



## Managing Roadsides **Monitoring & Evaluation**

*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.

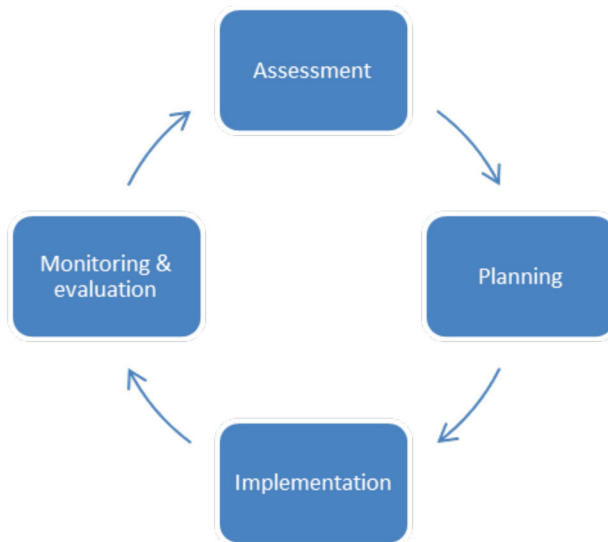
These guidelines have been prepared for local councils seeking to achieve best practice in roadside environmental management through the use of RVMPs. However, the guidelines will also be of relevance to managers of other linear reserves which, by nature of their shape and issues, have similar management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

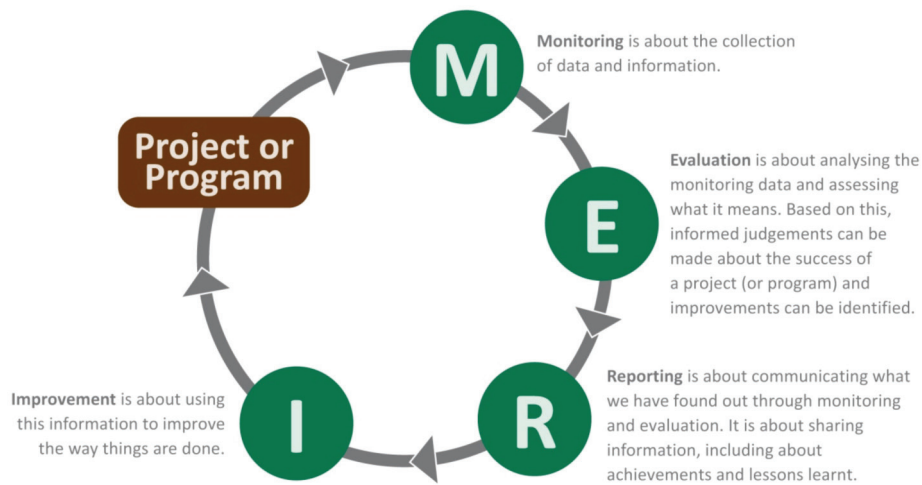


*The four stages in best practice roadside environmental management*

This guide outlines the fourth stage in best practice – monitoring and evaluation (M&E).

## The need for M&E

M&E is an essential part of the Monitoring, Evaluation, Reporting and Improvement (MERI) process encouraged by the Australian and NSW Governments for natural resource management plans, programs and projects. They are simple concepts that, when applied, help in the understanding of what is being achieved and can identify possible improvements. A definition of each part of MERI is provided in the graphic below.



*Components of the MERI approach to natural resource management.  
Source: Australian Government*

It should be noted that for reporting, the Integrated Planning and Reporting Framework requires that the NSW local councils prepare annual reports which will include reporting on environmental objectives in their Community Strategic Plans. A State of the Environment Report must be included in the annual report only in the year in which a council election is held. Elections occur every four years, with the next one planned for 2016. These reports should include M&E for the three stages in best practice roadside environmental management.

The MERI for the council's roadside environmental management could be conducted by a new or existing committee which may include membership from across some of the divisions or departments of council, such as works, environment, communications and community engagement. Other stakeholders including a community representative, or government agency representative would add value to the M&E committee.

## M&E for Stage 1 - Assessment

As outlined in 'Managing Roadside 1: Assessment', there are four suggested steps in the environmental assessment for the development of RVMPs:

1. Collecting existing information
2. Conducting the assessment in the field
3. GIS mapping
4. Identification of conservation status

Each of these four steps should be monitored and regularly evaluated, at least annually. For example, a new Threatened Species or Threatened Ecological Community listing by the NSW Scientific Committee may result in further assessment and mapping information which could alter the conservation value status of a roadside. This may result in a change in priority from 'Medium' or 'Low' conservation status to 'High'. This new conservation value status should be reflected through amendments of the RVMP.

Monitoring should also be conducted for other new information, such as GIS layers, new environment reports and REFs. This information should be evaluated for its relevance to the RVMP and included in updates if relevant.

Every ten years, a reassessment of roadside environments should be undertaken. This is necessary to ensure major changes to roadsides due to impacts such as weed invasion, fires, road construction and climate change can be incorporated. This reassessment should be compared with the existing assessment and changes included in a major revision of the RVMP. New GIS layers would result and enable the evaluation of the conservation value status of the roadside areas.

## M&E for Stage 2 - Planning

All plans need to be monitored and evaluated to remain relevant and respond to changing conditions. Changes may include a shift in community attitudes, economic changes may make it impossible to achieve some of the goals in the plan and development and infrastructure requirements will change. Plans must be evaluated to ensure they are current and supported by the community and the council.

