

# Fire

## Guidelines for management of roadsides



having regard to both  
conservation and fire  
prevention

Fire is a natural component of the Western Australian environment

Most plants and animals have evolved strategies to cope



However this response is dependant on :



Seasonality



Intensity



Frequency

# Frequency

The period of  
time between  
successive fires



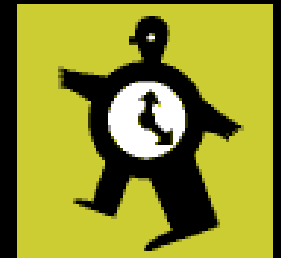
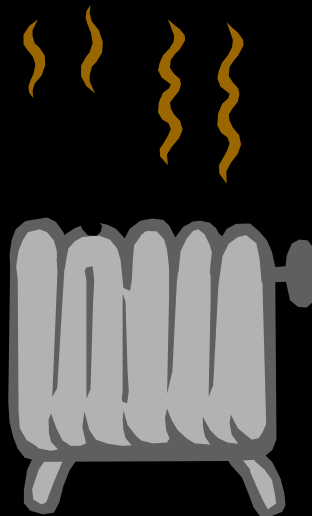
# Season

The time of the year  
the fire occurs



# Intensity / Duration

The severity of fire in terms of the rate of heat output and the length of time that fire is sustained



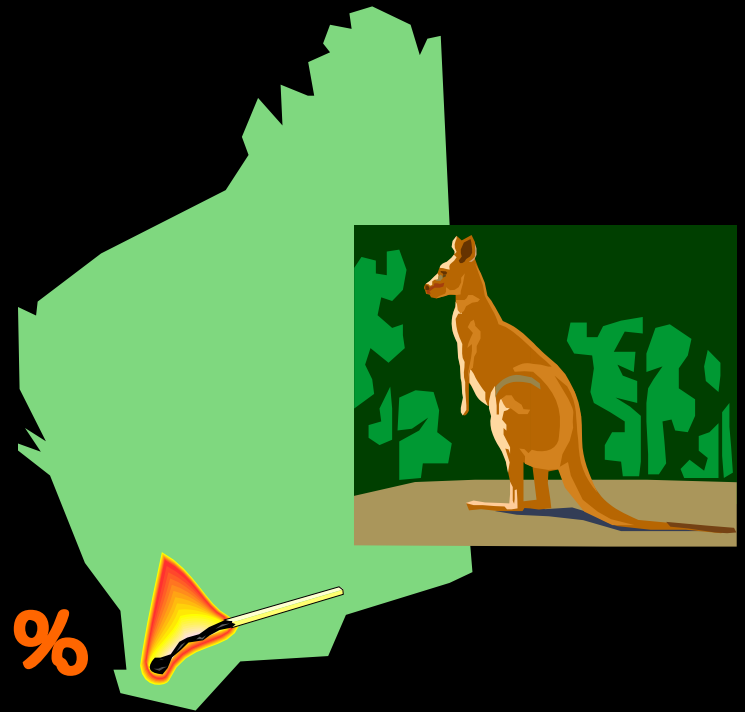


Fire is a major disturbance factor and often allows weeds to establish and out compete native vegetation

# Extent / Coverage

The size of the area  
burnt and the  
proportion of the  
area burnt

? %





# Prescribed FIRE on Roadsides



Use of fire to abate fire hazards on roadsides should be confined to those areas where identifiable hazards, high ignition risks and high values exist

This is generally on roadsides where the native vegetation has been replaced by annual grasses and weeds

Fire can kill animals outright or effect their long term survival by destroying or altering habitat



# THE THREAT TEST



Is there a heavy loading of highly flammable fuel

**NO**

Do not burn

**YES**

Is there property at risk from fire starting in the roadside

**NO**

Do not burn

**YES**

Can the property be adequately protected in any other way, e.g. fire breaks, herbicides

**YES**

Do not burn

**NO**

Are there any other methods of reducing fire threat from roadside, e.g. mowing

**YES**

Do not burn

**NO**

Seek expert advice from DCLM or FEŞA

# Minimise Roadside Fire Hazard

Control invasion and spread of weeds

Keep soil disturbance to a minimum

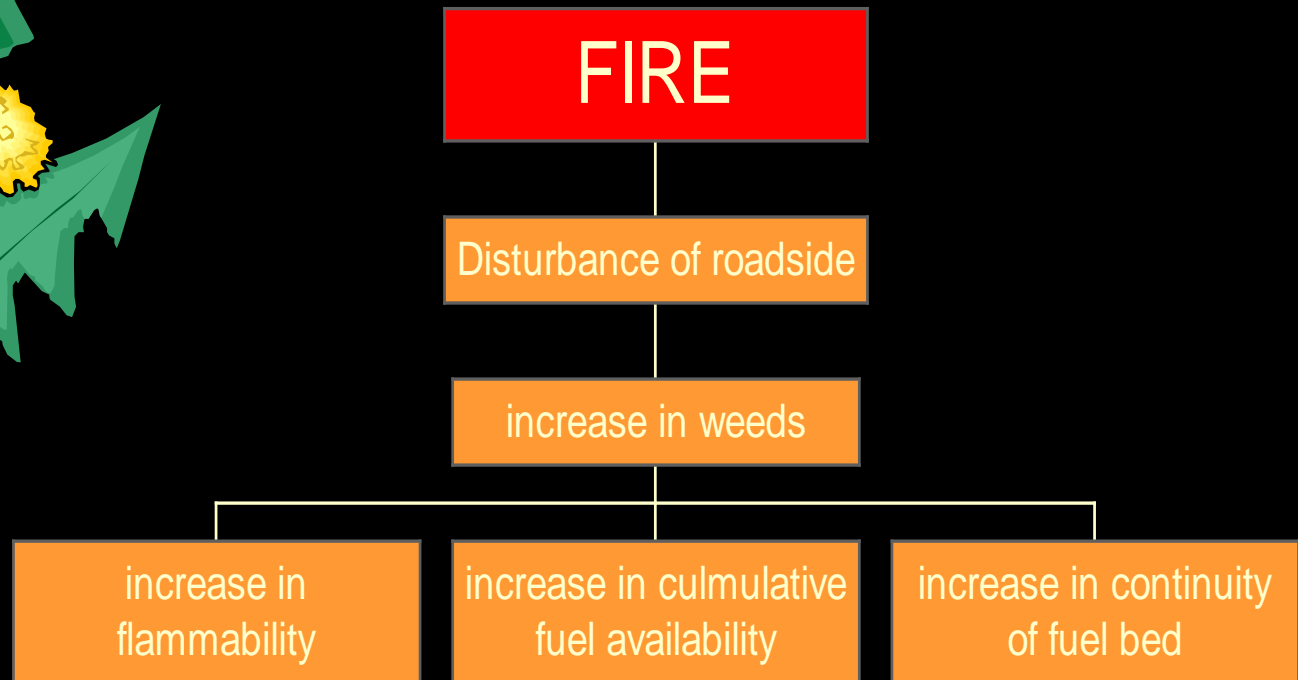
Manipulate fire frequency and seasonality  
to encourage native vegetation

Use mowing or herbicides to reduce fuel loads

Revegetate disturbed areas to  
reduce weed infestations



# Weeds and fire hazard



# When to use fire



- Under some circumstances fire can be used to advantage as an initial stage for recapturing control of established stands of perennial weeds.
- The use of fire should only be contemplated provided it is **SAFE** , not destructive to existing native vegetation and conforms with Local and State legislation with regard to fire

# Fire for Regeneration

Some plants are dependant on fire to regenerate but fire should only be used when all aspects of its use are understood.



# Firebreaks

Fire breaks should only be installed in the road reserve under exceptional circumstances and then only in wide road reserves



# Mapping Roadside Conservation Value




The Roadside Conservation Committee






# Roadside Surveys



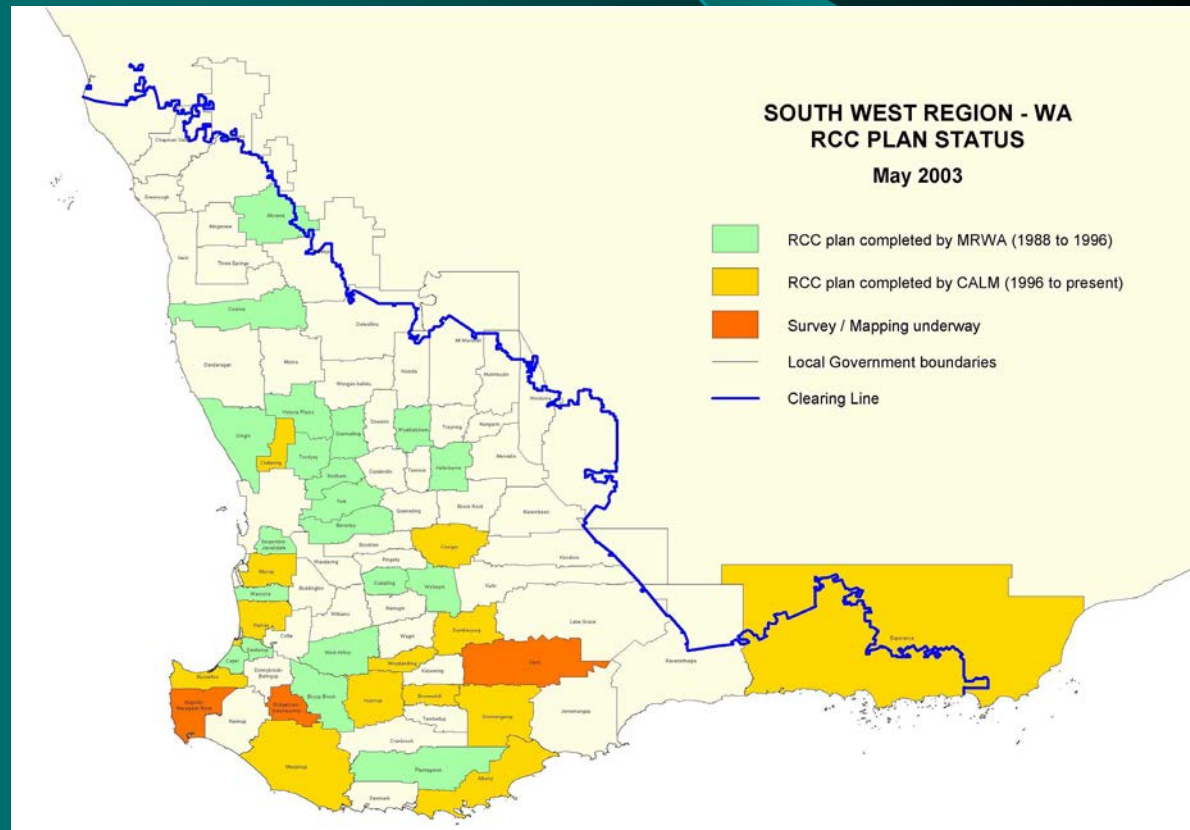
 The Roadside Conservation Committee is working with the community, volunteer groups, Shires and Landcare representatives in coordinating roadside surveys.

 The aim: to survey and map all of the roadsides within the south west land division and outlying areas.

# Roadside Surveys



 Surveys have been completed in 35 shires with > 75,000 km of roadside being surveyed by volunteers.





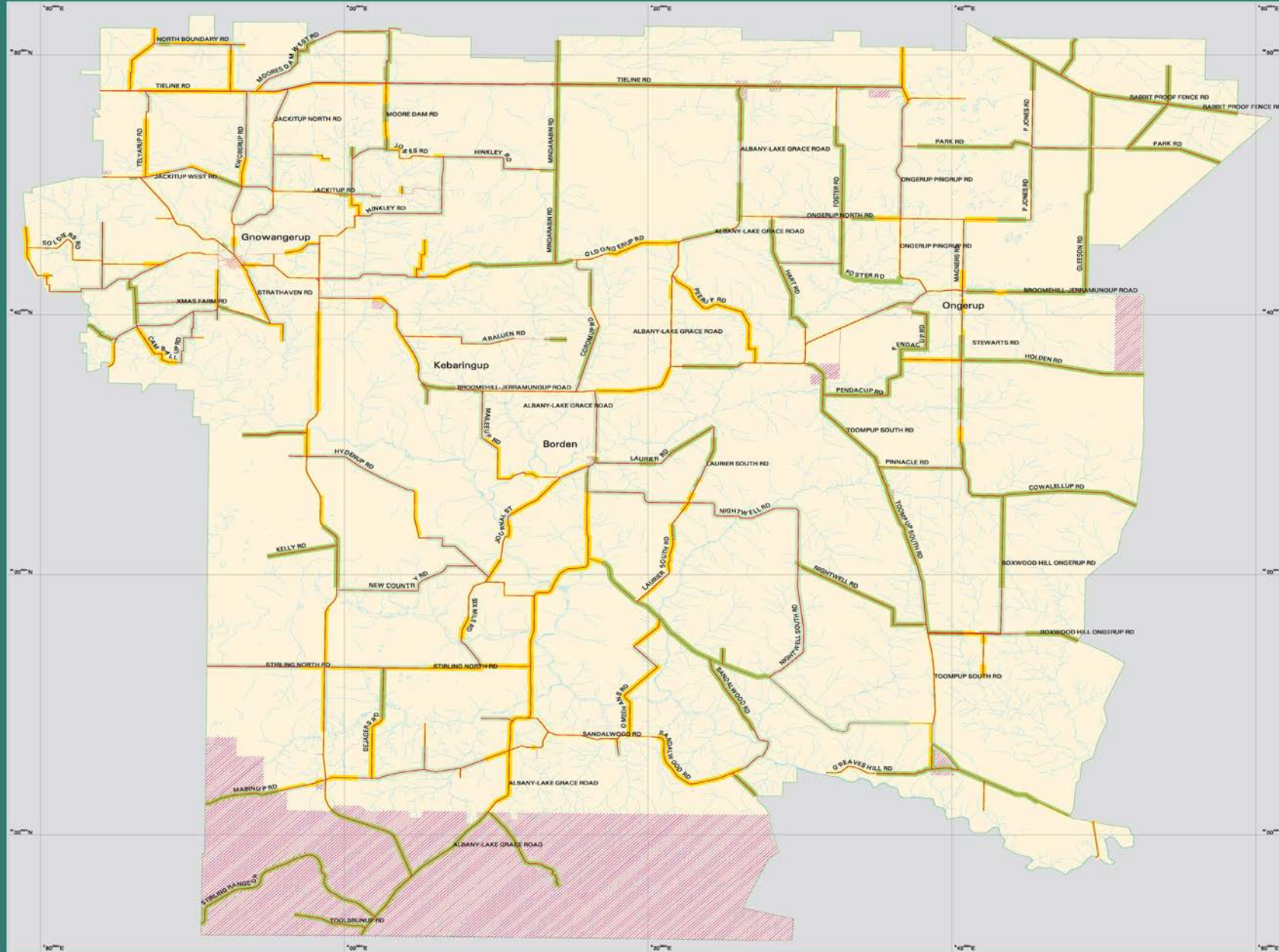
# What Is the RCC's Role?

