



Managing Roadsides **Planning**

The update to this document was made possible through funding provided by the NSW Environmental Trust, through the Roadside Vegetation Implementation Project managed by the Local Government NSW.

Why are roadside environments important?

There are approximately 180,000 km of public roads in New South Wales (NSW). Coupled with other linear reserves such as travelling stock reserves (TSRs), rail corridors and infrastructure easements (including electricity lines, gas pipelines), it is estimated that NSW linear reserves cover about 6% of the State's area.

Apart from covering a large area, the State's roadside reserves contain significant native biodiversity, including ecological communities that are not represented in national parks, public reserves or private land. In rural areas, roadside reserves may constitute the only remaining intact natural environment in the district due to extensive clearing for broadacre farming and other land uses.

Roadside reserves provide invaluable wildlife habitats and corridors, especially when linked with other native vegetation remnants in the landscape and provide connectivity which may assist in addressing threats, including those associated with climate change. Other values of roadside reserves include:

- Transport routes (e.g. for stock)
- Agistment during drought
- Fire control lines
- Carbon sinks
- Places of Indigenous culture and heritage
- Sites of historic heritage
- Geological heritage
- Aesthetic appeal and recreational opportunities
- Sites for research and education.

Managing roadside environments in NSW

Reserves along main roads in NSW are managed by the NSW Roads and Maritime Services; local councils are responsible for the management of local (minor) roads and their reserves.

Managing roadside areas is complex due to a number of competing values and issues. Conservation needs must be balanced with road safety, soil stability, water runoff, legal requirements, bushfire risk, infrastructure corridors (water, power, telecommunications), cultural values, firewood collection, grazing, recreational values (horse riding, hiking, bike riding), educational values and development needs.

The NSW Environmental Planning and Assessment Act 1979 outlines requirements for environmental assessment in relation to roads in NSW. Works on existing roadsides will be covered under the Local Environment Plan (LEP) and no permit is required. However, local councils do have a responsibility to undertake due diligence in relation to managing environmental values, including threatened species, usually by way of an assessment called a Review of Environmental Factors (REF), and are their own consent authority in this regard.

If it is considered that a significant environmental impact may occur, then further assessment and mitigation measures are required and the assessment may be directed to the Environment Minister (NSW and/or Commonwealth) for determination. Note that for main roads, the NSW government agency Roads and Maritime Services is the determining authority.

There are other legislative requirements relating to specific aspects of roadside reserve management including:

- Bushfire management (*NSW Rural Fires Act 1997*)
- Threatened species (*NSW Threatened Species Conservation Act 1995, Commonwealth Environmental Protection and Biodiversity Conservation Act 1999*)

- Weed management (*NSW Noxious Weeds Act 1993*)
- Protection of public lands (*NSW Local Government Act 1993*)
- Pollution of land or waterways (*NSW Protection of the Environment Operations Act 1997*).

In addition to carrying out the legislative requirements, local councils are encouraged to take a more proactive approach to roadside environmental management. This approach involves the use of Roadside Vegetation Management Plans (RVMPs) or similar. These plans enable the identification of important roadside environments and coordinated strategies to conserve them. This holistic planning approach means that the risks to the important natural assets are understood and better managed.

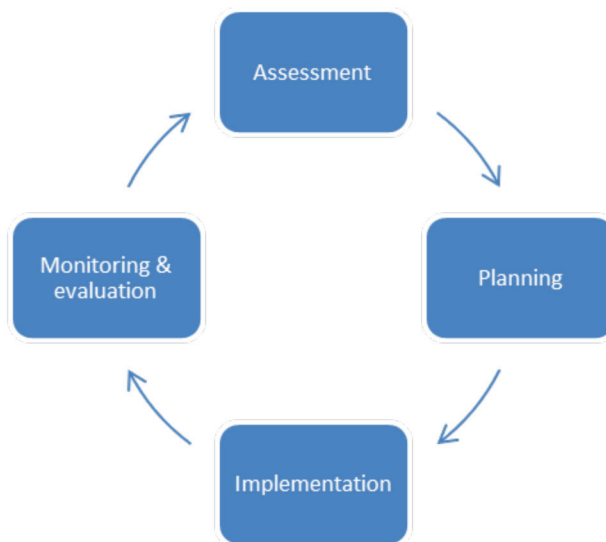
These guidelines have been prepared for local councils seeking to achieve best practice in roadside environmental management through the use of RVMPs. However, the guidelines will also be of relevance to managers of other linear reserves which, by nature of their shape and issues, have similar management requirements.

