Preparing Roadside Vegetation Management Plans

A guide to assist local councils

Prepared by the Native Vegetation Council
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Preface to the 2012 update ......................................................................................................................... 01

1. Background ................................................................................................................................................ 02
  1.1 What is Roadside Vegetation? .................................................................................................................. 02
  1.2 Why is it Important to Protect Native Vegetation on Roadsides? ............................................................. 03
  1.3 Legal Protection of Native Vegetation on Roadsides .............................................................................. 07
  1.4 Threats to Roadside Native Vegetation .................................................................................................. 09
  1.5 Roadside Vegetation Management ....................................................................................................... 11
  1.6 Roadside Vegetation Management Plans ............................................................................................. 13

2. Establishing a Plan ........................................................................................................................................ 14
  2.1 Key Steps Checklist .................................................................................................................................. 14
  2.2 Resources .................................................................................................................................................. 17
    2.2.1 Contact Information .......................................................................................................................... 17
    2.2.2 Legislation .......................................................................................................................................... 17
    2.2.3 References Relating to Roadside Vegetation Management ................................................................. 17
    2.2.4 Training Resources ........................................................................................................................... 17
  2.3 Format of a Roadside Vegetation Management Plan ................................................................................ 18
    A. Introduction ............................................................................................................................................. 18
    B. District Council Roadside Vegetation Policy .......................................................................................... 18
    C. Key Objectives – This section states the local council’s key objectives for roadside vegetation .......... 18
    D. Role of the RVMP – This section should briefly summarise the role of the RVMP and what it contains .... 18
    E. Responsibilities of Local Council for Road Reserve Management ....................................................... 18
    F. Relationship between RVMP and other Local Council Systems and Procedures ................................. 18
    G. Training and Education ....................................................................................................................... 18
    H. Distribution of the RVMP ..................................................................................................................... 18
    I. Roles and Responsibilities ................................................................................................................... 19
    J. Biological Inventory ............................................................................................................................... 19
    K. Roadside Vegetation Management Categories ..................................................................................... 20
    L. Classification of District Council Roads ................................................................................................. 20
    M. Risk Assessment and Management of Key Threats ........................................................................... 20
    N. Roadside Management Issues ............................................................................................................. 21
    O. Implementation of the RVMP ............................................................................................................... 23
    P. Specific Activity Procedures ................................................................................................................ 24
    Q. Management Actions .......................................................................................................................... 24
    R. Review of the RVMP ............................................................................................................................ 25
    S. Monitor Compliance with the Plan ....................................................................................................... 25

3. Template for a Roadside Vegetation Management Plan ............................................................................... 26
  3.1 RVMP Plan types ..................................................................................................................................... 26
  3.2 Instructions for How to Use template ...................................................................................................... 27
  3.3 Fact Sheets ............................................................................................................................................. 27

4 Glossary ....................................................................................................................................................... 29

Appendix A: Implementing Roadside Vegetation Surveys .............................................................................. 32
Appendix B: Roadside Marker Schemes ......................................................................................................... 40
Appendix C: Risk Assessment Guidelines ...................................................................................................... 41
Appendix D: Examples of Roadside Vegetation Impact Approval Procedures ............................................. 45
Appendix E: Job Environmental Analysis (JEA) Checklist ............................................................................. 48
Appendix F: Incident Report Form – EXAMPLE ONLY .................................................................................. 51
Preface to the 2012 update

Since the introduction of the Native Vegetation Act 1991, local councils in South Australia have been required to manage vegetation on roadsides by either applying guidelines issued by the Native Vegetation Council (NVC), or by developing a Roadside Vegetation Management Plan (RVMP) approved by the NVC.

Although there is no compulsion for local councils to produce roadside vegetation management plans many have developed them, particularly since a guide to assist local councils prepare RVMPs was released by the Native Vegetation Council in 2004.

The Native Vegetation Council acknowledges that management of roadside vegetation can be challenging. Due to their linear shape, and the many uses and users of roads and road sides, local councils are faced with a myriad of issues on a daily basis. Local councils control weeds as well as manage threatened plants. They need to consider road safety issues, supply of services, and adjacent landholders’ needs, all within the constraints of limited resources.

The Native Vegetation Council also appreciates that local councils know and understand the issues surrounding roadsides under their care and control, and are therefore best qualified to develop a Roadside Vegetation Management Plan most suited to their particular conditions. While it is acknowledged that no two Roadside Vegetation Management Plans can or should be the same, a template has been prepared which includes key information from the Native Vegetation Act 1991, and is in a format that may assist local councils in the preparation of a RVMP for their region. The template can be adapted to suit varying levels of commitment, expertise and financial constraints, with the bulk of information pre-written.

The 2004 Guide has been revised and updated to reflect amendments to the Native Vegetation Regulations, name changes and correction of typographic and other errors. The revised guide is presented here, for use by local councils when preparing a Roadside Vegetation Management Plan, whether councils prepare their own, based on the Native Vegetation Council guide, or whether they use the template as a basis for their plan.

This revised Guide will assist local councils with the preparation of a Roadside Vegetation Management Plan (RVMP). It –

1. outlines the benefits of having a Roadside Vegetation Management Plan;
2. provides details on the required contents and recommended structure of a Roadside Vegetation Management Plan;
3. provides a template for a Roadside Vegetation Management Plan; and
4. outlines options for assistance with managing Roadside Vegetation.

COMPANION DOCUMENTS:
"Guidelines for the Management of Roadside Vegetation", Native Vegetation Council (2012)

1 Background

This section explains what roadside vegetation is, its importance, and the benefits of developing a Roadside Vegetation Management Plan in South Australia. Local councils can review the points below and determine whether they would like to develop a RVMP as part of their strategic management.

1.1 WHAT IS ROADSIDE VEGETATION?
Local councils in South Australia are responsible, under the Local Government Act 1991, for approximately 75,000 kilometres of roads. While the Commissioner of Highways controls and maintains the trafficable section of major arterial roads under the Highways Act 1926, local councils are responsible for the remainder of the road reserve, including the roadside vegetation, as well as all other roads within their district.

The definition of a Road (from Roads (Opening and Closing) Act 1991) is –

a. a public road within the meaning of section 4 of the Local Government Act 1999; or

ab. an alley, laneway, walkway or other similar thoroughfare vested in a council; or

b. in relation to a part of the State not within a council area –

i. a road or street delineated and shown on a public map or plan of the State as laid out for public purposes by the Crown; or

ii. a road or street opened under this Act or any other Act relating to the opening of new roads and streets; or

iii. a road or street transferred or surrendered to the Minister of Local Government or the Crown by the owner or lessee for use as a public road or street; or

iv. a road or street declared or dedicated under any other Act to be a public road or street, and includes part of a road.

For The Purposes of This Plan:

Roadside – is defined as the strip of land between the road formation and the boundary of the road reserve. [Where the road formation is the surface of the finished earthworks, excluding cut or fill batters (Austroads, 2010)].

Roadside vegetation – Is any vegetation growing on a road reserve, and includes vegetation on a roadside (the area adjacent to a formed road), and vegetation growing on an unmade or undeveloped road reserve; this ranges from native vegetation of conservation value to vegetation dominated by introduced species.
1.2 WHY IS IT IMPORTANT TO PROTECT NATIVE VEGETATION ON ROADSIDES?

Native roadside vegetation is important for a variety of reasons. From a conservation perspective, it has significant value, as much of the native vegetation within the State has been removed or highly disturbed. In some areas roadides support virtually the only remaining example of the original vegetation. Roadside vegetation also provides functional and social benefits.

Survey work in 1978 revealed, “South Australia’s native roadside vegetation has been severely depleted through clearance and through several forms of ongoing disturbance. Despite this, many important areas remain, some of which are in very good condition and need to be kept free of disturbance as much as possible, while others require active management to ensure that their features are not gradually degraded”1.

The benefits of preserving native vegetation on roadides can be summarised as follows (Breckwoldt et al., 19902, and Saunders and Hobbs 19913, provide further background information):

1. Functional benefits

• Native vegetation on roadides helps to lower local water tables that may affect the road formation and pavement.

• Intact native vegetation also acts as an effective, low cost form of weed control by preventing the establishment of weeds in the roadside. Roadides heavily infested with weeds can be a threat to adjacent properties and may increase wildfire risk.

• Native vegetation on roadides can provide valuable shelter for livestock and crops in adjacent land.

• Native vegetation can also help to define curves, creating a safer driving environment.

• Retention of native vegetation reduces the velocity of water runoff, thus reducing scour and erosion of batters and embankments.

• Shade from native vegetation keeps the road cool for road users, particularly pedestrians and cyclists, and provides shade at rest stops for travellers.

• Predatory insects (‘farmers helpers’) are commonly found on native vegetation.

2. Conservation benefits

• Substantial areas of native vegetation can still be found along roadides even in highly modified areas of the state. In some areas, native vegetation in road reserves is virtually the only remnant of the original vegetation.

• For the most part, roadides are areas that have never been grazed or cultivated, and therefore may contain plant species – often threatened – that aren’t found in the surrounding scrub areas.

• They provide important habitat for native fauna, including reptiles and invertebrates (Table 3).

• Along with other remnant vegetation and scattered paddock trees, roadside vegetation can facilitate movements of wildlife, particularly birds, through the landscape and in turn assist pollination of plants that may otherwise become isolated.

• Roadside trees can be very old and contain resources (e.g. hollows) less common in younger surrounding vegetation4.

• Roadside vegetation can also provide an important seed source for revegetation projects.

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### Table 1. Examples of conservation benefits of roadside vegetation

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Image Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old trees provide habitat for wildlife</td>
<td>Frog</td>
</tr>
<tr>
<td>Intact soil crust, micro flora and fauna</td>
<td>Birds</td>
</tr>
<tr>
<td>Floral resources – nectar, flowers and fruits</td>
<td>Nest sites for birds</td>
</tr>
<tr>
<td>Perches</td>
<td>Protection</td>
</tr>
</tbody>
</table>
### Table 1 cont. Examples of conservation benefits of roadside vegetation

<table>
<thead>
<tr>
<th>Mature trees with hollows</th>
<th>Hollows for nesting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insects</td>
<td>Remnants in highly cleared districts</td>
</tr>
<tr>
<td>Intact plant communities (blue gum woodland)</td>
<td>Threatened plants (Pink ground Berry – Uncommon)</td>
</tr>
<tr>
<td>Threatened plant communities, e.g. buloke woodland (South East)</td>
<td>Threatened plants (Monarto mintbush – Endangered)</td>
</tr>
</tbody>
</table>
3. Social benefits

- In areas that have been extensively cleared, remnant vegetation on roadsides provides important aesthetic visual interest to the general landscape – once referred to as the “Front Garden of the Nation” by Edna Walling in 1952⁵.

- Scenic quality is important to motorists: roadside vegetation can contribute to driver alertness by offering relief from boredom.

- Remnant vegetation in road reserves often contains attractive wildflower species contributing to the natural character and tourist appeal of a district.

- In cleared areas, road reserves often represent an historical reminder of the variety of vegetation types that occurred across the landscape prior to settlement.

- Roadside vegetation can be used as an educational tool to highlight to the general public the varieties of habitats that used to belong in the area.

• It could also be said that “we, the community, have a duty to exercise foresight in our treatment of the environment which we will hand on to our successors”⁶.

1.3 LEGAL PROTECTION OF NATIVE VEGETATION ON ROADSIDES

Native vegetation on South Australia's roadsides is protected or regulated under State and Commonwealth legislation.

1.3.1 Native Vegetation Act 1991 and Native Vegetation Regulations 2003

In South Australia the clearance of native vegetation, including that along roadsides, is controlled under the Native Vegetation Act 1991 and the Native Vegetation Regulations 2003. This means that any clearance of native vegetation on roadsides requires the permission of the Native Vegetation Council (NVC) unless a specific Regulation applies.

Regulation 5(1)(y) – Roadside Vegetation allows for clearance by a local council, or someone acting on behalf of the local council, if the vegetation is growing on a road reserve in the area of the council and the person undertaking the clearance complies with either:

− a management plan prepared by the local council and approved by the Native Vegetation Council; or

− Native Vegetation Council guidelines for the Management of Roadside Vegetation.

Some roadside activities such as clearance for new road works, fire prevention, public safety and service provision are dealt with under other Regulations (Figure 2). Some require compensation for the clearance through either on-ground native vegetation restoration or revegetation works, or payment into a fund that supports those works elsewhere in the region.

Fig 2. Roadside Vegetation Clearance mechanisms under the Native Vegetation Act 1991

1.3.2 Other statutes relevant to the protection and management of native fauna and flora

- The Local Government Act 1999 (Section 221) where any works on road reserves require permission of the local council.

- The National Parks and Wildlife Act 1972, which prohibits the removal of native vegetation without a permit from reserves, wilderness protection zones, Crown land, public land or forest reserves in South Australia.

- The Commonwealth Environment Protection and Biodiversity Conservation Act 1999, which promotes the conservation of biodiversity by providing strong protection for nationally listed species of threatened indigenous plants and animals and important habitats. Any action that will have a significant effect on these species or habitats requires assessment and Commonwealth approval.

- The Natural Resources Management Act 2004, which promotes sustainable and integrated management of the State’s natural resources and makes provision for the protection of the State’s natural resources.


Table 2. Examples of native plants along roadsides

| Chocolate lily | Yacca | Flax-lily | Peperargonium | Guinea flower | Wattle | Hop bush | Brush heath | Orchid | Narrow-leaf bitter-pea | Eucalypt | Native cherry |
1.4 THREATS TO ROADSIDE NATIVE VEGETATION

Purely because of its linear nature, roadside vegetation is susceptible to gradual degradation through a range of activities. This degradation can be compounded if soils are disturbed or compacted by machinery or if low native shrubs or native grasses are unintentionally driven over or cleared. Not only can native plants be unnecessarily destroyed, but conditions can also be made unsuitable for natural regeneration and management problems can be created for adjoining landholders.