- ✓ Provide **training** for community volunteers,
- ✓ **Process** the roadside data,
- ✓ **Assess** the conservation value of roadsides,
- ✓ **Supply** the community group & Shire with Roadside Conservation Value maps and weed overlays,
- ✓ Provide a summary **report** outlining the results of the roadside survey

# What Information Is Recorded?

- ✓ Width of road reserve
- ✓ Width of vegetation on roadside
- ✓ Structure of native vegetation
- ✓ Extent/continuity of native vegetation
- ✓ Weeds, general and specific
- ✓ Adjoining land use
- ✓ Presence of utilities
- ✓ Landscape value
- ✓ Conservation value





# SHIRE OF GNOWANGERUP

## Roadside Conservation Value

August 2001

Scale 1:100000



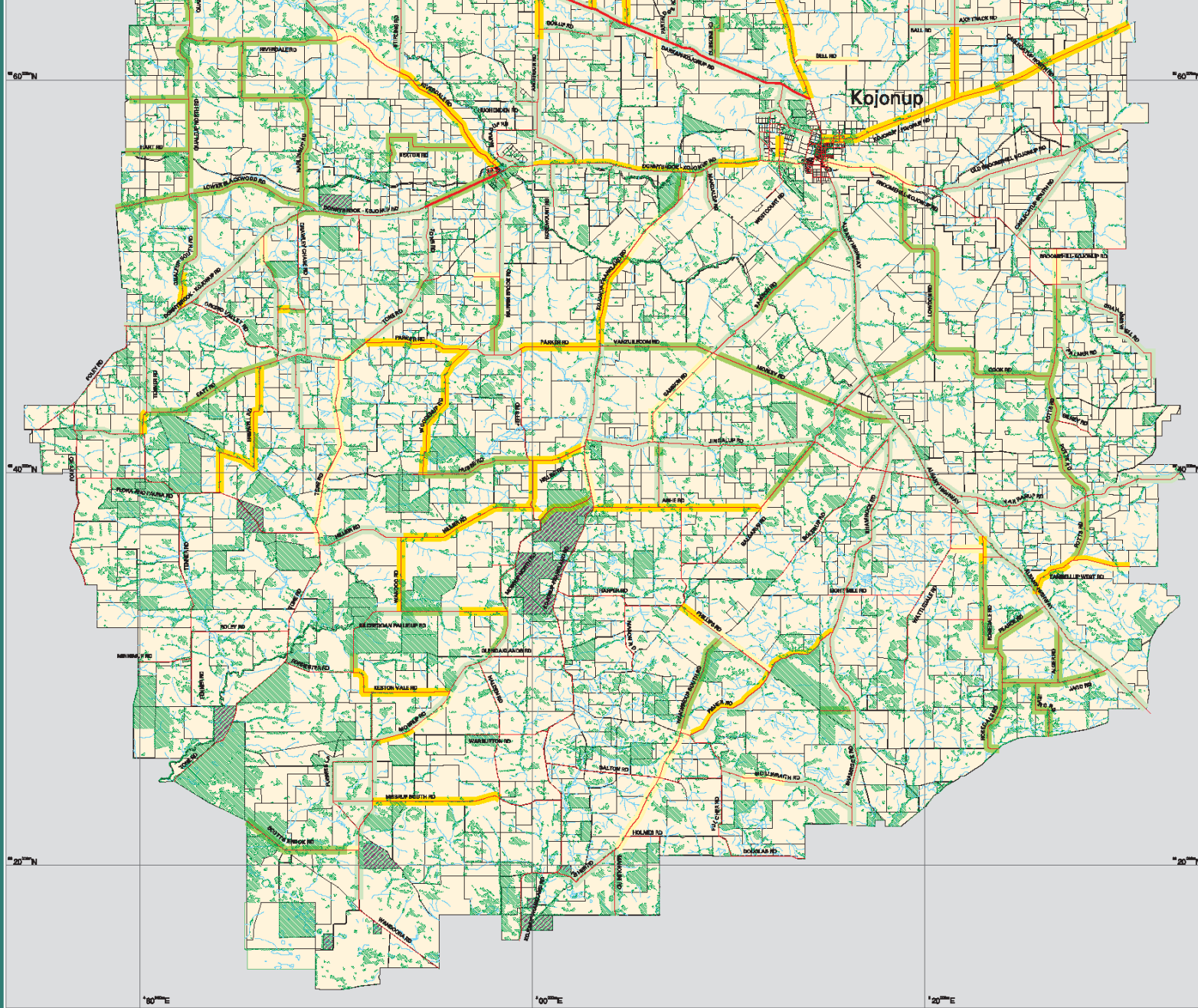
### LEGEND

- Low (0-4)
- Medium Low (5-6)
- Medium High (7-8)
- High (9-12)
- Reserve Width of 60m
- Reserve Width of 40m
- Reserve Width of 20m



**SOURCE OF DATA**  
 ROADS: Roads digitized from 1988 data supplied by DCA  
 HCG: Digitized in support of Resource Conservation Commission  
 COASTLINE: Digitized from 1:50,000 scale map  
 MATHS: Digitized by DCA, integrated by CALM using  
 ArcView software





# SHIRE OF KOJONUP

## Roadside Conservation Value

### LEGEND

- Low (0-4)
- Medium Low (5-6)
- Medium High (7-8)



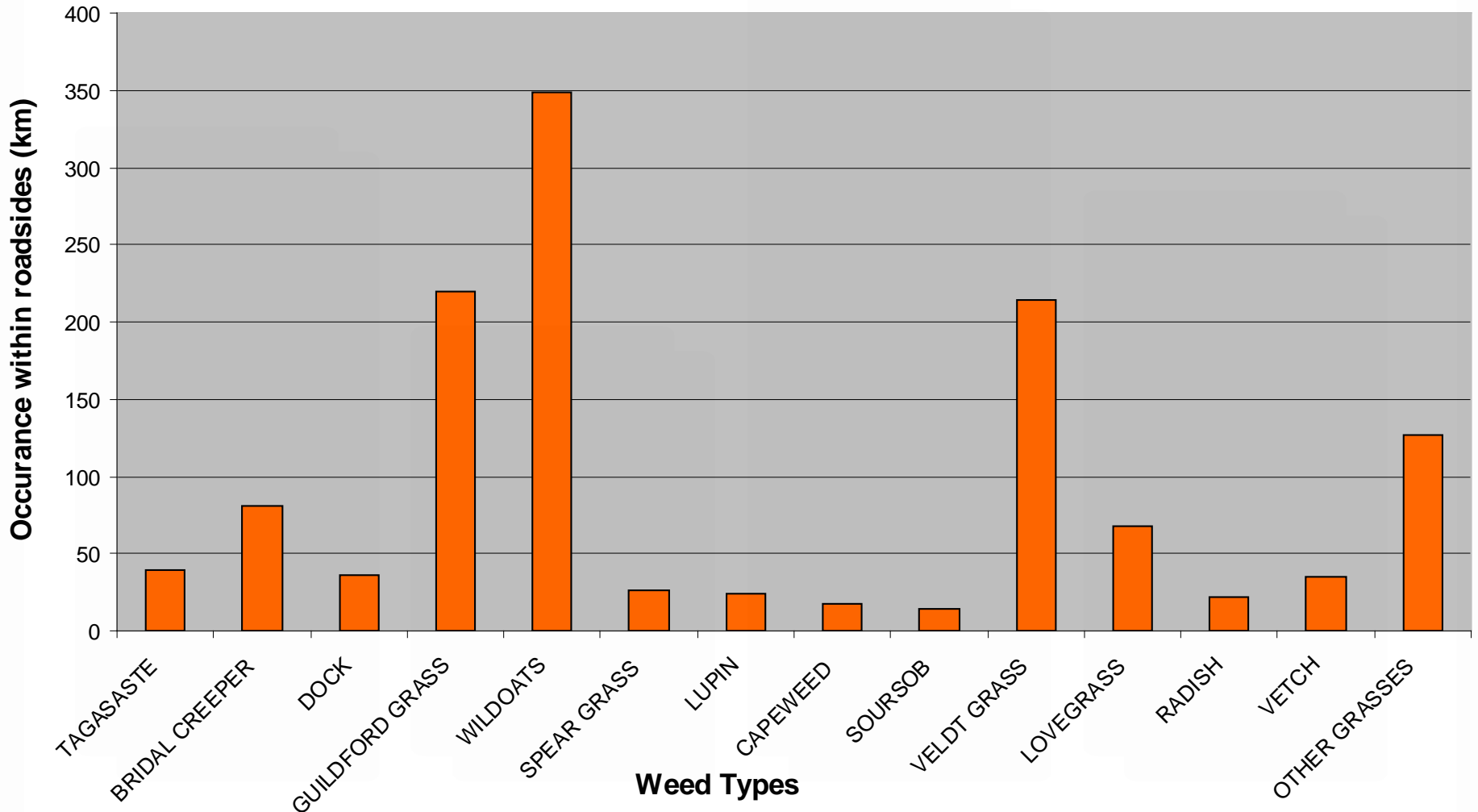
**SOURCES OF DATA**

**ROADS:** Road Network from 2004 updated by DOLA.  
**BM:** Spot heights supplied by DOLA.  
**CONTOURS:** Supplied by DOLA, version 0200.  
**VEGETATION:** Derived by DOLA, version 0104.  
**BOUNDARY:** SUPPLY ROADSIDE CONSERVATION VALUE



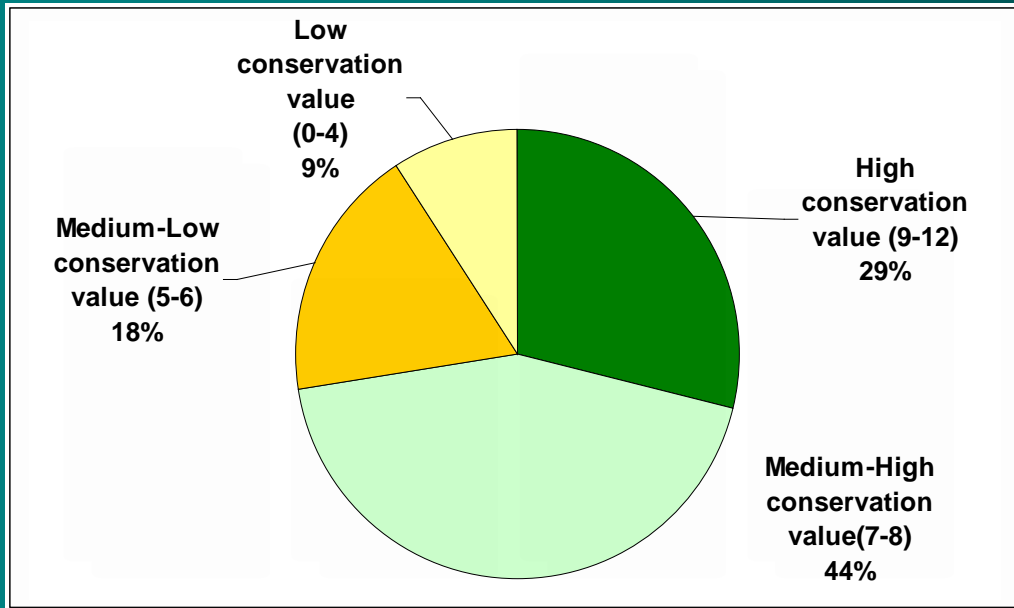
# Weeds Overlays

Weed occurrence along roadsides (kms)



# Purpose of the Map...

- ❖ Enable more effective management of roadside vegetation.
- ❖ Provide an inventory of the condition of the roadside vegetation.