Towards best practice in roadside environmental management

There are four stages that lead to best practice in roadside environmental management:

1. Assessment
2. Planning
3. Implementation
4. Monitoring and evaluation

The stages should be carried out in a cycle as shown below.



The four stages in best practice roadside environmental management

This guide outlines the second stage in best practice - planning.

From the Assessment

In 'Managing Roadsides 1: Assessment', a process was outlined to assess and identify management categories as high, medium and low value conservation roadsides. This categorisation assists to determine appropriate management actions for inclusion in the RVMP.

Data collected from the assessment process, including GIS maps, should be used as evidence in the RVMP to support environmental management decisions.

Considerations

There are several aspects for consideration in the development of a RVMP in addition to the outcomes of the assessment. These include:

- Roadside environmental management threats and issues
- Council systems and planning
- Community interests, values and activities.

Roadside environmental management threats and issues

There are several roadside environmental threats and issues that should be considered in the development of an RVMP:

1. **Road safety.** When roadside trees have been identified as 'hazardous' through mechanisms such as a safety audit, crash history and community perception, authorities need to respond. Local councils and other managers of linear reserves are regularly asked to resolve the balance between clearing for road safety and the need for protection of roadside reserve environments.

The 'clear zone' is defined as the "width of the roadside beginning at the edge of the travelled way that is made available for a driver of an errant vehicle to take corrective action in an emergency" (NSW Roads and Traffic Authority, 1999). Clear zone distances are usually set according to predicted traffic volumes, speed and road geometry. The width takes into account local site factors including widths of adjacent lanes, shoulders, medians, footways, batters etc.

Tree removal for clear zones can improve safety by extending sight distance and removing hazard. However, it may cause:

- loss of environmental/biodiversity values
- loss of aesthetics
- loss of functional values such as shade, visual buffering, wind protection, soil erosion and change in landscape character.

The Austroads guidelines for clear zones can be obtained via www.onlinepublications.austroads.com.au/items/AGRD06-10.

The NSW Roadside Environment Committee (REC) has commissioned a report and spreadsheet that enables land managers to make a balanced decision about clear zones. The report and spreadsheet is available at www.higherlogicdownload.s3.amazonaws.com/IPWEA/c7e19de0-08d5-47b7-ac3f-c198b11cd969/UploadedImages/Roadside%20Environment/Clear_Zones_report_Dec_2005.pdf

2. **New road construction and widening.** At times, local councils will construct new roads and widen existing roads that may involve the need to remove native vegetation. As noted above, there are legislative requirements for these activities that may trigger the use of an REF to determine the extent of clearing.
3. **Fire management.** Linear reserves are extremely important in bushfire management. They are a point of ignition, provide containment and firebreak, and are a route of escape in the event of an evacuation.

Land managers of linear reserves including local councils have responsibilities under the *Rural Fires Act, 1997*. The NSW Rural Fire Service (RFS) administers the Act.

Linear reserves are covered by local Bushfire Risk Management Plans (BFRMPs). A BFRMP is a comprehensive document that maps and describes the level of bush fire risk across an area. The BFRMP identifies assets within the community at risk from bush fire, assesses the level of risk to those assets, establishes treatment options to deal with the risk and assigns responsibility for carrying out those treatments. The BFRMP is used to determine where mechanical clearing or hazard reduction burns are conducted, which areas require specialised fire protection, and which areas need to be targeted for community education.

A list of completed BFRMPs across NSW can be found at www.rfs.nsw.gov.au/dsp_content.cfm?cat_id=1040.

The knowledge and opinions of local people about bush fires, important assets and potential risks is a focus of BFRMPs. Bush Fire Management Committees (BFMCs) actively seek the opinions of local people through meetings and other communication channels when developing a draft BFRMP.

Local councils are involved as members of BFMCs. Where possible, it is important to link BFRMPs with RVMPs for consistent planning.

Environmental approval may be required for any activity which involves the modification of vegetation and/or the production of smoke. Councils that are planning to conduct hazard reduction works on their roadsides should apply for an environmental assessment through the NSW RFS. Under the Bush Fire Environmental Assessment Code, an NSW RFS officer may assess this activity and issue an environmental approval called a Hazard Reduction Certificate.