Examples of the types of threats to native vegetation on roadsides include:

• inappropriate fire prevention methods (e.g. grading / ploughing)
• pesticide drift from neighbouring property
• clearing for fence replacement (excessive or inappropriate method)
• clearing for new driveways (excessive or poorly located)
• weed invasion from neighbouring property
• excessive seed harvesting
• firewood collecting
• disposal of rubbish and waste materials
• inappropriate or insensitive weed control methods (e.g. boom spraying)
• inappropriate or insensitive vermin control methods
• poorly designed new road construction (realignments, widening)
• poorly managed roadwork activity (e.g. stockpiles, turning areas)
• incremental clearance along road edge when grading unsealed roads.
• inappropriate vegetation control methods for sight distance
• poor management of grading spoil (placement in roadside or table drain)
• excessive drain clearing or inappropriate disposal of drain spoil
• installation of services where cleared land exists elsewhere
• insensitive methods used to maintain services
• planting within intact native vegetation (e.g. trees in native grassland, or sedgeland)
• grazing by stock or rabbits
• off-road vehicles
• plant disease (e.g. Phytophthora, Mundulla Yellows)
• inappropriate fire regimes
• changes to hydrology
• dryland salinity
• lack of active management
• senescence (old age)

These detrimental activities can occur for a number of reasons, but can be grouped into four categories, each of which may require a different approach to minimise or eliminate the risk. Threats to roadside native vegetation can occur due to:

• ignorance of the law – e.g. clearance for fencelines by adjacent landholders, or seed collection;
• accidental clearance – e.g. vehicles parking on roadside, grading a little wider each time, or inappropriate weed control methods;
• illegal use – e.g. domestic waste and weed dumping, or sheep and cattle grazing; and
• inaction – e.g. weeds and pests spread over time if not actively controlled.
### Table 3. Examples of threats to roadside native vegetation

<table>
<thead>
<tr>
<th>Threat</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fenceline clearance</td>
<td><img src="image" alt="Fenceline clearance" /></td>
</tr>
<tr>
<td>Garden waste dumping</td>
<td><img src="image" alt="Garden waste dumping" /></td>
</tr>
<tr>
<td>Spoil heaps</td>
<td><img src="image" alt="Spoil heaps" /></td>
</tr>
<tr>
<td>Illegal firewood collection</td>
<td><img src="image" alt="Illegal firewood collection" /></td>
</tr>
<tr>
<td>Incremental road widening</td>
<td><img src="image" alt="Incremental road widening" /></td>
</tr>
<tr>
<td>Rubbish dumping</td>
<td><img src="image" alt="Rubbish dumping" /></td>
</tr>
<tr>
<td>Old age / senescence / drought</td>
<td><img src="image" alt="Old age / senescence / drought" /></td>
</tr>
<tr>
<td>Water cut-off drain</td>
<td><img src="image" alt="Water cut-off drain" /></td>
</tr>
<tr>
<td>Rabbits</td>
<td><img src="image" alt="Rabbits" /></td>
</tr>
<tr>
<td>Weed infestation (broom)</td>
<td>![Weed infestation (broom)]</td>
</tr>
<tr>
<td>Roadworks</td>
<td><img src="image" alt="Roadworks" /></td>
</tr>
<tr>
<td>Weed regrowth following fire</td>
<td><img src="image" alt="Weed regrowth following fire" /></td>
</tr>
<tr>
<td>Powerline clearance</td>
<td><img src="image" alt="Powerline clearance" /></td>
</tr>
<tr>
<td>Disturbance of mature vegetation</td>
<td><img src="image" alt="Disturbance of mature vegetation" /></td>
</tr>
<tr>
<td>Clearance envelope maintenance</td>
<td><img src="image" alt="Clearance envelope maintenance" /></td>
</tr>
</tbody>
</table>
1.5 **ROADSIDE VEGETATION MANAGEMENT**

Native bushland is an efficient, self-sustaining system and, after any ground disturbance, it may take a number of years to return to a stable state. Major disturbance can unbalance the system (e.g. through serious weed infestation) and cause long-term and sometimes irreversible damage. In many instances inappropriate management activities can set up the next round of maintenance problems.

Native vegetation along roadsides needs careful management if it is to be conserved for future generations. Good roadside management practices can also generate potential savings in local council road maintenance budgets.

Low-impact management of roadside vegetation is an integral part of efficient and effective maintenance of roads.

The most important step to manage roadside native vegetation is to identify where and what it is, through roadside vegetation surveys or opportunistic observations.

Preventative measures (such as the Roadside (Blue) Marker system, protocols for road workers, and information to landowners) should then be implemented to prevent direct clearance and physical damage to identified vegetation.

Ideally, management measures should also extend to improving the quality and quantity of the vegetation on roadsides, through weed and pest control works, rehabilitation and revegetation.

**Fig 3.** Roadside markers highlighting the presence of native plants in a weed-infested roadside – this can help road workers or weed control contractors avoid accidental damage to native plants.
### TABLE 4. EXAMPLES OF GOOD ROADSIDE MANAGEMENT

<table>
<thead>
<tr>
<th>Maintain clearance envelope</th>
<th>Fencing highly significant vegetation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadside Marker System</td>
<td>Markers to highlight natives amongst weeds</td>
</tr>
<tr>
<td>Bushcare sites for volunteers</td>
<td>Protect native grasses and maintain an intact soil crust</td>
</tr>
<tr>
<td>Minimum clearance required for fenceline maintenance</td>
<td>Minimum clearance necessary for safe property access</td>
</tr>
<tr>
<td>Allowing natural regeneration</td>
<td>Restoration of degraded remnants</td>
</tr>
</tbody>
</table>
1.6 ROADSIDE VEGETATION MANAGEMENT PLANS

1.6.1 What is a Roadside Vegetation Management Plan?

A Roadside Vegetation Management Plan (RVMP) is a reference document encompassing a range of actions that occur on road reserves and programs for the local council for the purpose of promoting good management of roadside vegetation.

Implementation of the plan’s objectives and guidelines, combined with local council commitment and support, can result in good management outcomes for roadside vegetation, and usually with little impact on council and other users’ activities on roadsides.

RVMPs need to be endorsed by the Native Vegetation Council under the Native Vegetation Act 1991 in order to fulfill a legal requirement under Regulation 5(1)(f). This Regulation allows for clearance of native vegetation by a local council, or someone acting on behalf of the local council, where the clearance complies with a Roadside Vegetation Management Plan that has been approved by the Native Vegetation Council.

Councils ARE NOT obliged to have an endorsed RVMP, but if they don’t, they must follow the Native Vegetation Council’s “Guidelines for the Management of Roadside Vegetation”.

1.6.2 What RVMPs can do

Roadside Vegetation Management Plans can:

- outline what can be legally cleared on road reserves without Native Vegetation Council approval;
- outline the ecological value of roadside native vegetation in the region – e.g. what plant associations are present, their conservation significance and quality; the location of any threatened species, and the distribution of weed species of significance;
- identify the threats to roadside native vegetation in the region;
- promote protection of roadside native vegetation from direct damage (e.g. roadworks), by either
  - processes and procedures (codes of practice, guidelines, fact sheets) and/or
  - plant identification by vegetation survey, mapping, database, Geographic Information Systems (GIS) and roadside markers for the entire region, OR, on a case-by-case basis by council staff, local experts or Department of Environment, Water and Natural Resources staff;
- promote the protection of roadside native vegetation from indirect damage (e.g. weeds, pests, old age/senescence) and present opportunities for environmental enhancement of the road network such as guidelines and programs for weed control; weed hygiene procedures; Bushcare work and Principles and other restoration works;
- set clear policies and guidelines for activities affecting roadsides - this applies not only to road works but also to other uses of roadsides such as service provision, pest animal and plant control, property access and bushfire prevention;
- encourage forward planning to minimise potential damage to roadside vegetation (combined with vegetation surveys, planning of roadworks programs well in advance can avoid areas of conservation significance and allow options that have the least impact on roadside vegetation);
- enable councils to coordinate work programs affecting roadside vegetation and avoid ad-hoc decisions that may be detrimental to roadside vegetation;
- enable greater efficiencies through planning - from road network planning, management of maintenance contracts and construction project planning, to development of environmental programs and strategies;
- enhance local council and community awareness of issues affecting roadside vegetation;
- provide a means for local councils to demonstrate due diligence in their responsibility to protect and maintain native vegetation on roadsides; and
- if sufficient detail is included, remove the need for case-by-case consultation associated with some activities (e.g. by setting out how a particular pest will be tackled in a way which minimises the impact on native vegetation, and showing how any damage will be offset through replanting or natural regeneration at the completion of the work, councils may be able to avoid the requirement to obtain individual clearance approval for each case of that pest).

1.6.3 What RVMPs can’t do

However, a RVMP is not:

- a means of avoiding liability if native vegetation clearance offences do occur;
- an appropriate mechanism to obtain environmental approval for large road construction works;
- an approval for all roadside vegetation clearing;
- a stand-alone document in isolation of other management structures and controls over activities that occur in road reserves for which local councils have jurisdiction; or
- a mechanism to obtain approval for bushfire prevention works.
2 Establishing a Plan

Having identified and endorsed the need to develop and comply with a RVMP as part of the local council's strategic management, the main steps involved in the preparation of a RVMP are outlined below (2.1) and illustrated in Figure 4. Ultimately the RVMP becomes the key focus of a "Roadside Vegetation Management System" including a number of documents (Figure 5). The resources that may be useful (2.2), and a suggested format for a Roadside Vegetation Management Plan (2.3) are also presented.

2.1 KEY STEPS CHECKLIST

☐ 1. Establish a local consultative group

Establish a local working group, comprising representatives of the local council (e.g. Works Manager, planners) and community (e.g. NRM Board, Bushfire Prevention Officer). The group should guide the preparation of the plan and ensure that it addresses all issues and is consistent with council's objectives and systems. It should include at least one person with expertise in, or a good understanding of, native vegetation management.

☐ 2. Determine level of plan

Decide on the level of plan to be developed – i.e. basic, vegetation survey, or planning (see Section 3.1).

☐ 3. Identify funding sources

Before developing a RVMP, local councils should seek advice on potential sources of funding to carry out the work. While the Native Vegetation Council Fund is not used to fund the costs associated with writing a plan, it can contribute up to 50% of the cost of a vegetation survey, and also can fund the cost of materials for a Roadside Marker Scheme (see Section 2.3 – J.2. and/or Appendix B). Funding applications will usually require the applicant to propose a level of "in-kind" or financial contribution to the project.

☐ 4. Decide who will prepare the plan

It is recommended that a person with qualifications and experience in vegetation management prepare the plan. Local council's Natural Resource Officers or suitably qualified consultants have prepared past plans.

☐ 5. Identify issues

Identify the issues or activities that may affect roadside vegetation within the council area. Examples include routine road maintenance (e.g. patrol grading, safety pruning), road construction, adjacent farming activities, weed or vermin control, bushfire prevention (as outlined in a Bushfire Management Plan), property access, fence-line construction, firewood and seed collection, pest plant and animal control program, and movement of wide vehicles (see Section 2.3 – N). Consideration must be given to existing and potential future issues.

It should be noted that measures to minimise the impact of activities on roadside vegetation are likely to contribute to lower, long-term roadside and road verge maintenance costs.

A Risk Assessment may be conducted as part of this process (Appendix C).

☐ 6. Identify and review existing relevant processes and policies

Determine whether the RVMP could be integrated with or linked to existing local council systems or procedures. This approach may be preferable to creating a new system of management. Identify where a RVMP may link with the councils' Strategic Management Plan (Local Government Act 1999, Section 122).

☐ 7. Collate existing information

Collate any existing information on native vegetation along roadsides in the district and any information the local council has on roadside vegetation management. For example, contact relevant State Environment agencies, Natural Resource Management Boards and groups, organisations such as Trees for Life, local experts, and the Native Vegetation and Biodiversity Management Unit for information on existing databases, survey, and biodiversity information.

☐ 8. Establish policies and objectives

Establish or identify policies and objectives for the management of roadside vegetation. For example, a roadside vegetation policy may include commitments to prevent harm to the environment / ensure no net loss of vegetation, comply with relevant legislation and continually improve vegetation management practices. Different vegetation standards may be required for different types of road (major, minor, sealed and unsealed). These standards should be based on the road classification system according to transport, safety and biodiversity protection needs.
9. Assess roadside vegetation and determine conservation values

Depending on the level of RVMP (note that a basic plan excludes detailed vegetation information) undertake a roadside vegetation survey of the road network (Appendix A). Where the size of the road network makes a single survey impractical, a survey program staged over several years may be necessary.

10. Define vegetation management categories (Appendix A)

Define management categories for sections of roadside vegetation based on their conservation significance developed from the results of the roadside vegetation survey. While all vegetation is protected (unless specified in this plan), management categories for vegetation can define the level of protection and care required when undertaking specific activities. For example, Roadside Markers (Appendix B) may be erected next to very high value vegetation, while draving may be allowed only on lower value vegetation.

11. Develop operational standards (see 4.3)

Develop standard operating procedures for managing activities of the local council, landholders, service authorities, etc. where those activities are likely to affect roadside native vegetation. For example, procedures may be developed for managing activities such as roadworks, weed control, fire prevention and firewood collection.

12. Identify management roles and responsibilities

Identify roles and responsibilities of council staff for implementing all aspects of the RVMP, including issuing permits for activities such as seed collection, issuing environmental instructions for road construction projects, or developing a roadside marker scheme for significant sites. When developing a RVMP, this may include the formation of a local roadside vegetation advisory group consisting of staff, Councillors and local botanists or naturalists (this may or may not be the same consultative group that guides the preparation of the RVMP).

13. Endorsement by the Native Vegetation Council

A copy of the completed draft plan needs to be submitted to the Native Vegetation and Biodiversity Management Unit (NVMU) for assessment prior to adoption by the Native Vegetation Council (NVC) (the NVMU is also happy to comment on earlier versions of the plan, prior to local council endorsement).

The NVMU will provide feedback on the plan and work with local councils to finalise the plan for consideration by the NVC (usually by the Native Vegetation Assessment Panel (NVAP) – a sub-committee of the NVC).

Once the NVAP has considered the plan, local councils will be advised of the outcome via a Decision Letter notification, which outlines any further amendments to be made prior to adoption of the plan and specifies the approved period, including the date by which a review of the plan is required.

