Goulburn-Broken Catchment Roadside Biodiversity Risk Management Protocols

December 2007

Goulburn-Broken Catchment Roadside Biodiversity Risk Management Protocol Project Report

Table of Contents

1. Overview

1.1 Summary

The Roadside Biodiversity Risk Management Protocols (RBRMP) was developed by a joint local government and Goulburn-Broken Catchment Management Authority (GBCMA) project managed by Moira Shire Council. The primary aim of the project is to preserve biodiversity related with roadsides by improving the capacity of local government to manage associated activities and risks. A reference group consisting of representatives from local governments and key agencies in the Goulburn-Broken catchment (appendix A) supports the project and provided technical input to the protocols.

The protocols provide general guidelines and simple measures and processes that can be easily adapted and implemented by local government and others to mitigate potential impacts to biodiversity as a result of works and other activities in road reserves.

The key objectives are:

- To increase awareness and understanding of the factors influencing biodiversity risk management, particularly in road reserves.
- To minimise adverse impacts and where possible enhance biodiversity as a result of activities undertaken in road reserves.
- Provide practical information and guidance on measures which can be implemented to mitigate potentially adverse impacts to biodiversity.
- To supplement existing information and guides such as Roadside Management Plans and Codes of Practice.
- Foster a cooperative and where possible a consistent approach by local government and others to roadside biodiversity management.

The premise of the protocols is that biodiversity conservation, and more broadly environmental management, can be integrated into all management actions and activities associated with road reserves. Adopting and implementing measures to avoid and minimise the chances of adverse environmental effects should be standard practice and everyone's responsibility. The principle is not dissimilar to the integration of occupational health and safety into workplaces.

Local government is the responsible authority for local roads and is therefore well placed to influence biodiversity conservation associated with road reserves. There are many things local government can do to ensure this influence is a positive one. Most importantly councils can integrate environmental management into all of their relevant processes, ensure compliance with regulatory controls and foster involvement and ongoing improvement throughout their organisations.

The responsibilities for biodiversity conservation associated with road reserves do not lie solely with local government. Catchment Management Authorities (CMAs), Department of Sustainability and Environment (DSE), Department of Primary Industries (DPI), Country Fire Authority (CFA), VicRoads, other agencies and the public all have roles and responsibilities. Improved outcomes can be obtained by local government developing networks and cooperative relationships with agencies, other councils and the public.

Willingness on the part of stakeholders to gain a better understanding of the factors influencing the functions of roads, and to take appropriate action when necessary, is a key to improving biodiversity conservation.

Councils and others are encouraged to adopt, and or adapt, the roadside biodiversity risk management protocol principles, processes and guidelines into their systems. It is also highly recommended that councils support this by providing targeted, specialised training programs for staff and others to further aid implementation of environmental management systems and biodiversity risk mitigation.

1.2 Background

Roads primarily provide transport and access routes for people, goods and services. However another very important but probably unintentional function of roads is as reserves for native flora and fauna. Some roads, or more specifically roadsides, support high levels of biological diversity and areas of high conservation value. The implications of climate change increase the significance of these areas for biodiversity conservation.

The depletion of native vegetation and habitats in other land tenures has accentuated the importance of roadsides for providing a range of habitats for flora and fauna, including threatened species and vegetation types. Native vegetation and habitats on roadsides can include many of the few remaining examples in highly developed landscapes, as well as some of the higher quality examples where there have been fewer disturbances. They often provide the only connectivity to other remnants and also the framework to support revegetation and restoration efforts in other land tenures. In the Goulburn-Broken Catchment there are flora species known only to remain on roadsides and fauna that would otherwise not exist in some areas without roadside habitats.

The eight local government areas represented in the Goulburn Broken Catchment have a total of around 17,500 kilometres of local roads[1]. This equates to an area estimated conservatively at around 35,000 ha. Not all of this has been assessed for conservation values, however, areas which have been subject to some form of assessment indicate that, on average 37% of roads are rated high conservation value and a further 38% are rated medium conservation value. These figures are averages but nevertheless provide a useful indicator of the direct contribution roads make to biodiversity conservation in terms of area alone.

Local government is the responsible authority for municipal roads and is therefore well placed to manage risks to biodiversity in road reserves under their care. This role is determined to an extent by a range of legislative requirements, strategies, policies and other controls. Awareness, understanding and compliance with responsibilities required by these controls can address many of the issues associated with biodiversity conservation in road reserves.

There may also be opportunities for local government to develop and implement their own internal procedures for council works and processes such as Local Laws to regulate and manage third party activities in road reserves.

The importance of roadsides for biodiversity conservation is fairly broadly acknowledged by local government and others, with much good work being done to improve roadside management. However, there is a need for ongoing commitment and resources.

[1] Department of Transport and Regional Services, 2004/5 annual report

By gaining a better understanding of issues relating to biodiversity conservation, changing or improving practices and implementing simple processes, councils can improve their environmental performance, increase efficiencies and reduce costs.

The Roadside Biodiversity Risk Management Protocols (RBRMP) project reference group identified a sample of local government administered programs and activities that were considered to have the potential for impacts on biodiversity in road reserves. These were then subjected to a quantitative biodiversity risk assessment to indicate the type, levels and significance of biodiversity risks associated with the programs and activities. The risk assessment was based on methods and processes for biodiversity risk mitigation protocols developed by Sinclair Knight Mertz[2] for the GBCMA. A report[3] of the risk assessment process and results showed relatively high risk of potential biodiversity impacts. Indicated risk scores showed 84% in the high to medium range (see Table 1).

Table 1: Risk Score* Summary

	Program						
Potential Impact	**Road construction & maintenance**	**Fire prevention works**	**Livestock movement & grazing**	**Slashing & spraying**	**Fence & property access**	**Roadside rehabilitation**	**Firewood collection**
Native vegetation removed/effected	9	9	9	8	8	8	8
Loss or damage to habitats	9	9	9	8	8	8	8
Accidental pest spread, weeds etc	8	8	8	9	7	7	6
Contamination run-off sediments dust	7	7	7	6	5	5	5
Altered water regimes, drainage etc	6	5	4	4	4	4	4

***Score range is 2-10. Scores of 2-4 indicate lowest risk, 5-7 moderate risk and 8-10 high risk.**

Protocols were then developed in conjunction with the RBRMP project reference group, with the aim of assisting local government to address the identified risks. Practicality and response to local government needs were key considerations throughout the protocol development process. The protocols provide general guidelines and simple measures and processes which can be used to aid mitigation of potential impacts to biodiversity as a result of works and other activities in road reserves. The protocols are set out as follows:

- General guidelines and principles (Section 2)
- Program specific guidelines (Section 3)
- Roadside biodiversity risk management check lists (Section 4)
- Environmental works planning and management for roadsides training program options. (Appendix B)

[2] Native Biodiversity Risk Mitigation Protocols, Training Manual, Sinclair Knight Mertz, 2003
[3] Goulburn-Broken Catchment, Roadside Biodiversity Risk Assessment Report, Roadside Biodiversity Risk Management Protocols Project, 2007

All of the guidelines and check lists provided are of a general nature, so there may well be other circumstances that can be applied on a case by case basis. This also applies to the mitigation measures suggested and the legislative references. A check of current legislative requirements, interpretation and relevance is recommended for anyone using these guidelines.

The program check lists in Section 4 are a tool to guide the user through a simple step by step process which aids with the identification, evaluation and mitigation of potential impacts to biodiversity as a result of activities in a road reserve. This information can then be used to develop and implement an environmental management plan for the proposed activities. The check lists follow a standard format with specific variations for each program; however the method could easily be adapted for other activities not covered here.

The guidelines and check lists are not intended to be used solely to determine if an activity or project should proceed or not.

The assessment process focuses on identifying a range of biodiversity 'assets' rather than just native vegetation, emphasis is given to identification of various characteristics of native vegetation, habitats, threatened species, wetlands and waterways.

An essential element of the risk management process is good communications, monitoring and reporting from project concept to completion of works. A communications check list is provided (Section 4.1) to assist with this part of the process.

The level or complexity of assessment and expertise required to undertake it will vary considerably depending on the circumstances of each proposal, or the type of activity. For example simple routine activities may only require a basic visual assessment. Importantly any assessment should follow the steps outlined in the check lists.

The following is a summary of steps in the roadside biodiversity risk management process:

1. Identification of works planned and activities involved.
2. Identification of biodiversity assets on-site and off-site (beyond the road reserve). What information needs to collected?
3. Identification of potential impacts. What potential impacts could there be from the activities required by the works on biodiversity assets onsite and offsite?
4. Assess likelihood of impacts. The proximity of the area of activities to biodiversity assets is likely to increase the chances of adverse impacts.
5. Identification of mitigation measures. What methods can be used to avoid or at least reduce the likelihood of potential impacts? Are there existing controls such as legislative requirements, codes of practice that must be complied with?
6. Review and evaluation. Will these measures adequately reduce the likelihood and avoid/minimise potential impacts. If the result of review is not satisfactory (risks remain that are deemed to be unacceptable), change mitigation, look for alternative options
7. Mitigation planning and implementation. Prepare a risk management plan ie mitigation measures/actions. How will they be implemented? When? What resources are required? Who will be responsible? Monitoring/reporting required.

In developing the protocols, the RBRMP project reference group also recognised the necessity for ongoing development of the knowledge, skills and ability required by the people involved in activities associated with roads and biodiversity risk management. This was considered to be a particularly important aspect of effective roadside management. The reference group also considered and assessed the merit and potential benefits of specialised environmental (roadside) management training.

In order to assess the benefits of training, an evaluation[4] of accredited environmental management for roadsides training was conducted during this project by surveying participants in training programs undertaken by four councils in 2006/07. Participants were asked to voluntarily self rate their level of knowledge and understanding of a range of topics pre and post training. The survey results showed a substantial, 70% (average) improvement post training. This result was further supported by anecdotal reports from participants post training, that practical, specialised and professionally presented training has improved their performance and response to environmental management.

Whilst the benefit of training is clearly evident, it was also thought that further gains could be achieved if there were more training program options available which encouraged progressive skills development. To address this, the project reference group worked with a professional training provider to develop a range of program options suited to local government (Appendix B). The training programs have a strong emphasis on raising environmental awareness, practical skills development, implementation techniques and workplace communications. Program options include several levels of training to aid progressive skills development.

Environmental works planning and management for roadsides training is highly recommended to local government and other road managers.

[4] Results Summaries, Roadside Training Evaluation Surveys, Roadside Biodiversity Risk Management Protocols Project, 2006,2007

2. General guidelines and principles

2.1 Roadsides are important for biodiversity conservation

Roadsides support areas of high biological significance such as native vegetation, threatened species and habitats in the road reserve and adjoining areas. The depletion of native vegetation and habitats in other land tenures has accentuated the importance of roadsides for a range of flora and fauna, including threatened species and vegetation types.

Native vegetation and habitats on roadsides can include many of the few remaining examples in highly developed landscapes, as well as some of the higher quality examples where there have been fewer disturbances. They often provide the only connectivity to other remnants and also the framework to support revegetation and restoration efforts in other land tenures. In the Goulburn-Broken Catchment there are flora species known only to remain on roadsides and fauna that would otherwise not exist in some areas without roadside habitats. Protection and preservation of biodiversity on roadsides is a very important

The implications of climate change increase the significance of roadside corridors for biodiversity conservation.

2.2 Risk of impacts

The risks of biodiversity impacts from a range of activities undertaken in road reserves are generally high and almost certain to occur if no action is taken to avoid them.

2.3 Incremental loss

Even small impacts should be avoided where possible. They all contribute to incremental losses which compound over time. Opportunities should also be sought to offset unavoidable losses and enhance existing biodiversity assets associated with roads.

2.4 Communication, consultation and involvement

Effective communication and consultation with all involved throughout any process to manage risks is very important. There needs to be clear understanding of issues, reasons for decisions, clearly defined actions and allocation roles and responsibilities for implementation (see communications checklist section 4.1).

2.5 Early intervention

Involvement in the early concept and planning stages of works programs, projects, proposed works and public enquiries provides the greatest opportunity to positively influence environmental outcomes for biodiversity. This is when risk assessment should start and then continue as plans are adjusted to avoid potential impacts. If necessary, alternative options should be considered when other mitigation options do not adequately address risks. Early intervention is also more likely to ensure compliance with regulatory controls and discourage unauthorised works.