- ❖ Study changes in conservation values over time.



# Applications of the Map...

- ❖ Management,
- ❖ Planning,
- ❖ On-ground programs/activities.

# Why Survey Roadsides?



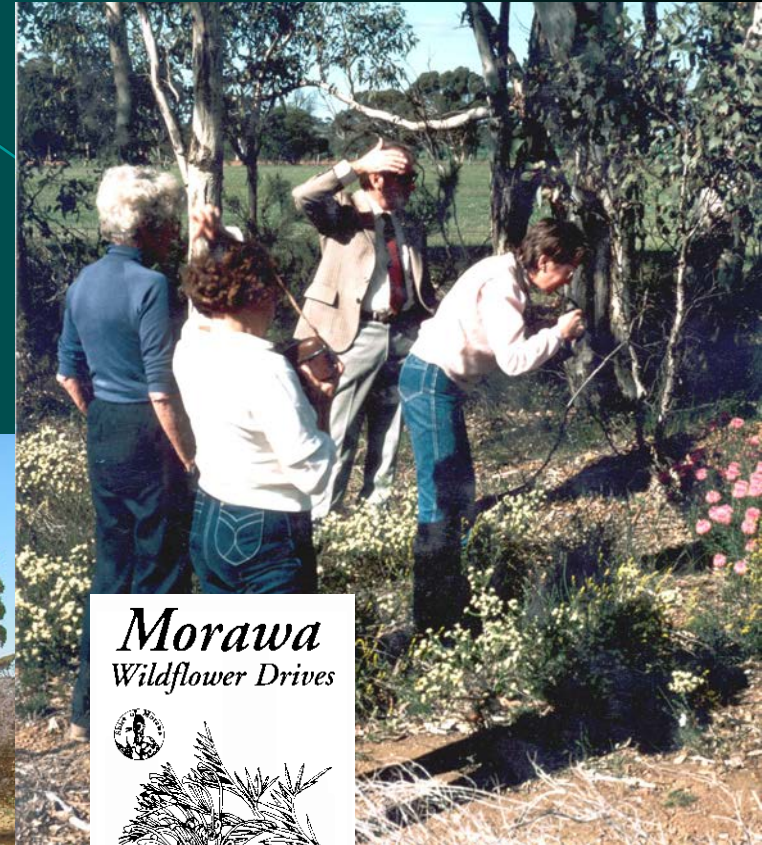
- ❖ People who use, live adjacent to, or work within the roadside can cause damage to the values found there (conservation, tourism, cultural, etc).



- ❖ Taking part in the roadside survey raises awareness of the values, threats and impacts.

# Why Survey Roadsides ?

❖ To promote significant historic, cultural or biological sites for tourism.

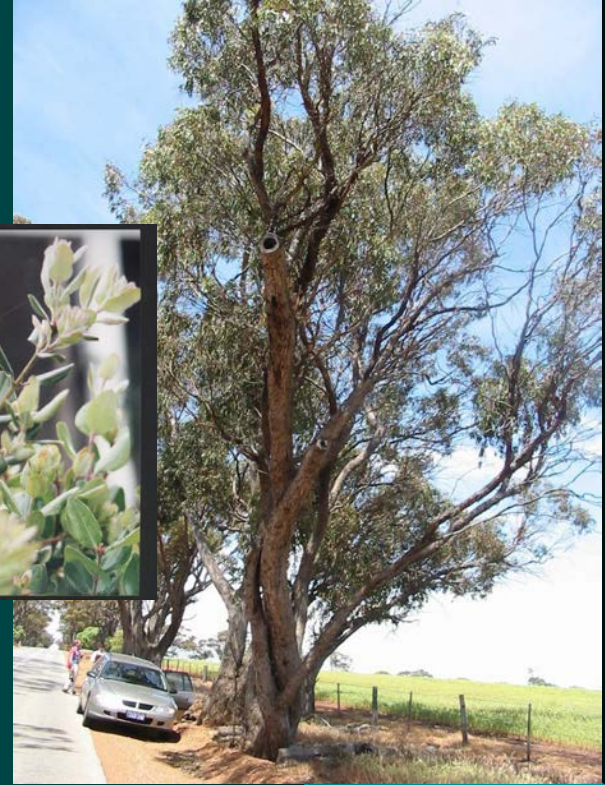


❖ Develop Wildflower Drives for tourism.



# Why Survey Roadsides ?

- ❖ Identify wildlife corridors and protect important fauna habitat.



- ❖ Integrate into revegetation projects, and other Landcare programs.

# Why Survey Roadsides ?

- ❖ Road managers should know of high value areas, in order to plan road works so that important areas of roadside vegetation are not disturbed.



# Why Survey Roadsides ?

❖ These maps are also important for service authorities such as:

- ✓ Western Power,
- ✓ Alinta Gas,
- ✓ Telstra, and
- ✓ the Water Corporation,

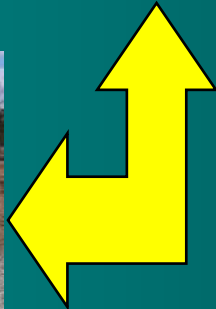
which often use the road corridor for the location of their services.



# Why Survey Roadsides ?

## ❖ Land degradation Issues

Salinity affected road surface



Sand drift smothers vegetation



Retaining roadside helps minimise soil erosion



# Why Survey Roadsides ?

- ❖ Fire control: the maps have been used to develop regional or district fire management plans,



- ❖ The weed overlays are especially useful in determining fire threats throughout the seasons.



# Why Survey Roadsides ?

- ❖ Changes to the E.P Act.

- ❖ The maps and survey information will be used as a reference, in setting recommendations and in planning.

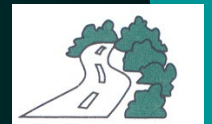
- ❖ Assist in the development of *Shire Roadside Vegetation Management Plans*, and in obtaining approval to clear vegetation for maintenance and construction



# Benefits to the Shire & Community

- ✓ Increase knowledge about, and awareness of, threats to roadside vegetation, and human impacts;
- ✓ Community ownership of map and survey data;
- ✓ Easy to interpret Management Tool:
  - Weed control, Wildlife corridors,**
  - Fire, Tourism,**
  - Revegetation, Road works**
- ✓ Builds bridges between community, Landcare and Shire;
- ✓ Baseline data, useful for measuring changes over time.

# Flora Roads



# What Are Flora Roads?

The RCC has defined Flora Roads as:

“Those roads which have conservation value owing to the vegetation growing within the reserve.”

# Principle Conservation Values: Flora Roads

- ❖ Contain a significant population of native vegetation, not introduced plants;



- ❖ Be in as near to its natural condition as possible;



- ❖ May be the only remaining example of original vegetation;

# Flora Roads...

- ✓ Provides a source of local seed for revegetation;
- ✓ Acts as wildlife habitat and/or corridor;
- ✓ Provides feeding and nesting sites;
- ✓ May contain threatened species or communities;
- ✓ Be situated near tourist routes.

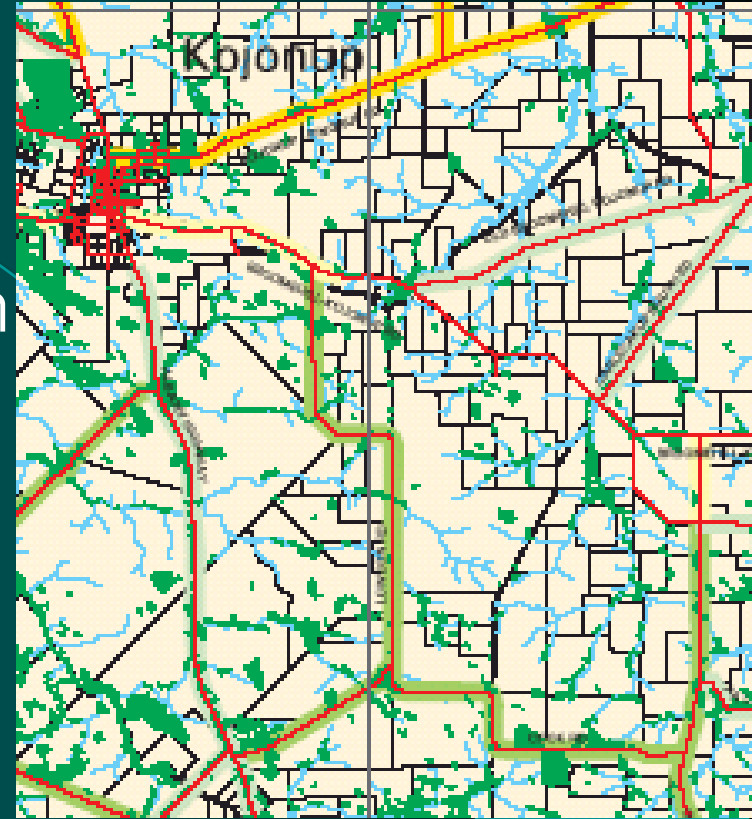


# History of Flora Roads...

- Began as an initiative of the RCC in December 1986,
- Encourage road managers to protect and preserve roadside vegetation of high conservation value,
- Standard sign developed by Main Roads WA in 1989,
- MRWA developed policy for the erection of Flora Road signage in 1992.

# Identification

- ❖ RCC roadside survey program identifies high conservation value roadsides.



- ❖ Only the managing authority in whom the care, control and management of the road can officially declare it a Flora Road.
- ❖ Support of road manager is essential.



# Management Implications

- Minimise disturbance to the roadside vegetation,
- Take into consideration the conservation and tourism values present, and take special care when working within the Flora Road section,
- Council may choose to adopt a Policy on Roadside Conservation,
- No legal requirements.

# Tourism Implications

- ❖ W.A. known as “Wildflower State”.
- ❖ 28% of international visitors come to WA to experience nature and wildlife.
- ❖ 11% come to experience rural life and the outback.
- ❖ Flora Roads will be very attractive to tourists, and would be suitable as part of tourist drive networks.
- ❖ Promote Flora Roads by small brochure or map.



# How Can You Help?

- ❖ Take part in a roadside survey to determine which roads are important for conservation;
- ❖ Contact the RCC for details;
- ❖ Nominate a roadside as a possible Flora Road;
- ❖ Integrate minimal disturbance techniques into projects;
- ❖ Utilise the RCV map in planning and management.

# Thank-you...

For further information please contact

**Kate Jackson**

**Technical Officer (Mapping)**

Roadside Conservation Committee

Phone: 9334 0174      Fax: 9334 0367

E-mail: [katej@calm.wa.gov.au](mailto:katej@calm.wa.gov.au)

# The Value of Roadside Vegetation



The Roadside Conservation Committee

# Membership of the Roadside Conservation Committee

Department of Conservation & Land Management

Main Roads Western Australia

WestNet Rail

AlintaGas

Western Power

Telstra

Conservation Council

Dept of Environment

Dept of Agriculture, Western Australia

Fire and Emergency Services Authority

Greening Australia Western Australia

Wildflower Society of Western Australia

Western Australian Local Government Association



# Terms of Reference of the RCC

*“..... to co ordinate and promote the conservation and effective management of rail and roadside vegetation for the benefit of the environment and the people of Western Australia”.*



# The Roads of Australia

The combined length of roads in Australia is equal to > 40 times around the equator