14. Monitoring and review

Local councils are encouraged to establish a system of operational control to ensure compliance with the objectives of any approved RVMP (and therefore the Native Vegetation Act 1991). Non-compliance with an approved RVMP may result in the Native Vegetation Council withdrawing that endorsement.

Endorsement of a RVMP is conditional upon review of the plan, initially after 3 years and then at 5 yearly intervals. This enables changes to be made that increase the usability of the plan as well as keep any name or policy changes up to date.

To assist the review process, the Native Vegetation and Biodiversity Management Unit requests that proposed changes are either highlighted as track changes or noted separately.
Instructions for using the Roadside Vegetation Management Plan Template

1. Establish a Consultative Group and determine level of plan
   - Local council

2. Identify issues
   - Consultative group, RVMP author

3. Identify existing processes
   - RVMP author

4. Collate existing information
   - Consultative group, RVMP author

5. Develop operating standards
   - Consultative group, RVMP author

6. Define management categories
   - Consultative group, RVMP author

7. Conduct roadside vegetation assessment
   - RVMP author

8. Establish policies & objectives
   - Consultative group, RVMP author

9. Identify management roles & responsibilities
   - Consultative group, RVMP author

10. Endorsement of plan
    - Native Vegetation Council, local council

11. Monitor, review and update
    - Consultative group, local council

**PLANNING**

- Local Council Roadside Vegetation Policy
- Roadside Vegetation Management Plan
- Roadside Vegetation Survey Information
- Roadside Significant Site Database

**IMPLEMENTATION & OPERATION**

- Approval procedures
- Standard Operating Procedures
- Action Plan
- Guidelines
- Staff Training
- Permits
- Project Checklists
- Roadside Marker Scheme

**MONITORING & REVIEW**

- RVMP Review (feeds back into RVMP)
- Monitor compliance with Plan

Fig 4. RVMP development process

Fig 5. Roadside Vegetation Management System
2.2 RESOURCES

2.2.1 Contact Information

Native Vegetation Council (NVC) Secretariat
Department of Environment Water and Natural Resources
Principal Advisor Ph: 08 8303 9705
Secretary Ph: 08 8303 9741
Fax: 08 8303 9780
GPO Box 1047, Adelaide SA 5001
Entry 3, Waite Road, Urrbrae 5064

Native Vegetation and Biodiversity Management Unit (NVBMU)
Assessments, compliance, restoration
Department of Environment Water and Natural Resources
Manager, Native Vegetation Group
Ph: 08 8303 9742
GPO Box 1047, Adelaide 5001
Entry 3, Waite Road, Urrbrae 5064

Roadside Vegetation Mapping and Surveys
Department of Environment Water and Natural Resources
Plant Biodiversity Centre
Ph: 08 8222 9204

Transport Services Division
Department of Planning, Transport and Infrastructure
Contracts and Environment Section
Anne Welsh
Ph: 08 8343 2686

2.2.2 Legislation


2.2.3 References relating to Roadside Vegetation Management


Transport SA Environmental Code of Practice for Road Maintenance.


2.2.4 Training Resources

The Native Vegetation Council cannot provide a list of accredited training providers; however the Department of Planning Transport and Infrastructure (DPIT) courses for road workers (details below) may be suitable for local council workers.

ENVIRONMENTAL TRAINING FOR ROAD MAINTENANCE WORKERS contact the Department of Planning Transport and Infrastructure


Business SA offers this and other Environmental training courses, please visit the following link:

http://business-sa.com/training-courses/category/631

Other specific native vegetation training courses may be available from other organisations in South Australia (e.g. Greening Australia, Trees for Life, TAFE).
2.3 FORMAT OF A ROADSIDE VEGETATION MANAGEMENT PLAN

This Section outlines a suggested format for a Roadside Vegetation Management Plan, but may be varied according to the specific needs of the local council.

A template based on this outline is also included as part of this document suite or can be downloaded from the Native Vegetation Council website. It can be used as a basis to develop a RVMP (see section 3). Local councils are not obliged to use the template, but may find it useful when developing or updating their plans.

The suggested format of a Roadside Vegetation Management Plan is as follows:

A. Introduction

Provide some general information about the local council area, including its size and area, population, number of personnel, length of road network, road classification system (including map, road category descriptions and typical formation widths) and available resources for roadside vegetation management. Include an overview of the type, importance and status of roadside vegetation in the area, a brief explanation of any local roadside vegetation management issues requiring particular attention and some general background information on the development of the RVMP.

Include a foreword or initial statement from the CEO or the Mayor recognising that the local council has a clear charter for ecologically sustainable development in the Local Government Act 1999 and this extends to the management of the road network. Also state the importance of roadside vegetation and corridors to the local council and that a RVMP is a commitment to the sustainable management of native vegetation on roadsides and as such, it is a management structure that contributes to the protection of biodiversity.

Provide definitions of terms either here or as an Appendix.

B. Local Council Roadside Vegetation Policy

State the local council’s policy for protection of roadside vegetation.

C. Key Objectives

State the local council’s key objectives for roadside vegetation.

D. Role of the RVMP

Briefly summarise the role of the RVMP and what it contains.

E. Responsibilities of Local Council for Road Reserve Management

Outline or describe council’s responsibilities and relevant legislation such as the Native Vegetation Act 1991, Native Vegetation Regulations 2003 and the Local Government Act 1999, which affect local council’s management of roadsides.

F. Relationship between RVMP and other Local Council Systems and Procedures

Identify any relevant internal management processes or systems such as quality, safety, training, reporting, administrative, and how the RVMP is linked to those systems. This section should also identify management responsibilities for roadside vegetation issues within the council’s management structure.

G. Training and Education

State how staff will be informed about the objectives and use of the RVMP, including the details of who will be required to undertake training, the proposed scope of the training and schedule of implementation. For new staff this may be included in the normal employee induction procedure. As community involvement in roadside vegetation conservation is particularly important, the RVMP should identify measures to promote understanding and adoption of relevant aspects.

H. Distribution of the RVMP

Information on how the RVMP document will be distributed and tracked within a local council is included in this section. For example: how many copies of the document will be made; who will hold copies of the document (e.g. Works Manager, Natural Resource Officer, Administration Manager, CEO); who will be responsible for making sure each copy is kept current and what internal or external promotion is intended.
I. Roles and Responsibilities

This section outlines the local council’s organisational structure identifying staff (e.g. CEO, Works Manager, Area Supervisor, Natural Resource Officer, advisory group) responsible for implementing specific aspects of the RVMP. Their roles and responsibilities can also be outlined in this section. Who will –

• maintain the RVMP, including updates reflecting any relevant organisational or legislative changes that may occur;
• determine whether clearance requires NVC approval (using information in the plan), which may require botanical skills; or access suitably qualified people for consultation; and/or consult with the Native Vegetation and Biodiversity Management Unit;
• prepare NVC clearance application forms;
• over-see on-ground works;
• ensure job checklists are completed; and
• report non-compliance with the RVMP.

J. Biological Inventory

To effectively manage roadside vegetation, road managers need comprehensive information on the conservation value of roadside vegetation and the location of sites of high importance. Surveys are extremely valuable as they –

• help with planning of new roadworks / subdivisions, so that clearance of important vegetation can be avoided;
• identify valuable vegetation, thereby minimising the risk of damage to those areas; and
• allow restoration to focus on the high priority vegetation, such as threatened plant communities or habitat for a particular threatened species.

Implementation of a Roadside Marker System (RMS) to identify significant roadside vegetation is recognised as an important management tool, and is also recommended as an important component of a RVMP.

A RMS consists of:

1. A Roadside Significant Sites Database (RSSD) which is a database of known significant sites such as vegetation, rare flora, rare fauna habitat, significant trees, wetlands, trails, or cultural sites and heritage, both indigenous and non-indigenous, that may be highly vulnerable to disturbance and damage. These sites may have specific requirements for their protection, and can be represented as a GIS layer so their locations can be mapped. The database may include photos of each site, and a general description, including any current or potential impacts.

2. Roadside Markers or “Blue Markers” which help identify significant vegetation, so that accidental damage is minimised. Such markers are used by the State transport authority and local councils, which are a discreet type of site marker intended primarily to assist field staff of road agencies and service authorities in recognising significant sites. Roadside Markers indicate the location of significant sites, so it is clear that there is something of importance there that needs to be avoided. They are placed at each end of a Site. The markers are small plates mounted on a steel dropper post, with the front (observed when approaching the site) displaying a blue pointer and a number identifying the site and agency / Council. On the back (observed when exiting the site) is a white diagonal bar on a blue background – hence the name “blue markers”.

3. Management Procedures or actions required to protect the identified sites, for example, avoid unnecessary disturbance or activity outside the road formation, or use particular hygiene procedures, or weed control methods).

The NVC encourages Councils to undertake vegetation surveys of roadside vegetation, and they will fund up to 50% of the cost of a survey if the standard DEWNR roadside survey methodology is used.7 The NVC also funds the cost of Roadside Markers.

Depending on the length of road reserves in a local council area, this survey may need to be undertaken in stages. Staging of survey work should be prioritised to recognise those roads identified in the proposed work program over the several years. Appendix A provides additional information on conducting roadside vegetation surveys. Appendix B provides additional information on roadside significant site marker schemes.

7 Traditional methods of mapping existing vegetation communities are unsatisfactory for roadside vegetation due to its finer scale and linear nature. DEWNR has developed a method to map the native vegetation remaining along roadsides throughout South Australia. It collects the features of specific roadside vegetation areas, including dominant native and weed species, the condition of the vegetation, and significance of the species and communities. This data can be entered into the Roadside Vegetation Database, which is linked to the State Government GIS, and fully integrated within the Environmental Database of South Australia (Flora and Fauna records).
Other types of vegetation survey are still valid, and may be included within the RVMP. However, these may not be as likely to be funded by the NVC. Such surveys include, but are not limited to, a modified version of the recognised standard method described above, a more detailed weed survey, a Phytophthora survey, or collation of opportunistic records.

For more information contact the Contracts and Environment Section (Anne Welsh, Principal Environment Officer) within the Department of Planning Transport and Infrastructure – they have operational instructions for Significant Sites, including procedures for recording sites and installing markers, specifications for constructing the markers, Guidelines for protection of significant sites, and Codes of Practice that should be followed irrespective of the presence of a significant site.

1. Roadside Vegetation Surveys

Provide information on any roadside vegetation surveys that have been conducted in the district or are being planned. Specifically:

- **maps** displaying the information collected (colour-coding for each segment);

- Information about the system used to manage the survey results, such as whether all data is stored in the Central State Government Database, or whether **copies of all the data** have been obtained and mapping and/or analysis customised by the local council (the data can be made available in a format suitable for PC-based GIS ‘Arcview’);

- **reports** summarising the data collected (discuss your requirements with DEWNR Mapping staff);

- locations for placing roadside markers under the Roadside Marker Scheme; and

- locations of potential **rehabilitation** and **revegetation** areas.

2. Roadside Marker Scheme (RMS)

Outline the Roadside Marker Scheme that has been implemented or is proposed.

3. Fauna surveys

Include any records, or survey results of fauna associated with roadside vegetation.

K. Roadside Vegetation Management Categories

Outline the different management categories of roadside vegetation (e.g. Category A-E from the roadside vegetation survey) that will be referred to in subsequent sections of the plan.

L. Classification of Local Council roads

Outline the road classification system and (where relevant) the construction standard for a Local Government Area.

The road classification system should identify or recognise roads within the network that contain high quality roadside vegetation. This will avoid the loss of vegetation through the reclassification of a road and application of a higher clearance envelope standard (i.e. increase of clearance width). The width of roadides supporting good quality native vegetation should be maintained by recognising the roads where this occurs. A system of road classification based on functional use, including the roadside environment, allows for a consistent treatment of all roads in a network.

M. Risk Assessment and Management of Key Threats

Ideally, a process of identifying and managing risk should be developed and incorporated into the RVMP. It is important to undertake a risk assessment when planning any activity that may adversely impact on roadside vegetation. Include the results of a risk assessment (i.e. a roadside impact matrix) using the process described in Appendix C.

For routine or recurring activities, a risk assessment would usually only need to be undertaken once. Control measures developed as a result of the risk assessment, such as a standard operating procedure for patrol grading or a procedure for relating to with requests to collect firewood would continue to apply.
N. Roadside Management Issues

Having conducted a risk assessment to identify the key threats to roadside vegetation and their likelihood of occurring, appropriate control measures to minimise or eliminate the risk can now be developed.

It should be noted that a RVMP applies to all activity within road reserves including roadworks, development approvals, service relocation proposals, fire prevention and pest plant and animal control. Clearance proposals associated with major construction projects involving the disturbance of significant areas of roadside vegetation will still require NVC approval.

List the local roadside management issues, for example road construction, road maintenance, sight distance, services, or pest control.

Outline how each management issue will be addressed, including any consultation or assessment that may be required.

A section for each management issue should include:

- objectives outlining Council’s approach to the issue – listed first;
- information about each issue – described with or without accompanying photos;
- consultation and approval procedures specifically outlining when formal NVC clearance application is required (refer to the table below); and
- guidelines and procedures aimed at identifying and protecting areas of significant roadside vegetation during the planning and implementation of roadside works – these may be detailed in an appendix or a separate document.
Table 5. Quick Reference Guide to Legal Requirements

The table below is a quick reference guide to the legal requirements of clearing native roadside vegetation, as detailed more fully in the "Guidelines for the Management of Roadside Vegetation" (NVC, 2012).