2.6 Environmental management skills and training

Ongoing development of awareness, understanding, knowledge and skills required for environmental management of activities in road reserves underpins successful implementation of tools such as protocols, codes of practice, roadside management plans, procedures and processes as well as compliance with policy and legislation.

It is important for councils to adopt a broad organisational approach to roadside management education and training for all sectors of council. Participation by staff and management from a cross section of council departments has many advantages such as improved inter-department cooperation, more informed response to community enquiries and greater efficiencies. There are several training program options available to councils (see Appendix B).

Councils are encouraged to develop and implement a training strategy for environmental works planning and management for roadsides.

2.7 Third party activities

Some works and activities may be undertaken by a third party such as a landholder, community group or contractor rather than directly by council, however when the works involve a road reserve there may be options and or legal responsibilities to regulate the works and thereby influence potential impacts.

Unauthorised and uncontrolled works in road reserves are a serious threat to biodiversity conservation. Councils need to ensure they have processes in place to provide an appropriate response to enquires and an ability to process applications from third parties. It is essential that where necessary council processes include a referral for environmental assessment and recommendations. Verbal approvals and or an assumption that a proponent will be aware of and interpret legislation, or other technical information, will increase the likelihood of impacts on biodiversity.

Many third party activities in road reserves can fall within a broad interpretation of the definition and generality of 'Works' (*Road Management Act 2004)*, the conduct of which by any person requires written consent of the coordinating road authority. This is usually referred to as, a 'Consent for Works in a Road Reserve Permit'.

Environmental conditions can be applied to any written consent for 'works' in order to protect and preserve existing significant roadside vegetation and sites of biological significance within the road reserve.

Applications for consent for works should be subject to a biodiversity risk assessment. An assessment provides the opportunity to evaluate the potential impacts and will support the application of conditions to consent for works permits when necessary. It can also improve a proponent's awareness of the need for biodiversity risk management. A lack of awareness and understanding increases the risk of potential impacts. Where possible it is recommended to involve proponents in an onsite inspection and assessment of proposed works.

2.8 Triple bottom line

Environmental objectives and initiatives should be considered as complimentary to, rather than threatening or contrary to, other management objectives. Skilled personal, appropriate communications, pre works assessment, planning and implementation of environmental best practice can produce the much sought after but not always achieved triple bottom line of environmental, economic and social benefits.

For example weeds are a considerable threat to biodiversity, economic and aesthetic values. Weed management is also costly and there is increasing pressure from the community for councils to undertake weed control. A range of activities undertaken in road reserves can potentially spread weed material and cause excessive ground disturbance resulting in weed invasion. Simply understanding this and implementing practices to minimise ground disturbance and improve vehicle hygiene can significantly reduce the risk of weed invasion and spread, minimises the risks to biodiversity and reduces the potential for costly, ongoing weed control.

2.9 Legislation

There is an array of legislation and policy relevant to biodiversity and road management. The following are some examples which may influence local government management of road reserves. Councils should be aware of their responsibilities and ensure they are addressed.

- *Local Government Act 1989*
- *Flora and Fauna Guarantee Act 1988*
- *Planning and Environment Act 1987*
- *Road Management Act 2004*
- *Aboriginal Heritage Act 2006*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Catchment and Land Protection Act 1994*
- *Victoria's Native Vegetation Management – A Framework For Action*
- *Victoria's Biodiversity Strategy*

2.10 Role of Local Government - what can Councils do?

There are many ways councils can contribute to biodiversity conservation associated with road reserves.

The following are some recommendations based on points identified during the protocols development process:

- Develop awareness, knowledge and commitment to sound environmental management throughout the organisation.
- Provide direction and support through Council Plans, strategies, policy.
- Identify and document biodiversity information, threatening processes and management requirements. Ensure this is accessible and well known.
- Develop and resource council revegetation/rehabilitation projects.
- Ensure compliance with legislative and other regulatory responsibilities.
- Integrate environmental management into systems, procedures, processes and practices.
- Implement systems and controls to manage and ensure compliance with council consent for third party activities in road reserves, such as 'Consent for Works' and livestock permits.
- Encourage communication and sharing of responsibilities between all functions of council.
- Develop and implement incident response procedures.
- Review existing practices and procedures (controls) for strengths and weaknesses and modify where necessary.
- Provide regular environmental management awareness and technical training with a focus on a whole of organisation approach rather than just a section such as road crews. Include other sectors such as customer service, administration, planning, local laws, infrastructure, management and Councillors, they all influence roadside management.
- Provide skilled environmental technical support for staff.
- Source and provide technical information.
- Support inter-council and agency cooperation, information sharing and joint projects.
- Encourage community involvement and acceptance by:
    - Providing information and clear direction from council.
    - Ensure informed and consistent responses from council staff to enquiries.
    - Ensure systems are in place and implemented to manage third party activities in road reserves eg consent for works, livestock permits.
    - Discourage unauthorised activities in road reserves.

3. Program specific guidelines

3.1 Road construction and maintenance

Road construction and maintenance activities can lead to considerable biodiversity losses. Many losses can be attributed to poor works planning and practices such as dumping spoil on native vegetation, excessive widening of the road formation and soil disturbance leading to weed invasion.

Unnecessary works and or sub-standard work practices are costly to perform, increase follow up maintenance costs, encourage weed invasion, adversely affect landscape values and often lead to community complaints.

Unfortunately, the examples of poor work standards and practices shown in these photographs are not uncommon.

Road managers need to ensure environmental planning and practices are implemented for all works. Sub-standard works and practices should not be accepted.

3.1 Road construction and maintenance

3.1.1 Overview

Road construction and maintenance involves a very diverse range of activities and projects which are implemented frequently and extensively across a broad area. While roadside vegetation and habitats may not be targeted directly by many activities, for example during routine road maintenance, the chance of accidental impacts is high.

An assessment of biodiversity risk for activities associated with road construction and maintenance indicated that there is a high risk of loss or damage to native vegetation and habitats and accidental weed spread. There is a slightly lower, but still significant risk of erosion and sediment and nutrient run-off to wetlands or waterways. There is also a moderate risk of impacts from alterations to drainage leading to altered surface water and stream flows, and alteration of aquatic and or terrestrial ecosystems.

Some of the higher risks relate to removal of native vegetation, ground disturbance and compaction, weed invasion of disturbed ground, reduction of roadside width, adverse effects on regeneration and health of remaining vegetation, and removal of habitat features such as woody debris and leaf litter.

3.1.2 Key guidelines

- The risk of biodiversity impacts can be very high.
- Unnecessary and avoidable biodiversity losses can and do occur as a result of road construction and maintenance activities.
- These activities are more likely to be undertaken by council staff and contractors.
- Council staff and contractors need to be aware of the risks of potential impacts and requirements for mitigation measures to be implemented. Informed and cooperative arrangements are more likely to produce better outcomes.
- All road construction and maintenance activities should be subject to an environmental assessment. The level and detail of assessment should be consistent with the type, location and extent of activities in relation to proximity of biodiversity assets.
- For routine tasks where activities are confined to the cleared area of the road formation the focus should be on avoiding adverse biodiversity impacts through implementation of approved procedures and work practices which are consistent with Codes of Practice, Roadside Management Plans.
- All staff and contractors should have or be required to attain skills and knowledge necessary to implement environment management practices.
- In addition to the above. Where works are proposed and it is likely activities could potentially impact biodiversity assets the proposed works should be subject to an on-site assessment to determine mitigation measures to be implemented.
- If necessary an Environmental Management Plan (EMP) should be developed. Responsibility for implementation should be clearly defined, allocated and acknowledged by the appropriate parties. This should include monitoring and reporting.
- All relevant stakeholders should be consulted and approvals given prior to commencement.

- If native vegetation removal is proposed and or the works are in threatened species habitat, alternative designs and other options should be considered and where possible adopted.
- Advice should be sought from DSE Native Vegetation Officer and Flora and Fauna Officers.
- If removal of native vegetation is considered necessary all permit requirements should be addressed and approvals given prior to commencement.
- All requirements for other permits should be addressed eg Works on Waterways prior too commencement of works.
- Contracts for works in road reserves should include environmental conditions adequate to address the above and monitored for compliance.
- Road construction and maintenance works should be consistent with environmental best practice. These should include the following:[5]
  - Inspect site for potential environmental issues and biodiversity assets and implement risk management.
  - Seek or refer for advice and approvals when necessary.
  - Clearly mark the limits of works and all other construction zones.
  - All ground disturbance should kept to the minimum.
  - Keep machinery turning and parking areas and stockpiles on cleared or previously disturbed land.
  - Always stay within the 'construction zone'.
  - Use the appropriate type and minimum size of machine for the job.
  - If native vegetation removal is unavoidable, plan and ensure approval prior to works.
  - Retain dead trees where possible.
  - Avoid windrowing spoil from the road onto roadside vegetation.
  - Remove drain spoil and dispose of offsite away from areas of native vegetation.
  - Control soil erosion.
  - Remove or lop trees carefully using appropriate equipment and where possible retain habitat logs on site. Only remove to the minimum extent necessary.
  - Avoid 'tidying up' roadsides and piling up windfall timber.
  - Spray herbicides in calm, dry conditions and avoid areas of native vegetation especially groundcover.
  - Clean down machinery before moving to another site.
  - Protect cultural heritage.
  - Undertake roadside rehabilitation in compliance with biodiversity conservation guidelines.

[5] Adapted with reference to Roadside Handbook, An Environmental Guide for Road Construction and Maintenance VicRoads 2006

3.2 Fire prevention works in road reserves

Unauthorised fire prevention works adversely impacts biodiversity assets in road reserves without addressing strategic fire prevention goals.

3.2 Fire prevention works in road reserves

3.2.1. Overview

A biodiversity risk assessment of activities associated with fire prevention works in road reserves indicated that there is a high risk of removal or damage to native vegetation and habitats and accidental weed spread. There is a slightly lower, but still significant risk of, erosion and sediment run-off to wetlands or waterways. The risk of impacts from alterations to drainage is relatively low but they still need to be accounted for on a site by site basis.

Some of the higher risks relate to adhoc, unauthorised ploughing, grading, spraying, slashing and burning. The risk of biodiversity impacts is increased when planning for strategic works is inadequate and when works are undertaken without sufficient knowledge and consideration of the biological significance of road reserves.

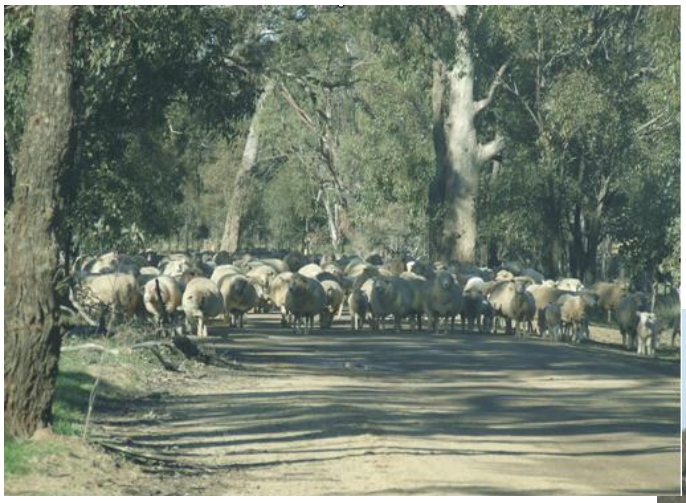
3.2.2. Key guidelines

- The risk of biodiversity impacts can be high and proposals for works should be subject to risk evaluation and mitigation of potential impacts. It is imperative to identify biodiversity assets that should be protected from adverse impacts as a result of fire prevention works (see Section 4 for check lists). All proposed works should be subject to environmental assessment.
- Refer proposals to a DSE Native Vegetation Officer for advice if necessary.
- Landholders, community groups and others proposing fire prevention works that involve a road reserve, should seek advice from the road authority and comply with requirements.
- Public enquires regarding proposals for fire prevention works on roads should be directed to Municipal Fire Prevention Officers and CFA Regional Officers for assessment and processing.
- All fire prevention works in a road reserve must be in accordance with an approved Municipal Fire Prevention Plan and have consent from the responsible road authority.
- Fire prevention works in a road reserve by a third party require consent of the road authority (*Road Management Act 2004)*. This is usually referred to as, a 'Consent for Works in a Road Reserve' permit.
- If it is necessary, environmental conditions can and should be applied to any consent permit in order to protect and preserve existing significant roadside vegetation and sites of biological significance within the road reserve (*Road Management Act 2004).*
- Where necessary, ensure a written consent for works in a road reserve (permit) includes:
  - a description of defined works zone and methods to ensure that works do not exceed these limits
  - conditions to ensure disturbance is minimised
  - conditions for use and movement of machinery on roadside
  - conditions for erosion/sediment control
  - conditions for follow up weed control
  - reference to identified biodiversity assets and conservation significance
  - reference to other compliance/permit requirements eg Planning Permit, Code of Practice, Roadside Management Plan

- The Country Fire Authority (CFA) only endorses works that are in accordance with a Municipal Fire Prevention Plan.
- All works must comply with legislative controls and should be consistent with CFA guidelines and council controls such as Roadside Management Plans.
- Councils should promote awareness of the above and actively discourage unauthorised works in road reserves. Controls need to be put in place to regulate works and ensure compliance as necessary.
- Private fire prevention works should be located on private property.

