Greater Shepparton City Council

Roadside Environmental Code of Practice Handbook

Road Construction and Maintenance Contractors and Workers

Document 3, Version 2, March 2008

This handbook forms part of the Greater Shepparton City Council *Roadside Management Strategy*. It is designed for use by road construction and maintenance staff or contractors working directly or indirectly for the Greater Shepparton City Council. It has been adapted from the Vicroads *Roadside Handbook – Environmental Guidelines for Road Construction and Maintenance Workers*.

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1.0 Introduction

Prior to European settlement a diverse range of native vegetation types existed across the flat to gently undulating landscape of the City of Greater Shepparton.

Some of the northern areas were in the Murray Fans bioregion with Yellow Box and River Red-Gums in a grassy under storey. The majority of the Municipality was in the Victorian Riverina bioregion with Grey Box, Yellow Box, Black Box, Yellow Gums and River Red-Gums being the dominant species. The under storey was often diverse with shrubs, wildflowers and native grasses present.

These woodlands and grassy areas have been extensively cleared for agriculture and the substantial irrigation throughout the municipality has led to a significantly modified landscape contributing to almost total destruction of some native vegetation types. These are now officially listed as being endangered.

Most remnants now only remain on road reserves and the Goulburn and Broken River corridors. These represent the few remaining examples of ecosystems where the remnant vegetation provides fauna habitat, corridors and connections between isolated areas of bushland.

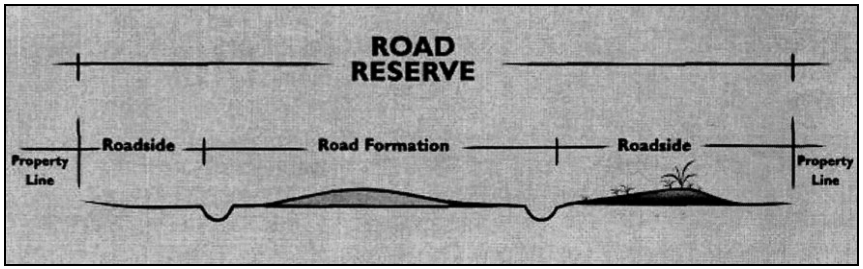
The Greater Shepparton City Council's Council Plan has identified the need to: 'Enhance and protect the natural environment through appropriate asset management strategies' as a means of improving biodiversity within the City, with strategic indicators including retention of indigenous plant species and adherence to sustainable development principles.

The Municipal Strategic Statement and Greater Shepparton 2030 both support the preservation and management of areas of remnant native vegetation and enhancement of biodiversity throughout the region.

The Victorian State Government has also established the primary goal for management of native vegetation as: 'A reversal of the long-term decline in the extent and quality of native vegetation, leading to a Net Gain across the entire landscape.'

2.0 Road Reserves

Road reserves were established to provide a safe and effective network for vehicle movement. They also provide a route for stock movement, access for utility services and fire management. The diagram below defines the various sections of the road reserve.



Recently roadsides have also been recognised as being very valuable for the conservation of native plants and animals. Roadsides also provide amenity value for both the local community and tourists who visit the area, and contain sites of cultural heritage.

As remnant vegetation on roadsides tends to be narrow and linear, it is usually more susceptible to threats – including clearing and fragmentation of native vegetation, pest plants and animals, firewood collection, fire prevention activities, agricultural activities and roadworks.

This handbook seeks to encourage best practice which:

- Avoids damage to remnant vegetation through adherence to improved road maintenance and construction works practices.
- Protects and enhances the environmental, amenity and cultural values of roadsides, while maintaining road safety in accordance with the Greater Shepparton Road Safety Plan.
- Accommodates functional values of road safety, fire management and utility provision.
- Enhances awareness and knowledge of roadside issues.
- Promotes minimum disturbance techniques.
- Minimises pest plant and animal invasion and spread.
- Minimises land degradation and enhances water quality.
- Adopts and applies the Net Gain principle.

3.0 General Principles

3.1 The Value of Native Vegetation on Roadsides

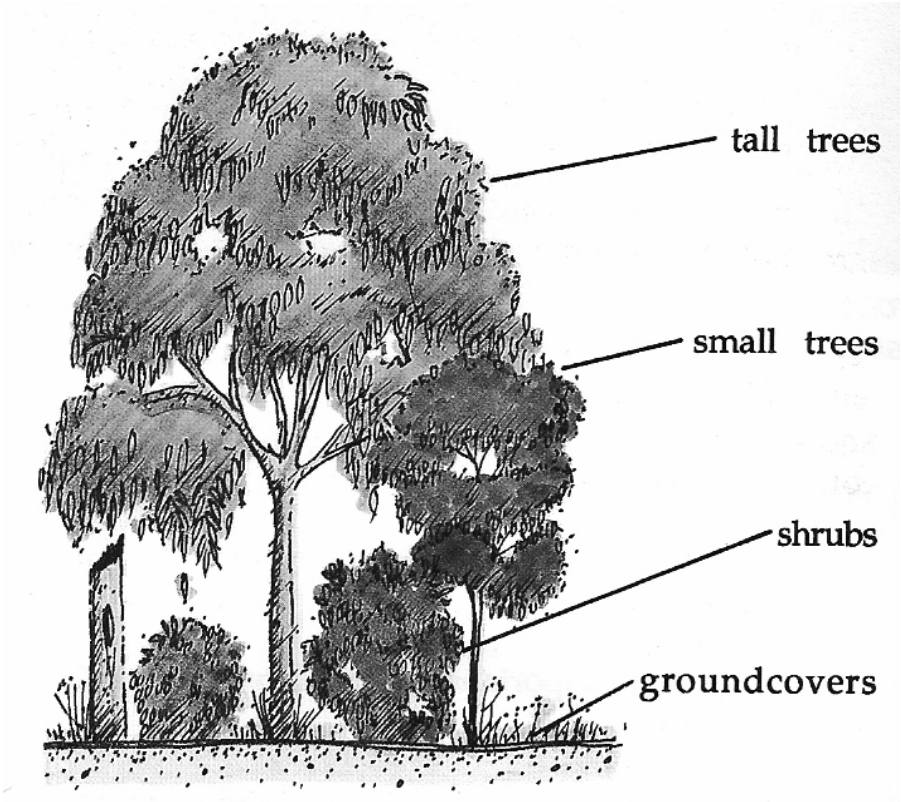
Native vegetation that occurs on roadsides is valuable and important to protect because:

