**Rosa rubiginosa*
**Rubus aff. selmeri*
**Rubus discolor*
**Rubus selmeri*
**Rubus ulmifolius*
Rulingia sp.Trigwell Bridge(R.Smith s.n. 20.6. R
**Rumex conglomeratus*
**Rumex crispus*
Samolus junceus
**Sanguisorba minor subsp. muricata*
Scaevola calliptera
Scaevola glandulifera
Scaevola repens
Scaevola striata var. arenaria
Schoenolaena juncea
Schoenolaena tenuior
Schoenus asperocarpus
Schoenus bifidus
Schoenus brevisetis
Schoenus efoliatus
Schoenus grandiflorus
Schoenus sublateralis
Schoenus unispiculatus
**Senecio glomeratus*
Senecio hispidulus
Senecio quadridentatus
**Setaria italica*
**Setaria sphacelata*
**Silybum marianum*
**Sisymbrium officinale*
Solanum hoplopetalum
Solanum simile
Sollya heterophylla
**Sonchus hydrophilus*
**Sparaxis bulbifera*
**Sparaxis pillansii*
Sphaerolobium daviesioides
Sphenotoma capitatum
Sphenotoma gracile
Spiculaea ciliata
Sporobolus virginicus
**Stachys arvensis*
Stackhousia monogyna
Stirlingia seselifolia
Stylidium affine
Stylidium brunonianum
Stylidium brunonianum subsp. minor
Stylidium caespitosum
Stylidium calcaratum
Stylidium caricifolium subsp. affine
Stylidium ciliatum
Stylidium crassifolium
Stylidium guttatum
Stylidium inundatum
Stylidium schoenoides
Styphelia tenuiflora
Synaphea floribunda
Synaphea gracillima
Synaphea obtusata
Synaphea petiolaris subsp. petiolaris
Taraxis grossa ms
Tetraria capillaris
Tetraria octandra
Tetrarrhena laevis
Tetratheca affinis
Tetratheca filiformis
Tetratheca hirsuta
Tetratheca setigera
Thelymitra antennifera
Thelymitra crinita
Thelymitra flexuosa
Themeda australis
Themeda triandra
Thomasia discolor P3
Thomasia foliosa
Thomasia grandiflora
Thomasia pauciflora
Thryptomene appressa
Thysanotus fastigiatus
Thysanotus multiflorus
Thysanotus tenellus
Thysanotus triandrus
**Tolpis barbata*

Trachymene pilosa
**Tragopogon porrifolius*
Tremandra diffusa
Tremandra stelligera
Tremulina cracens ms
**Tribolium uniolae*
Tribonanthes australis
Tribonanthes brachypetala
Tribonanthes longipetala
Tribonanthes violacea
Trichocline spathulata
Tricoryne elatior
Tricoryne humilis
Tricostularia neesii var. neesii
**Trifolium subterraneum*
Triglochin huegelii
Triglochin striatum
Tripterococcus brunonis
Trithuria bibracteata
Trymalium floribundum subsp. trifidum
Trymalium ledifolium var. rosmarinifolium
**Urtica urens*
Utricularia multifida
Velleia trinervis
**Vellereophyton dealbatum*
Verbascum virgatum
**Veronica arvensis*
Veronica plebeia
Veronica plebeia
Verticordia densiflora
Verticordia densiflora var. cespitosa
Verticordia habrantha
Verticordia pennigera
Verticordia plumosa
Verticordia plumosa var. brachyphylla
**Vicia benghalensis*
**Vicia hirsuta*
**Vicia sativa subsp. sativa*
Villarsia lasiosperma
Villarsia submersa P4
Wahlenbergia multicaulis
**Watsonia marginata*
Wurmbea sinora
Wurmbea tenella
Xanthorrhoea gracilis
Xanthorrhoea preissii
Xanthosia atkinsoniana
Xanthosia candida
Xanthosia huegelii
Xanthosia singuliflora
Xylomelum occidentale
Xyris lacera