Private fire prevention works (above) located on the property not the roadside.

3.3 Livestock movement and grazing



Livestock movement and grazing on roads can be high risk activities for biodiversity conservation. These activities need to be regulated and carefully managed to mitigate risks.

The photographs below show adjacent sides of a high conservation value road. The picture on the left shows where livestock movement has destroyed native vegetation and habitat, compacted soil, encouraged weed invasion and adversely affected the health of the remaining native vegetation and habitat. The picture on the right shows the opposite side of the road and gives an indication of the likely condition of the damaged area prior to use by livestock.

3.3 Livestock movement and grazing

3.3.1 Overview

An assessment of biodiversity risk associated with livestock movement and grazing indicates that there is a high risk of accidental weed spread and loss or damage to native vegetation and habitats. This includes ground disturbance and compaction, weed invasion of disturbed ground, adverse effects on regeneration and health of remaining vegetation, increased nutrient levels and destruction of habitat features such as small woody debris, leaf litter. There is a slightly lower, but still significant risk of erosion and sediment and nutrient run-off to wetlands or waterways. The risk of impacts from alterations to drainage is relatively lower but they still need to be accounted for on a site by site basis.

Some of the higher risks relate to moderate to high levels (daily/weekly) of use for stock movement, inadequate stock control (use of larger areas than necessary), use of roads instead of internal farm access, overgrazing, poorly timed grazing, movement or grazing when ground conditions are wet, stock held on roadsides over night and or confined to small areas for long periods, supplementary feeding of stock on roadsides, activities close to waterways, use of vehicles off road to move stock, subsequent weed invasion.

3.3.2 Key guidelines

- The risk of biodiversity impacts can be very high.
- These activities are more likely to be undertaken by a third party such as a landholder.
- It is very important for local government to ensure third parties are aware of the risks of potential impacts and requirements for mitigation measures to be implemented. Informed and cooperative arrangements are more likely to produce better outcomes.
- Proposals for livestock movement and grazing on roads should be referred for environmental assessment and recommendations. Site conditions and conservation values should guide recommendations (see Section 4 for assessment check lists). Refer to DSE or others for advice if necessary.
- Emphasis should be on managing the risks of livestock movement rather than prohibition.
- Ecological objectives should be the primary consideration for allowing grazing of livestock on roads with native vegetation and habitats. For example, timely reduction of introduced grasses.
- Grazing of native vegetation and disturbance of habitats should not be undertaken if it is likely to contribute to a loss of vegetation and habitat quality. Advice form DSE Native Vegetation Officers should be sought as necessary.
- Livestock movement and grazing on roads should be regulated within local government by Local Laws. There may also be requirements outlined in council strategies such as Roadside Management Plans and legislation.
- Holding stock on a road for the purpose of grazing (where there is native vegetation) by the use of a temporary fence may require a Planning Permit *(Planning and Environment Act 1987).* This would also trigger a referral to DSE. The erection of a temporary fence is considered ‘minor works’, therefore requiring a ‘Consent for Works in a Road Reserve’ permit (*Road Management Act 2004)*.

- It is recommended that Local Laws are used to require compliance with conditions applied to livestock movement and grazing permits. Conditions should address potential impacts, be practical and able to be implemented.
- The following are recommended as minimum requirements for livestock movement permits:
  - The use of roads for movement of livestock is minimised so far as is practicable (roads should not be used as an alternative to providing internal property access)
  - Livestock should be supervised by a person/s competent in the management of livestock
  - Livestock movement is avoided when ground conditions are wet to avoid pugging and compaction
  - Livestock are not to be driven on areas where there is native vegetation
  - Livestock must be moved promptly and not allowed to wander aimlessly
  - No supplementary feeding of stock in road reserves
  - Vehicles should not be driven on roadsides
  - Livestock should not remain in road reserves overnight
  - Where there are risks to biodiversity assets such as native vegetation and habitats the permit should include a brief statement to draw this to the attention of the applicant
- If livestock grazing is allowed, permits should include minimum conditions such as:
  - Permits should have a maximum life of 28 days from the date of issue with renewal subject to environmental inspection and approval (this is an aid to minimising overgrazing and ensuring compliance with conditions)
  - Appropriate precautions should be implemented to ensure no damage occurs to native trees and shrubs growing within the road reserve
  - Grazing should be avoided when ground conditions are wet to avoid pugging and compaction
  - In the event that livestock are causing damage, including where overgrazing occurs, they must be removed from the road reserve without delay
  - No supplementary feeding of stock in road reserves
  - Vehicles should not be driven on roadsides
  - Livestock should not remain in road reserves overnight

3.4 Slashing and spraying programs

Invasion of herbaceous weeds such as Prickly Lettuce *(Lactuca serriola)* following spraying (left and below).

Spraying in road reserves has the potential for substantial environmental and economic impacts both on and offsite. For example, spraying grassed areas produces conditions such as bare ground and reduced competition which encourage the establishment and spread of herbaceous and noxious weeds. This is a significant threat to biodiversity values and increases follow up maintenance costs.

The risks associated with roadside spraying should be carefully assessed and mitigation measures implemented.

Where control is necessary in areas of native vegetation, slashing is recommended.

3.4 Slashing and spraying programs

3.4.1 Overview

An assessment of biodiversity risk for activities associated with road slashing and spraying programs indicated that there is a high risk of accidental weed spread and loss or damage to native vegetation and habitats. There is a slightly lower, but still significant risk of erosion and sediment run-off to wetlands or waterways. The risk of impacts from alterations to drainage is relatively low but they still should be accounted for on a site by site basis.

Some of the higher risks relate to direct loss of native ground cover plants and habitat features such as small woody debris and leaf litter, ground disturbance, spray/vapour drift, contamination of wetlands, invasion of disturbed or bare ground by noxious and herbaceous weeds, spread of weed material on machinery, erosion of bare ground and adverse effects on native plant regeneration and health of remaining vegetation.

3.4.2 Key guidelines

- The risk of biodiversity impacts from both programs can be very high.
- Activities are likely to be undertaken by a third party such as a contractor.
- It is very important for councils to ensure third parties are aware of the risks of potential impacts and requirements for mitigation measures to be implemented. Informed and cooperative arrangements are more likely to produce better outcomes.
- For proposed works other than spot weed control using approved methods, landowners, contractors and others planning to conduct works that involve a road reserve, should seek written consent from the responsible road authority and comply with requirements.
- Proposals should be referred for environmental assessment and recommendations. Site conditions and conservation values should guide recommendations (see assessment check lists).
- Refer to DSE or others for advice if necessary.
- Slashing works in a road reserve (for works by a third party) may require written consent of the responsible road authority (*Road Management Act 2004*).
- Ensure written consent for spraying and slashing works includes conditions to protect and preserve existing significant roadside vegetation and sites of biological significance within the road reserve:
  - reference to compliance with Codes of Practice, Roadside Management Plans (specify) and other guidelines
  - extent of works
  - defined works zone and methods to ensure works do not exceed limits
  - conditions for use and movement of machinery on roadside
  - responsibility for follow up weed control
  - other site specific requirements
- Councils should implement measures to deal with unauthorised works.

- All spraying other than spot weed control should be confined to road shoulders, except where there is native ground cover. In areas with native vegetation slashing is the recommended control method. All works should comply with codes of practice and legislation.
- Spraying of road verges and table drains is not recommended.
- Machinery and vehicle hygiene practices should be implemented to avoid the movement of soil and plant material which can to lead to weed spread.

Avoiding weed spread as a result of machinery operations such as slashing, reduces follow up maintenance costs. Specialised training in environmental management practices such as vehicle hygiene techniques for staff and contractors improves their awareness, knowledge and skills.

3.5 Construction or repair of fence lines / property access

This graded fence line (above) through native vegetation resulted in the direct loss of native vegetation and habitat as well as the adverse effects of weed invasion (below). It was not necessary to grade a line to construct this fence. These impacts could have been avoided by a biodiversity risk assessment and appropriate planning and implementation of the works.

3.5 Construction or repair of fence lines / property access

3.5.1 Overview

An assessment of biodiversity risk associated with works to construct or repair fence lines or construct property entrances indicated that there can be a high risk of removal or damage to native vegetation and habitats. There is a slightly lower, but still significant risk of accidental weed spread, erosion and sediment run-off to wetlands or waterways. The risk of impacts from alterations to drainage is relatively low but they still need to be accounted for on a site by site basis.

Some of the higher risks relate to excessive or unnecessary clearing for fence lines, dumping spoil on roadsides, poorly located property access, the use of machinery on the roadside, disposal of redundant fencing, removal of ground cover, disturbance leading to weed invasion and general tidying up.

3.5.2 Key guidelines

- Activities associated with works in road reserves to construct or repair fence lines or construct property entrances can adversely impact biodiversity assets and the risk of impacts can be high.
- The works are likely to be undertaken by a third party such as a landholder or contractor rather than be directly undertaken by local government.
- Landowners, contractors and others planning to conduct works that involve a road reserve, should seek written consent from the responsible road authority and comply with requirements.
- Council procedures should ensure proposals for works involving a road reserve are referred for environmental assessment, recommendations and permit requirements (see Section 4 for an assessment check list). Where appropriate conditions should be applied to Planning Permits regarding the location of rural vehicle crossings.
- When the works involve a road reserve, written consent of the road authority is required (*Road Management Act 2004)*. This is usually referred to as, a Consent for Works in a Road Reserve permit. If it is necessary, environmental conditions can and should be applied to any consent permit in order to protect and preserve existing significant roadside vegetation and sites of biological significance within the road reserve.
- Exemptions for removal of the 'minimum extent' of native vegetation *(Planning and Environment Act 1987)* for rural activities relating to fences and tracks on private land do not apply to roadsides. At the least, for works involving a road reserve, written consent of the road authority is required and where necessary, conditions applied (see above).
- Refer proposals to a DSE Native Vegetation Officer for advice if necessary.
- Determine if a proposal requires removal/lopping of native vegetation in the road reserve and ensure planning permit requirements are addressed (a permit for public land requires a referral to DSE).

- Where biodiversity impacts are likely, the proponent should demonstrate that options to avoid and minimise vegetation/habitat removal and soil disturbance have been considered and where possible adopted. Such as:
  - Changing the crossing/entrance to a more suitable site
  - Re-align and or relocate the fence line (incentives may be available)
  - Slash grass along the fence line if necessary rather than grading or ploughing
  - Conduct works/machinery operation from the property side of road reserve
- Environmental conditions can and should be applied to any written consent for works in order to protect and preserve existing significant roadside vegetation and sites of biological significance within the road reserve.
- Where necessary, ensure a written consent for works in a road reserve (permit) includes:
  - defined extent and location of works
  - a description of defined construction zone and methods to ensure works do not exceed limits and disturbance is minimised
  - conditions for use and movement of machinery on roadside
  - condition for rubbish removal
  - conditions for erosion/sediment control
  - conditions for follow up weed control
  - reference to identified biodiversity assets and conservation significance
  - reference to other compliance/permit requirements eg Planning Permit, Code of Practice, Roadside Management Plan
- Ensure the proponent is aware of the potential for impacts, how to avoid them and their responsibility to implement actions (conditions of consent, permits) .
- Monitor works for compliance. Follow up non compliance.