- It provides food and shelter for native wildlife.
- It is often easier to maintain than introduced vegetation.
- It reduces the impacts of erosion and salinity.
- It provides a seed source for revegetation.
- Roadsides now contain some of the last remnants of the vegetation that was originally widespread throughout the City of Greater Shepparton.
- Roadsides often contain endangered native plants and animals.
- Roadsides with native vegetation are important wildlife corridors, linking other areas of native vegetation.
- Native grasses have lower fuel loads and fire risk than introduced species.

3.2 Trees are Good – Bush is Better

Native vegetation includes trees, shrubs, grasses and groundcovers. In some cases, not all of these types of plants are present.

For example, native grasslands that contain no shrubs or trees are still very important as habitat. In the Shepparton area, high priority should be given to the protection of native grasses due to their rarity.



All layers of bush have value

3.3 Protect Native Vegetation

Protection of native vegetation and fauna is a key goal of roadside management. It is also a legislative and planning requirement.

The *Flora and Fauna Guarantee* (*FFG*) *Act*, *1988* gives special protection to rare species. Roadsides within Victoria contain 25 per cent of all rare or threatened flora species and communities listed under the *FFG Act*. The Department of Sustainability and Environment (DSE) should be consulted to provide management advice if a rare species is known to be on a site. It is an offence to disturb or destroy species listed under the *FFG Act* and *Environment Protection and Biodiversity Conservation* (*EPBC*) *Act, 1999*. Heavy penalties apply for breaches of the *EPBC Act.*

The best way to protect native vegetation is to minimise disturbance. This includes minimising soil disturbance and damage to all native plants, including native grasses and groundcover plants, which are particularly easy to damage. Native vegetation reduces weed infestation. Following disturbance weeds will invade a site. Weeds compete with native plants, increase maintenance costs and can lead to higher fire risk. Disturbance can also significantly increase the risk of soil erosion.

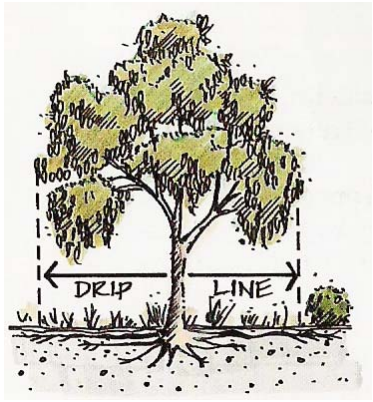
The majority of damage to vegetation occurs by inappropriately locating materials stockpiles, windrows, machinery turning or parking areas or inadequately defining the limit of works. The location and marking of these areas needs to be completed before works commence to ensure minimum disturbance is achieved. In areas of significant vegetation, machinery parking areas are best located on cleared private land.

Guidelines:

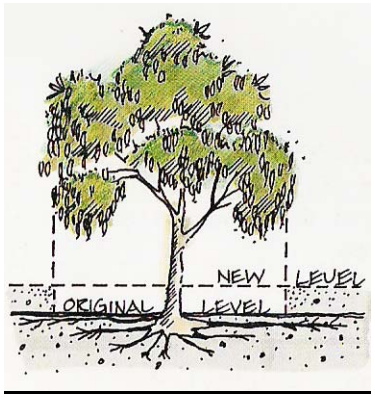
- Designs should accommodate vegetation assessments.
- Develop basic on-site plant identification skills.
- Contracts should specify any vegetation to be removed and define the limit of works.
- Tape off or mark areas of native vegetation to be protected.
- Protect regenerating plants as they are the basis of future vegetation, staking to mark location if necessary.
- Contain all activities to the defined work site.
- Avoid machinery driving over native vegetation.
- Avoid bark scarring which may cause rot and disease in trees.
- Do not ‘tidy up’ areas of native vegetation by grading the roadside beyond the limit of works.

3.4 Avoid or Minimise Impacts on Existing Trees

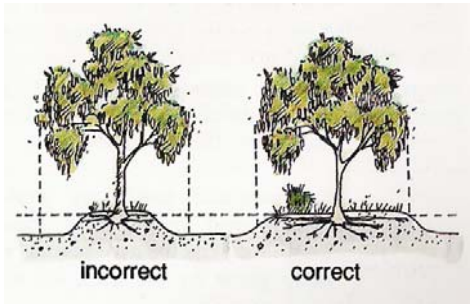
Avoid working within the drip line of trees



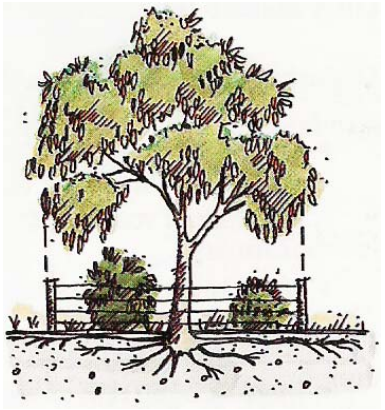
Keep fill material clear of drip line and prevent soil from accumulating against tree trunks.