After three years, it is a good idea to formally evaluate the RVMP (see 'Managing Roadsides 2: Planning'). This will provide the M&E committee with a way of ensuring the plan remains flexible and workable. Adjustments to time lines, changing community expectations or changes in conditions of the roadside environment are common and should be monitored on a regular basis. M&E should focus on the following elements of the RVMP as described in 'Managing Roadsides 2: Planning':

1. **Vision.** Is this still appropriate?
2. **Objectives.** Are these still appropriate and consistent with Council's environmental objectives?
3. **Relevant legislation.** Is there new relevant legislation? If so, what impacts will it have on the RVMP and its implementation?
4. **Links with Council systems and planning.** Are the links between the RVMP and Council systems and planning still in place? Can they be better formed?
5. **Description of roadside vegetation and other environment values.** Are there changes as a result of the M&E for Assessment as described above?
6. **Local roadside environmental management threats and issues.** Have the threats and issues changed over the past three years? If so, what impact have they had on local roadside environments?
7. **Community interests, values and activities.** Have community values, attitudes and behaviours regarding roadside environments changed? If so, what impact will this have on actions in the RVMP and their implementation?
8. **Conservation values.** As described in 'Managing Roadsides 1: Assessment', the process below was used to determine high, medium and low conservation value roadsides. As noted, new information such as listings of Threatened Species may change the conservation value status of roadsides, prompting an amendment of that section of the RVMP and possibly resultant actions. An overall re-assessment, within ten years will trigger a revision of the RVMP.
9. **Roadside environmental management priority sites.** As for the conservation value status, new information should be monitored and amendments to the RVMP conducted to prioritise projects and programs in high conservation value areas.
10. **Management action plan.** There are four main categories of actions emanating from the RVMP:
  - Actions relating to legislative requirements for road construction and widening.
  - Actions relating to other legislative requirements, such as weed managements, threatened species, and, bushfire management.
  - Actions to minimise the impacts of threats and resolve issues
  - 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'.

Actions in each of the four categories should be monitored and evaluated. Some pertinent evaluation questions include:

- **Effectiveness:** Were the planned actions performed, and to the standard required?
- **Impact:** What is the outcome, or result of having done the planned actions? Consider what changes in the condition of environmental assets, changes in management practices and/or changes in institutions can be observed.
- **Appropriateness:** Was this the best way to have addressed the problem? Did the activities and the way they were undertaken align with stakeholder needs and expectations? Were they consistent with relevant legislation and council systems and planning?
- **Efficiency:** Did the action achieve the desired results within budget? To what extent did the action attain the highest value from available resources and could the same outcomes be achieved more simply and for less cost next time?
- **Legacy:** Will the action continue to have an impact after its completion?

## M&E for Stage 3 - Implementation

Some general guidelines for monitoring and evaluation of management actions are provided above. However, further guidance is provided here for actions to better manage high, medium and low conservation value roadsides and, in particular, those highest priority sites. It is these actions which may discriminate the RVMP from some other council environmental management plans.

Details of recommended management actions for these areas and sites can be found in 'Managing Roadsides 3: Implementation'. Thus monitoring and evaluation should be related to:



*Members of the NSW Roadside Environment Committee inspecting roadside environmental management initiatives in the Tumut area*

- **Appropriate maintenance of roadsides**  
How is maintenance quality being monitored? Is there a community complaints register being used? Is the maintenance regime appropriate to the conservation value status of the roadside? Is it effective and efficient?
- **Signage and markers**  
Is the signage or markers effective in educating council maintenance staff/contractors and the community?
- **Training**  
Based on training feedback sheets and other monitoring, was the training appropriate and effective? Has it left a lasting legacy of best practice? When will the training program need to be updated and for participants to update their training?
- **Community education**  
From community feedback such as a survey, is the community aware of the importance of roadsides and particularly those of high conservation value? Has there been a reduction of illegal behaviours as a result of the community education actions?
- **Regulation**  
Are enforcement activities working? How well are they being coupled with community education?
- **Stakeholder engagement and partnerships**  
Are those being engaged still appropriate? Are there partnerships in place to effectively implement the management actions?
- **Funding opportunities**  
Are funds such as grants and sponsorships being sought? How successful has council been in obtaining funding? What are the critical success factors and what are the barriers to obtaining internal and external funding?
- **Restoration and rehabilitation projects**  
Have the planned project outputs and outcomes been achieved? If not, why not? Have these funded projects/programs been completed to deadline, within budget? Were there any unexpected outcomes? How will the project outputs be monitored and evaluated in the future to ensure that they are still in place? What learnings and improvements are there for future projects?

In relation to restoration and rehabilitation projects, there are a range of techniques to monitor vegetation condition before and after the projects are implemented. Suggested techniques include:

1. **Photo-points:** This technique involves taking before, during and after photographs at the same location and direction to compare the difference in the condition of vegetation. An example of how to undertake this is available at: <http://www.hcr.cma.nsw.gov.au/uploads/res/Publications/photopointprotocol.pdf>
2. **Step-point monitoring:** The step-point method is where the plants in contact with the toe of your boot are recorded as you take each step. These steps can be along a fixed path which acts as a line-transect. This method can be used to monitor changes before, during and after a restoration and rehabilitation project.
3. **Windscreen assessment:** As described in 'Managing Roadsides 1: Assessment', a windscreen assessment of roadside environments is recommended using the Roadside Assessment Sheet provided. After the project is completed, it is suggested that the Roadside Assessment Sheet be used to gauge changes in vegetation condition as a result of the project. The Roadside Assessment Sheet is available as an Excel spreadsheet at: [www.rms.nsw.gov.au/environment/roadsideenvironcommittee](http://www.rms.nsw.gov.au/environment/roadsideenvironcommittee).

Further details of appropriate M&E techniques can be found at [www.dpi.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0011/299360/Guidelines-for-monitoring-weed-control-and-recovery-of-native-vegetation.pdf](http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0011/299360/Guidelines-for-monitoring-weed-control-and-recovery-of-native-vegetation.pdf)

## 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](http://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.

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