An assessment under the Bush Fire Environmental Assessment Code will consider the potential impact of the hazard reduction activity on the following environmental factors:

- Threatened species
- Native vegetation
- Soil erosion
- Riparian vegetation
- Water bodies
- Indigenous and non-indigenous heritage.

The Hazard Reduction Certificate (if approved) will provide councils with specific conditions that they must follow in order to minimise the potential impact of their activity on the environment.

Another issue relating to bushfire management of linear reserves is 'fire regimes'. Fires are recurrent disturbances in landscapes. The ecological effects of fire are shaped by fire regimes, the collective effects of fire frequency, intensity, season and type.

Fire season may affect various biological responses to a fire event. There is interplay between the capacity of species to survive and regenerate from fire and the interval between fires (a measure of fire frequency). Many species require a characteristic amount of time to acquire a capacity to survive and replenish their regeneration capacity. Fire intensity may determine the proportion of individuals that survive a particular fire. It may also affect regeneration processes such as seed germination in plants, often positively.

The characteristic fire regime limits of plant species in a community are of fundamental importance particularly in small remnants such as linear reserves. Changes in abundance and cover of dominant species may strongly influence the structure and composition of plant communities. Interactions between species, such as competition and inhibition, influence floristic composition and particular fire regimes may strongly affect these processes. Plant communities also function as key elements of habitat for animals.

An appropriate fire regime for roadside reserve vegetation should therefore be factored into the RVMP. Studies have been conducted across the State which will give an indication of the appropriate fire frequency and intensity for the roadside plant species. These are available from the RFS. The research may indicate the need for environmental burns to encourage plant regeneration.

4. **Weed management.** There are 1,665 naturalised plant species in NSW. Of these, over 340 have the ability to threaten biodiversity and many of these weeds have been identified in key threatening processes. Weeds, along with pest animals, pose the second greatest threat to biodiversity after habitat loss.

Linear reserves including roadsides are particularly vulnerable to the impacts of weed invasions given their close proximity to transport and stock which can readily transfer weed seeds. Weeds from linear reserves can impact on neighbouring properties.

The NSW Department of Primary Industries is the primary government agency for weed control in NSW. It is responsible for implementing the *NSW Noxious Weeds Act 1993*.

Local control authorities (such as local councils) are responsible for enforcing the control of noxious weeds on private lands and for undertaking weed control measures on council-managed lands including roadside reserves. Strategies for the management of weeds in roadside reserves should therefore be included in the council's RVMP.

Broad guidance on managing weeds in roadside reserves can be obtained from:

- National Weed Strategy - aims to prevent new weed problems reduce the impact of existing weeds of national significance and provide the framework and capacity for ongoing management of weeds of national significance.
- NSW Invasive Species Plan - Provides a framework for the management of weeds, vertebrate pests, invertebrate pests and freshwater and marine aquatic pests in NSW.

Specific guidance (e.g. regarding management options for a particular weed species) can be obtained from the NSW Department of Primary Industries at www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/profiles.

5. **Inappropriate activities.** There are a range of activities conducted by people that have deleterious impacts on roadside reserves. Such activities include, littering, illegal dumping, firewood collection, illegal grazing and clearing by adjacent landholders.

The impacts of these issues may vary from place to place. For example, along isolated roads littering may be non-existent; along roads leading out of cities and regional centres it may be a significant management issue. Management strategies for such issues should be considered in the development of the RVMP.



Illegal firewood collection is a problem in some roadside reserves

6. **Climate change.** There is strong evidence that the climate of NSW is changing, largely due to human activities (Department of Environment, Climate Change and Water NSW, 2010).

NSW is expected to become hotter, with the greatest increases in temperature expected to occur in the north and west of the state. North-eastern NSW is likely to experience a slight increase in summer rainfall, while in the south-western regions there is likely to be a decline in winter rainfall. Many parts of the state will experience a shift from winter-dominated to summer-dominated rainfall.

Climate change will exacerbate natural variability, making it more difficult to manage landscapes and ecosystems and the human activities that depend on them. Remnants of vegetation such as linear reserves will be particularly vulnerable.