3.6 Roadside rehabilitation (revegetation and enhancement)

Natural regeneration (above) enhances biodiversity. Roadside revegetation should be carefully planned and implemented. Inappropriate species selection and location (below) can adversely impact biodiversity as well as create road management problems.

3.6 Roadside rehabilitation (revegetation and enhancement)

3.6.1 Overview

A biodiversity risk assessment of activities associated with rehabilitation works in road reserves indicated there is a high risk of removal or damage to native vegetation and habitats. There is a slightly lower, but still significant risk of accidental weed spread, erosion and sediment run-off to wetlands or waterways. The risk of impacts from alterations to drainage is relatively low but still needs to be accounted for on a site by site basis.

Roadside rehabilitation may be desirable in some situations however this is not always the case. There may be situations when it is incompatible with biodiversity conservation objectives. A lack of awareness and understanding of the potential for impacts increases the risks.

Some of the higher risks relate to poor site selection and preparation works leading to the loss or damage of native groundcover grasses, herbs, mosses and habitats such as leaf litter, woody debris, changes to structure and density These aspects can be overlooked, probably inadvertently, yet they are important biodiversity attributes. Damage and losses can occur through displacement due the inappropriate planting of trees and shrubs, (especially in grasslands, grassy woodlands and wetlands), soil disturbance, changes to shading and soil moisture, use of herbicide, inappropriate species selection and weed invasion.

3.6.2 Key guidelines

- Activities associated with rehabilitation works in road reserves can adversely impact biodiversity assets and the risk of impacts can be high.
- Works should not be approved and or undertaken on an assumption that they will improve biodiversity values.
- Rehabilitation works may be undertaken by a third party such as a landholder, community group or contractor. Landowners, contractors and others planning to conduct works that involve a road reserve, should seek written consent from the responsible road authority and comply with requirements.
- Proposals should have defined biodiversity objectives.
- Planting and associated works should not compromise existing biodiversity values eg displacement of native vegetation including ground layer grasses, herbs, mosses etc. and threatened fauna habitat.
- A strategic approach to rehabilitation work in road reserves which aligns with catchment targets and biodiversity objectives is recommended.
- Preference for investment in roadside rehabilitation should be directed to proposals which enhance the quality of remnant vegetation, provide linkages and or enhance threatened species habitat.
- Rehabilitation should include removal of environmental weeds that are threatening native vegetation and habitats.
- Council procedures should require referral of all rehabilitation proposals (internal and external) for environmental assessment and recommendations (see Section 4 for assessment check lists).
- Refer proposals to DSE or others for advice if necessary.

- Rehabilitation works in a road reserve (for works by a third party) require written consent of the responsible road authority (*Road Management Act 2004*).
- Ensure written consent includes conditions to protect and preserve existing significant roadside vegetation and sites of biological significance within the road reserve:
  - reference to compliance with revegetation guidelines, Roadside Management Plans (specify)
  - extent of works
  - defined works zone and methods to ensure works do not exceed limits
  - conditions for use and movement of machinery on roadside
  - conditions for rubbish removal
  - responsibility for follow up weed control
  - other site specific requirements such as:
    - Project timelines
    - Species selection
    - Species mix (percentages)
    - Planting density (number of plants)
    - Revegetation method(s)
    - Include a site plan showing the location, revegetation area, setbacks and existing native vegetation.
- Areas of native vegetation (especially ground cover) and habitats should be avoided if loss or damage is likely. If necessary, produce an environmental management plan for the site and proposed works. Include mitigation measures and allocate responsibilities for implementation of actions.
- Use only indigenous species of the appropriate vegetation type (EVC) for the site
- Plan revegetation works and methods to minimise disturbance.
- Ensure follow up weed control.
- Monitor for compliance.

Planned planting in a degraded area (right) with indigenous species, fills a gap in a woodland corridor. As these plants grow they will displace the introduced grasses currently occupying the site. Note that appropriate setbacks from the road and fence have been applied.

Firewood collection

Firewood collection removes habitat for invertebrates and other fauna including threatened species such as the Bush-stone Curlew (below).

3.7 Firewood collection (including windfall removal)

3.7.1 Overview

An assessment of biodiversity risk for activities associated with firewood collection in road reserves indicated that there is a high risk of removal or damage to native vegetation and habitats. There is a slightly lower, but still significant risk of accidental weed spread. There is a lower risk of erosion and contamination or sediment run-off to waterways and wetlands.

Firewood collection will remove fallen timber habitat and associated activities such as the use of vehicles and machinery off-road may lead to ground disturbance, damage to or removal of native vegetation, particularly groundcover and weed invasion/spread. Standing dead trees and live trees could also be removed.

Fallen timber and standing dead trees are important habitat features for threatened species and uncontrolled firewood collection and windfall removal can have severe localised impacts, with even small losses contributing incrementally to broader scale loss of biodiversity.

3.7.2 Key guidelines

- The risk of biodiversity impacts can be high.
- 'Loss of coarse woody debris from Victorian forests and woodlands' is listed as a potentially threatening process *(Flora and Fauna Guarantee Act 1988).*
- Removal of fallen timber from road reserves for firewood is not recommended unless there is a demonstrated requirement to address management objectives.
- Proposals to remove timber from roadsides should be subject to an environmental assessment (see check lists in Section 4) and conditions (except in an emergency where works should be to the minimum extent necessary).
- It is very important for councils to ensure their staff and third parties are aware of the risks of potential impacts and require mitigation measures to be implemented. Informed and cooperative arrangements are more likely to produce better outcomes.
- Where management objectives deem it necessary to reduce the mass of fallen timber in a road reserve, the work should preferably be directly managed by councils and subject to environmental works procedures to minimise impacts.
- Where emergency/essential or other works have caused unavoidable impacts such as ground disturbance, rehabilitation works such as follow up weed control should be implemented.
- If councils devolve this work to others such as contractors or individuals the works should be regulated, carefully managed and monitored to reduce biodiversity impact risks.
- Environmental management compliance conditions and requirements should be included in contracts and contractors made aware of this.
- Firewood collection or removal of windfall in a road reserve by a third party fall within the broad definition of works (*Road Management Act 2004)*, requiring written consent of the road authority. This is usually referred to as, a Consent for Works in a Road Reserve permit.

- Environmental conditions can and should be applied to any written consent for works in order to protect and preserve existing significant roadside vegetation and sites of biological significance within the road reserve.
- Where necessary, ensure a written consent for works in a road reserve (permit) at least includes:
  - clearly defined location of works
  - extent and limits of timber approved to be taken
  - conditions restricting use and movement of machinery/vehicles on roadside
  - conditions to prohibit piling and or burning remaining woody debris (tidying up)
  - conditions prohibiting felling of live or dead trees
  - reference to other compliance/permit requirements such as 'in addition to council consent a Firewood Permit from the Department of Sustainability and Environment is required'
  - reference to the conservation significance of the works area and potential environmental risks and a requirement that the proponent must avoid impacts
  - conditions prohibiting rubbish dumping including garden rubbish, prunings.
- If areas are subject to firewood collection or windfall removal they should be recorded and monitored for environmental impact. Where unacceptable impacts occur the activities should be stopped.
- Councils should develop and implement processes to discourage unauthorised works for removal of timber in road reserves.

Piling up windfall should be avoided where possible. This 'clean up' was undertaken behind the tree line in a wide road reserve and well away from the road formation. There is very little course woody debris in the area. Apart from the potential for biodiversity impacts, the necessity and deployment of resources for these works is questionable.

4. Roadside Biodiversity Risk Management Check Lists

4,1 Communications

Communication Check list		Responsibility
Initial Communication required with:	☐ Coordinating authority – undeclared roads ☐ VicRoads – declared roads ☐ Environmental officer ☐ Supervisor ☐ Team leader ☐ Engineer ☐ Planner ☐ Referral agencies ☐ Contractor ☐ Third parties (landholders) ☐ Other	
Environmental assessment	o Environmental officer ☐ Supervisor ☐ Referral agencies o Other	
Mitigation plan development	o Environmental officer ☐ Supervisor ☐ Referral agencies o Other	
Permits required from	o Council (Planning, Consent for works) o CMA (Works on Waterways) o Other (Local Laws)	
Mitigation measures implementation Internal communication	☐ Appropriate works personnel / management notified ☐ Works plans and issues discussed ☐ Plans documented ☐ Appropriate delegations communicated in writing to responsible persons ☐ Other	
Mitigation measures implementation External communication: Referral agencies, Contractors	☐ Appropriate external agencies notified ☐ Works plans and issues discussed ☐ Plans documented ☐ Appropriate delegations communicated in writing to responsible persons ☐ Other	
Mitigation plan implementation	☐ Supervisor ☐ Contractor ☐ Other	
Monitoring Evaluation and Reporting (MER)	☐ Who undertakes MER ☐ When is MER undertaken ☐ What is reported ☐ How are works reported ☐ Appropriate reports communicated in writing ☐ Other	

4.2 Road construction and maintenance

The activities associated with this program could occur in road reserves that may contain native vegetation and habitats for threatened species. Road reserves where the activities take place may also occur in close proximity to waterways and or temporary or permanent wetlands.

The following steps provide a guide to evaluating and mitigating impacts on biodiversity assets from works activities.

Step 1: Identify program (works) and typical activities

The activities associated with this program occur in road reserves that may contain native vegetation and habitats for threatened species. Road reserves where the activities take place may also occur in close proximity to waterways and or temporary or permanent wetlands.

Program activity-Check list
☐ Grading and re-forming the road surface, shoulders and drains
☐ Importation and compaction of road filling material
☐ Operation of vehicles and machinery including turning and parking
☐ Ground disturbance
☐ Management of spoil
☐ Removal of native vegetation
☐ Other list below

Step 2: Identify biodiversity assets

Identify biodiversity assets within the road reserve (on-site) or nearby (off-site) that may be affected by road construction and maintenance activities. This should be achieved by accessing a range of readily available information and a site inspection by someone who is able to identify biodiversity assets.

1. Refer to roadside conservation value maps, Roadside Management Plan, aerial photographs, Ecological Vegetation Class maps
2. Conduct an on-site inspection, seek assistance if necessary eg Council Environment department and or DSE Native Vegetation Officer, CMA.
3. Seek advice if unsure (as above)
4. Complete the biodiversity check list

Biodiversity Asset-Check list	**On-site yes/no**	**Off-site yes/no**	**Roadside conservation value H M L**	**EVC or Threatened species status**
Native vegetation and habitats-Check list ☐ Individual trees ☐ Stands of trees ☐ Treeless grasslands ☐ Shrubs ☐ Groundcover, grasses, mosses ☐ Habitat features such as logs, dead trees, logs, rocks				
Threatened Species-Check list *Any species and habitats of local, regional, state or national importance* ☐ Plants ☐ Animals ☐ Habitats				
Wetlands-Check list *Any type of permanent or temporary wetland including areas subject to periodic flooding or connected to a floodplain* ☐ Wetland				
Waterways *Any river, stream, creek including the bed, banks and adjacent areas* ☐ Waterway				

Step 3: Identify potential impacts

This step identifies potential impacts (that could occur as part of the planned works or unintentionally) on biodiversity assets (see step 2) that could result from road construction and maintenance activities if no action is implemented to avoid impacts.

Potential impacts- Check list	**Including**
Native vegetation removed or damaged	☐ Shrubs ☐ Saplings ☐ Trees ☐ Ground cover such as mosses and grasses ☐ Dumping or stockpiling spoil or other materials onto areas with native vegetation ☐ Removal of soil within the drip line area of trees ☐ Dumping spoil around trees ☐ Damage to trunks, branches and roots ☐ Parking, turning or other operation of machinery in areas of native vegetation ☐ Other
Loss or damage to habitats	☐ Reduction of roadside width ☐ Removal of dead standing trees ☐ Removal of logs, branches, rocks, leaf litter ☐ General 'tidying up' by grading roadside edge, piling up fallen logs and branches ☐ Soil compaction due to operation of machinery off road ☐ Disturbance of wildlife corridors ☐ Other
Weed spread	☐ Soil disturbance and baring the ground ☐ Dumping spoil on roadsides ☐ Importation of materials containing weed seed ☐ Transportation of weed seed on vehicles ☐ Spreading of soil and other materials which may contain weed seed ☐ Other
Contamination from run-off and sediments	☐ Sediment and or nutrient run off into wetlands and waterways ☐ Dust ☐ Other
Altered drainage	☐ Artificial changes to water levels in wetlands ☐ Water ponding in roadside 'drains' ☐ Blockage of natural drainage lines ☐ Water logging ☐ Other

Step 4: Evaluating likelihood of impacts

This involves consideration of the likelihood of potential biodiversity impacts (see step 3) occurring if measures are not implemented to avoid them. Likelihood of impact should be considered for all stages of the works including on-going maintenance. A key influence on the likelihood of impact is the proximity of biodiversity assets to the activities. In the case of works in road reserves biodiversity assets are often in close proximity to works activities (on-site).