Avoid undercutting (soil removal) within the drip line of a tree.



Fence trees and avoid storing materials or equipment under trees.



It is advantageous to minimise impacts on trees by keeping activities further away than the minimum of the drip line.

3.5 Special Environmental Areas

Roadside vegetation signage is used to highlight significant vegetation and prevent unnecessary damage. If working at a signed area, contact the Council for advice on appropriate management before commencing any works.

'Significant Roadside Area'
Alerts road workers, local residents and road travellers to the conservation value of the roadside.

3.6 Conservation Value of Roadside Native Vegetation

All roadsides in the City have been assessed to determine the quality of native vegetation present and rated as outlined in the table below.
A copy of the *Roadside Conservation Values Assessment Map* is available from Council's Environment Officer.

High Conservation Value Fairly undisturbed native vegetation with most expected vegetation layers present and low levels of weed invasion. Supports a range of habitats.	
Medium Conservation Value Moderately disturbed native vegetation with one or more vegetation layers absent or modified. Moderate levels of weed invasion.	
Low Conservation Value Highly disturbed native vegetation. High levels of weed invasion. Also includes scattered or clumps of trees and shrubs over an exotic (introduced) understorey.	

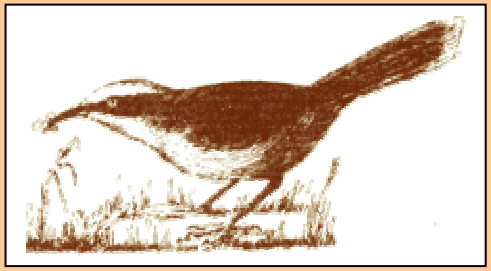
3.7 Protect Native Fauna and Wildlife Habitat

Roadsides contain habitat for a range of native fauna. In particular, scattered large old remnant trees which are features of the Shepparton landscape contain hollows that are vital habitat for many species including gliders, possums, birds and bats.

Other elements such as fallen timber, coarse woody debris, leaf litter and native under storey form equally important habitat for other species including lizards, insects, etc.

Minimise or, where possible, avoid any impacts on native fauna and habitat for native fauna.

Grey-crowned Babbler



Listed as threatened under the *Flora and Fauna Guarantee Act, 1988* in Victoria. Once formerly widespread through western, central and northern parts of the state.
Over the last century the species has disappeared from south-west Victoria and become rare in other areas due to clearing of habitat. Current populations are scattered from Murtoa in the West to Chiltern in the east.
The most suitable habitat for Grey-crowned Babblers occurs along well-treed roadsides and on private land. Threats to the species include: clearing, removal of logs for firewood, habitat modification eg 'tidying–up', ploughing of firebreaks and predation by feral pests. Management of habitat includes minimising disturbance of understorey on roadsides and revegetation to provide additional habitat.

The following is a list of ***some*** of the fauna and flora species which are threatened in the Municipality or in adjoining areas.

Threatened Fauna

Barking Owl	*Ninox connivens*
Brolga	*Grus rubicundus*
Brush-tailed Phascogale	*Phascogale tapoatafa*
Bush-stone Curlew	*Burhinus magnirostris*
Carpet Python	*Morelia spilota variegata*
Grey-crowned Babbler	*Pomatostomus temporalis*
Regent Honey Eater	*Xanthomyza phrygia*
Squirrel Glider	*Petauras norfolcensis*
Striped Legless Lizard	*Delma impara*
Superb Parrot	*Prolytelis swainsonii*
Swift Parrot	*Lathamus discolor*

Many of these fauna species rely on roadside habitat for their survival. Appropriate roadside management will assist in reducing species decline.

Threatened Flora

Catkin Wattle	*Acacia dallachiana*
Kanarooka Mallee	*Eucalyptus froggattii*
Narrow Goodenia	*Goodenia manbarrionii*
Purple Diuris	*Diuris punctata var. punctata*
Red Swainson-pea	*Swainsona plagiotropis*
White Cypress-pine	*Callitris glaucophylla*
Western Silver Wattle	*Acacia decora*
Yellow-tongued Daisy	*Brachyscome chrysoglossa*

Ecological Vegetation Class (EVC) is the term used to describe particular types of vegetation. Some EVC's are rated as threatened in the municipal area, notably grasslands and grassy woodlands.

Plants associated with these threatened EVC's, particularly groundcover plants like the Red Swainson-pea are among the most vulnerable to inappropriate roadside management.

Guidelines:

- Leave native vegetation undisturbed, except for regrowth that must be removed within the road shoulder, verge or table drain.
- When signage indicates significant flora species are present on a roadside, contact the council for appropriate management advice before undertaking any activities or works.
- Check for nests or other fauna habitat, and avoid disturbance to those areas.
- Retain all habitat such as rocks, dead standing trees, fallen timber and leaf litter unless they pose an identifiable risk in terms of road safety.
- Ensure that large old trees are protected from activities such as firewood collection, agricultural activities, and fire prevention measures.
- Do not slash or disturb regeneration.
- Encourage regeneration by weed and rabbit control, and fencing.
- Do not 'tidy up' areas of native vegetation on roadsides.

3.8 Avoid the Spread of Weeds

Council's key responsibility in weed control is to avoid contributing to the spread of weeds. During road construction and maintenance works, weeds can be easily spread within a site and between different sites.