Appendix

6

Weed species in the Shire of Bridgetown-Greenbushes

(Source –Blackwood Environment Society)

WOODY WEEDS

Trees

Acacia baileyana – Cootamundra Wattle
Acacia dealbata – Silver Wattle
Acacia decurrens – Early Black Wattle
Acacia iteaphylla – Flinder's Range Wattle
Acacia longifolia- Sydney Golden Wattle
Acacia mearnsii – Black Wattle
Acacia pycnantha – Golden Wattle
Cotoneaster spp. - Cotoneaster
Eucalyptus globulus – Tasmanian Bluegum
Olea europea - Olive
Opuntia stricta – Prickly Pear
Leptospermum laevigatum – Victorian Teatree
Pinus radiata – Radiata Pine
Pittosporum undulatum – Sweet Pittosporum
Populus alba – White Poplar
Populus nigra – Lombardy Poplar
Prunus cerasifera – Cherry Plum
Robinia pseudoacacia – Black Locust
Salix babylonica – Willow
Ulnus procera – English Elm

Shrubs

Chamaecytisus palmensis - Tagasaste
Genista spp. - Canary Broom
Gomphocarpus fruticosus – Narrowleaf Cottonbush
Lavandula stoechas-Topped Lavender or Spanish Lavender
Leptospermum laevigatum – Victorian Teatree
Podalyria sericea
Rubus Fruticosus aggreg. – Blackberry
Rosa rubiginosa – Sweet Briar

CLIMBERS

Dipogon lignosus – Dolichos Pea
Ipomoea indica – Purple Morning Glory
Lonicera japonica – Japanese Honeysuckle

GRASSES

Annual grasses

Avena fatua – Wild Oat
Briza maxima – Blowfly Grass
Briza minor - Shivery Grass
Bromus diandrus – Great Brome
Horde leporine – Barley Grass
Folium rigid – Annual Rye Grass
Poi annual - Winter Grass

Perennial Grasses

Arundo don ax – Giant Reed
Cortaderia selloana - Pampas Grass
Cynodon dactylon - Couch
Ehrharta calycina – Perennial Veldgrass
Eragrostis curvula – African Lovegrass
Paspalum dilatatum – Paspalum
Paspalum distichum – Water Couch
Pennisetum clandestinium – Kikuyu
Phalaris aquatica – Phalaris
Phalaris spp. – Other species

HERBS

Annual Herbs

Arctotheca calendula - Cape Weed
Carduus tenuiflorus – Sheep Thistle
Chenopodium album – Fat Hen
Conyza albida – Tall Fleabane
Dittrichia graveolens – Stinkwort
Fumaria sp. - Fumitory
Hypochaeris glabra – Flat Weed
Lactuca serriola – Prickly Lettuce
Lupinus angustifolius – Narrowleaf Lupin
Lupinus cosentinii – Western Australian Blue Lupin
Lupinus luteus – Yellow Lupin
Raphanus raphanistrum – Wild Radish
Silybum marianum – Variegated Thistle
Solanum nigrum – Black Nightshade
Trifolium spp. - Clover
Vicia sativa - Common Vetch

Perennial Herbs

Acetosella vulgaris - Sorrel
Centranthus ruber – Red Valerian
Plantago spp. - Plantain
Rumex spp. – Dock

Typha oreintalis - Typha
Vinca major – Blue Periwinkle
Yucca aloifolia - Yucca

CORMS, BULBS AND TUBERS
Allium triquetrum – Three – cornered Garlic
Asparagus asparagoides – Bridal Creeper
Babiana stricta – Baboon Flower
Chasmanthe floribunda – African Corn Flag
Freesia alba x leichtinii – Freesia
Gladiolus undulatus – Long Tubed Painted Lady
Gladiolus angustus – Wavy Gladiolus
Ixia maculata – Yellow Ixia
Ixia paniculata – Long Tubed Ixia
Oxalis caprina – White-flowered Oxalis
Oxalis pes – caprae – Soursob
Oxalis purpurea – Purple wood Sorrel
Tritonia lineata
Watsonia spp. – Watsonia
Zantedeschia aethiopica-Arum Lily