Strategies to assist in the adaptation of roadside environments should be considered in the RVMP. Species under threat of becoming endangered or extinct include those living near the upper limit of their temperature range, such as in alpine regions; those with restricted climatic niches; and, those that cannot migrate to new habitats due to habitat fragmentation or lack of alternatives. For those species capable of dispersal, action is required to ensure that sufficient remnant habitat exists, invasive species are controlled and that linkages between habitats exist.

The NSW Office of Environment and Heritage can provide more information including at <http://www.environment.nsw.gov.au/climatechange.htm>

Council systems and planning

It is important that the RVMP is not a standalone plan and is integrated with council's planning and systems.

In 2009, the *Local Government Act 1993* was amended. The amendments require the use of an Integrated Planning and Reporting (IP&R) Framework to guide a local council's future strategic planning and reporting. As part of the IP&R Framework, councils develop environmental objectives in collaboration with their communities on environmental issues relevant to their shire. These environmental objectives form part of the council's overarching Community Strategic Plan.

Council's Community Strategic Plans should include objectives relating to biodiversity and/or natural systems. The RVMP should be used to guide objectives in relation to roadside environmental management, and be linked to other council environmental planning tools which assist in forming the delivery program to implement these broader objectives.

Local government in NSW is responsible for assets worth approximately \$50 billion. Infrastructure assets include roads, water and sewerage assets, drains, bridges, footpaths and public buildings. A strong and sustainable local government system requires a robust planning process to ensure that those assets are maintained and renewed in the most appropriate way on behalf of local communities. As custodian, local government is responsible to effectively account for and manage these assets and to have regard to the long-term and cumulative effects of its decisions. This is a core function of councils and is reflected in section 8 of the *Local Government Act 1993* (NSW).

Roadside reserves should be viewed as natural assets associated with road infrastructure and, as such, should be valued and included in the council asset management plans and systems. The RVMP should outline the risks and council's efforts to manage their roadside reserves as an important asset.

Community interests, values and activities

Roadside reserves, along with other linear reserves such as TSRs, have significant community values. These include recreational, scientific, educational and aesthetic values.

Where possible, community representatives should participate in the development of the RVMP. This will provide valuable local input and assist in balancing the management options at a local level. It may also engender 'ownership' of the roadside reserves, through Adopt-a-Road programs, Landcare or Bushcare activities, all assisting in delivering management objectives for the area.

Councils should identify local groups to consult with, or provide other opportunities for community input when developing the RVMPs. Other stakeholders also need to provide input including the RFS, Department of Primary Industries, Local Land Services, and Roads and Maritime Services. The creation of a group of such stakeholders is a good way to facilitate input when developing the RVMP.

Linkages with local and regional natural resource management plans and related activities should also be encouraged. Regional natural resource management plans such as Catchment Action Plans (CAPs) identify regional NRM priorities, and may have specific reference to roadside reserves with associated management targets. Linkages with these external plans may assist in obtaining funds for priority roadside reserve activities.

RVMP template

The following headings and processes are recommended to develop a robust RVMP:

1. Vision

The vision of the plan should be briefly stated in terms of what state it is trying to achieve in the future.

2. Objectives

The objectives of the plan should be clearly stated.

3. Relevant legislation

Relevant legislation should be listed.

4. Links with Council systems and planning

A brief statement or list - see above for guidance. Ensure it is clear where the RVMP sits with other council plans and systems.

5. Description of roadside vegetation and other environment values

Use the results of the roadside environmental assessment (see 'Managing Roadsides 1: Assessment') to provide a description of the diversity and values of roadside environments in the LGA. The description should be accompanied by photographs, for example of threatened species, and use maps where possible.

6. Local roadside environmental management threats and issues

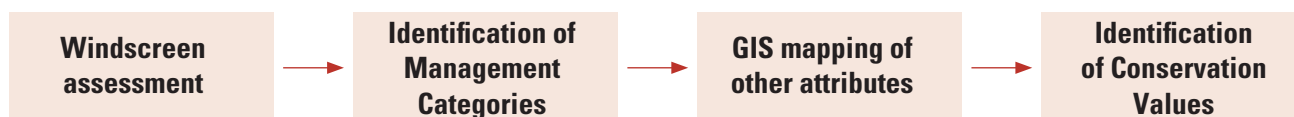
Based on the guidance in the Considerations above, describe the threats and issues impacting on local roadside environments and how these could be minimised or resolved.