Noxious weeds are plants that are legally declared to be a serious threat and economic cost to agriculture and the environment. These are classified as either Regionally Prohibited (P) or Regionally Controlled (C) weeds, the following being the most common in the municipality requiring priority action.

Table 1 - Weed classifications

Artichoke Thistle	*Cynara cardunculus*	[P]
Blackberry	*Rubus fruitcosus spp.agg.*	[C]
Boxthorn	*Lycium ferocissimum*	[C]
Cape Tulip [Two leaf]	*Homeria miniata*	[P]
Hardheads	*Acroptilon repens*	[C]
Paterson's Curse	*Echium plantagineum*	[C]
Prairie Ground Cherry	*Physalis viscosa*	[C]
Silver Leaf Nightshade	*Solanum elaegnifolium*	[P]
St. John's Wort	*Hypericum perforatum*	[C]
Sweet Briar	*Rosa rubiginosa*	[C]
Noogoora burr	*Xanthium occidentale*	[C]

Under the *Catchment and Land Protection (CaLP) Act, 1994* landholders are responsible for the control of Regionally Controlled Weeds on adjacent local roadsides (not controlled by Vicroads). The interpretation of this Act is currently under review.

Regionally Prohibited weeds are the responsibility of DSE and Vicroads on roadsides.

Environmental weeds are plants that invade areas of natural bushland and include both introduced plants and native plants that originally come from other areas of Australia.
Unlike *Regionally Prohibited* and *Regionally Controlled* weeds, these species are not declared under the *CaLP Act,* however land managers are encouraged to consider removal of these species on roadsides as there is potential for these species to spread.
The following are recognised as the most common Environmental Weeds currently threatening roadside vegetation in the municipality.

Trees and Shrubs

Cootamundra Wattle	*Acacia baileyana*
Golden Wreath Wattle	*Acacia saliga*
Desert Ash	*Fraxinus rotundifolia*
Canary Island Date Palm	*Phoenix canariensis*
Poplar	*Poplar spp.*
Cherry Plum	*Prunus cerasifera*
Willows	*Salix spp.*
Peppercorn	*Schinus molle*
Cotoneaster	*Cotoneaster divaricata*
Montpellier Broom	*Genista monspessulana*
Privet	*Ligustrum lucidum*

Aquatic Plants

Yellow Water-lily	*Nymphaea mexicana*
Arrowhead	*Sagittaria graminea*

Climbers/Creepers

Bridal Creeper	*Asparagus asparagoides*
Wandering Jew	*Tradescantia albiflora*
Blue Periwinkle	*Vinca major*

Herbs and Grasses

Wild Oat	*Avena fatua*
Chicory	*Chicorium intypus*
Fennel	*Foeniculum vulgare*
Chilean Needlegrass	*Nassella neesiana*
Phalaris	*Phalaris paradoxa*
Curled Dock	*Rumex crispus*

Guidelines:

- Ensure weed management is included in the works program.
- Minimise disturbance.
- Learn to identify weeds of the region.
- Schedule works to move from the least weed infested areas to the most weed infested areas.
- Practice vehicle hygiene to avoid spread of weeds especially following works in weed contaminated areas. Under The *CaLP* Act (Sect. 71) a person needs to ensure they maintain vehicle hygiene when moving any equipment or machinery onto or along a roadway. Transport of weeds or weed seeds is an offence.
- Clean vehicles and machinery of all material capable of spreading weeds before undertaking activities on or near high or medium conservation sites or weed free sites.
- Drain spoil is generally rich in weed seeds, and should be removed offsite in areas of significant vegetation. Approval from DSE is required to dispose of noxious weeds capable of germinating, or to deposit on land noxious weeds or weed seeds,other than in landfill.
- Obtain soil and gravel from weed free sites. A DSE permit is required to use soil, sand or gravel which could result in the transfer of noxious weeds.
- Dispose of any weeds likely to set seed or re-shoot by burning on-site (subject to fire prevention) or at a designated dump site (cover during transport).

3.9 Protect Wetlands and Waterways

The Goulburn Broken Catchment Management Authority (GBCMA) should be contacted and a Works on Waterways permit obtained before undertaking any works within the bed and banks of designated waterways.

Guidelines:

- Wetlands and waterways should be protected by appropriate works practices, including minimising the use of herbicides.
- Roadside drainage systems should ensure that water levels of wetlands are not altered.
- Ensure that runoff is not directed into wetlands.
- Road discharge should be filtered through native vegetation to reduce erosion and potential pollution problems.

3.10 Permit requirements

Victorian legislation requires that, subject to certain exemptions, a planning permit be obtained to remove, lop or destroy any native vegetation. At the time of printing a review of the exemptions included in the current legislation is in progress and this review may result in alterations to the exemption provisions.

One of the current exemptions applicable to roadsides is that no permit is required for the removal of seedlings or regrowth less than ten years old within previously cleared areas of the road formation, provided that the clearance is deemed necessary for the continued function of the road and the clearance is to the minimum extent necessary.

A condition of permits being issued will be that any vegetation loss will be offset as required by the Native Vegetation Framework, according to the Net Gain principles in the Planning Practice Notes.

Flowcharts have been prepared that identify procedures to be followed for routine roadside maintenance sapling removal and tree branch lopping within the road maintenance envelope.

3.11 Protect Cultural Heritage

Indigenous and non-indigenous cultural heritage provides a sense of community identity. Victoria's heritage includes archaeological sites, buildings and structures, created landscapes and community values and beliefs.