RUSHES AND SEDGES
Juncus acutus – Spiny Rush
Juncus microcephalus

Appendix

7

Maps of weed control sites: Bridal creeper, Blackberry & Watsonia

Appendix

8

Fauna Species in the Shire of Bridgetown-Greenbushes

(Source- WA Museum, Fauna Base)

****=introduced species. Note- not a comprehensive list.**
Latitude/longitude coordinates: -33.8333, 116.0000 and -34.1666, 116.4166

Family	Scientific name	Common name
Amphibians		
Hylidae		
	Litoria adelaidensis	**Slender Tree Frog**
	Litoria moorei	**Motorbike Frog or Bell Frog**
Myobatrachidae		
	Crinia Georgiana	**Quacking Frog**
	Crinia glauerti	**Glauert`s Froglet**
	Crinia pseudinsignifera	**Bleating Froglet**
	Crinia subinsignifera	**South Coast Froglet**
	Geocrinia leai	**Lea`s Frog**
	Heleioporus eyrie	**Moaning Frog**
	Limnodynastes dorsalis	**Bullfrog or Banjo Frog**
	Metacrinia nichollsi	**Nicholls` Toadlet**
	Myobatrachus gouldii	**Turtle Frog**
	Pseudophryne guentheri	**Crawling Frog or Günther`s Toadlet**
Reptiles		
Agamidae		
	Pogona minor minor	**Western Bearded Dragon**
Boidae		
	Morelia spilota imbricata	**Southern Carpet Python**
Cheluidae		
	Chelodina oblonga	**Oblong Turtle**
Elapidae		
	Notechis scutatus	**Tiger snake**
	Pseudonaja affinis affinis	**Dugite**
Gekkonidae		
	Christinus marmoratus	**Marbled Gecko**
	Diplodactylus polyophthalmus	**Speckled Stone Gecko**
Scincidae		
	Acritoscincus trilineatum **Southwestern**	**Cool Skink**
	Ctenotus delli	
	Ctenotus labillardieri	**Red-legged Skink**
	Egernia napoleonis	**Southwestern Crevice Skink**
	Hemiergis initialis initialis	**Five-toed Earless Skink**
	Hemiergis peronii peronii	**Four-toed Earless Skink**
	Lerista distinguenda	
	Lerista microtis microtis	
	Menetia greyii	**Common Dwarf Skink**
	Morethia obscura	**Woodland Flecked Skink**
	Tiliqua rugosa rugosa	**Southwestern Bobtail**
Typhlopidae		
	Ramphotyphlops australis	
Birds		
Acanthizidae		
	Acanthiza apicalis	**Broad-tailed Thornbill (Inland Thornbill)**