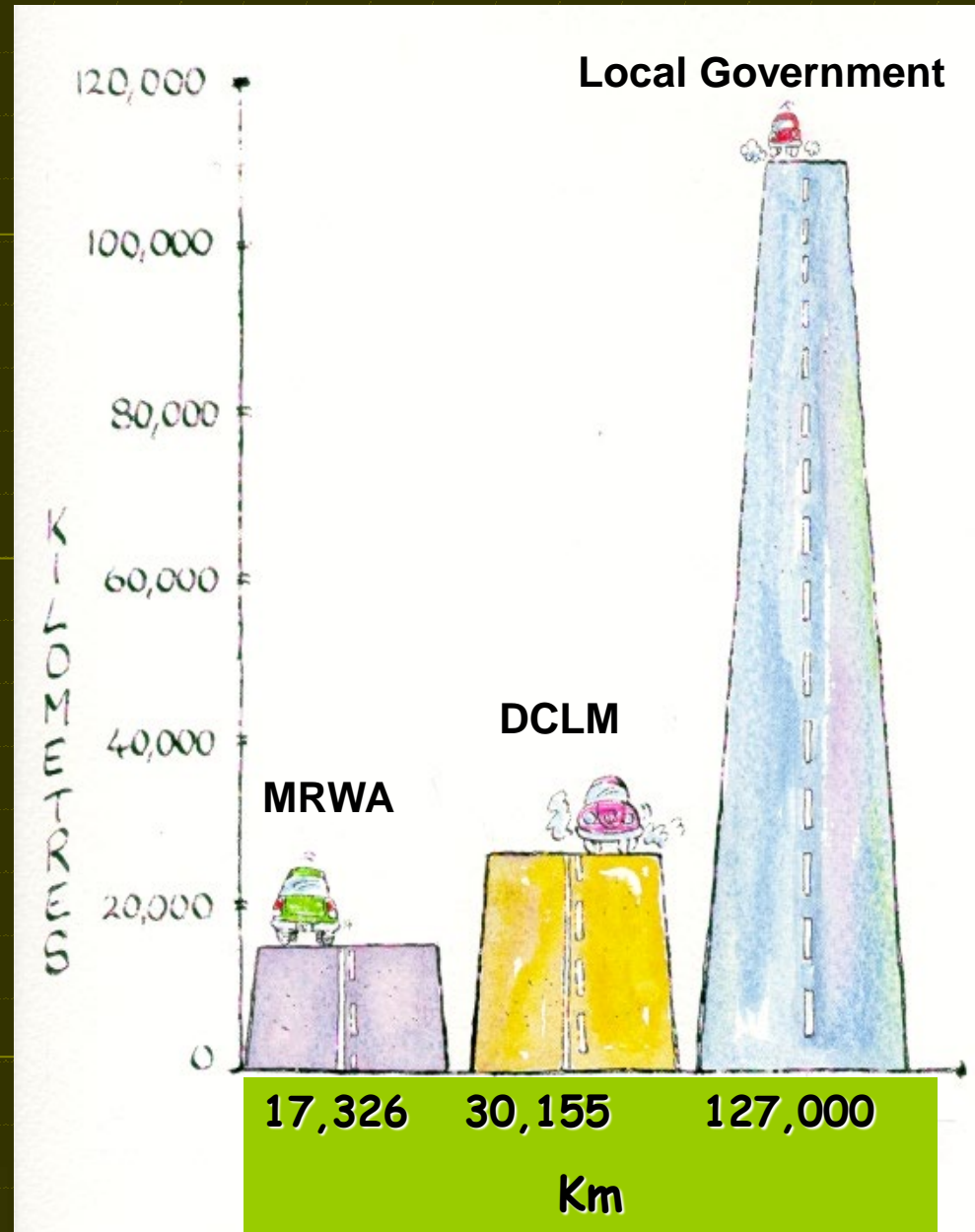
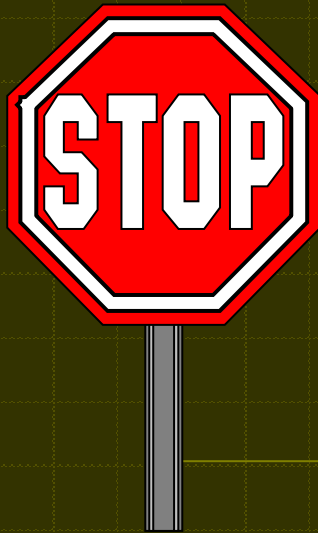


# The Roads of Australia

19 % of these are located in Western Australia and their management is shared by three main groups...

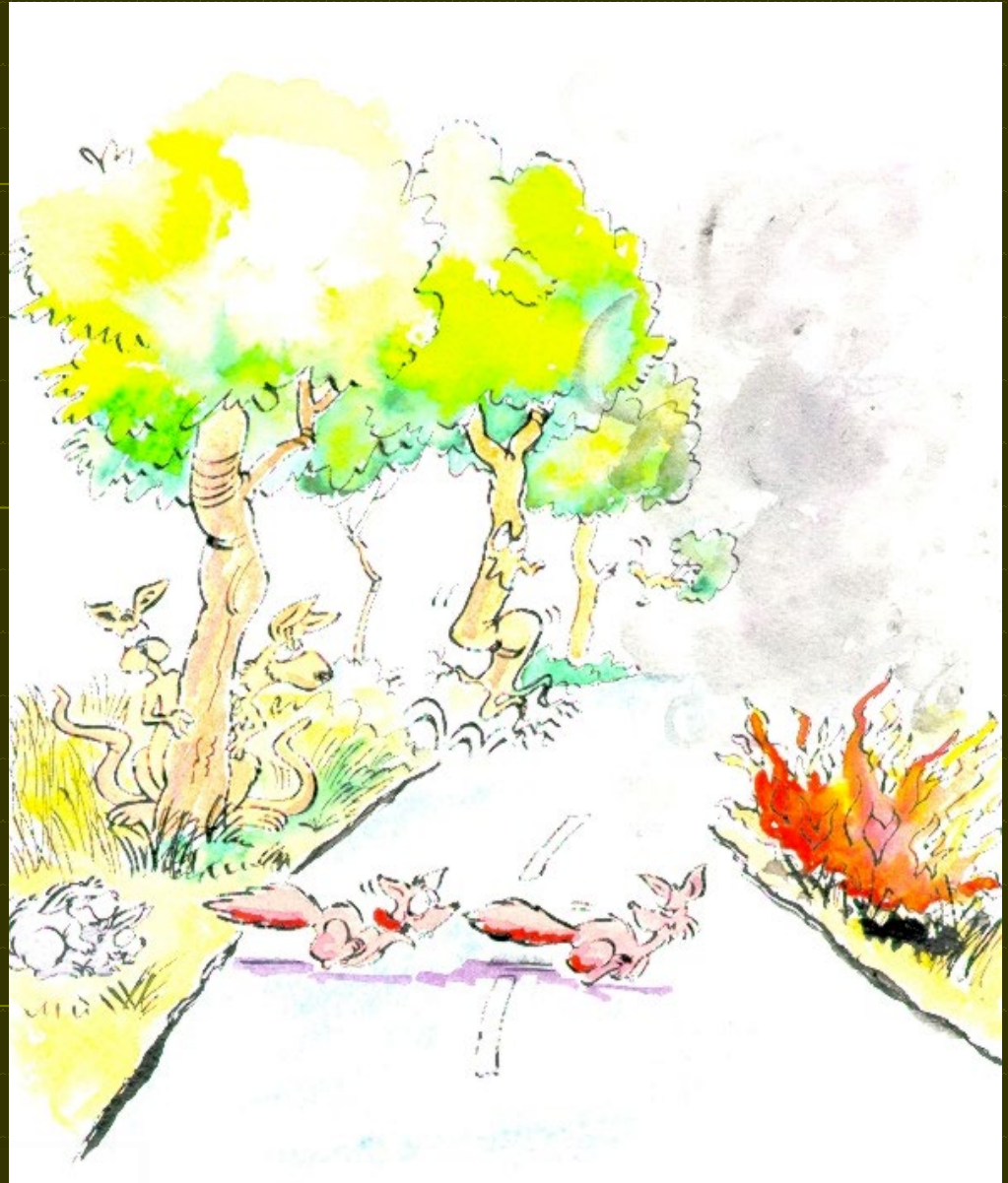


# Who Is Responsible for Our Roads ?



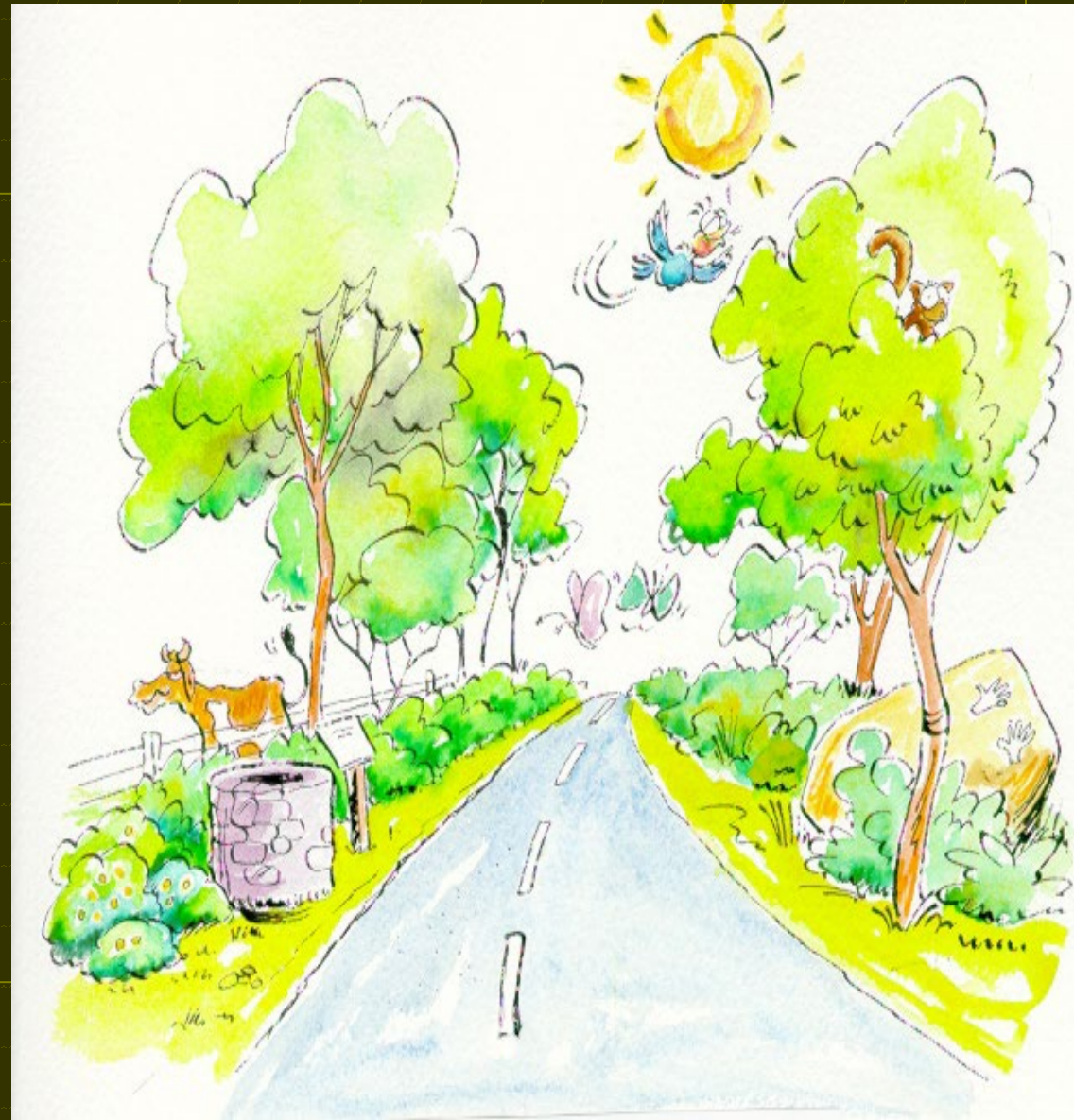
# Negative Views of Roadside Values

- ✱ Feral animals,
- ✱ Fire,
- ✱ Weeds,
- ✱ Safety,
- ✱ Unsightly.



# Idealistic Views of Roadside Values

- ★ Shelter
- ★ Historical & Cultural sites,
- ★ Scenic,
- ★ Wildlife habitat,
- ★ Ecosystem.

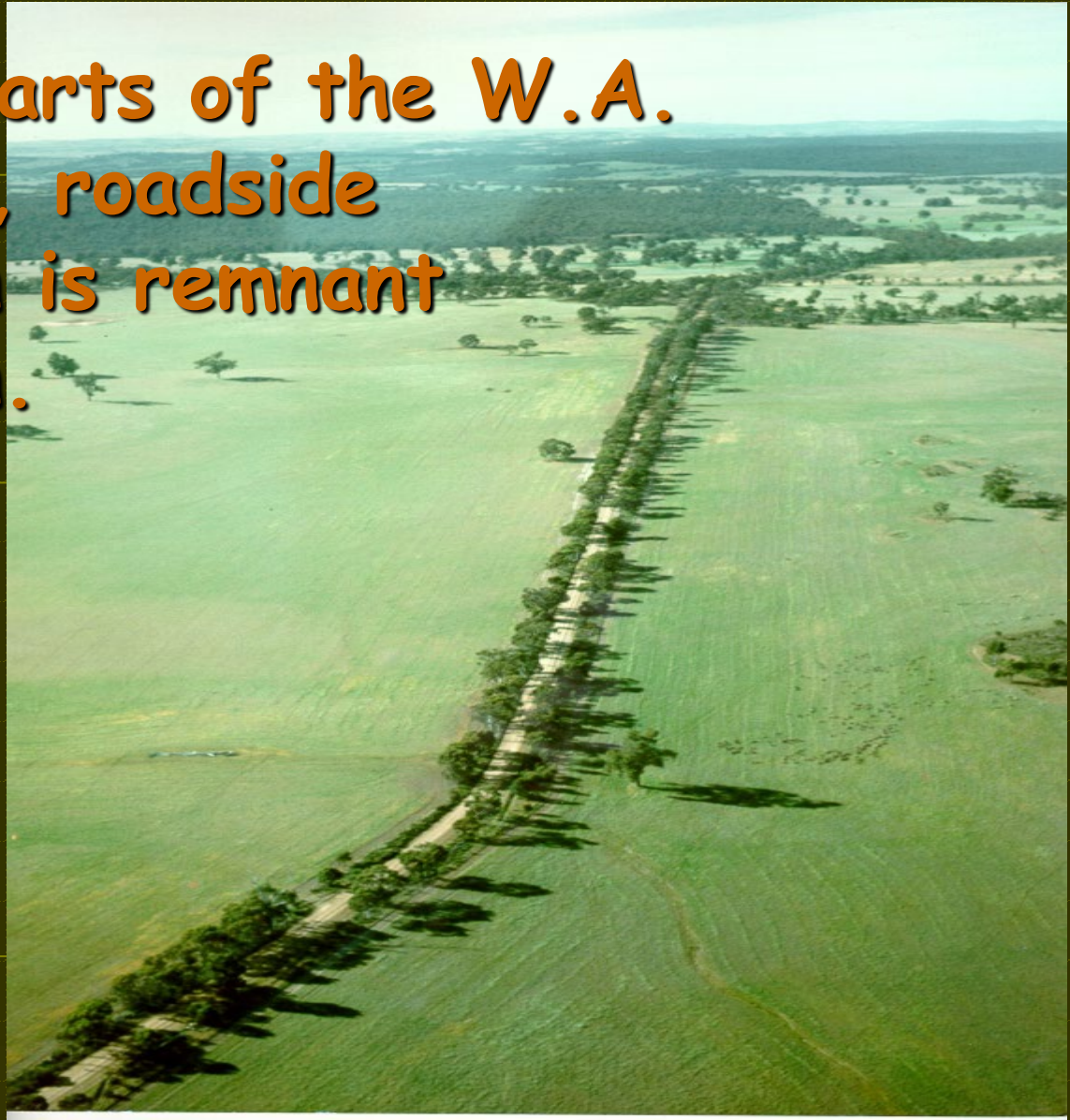


# Values of Roadside Vegetation

- ★ Landcare
- ★ Conservation
- ★ Revegetation
- ★ Scientific
- ★ Education
- ★ Tourism
- ★ Historic & Cultural
- ★ Salinity



In many parts of the W.A. wheatbelt, roadside vegetation is remnant vegetation.