As activities on roadsides have the potential to impact on heritage sites, it is important to identify heritage issues to enable impacts to be avoided, minimised or mitigated.

All registered and unregistered Victorian Aboriginal archaeological sites are protected by the State *Aboriginal Heritage Act 2006* and the Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984.* All Victorian historical sites are protected by the State *Heritage Act 1995.* These Acts prohibit the wilful destruction or disturbance of any cultural heritage site, place or object, whether on private or public land.

Heritage Victoria and Aboriginal Affairs Victoria are the Victorian State Government instrumentalities that administer these Acts. The Heritage Services Branch, Aboriginal Affairs Victoria, Department for Victorian Communities must be advised of any proposed works that may affect Aboriginal sites, or if any new sites are located.

If the proposed works are a high impact activity (such as building a road) and are in an area of cultural heritage sensitivity, a Cultural Heritage Management Plan will be required under the *Aboriginal Heritage Act 2006.* This plan will be evaluated by Registered Aboriginal Parties operating under the auspices of the Aboriginal Heritage Council. If a Cultural Heritage Management Plan is required, other statutory authorisations can not be given before the Plan is approved.

In addition to the above, the '*Co-operative Management Agreement between Yorta Yorta Nation Aboriginal Corporation and The State of Victoria*' also deals with proposed works in designated areas specified in the agreement.

Roadside workers and contractors would benefit from training to increase awareness of heritage issues and to increase recognition skills of indigenous artefacts such as mounds, middens, surface scatters, tools, stone quarries, burial sites and scar trees to assist in the identification and subsequent protection of new sites.

4.0 Environmental issues

4.1 Minimise disturbance to soil and vegetation

4.2 Restrict machinery to cleared areas at all times

4.3 Use the most suitable machinery for the job

4.4 Clean down machinery before moving to another site

4.5 Locate stockpiles on areas with no native vegetation

4.6 Control erosion and siltation – water management

4.1 Minimise Disturbance to Soil and Vegetation

The best way to protect native vegetation is to minimise disturbance. This includes minimising soil disturbance and damage to all native plants, including native grasses and groundcover plants, which are particularly easy to damage. Disturbance results in:

- Weeds invading a site, which compete with native plants, increase maintenance costs and lead to a higher potential fire risk.
- Damage and death of native plants.
- Reduced natural regeneration of native plants.
- Increased risk of soil erosion.

The majority of damage to vegetation occurs through the inappropriate locations of materials stockpiles, windrows, turning and parking areas for machinery or inadequate definition of the limit of works.

The location of these areas needs to be determined before works commence to ensure minimum disturbance is achieved. In areas of significant vegetation, machinery parking areas are best located on cleared private land.

4.2 Restrict Machinery to Cleared Areas at All Times

Machinery can cause a lot of damage to native vegetation in a very short period of time. When undertaking maintenance works operate machinery from the road surface or other cleared areas wherever possible.

Once the locations of material stockpiles, windrows, turning and parking areas for machinery and the limit of works have been nominated, ensure that operators are aware of site limitations through a job site induction program.

For contracts, ensure rectification of any environmental damage is undertaken at the contractor's expense within the defect liability period.

4.3 Use the Most Suitable Machinery for the Job

Choose the appropriate type and minimum size of machinery to do the job.

- Smaller machinery is more manoeuverable, thereby minimising potential disturbance to native vegetation. It also causes less compaction and damage to roots of trees.
- A backhoe operating from the shoulder of the road will cause far less disturbance to vegetation than a machine operating within the roadside vegetation.

4.4 Clean Down Machinery before Moving to Another Site

Dirty machinery can spread weeds and soil borne diseases. Before transporting any machinery and vehicles to a new site remove all soil and seed from machinery.

This is best achieved with high-pressure water hoses. However, where these hoses are unavailable, blowing off with compressed air, scraping and brushing off soil will suffice as a short-term measure.

Wash machinery away from creeks and native vegetation, preferable on non-native grassy areas.

4.5 Locate Stockpiles in Areas with no Native Vegetation

Stockpiles can damage native vegetation if placed inappropriately and act as a source of weeds.

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Guidelines:

- Only place stockpiles at Council designated locations. These should have safe traffic access, but not affect visual amenity.
- Only locate stockpiles on areas of low conservation value, and not on roadsides adjacent to public land.
- No materials should be stored within the driplines of existing trees, or within drainage lines.
- Stockpiles are to be regularly monitored for weeds.
- Weeds are to be controlled before they flower and set seed.
- The limits of each site are to be defined by stakes, coloured tape or fencing to avoid encroachment.
- A list of Council designated sites should be made available to staff and contractors.
- The use of stockpiles should be minimised by utilising best works practices and avoiding double-handling of materials.

4.6 Maintain Water Quality, Minimise Siltation and Control Erosion

Roadworks can result in erosion and increased siltation of local waterways. Drainage from roads is often high in sediment and pollutants such as oil and fuel residues.

High water velocities and bare ground are the principal causes of erosion, especially in combination with dispersive soils. Design of projects should aim at minimising water velocities by dissipating flows; minimising areas of disturbed ground and retaining vegetation cover where possible.