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>CLEARANCE APPROVAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NOT REQUIRED (Does not require approval under the Native Vegetation Act 1991.)</td>
</tr>
<tr>
<td></td>
<td>REQUIRED (Approval is required from either the Native Vegetation Council or the Native Vegetation &amp; Biodiversity Management Unit.)</td>
</tr>
<tr>
<td>MAINTENANCE</td>
<td>Maintenance of <strong>existing clearance with low impact</strong> methods</td>
</tr>
<tr>
<td></td>
<td><strong>Increased clearance or high impact</strong> methods to be used</td>
</tr>
<tr>
<td>NEW ROADWORKS</td>
<td>Very minor clearance e.g. pruning of branches or removal of one or two saplings or shrubs known to be common in the area</td>
</tr>
<tr>
<td></td>
<td><strong>All but very minor clearance</strong></td>
</tr>
<tr>
<td>PEST PLANT AND ANIMAL CONTROL</td>
<td>Very minor clearance e.g. pruing for access</td>
</tr>
<tr>
<td></td>
<td><strong>All but very minor clearance</strong></td>
</tr>
<tr>
<td>BUSHFIRE PREVENTION</td>
<td>All bushfire protection works which are carried out under an approved Bushfire Management Plan or equivalent under the Fire and Emergency Services Act 2005</td>
</tr>
<tr>
<td></td>
<td>Any other clearance for fire prevention Formal NVC approval required unless in accordance with a District Bushfire Management Plan under the Fire and Emergency Services Act 2005, or through an application to the CFS Regional Prevention Officer</td>
</tr>
<tr>
<td>FENCELINES</td>
<td>Trees on boundary; branches over/through fence; where shrubs or bushes are growing through the fence, those within 1m of the fence may be cleared</td>
</tr>
<tr>
<td></td>
<td><strong>Any clearance exceeding standards</strong></td>
</tr>
<tr>
<td>ACCESS TO ADJOINING LAND</td>
<td>Maximum 5m wide – normal access. Maximum 10m wide – machinery. (Careful site selection to minimise clearance)</td>
</tr>
<tr>
<td></td>
<td><strong>Any clearance exceeding standards</strong></td>
</tr>
<tr>
<td>GRAZING (LEASED ROADS)</td>
<td>Long-standing grazing practices.</td>
</tr>
<tr>
<td></td>
<td><strong>Any direct clearance or increased pressure on native vegetation through changed grazing</strong></td>
</tr>
<tr>
<td>GRAZING (GENERAL)</td>
<td><strong>No</strong> native vegetation or only native trees &amp; exotic grasses present</td>
</tr>
<tr>
<td></td>
<td>Where understorey or regenerating vegetation present</td>
</tr>
<tr>
<td>REMOVAL OF PLANT MATERIAL</td>
<td><strong>Dead vegetation other than that defined in the Native Vegetation Regulations</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Live timber, flowers or other vegetation removed e.g. brush-cutting</strong></td>
</tr>
<tr>
<td></td>
<td>Clearance of dead plants of a class declared by Regulation to be included in the definition of native vegetation.</td>
</tr>
<tr>
<td>MAINTAINING DIVERSITY</td>
<td><strong>Any measures involving burning, lopping or other disturbance of native vegetation.</strong></td>
</tr>
</tbody>
</table>

**Note**

As well as these requirements under the Native Vegetation Act 1991, **ANY** removal of roadside native vegetation, including dead material, needs local council approval and may require approval under other legislation, such as the Environment Protection and Biodiversity Conservation Act 1999. If in doubt about any of these requirements, consultation with the relevant authority is recommended.
O. Implementation of the RVMP

Briefly describe the local council’s assessment and approval process for activities that may affect roadside vegetation, which will be used to ensure that any proposed activity will comply with the Native Vegetation Act 1991.

The basic steps of an approval process are:

- **assess** the impact (of the proposed activity);
- **determine** whether NVC approval is required;
- **determine** environmental constraints and controls for the activity,
- **obtain** approval,
- **issue** appropriate advice (instruction or permit) subject to appropriate conditions,
- **inspect** to ensure compliance with the approval conditions.

The basic steps of a **roadside activity impact approval procedure** can be illustrated in a flow chart similar to the following example (and see Appendix D for specific examples):

**Table 6. Example flow chart of the basic steps for roadside activity impact approval procedure**

<table>
<thead>
<tr>
<th>ACTION</th>
<th>HOW</th>
</tr>
</thead>
</table>
| 1. determine impact of activity | • refer to the Risk Assessment Guidelines (e.g. in Appendix C)  
• consult a native vegetation expert |
| 2. determine if external approval is required (e.g. under Native Vegetation Act 1991 and other legislation) | • refer to Summary table of legal requirements under the Native Veg Act  
• consider other legislation |
| Not required  
– seek local council approval | |
| Required  
– obtain approval from NVC or other authority | |
| 3. determine constraints & controls | • refer to Management Issue Guidelines and/or Codes of Practice  
• refer to Roadside Significant Site Database |
| 4. issue advice | • written instruction  
• work order  
• permit |
P. Specific Activity Procedures

Outline any procedures that will support the effective operation of the RVMP. Include details of when procedures will be developed, where they will be kept, to whom they will apply and how they relate to the RVMP.

Operating standards for vegetation protection could be included in procedures or instructions. These could include work orders, construction management plans, standard operating procedures or permits for any activity, or decision making process, that may affect roadside vegetation.

Examples of standards for vegetation protection can be found in the following publications (relevant parts can be included in the RVMP Guidelines, see N. above):

- Environmental Practices for Rural Sealed and Unsealed Roads (ARRB Transport Research, 2001); and

Q. Management Actions

List Management actions associated with each issue either in a summary table at the end of the plan, or presented in the management issues part of the RVMP (section 3). Ideally priority and timelines should be listed for these actions.

An example table is shown below.

Table 7. Example of summary table of Management Actions associated with each issue

<table>
<thead>
<tr>
<th>Activity</th>
<th>Action Statement</th>
<th>Priority (where 1 is highest)</th>
<th>Timeline</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEW ROAD WORKS CLEARANCE</td>
<td>Refer to vegetation category mapping or, where vegetation has not been surveyed, conduct a vegetation survey along proposed new roadworks to determine if works are likely to have significant impact on native vegetation.</td>
<td>2</td>
<td>e.g. June – August 2012</td>
<td>17</td>
</tr>
<tr>
<td>VEGETATION SURVEY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAKEHOLDER CONSULTATION</td>
<td>Consult with relevant stakeholders (Council’s Natural Resource Officer, NVC) prior to planning development to ensure that (in particular) damaging activities along Category A and B roadside vegetation can be avoided and routes can be selected along areas without roadside vegetation.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MODIFY WORKS</td>
<td>Once routes are settled on, further modify design to minimise vegetation impacts.</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAPACITY BUILDING</td>
<td>Train workers and contractors in erosion control, vegetation removal and vegetation protection measures prior to commencement of works.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
R. Review of the RVMP

To keep the RVMP up to date, the Native Vegetation Council requires that it will be reviewed at regular intervals. The Native Vegetation Council's current policy is that plans should initially be reviewed after three years and then at five-year intervals.

Include information on how often the RVMP will be reviewed and revised and by whom. For example, a local vegetation management committee may be formed and required to review the RVMP as part of its duties.

The local council usually initiates the process for review. It should, as a first step, contact the Native Vegetation Biodiversity Management Unit to obtain any changes that have been made to Department contact details, names, and/or policy since the RVMP was last endorsed.

The local council should then check whether any changes need to be made from their perspective – in terms of content, and/or usability. It then provides a copy of the proposed changes to the Native Vegetation Biodiversity Management Unit, who will review them and make any further changes in consultation with the local council.

The plan is then submitted to the Native Vegetation Assessment Panel (NVAP) (a sub-committee of the NVC that makes decisions on proposals) for consideration and re-endorsement.

Once the NVAP has endorsed the revised plan, it will be valid for a further 5 years (or negotiated time-frame).

The Native Vegetation Biodiversity Management Unit will update the Guidelines and template from time to time to reflect changes in policy and other content. Local councils will be advised of such changes and requested to include those changes when review of the plan is next required.

S. Monitor compliance with the Plan

Outline how the local council will establish a system of operational control to ensure compliance with the objectives of the approved RVMP (and therefore the Native Vegetation Act 1991). Non-compliance with an approved RVMP may result in the Native Vegetation Council withdrawing that endorsement.

Appendix F outlines an example of an Incident Report Form that may be used to report native roadside vegetation clearance that is not consistent with the objectives of this plan.
In order to assist Councils prepare a Roadside Vegetation Management Plan (RVMP), a template has been prepared using a stepped approach where the level of information and detail for each plan type increases from a basic RVMP (Level 1) through a more detailed RVMP with vegetation mapping (Level 2) to a comprehensive RVMP with forward planning (Level 3). Alternatively, a hybrid of all three other levels (Level 4) can be developed.

Each level has its own advantages and limitations as summarised and explained in Figure 6, below.

**LEVEL 1**
- **BASIC RVMP**
  - Quick, inexpensive to produce, outlines approval procedures.
  - Does not include vegetation survey; limited information over and above NVC Guidelines, but still useful in other ways.

**LEVEL 2**
- **RVMP WITH VEGETATION MAPPING**
  - More informative, and helps to protect important areas of native vegetation from accidental clearance.
  - Vegetation survey expensive, but can be partly funded by an NVC grant.

**LEVEL 3**
- **FORWARD PLANNING RVMP**
  - Incorporates forward planning,
  - Action plan with priorities and timelines.
  - Requires increased local council commitment and input.

**LEVEL 4**
- **HYBRID PLAN**
  - Uses parts of all three other levels.
  - Councils can adapt the template to better suit their own needs.
  - Requires more local council input.

The template for a Roadside Vegetation Management Plan comes as a part of this package, is available on request from the NVBMU or can be downloaded from the Department of Environment Water and Natural Resources website, [http://www.environment.sa.gov.au/Conservation/Native_Vegetation/](http://www.environment.sa.gov.au/Conservation/Native_Vegetation/)

### 3.1 RVMP PLAN TYPES

#### 3.1.1 Level 1 – Basic RVMP

Level 1, *colour-coded in Black*, contains the minimum requirements of a RVMP that all local councils should have in their RVMP. This includes:

- a brief description of the roadside vegetation management issues;
- best practice guidelines; and
- the consultation and approval procedures required to clear under the Regulations of the Native Vegetation Act 1991.

Local councils can add or remove the relevant information where indicated (in *grey* *italic* font). Where it can be justified to the NVC, they can also tailor the content to suit their circumstances.

Once the NVC has approved the RVMP, the local council may conduct clearance of native vegetation according to the Plan (e.g. road maintenance, fenceline clearance, property access etc).

#### 3.1.2 Level 2 – RVMP with vegetation mapping

Level 2 expands on the basic plan. It contains:

- all of the text and information in Level 1, *colour-coded in Black* and

  - incorporates the results of a vegetation survey, *colour-coded in Red*, outlining the ecological value of roadside native vegetation.

A level 2 plan increases the benefits of the RVMP to road managers, and greatly assists in identifying and categorising the conservation value of roadside native vegetation. This is a more expensive and resource intensive Plan; however this can be partly funded by an NVC grant to conduct the roadside survey.
3.1.3 Level 3 – Forward Planning RVMP

Level 3 is a longer-term (e.g. 10-year) overarching plan for the strategic management of activities affecting roadside vegetation. It contains:

- all of the text and information in Levels 1 and 2 [colour-coded in Black and Red]; and
- an Action Plan for each roadside management issue [colour-coded in Blue] which:
  - identifies a number of activities that will assist in delivering best management practices for managing the specific roadside management issue, and
  - prioritises when the works will be undertaken.

The additions in Level 3 recognise that having a RVMP is important for road planning as well as road maintenance purposes - from road network planning, management of maintenance contracts and construction project planning, to development of environmental programs and strategies.

Planning of roadworks programs well in advance, combined with vegetation surveys, will avoid areas of conservation significance and, if clearance of vegetation is unavoidable, will reduce delays associated with the vegetation clearance approval process.

A Level 3 plan can be used:

- by the Council Chief Executive or equivalent to coordinate local council’s priorities, actions, funding opportunities and forward planning decisions, for example by identifying appropriate routes for new roadworks that minimise impacts on significant roadside native vegetation; and
- as a standard reference for Council Works Managers, works tenders and contractors.

3.1.4 Level 4 – Hybrid RVMP

Level 4 is a combination of the other three levels, and councils select which parts suit them.

3.2 INSTRUCTIONS FOR USING THE TEMPLATE

Councils can chose between the 4 RVMP options depending on their needs, circumstances and requirements in the management of roadside vegetation. Details may be added or re-formatted to suit Council’s specific requirements.

The pre-written text for Levels 1, 2 and 3 is colour coded to suit the differing plan levels. The colours used are:

- grey italic font for instructions on how to prepare the plan – these should be deleted after the plan has been prepared;
- bold black italic font are places where local councils are required to fill in the blanks – these sections are then to be reverted back to normal text after the plan has been prepared;
- black font for level 1 plan text;
- red font for level 2 additional text; and
- blue font for level 3 additional text.

More specifically, the RVMP options are created as follows:

- **Level 1** – if a local council wishes to undertake a basic RVMP (Level 1) all the pre-written text highlighted in Black is retained and all the text highlighted in Red and Blue is deleted.
- **Level 2** – if a local council wishes to undertake a more detailed RVMP with vegetation mapping, all the pre-written text highlighted in Black and Red is retained and all the pre-written text highlighted in Blue is deleted.
- **Level 3** – if a local council wishes to undertake a comprehensive RVMP, all the pre-written text highlighted in Black, Red and Blue is retained.
- **Level 4** – local councils can use parts of all three other levels, and create their own plan.

3.3 FACT SHEETS

Fact sheets may be useful tools for road-workers and adjacent landholders and can be included on the local council website for general information to the community. They may outline what to do and who to call when in the field, or provide information for adjacent landholders about activities that affect roadside vegetation. They may be printed and included with permits for roadside activities, kept in workers’ vehicles as laminated sheets, or printed as a “ute-guide” booklet for roadside management.

The Native Vegetation Council encourages this, and an example of content for a roadside fact sheet is presented on page 28.

Local councils can adapt the format to suit their needs, but essentially the information provided in the sheets must replicate the information in the RVMP.

It is advisable that the Fact Sheets be reviewed and endorsed by the NVC to ensure that all information is correct.
Example factsheet: Clearance for Access to Adjoining Land

INFORMATION
From time to time clearance of roadside vegetation may be required to provide or improve access to private properties (e.g. new driveways). For rural areas, a primary producer may need new access to a paddock, possibly to cater for wide farm machinery; in other situations (e.g. semi-urban) it may be for normal vehicular access to a residential allotment.

In these situations, the safety of the access-user needs to be the primary consideration, but the conservation of native vegetation is also a high consideration.