# The Values of Roadside Vegetation...



- ★ Provide a benchmark for the study of soil change during agricultural development.
- ★ Often are the only remaining example of original vegetation in cleared areas.
- ★ Are easier to maintain and are generally less fire prone than introduced vegetation.
- ★ Provide windbreaks and shelter for stock and adjoining farmland.



# The Values of Roadside Vegetation...

- ★ Provide the basis for our important wildflower tourism industry,
- ★ Often contain sites of historical or cultural significance,
- ★ If no alternative source is available they can be a source of seed for revegetation projects (CALM permit required),
- ★ Provide habitat for many native species of plants, mammals, reptiles amphibian and invertebrates.





# Declared Rare Flora Conservation

- ☀ More than 340 species of flora declared rare;
- ☀ Of these, more than 100 are known from roadside populations;
- ☀ 3 species are known only from roadsides



*Banksia cuneata*



# Roadside Vegetation and Salinity

- ★ The effect of salinity is not restricted to agriculture but it is also having a serious effect on rural townsites and the rural road network.

- ★ National Land and Resources Audit (2002) warned that, across Australia, some

- 19,800 km of roads
- 1,600 km of railways, and
- 306 towns

are all at high risk from dryland salinity.



# The Effect Of Salinity On The Road Network

- ✿ It is estimated that more than 3,000km of roads in Western Australia are being degraded by the effects of rising water tables/ salinity.
- ✿ The annual cost of repairing Western Australian roads in the year 2000 was \$505 m and this will have risen by an extra \$91 m in 2020.



# Tourism

Spending by international visitors who have listed wildflower viewing as a reason for visiting WA.



	Country	\$ in millions spent
1	New Zealand	72
2	Japan	69
3	Malaysia	70
4	Singapore	112
5	Indonesia	112
6	USA	41
7	UK	133
8	Germany	46



T  
O  
U  
R  
I  
S  
M

# Morawa Wildflower Drives



*Excellens tenuis lvs*

Roadside Conservation Committee



P.O. Box 34 Morawa, Western Australia 6708

# 5th Annual WATTLE WEEK FESTIVAL

Shire of Dalwallinu  
WESTERN AUSTRALIA

Saturday 11th - 18th September 1999



# Local Tourism : Morawa Shire

MONTH	1998	1999
	No. of enquires	No. of enquires
May	76	83
June	82	37
July	162	169
August	798	946
September	1658	1431
October	364	270
November	100	4 (incomplete)



Visitor enquiry at Tourist Centre, Shire of Morawa.



The Roadside Conservation Committee



What  
sort of  
roadside  
do YOU  
want?



# this



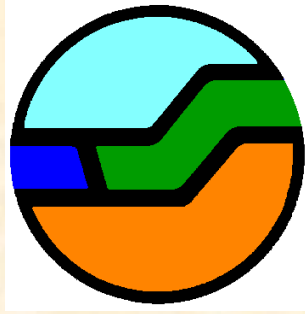
The Roadside Conservation Committee



or THIS ?



The Roadside Conservation Committee



# **Declared Rare Flora Roadside Conservation**

**Department of Conservation and  
Land Management - Merredin  
District.**

# Introduction.

- Wheatbelt area contains high percentage of rare flora.
- Many located in small remnant populations along roadsides.
- Declared Rare Flora are subject to special legislative protection.



# Current Threats to Flora.

- Direct disturbance - land clearing, road maintenance, firebreaks, gravel pits.
- Weed invasion.
- Salinity.
- Introduced diseases - 'Dieback' (*Phytophthora cinnamomi*)
- Grazing from domestic, feral and native animals.
- Herbicide sprays.
- Inappropriate fire regimes.
- Lack of suitable pollinators.

# Protection of Flora.

- ALL native flora is protected under the *Wildlife Conservation Act*.
- Flora cannot be taken without proper authorisation and in accordance with prescribed licence / authority.
- Special protection provided for threatened flora designated as Declared Rare Flora (DRF).

# Declared Rare Flora (DRF)

- Declared as rare flora by the Minister under the *Wildlife Conservation Act*.
- “Where the Minister is of the opinion that any class of protected flora is likely to become extinct 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 purpose of this section throughout the State.”
- Section 25F(2) of the Act.

# How?

- Flora is recommended for declaration as ‘rare’ through the ‘Threatened Species Scientific Committee’
- Nominations for changes to the schedule of DRF can be made by any member of the public via the committee.
- Schedule is reviewed annually by the committee who may recommend additions and / or removals.

# Federal Legislation

- Commonwealth protection under *Environment Protection and Biodiversity Conservation Act, (EPBCA)*.
- Provides for the listing of threatened species and key threatening processes of national importance.
- EPBCA provides for the protection of listed species.



# Categories.

- Declared Rare Flora is divided into three categories based on the International Union for Conservation of Nature (IUCN) system.
- Critically Endangered.
- Endangered.
- Vulnerable.

Within the Merredin District  
there are-

- 22 Critically Endangered species.
- 11 Vulnerable species.
- 17 Endangered species.



*Eremophila viscida*

Photos: S.F. Patrick & A.P. Brown



*Frankenia parvula*

Photos: K. Bettink



*Hakea aculeata*

Photos: S.D. Hopper



*Eucalyptus synandra*

Photos: P. Roberts, S.D. Hopper & S.J. Patrick



*Philotheca basistyla*

Photos: K. Bettink



*Daviesia euphorbioides*

Photos: S.D. Hopper



# Priority Flora.

- CALM also maintains a supplementary listing of flora referred to as the Priority Flora Listing.
- Includes taxa which are regarded as rare (present in low numbers) but not currently threatened.
- Divided into four 'Priorities.'
- Priority flora grouped and ordered according to the perceived urgency for further survey.

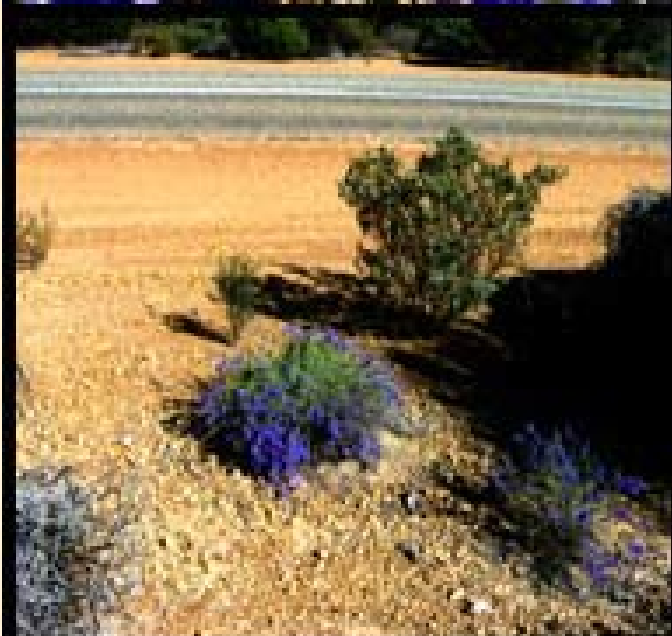
# Priority 1.

- Few known populations.
- Grow on land which is under threat.



*Phebalium drummondii*

Photos: S.J. Patrick



*Dampiera glabrescens*

Photos: K. Bettink

## Priority 2.

- Few known populations of plants.
- Some occur on conservations estates such as Nature Reserves and National Parks.



*Eremophila brevifolia*

Photos: A.P. Brown & J.D. Start

## Priority 3.

- Several known populations of plants.
- Some occur on secure conservation estate or
- Present over a large range and,
- Not under immediate threat.



*Calothamnus brevifolius*

Photos: J.A. Cochrane



## Priority 4.

- Populations have been adequately surveyed and found to be rare but secure.
- Populations require monitoring to check that their conservation status does not change.



*Eucalyptus caesia* subsp. *caesia*

Photos: S.D. Hopper

# Application to take process.

- Notify local CALM office so population / area can be assessed, (generally by Conservation Officer).
- Complete an “Application For Approval to Take Declared Rare Flora in Management Operations” form.
- Under the Act, approval must be in writing from the Minister, however this is delegated to the appropriate Administration Officer at Wildlife Branch in Perth.
- CALM staff will assist with the application.

# Definition of “To Take”

- Under the Act, ‘take’ means to -
  - gather,
  - pluck,
  - pull up,
  - destroy,
  - dig up,
  - remove or
  - injure the flora.

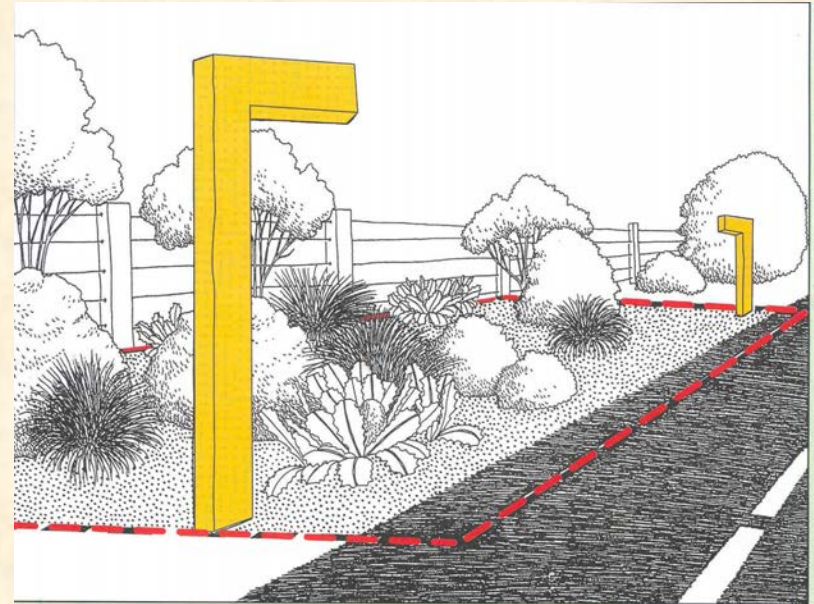
OR to cause or permit the same to be done by ANY  
MEANS.

# Why Protect DRF?

- There is a legislative obligation to do so.
- Moral obligation to maintain biodiversity.
- Economic benefits from tourists and visitors.
- Intrinsic value.

# Markers

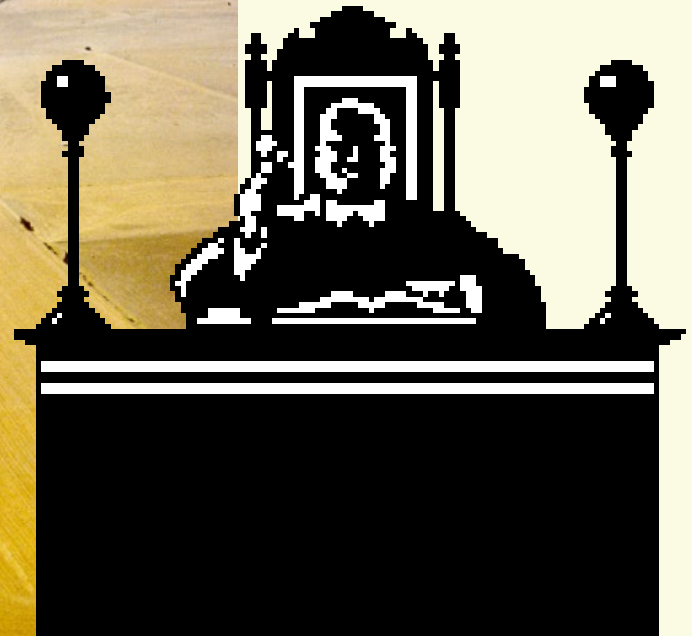
- Accepted standard are yellow 'hockey stick' markers.
- Supplied by CALM.
- Generally erected at each end of the road side population although more may be used to delineated area.
- Top of marker pointing towards DRF population.