Family	Scientific name	Common name
	Acanthiza apicalis leeuwinensis	
	Acanthiza chrysorrhoa	**Yellow-rumped Thornbill**
	Acanthiza inornata	**Western Thornbill**
Accipitridae		
	Accipiter cirrocephalus	**Collared Sparrowhawk**
	Accipiter cirrocephalus cirrocephalus	
	Accipiter fasciatus fasciatus	**Brown Goshawk**
	Aquila audax	**Wedge-tailed Eagle**
	Circus assimilis	**Spotted Harrier**
	Elanus caeruleus axillaris	**Australian Black-shouldered Kite**
	Haliastur sphenurus	**Whistling Kite**
Aegothelidae		
	Aegotheles cristatus	**Australian Owlet Nightjar**
	Aegotheles cristatus cristatus	**Australian Owlet Nightjar**
Anatidae		
	Anas superciliosa	**Pacific Black Duck**
Ardeidae		
	Nycticorax caledonicus hilli	
Burhinidae		
	Burhinus grallarius	**Bush Stone-Curlew**
Campephagidae		
	Coracina maxima	**Ground Cuckoo-shrike**
	Coracina novaehollandiae	**Black-faced Cuckoo-Shrike**
	Coracina novaehollandiae novaehollandiae	**Black-faced Cuckoo-Shrike**
Caprimulgidae		
	Eurostopodus argus	**Spotted Nightjar**
Climacteridae		
	Climacteris rufa	**Rufous Treecreeper**
Columbidae		
	Phaps chalcoptera	**Common Bronzewing**
	Phaps elegans	**Brush Bronzewing**
Corvidae		
	Corvus coronoides perplexus	
Cracticidae		
	Cracticus tibicen	**Australian Magpie**
	Cracticus tibicen dorsalis	
Cuculidae		
	Cacomantis flabelliformis	**Fan-tailed Cuckoo**
	Cacomantis flabelliformis flabelliformis	
	Chrysococcyx lucidus plagosus	
	Cuculus pallidus	**Pallid Cuckoo**
Dicaeidae		
	Dicaeum hirundinaceum	**Mistletoebird**
Dicruridae		
	Grallina cyanoleuca	**Peewee**
	Myiagra inquieta	**Restless Flycatcher**
	Rhipidura fuliginosa preissi	
Falconidae		
	Falco berigora berigora	**Brown Falcon**
	Falco cenchroides cenchroides	**Nankeen Kestrel**
Halcyonidae		
	***Dacelo novaeguineae*	**Laughing Kookaburra**
	***Dacelo novaeguineae novaeguineae*	**Laughing Kookaburra**

Family	Scientific name	Common name
	Todiramphus sanctus sanctus	**Sacred Kingfisher**
Hirundinidae		
	Hirundo neoxena	**Welcome Swallow**
Maluridae		
	Malurus elegans	**Red-winged Fairy-wren**
	Malurus splendens	**Splendid Wren**
	Malurus splendens splendens	**Splendid Wren**
	Stipiturus malachurus westernensis	
Meliphagidae		
	Acanthorhynchus superciliosus	**Western Spinebill**
	Anthochaera carunculata	**Red Wattlebird**
	Anthochaera lunulate	**Western Little Wattlebird**
	Lichenostomus ornatus	**Yellow-plumed Honeyeater**
	Melithreptus chloropsis	**Western White-naped Honeyeater**
	Phylidonyris novaehollandiae	**Yellow-winged Honeyeater**
	Phylidonyris novaehollandiae longirostris	
Motacillidae		
	Anthus australis australis	
Neosittidae		
	Daphoenositta chrysoptera pileata	
Otididae		
	Ardeotis australis	**Australian Bustard**
Pachycephalidae		
	Colluricincla harmonica rufiventris	
	Falcunculus frontatus	**Shriketit**
	Pachycephala pectoralis fuliginosa	
	Pachycephala rufiventris rufiventris	**Rufous Whistler**
Pardalotidae		
	Pardalotus punctatus xanthopyge	**Yellow-rumped Pardalote**
	Pardalotus striatus	**Striated Pardalote**
	Pardalotus striatus westraliensis	
Passeridae		
	Stagonopleura oculata	**Red-eared Firetail**
Petroicidae		
	Eopsaltria australis griseogularis	**Western Yellow Robin**
	Eopsaltria georgiana	**White-breasted Robin**
	Eopsaltria griseogularis griseogularis	**Western Yellow Robin**
	Petroica multicolor campbelli	
Phalacrocoracidae		
	Phalacrocorax melanoleucos melanoleucos	
Phasianidae		
	Coturnix pectoralis	**Stubble Quail**
	Coturnix ypsilophora	**Brown Quail**
Podargidae		
	Podargus strigoides brachypterus	
Podicipedidae		
	Tachybaptus novaehollandiae novaehollandiae	**Australian Grebe**
Psittacidae		
	Cacatua pastinator pastinator	
	Calyptorhynchus banksii	**Red-tailed Black-Cockatoo**
	Calyptorhynchus banksii naso	**Forest Red-tailed Black Cockatoo**
	Calyptorhynchus baudinii	**Baudin`s Cockatoo**
	Calyptorhynchus latirostris	**Carnaby`s Cockatoo**
	Neophema elegans	**Elegant Parrot**