Guidelines:

- Drains should follow natural drainage lines.
- Table drains, culverts and mitre/cutoff drains should retain some vegetation cover to maximise filtering of runoff water.
- Concentrated flows onto adjacent areas should be avoided as these increase the likelihood of erosion and poor filtration.
- Minimise soil disturbance.
- Avoid scalping of the ground during slashing operations.
- Herbicides should not be used to maintain drain lines, as this bares soil and increases the erosion risk.
- Cleaning of drains should expose the least soil necessary to maintain effective water flow.
- When forming drains disturb and expose the minimum area of soil necessary to maintain effective water flow.
- Minimise areas of disturbed ground, retain vegetative cover where possible.
- Plant disturbed/exposed areas with cover crops such as sterile rye grass to provide interim vegetation cover or rehabilitate disturbed areas with native plants as works proceed.
- Contain water flows using pipe or kerb/channel structures.
- Use energy dissipating devices at outfalls.
- Capture silt by use of silt traps, silt fencing, barriers, sedimentation ponds or retarding basins.
- Avoid steep batters.
- Avoid steep drainage lines.
- Use rip-rap (i.e. rock) lining of drainage lines where necessary.
- Increase the number of mitre drains.
- Broaden drain profiles to reduce water velocities.
- Create artificial wetland areas to dissipate flow where practicable.
- Divert stormwater away from loose or exposed soil.
- Avoid blocking drainage lines with soil or vegetation stockpiles or windrows.
- Prepare contingency plans for large storms (e.g. retention basins) to minimise effects on waterways.
- Best practice includes anticipating potential risk and being prepared for abnormal circumstances.
- Drainage water should be directed away from wetland areas to avoid contamination and alteration to water levels.

5.0 Construction Specific Issues

5.1 Walk the route before construction commences:

- **Clearly mark the construction zone to avoid unnecessary disturbance**
- **Plan vegetation removal, obtain permits and clearly mark any vegetation to be removed prior to the commencement of work**

5.2 Minimise vegetation removal

5.3 Stay within the construction zone

5.4 Strip and stockpile top soil

5.5 Rehabilitate the site following works

5.1 Walk the Route Before Construction Commences

'Walking the route' involves assessing the construction alignment before construction begins in order to:

- Clearly mark the construction zone.
- Avoid unnecessary removal of vegetation and disturbance.
- Assess vegetation and protect significant vegetation or other sensitive areas from disturbance - tape off areas to be protected.
- Plan vegetation removal and clearly mark any vegetation to be removed.
- Locate stockpiles, access roads, machinery parking and turning areas.

A checksheet has been developed to assist this process (Appendix 2 Document 1). This should be undertaken by Council staff and suitable induction given to construction workers. An appropriate DSE officer and Council's Environment Officer may also need to be involved.

5.2 Minimise Vegetation Removal

Mark and remove only the minimum extent necessary of native vegetation. Consider alternatives to vegetation removal, such as barriers and road re-alignment. Avoid areas of natural regeneration.

When vegetation needs to be removed the following techniques will minimise damage:

- Obtain appropriate planning permits prior to vegetation removal.
- Choose appropriate equipment to perform the work.
- Fell trees onto the road surface, or in the direction that minimises damage to surrounding vegetation.
- Dispose of felled material by leaving for habitat. Larger quantities can be mulched or made available for firewood.
- Practice correct arboreal tree pruning techniques to minimise damage and regrowth towards road.
- Collect seed from any vegetation being removed where possible.
- Any tree stumps that are left should be cut flush to ground, or left at least 1.2 metres high to ensure they are visible.
- Canopy clearance activities shall comply with roadside flowcharts.
- Canopy clearance activities should be scheduled to coincide with Councils grading, resheet and reseal program.
- Trimming to the clearance template prior to road grading prevents unnecessary damage to vegetation.

5.3 Stay Within the Construction Zone

The construction zone is the area marked out with pegs and coloured tape where all construction activities take place, including stockpiles, turning and parking areas. The limit of works should be clearly defined.

Stay within the marked construction zone during construction and confine machinery to well-defined tracks. Attempt to minimise machinery movement and restrict to cleared areas at all times.

5.4 Strip and Stockpile Top Soil

Topsoil from areas of native vegetation contains seeds of local native plants and organic matter. Stockpiling of this topsoil for later use can enhance natural regeneration of a site.
Where weeds are present or close to a site, weed seed will also exist in topsoil. Only spread topsoil that is likely to contain little or no weed seed.

Guidelines:

- Before starting works strip the top 150-200mm of topsoil.
- Locate soil stockpiles on cleared areas, away from existing drainage lines and native vegetation. Remove weeds where the stockpile is to be placed by scalping or spraying.
- Ideally topsoil should be stockpiled for less than six months to ensure seed in the soil remains viable.
- Do not mix weed free and weedy topsoil.

5.5 Rehabilitate the Site following Works

Where sites require rehabilitation following works:

- Utilise fallen timber as habitat where possible.
- Larger quantities of felled vegetation can be mulched for later use and stockpiled in an area with no native vegetation.
- Do not dump mulch on roadsides.
- Do not chip any weeds that are going to seed.
- Natural regeneration should be encouraged where possible through guarding, weed control and using stockpiled topsoil that contains an indigenous plant seedbank.
- Where topsoil is to be removed from weed free areas, stockpile for spreading back over the site at the completion of works.
- Do not re-spread topsoil that contains weeds and weed seed.
- Do not mix weed free and weedy topsoil.
- Where sub-soil is heavily compacted, rip to a minimum depth of 300mm prior to spreading topsoil, except under trees.
- Weed contaminated soil should be deep buried on site as part of the project.
- Do not build up any soil around tree trunks of under tree driplines.
- Following spreading, water topsoil if wind erosion is likely.
- Try to follow original contours.