# What CALM can do for you.

- Provide location details on DRF populations.
- Assist with “To Take Applications”
- Provide on-site assessment.
- Collect seeds or cuttings from DRF populations that are to be taken.
- Provide and erect DRF markers.
- Information on various management strategies, ‘Flora Roads’, Shire ‘adopting’ a DRF etc.

# *The Law and Roadsides*





# *Legislation*


---

## **Waiver**

The advice given in this presentation on Legislation pertaining to Roadsides is believed to be correct, however the Roadside Conservation Committee accepts no responsibility for advice given should it prove to be incorrect

# *Legislation*

---

 Legislation relating to roadsides is complex and in most instances has not been tested in Court to enable legal precedents to be established.

. Legislation relating to roadsides includes:

---

- *Local Government Act 1960;*
- *Land Act 1933;*
- *Land Administration Act*
- *Soil and Land Conservation Act 1945;*
- *Wildlife Conservation Act 1950;*
- *Conservation and Land Management Act 1984;*
- *Bush Fires Act 1954;*
- *Aboriginal Heritage Act 1972;*
- *Agriculture and Related Resources Protection Act 1976;*
- .

---

*State Energy Commission Supply Act 1979;*

- *Environmental Protection Act 1986,*
- *Water Authority Act 1987.*
- *Main Roads Act 1930.*

With such a diversity of legislation influencing the management of roadsides it is not surprising that uncertainty has arisen with regard to the legal responsibility and authority.

# *Local Laws and Policies*

---

Most local governments or agencies that work in the transport corridor environment have their own local laws or policies pertaining to conservation of the roadside asset

# *Local Government Act*

---

Public roads other than main roads are dedicated under the *Local Government Act* (Part XII). Dedication places care and management of the road (street) in the relevant local government authority. However, under Section 286 of the *Local Government Act 1960* land in a road is the absolute property of the Crown, i.e. still Crown land.

# *Local Government Act*

---

Road reserves may be created in the following ways -

- By approval of a Crown subdivisioal plans, s.294A of the *Local Government Act*.

- By approval of a freehold subdivisioal plan, s.295(5) of the *Local Government Act*.


- By approval of a survey plan (Crown or freehold), s.28 of the *Town Planning and Development Act*.

- By dedication of Crown land (often following acquisition under the Public Works Act), ss.287 and 288 of the *Local Government Act*.

- By a local government undertaking work on a private street, s.296 of the *Local Government Act*.

# *Soil and Land Conservation Act 1945*

---

 "To combat land degradation especially erosion, salinity and flooding through the protection of existing vegetation

## Clearing Control Regulations 1986

The Regulations require permission from the Commissioner of Soil and Land Conservation when clearing more than 1 (one) hectare of indigenous bush.

Implications : *The Regulations apply to all landholders and consequently Local Government should send a NOI*



# *Agriculture & Related Resources Protection Act 1976*

---




“To eradicate or control the spread of noxious species of fauna and flora.

There is a list of declared pests published in the Government Gazette

*Implications If Local Government is a landholder then they are responsible for the eradication or control of declared species*

# *Environmental Protection Act 1986 (WA)*

---

 To provide for an Environmental Authority, for the prevention, control and abatement of environmental pollution, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing.

Section 4 “ this Act binds the Crown” .

# *Environmental Protection Act 1986 (WA)*

---

Impact Area : all areas involved with  
planning for road networks  
major realignments or alignments  
through environmentally sensitive  
areas must submit the proposal for  
DEP review

# *Land Act 1933*

---



“To reserve land for public purposes

When a street is dedicated to a public use, it becomes Crown land under the *Land Act*, pursuant to s.286 of the *Local Government Act*. Care, control and management rests in the relevant local government (s.300 of the *Local Government Act*) unless the road is declared a highway, main road or secondary road under the *Main Roads Act*.

# *Wildlife Conservation Act* *1950,1972*

---



The purpose of the *Wildlife Conservation Act* is “to provide for the conservation and protection of wildlife” . .

# *Wildlife Conservation Act* *1950,1972*

---



“The *Wildlife Conservation Act*, (Section 6) defines flora as “any plant, including wildflower, palm, shrub, tree, fern, creeper or vine which is either native to Western Australia or declared to be flora under the Act and includes any part of flora and all seeds and spores thereof”. All parts of the plant including roots, branches, stems, leaves, flowers, seeds and spores come within the legal meaning of flora. Under the *Wildlife Conservation Act*, protected flora on Crown land is deemed to be the property of the Crown, until legally taken.

# ***Conservation & Land Management Act 1984 (WA)***

---



“To make better provision for the use, protection and management of certain public lands and waters and the flora and fauna thereof, to establish authorities to be responsible therefore, and for incidental or connected purposes


## **Implications**

The is a need to identify when new routes or realignments impact on CALM reserves.

There is a need to comply with CALM regulations in general but in particular with those concerning fire or dieback

# *Conservation & Land Management Act 1984 (WA)*

---

 With the formation of the Department of Conservation and Land Management (CALM) in 1984 and the accompanying *Conservation and Land Management Act 1984* the conservation and management of all native wildlife passed to the Minister responsible for that Department and the Department itself. As a consequence CALM has the authority to exert controls on the commercial harvesting of protected wildlife in Western Australia from both Crown and private lands.



# *Aboriginal Heritage Act 1972*

---



“To make provision for the preservation on behalf of the community of places and objects customarily used by or traditional to the original inhabitants of Australia or their descendants, or associated therewith, and for other purposes incidental thereto

# *Aboriginal Heritage Act 1972*

---

## **Implications**

Local Government must ascertain whether there are any Aboriginal sites within proposed road works and the associated works area

The Act impacts both short and long term planning areas. It has the potential to impact road maintenance operations especially in rural areas

# *Heritage of Western Australia Act 1990*

---



“To provide for, and encourage, the conservation of places which have significance to the cultural heritage in the State, to establish the Heritage Council of Western Australia, and for related purposes.

# *Heritage of Western Australia Act 1990*

---

## **Implications**

Checks should be made of the Registrar prior to planning and realignment operations. Checks should also be made with the National Trust and local records to ascertain whether places have historic significance

.

# ***Main Roads Act***

---

• The Main Roads Act 1930 Section 15 part 3a vests all vegetation, both living and dead on roads under the control of Main Roads in the Commissioner of Main Roads.

(3) The property in -

(a) the materials of all highways and main roads, and all live and dead timber and vegetation thereon, and all matters and things appurtenant thereto; and

•

# *Main Roads Act*

---

- 15A. (1) No person shall cut, break, bark, root up or otherwise damage, destroy or remove the whole or any part of any timber, tree, sapling, shrub, undergrowth, or wildflower in or upon any highway or main road without the prior consent in writing of the Commissioner except when such action is taken to remove a hazard.

# The Changing World




Presented by

**David Mickle**



Roadside Conservation Committee

- 
- Before European Settlement
  - After European Settlement
  - Subsequent Environmental Problems
  - Land Clearing
  - Current State Government elected platform
  - Roadside Conservation History in Western Australia



Roadside Conservation Committee



# Before European Settlement



- Balance existed with plants, animals and people
- Animals suited to climate and vegetation
- Plant propagules dispersed unhindered
- Vegetation in natural state and continuous
- Vegetation kept the land and water healthy



Roadside Conservation Committee



# Before European Settlement

- Vegetation kept the land and water healthy
- Indigenous Australians lived in a harmonious state
- Hunter gatherer
- Indigenous Australians understood the environment



Roadside Conservation Committee

# After European Settlement

- People tried to conquer the environment
- European farming on an ancient landscape

- Native animals and plants threatened
- Introduced animals competed with the native fauna



Roadside Conservation Committee

# After European Settlement

- Lack of understanding of the environment
- Vegetation cleared
- Landscape fragmented
- Animals not suited to climate or vegetation
- Natural processes unbalanced



Roadside Conservation Committee

# Subsequent Environmental Problems

Changing the environment by clearing native vegetation is the cause of land degradation and environmental problems such as:

- Salinity
- Erosion
- Weed infestation
- Habitat destruction and fragmentation
- Loss of biodiversity



Roadside Conservation Committee

# Salinity

- Soil salinity was noted in the late 18<sup>th</sup> Century
- Reservoirs used for steam trains became unusable due to salt content
- Noted increase of salt in soil and streams following clearing of native vegetation



# Erosion and Weeds

- Clearing land left the soil exposed
- Wind and water eroded the top soil (the most valuable part)
- Introduced pasture and garden plants became agricultural and environmental weeds



Roadside Conservation Committee

# Habitat fragmentation impacts on biodiversity

- Clearing for agriculture has left native vegetation fragmented
- Native animals need corridors of bush to move through the landscape
- Plants need pollinators and propagules to maintain healthy populations



Roadside Conservation Committee



# Land Clearing

- 1960s and early 1970s new land was allocated to private property owners
- Expectation that private property owner would clear the land
- 'conditional purchase' leases required new property owners clear percentage of land within a ten-year period or face forfeiture
- No guidance on how or where to clear



Roadside Conservation Committee

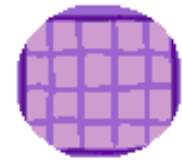
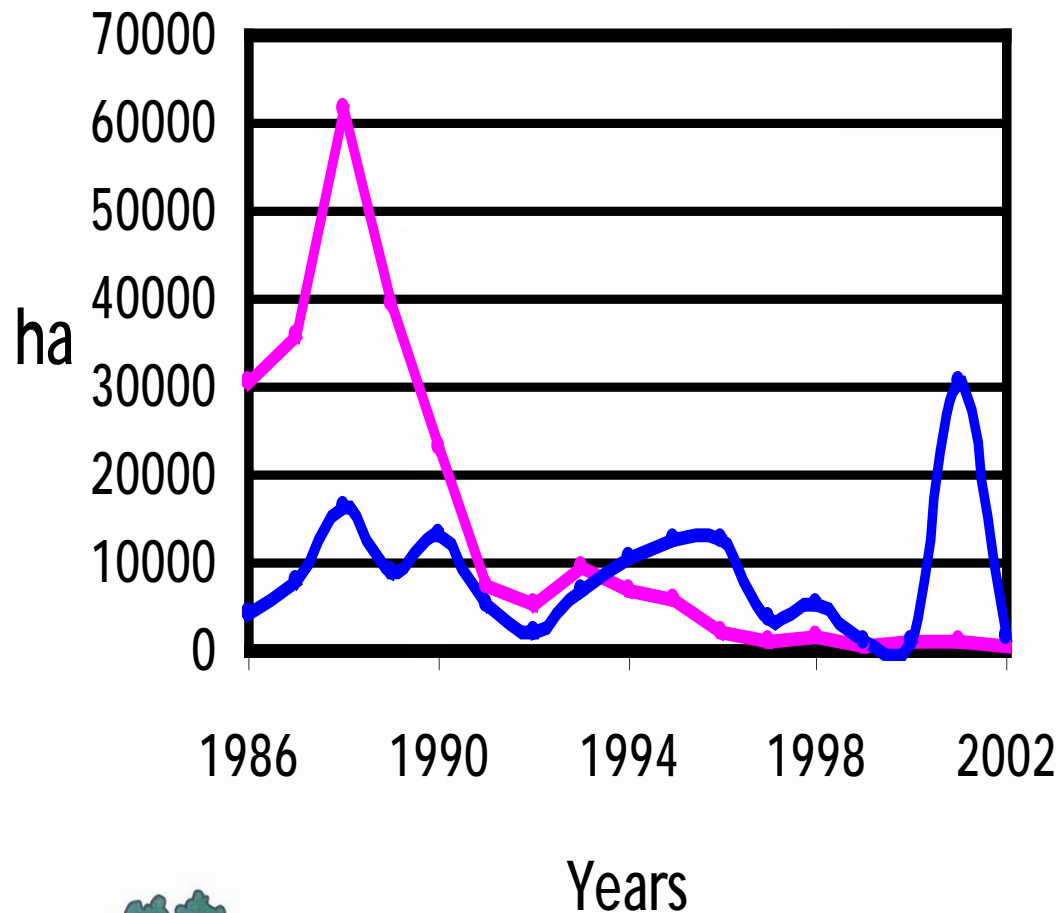
# Back Flip

- Soil and Land Conservation Regulations 1991: no clearing in Bruce Rock
- Notice of intent to clear: restrictions on clearing from 1992
- In 1997 Memorandum of Understanding on protection of remnant vegetation on private land
- Environmental Protection Amendment Bill 2002 will give greater protection to native vegetation on all land



Roadside Conservation Committee

# 1986-2003 NOIC Land Clearing Statistics



- Area (ha) without Objection
- Area (ha) Objected



Roadside Conservation Committee

# Current State Government elected platform

- The natural environment is unique, irreplaceable and essential
- Inspiration for tourism and recreation and primary industries
- Environment is fragile and easily degraded
- Provide statutory authority to the Code of Practice for Roadside Conservation in Road Construction and Maintenance;
- Ensure that government agencies, utility companies and local governments proposing to clear on public land are made subject to the same processes as private land-owners;



Roadside Conservation Committee



# Sir David Brand



- Premier of Western Australia from 1959 to 1971
- Initiated policy of creating wide road reserves to preserve Australia's indigenous flora
- Reserves to be wider than what is needed for establishment of a road



Roadside Conservation Committee

# Roadside Conservation History in Western Australia

- Roadside Conservation Committee (RCC) formed in response to concern expressed by communities, tourism industry over the deterioration of roadside vegetation
- The government of the day picked up on this and implemented change
- Started in the office of the Premier and Cabinet



Roadside Conservation Committee

# RCC's Terms of Reference



To co-ordinate and promote the conservation and effective management of rail and roadside vegetation for the benefit of the environment and the people of Western Australia.