CONSULTATION AND APPROVAL PROCEDURES
• Clearance of roadside vegetation to provide access to adjoining land requires the consent of the local council.

• In addition, approval is needed through the Native Vegetation and Biodiversity Management Unit for any proposed clearance of native vegetation for access which exceeds the standards below:

Property Access clearance standards
• If there is more than one option that will provide safe access, the option that involves least disturbance of native vegetation should be selected. Care must also be taken to avoid:
  – areas of native grassland,
  – plant communities of conservation significance, and
  – Category A road reserves.

• Where some clearance of native vegetation is unavoidable, this should not exceed the following standards:
  – For normal vehicle access: five metres wide plus minimum clearance along the road reserve needed to provide adequate sight distance;
  – For wider farm vehicles: ten metres wide plus minimum clearance along the road reserve needed to provide adequate sight distance.

• Consultation with the Native Vegetation and Biodiversity Management Unit should occur through the local council.

• If threatened plant species (NPW Act Schedules or EPBC Act 1999) are known to be present, local council staff should take reasonable care to protect them. If necessary, consult with the Native Vegetation and Biodiversity management Unit for advice.

CLEARANCE METHODS
Once permission has been given to clear, the following methods of clearance must be adhered to:

• Wherever possible, low impact methods of clearance (e.g. minimal ground disturbance, cutting cleanly rather than breaking branches) should be used when clearing vegetation according to these standards.

• Cleared vegetation is to be removed from the site and not left on the road reserve, so as to minimise disturbance to the remaining vegetation (unless considered habitat features, such as hollow logs, or small amounts of material may be left on site if it is spread widely and does not significantly increase the amount of combustible material).

CONTACTS
Council (phone number)
NVC (phone number(s))
Version (date)
Website (link)

This fact sheet has been endorsed by the Native Vegetation Council [date], and complies with the Native Vegetation Act 1991.
4 Glossary

Biological diversity or biodiversity – means the variety of life forms represented by plants, animals and other organisms and micro-organisms, the genes that they contain, and the ecosystems and ecosystem processes of which they form a part (Native Vegetation Act 1991).

Borrow pit – an excavation from which earth material (borrow) is dug for use as fill elsewhere.

Carriageway – That portion of a road or bridge devoted particularly to the use of vehicles, inclusive of the shoulders and auxiliary lanes (Austroads, 2010).

Catch drain – a surface channel constructed along the high side of a road or embankment, outside the batter to intercept surface water (Austroads, 2010).

Clearance (from the Native Vegetation Act 1991) means –
a. the killing or destruction of native vegetation;
b. the removal of native vegetation;
c. the severing of branches, limbs, stems or trunks of native vegetation;
d. the burning of native vegetation;
e. any other substantial damage to native vegetation,
and includes the draining or flooding of land, or any other act or activity, that causes the killing or destruction of native vegetation, the severing of branches, limbs, stems or trunks of native vegetation or any other substantial damage to native vegetation.

Clearance envelope – the area where vegetation clearance is required to allow for the passage of legal height vehicles across the full width of the carriageway.

Dead plants (under the definition of native vegetation in section 3(1) of the Native Vegetation Act 1991), means the class of plants, or parts of plants, comprising trees of a species indigenous to South Australia –
a. that have a trunk circumference (measured at a point 300 millimetres above the base of the tree) of –
   i. in the case of a tree located on Kangaroo Island – 1 metre or more; or
   ii. in any other case – 2 metres or more; and
b. that provide or have the potential to provide, or are a part of a group of trees or other plants (whether alive or dead) that provide, or have the potential to provide, a habitat for animals of a listed threatened species under the Environment Protection and Biodiversity Conservation Act 1999 of the Commonwealth, is declared to be included in that definition.

Dead timber (firewood) – in this plan generally refers to woody debris from standing or fallen dead trees or branches. It does not usually encompass fine fuels – which generally refer to grass, leaves, bark and twigs less than 6mm in diameter (SA CFS web-site).

DEWNR – Department of Environment, Water and Natural Resources (South Australian Government)

DPTI – Department of Planning, Transport and Infrastructure (South Australian Government)

Droving or Movement of Stock – Moving stock, usually cattle or sheep, from one place to another by driving them slowly on foot along roadways or stock routes.

EPBC Act – Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

Formation – The surface of the finished earthworks, excluding cut or fill batters (Austroads, 2010).

Grazing of Stock – Using a particular area for grazing rather than for movement of livestock.

Indigenous (or Native) Vegetation – Local (naturally established) native vegetation species of the type occurring prior to European settlement in this district.

Local council – in these guidelines has the same meaning as “council” under the Local Government Act 1999; i.e. a council constituted under that Act; the principal role being “…to provide for the government and management of its area at the local level and, in particular –
a. to act as a representative, informed and responsible decision-maker in the interests of its community; and
b. to provide and co-ordinate various public services and facilities and to develop its community and resources in a socially just and ecologically sustainable manner; and
c. to encourage and develop initiatives within its community for improving the quality of life of the community; and
d. to represent the interests of its community to the wider community; and
e. to exercise, perform and discharge the powers, functions and duties of local government under this and other Acts in relation to the area for which it is constituted”.

Instructions for using the Roadside Vegetation Management Plan Template 29
LGA – Local Government Area

Native Vegetation – under Section 3(1) of the Native Vegetation Act 1991, “native vegetation means a plant or plants of a species indigenous to South Australia including a plant or plants growing in or under waters of the sea but does not include –

a. a plant or part of a plant that is dead unless the plant, or part of the plant, is of a class declared by regulation to be included in this definition; or

b. a plant intentionally sown or planted by a person unless the person was acting –

i. in compliance with a condition imposed by the Council under this Act or by the Native Vegetation Authority under the repealed Act, or with the order of a court under this Act or the repealed Act; or

ii. in pursuance of a proposal approved by the Council under Part 4 Division 2; or

iii. in compliance with a condition imposed by a Minister, statutory authority or prescribed person or body under –

A. the River Murray Act 2003; or

B. the Water Resources Act 1997; or

C. any other Act prescribed by the regulations for the purposes of this paragraph;”

Natural Regeneration – New growth of indigenous native plants from seed or sucker growth.

NVC – Native Vegetation Council as established by the Native Vegetation Act, 1991.

Pavement – That portion of a road designed for the support of, and to form the running surface for, vehicular traffic (Austroads, 2003).

Public road (from section 4 of the Local Government Act 1999), is –

a. any road or land that was, immediately before the commencement of this Act, a public street or road under the repealed Act; or

b. any road–

i. that is vested in a council under this or another Act; or

ii. that is placed under a council’s care, control and management as a public road after the commencement of this Act, but not including an alley, laneway, walkway or other similar thoroughfare vested in a council; or

c. any road or land owned by a council, or transferred or surrendered to a council, and which, subject to this Act, is declared by the council to be a public road; or
d. any land shown as a street or road on a plan of division deposited in the Lands Titles Registration Office or the General Registry Office and which is declared by the council to be a public road; or
e. any land transferred or surrendered to the Crown for use as a public road that was, immediately before the transfer, held by a person in fee simple or under a lease granted by the Crown, (and includes any such road that is within the boundaries of a public square);

Property Line – The boundary between a road reserve and the adjacent land (Austroads, 2010).

Remnant Vegetation – Surviving indigenous vegetation.

Road (from Roads (Opening and Closing) Act 1991) is –

a. a public road within the meaning of section 4 of the Local Government Act 1999; or

ab. an alley, laneway, walkway or other similar thoroughfare vested in a council; or

b. in relation to a part of the State not within a council area –

i. a road or street delineated and shown on a public map or plan of the State as laid out for public purposes by the Crown; or

ii. a road or street opened under this Act or any other Act relating to the opening of new roads and streets; or

iii. a road or street transferred or surrendered to the Minister of Local Government or the Crown by the owner or lessee for use as a public road or street; or

iv. a road or street declared or dedicated under any other Act to be a public road or street, and includes part of a road.

Roadside – Is the strip of land between the road formation and the boundary of the road reserve.

Roadwork (from the Local Government Act 1999) means –

a. the construction of a road; or

b. the maintenance or repair of a road; or

c. the alteration of a road; or

d. the construction of drains and other structures for the drainage of water from a road; or

e. the installation of fences, railings, barriers or gates; or

f. the installation of traffic control devices, traffic islands or parking bays; or
Significant Environmental Benefit – The Native Vegetation Act 1991 includes provisions requiring the clearance of native vegetation to be offset by an environmental gain, referred to by the legislation as a ‘Significant Environmental Benefit’ (SEB).

− The rationale for an SEB offset recognises that clearance of native vegetation will result in the loss (even temporary) of habitat, biodiversity and/or other environmental values, in a landscape that has already been significantly modified by human settlement.

− The SEB provides a mechanism to minimise that loss by managing, restoring or re-establishing areas of native vegetation that result in a better outcome for the environment.

Table drain – The side drain of a road adjacent to the shoulder, having its invert lower than the pavement base and being part of the formation (Austroads, 2003).

Threatened Species – Threatened species are those plant and animal species considered to be at risk of extinction in the wild.

Travelled way – That portion of a carriageway ordinarily assigned to moving traffic, and exclusive of shoulders and parking lanes (Austroads, 2003).

Traffic Lane – A portion of the carriageway allocated for the use of a single line of vehicles (Austroads, 2010).

Unmade road – Means a road that is not sealed with bitumen (or other surfacing material) for use by motor vehicles. (Roads (opening and closing) Regulations 2006).

Undeveloped road – A surveyed road reserve which has never been developed as a road. Some are totally cleared and pass unmarked through farm paddocks, and others retain native vegetation.

Verge – That portion of the formation not covered by the carriageway or footpath (Austroads, 2010).
Appendix A: Implementing Roadside Vegetation Surveys

1 INTRODUCTION

To effectively manage roadside vegetation, road managers need comprehensive information about the conservation value of roadside vegetation and the location of sites of high importance. Roadside vegetation (drive-by) surveys are a key tool in the management of roadside vegetation. They can be used to determine:

• the type, quality and extent of vegetation along roadsides or road reserves, and
• the location and extent of key physical impacts.

Some additional items, such as the presence of Phytophthora and threatened species, can be included in addition to the standard items recorded. Specifications for surveying Undeveloped Road Reserves have been developed also.

A roadside vegetation survey scheme forms an integral part of a RVMP.

Councils generally employ consultants to carry out roadside vegetation surveys and write reports, as survey personnel must be suitably qualified in plant identification and vegetation assessment. Consequently, some external funding is usually required to resource a survey program.

This document provides background information on the survey process, the resources required to undertake a survey, and the commissioning and use of roadside vegetation surveys.

2 SURVEY METHODOLOGY

Roadside vegetation surveys follow a standard methodology9, which sets out methods for collecting, entering and analysing data. The main outputs from a survey are a spatial dataset and maps showing vegetation type, quality and extent. Generally a survey report is produced to summarise the survey findings.

All roadside vegetation surveys are carried out in conjunction with the Science, Monitoring and Knowledge Branch’s Landscapes Team, within the Department of Environment Water and Natural Resources (DEWNR). The Science, Monitoring and Knowledge Branch manage and maintain the South Australian ‘Roadside Vegetation Database’, where all roadside vegetation survey data is entered, analysed and stored10.

Authorities (e.g. Councils) managing roadsides contract consultants to undertake roadside vegetation surveys using the standard methodology. Consultants are responsible for undertaking the survey (field collection), entering and validating the vegetation data, undertaking analysis and report writing. DEWNR provides methodology field based training, database training, spatial data conversion and mapping services on a fee for service basis. For fees involved please contact the DEWNR Science Monitoring and Knowledge Branch’s Landscapes Team. In addition the Department provides ongoing technical support, data management and maintenance as part of the state government services.

The key components of the roadside vegetation survey methodology are:

• planning;
• undertaking the drive-by survey of roadside vegetation;
• entry of data into the Roadside Vegetation Database;
• analysis of the data to assign a category of overall importance to each vegetation segment;
• generation of summary tables and maps; and
• capacity to update and retrieve information as roadside surveys are completed.

Additional analysis of the survey data can provide useful information for a roadside vegetation management plan. The following tasks are generally specified as part of the survey brief, and included in the consultant’s Roadside Vegetation Survey report:

• assess impacts and degrading factors on roadside vegetation;
• define vegetation management categories (based on the categories of overall importance); and
• identify significant sites (which may form the basis of a roadside marker scheme).

3 IMPLEMENTING A SURVEY PROGRAM

Implementing a roadside vegetation survey program requires advance planning. The process of planning a survey or series of surveys, obtaining funding, appointing a consultant(s) and receiving a final report(s) can take a year or more, as applications for many funding sources can only be made annually and vegetation surveys must usually be carried out in spring or early summer.

A survey program for a council’s entire road network can take several years to complete, dependent on council’s road network.

3.1 Planning a survey

Before a local council applies for funding and undertakes a survey, it should consult the Science, Monitoring and Knowledge Branch’s Landscapes Team11. As well as providing advice on survey

10 The Roadside Vegetation Database was originally developed as a joint project between Planning SA and Transport SA.
costs, the Landscape team can advise on the key areas within a council district that should be targeted in the first survey. Identifying the areas to target in the survey could also involve consultation with non-government organisations, community groups and local experts that have knowledge of the local environment.

The survey area can be defined by prioritising the roads that need to be surveyed. Prioritisation can be based on a number of factors including:

- a broad assessment of habitat quality, including road reserve width (3 chain roads would have priority over 1 chain roads), aerial photo interpretation and local knowledge;
- proposed road works;
- heavy vehicle or freight route planning; and
- proposed vegetation (tree trimming) programs, etc.

It should be noted that cost will also limit the extent of the road network that can be surveyed in any one year.