Guidelines for revegetation along roadsides:

- Use indigenous native species grown from local seed.
- Undertake suitable site preparation and ongoing maintenance. Depending on the site, this may include ripping, weed control, tree guards, fencing, rabbit control and watering.
- Plantings must take account of road safety and sight distances.
- Plantings should consider the requirements of the Municipal Fire Prevention Plan in relation to Fuel Reduced Corridors.
- Plantings should aim for a natural appearance (avoid rows) and should not be continuous (to provide fuse breaks for fire).
- Plant shrubs and understorey species in dense clumps.
- Species planted under powerlines should be low growing (not higher than 3m) and not interfere with services.
- Planting should be set back 3 metres from fences.
- Trees and shrubs should not be planted in native grasslands.
- Batter slopes should be seeded with a mix of sterile rye grass to provide immediate cover. This mix should also include native grass seeds for long term establishment.

6.0 Maintenance Specific Issues

6.1 Remove and prune vegetation carefully

6.2 Avoid 'tidying up' vegetation

6.3 Remove drain spoil and dispose in suitable location

6.4 Avoid the spread of weeds

6.5 Minimise herbicide usage

6.6 Protect native vegetation and avoid the spread of weeds when grass slashing and shoulder spraying

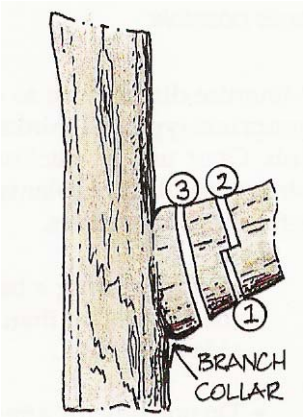
6.1 Remove and Prune Vegetation Carefully

Native vegetation should be protected and removal minimised wherever possible. Careful pruning of over-hanging branches may reduce the need for tree removal. Consider the following before any pruning or removal of vegetation is undertaken:

- The safety of staff and road users.
- Legislative requirements.
- The effect of removal on the appearance of the roadside.
- Any historical significance of the tree or vegetation.

When removing larger branches use the three-cut method outlined below to avoid bark injury.

1. The under cut
2. The upper cut to remove the branch
3. The final trim cut (always cut on the outside of the branch collar close to, but not flush with the main trunk or limb, to assist with wound healing).



The three–cut–method.

If one side of a forked tree is to be removed, ensure cut is angled to shed water.

6.2 Avoid Tidying up Vegetation

Leave native vegetation undisturbed where possible during maintenance. Do not 'tidy up' areas of native vegetation after works by grading the roadside. Avoid smothering native vegetation with spoil from grading works, especially windrows at tops of batter slopes and parallel to roadworks. Remove excess grading spoil off site.

Logs, rocks and leaf litter provide habitat for native fauna and should be left undisturbed.

6.3 Remove Drain Spoil and Dispose in Suitable Location

Exposed earth and drain spoil usually contains weed seed, so do not place the spoil on roadside native vegetation. Direct spoil from drains towards the road pavement for collection. Remove spoil and dispose in an area that will not cause a weed problem.

6.4 Avoid the Spread of Weeds

Council's key responsibility in weed control is to avoid contributing to the spread of weeds. Weeds can be easily spread within a site and between different sites during road maintenance works.

Guidelines:

- Learn to identify weeds of the region and ensure weed management is included in the works program.
- Schedule works to move from the least weed infested areas to the most weed infested areas. Slash roadsides from native vegetation areas towards weed infested areas to minimise spread of weed seed.
- Clean vehicles and machinery of all material capable of spreading weeds, especially following works in areas containing weeds and before undertaking activities on or near high or medium conservation sites or weed free sites.
- Obtain soil and gravel from weed free sites.
- Avoid scalping of the ground during slashing operations as it encourages colonisation by weed species.
- Drain spoil is generally rich in weed seeds, and should be removed offsite in areas of significant vegetation.
- Minimise disturbance.

6.5 Minimise Herbicide Usage

Herbicide usage can result in:

- Resistance developing in target weeds, which are then immune to herbicide.
- Damage to native plants from drift and off-target application.

Guidelines:

- Herbicides should only be used to control weeds when other alternatives are not suitable.
- Ensure appropriate Chemcert / ACUP qualifications are held by operators.
- Ensure weed control is undertaken in accordance with manufacturer's instructions.
- Only non-residual herbicides such as 'glyphosate' should be used to control weeds along roadsides, unless advice from DSE is given and approval is obtained to use other herbicides.
- Reduce the use of broad-scale application of herbicides, to decrease the potential of herbicide resistance.
- Rotation of herbicides may reduce the risk of resistance.
- Minimise any off-target damage to native vegetation and ensure drift is minimised when spraying road verges adjacent to grasslands.
- Use herbicides sparingly to spot spray targeted, isolated or localised aggressive infestations, especially in native grasslands. Application of herbicides using a rope-wick applicator or back-pack spot spraying is preferred.
- Alternative application methods such as stem injection or cut and paint, reduce chemical usage and off-target damage.
- Do not use herbicides near wetlands or waterways, or if unavoidable, use frog friendly products.
- Record all herbicide use and regularly monitor effects on target weed species and native vegetation.

6.6 Protect Native Vegetation and Prevent Weed Spread when Grass Slashing and Spraying

Guidelines:

- Slash roadsides from native vegetation areas towards weed infested areas to minimise spread of weed seed.
- Clean contaminated machinery after working in known weed areas, by broom, air blast, washing, or steam cleaning. Select appropriate site for washdown to avoid further spread of weeds.
- Generally slashing shall be to one slasher width behind guideposts or two metres from pavement edge, unless otherwise specified in the Municipal Fire Prevention Plan.
- Native grass areas shall not be slashed lower than 150-200mm.
- Scalping of the ground during slashing operations is to be avoided as it encourages colonisation by weed species.
- Slash native grasses in late summer/autumn to allow seedset.
- Slash weeds before they set seed.
- Mow around regenerating trees and shrubs unless these are in unsuitable locations.
- Spraying may be used around guideposts and roadside furniture.
- Only herbicides with the active ingredient 'glyphosate' should be used to control weeds along roadsides, unless advice from DSE is given and approval from the authorised Council Officer is obtained to use other herbicides. Rotation of herbicides may reduce the risk of resistance.
- Ensure operators have current Chemcert / ACUP qualifications.
- Minimise fire risk from roadside ignition sources.