Roadside Conservation Committee

# Roadside Conservation History in Western Australia

- 1961 road reserves created greater than 3 chains
- 1969-1983 Road Verge Conservation Committee
- 1985 The RCC reformed, the first Executive Officer appointed
- 2000 Labour government policy to apply statutory authority to Code of Practice for Roadsides
- 2003 Code of Practice for road construction and Maintenance works



Roadside Conservation Committee



# Current RCC Members

Dr K. Atkins	(Chairman) Department of Conservation and Land Management
Mr D. Lamont	(Executive Officer) Roadside Conservation Committee
Dr R. Howard	Main Roads Western Australia
Mr G. Beeston	Department of Agriculture Western Australia
Dr V. Saffer	Department of Environment
Ms J. Abbott	Fire and Emergency Services Authority of Western Australia
Mr C. Tallentire	Conservation Council of Western Australia
Mr M. Olivieri	Telstra
Mr D. Solmundson	Alinta Gas
Mr C. Morgan	Western Power
Mr P. Bothwell	Representative for WestNet Rail
Mr M. McCarthy	East Metropolitan Region of Councils
Cr E. Farmer	WALGA
Mr V. Orchard	Elected Country Representative of WALGA
Mr B. Moyle	Wildflower Society of Western Australia
Mr N. McQuoid	Greening Australia Western Australia

Committee is answerable to the Minister of Environment



## Roadside Conservation Committee

# Bio-prospecting: the hidden treasure

- Some plants may contain chemicals useful to medicine
- They may be vital to curing cancer or other human diseases
- Agreement signed between CALM and a Perth company to test plant extracts from WA flora for new medicines



Roadside Conservation Committee

# Spiritual and Cultural Value

- Mrs Helena Dance - Cut down a tree for the proclamation of Perth
- Boys from the bush
- WA in unique position having a 'Garden of Eden' where native vegetation exists in its natural state
- If the earth and its biota was created for people, why are we wasting it before we know its true value



Roadside Conservation Committee

# Sense of place

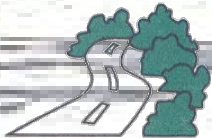
- Being in a certain place in the world
- The old gum tree down the road
- Forest Department used reference trees before GPS technology
- Swing in a tree used by kids



Roadside Conservation Committee

# Sense of place

- How do you identify where you are?
- Sandplain- Heath and Kwongan
- Rangelands- Mulga
- Goldfields- Mallee
- Wheatbelt- York and Salmon Gums



Roadside Conservation Committee



# Floral Glory an Artist's Picture



- In 1929 Emily Pelloe expressed concern that future generations will not be able to enjoy the native flora
- In 1952 Edna Walling mentions roadsides as being a logical place for nature reserves and preservation of flora
- Do you think it would make a difference if a bloke said this?



Roadside Conservation Committee

# Social Conscience

- Community developed acceptance of a value of native vegetation
- Conservation movement
- Societies demands changed
- This is reflected in government regulation of land clearing



Roadside Conservation Committee

# Roadside Conservation History in Western Australia

- Roadside Conservation Committee (RCC) formed in response to concern expressed by communities, tourism industry over the deterioration of roadside vegetation
- The government of the day picked up on this and implemented change
- Started in the office of the Premier and Cabinet



Roadside Conservation Committee



# Amendments to the Environmental Protection Act and Roadside Vegetation Management Plans

## The Protection of Native Vegetation in Western Australia and How this will Affect Road Managers

Presented by

David Mickle

Technical Officer (Management Plans)

Roadside Conservation Committee

(08) 9334 0173 Email: [davidmi@calm.wa.gov.au](mailto:davidmi@calm.wa.gov.au)



The Roadside Conservation Committee

# Native Vegetation on Roadside

- Roadside vegetation is an asset to the Road Manager
- Protection of this vegetation will be enforceable by law
- Road Managers will need to apply for permits to clear native vegetation on roadsides



# Definition of Native Vegetation

- **Native vegetation is defined as:**
  - **Indigenous aquatic or terrestrial vegetation**
  - **Including dead vegetation**
- **This does not include vegetation in a plantation**
  - **ie. vegetation intentionally sown, planted or propagated**



# Definition of Clearing

- (a) the killing or destruction of;**
- (b) the removal of;**
- (c) the severing or ringbarking of trunks or stems of; or**
- (d) the doing of any other substantial damage to, some or all of the native vegetation in an area, and includes the draining or flooding of land, the burning of vegetation, the grazing of stock, or any other act or activity, that causes - (a), (c) or (d)**



# What are considered clearing activities?

## Road Maintenance:

- Grading shoulders and drains
- Herbicide overspraying
- Fire
- Slashing or Mowing



# What are considered clearing activities?

## Road Construction:

- Gravel Pit location
- New roads constructed through native vegetation
- Installation of side drains



# Permit Conditions

- **The DEP has the authority to issue a permit with binding conditions**
- **One condition of a permit will be to implement, adhere to and evaluate environmental management systems in the form of a Vegetation Management Plan.**
- **Other conditions may include environmental restoration of another area of cleared vegetation**



# Types of permits

- **Area permit**
  - Issued for clearing a specific area of land (Road Construction)
  - Valid for 2 years
- **Purpose permit**
  - Issued for a program of clearing for a specified purpose (Road Maintenance)
  - Valid for 5 years





# Clearing Exemptions for Roadside

Exemptions fall under 2 classes:

- Clearing required by law under a specific Act
- Regulations exempting clearing for a specific purpose



The Roadside Conservation Committee

# Enforcement of the EP Act

- **Persons undertaking unauthorised clearing can receive a maximum \$250 000 fine or 3 years jail.**
- **An organization responsible for unauthorised clearing could receive a maximum \$500 000 fine.**
  - **This includes for work carried out by contractors or sub contractors under LGA control**



# What is unauthorised Clearing?

- **Clearing done without an exemption**
- **Clearing of Native vegetation without the relevant permit**



# Assessment Principles

- Applications will be assessed for effects on:
  - biodiversity
  - land and water resources; land degradation
  - associated watercourses or wetlands
  - surface or underground water sources
  - neighbouring or other local native vegetation areas



# Transitional Provisions

This refers to :

- **Contravening the Soil & Land Conservation Act**
- **Contravening the Country Areas Water Supply Act**
- **Clearing of land while under environmental impact assessment**



# Vegetation Management Plans

- What is a management plan?
- Why have a management plan?
- Management strategies
- Management procedures
- How can the RCC help?



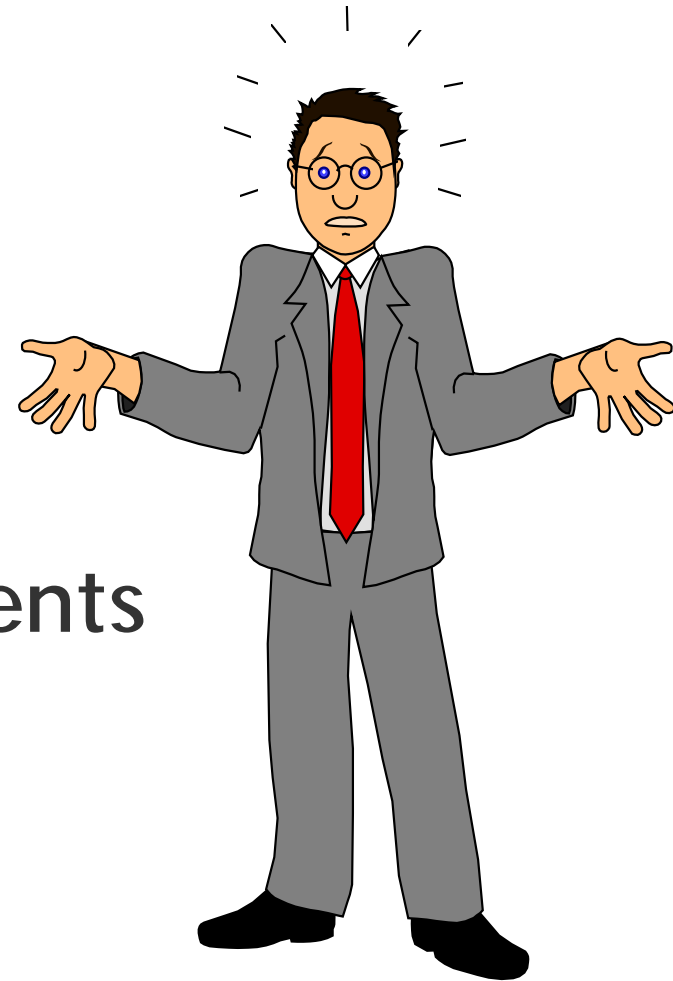
# What is a Management Plan?

- What is to be managed?
- How it will be managed?
- Who will manage it?
- Outlines strategies and procedures to be followed for ongoing works (maintenance)



# Why have a Management Plan?

- ❑ Maintain safe roads
- ❑ Budgeting purposes
- ❑ Clear direction for staff
- ❑ Development of strategies
- ❑ Outline works procedures
- ❑ Fulfil legislative requirements





# Management Strategies

- Keep the road safe
- Minimise risk and impact from fire
- Ensure compliance with legislative requirements
- Minimise environmental harm
- Evaluation of strategies and procedures
- Change procedures if strategies are not met



# Management Strategies

Protect:

- the road formation
- native vegetation
- rare flora and fauna species
- water resources
- environmentally sensitive areas
- cultural and heritage values
- service assets



# Management Strategies

Maintain and enhance:

- ecological corridors
- visual amenity and landscape values
- native vegetation communities
- fauna habitat
- watercourses and wetlands



# Management Procedures

- Mark out the maintenance zone
  - (set maintenance zone width)
- Walk the route
- Use roadside conservation maps for planning works
- Develop methods for disease and pest control