Family	Scientific name	Common name
	Platycercus icterotis	**Western Rosella**
	Platycercus icterotis icterotis	
	Platycercus spurius	**Red-capped Parrot**
	Platycercus zonarius	**Australian Ringneck (Ring-necked Parrot)**
	Platycercus zonarius semitorquatus	**Twenty-eight Parrot**
	Polytelis anthopeplus anthopeplus	**Regent Parrot**
Rallidae		
	Gallirallus philippensis mellori	
	Porphyrio porphyrio bellus	
	Rallus pectoralis clelandi	
Strigidae		
	Ninox connivens	**Barking Owl**
	Ninox connivens connivens	**Barking Owl**
	Ninox novaeseelandiae	**Boobook Owl**
Sylviidae		
	Acrocephalus australis	**Australian Reed Warbler**
	Megalurus gramineus gramineus	**Little Grassbird**
Turnicidae		
	Turnix varia varia	**Painted Bustard-Quail**
Tytonidae		
	Tyto alba	**Barn Owl**
	Tyto alba delicatula	
	Tyto novaehollandiae	**Masked Owl**
	Tyto novaehollandiae novaehollandiae	**Masked Owl**
Zosteropidae		
	Zosterops lateralis gouldi	
Mammals		
Burramyidae		
	Cercartetus concinnus	**Western Pygmy-possum, Mundarda**
Dasyuridae		
	Dasyurus geoffroii	**Western Quoll, Chuditch**
	Phascogale calura	**Red-tailed Phascogale**
	Phascogale tapoatafa	**Brush-tailed Phascogale**
	Phascogale tapoatafa tapoatafa	**Brush-tailed Phascogale, Wambenger**
	Sminthopsis griseoventer griseoventer	**Grey-bellied Dunnart**
Felidae		
	***Felis catus*	**Cat**
Macropodidae		
	Macropus fuliginosus	**Western Grey Kangaroo**
	Macropus irma	**Western Brush Wallaby**
Muridae		
	Hydromys chrysogaster	**Water rat**
	***Mus musculus*	**House mouse**
	Rattus fuscipes	**Bush rat**
	***Rattus rattus*	**Black rat**
Myrmecobiidae		
	Myrmecobius fasciatus	**Numbat, Walpurti**
Peramelidae		
	Isoodon obesulus fusciventer	
Phalangeridae		
	Trichosurus vulpecula	**Common brushtail possum**

Family	Scientific name	Common name
	Trichosurus vulpecula vulpecula	**Common Brushtail Possum**
Potoroidae		
	Bettongia penicillata	**Brush-tailed Bettong**
	Bettongia penicillata ogilbyi	**Brush-tailed Bettong or Woylie**
Pseudocheiridae		
	Pseudocheirus occidentalis	**Western Ringtail Possum**
	Pseudocheirus peregrinus	**Common ringtail possum**
Tachyglossidae		
	Tachyglossus aculeatus	**Short-beaked echidna**
Thylacomyidae		
	Macrotis lagotis	**Bilby**
Vespertilionidae		
	Nyctophilus geoffroyi	**Lesser long-eared bat**

APPENDIX

9

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

10

ROADSIDE CONSERVATION COMMITTEE

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;
- 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 will be 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, and the RCC's *Guidelines for Managing Special Environment Areas in Transport Corridors* and the *Roadside Handbook* also provides 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,
- 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.
- The RCC hope to establish links with the Tourist Commission for inclusion on wildflower tourist maps.

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.