7.0 Guideline Summary

LOW CONSERVATION VALUE	**MEDIUM CONSERVATION VALUE**	**HIGH CONSERVATION VALUE**
Confine machinery operations to the existing road formation or a designated construction zone. Spoil from grading and drain clearing must not be placed or spread on the roadside. If suitable, the spoil may be graded onto, and confined to, the road verges, otherwise it is to be removed to a recognised dump site.	Confine machinery operations to the existing road formation or a designated construction zone. Spoil from grading and drain cleaning must not be placed or spread on the roadside. If suitable, the spoil may be graded onto, and confined to, the road verges, otherwise it is to be removed to a recognised dump site or tip. Do not spread spoil into native vegetation on roadsides.	Confine machinery operations to the existing road formation or a designated construction zone. Spoil from grading and drain clearing must not be placed or spread on the roadside. If suitable, the spoil may be graded onto the road for re-use with new gravel in resurfacing works or if not, it is to be removed to a recognised dump site or tip. Do not spread spoil into native vegetation areas on roadsides.
Remove all stripping from widening and reconstruction works to a recognised dump site or tip. On very weedy sites, stripping may be extended to the fenceline but a permit is required from DSE under the *CaLP* Act.	Remove all stripping from widening and reconstruction works to a recognised dump site or tip.	Remove any topsoil (where approved in the contract) prior to works and store in a designated area free from weeds. Re-use as soon as practical.
Clean table drains regularly so they do not become clogged with silt or vegetation.	Clean table drains regularly so they do not become clogged with silt or vegetation. Avoid native vegetation when locating or maintaining drain cut off points.	Clean table drains regularly so they do not become clogged with silt or vegetation. Avoid native vegetation when locating or maintaining drain cut off points.

LOW CONSERVATION VALUE	MEDIUM CONSERVATION VALUE	**HIGH** CONSERVATION VALUE
Avoid regenerating native vegetation during slashing and spraying operations except within the road shoulder, verge or table drain.	Avoid regenerating native vegetation during slashing and spraying operations except within the road shoulder, verge or table drain. Time before seed set of exotic grasses and after seed set of indigenous understorey species – generally Autumn.	If slashing is required for fire prevention or to retain sight lines, carry out work to occur before seed set of exotic grasses and after seed set of indigenous understorey species. If possible, avoid native grasses between September and late December. Slash only up to the back of the table drain or a maximum of two metres from the edge of the pavement. Maintain 150 - 200mm. slashing height.
Remove weeds before stockpiling materials on a new stockpile site.	Existing stockpile sites are to be kept tidy and free of weeds.	Relocate existing stockpiles as soon as possible. No new stockpiles are to be located on these roadsides.
	Clearly mark the construction zone prior to the commencement of works. The construction zone is to be approved in contract documents [Refer VicRoads Handbook]. Plant and equipment must not be parked on the roadside in this zone.	Clearly mark the construction zone prior to the commencement of works. The construction zone is the area where all construction activities take place [Refer VicRoads Handbook]. Plant and equipment must not be parked on the roadside in this zone.
Clean all machinery and equipment before moving onto or off a roadside to ensure all noxious weeds or part thereof are removed Incorporate stringent hygiene procedures.	Clean all machinery and equipment before moving onto or off a roadside to ensure all noxious weeds or part thereof are removed. Incorporate stringent hygiene procedures.	Clean all machinery and equipment before moving onto or off a roadside to ensure all noxious weeds or part thereof are removed Incorporate stringent hygiene procedures.

References

Victoria's Native Vegetation Management - a Framework for Action, 2003

Planning Practice Notes - Department of Sustainability and Environment, 2006

Roadside Management Strategy - GSCC, 2007

Routine Roadside Maintenance Sapling Removal Flowchart and Routine Roadside Maintenance Tree Branch Lopping Flowchart - GSCC, 2007

Roadside Management Guidelines - VicRoads, 1999

Shepparton Municipal Transport Plan Road Networks and Management Aspects - GSCC, 2000

Greater Shepparton Road Safety Plan - GSCC, 2003

Roadside Handbook: Environmental Guidelines for Road Construction and Maintenance Workers - VicRoads, 1992

Goulburn Broken CMA Native Vegetation Management Strategy, 2003

Goulburn Broken Regional Catchment Strategy, 2003

Goulburn Broken Weed Action Plan, 2001-2005

Environmental Protection – Project Management - VicRoads, 2000

Environment Strategy - VicRoads, 2005 - 2015

Regional Management Goals - VicRoads

Code of Work Practice for the Care of Native Vegetation on Roadsides, Volume 1 and 2

VicRoads Regional Codes of Practice for Roadside Maintenance and Construction, 1999

EPA Environmental Guidelines for Major Construction Sites - Publication 480, 1996

Vegetation Management Plan for Powerline Clearance, VicRoads, 1997

Code of Practice for Powerline Clearance (Vegetation) - Office of the Chief Electrical Inspector, 1999

Risk Assessment Checklist - VicRoads, 1998