Once the Landscape Team has been consulted and the survey area has been established, a brief timetable should be drawn up to assist in the scheduling of the survey and funding applications. For example:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan survey and gain costing information</td>
<td>Initiate Survey – Stage 1</td>
<td>Conduct Survey – Stage 2</td>
<td>Conduct Survey – Stage 3</td>
<td>Complete Survey</td>
</tr>
<tr>
<td>Funding applications</td>
<td>Undertake Survey</td>
<td>Undertake Survey</td>
<td>Undertake Survey</td>
<td></td>
</tr>
<tr>
<td>Complete Data Entry – textural – spatial</td>
<td>Complete Data Entry – textural – spatial</td>
<td>Complete Data Entry – textural – spatial</td>
<td>Complete Data Entry – textural – spatial</td>
<td></td>
</tr>
<tr>
<td>Analyse &amp; compile survey data</td>
<td>Analyse &amp; compile survey data</td>
<td>Analyse &amp; compile survey data</td>
<td>Analyse &amp; compile all survey data</td>
<td></td>
</tr>
<tr>
<td>Write Report</td>
<td>Write Report</td>
<td>Write Report</td>
<td>Write Report</td>
<td></td>
</tr>
</tbody>
</table>

Note: Most surveys are usually completed within 1 to 2 years.

3.2 Costs

Total consultant’s costs for a survey are likely to be at least $50 - $70 per kilometre of road. This includes planning, field survey, data entry, final report and the Landscape Team’s costs; including training, spatial data entry/mapping, summary statistics and map products. The cost of a survey will also depend on the number and length of the roads a council wishes to survey, and the consulting firm used. Typically, surveys cover between 300km and 600km of road, with longer surveys tending to cost slightly less per kilometre.

The EAM Unit should be consulted to obtain cost estimates when planning a survey or applying for funding, as costs can vary. The EAM Unit also provides a significant non-financial contribution during the course of each project, through the provision of technical advice and database management support.

Surveys require two people (driver and observer/recorder) and are usually carried out by suitably qualified consultants who are familiar with local vegetation, the surveying process and the analysis of the collected data. Most suitably qualified consultants are based in Adelaide, which may have some bearing on the cost of surveys in the more remote regions of the state. Department of Planning, Transport and Infrastructure, Contracts and Environment Section, and the Department for Environment, Water and Natural Resources (EAM Unit) can provide advice on suitable consultants.

It is also advisable to include staff supervision costs in the budget for a survey, as often a member of local council staff will be required to devote time and resources to the management of a survey consultant.

3.3 Funding

A variety of funding sources exist for undertaking biological surveys, such as the World Wide Fund for Nature and the Native Vegetation Council. The Native Vegetation Council can provide advice on these potential sources of funding.

Often this funding must be applied for at regular intervals, such as annually. However, Native Vegetation Council roadside survey grants can be applied for at any time.

3.4 Timing of Survey

Vegetation surveys are usually carried out in spring or early summer as these are the best months of the year for the identification of annual and perennial plant species.

3.5 The Contract

The contract should recognise the requirement to fund data analysis and mapping works by the DEWNR. This should be paid by the consultant.
There are some disadvantages:

• significant council staff resources were required for conducting the actual survey;
• council needed to provide resources for the contractor, such as a computer, workspace and a vehicle; and

4 INFORMATION STORAGE & ACCESS

Roadside vegetation survey data is stored in the Roadside Vegetation Database, which is maintained by the EAM Unit. It uses sophisticated Geographical Information System (GIS) procedures to enter, maintain, analyse and display spatial data and sophisticated relational database systems (Oracle®) for entry of field data, summary, analysis and output to create databases.

After completion of a roadside vegetation survey, the data can be supplied to councils in two main forms:

• as hard-copy maps showing, for example, location of vegetation associations, and overall significance of roadside vegetation; and
• in a format compatible with the GIS software that council is currently using.

The data in GIS format provides a valuable tool for planning, as users can analyse it using GIS software to show certain criteria. For example, a map could be produced showing all segments of roadside vegetation that were wider than 6m and contained native grassland. If the local council does not have GIS capabilities, this further analysis of survey data can be carried out by the EAM Unit (at a cost).

If the survey of a council area is expected to take several years, it is advisable to extract the management information from each individual survey as it is completed, rather than wait for all of the surveys to be completed. This allows the survey information to be utilised and worked into the RVMP as soon as it becomes available, preventing delays in management practice improvements.

5 FURTHER INFORMATION AND CONTACTS

5.1 Technical Specifications for a Roadside Vegetation Survey Contract

The Department of Planning, Transport and Infrastructure have developed guidelines for conducting roadside vegetation surveys.

A copy of the Technical Specifications used in a roadside vegetation survey contract is provided in below.
The fieldwork may involve the following components:

**Required:**
A “drive-by” survey, to record standard vegetation and roadside attributes, and the subsequent management of Vegetation Associations to assist determination of appropriate Roadside Management Categories. Potential Reference Sites, Roadside Significant Sites, and “managed sites” (e.g. Bushcare) may be identified during the “drive-by” or subsequent assessment of Roadside Management Categories for further assessment.

**Optional (as directed):**
Detailed on-ground assessment of potential Reference Sites, Roadside Significant Sites and “managed sites” after the drive-by survey. A location identified as a Reference Site is representative of a particular plant community identified during the “drive-by” survey. Reference Site assessments will conform to the standard procedures for the Biological Survey of SA (refer to Heard & Channon (1997)) and will collect physical and vegetation (floristic and structural) data describing the features of the site. These sites should be surveyed during spring. A Roadside Significant Site contains vegetation of high ecological and conservation value based on factors such as remnancy and condition. (Sites may be recorded in a Significant Sites database and marked on site with Roadside Markers). A Bushcare Site contains high value bushland with minimal disturbance and is sufficiently intact that full rehabilitation is possible ("bushcare" is based on minimal disturbance, integrated management techniques and may involve small teams of trained volunteers). A Bushcare Site is determined according to the value of the vegetation and its bushcare management potential.

**2 General**
The Project Manager / Survey Botanist (Contractor) shall engage a Project Assistant in accordance with this Specification subject to approval from the Contract Manager. The Roadside Vegetation Survey shall be conducted in accordance with the methodology defined in the Specification and the Survey Manual (Annexure). The Contract Manager can direct the Contractor to resurvey any portion of the survey area if data has not been collected or recorded in accordance with the defined methodology.

**3 Definition Of Contract Area**
The Survey Area shall include all roads identified on the attached map (and table) of the [REGION NAME] Region network.

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5.2 Contact Information
Further Information on roadside vegetation surveys can be obtained from the following state government agencies:

**Ecological Analysis & Monitoring, Science Research Centre, Department of Environment, Water and Natural Resources**
Contact: Mr Phil Pisanu
Principal Advisor – Ecological Analysis
Ph: 08 8222 9204

**Department of Planning, Transport and Infrastructure, Contracts and Environment Section**
Contact: Heinz Froehlingsdorf
Ph: 08 8343 2772

4 Responsibilities

This project involves the following people and organisations who provide certain services and input into the project:

Contract Manager:
[name, organisation]

Project Manager/ Survey Botanist:
[name, organisation] (contractor)

Project Assistant/ Assistant Botanist:
[name, organisation] (contractor)

Roadside Vegetation Project Coordinator:
EAM Unit, DEWNR

5 Pre-Survey

5.1 Study Area and field maps

The Contractor shall arrange acquisition of 1:50,000 topographic maps to assist with field survey calibration. To access existing data from the Environmental Database of SA the Contractor shall contact the Roadside Vegetation Project Coordinator, EAM unit, DEWNR to arrange production of Survey Area maps (either 1:50,000 or study area overview maps).

5.2 Familiarisation with the flora of the Survey Area

The Contractor shall prepare a species list and develop a sound working familiarity with the flora of the Survey Area based on:

• a literature review;
• reference to relevant databases;
• consultation with experts (e.g. State Herbarium);
• survey area reconnaissance.

5.3 Survey vehicle

The vehicle shall be equipped with an accurate odometer and tripmeter, and shall have roof mounted rotating flashing yellow light/s. The Contractor must ensure that the driver is designated to driving duties and a second person must be observing and recording.

5.4 Pre-survey Meeting

The Contractor shall arrange and attend a pre-survey meeting with the Contract Manager and the Roadside Vegetation Project Coordinator, EAM Unit, DEWNR, to be briefed on any survey methodology changes and issues, to discuss the project schedule (i.e. timing of data entry, validation, analysis loads and map production) and clarify the quote on costs for the spatial data entry and technical support from the EAM Unit.

5.5 Field trial

A half-day trial shall be conducted to develop familiarity with the survey procedure prior to formal data collection. This would be done in conjunction with field training from the EAM Unit (if the contractor hasn’t undertaken a Roadside Vegetation (Drive-by) Survey using the Standard SA Methodology before).

5.6 Route planning

A plan of the survey route to minimise travel time and distance shall be prepared and submitted to the Contract Manager for approval no later than two working days before the commencement of the field survey.

5.7 Plant voucher identification

The Contractor shall arrange appropriate plant collection permits through consultation with Department for Environment Water and Natural Resources. The Contractor shall make arrangement for plant identification services for plant vouchers, through consultation with the State Herbarium prior to the commencement of the survey.

6 Field Survey

6.1 Key responsibilities

1. The Contractor (Project Manager/ Botanist) is responsible for field survey planning, field survey (data collection), management of data entry, data validation & update, data analysis, field survey documentation and reporting of survey results.

2. The Project Assistant shall record field data, provide other field support services, undertake or assist entry, validation and update of data onto the Roadside Vegetation Database as directed by the Project Manager.

6.2 Daily work schedule (field survey)

Collection of field data shall not exceed 8 hours in a day in order to minimise recording error. The expected daily survey road length is 50-70 km (i.e 250 – 350 km per week). Data sheets and calibration maps shall be checked regularly for accuracy, consistency and completeness throughout the course of the survey (e.g. at the completion of each route). Five (5) Main Datasheets from the first two days of the survey shall be submitted by the Contract Manager to the Roadside Vegetation Project Coordinator, EAM Unit, DEWNR, in the first week of the survey to allow verification of the field data recording.
6.3 Data recording

6.3.1 Main survey data

Field data shall be recorded in the following manner:

Roadside Vegetation Survey (“Drive-by”)

• Main Datasheet: for defining segments (maximum 9 per sheet) and recording of roadside attributes within segments;

• Calibration Datasheet: to calibrate road features (e.g., intersections) with corresponding map features by recording tripmeter readings to ensure that they are accurate relative to each other;

• Voucher Datasheet: to record all plant voucher samples (for plant species of uncertain identity) collected during the assessment; and

• Vegetation Code Lookup Sheet: abbreviations for plant species recorded during the survey (unique two- three letter codes).

6.3.2 Supplementary survey data

1. Proposed Reference Site

A Proposed Reference Site shall be recorded as “REF” in the Comments field of the Main Datasheet.

Ground assessment of Potential Reference Sites shall only be undertaken by the Contractor subject to direction from the Contract Manager. Ground assessment shall be undertaken (if directed) in accordance with Biological Survey of SA methodology (refer to Heard & Channon 199713). The Roadside Vegetation Survey Co-ordinator, EAM Unit should be consulted for data entry, data validation requirements and costs.

2. Proposed Bushcare Site

A Proposed Bushcare Site shall be recorded as “BCS” in the “Comments” field on the Main Datasheet. Ground assessment of Proposed Bushcare Sites shall only be undertaken by the Contractor subject to direction from the Contract Manager. Ground assessment shall be undertaken (if directed) in accordance with the “Proposed Roadside Bushcare Site” datasheet (Annexure 2).

3. Proposed Roadside Significant Site

A Proposed Roadside Significant Site shall be recorded as “RSS” in the “Comments” field on the Main Datasheet. Ground assessment of Proposed Roadside Significant Sites shall only be undertaken by the Contractor subject to direction from the Contract Manager. Ground assessment shall be based (if directed) on the “Proposed Roadside Significant Site” datasheet (Annexure 3).

6.4 Plant vouchering

The procedure below shall be followed for plant vouchering:

Tag each specimen as it is collected with a voucher number. Record the voucher number on the Voucher Datasheet in the Voucher Number column. On the Vegetation Code Lookup Sheet record the “field name” (see Section 5.3 of Field Manual) in the species name column and assign an appropriate code to be entered on the main datasheet. For specimens, which are to be lodged with the State Herbarium attach appropriate voucher labels and complete an Opportunistic Database Records datasheet (refer to Field Manual).

6.5 Daily field survey log

The Contractor shall record and maintain a Daily Field Survey Log (attached), which shall be submitted to the Contract Manager within 3 working days of completion of the field survey.

6.6 Survey audit

The Contractor may be audited at any stage. The audit may involve the following elements:

• Inspection of datasheets and the Daily Field Survey Log; and

• Field data verification audit.

7. Post-Survey

Before the data collected in the field can be entered onto the Roadside Vegetation Database, a number of steps shall be carried out as described below. Refer to the document “Guide to Entering Data onto the Roadside Vegetation Database”, available from EAM Unit DEWNR for data entry instructions.

1. Check project schedule and data entry / validation arrangements with the Roadside Vegetation Project Co-ordinator (RVPC), EAM Unit DEWNR.

2. Submit plant vouchers to taxonomist for identifications.

3. Enter correct plant IDs onto Voucher Datasheet and Vegetation Code Lookup Datasheet.

4. Check over all datasheets and calibration maps for completeness and any inconsistencies in the use of codes.

5. Complete Opportunistic datasheets and attach appropriate voucher labels (for vouchers to be lodged with Herbarium for incorporation into collection) – optional.

6. Prior to data entry, provide the RVPC with all plant species names recorded during the survey (listed alphabetically on the abbreviation) and survey observer name details. This plant list is best provided by entering the abbreviations and corresponding plant species names into a MS Word® table or MS Excel® spreadsheet. The species names will be added to the appropriate look-up table in the database. Identify any other new codes for other items that may be needed and discuss these with the RVPC.

7. Submit all calibration datasheets and maps to RVPC and provide a copy to the Contract Manager. Provide a copy of all field datasheets to the Contract Manager.

8. The Contractor shall submit the Daily Field Survey Log to the Contract Manager within 3 working days of completion of the field survey.

9. Organise a final datasheet check in consultation with the RVPC.

10. Undertake data entry training to input field data into the Roadside Vegetation Database (Oracle®) and undertake the data entry based on the final datasheets and calibration sheets.

11. Undertake data editing, which includes data validation and update. Specialist data changes may need to be arranged through the RVPC.

12. Complete survey documentation (“Survey Summary”) including entering the information on the database.

13. Complete “calibration check” for the spatial data and provide updates where appropriate. (Details of calibration data to check will be supplied by the EAM Unit).