Likelihood of impact	Check list
Unlikely	☐ Conservation value and native vegetation/species status information and mapping (see step 2) shows the works area is designated **low conservation** value and there are **no records of threatened species or vegetation types in the vicinity of the works area** ☐ On-site inspection shows that there is no native vegetation/habitats with the exception of few widely scattered trees and grasses which are not close to the road ☐ There are no wetlands or waterways in the vicinity of the works area ☐ Drainage works are planned (including maintenance of existing drains) ☐ Works and soil disturbance are only planned for the existing cleared area of the road formation ☐ Cleared areas are available for vehicle use including turning and parking ☐ The work area is relatively flat and no alteration to drainage is planned ☐ Imported materials are from a known weed free source
Likely	☐ Check of conservation value and vegetation status information and mapping shows the works area is designated **moderate conservation value** and or there are **no records of threatened species or vegetation types in the vicinity of the works area** ☐ On-site inspection shows patches of native vegetation and habitat features that are not close to the road but works may works could occur within the drip line of trees ☐ The work area is in close proximity to a wetland, waterway or floodway ☐ Drainage works are planned (including maintenance of existing drains) but there will be no run-off directly to a wetland, waterway or floodplain ☐ Works and soil disturbance are planned for the existing cleared area of the road formation only ☐ Cleared areas are available for vehicle use including turning and parking ☐ The work area is relatively flat and no alteration to drainage is planned ☐ Imported materials are from a known weed free source
Almost certain	☐ Check of conservation value and vegetation status information and mapping shows the works area is designated **moderate or high conservation value and or there are records of threatened species or vegetation types in close proximity to the works area** ☐ On-site inspection shows native vegetation and or habitat features occur across much of the area including close to the road edge ☐ Works and soil disturbance may be necessary outside the existing cleared area of the road formation ☐ Cleared areas for vehicle use including turning and parking are limited ☐ The work area could directly involve a wetland, waterway or floodway ☐ Drainage works are planned (including maintenance of existing drains) which could direct run-off to a wetland, waterway or floodway ☐ Imported materials are not from a known weed free source

Step 5: Risk mitigation

Mitigation involves the identification and implementation of appropriate minimal level measures to avoid potential impacts (step 3) or at least reduce the likelihood of impacts (step 4) to biodiversity assets (step 2) as a result of program activities (step 1). The following is only a guide, appropriate measures may be determined on a case by case basis.

Likelihood	Mitigation Measures-Check list
Unlikely	☐ All road construction and maintenance activities should be subject to an environmental assessment. The level and detail of assessment should be consistent with the type, location and extent of activities in relation to proximity of biodiversity assets ☐ For routine tasks where activities are confined to the cleared area of the road formation the focus should be on avoiding adverse biodiversity impacts through implementation of approved procedures and work practices which are consistent with Codes of Practice, Roadside Management Plans and legislation ☐ All staff and contractors should have or be required to attain skills and knowledge necessary to implement environment management practices
Likely	☐ In addition to the above. Where works are proposed and it is likely activities could potentially impact biodiversity assets the proposed works should be subject to an on-site assessment to determine mitigation measures to be implemented ☐ If necessary an Environmental Management Plan (EMP) should be developed. Responsibility for implementation should be clearly defined, allocated and acknowledged by the appropriate parties. This should include monitoring and reporting. ☐ All relevant stakeholders should be consulted and approvals given prior to commencement.
Almost certain	☐ If native vegetation removal is proposed and or the works are in threatened species habitat, alternative designs and other options should be considered and where possible adopted ☐ Advice should be sought from DSE Native Vegetation Officer and Flora and Fauna Officers ☐ If removal of native vegetation is considered necessary all permit requirements should be addressed and approvals given prior to commencement ☐ All requirements other requirements for permits should be addressed eg Works on Waterways ☐ Contracts for works in road reserves should include environmental conditions adequate to address the above and monitored for compliance

Compliance tools (relevant legislation, strategies, policy)

4.3. Fire prevention works in road reserves

The activities associated with this program could occur in road reserves that may contain native vegetation and habitats for threatened species. Road reserves where the activities take place may also occur in close proximity to waterways and or temporary or permanent wetlands.

The following steps provide a guide to assessing, evaluating and mitigating the risk of impact on biodiversity assets from activities associated with fire prevention works in road reserves.

Step 1: Identify program (works) and typical program activities

Program activity-Check list
☐ Grading, ploughing, slashing, spraying and burning
☐ Operation of vehicles and machinery including turning and parking
☐ Ground disturbance
☐ Management of spoil
☐ Use of herbicide

Step 2: Identify biodiversity assets

Identify biodiversity assets within the road reserve (on-site) or nearby (off-site) that may be affected by fire prevention works activities. This should be achieved by accessing a range of readily available information and a site inspection by someone who is able to identify biodiversity assets.

1. Refer to roadside conservation value maps, Roadside Management Plan, aerial photographs, Ecological Vegetation Class maps
2. Conduct an on-site inspection, seek assistance if necessary eg Council Environment department and or DSE Native Vegetation Officer, CMA.
3. Seek advice if unsure (as above)
4. Complete the biodiversity check list and record any other relevant site details (take photographs)

Biodiversity Asset-Check list	On-site yes/no	Off-site yes/no	Roadside conservation value H M L	EVC or Threatened species status
Native vegetation and habitats-Check list ☐ Individual trees ☐ Stands of trees ☐ Treeless grasslands ☐ Shrubs ☐ Groundcover, grasses, mosses ☐ Habitat features such as logs, dead trees, logs, rocks				
Threatened Species-Check list *Any species and habitats of local, regional, state or national importance* ☐ Plants ☐ Animals ☐ Habitats				
Wetlands-Check list *Any type of permanent or temporary wetland including areas subject to periodic flooding or connected to a floodplain* ☐ Wetland				
Waterways *Any river, stream, creek including the bed, banks and adjacent areas* ☐ Waterway				

Step 3: Identify potential impacts

This step identifies potential impacts (that could occur as part of the planned works or unintentionally) on biodiversity assets (see step 2) that could result from fire prevention works if no action is implemented to avoid impacts.

Potential impacts- Check list	**Including**
Native vegetation removed or damaged (including as a result of burning/spraying)	☐ Shrubs ☐ Saplings ☐ Trees ☐ Ground cover such as mosses and grasses ☐ Dumping or stockpiling spoil or other materials onto areas with native vegetation ☐ Removal of soil within the drip line area of trees ☐ Dumping spoil around trees ☐ Damage to trunks, branches and roots ☐ Parking, turning or other operation of machinery in areas of native vegetation ☐ Other
Loss or damage to habitats	☐ Reduction of roadside width ☐ Removal of dead standing trees ☐ Removal of logs, branches, rocks, leaf litter (including loss due to burning) ☐ General 'tidying up' by grading roadside edge, piling up fallen logs and branches ☐ Soil compaction due to operation of machinery off road ☐ Disturbance of wildlife corridors ☐ Other
Weed spread	Soil disturbance and baring the ground (including burnt and sprayed areas) ☐ Dumping spoil on roadsides ☐ Importation of materials containing weed seed ☐ Transportation of weed seed on vehicles ☐ Spreading of soil and other materials which may contain weed seed ☐ Other
Contamination from run-off and sediments	☐ Sediment and or nutrient run off into wetlands and waterways ☐ Dust ☐ Other
Altered drainage	☐ Artificial changes to water levels in wetlands ☐ Water ponding in roadside 'drains' ☐ Blockage of natural drainage lines ☐ Water logging ☐ Other

Step 4: Evaluating likelihood of impacts

Risk evaluation involves consideration of the likelihood of potential biodiversity impacts (see step 3) occurring if measures are not implemented to avoid them. Likelihood of impact should be considered for all stages of the works including on-going maintenance.

A key influence on the likelihood of impact is the proximity of biodiversity assets to the activities. In the case of works in road reserves biodiversity assets are often in close proximity to works activities (on-site).

Likelihood of impact	Check list
Unlikely	☐ Conservation value and native vegetation/species status information and mapping (see step 2) shows the works area is designated **low conservation** value and there are **no records of threatened species or vegetation types in the vicinity of the works area** ☐ On-site inspection shows that there is no native vegetation/habitats with the exception of few widely scattered trees and grasses which are not close to the road ☐ There are no wetlands or waterways in the vicinity of the works area ☐ Works and soil disturbance are only planned for the existing cleared area of the road formation ☐ Cleared areas are available for vehicle use including turning and parking ☐ The work area is relatively flat and no alteration to drainage is planned
Likely	☐ Check of conservation value and vegetation status information and mapping shows the works area is designated **moderate conservation value** and or there are **no records of threatened species or vegetation types in the vicinity of the works area** ☐ On-site inspection shows patches of native vegetation and habitat features that are not close to the road but works may works could occur within the drip line of trees ☐ The work area is in close proximity to a wetland, waterway or floodway ☐ Works and soil disturbance are planned for the existing cleared area of the road formation only ☐ Cleared areas are available for vehicle use including turning and parking ☐ The work area is relatively flat and no alteration to drainage is planned
Almost certain	☐ Check of conservation value and vegetation status information and mapping shows the works area is designated **moderate or high conservation value and or there are records of threatened species or vegetation types in close proximity to the works area** ☐ On-site inspection shows native vegetation and or habitat features occur across much of the area including close to the road edge ☐ Works and soil disturbance may be necessary outside the existing cleared area of the road formation ☐ Cleared areas for vehicle use including turning and parking are limited ☐ The work area could directly involve a wetland, waterway or floodway ☐ Works planned are in are in the vicinity of drains which could direct run-off to a wetland, waterway or floodway

Step 5: Risk mitigation

Mitigation involves the identification and implementation of appropriate minimal level measures to avoid potential impacts (step 3) or at least reduce the likelihood of impacts (step 4) to biodiversity assets (step 2) as a result of program activities (step 1). The following is only a guide, appropriate measures may be determined on a case by case basis.

Likelihood	Mitigation Measures-Check list
Unlikely	☐ All proposed works should be subject to environmental assessment ☐ Public enquires regarding proposals for fire prevention works on roads should be directed to Municipal Fire Prevention Officers and CFA Regional Officers for assessment and processing ☐ All fire prevention works in a road reserve must be in accordance with an approved Municipal Fire Prevention Plan and have consent from the responsible road authority ☐ Fire prevention works in a road reserve by a third party require consent of the road authority (*Road Management Act 2004)*. This is usually referred to as, a Consent for Works in a Road Reserve permit ☐ All works must comply with legislative controls and should be consistent with CFA guidelines and Council controls such as Roadside Management Plans
Likely	☐ All of the above plus the following ☐ Refer proposals to a DSE Native Vegetation Officer for advice if necessary ☐ Private fire prevention works should be located on private property ☐ If it is necessary, environmental conditions can and should be applied to any consent permit in order to protect and preserve existing significant roadside vegetation and sites of biological significance within the road reserve (*Road Management Act 2004)* ☐ Where necessary, ensure a written consent for works in a road reserve (permit) includes: • a description of defined works zone and methods to ensure works do not exceed limits and disturbance is minimised • conditions for use and movement of machinery on roadside • conditions for erosion/sediment control • conditions for follow up weed control • reference to identified biodiversity assets and conservation significance • reference to other compliance/permit requirements eg Planning Permit, Code of Practice, Roadside Management Plan
Almost certain	All of the above plus the following ☐ Look for alternative locations

4.4 Livestock movement and grazing

The activities associated with this program could occur in road reserves that may contain native vegetation and habitats for threatened species. Road reserves where the activities take place may also occur in close proximity to waterways and or temporary or permanent wetlands.