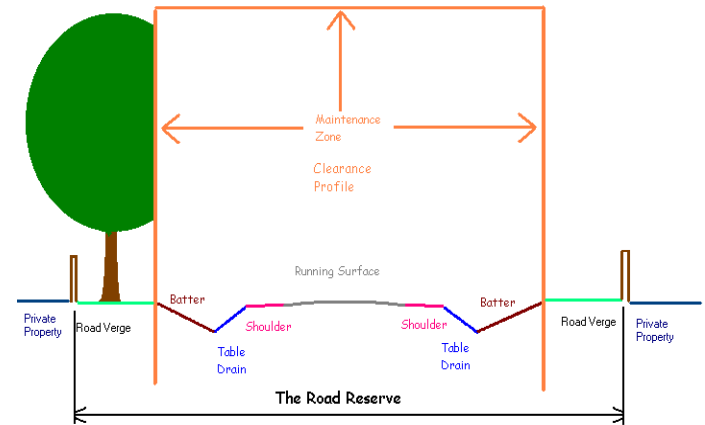
# The Road Reserve

## □ Maintenance zone

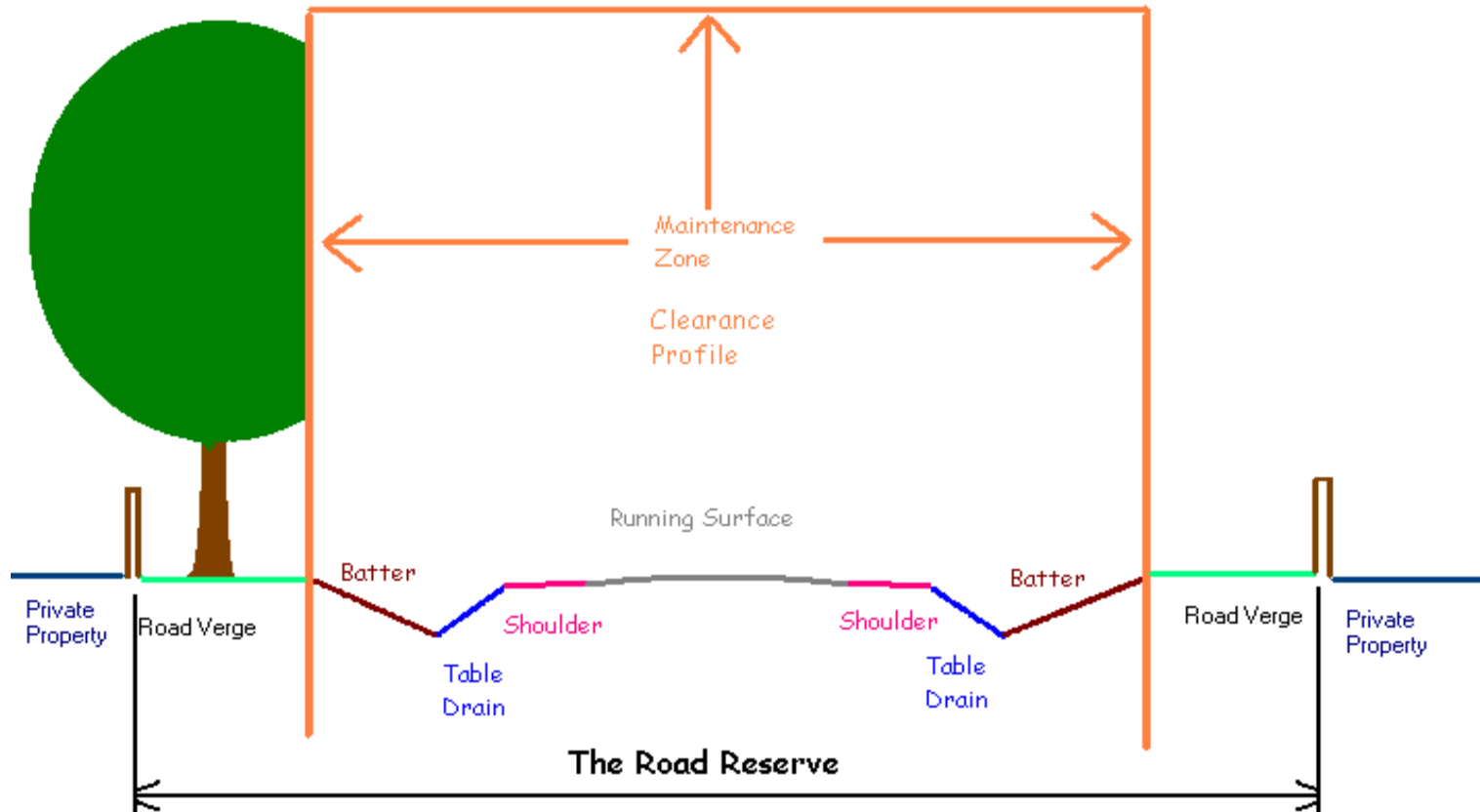
- Running surface
- Shoulder
- Table drains
- Batters/back slopes

## □ Road Verge

- Edge of batter to property line

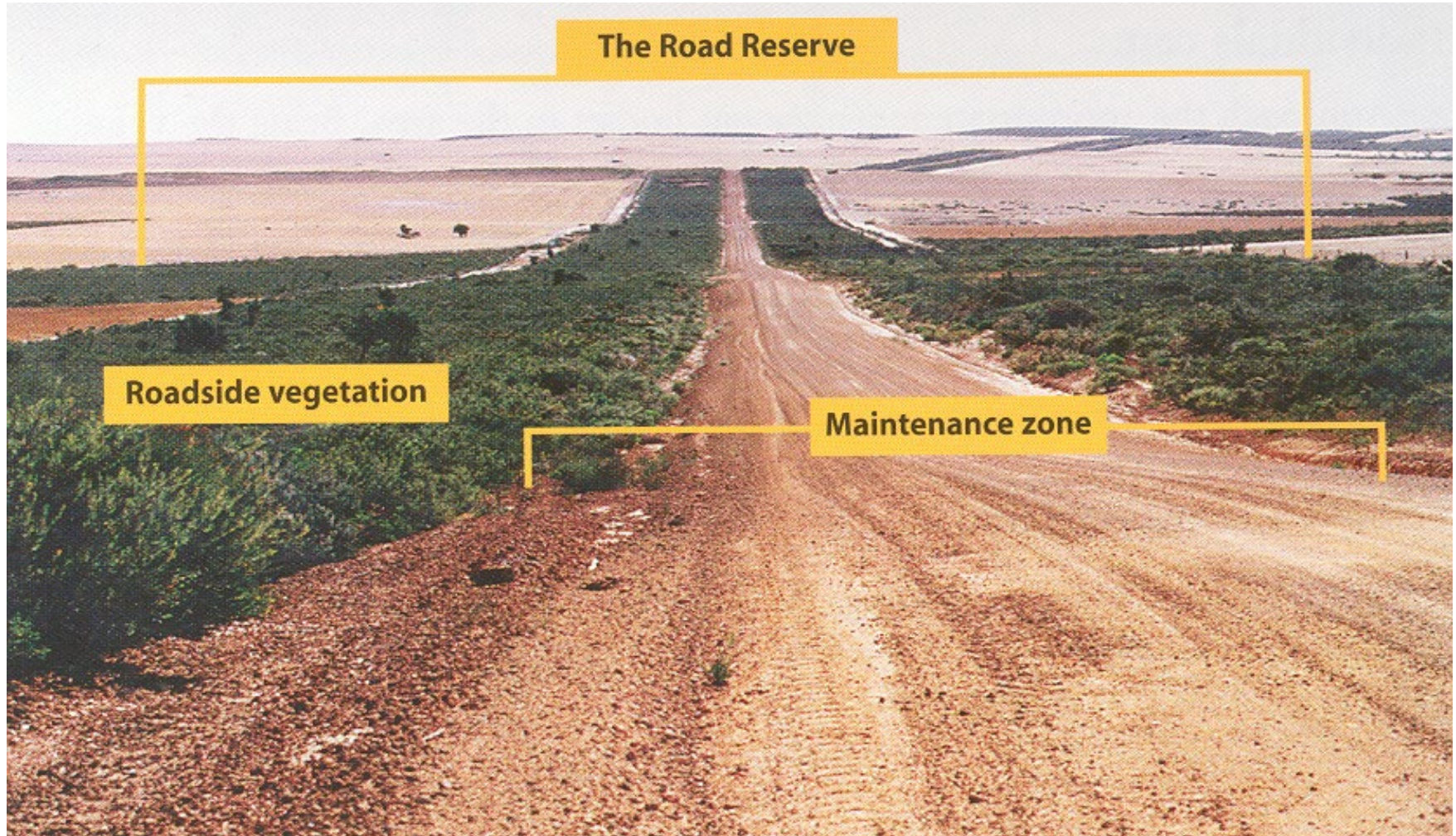


# The Road Reserve



The Roadside Conservation Committee

# The Road Reserve



The Roadside Conservation Committee

# Maintenance Zone

- Clearance for safety
- Defined width and height
- Includes drains and culverts
- Includes sightlines





# Management Procedures

Develop gravel pit plans

These should include:

- Topsoil management
- Restoration techniques
- Life span of pit
- Access track rehabilitation



# Management Procedures

Use cleared land to locate:

- stockpile sites



The Roadside Conservation Committee

# Management Procedures

Use cleared land to locate:

- gravel pits



# Management Procedures

Use cleared land to locate:

- dump or disposal sites



The Roadside Conservation Committee

# Management Procedures

Use cleared land to locate:

- parking areas
- turn around points



# Cost Effective Maintenance Strategies

- Keeping to the maintenance zone reduces the cost of road maintenance
- Reducing soil disturbance reduces weed infestations and therefore saves money on weeds control



# Working with Management Plans

- Read the document
- Understand how it affects your work
- Talk to your manager/supervisor
- Think about what you are doing



# For detailed information on legislation....

Call the Department of Environmental Protection  
on 1800 061 025 (freecall)

Visit DEP website at: *[www.environ.wa.gov.au](http://www.environ.wa.gov.au)*



The Roadside Conservation Committee



# For more information on Management Plans....

**David Mickle - Technical Officer (Management Plans)**

**Roadside Conservation Committee**

**(08) 9334 0173**

**Email: [davidmi@calm.wa.gov.au](mailto:davidmi@calm.wa.gov.au)**



The Roadside Conservation Committee



***WEEDS***

# *What is a weed?*

- National Weeds Strategy

“a plant that has, or has the potential to have, a detrimental effect on economic, social or conservation values.”

- “A plant growing in the wrong place!”

# *What makes a plant a weed ?*

- Most of the plants that become weeds here come from countries with a similar climate as ours, e.g. Mediterranean countries or South Africa
  - Although the climate is similar these plants often do not have to cope with their natural predators.
  - Without these natural predators they can grow unchecked and totally dominate ecosystems
- Even Australian plants can become weeds when they are introduced into new areas.

# Where do weeds come from?

- Many weeds have escaped from gardens.
- Some plants were introduced (unsuccessfully) as pasture for stock eg Love grass & veldt grass and have become weeds along roadsides and in bushland
- Weeds are spread in many ways
  - seeds, corms, rhizomes
  - wind, water, birds, soil and machinery



# Different groups of weeds

- **Environmental** weeds impact on natural ecosystems such as roadsides and bushland.
- **Agricultural** weeds impact on production of food, wood, etc.
  - **Declared** weeds are required under law to be controlled by the property owner.
- **Sleeping** weeds are plants that are not yet considered weeds but are likely to become so.
  - Are there any **sleepers** in your local area
    - Report sightings of strange or unusual plants.

# Environmental Weeds

**Love Grass** (*Eragrotis curvulata*)

**Paterson's Curse** (*Echium plantagineum*)

**Bridal Creeper** (*Myrsiphyllum asparagoides*)

**Caltrop** (*Tribulus terrestris*)

**Cape Tulip** (*Homeria spp.*)

## 3 groups of roadside weeds...

- Impact on Fire
  - many weeds present a **greater fire** threat than native vegetation
  - many are annuals, they build up a huge biomass that dies off in summer leaving a highly flammable roadside, eg.?
  - some thrive after burning, presenting an even greater fire risk, eg. ?.



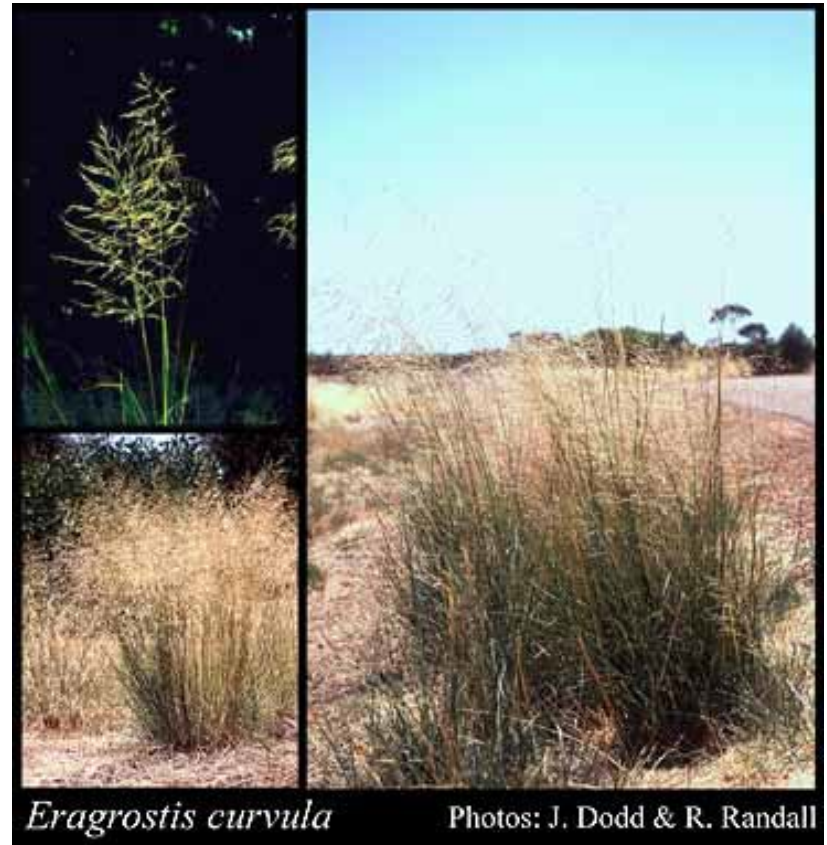
*Avena fatua*

Photo: J.D. Dodd



## 3 groups of roadside weeds...

- **Threaten the integrity of the road**
  - weed roots undermine the stability of the road by allowing water penetration



*Eragrostis curvula*

Photos: J. Dodd & R. Randall

# 3 groups of roadside weeds..cont.

- **Impact on biodiversity**

- *Environmental* weeds are a threat to our native flora and fauna:
- compete for space and nutrients and smother our native plants
- dominate an area, reducing the number of native plant types and numbers
- this in turn reduces the number and types of fauna the vegetation can support
- so as weeds take over, many birds, animals and insects disappear as they lose their natural food source.
- That is weeds **decrease** our **biodiversity**

## *Something good about weeds..? ? .*

- They can help hold soil together and prevent wind and water erosion.
- Lovegrass and watsonia provide habitat for bandicoots, protecting them from foxes.



# Controlling weeds



- Is expensive
  - don't let plants become weeds
  - dealing with a few plants is the easiest and cheapest way to manage weeds.
- Practice hygiene
  - don't spread weed seeds into areas that are NOT infested
  - work in clean areas first; clean down in infested areas.
- Minimise disturbance
  - weeds easily invade areas disturbed by fire, machinery, etc.
- Replace weeds with local native vegetation