14. Submit original data sheets to RVPC for archiving.

15. Undertake analysis / interpretation of data compiled from Roadside Vegetation Survey (extracted from database) and produce appropriate analysis files (for loading into database)

16. Identify analysis map products required in consultation with the Contract Manager and arrange production of these in consultation with the RVPC.

17. Update “Survey Summary” information.

18. Request dataset required in ESRI Arcview format (or Mapinfo) in consultation with RVPC.
8. Documentation

8.1 Outputs

The outputs of the Roadside Vegetation Survey shall include:

Main Datasheets: Main Survey data
Calibration Datasheets: Calibration data
Voucher Datasheets: Record of all plant voucher samples
Vegetation Code Lookup Sheet: List of unique 2-3 letter species codes with corresponding full plant list species (scientific) names.
Daily Field Survey Log: Daily log of field survey activity (submit to Contract Manager within 3 working days of completion of the field survey)
Final Report: Summary of Roadside Vegetation Survey analysis and results
Proposed Roadside Bushcare Site datasheets: Including site sketch maps and photographs
Proposed Roadside Significant Site datasheets: Including site sketch maps and photographs
Biological Survey of SA datasheets: (Reference Sites)

8.2 Final Report

The Final Report shall provide the following information:

• concise overview of the vegetation (type, condition, extent and impacts) for each road surveyed;
• summary of survey logistics (from Daily Field Survey Log);
• summary of analysis and results;
• summary table of Bushcare Sites;
• summary table of Reference Sites (Biological Survey of SA quadrats);
• regional map showing location of Bushcare and Reference Sites;
• summary of management priorities and actions (to assist with the development of a RVMP).

8.3 Distribution

The Contractor shall distribute Survey outputs as follows:

<table>
<thead>
<tr>
<th>Output</th>
<th>Contract Manager</th>
<th>Roadside Vegetation Survey Co-ordinator, DEWNR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Datasheets</td>
<td>1 copy</td>
<td>original set</td>
</tr>
<tr>
<td>Calibration Datasheets</td>
<td>1 copy</td>
<td>original set</td>
</tr>
<tr>
<td>Voucher Datasheets</td>
<td></td>
<td>original set</td>
</tr>
<tr>
<td>Vegetation Code Lookup Sheets</td>
<td></td>
<td>original set</td>
</tr>
<tr>
<td>Daily Field Survey Log</td>
<td>original set</td>
<td>1 copy</td>
</tr>
<tr>
<td>Reference Site datasheets</td>
<td>1 copy</td>
<td>original set</td>
</tr>
<tr>
<td>“Proposed Bushcare Site” datasheets</td>
<td>original set</td>
<td>original set</td>
</tr>
<tr>
<td>“Proposed Roadside Significant Site” datasheets</td>
<td>original set</td>
<td>original set</td>
</tr>
<tr>
<td>Final Report</td>
<td>2 copies</td>
<td>1 copy</td>
</tr>
</tbody>
</table>
Appendix B: Roadside Marker Schemes

1 INTRODUCTION
A Roadside Marker Scheme (RMS) is a very useful planning tool for roadside activities that could affect significant roadside vegetation. A roadside marker scheme involves the development of a Significant Sites Register (database), the physical marking of these sites in the field and the development of management procedures to protect the identified sites.

A roadside marker scheme can form an important part of a RVMP as it can allow local council employees, contractors and the public to readily identify significant roadside vegetation sites and any specific management practices associated with the site.

It is suggested therefore that a roadside marker scheme be included as a key component of any roadside vegetation management plan. A training program for council staff, contractors and adjoining landowners should be an integral part of a RMS.

2 IMPLEMENTING A ROADSIDE MARKER SCHEME
A number of resources are required to implement a RMS. The main component of a scheme is a Significant Sites Register. Other resources required to implement a RMS are discussed below.

2.1 Developing a site register or database
Prior to installing markers a site register or database must be developed. Depending upon the scope of the database (e.g. inclusion of significant vegetation sites, cultural heritage sites), this database could be developed in-house or by a botanical consultant. Information collected in the roadside vegetation surveys, about the location and type of vegetation sites, can form the basis of the dataset. Key information for each site record includes any control measures required to protect the site. The Department of Planning, Transport and Infrastructure has developed a comprehensive "Roadside Significant Sites Database" and can provide assistance in setting up a database.

2.2 Costs
The cost of implementing a roadside marker scheme is dependent upon the scope of the scheme. If the marker scheme only identifies significant vegetation sites then the database could be set up in conjunction with the roadside vegetation surveys, significantly reducing the costs associated with site identification, survey and verification. Costs are in the order of $70 to $100 per site, which includes:

- extracting relevant information from the drive-by survey dataset;
- collating any other relevant information (e.g. known rare plant sites);
- fabricating marker plates;
- site validation of potential sites;
- installing markers; and
- entering data into the significant sites database.

2.3 Funding
A variety of state and federal funding sources exists for undertaking on-ground conservation works that may include biological surveys and associated management practices. The Native Vegetation Council can provide advice on these potential sources of funding.

2.4 Timing
The implementation of a roadside marker scheme can occur in a relatively short period of time and is not highly dependent on seasons, although potential site validation is more effectively undertaken during spring or early summer. Once implemented the database can be reviewed and updated as required.

2.5 Ongoing maintenance
Once implemented the marker scheme will require some maintenance. The cost of training staff in the use of a RMS should also be considered. The database will need to be updated as new information on the status of sites becomes available. The roadside marker signs will also require maintenance.

3 FURTHER INFORMATION
The Department of Planning, Transport and Infrastructure (DPTI) has developed a roadside marker database and guidelines for the implementation and maintenance of a scheme and the promotion of similar schemes on roads controlled by local councils. DPTI are able to provide advice on setting up a Roadside Marker Scheme and will provide a template of its database to interested local councils.

Contact: Mr Heinz Froehlingsdorf
Ph: 08 8343 2772
Contracts and Environment Section, DPTI.
Appendix C:
Risk Assessment Guidelines

1 INTRODUCTION
An environmental risk assessment may be used to:
• identify the risk of damage to roadside vegetation from any activity; and
• develop appropriate control measures.
The following guidelines explain how to identify risks and determine control measures for the preparation of a RVMP. An outcome of the process may be a roadside impact matrix (Table 4).

2 METHODS
The steps associated with undertaking risk assessment of roadside vegetation are:
• identify all the activities and factors that may impact upon roadside vegetation;
• identify all of the consequences (what can happen/how) of each activity;
• determine the severity of the consequences (refer to Table 1);
• identify the likelihood (or frequency) with which these consequences may occur;
• establish the level of risk; and
• determine how the risk can be managed/treated to reduce risk.

These steps are illustrated below.

<table>
<thead>
<tr>
<th>IDENTIFY ACTIVITIES &amp; CONSEQUENCES</th>
<th>What are the activities?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>What can happen?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ANALYSE RISK</th>
<th>Determine existing controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish Level of Risk</td>
<td></td>
</tr>
</tbody>
</table>

| RISK MANAGEMENT/TREATMENT OPTIONS | Identify Existing Controls |
|-----------------------------------| Identify Management Priorities and Requirements |

Risk assessment may be undertaken to various degrees of refinement depending upon the information and data available. A descriptive risk assessment process is often used. This approach uses descriptive scales to describe the severity (negligible to disastrous) and the likelihood of consequences (virtually certain to virtually impossible).

The phases of the risk assessment process are further discussed in the following sections.

2.1 Identify Activities and hazards
The first step in the risk assessment process is to identify the activities and associated hazards that may damage roadside vegetation.

For example:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proclaimed Plant Control – cover spraying</td>
<td>• overspray</td>
</tr>
<tr>
<td></td>
<td>• herbicide spillage</td>
</tr>
<tr>
<td></td>
<td>• vehicle access to roadside</td>
</tr>
<tr>
<td>Patrol grading</td>
<td>• placing grading rill outside formation</td>
</tr>
<tr>
<td></td>
<td>• placing grading rill in table drain or across turnouts</td>
</tr>
<tr>
<td></td>
<td>• turning grader in roadside</td>
</tr>
</tbody>
</table>

2.2 Identify Consequences
Identify the key potential environmental consequences of the activities and associated hazards.

For example:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hazard</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proclaimed Plant Control – cover spraying</td>
<td>• overspray</td>
<td>• destruction or damage to native plants</td>
</tr>
<tr>
<td></td>
<td>• herbicide spillage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• vehicle access to roadside</td>
<td></td>
</tr>
<tr>
<td>Patrol grading</td>
<td>• placing grading rill outside formation</td>
<td>• destruction or damage to native plants (smothering)</td>
</tr>
<tr>
<td></td>
<td>• placing grading rill in table drain or across turnouts</td>
<td>• sititation / smothering of native plants in roadside</td>
</tr>
<tr>
<td></td>
<td>• turning grader in roadside</td>
<td>• damage to / destruction of native plants (e.g. grasses, shrubs) in roadside</td>
</tr>
</tbody>
</table>
2.3 Determine Severity of Consequences

The severity of the consequences of an activity is categorised on a descriptive scale, from negligible to disastrous. Table 1 shows an example based on impacts to good quality roadside vegetation.

### Table 1: Severity of Consequences

<table>
<thead>
<tr>
<th>Severity</th>
<th>Description of Environmental Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negligible</td>
<td>No demonstrable or measurable effect</td>
</tr>
</tbody>
</table>
| Minor    | • few plants affected  
            • no damage to threatened species or vegetation of conservation significance  
            • no long-term damage to vegetation |
| Major    | • significant numbers of plants killed  
            • limited damage to threatened species or vegetation of high conservation significance or moderate damage to vegetation of lower conservation significance  
            • damage reversible in less than five years |
| Severe   | • substantial damage to vegetation  
            • moderate damage to threatened species or vegetation of high conservation significance or severe damage to vegetation of lower conservation significance  
            • eventual recovery possible, but not necessarily to the same pre-incident conditions |
| Disastrous | • irreversible and irrecoverable changes to areas of vegetation, with little prospect of recovery to pre-incident conditions  
            • extensive damage to and loss of vegetation of high conservation significance, possibly loss of threatened species |

2.4 Determine Likelihood

Likelihood (or frequency) is the chance that the predicted consequences will occur.

The likelihood of environmental consequences occurring can be categorised according to the qualitative criteria outlined in Table 2 below.

### Table 2: Likelihood of Occurrence of damage

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Qualitative description of exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtually Possible</td>
<td>Has almost never occurred, but conceivably could</td>
</tr>
<tr>
<td>Rare</td>
<td>Has occurred but only a few times</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Occurs, but not likely</td>
</tr>
<tr>
<td>Likely</td>
<td>Likely to occur</td>
</tr>
<tr>
<td>Virtually Certain</td>
<td>Can be expected to occur more than once and includes continuous impact</td>
</tr>
</tbody>
</table>
2.5 Establish Level of Risk

To determine the level of risk associated with an event or activity, both the severity and likelihood of consequences of that event need to be combined.

The matrix in Table 3 can be used to determine the level of risk, given the likelihood and severity of environmental consequences arising from activities.

Table 3: Risk Matrix – Likelihood of consequence

<table>
<thead>
<tr>
<th>SEVERITY OF CONSEQUENCE</th>
<th>Virtually Impossible</th>
<th>Rare</th>
<th>Unlikely</th>
<th>Likely</th>
<th>Virtually Certain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negligible Effect</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
</tr>
<tr>
<td>Minor Effect</td>
<td>LOW</td>
<td>MEDIUM</td>
<td>MEDIUM</td>
<td>MEDIUM</td>
<td>MEDIUM</td>
</tr>
<tr>
<td>Major Effect</td>
<td>MEDIUM</td>
<td>MEDIUM</td>
<td>MEDIUM</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>Severe Effect</td>
<td>MEDIUM</td>
<td>MEDIUM</td>
<td>HIGH</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>Disastrous Effect</td>
<td>MEDIUM</td>
<td>HIGH</td>
<td>HIGH</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
</tbody>
</table>

An example of establishing the level of risk for an activity is provided below:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hazard</th>
<th>Consequence</th>
<th>Severity</th>
<th>Likelihood</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weed Control</td>
<td>boom spraying</td>
<td>over-spray</td>
<td>death or damage to non-target plants</td>
<td>Severe/Major</td>
<td>Likely</td>
</tr>
<tr>
<td></td>
<td></td>
<td>herbicide spillage</td>
<td>death or damage to non-target plants</td>
<td>Severe/Major</td>
<td>Rare</td>
</tr>
<tr>
<td></td>
<td></td>
<td>slashing of native vegetation</td>
<td>death or damage to non-target plants</td>
<td>Severe/Major</td>
<td>Virtually certain</td>
</tr>
<tr>
<td>Shoulder grading</td>
<td>vegetation disturbance</td>
<td>fuel spill</td>
<td>death or damage to non-target plants</td>
<td>Severe/Major</td>
<td>Likely</td>
</tr>
<tr>
<td></td>
<td></td>
<td>parking of vehicles</td>
<td>contamination of soil &amp;/or water leading to vegetation death</td>
<td>Major</td>
<td>Rare</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>death or damage to non-target plants</td>
<td>Minor/Major</td>
<td>Likely/ Certain</td>
</tr>
</tbody>
</table>
2.6 Management of Risks to Roadside Vegetation

Measures used to reduce the risk of impact to roadside vegetation and achieve legislative compliance include:

- Code of Environmental Practice – each broad activity such as roadworks, animal and plant control, fire prevention, may have a specific Code of Practice;
- Standard Operating/Environmental Procedures – outline specific environmental management techniques and practices to be followed whilst undertaking various activities;
- awareness and training about council policy and requirements for roadside vegetation protection for staff, contractors and landholders;
- monitoring and audits – for high risk activities of local council as a means of informing managers whether vegetation protection standards are being met;
- reporting – implementation of both internal and external reporting procedures to ensure that issues and/or incidents are appropriately responded to;
- general induction of new employees – include relevant requirements of the RVMP in the induction procedure; and
- standard contract specifications – inclusion of vegetation protection requirements or clauses within the master specification for each high-risk activity.