The following steps provide a guide to assessing and mitigating the risk of impact on biodiversity assets from activities associated with livestock movement and grazing in road reserves.

Step 1: Identify program and typical program activities

Program activities-Check list
☐ Movement of livestock
☐ Livestock grazing
☐ Operation of vehicles
☐ Other

Step 2: Identify biodiversity assets

Identify biodiversity assets within the road reserve (on-site) or nearby (off-site) that may be affected by livestock movement and grazing activities. This should be achieved by accessing a range of readily available information and a site inspection by someone who is able to identify biodiversity assets.

1. Refer to roadside conservation value maps, Roadside Management Plan, aerial photographs, Ecological Vegetation Class maps
2. Conduct an on-site inspection, seek assistance if necessary eg Council Environment department and or DSE Native Vegetation Officer, CMA.
3. Seek advice if unsure (as above)
4. Complete the biodiversity check list

Biodiversity Asset-Check list	On-site yes/no	Off-site yes/no	Roadside conservation value H M L	EVC or Threatened species status
Native vegetation and habitats-Check list ☐ Individual trees ☐ Stands of trees ☐ Treeless grasslands ☐ Shrubs ☐ Groundcover, grasses, mosses ☐ Habitat features such as logs, dead trees, logs, rocks				
Threatened Species-Check list *Any species and habitats of local, regional, state or national importance* ☐ Plants ☐ Animals ☐ Habitats				
Wetlands-Check list *Any type of permanent or temporary wetland including areas subject to periodic flooding or connected to a floodplain* ☐ Wetland				
Waterways *Any river, stream, creek including the bed, banks and adjacent areas* ☐ Waterway				

Step 3: Identify potential impacts

This step identifies potential impacts (that could occur as part of the planned activities or unintentionally) on biodiversity assets (see step 2) that could result from livestock movement and grazing activities if no action is implemented to avoid impacts.

Potential impacts- Check list	**Including**
Native vegetation removed or damaged	☐ Shrubs ☐ Saplings ☐ Trees ☐ Ground cover such as mosses and grasses ☐ Driving vehicles in areas of native vegetation ☐ Other
Loss or damage to habitats	☐ Soil compaction ☐ Disturbance and loss of leaf litter ☐ Disturbance of wildlife ☐ Other
Weed spread	☐ Soil disturbance and baring ground and or “pugging” the ground ☐ Transportation of weed seed on vehicles and stock ☐ Other
Contamination from run-off and sediments	☐ Sediment and or nutrient run off into wetlands and waterways ☐ Other
Altered drainage	☐ Damage to roadside ‘drains’ and natural drainage lines ☐ Water logging as a result of pugging ☐ Other

Step 4: Evaluating likelihood of impacts

Risk evaluation involves consideration of the likelihood of potential biodiversity impacts (see step 3) occurring if measures are not implemented to avoid them. Likelihood of impact should be considered for all aspects of the activities including on-going effects.

A key influence on the likelihood of impact is the proximity of biodiversity assets to the activities. In the case of works in road reserves biodiversity assets are often in close proximity to works activities (on-site).

Likelihood of impact	Check list
Unlikely	☐ Conservation value and vegetation status information and mapping shows the area is designated low conservation value and there are no records of threatened species or vegetation types in the vicinity ☐ Soil conditions are dry ☐ Cleared areas are available for vehicle use including turning and parking
Likely	☐ Check of conservation value and vegetation status information and mapping shows the works area is designated moderate conservation value and or there are no records of threatened species or vegetation types in the vicinity of the works area ☐ On-site inspection shows patches of native vegetation and habitat features ☐ Activities and soil disturbance may occur outside the existing cleared area of the road formation ☐ Soil conditions are dry ☐ Cleared areas are available for vehicle use including turning and parking
Almost certain	☐ Check of conservation value and vegetation status information and mapping shows the works area is designated moderate or high conservation value and or there are records of threatened species or vegetation types in close proximity to the works area ☐ On-site inspection shows native vegetation and or habitat features occur across much of the area ☐ Activities and soil disturbance may occur outside the existing cleared area of the road formation ☐ Cleared areas for vehicle use including turning and parking are limited ☐ The activity is in close proximity to a wetland, waterway or floodway ☐ Soil conditions are wet ☐ Vehicles could be driven off the road

Step 5: Risk mitigation

Mitigation involves the identification and implementation of appropriate minimal level measures to avoid potential impacts (step 3) or at least reduce the likelihood of impacts (step 4) to biodiversity assets (step 2) as a result of program activities (step 1). The following is only a guide, appropriate measures may be determined on a case by case basis.

Likelihood	Mitigation Measures-Check list
Unlikely	☐ Proposals for livestock movement and grazing on roads should be referred for environmental assessment and recommendations. Site conditions and conservation values should guide recommendations (see Section 4 for assessment check lists). Refer to DSE or others for advice if necessary ☐ Activities should be managed by a permit process which ensures activities are regulated. Livestock movement and grazing on roads is usually regulated within Local Government by Local Laws. There may also be requirements outlined in Council strategies such as Roadside Management Plans and legislation.
Likely	☐ Permit with conditions required ☐ The following are recommended as minimum requirements for livestock movement permits: • The use of roads for movement of livestock is minimised so far as is practicable (roads should not be used as an alternative to providing internal property access) • Livestock should be supervised by a person/s competent in the management of livestock • Livestock movement is avoided when ground conditions are wet to avoid pugging and compaction • Livestock are not to be driven on areas where there is native vegetation • Livestock must be moved promptly and not allowed to wander aimlessly • No supplementary feeding of stock in road reserves • Vehicles should not be driven on roadsides • Livestock should not remain in road reserves overnight • Where there are risks to biodiversity assets such as native vegetation and habitats the permit should include a brief statement to draw this to the attention of the applicant ☐ Grazing ☐ Ecological objectives should be the primary consideration for allowing grazing of livestock on roads with native vegetation and habitats. For example, timely reduction of introduced grasses ☐ Grazing of native vegetation and disturbance of habitats should not be undertaken if it is likely to contribute to a loss of vegetation and habitat quality ☐ Holding stock on a road for the purpose of grazing (where there is native vegetation) by the use of a temporary fence may require a Planning Permit (Planning and Environment Act 1987) ☐ Refer to DSE Native Vegetation Officer if necessary. ☐ If livestock grazing is allowed, permits should include minimum conditions such as: • Permits should have a maximum life of 28 days from the date of issue with

Likelihood	Mitigation Measures-Check list
	renewal subject to environmental inspection and approval (this is an aid to minimising overgrazing and ensuring compliance with conditions) • Appropriate precautions should be implemented to ensure no damage occurs to native trees and shrubs growing within the road reserve • Grazing should be avoided when ground conditions are wet to avoid pugging and compaction • In the event that livestock are causing damage, including where overgrazing occurs, they must be removed from the road reserve without delay • No supplementary feeding of stock in road reserves • Vehicles should not be driven on roadsides • Livestock should not remain in road reserves overnight
Almost certain	As above plus ☐ Apply special conditions to livestock movement if required ☐ Don't allow grazing unless it will certainly address ecological objectives

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4.5 Slashing and spraying

The activities associated with this program could occur in road reserves that may contain native vegetation and habitats for threatened species. Road reserves where the activities take place may also occur in close proximity to waterways and or temporary or permanent wetlands.

The following steps provide a guide to assessing and mitigating the risk of impact on biodiversity assets from activities associated with slashing and spraying.

Step 1: Identify program and typical program activities

The activities associated with this program occur in road reserves that may contain native vegetation and habitats for threatened species. Road reserves where the activities take place may also occur in close proximity to waterways and or temporary or permanent wetlands.

Program activity-Check list
☐ Slashing road shoulders and other areas for sight lines
☐ Spraying shoulders and drains
☐ Spraying weeds
☐ Operation of vehicles and machinery including turning and parking
☐ Ground disturbance

Step 2: Identify biodiversity assets

Identify biodiversity assets within the road reserve (on-site) or nearby (off-site) that may be affected by road construction and maintenance activities. This should be achieved by accessing a range of readily available information and a site inspection by someone who is able to identify biodiversity assets.

1. Refer to roadside conservation value maps, Roadside Management Plan, aerial photographs, Ecological Vegetation Class maps
2. Conduct an on-site inspection, seek assistance if necessary eg Council Environment department and or DSE Native Vegetation Officer, CMA.
3. Seek advice if unsure (as above)
4. Complete the biodiversity check list

Biodiversity Asset-Check list	On-site yes/no	Off-site yes/no	Roadside conservation value H M L	EVC or Threatened species status
Native vegetation and habitats-Check list ☐ Individual trees ☐ Stands of trees ☐ Treeless grasslands ☐ Shrubs ☐ Groundcover, grasses, mosses ☐ Habitat features such as logs, dead trees, logs, rocks				
Threatened Species-Check list *Any species and habitats of local, regional, state or national importance* ☐ Plants ☐ Animals ☐ Habitats				
Wetlands-Check list *Any type of permanent or temporary wetland including areas subject to periodic flooding or connected to a floodplain* ☐ Wetland				
Waterways *Any river, stream, creek including the bed, banks and adjacent areas* ☐ Waterway				

Step 3: Identify potential impacts

This step identifies potential impacts (that could occur as part of the planned works or unintentionally) on biodiversity assets (see step 2) that could result from road/roadside slashing and spraying activities if no action is implemented to avoid impacts

Potential impacts- Check list	**Including**
Native vegetation removed or damaged	☐ Shrubs ☐ Saplings ☐ Ground cover such as mosses and grasses ☐ Spray drift onto areas with native vegetation ☐ Disturbance of soil within the drip line area of trees ☐ Dumping spoil on areas with native vegetation ☐ Damage to trunks, branches and roots ☐ Parking, turning or other operation of machinery in areas of native vegetation ☐ Other
Loss or damage to habitats	☐ Disturbance logs, branches, leaf litter ☐ General 'tidying up' roadside ☐ Soil compaction due to operation of machinery off road ☐ Disturbance of wildlife corridors ☐ Other
Weed spread	☐ Soil disturbance and baring the ground ☐ Dumping spoil on roadsides ☐ Importation of materials containing weed seed ☐ Transportation of weed seed on vehicles ☐ Disturbance of soil and other materials which may contain weed seed ☐ Other
Contamination from run-off and sediments	☐ Sediment and or nutrient run off into wetlands and waterways ☐ Other
Altered drainage	☐ Blockage of natural drainage lines ☐ Other

Step 4: Evaluating likelihood of impacts

Risk evaluation involves consideration of the likelihood of potential biodiversity impacts (see step 3) occurring if measures are not implemented to avoid them. Likelihood of impact should be considered for all stages of the works including on-going maintenance.

A key influence on the likelihood of impact is the proximity of biodiversity assets to the activities. In the case of works in road reserves biodiversity assets are often in close proximity to works activities (on-site).

Likelihood of impact	Check list
Unlikely	☐ Conservation value and vegetation status information and mapping (see step 2) shows the works area is designated **low conservation value and there are no records of threatened species or vegetation types in the vicinity of the works area** ☐ On-site inspection shows that there is no native vegetation with the exception of few widely scattered trees and grasses which are not close to the road ☐ Works and soil disturbance are only planned for the existing cleared area of the road formation ☐ Cleared areas are available for vehicle use including turning and parking
Likely	☐ Check of conservation value and vegetation status information and mapping shows the works area is designated **moderate conservation value and or there are no records of threatened species or vegetation types in the vicinity of the works area** ☐ On-site inspection shows patches of native vegetation and habitat features that are not close to the road ☐ Works and soil disturbance are planned for the existing cleared area of the road formation only ☐ Cleared areas are available for vehicle use including turning and parking
Almost certain	☐ Check of conservation value and vegetation status information and mapping shows the works area is designated **moderate or high conservation value and or there are records of threatened species or vegetation types in close proximity to the works area** ☐ On-site inspection shows native vegetation and or habitat features occur across much of the area including close to the road edge ☐ Works and soil disturbance may be necessary outside the existing cleared area of the road formation ☐ Cleared areas for vehicle use including turning and parking are limited ☐ The work area is in close proximity to a wetland, waterway or floodway

Step 5: Risk mitigation

Mitigation involves the identification and implementation of appropriate minimal level measures to avoid potential impacts (step 3) or at least reduce the likelihood of impacts (step 4) to biodiversity assets (step 2) as a result of program activities (step 1). The following is only a guide, appropriate measures may be determined on a case by case basis.