7. Community interests, values and activities

Based on the guidance in the Considerations above, describe the community interests, values and activities relating to local roadside environments and how these could be acknowledged and changed if required. This may require community education to increase awareness or change current behaviours.

8. Conservation values

In 'Managing Roadsides 1: Assessment', the process below was used to determine high, medium and low conservation value roadsides.



The extent of high, medium and low conservation value roadsides should be described in the RVMP using maps.

9. Roadside environmental management priority sites

Within the high conservation value roadsides it is useful to prioritise sites based on the range of assessment attributes, as well as the Considerations from above. For example, there may be some sites that have unique or significant attributes, such as a few remaining locations for threatened species being under threat from urban development or other issues.

An understanding of high priority sites is critical to council environmental decision-making and can also be used in determining priorities for rehabilitation if required.

The high priority sites should be listed in the RVMP with a brief explanation of why they have been identified.

10. Management action plan

There are four main categories of actions emanating from the RVMP:

1. Actions relating to legislative requirements for road construction and widening.
2. Actions relating to other legislative requirements such as weed management, bushfire management.
3. Actions to minimise the impacts of threats and resolve issues (see under Considerations above).
4. Actions to better manage high, medium and low conservation value roadsides and, in particular, those high priority sites. Details of recommended management actions for sites can be found in 'Managing Roadsides 3: Implementation'.

The management action plan could use the following format:

Action	Priority	Timing	Responsibility	Resourcing
(List action from the four categories above)	(High, Medium, Low based on urgency, importance)	(When will the action be carried out)	(Who has responsibility for the action?)	(How will the action be funded and staffed?)

It is suggested that the management action plan be prepared for a period of three years and then reviewed and updated.

11. Monitoring and evaluation

Monitoring and evaluation should be conducted for:

1. The vegetation and environmental assessment
2. The RVMP itself
3. The implementation of management actions

Guidance for monitoring and evaluation is provided in 'Managing Roadsides 4: Monitoring and Evaluation'.

12. Council endorsement

It is recommended that the RVMP be endorsed by the elected representatives of Council to ensure there is council commitment to its content, to raise awareness across the elected representatives and to enable the priorities and actions identified to be embedded in other council plans ensuring implementation.

Examples

About two-thirds of the local councils in NSW have developed RVMPs or similar plans covering roadsides such as Biodiversity Strategies. Some of these councils provide RVMPs on their websites. Recommended sites are:

- Mid-Western Regional Council Roadside Vegetation Assessment and Prioritisation Plan www.midwestern.nsw.gov.au/Environmental-Services/Environmental-Projects-1.
- Albury City Council Biodiversity Strategy www.alburycity.nsw.gov.au/environment-and-waste/biodiversity.
- Hawkesbury City Council RVMP www.hawkesbury.nsw.gov.au/__data/assets/pdf_file/0010/38395/Hawkesbury-RVMP-Final.pdf

References

Department of Environment, Climate Change and Water NSW (2010) NSW Climate Impact Profile. NSW Government

NSW Roads and Traffic Authority (1999) Road Design Guide. NSW Government

The Roadside Environment Committee

The NSW Roadside Environment Committee (REC) was established in 1994 by the NSW Government in recognition of the environmental values of linear reserves including roadsides. The REC is an umbrella body of state agencies and environment groups that promotes and coordinates leading practice in linear reserve environmental management across the State. The REC identifies issues, and with land managers, works towards solutions.

The REC has taken a strategic approach to improving linear reserve environmental management in NSW. To do this, it has developed, implemented and evaluated a series of three-year strategic plans.

The objectives of the current REC strategic plan are:

- to achieve consistent, high quality of environmental management of NSW linear reserves
- to engage with key stakeholders and communities to improve linear reserve environmental management in NSW
- to address issues related to the management of linear reserve environments in NSW.

The REC website is at www.rms.nsw.gov.au/environment/roadsideenvironcommittee.

For more information

If you would like more information on roadside environmental planning and management, funding opportunities for projects or contacts within other organisations please contact the Executive Officer of the NSW Roadside Environment Committee.

Neil Dufty
REC Executive Officer
Phone: (02) 9354 0300
Mobile: 0437 130 283
Email: ndufty@molinostewart.com.au



This program has been assisted by the New South Wales Government through its Environmental Trust.

Cover photo courtesy of NSW Roads and Maritime Services