2.7 Production of a Roadside Impact Matrix

The final step in the process is the preparation of the roadside impact matrix, such as the example shown in Table 4. The roadside impact matrix provides a summary of activities or hazards, associated levels of risk and control measures for each activity.

<table>
<thead>
<tr>
<th>Activity or hazard*</th>
<th>Level of risk to native vegetation</th>
<th>Threat posed by</th>
<th>Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire prevention</td>
<td>HIGH</td>
<td>Landholders</td>
<td>Education &amp; Training</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Policy &amp; guidelines (RVMP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Permit System</td>
</tr>
<tr>
<td>Firewood collection</td>
<td>MEDIUM TO HIGH</td>
<td>Landholders or general public</td>
<td>Policy (RVMP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Permit System</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Education</td>
</tr>
<tr>
<td>Road Maintenance:</td>
<td>MEDIUM</td>
<td>Council personnel or contractors</td>
<td>Code of Practice</td>
</tr>
<tr>
<td>Patrol grading</td>
<td></td>
<td></td>
<td>S.O.P.*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Training</td>
</tr>
<tr>
<td>Road Maintenance:</td>
<td>HIGH</td>
<td>Council personnel or contractors</td>
<td>Code of Practice</td>
</tr>
<tr>
<td>Clearing diversion drains</td>
<td></td>
<td></td>
<td>S.O.P.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Training</td>
</tr>
<tr>
<td>Declared plant Pest and Animal Control:</td>
<td>MEDIUM TO HIGH</td>
<td>Landholders / NRM Board, Council</td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S.O.P.</td>
</tr>
<tr>
<td>Clearance envelope – lateral vegetation control</td>
<td>LOW</td>
<td>Council / landholders</td>
<td>Road / route classification system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S.O.P.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Education</td>
</tr>
</tbody>
</table>

* Note that not all activities or hazards associated with roadsides are listed in this example
* Standard Operating Procedure for that activity
Appendix D: Examples of Roadside Vegetation Impact Approval Procedures

Roadside Vegetation Impact Approval Procedure: Application to crop a road reserve

Based on an application to crop the roadside on Road XXXX

ACTION

1. Determine Impact
   • Has the roadside previously been cropped?
   • What is the composition of the existing vegetation at this site?

2. Determine Level of Approval Required
   • Is approval required?
   • If so, by whom – local council (internal); NVC or other authority (external)

HOW

Undertake one or more of the following actions:

• Refer to RVMP
• Conduct an Impact/Risk Assessment
• Consult a vegetation expert
• Consult NVC
• Review existing permits for site
• Visit site

Nil

Go to 4

3. Determine Constraints & Controls
   • What are the constraints/controls for re-sheeting a road?

4. Issue Advice
   • Request approved/denied

• Refer to Management Issue Guidelines and/or Codes of Practice
• Refer to Roadside Significant Site Database
• Issue permit or letter with written instructions on constraints

EXAMPLE ONLY
## Roadside Vegetation Impact Approval Procedure: Application to re-sheet 10km of road

Based on an application to re-sheet Road XXXX

### ACTION

<table>
<thead>
<tr>
<th>ACTION</th>
<th>HOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Determine Impact</strong></td>
<td>Undertake one or more of the following actions:</td>
</tr>
<tr>
<td>• Has the road previously been sheeted?</td>
<td>• Refer to the RVMP</td>
</tr>
<tr>
<td>• Is the re-sheeting likely to result in the road being widened?</td>
<td>• Conduct an Impact/Risk Assessment</td>
</tr>
<tr>
<td>• If so what is the composition of the existing vegetation at this site?</td>
<td>• Consult a vegetation expert</td>
</tr>
<tr>
<td>• Are vehicle or material lay-down areas required?</td>
<td>• Consult the NVC</td>
</tr>
<tr>
<td></td>
<td>• Review code of practice and standards</td>
</tr>
<tr>
<td></td>
<td>• Visit site</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>EXAMPLE ONLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Go to 4</td>
</tr>
<tr>
<td>Internal</td>
<td></td>
</tr>
<tr>
<td>External</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. <strong>Determine Level of Approval Required</strong></th>
<th>HOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Is approval required?</td>
<td>• Refer to RVMP</td>
</tr>
<tr>
<td>• If so, by whom? – local council (internal); NVC or other authority (external)</td>
<td>• Refer to Summary table of legal requirements under the Native Vegetation Act</td>
</tr>
<tr>
<td></td>
<td>• Consider other legislation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. <strong>Determine Constraints &amp; Controls</strong></th>
<th>HOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What are the constraints/controls for cropping of road reserves?</td>
<td>• Refer to Management Issue Guidelines and /or Codes of Practice</td>
</tr>
<tr>
<td></td>
<td>• Refer to Roadside Significant Site Database</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. <strong>Issue Advice</strong></th>
<th>HOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Request approved/denied</td>
<td>• Issue permit or letter with written instructions on constraints to roadworks manager &amp; crew supervisor</td>
</tr>
</tbody>
</table>

---
Roadside Vegetation Impact Approval Procedure:
Application to conduct weed control in a road reserve

Based on an application to conduct a Boxthorn control program along a 20km length of roadside

**ACTION**

1. **Determine Impact**
   - What methods of control will be used (cut & swab, uprooting)?
   - What is the composition of the existing vegetation at the sites?

2. **Determine Level of Approval Required**
   - Is approval required?
   - If so, by whom? – local council (internal); NVC or other authority (external)

3. **Determine Constraints & Controls**
   - What are the constraints/controls for conducting weed control programs?

4. **Issue Advice**
   - Request approved/denied

**HOW**

Undertake one or more of the following actions:
- Refer to the RVMP
- Conduct an Impact/Risk Assessment
- Consult a vegetation expert
- Consult the NVC
- Review existing control methods
- Visit site

- Refer to Management Issue Guidelines and/or Codes of Practice
- Refer to Roadside Significant Site Database
- Issue permit or letter with written instructions on constraints
Appendix E: Job Environmental Analysis (JEA) Checklist

Regardless of the size of the task or project, a checklist is a useful tool for ensuring that the appropriate steps are undertaken for assessing the risk of damage to roadside vegetation.

A Job Environmental Analysis (JEA) (see example below) can be used as a routine measure prior to undertaking a particular job or task, particularly where there is considered to be some risk of damaging native vegetation.

The JEA approach is based on the “Job Safety Analysis”, a common practice in industry, and enables actions to avoid or reduce risk of native vegetation damage to be determined based on the identified risks of the job.

This example checklist deals with the three stages of a task or project: planning, undertaking and completion.

Completed checklists can be used as a sign-off tool for a job or major project by the Works Manager and can be useful to the Works Manager for internal performance reporting.
Job Environmental Analysis (JEA) Checklist for high impact or high risk projects.

<table>
<thead>
<tr>
<th>Job Type</th>
<th>Job Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadworks – Construction</td>
<td></td>
</tr>
<tr>
<td>Roadworks – Maintenance</td>
<td></td>
</tr>
<tr>
<td>Service Install/Maintenance</td>
<td></td>
</tr>
<tr>
<td>Pest plant and animal Control</td>
<td></td>
</tr>
<tr>
<td>Revegetation/Rehabilitation</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

**Location**

- Road Name: 
- Road Number: 
- From: 
- To: 
- Location: 
- Road Number: 
- Length (km): 
- Project Manager/Supervisor: 
- Department/Contractor undertaking work: 
- Start Date: 
- Finish Date: 

**PLANNING**

<table>
<thead>
<tr>
<th>Question</th>
<th>Action / Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will there be any deviation from the existing alignment?</td>
<td></td>
</tr>
<tr>
<td>Will the road formation be widened?</td>
<td></td>
</tr>
<tr>
<td>Will the new alignment and cross-section alter the existing safety Clearance Envelope for vegetation?</td>
<td></td>
</tr>
<tr>
<td>Will services need relocation?</td>
<td></td>
</tr>
<tr>
<td>Does the site have any roadside vegetation?</td>
<td></td>
</tr>
<tr>
<td>Does adjacent land have any native vegetation?</td>
<td></td>
</tr>
<tr>
<td>Is any native vegetation clearance required?</td>
<td></td>
</tr>
<tr>
<td>What is its conservation value / management category?</td>
<td></td>
</tr>
<tr>
<td>Is vegetation clearance consistent with RVMP?</td>
<td></td>
</tr>
<tr>
<td>Are there any rare or threatened species present?</td>
<td></td>
</tr>
<tr>
<td>What native vegetation protection is required?</td>
<td></td>
</tr>
<tr>
<td>What approval for vegetation clearance is required?</td>
<td></td>
</tr>
<tr>
<td>Native Vegetation Act 1991</td>
<td></td>
</tr>
<tr>
<td>EPBC Act 1999</td>
<td></td>
</tr>
<tr>
<td>Are there any special restrictions or requirements for undertaking work in this area?</td>
<td></td>
</tr>
<tr>
<td>Has the area of vegetation disturbance been identified and marked on site?</td>
<td></td>
</tr>
<tr>
<td>Are there any declared weed species present?</td>
<td></td>
</tr>
<tr>
<td>What control is required?</td>
<td></td>
</tr>
<tr>
<td>Are weed or disease control measures required in this area (i.e. vehicle hygiene requirements)</td>
<td></td>
</tr>
<tr>
<td>Are there any proclaimed animal species present?</td>
<td></td>
</tr>
<tr>
<td>What control is required?</td>
<td></td>
</tr>
<tr>
<td>Are vehicle turnouts required?</td>
<td></td>
</tr>
<tr>
<td>Have suitable vehicle turnouts sites been identified?</td>
<td></td>
</tr>
<tr>
<td><strong>PLANNING</strong></td>
<td><strong>Y/N</strong></td>
</tr>
<tr>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>Is any stripping of vegetation and topsoil required?</td>
<td></td>
</tr>
<tr>
<td>Are stockpile or staging areas required?</td>
<td></td>
</tr>
<tr>
<td>Have suitable stockpile or staging areas been identified?</td>
<td></td>
</tr>
<tr>
<td>Is there a natural watercourse in the vicinity?</td>
<td></td>
</tr>
<tr>
<td>What protection is required?</td>
<td></td>
</tr>
<tr>
<td>Will this activity result in the alteration to drainage?</td>
<td></td>
</tr>
<tr>
<td>Have alterations to drainage been considered?</td>
<td></td>
</tr>
<tr>
<td>Have the appropriate steps been taken to minimise the impact of drainage alterations on roadside vegetation?</td>
<td></td>
</tr>
<tr>
<td>Have appropriate spoil management practices been chosen to minimise vegetation disturbance?</td>
<td></td>
</tr>
<tr>
<td>Will this activity result in the generation of sediment?</td>
<td></td>
</tr>
<tr>
<td>Have the appropriate steps been taken to minimise the impact of sedimentation on roadside vegetation?</td>
<td></td>
</tr>
<tr>
<td>Are traffic management measures required?</td>
<td></td>
</tr>
<tr>
<td>Will they impact roadside vegetation?</td>
<td></td>
</tr>
<tr>
<td>Have the appropriate steps been taken to minimise the impact on roadside vegetation?</td>
<td></td>
</tr>
<tr>
<td>Is any extraction of raw material (e.g. fill, gravel, water) required?</td>
<td></td>
</tr>
<tr>
<td>Have all project personnel (including contractors) received the appropriate environmental training for the task?</td>
<td></td>
</tr>
<tr>
<td>Are rehabilitation or revegetation measures required?</td>
<td></td>
</tr>
</tbody>
</table>

| **UNDERTAKING TASK** | | |
| Has the task footprint or activity zone been identified or marked on site? | | |
| Have significant vegetation sites with a buffer area (25m) been flagged off to prevent disturbance? | | |
| Are adequate vehicle hygiene practices being followed? | | |
| Are weather conditions being taken into account when undertaking specific activities (e.g. spraying, grading)? | | |

| **TASK COMPLETION AND ASSESSMENT** | | |
| Were any areas outside the activity zone cleared? | | |
| Were the designated vehicle turnouts/stockpile sites used? | | |
| Were appropriate vehicle hygiene practices followed? | | |
| Was the impact of drainage alterations on roadside vegetation kept to a minimum? | | |
| Was the impact of sedimentation on roadside vegetation kept to a minimum? | | |
| Have appropriate site clean-up or rehabilitation activities been carried out? | | |

**CHECKLIST COMPLETED BY:**

**POSITION/TITLE:**

**DATE:**
Appendix F: Incident Report Form

An “Incident” is where native vegetation has been cleared outside the provisions of the RVMP.

This may be through work undertaken by local council staff, contractors, NRM Board staff or contractors, landholders or the public (e.g. using motorbikes or other recreational vehicles).

As a first point of call, contact should be made with the Compliance group of the Native Vegetation Biodiversity Management Unit to determine whether immediate action is required. This would probably be the responsibility of the Works Manager or CEO.

The following Incident Report should be completed as soon as practical after the incident and addressed within Council to ensure that action is taken to prevent or minimise such incidents in the future.

Depending on advice from the NVBMU Compliance group, the following Incident form should also be submitted to the Native Vegetation and Biodiversity Management Unit (NVBMU).

Incident Report Form – EXAMPLE ONLY

<table>
<thead>
<tr>
<th>1. REPORT OF INCIDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Reported:</td>
</tr>
<tr>
<td>Date of Incident:</td>
</tr>
<tr>
<td>Location of Incident/Hazard:</td>
</tr>
</tbody>
</table>

Details of Incident/Hazard (causes, effects, personnel involved, factual information only):

<table>
<thead>
<tr>
<th>Witness Name:</th>
<th>Signature:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was anyone injured?</td>
<td></td>
</tr>
<tr>
<td>Has the Health and Safety Person been notified?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. REMEDIAL ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remedial action required: YES / NO</td>
</tr>
<tr>
<td>Details of proposed rectification work:</td>
</tr>
</tbody>
</table>

(Attach additional comments if necessary)

<table>
<thead>
<tr>
<th>Name:</th>
<th>Title:</th>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved by:</td>
<td>Signature:</td>
<td>Date:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. CLOSE OUT REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome of remedial work:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name:</th>
<th>Title:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature:</td>
<td>Date:</td>
</tr>
</tbody>
</table>