Likelihood	Mitigation Measures-Check list
Unlikely	☐ It is very important for councils to ensure third parties are aware of the risks of potential impacts and requirements for mitigation measures to be implemented. Informed and cooperative arrangements are more likely to produce better outcomes ☐ For proposed works other than spot weed control using approved methods, landowners, contractors and others planning to conduct works that involve a road reserve, should seek written consent from the responsible road authority and comply with requirements ☐ Broad scale spraying targeting all ground cover vegetation should not be allowed on roadsides ☐ Councils should implement measures to deal with unauthorised works
Likely	☐ Proposals should be referred for environmental assessment and recommendations. Site conditions and conservation values should guide recommendations (see assessment check lists)
Almost certain	☐ Refer to DSE or others for advice if necessary ☐ Slashing works (other than mowing a nature strip) in a road reserve (for works by a third party) may require written consent of the responsible road authority (*Road management Act 2004*) ☐ Ensure written consent includes conditions to protect and preserve existing significant roadside vegetation and sites of biological significance within the road reserve: • reference to compliance with Codes of Practice, other guidelines, Roadside Management Plans (specify) • extent of works • defined works zone and methods to ensure works do not exceed limits • conditions for use and movement of machinery on roadside • responsibility for follow up weed control • other site specific ☐ All council spraying other than spot weed control should be confined to road shoulders using and complying with appropriate methods, codes of practice and other controls ☐ Spraying road shoulders where there is native ground cover is not recommended ☐ Machinery hygiene practices should be implemented.

4.6 Construction or repair of fence lines / property access

The activities associated with construction or repair of fence lines and property access could occur in road reserves that may contain native vegetation, habitats and threatened species. Road reserves where the activities take place may also occur in close proximity to waterways and or temporary or permanent wetlands.

The following steps and check lists provide a guide to assessing, evaluating and mitigating the risk of impact on biodiversity assets from activities associated with construction of property entrances and fence lines adjoining roadsides.

Step 1: Identify typical program activities

Program activities-Check list
☐ Construction of crossings, drainage and entrances for property access
☐ Providing sight distances
☐ Removal and or maintenance of existing fencing
☐ Construction of new fencing
☐ Removal and or lopping vegetation
☐ Operation of vehicles and machinery including turning and parking
☐ Ground disturbance
☐ Disposal of redundant fencing material and rubbish
☐ Other
☐ Site location and details

Step 2: Identify biodiversity assets

Identify biodiversity assets within the road reserve (on-site) or nearby (off-site) that may be affected by program activities. This should be achieved by accessing a range of readily available information and a site inspection by someone who is able to identify biodiversity assets.

1. Refer to roadside conservation value maps, Roadside Management Plan, aerial photographs, Ecological Vegetation Class maps
2. Conduct an on-site inspection, seek assistance if necessary eg Council Environment department and or DSE Native Vegetation Officer, CMA.
3. Seek advice if unsure (as above)
4. Complete the biodiversity check list and record any other relevant site details (take photographs)

Biodiversity Asset-Check list	**On-site yes/no**	**Off-site yes/no**	**Roadside conservation value H M L**	**EVC or Threatened species status**
Native vegetation and habitats-Check list ☐ Individual trees ☐ Stands of trees ☐ Treeless grasslands ☐ Shrubs ☐ Groundcover, grasses, mosses ☐ Habitat features such as logs, dead trees, logs, rocks				
Threatened Species-Check list *Any species and habitats of local, regional, state or national importance* ☐ Plants ☐ Animals ☐ Habitats				
Wetlands-Check list *Any type of permanent or temporary wetland including areas subject to periodic flooding or connected to a floodplain* ☐ Wetland				
Waterways *Any river, stream, creek including the bed, banks and adjacent areas* ☐ Waterway				

Step 3: Identify potential impacts

This step identifies potential impacts (that could occur as part of the planned works or unintentionally) on biodiversity assets (see step 2) that could result from fence construction and maintenance activities or construction of property entrances if no action is implemented to avoid impacts.

Potential impacts- Check list	**Including**
Native vegetation removed or damaged	☐ Shrubs ☐ Saplings ☐ Trees ☐ Ground cover such as mosses and grasses ☐ Dumping fencing rubbish or other materials onto areas with native vegetation ☐ Removal of soil within the drip line area of trees ☐ Dumping spoil around trees ☐ Damage to trunks, branches and roots ☐ Soil compaction eg parking, turning or other operation of machinery in areas of native vegetation ☐ Other
Loss or damage to habitats	☐ Removal of dead standing trees, logs, branches, rocks, leaf litter ☐ General 'tidying up' by removing or piling up fallen logs and branches ☐ Soil compaction due to operation of machinery off road ☐ Disturbance of wildlife corridors ☐ Dumping fencing rubbish and other materials onto the roadside ☐ Other
Weed spread	☐ Soil disturbance and baring the ground ☐ Dumping spoil on roadsides ☐ Transportation of weed seed on vehicles ☐ Spreading of soil and other materials which may contain weed seed ☐ Other
Contamination from run-off and sediments	☐ Sediment and or nutrient run off into wetlands and waterways as a result of activities eg soil disturbance ☐ Other
Altered drainage	☐ Blockage or alteration of drainage lines ☐ Other

Step 4: Evaluating likelihood of impacts

Evaluation involves consideration of the likelihood of potential biodiversity impacts (see step 3) occurring if measures are not implemented to avoid them. Likelihood of impact should be considered for all stages of the works including on-going maintenance. A key influence on the likelihood of impact is the proximity of biodiversity assets to the activities. In the case of works in road reserves biodiversity assets are often in close proximity to works activities (on-site).

Likelihood of impact	Check list
Unlikely	☐ Conservation value and vegetation status information and mapping (see step 2) shows the works area is designated **low conservation value and there are no records of threatened species or vegetation types in the vicinity of the works area** ☐ On-site inspection shows that there is no native vegetation with the exception of few widely scattered trees and grasses which are not close to the fence line or proposed access point ☐ Works and soil disturbance are only planned for existing cleared areas on the property side of the fence line only ie no vegetation clearing required and works/machinery will not encroach on the roadside ☐ Cleared areas are available for vehicle use including turning and parking ☐ The work area is relatively flat and no alteration to drainage is planned
Likely	☐ Check of conservation value and vegetation status information and mapping shows the works area is designated **moderate conservation value and or there are no records of threatened species or vegetation types in the vicinity of the works area** ☐ On-site inspection shows patches of native vegetation and habitat features that are not close to the fence line ☐ Works and soil disturbance are only planned for existing cleared areas of the of the fence line but may encroach on the roadside ☐ No vegetation clearing is required ☐ Cleared areas are available for vehicle use including turning and parking ☐ The work area is relatively flat and but alteration to drainage is planned eg for vehicle crossing
Almost certain	☐ Check of conservation value and vegetation status information and mapping shows the works area is designated **moderate or high conservation value and or there are records of threatened species or vegetation types in close proximity to the works area** ☐ On-site inspection shows native vegetation and or habitat features occur across much of the area including close to the fence line ☐ Works and soil disturbance may be necessary outside the existing cleared area of the property side of the fence line ☐ Machinery will gain access from the roadside ☐ Vegetation clearing is required ☐ Cleared areas for vehicle use including turning and parking are limited ☐ The work area is in close proximity to a wetland, waterway or floodway ☐ Alteration to drainage is planned eg for vehicle crossing

Step 5: Risk mitigation

Mitigation involves the identification and implementation of appropriate minimal level measures to avoid potential impacts (step 3) or at least reduce the likelihood of impacts (step 4) to biodiversity assets (step 2) as a result of program activities (step 1). The following is only a guide, appropriate measures may be determined on a case by case basis.

Likelihood	Mitigation Measures-Check list
Unlikely	☐ Inspect site and record site details (photograph) ☐ Ensure (preferably meet on site) the proponent of any works is aware of any issues, requirements and responsibilities ☐ Council consent-Fence line construction, maintenance works and installation of vehicle crossings/property entrances involving a road reserve require the written consent of the coordinating road authority (*Road Management Act 2004*). Council is usually the coordinating authority for undeclared roads ☐ Refer to VicRoads for declared roads and freeways
Likely	As above plus: ☐ If necessary environmental conditions can and should be applied to any consent in order to protect and preserve existing significant roadside vegetation and sites of biological significance within the road reserve ☐ Where necessary, ensure written consent for works in a road reserve (permit) includes: • extent and location of works • a description of defined construction zone and methods to ensure works do not exceed limits and disturbance is minimised • conditions for use and movement of machinery on roadside • condition for rubbish removal • conditions for erosion/sediment control • conditions for follow up weed control • reference to identified biodiversity assets and conservation significance ☐ Reference to other compliance/permit requirements eg Planning Permit, Code of Practice, Roadside Management Plan ☐ Refer to DSE Native Vegetation Officer for advice ☐ Determine if proposal requires removal/lopping of native vegetation in road reserve and ensure planning permit requirements are addressed (a permit requires a referral to DSE) ☐ Onus is on the proponent to demonstrate that options to avoid and minimise vegetation/habitat removal and soil disturbance have been considered where possible and adopted such as: • shift the crossing to another site • shift fence line (incentives may be available?) • slash grass along fence line rather than grading or ploughing • conduct works/machinery operation on property side of road reserve • other ☐ Ensure the proponent is aware of the potential for impacts, how to avoid them and their responsibility to implement actions (conditions of consent, permits) to mitigate impacts. ☐ Monitor works for compliance. Follow up non compliance
Almost certain	All of the above plus: ☐ Request a survey of boundary line if unclear (onus on proponent to provide a survey)

4.7 Roadside rehabilitation (revegetation and enhancement)

The activities associated with this program could occur in road reserves that may contain native vegetation and habitats for threatened species. Road reserves where the activities take place may also occur in close proximity to waterways and or temporary or permanent wetlands.

The following steps provide a guide to assessing and mitigating the risk of impact on biodiversity assets from roadside rehabilitation activities.

Step 1: Identify typical program activities

Program activities-Check list
☐ Ground preparation, ripping, ploughing
☐ Weed control
☐ Operation of vehicles and machinery including turning and parking
☐ Planting and or direct seeding
☐ Other
☐ Site location details

Step 2: Identify biodiversity assets

Identify biodiversity assets within the road reserve (on-site) or nearby (off-site) that may be affected by roadside rehabilitation activities. This should be achieved by accessing a range of readily available information and a site inspection by someone who is able to identify biodiversity assets.

1. Refer to roadside conservation value maps, Roadside Management Plan, aerial photographs, Ecological Vegetation Class maps
2. Conduct an on-site inspection, seek assistance if necessary eg Council Environment department and or DSE Native Vegetation Officer, CMA.
3. Seek advice if unsure (as above)
4. Complete the biodiversity check list

Biodiversity Asset-Check list	**On-site yes/no**	**Off-site yes/no**	**Roadside conservation value H M L**	**EVC or Threatened species status**
Native vegetation and habitats-Check list ☐ Individual trees ☐ Stands of trees ☐ Treeless grasslands ☐ Shrubs ☐ Groundcover, grasses, mosses ☐ Habitat features such as logs, dead trees, logs, rocks				
Threatened Species-Check list *Any species and habitats of local, regional, state or national importance* ☐ Plants ☐ Animals ☐ Habitats				
Wetlands-Check list *Any type of permanent or temporary wetland including areas subject to periodic flooding or connected to a floodplain* ☐ Wetland				
Waterways *Any river, stream, creek including the bed, banks and adjacent areas* ☐ Waterway				

Step 3: Identify potential impacts

This step identifies potential impacts (that could occur as part of the planned works or unintentionally) on biodiversity assets (see step 2) that could result from roadside rehabilitation activities if no action is implemented to avoid impacts.

Potential impacts- Check list	**Including**
Native vegetation removed or damaged	☐ Shrubs ☐ Saplings ☐ Trees ☐ Ground cover such as mosses and grasses ☐ Disturbance of soil ☐ Damage to trunks, branches and roots ☐ Parking, turning or other operation of machinery in areas of native vegetation ☐ Other
Loss or damage to habitats	☐ Removal of dead standing trees, logs, branches, rocks, leaf litter ☐ General 'tidying up' by piling up fallen logs and branches ☐ Soil disturbance and compaction due to operation of machinery off road ☐ Introduction of non-indigenous vegetation ☐ Changes to vegetation composition, structure and density ☐ Other
Weed spread	☐ Soil disturbance and baring the ground ☐ Transportation of weed seed on vehicles ☐ Introduction non-indigenous species ☐ Other
Contamination from run-off and sediments	☐ Sediment and or nutrient run off into wetlands and waterways ☐ Other
Altered drainage	☐ Changes to natural drainage lines

Step 4: Evaluating likelihood of impacts

Risk evaluation involves consideration of the likelihood of potential biodiversity impacts (see step 3) occurring if measures are not implemented to avoid them. Likelihood of impact should be considered for all stages of the works including on-going maintenance.

A key influence on the likelihood of impact is the proximity of biodiversity assets to the activities. In the case of works in road reserves biodiversity assets are often in close proximity to works activities (on-site).

Likelihood of impact	Check list
Unlikely	☐ Conservation value and vegetation status information and mapping (see step 2) shows the works area is designated **low conservation value** and there are **no records of threatened species or vegetation types in the vicinity of the works area** ☐ On-site inspection shows that there is no native vegetation with the exception of few widely scattered trees and grasses which are not close to the proposed works ☐ Works and soil disturbance are only planned for existing cleared areas ie no native vegetation ☐ Cleared areas are available for vehicle use including turning and parking ☐ The work area is relatively flat and no alteration to drainage is planned
Likely	☐ Check of conservation value and vegetation status information and mapping shows the works area is designated **moderate conservation value** and or there are **no records of threatened species in the vicinity of the works area** ☐ On-site inspection shows patches of native vegetation and habitat features ☐ Works and soil disturbance are only planned for existing cleared areas but may encroach on areas with native vegetation and habitats ☐ Cleared areas are available for vehicle use including turning and parking ☐ The work area is relatively flat and no alteration to drainage is planned
Almost certain	☐ Check of conservation value and vegetation status information and mapping shows the works area is designated **moderate or high conservation value and or there are records of threatened species or vegetation types in close proximity to the works area** ☐ On-site inspection shows native vegetation and or habitat features occur across much of the area including to the vicinity of the proposed works area ☐ Works and soil disturbance may be necessary outside the existing cleared area ☐ Machinery will need gain access ☐ Native vegetation clearing is required ☐ Cleared areas for vehicle use including turning and parking are limited ☐ The work area is in close proximity to a wetland, waterway or floodway

Step 5: Risk mitigation

Mitigation involves the identification and implementation of appropriate minimal level measures to avoid potential impacts (step 3) or at least reduce the likelihood of impacts (step 4) to biodiversity assets (step 2) as a result of program activities (step 1). The following is only a guide, appropriate measures may be determined on a case by case basis.

Likelihood	Mitigation Measures-Check list
Unlikely	☐ Inspect site and record details (photograph) ☐ Roadside revegetation works involving a road reserve require the written consent of the coordinating road authority (*Road Management Act 2004*). ☐ Ensure compliance with roadside management plans, roadside revegetation guidelines ☐ Use only indigenous species of the appropriate vegetation type for the site ☐ Ensure follow up weed control
Likely	☐ As above plus the following: ☐ Refer to DSE Native Vegetation Officer or others for advice ☐ Review and adjust layout and revegetation methods to minimise disturbance ☐ Avoid areas of native vegetation (especially ground cover) and habitats ☐ Identify and mark areas to be avoided on-site ☐ Ensure written consent for works in a road reserve (for works by a third party) includes environmental conditions in order to protect and preserve existing significant roadside vegetation and sites of biological significance within the road reserve: ● reference to compliance with revegetation guidelines (specify) ● extent of works ● defined works zone and methods to ensure works do not exceed limits ● conditions for use and movement of machinery on roadside ● conditions for rubbish removal ● other site specific ☐ Produce an environmental management plan for the site and proposed works. Include mitigation measures and allocate responsibilities for implementation and actions ☐ Monitor for compliance
Almost certain	☐ As above plus the following: ☐ Relocate to another site where loss or damage to native vegetation and habitats can not be avoided

4.8 Firewood collection

The activities associated with this program could occur in road reserves that may contain native vegetation and habitats for threatened species. Road reserves where the activities take place may also occur in close proximity to waterways and or temporary or permanent wetlands.

The following steps provide a guide to assessing and mitigating the risk of impact on biodiversity assets from activities associated with firewood collection roadsides.

Step 1: Identify program (works) and typical activities

Program activities-Check list
☐ Removal of fallen timber
☐ Operation of vehicles and machinery including turning and parking
☐ Other

Step 2: Identify biodiversity assets

Identify biodiversity assets within the road reserve (on-site) or nearby (off-site) that may be affected by firewood collection activities. This should be achieved by accessing a range of readily available information and a site inspection by someone who is able to identify biodiversity assets.

1. Refer to roadside conservation value maps, Roadside Management Plan, aerial photographs, Ecological Vegetation Class maps
2. Conduct an on-site inspection, seek assistance if necessary eg Council Environment department and or DSE Native Vegetation Officer, CMA.
3. Seek advice if unsure (as above)
4. Complete the biodiversity check list

Biodiversity Asset-Check list	**On-site yes/no**	**Off-site yes/no**	**Roadside conservation value H M L**	**EVC or Threatened species status**
Native vegetation and habitats-Check list ☐ Individual trees ☐ Stands of trees ☐ Treeless grasslands ☐ Shrubs ☐ Groundcover, grasses, mosses ☐ Habitat features such as logs, dead trees, logs, rocks				
Threatened Species-Check list *Any species and habitats of local, regional, state or national importance* ☐ Plants ☐ Animals ☐ Habitats				
Wetlands-Check list *Any type of permanent or temporary wetland including areas subject to periodic flooding or connected to a floodplain* ☐ Wetland				
Waterways *Any river, stream, creek including the bed, banks and adjacent areas* ☐ Waterway				

Step 3: Identify potential impacts

This step identifies potential impacts (that could occur as part of the planned works or unintentionally) on biodiversity assets (see step 2) that could result from domestic firewood collection activities if no action is implemented to avoid impacts.

Potential impacts- Check list	**Including**
Native vegetation removed or damaged	☐ Parking, turning or other operation of machinery/vehicles in areas of native vegetation Removal or damage to: ☐ Shrubs ☐ Saplings ☐ Trees ☐ Ground cover such as mosses and grasses ☐ Other
Loss or damage to habitats	☐ Removal of dead trees, logs, branches ☐ Loss of hollows ☐ Soil compaction due to operation of vehicles off road ☐ Disturbance of wildlife ☐ Other
Weed spread	☐ Soil and ground cover disturbance ☐ Transportation of weed material on vehicles ☐ Other
Contamination from run-off and sediments	☐
Altered drainage	☐

Step 4: Evaluating likelihood of impacts

Risk evaluation involves consideration of the likelihood of potential biodiversity impacts (see step 3) occurring if measures are not implemented to avoid them. Likelihood of impact should be considered for all stages of the works including on-going maintenance.

A key influence on the likelihood of impact is the proximity of biodiversity assets to the activities. In the case of works in road reserves biodiversity assets are often in close proximity to works activities (on-site).

Likelihood of impact	Check list
Unlikely	☐ Conservation value and vegetation status information and mapping (step 2) shows the works area is designated **low conservation value and there are no records of threatened species or vegetation types in the vicinity of the works area** ☐ Vehicles are not driven off road ☐ Cleared areas are available for vehicle use including turning and parking
Likely	☐ Conservation value and vegetation status information and mapping shows the works area is designated **moderate conservation value and there are no records of threatened species or vegetation types in the vicinity of the works area** ☐ Habitat features such as fallen logs and branches will be removed ☐ Vehicles may be driven off road
Almost certain	☐ Conservation value and vegetation status information and mapping shows the works area is designated **moderate or high conservation value and or there are records of threatened species or vegetation types in close proximity to the works area** ☐ Habitat features such as fallen logs and branches will be removed ☐ Vehicles may be driven off road

Step 5: Risk mitigation

Mitigation involves the identification and implementation of appropriate minimal level measures to avoid potential impacts (step 3) or at least reduce the likelihood of impacts (step 4) to biodiversity assets (step 2) as a result of program activities (step 1). The following is only a guide, appropriate measures may be determined on a case by case basis.

Likelihood	Mitigation Measures-Check list
Unlikely	☐ Removal of fallen timber from road reserves for firewood is not recommended unless there is a demonstrated requirement to address management objectives ☐ Proposals to remove timber from roadsides should be subject to an environmental assessment and conditions (except in an emergency where works should be to the minimum extent necessary) ☐ It is very important for Councils to ensure their staff and third parties are aware of the risks of potential impacts and require mitigation measures to be implemented. Informed and cooperative arrangements are more likely to produce better outcomes
Likely	As above plus ☐ Where management objectives deem it necessary to reduce the mass of fallen timber in a road reserve, the work should preferably be directly managed by Councils and subject to environmental works procedures to minimise impacts ☐ Where emergency/essential or other works have caused unavoidable impacts such as ground disturbance rehabilitation works such as weed control should be implemented ☐ If Councils devolve this work to others such as contractors or individuals the works should be regulated, carefully managed and monitored to reduce biodiversity impact risks ☐ Environmental management compliance conditions and requirements should be included in contracts and contracts made aware of this ☐ Firewood collection or removal of windfall in a road reserve by a third party would fall within the broad definition of works (*Road management Act 2004)*, requiring written consent of the road authority. This is usually referred to as, a Consent for Works in a Road Reserve permit. ☐ Environmental conditions can and should be applied to any written consent for works in order to protect and preserve existing significant roadside vegetation and sites of biological significance within the road reserve. ☐ Where necessary, ensure a written consent for works in a road reserve (permit) at least includes: • clearly defined location of works • extent and limits of timber approved to be taken • conditions restricting use and movement of machinery/vehicles on roadside • conditions to prohibit piling and or burning remaining woody debris (tidying up) • conditions prohibiting felling of live or dead trees • reference to other compliance/permit requirements such as 'in addition to Council consent a Firewood Permit from the Department of Sustainability and Environment is required'

Likelihood	Mitigation Measures-Check list
	• reference to the conservation significance of the works area and potential environmental risks and a requirement that the proponent must avoid impacts • conditions prohibiting rubbish dumping including garden rubbish, prunings ☐ If areas are subject to firewood collection or windfall removal they should be recorded and monitored for environmental impact. Where unacceptable impacts occur the activities should be stopped ☐ Councils should develop and implement processes to discourage unauthorised works for removal of timber in road reserves ☐ DSE permit is required ☐ Require written permission from council ☐ Ensure compliance with Local Laws, Council strategies, Roadside Management Plans
Almost certain	As above

Appendix A - Biodiversity Risk Management Reference Group Participants

Benalla Rural City Council
Bianca Woolley, Environmental Technical Officer

Campaspe Shire Council
Sally Dickinson, Conservation Officer

Greater Shepparton City Council
Marisa O'Halloran, Sustainability and Environment Officer
Tracy Taylor, Sustainability and Environment Facilitator
Ann Roberts, Sustainability and Environment Officer

Mansfield Shire Council
Suzie Healy, Environment Officer
Melanie Haddow, Acting Environment Officer

Mithchell Shire Council
Ray Laan, Environmental Projects Officer
Vivian Pasic, Senior Environmental Officer

Moira Shire Council
Paula Tovey, Manager Environment
Gary Deayton, Environmental Projects Coordinator

Murrindindi Shire Council
Larry Kelly, Asset Development Coordinator

Strathbogie Shire Council
Steven Hicks, Town Planner
Heather Bradbury, Environmental Sustainability

Goulburn-Broken Catchment Manaagement Authority
Tim Barlow, Biodiversity Programs Manager
Jim Castles, Conservation Management Network Coordinator
Casey Damen, Regional NRM Coordinator
Colin James and Rachel Spokes, Municipal Catchment Coordinators

Department of Sustainability and Environment
Jenny Wilson, Biodiversity Projects Officer
Jill Fleming and Matt Looby, Native Vegetation Officers

VicRoads
Mike Kerr, Environmental Officer North East Region

Guest presenters:
John Boal, CFA Manager Community Safety North East Area
Ben Goonan, North Central CMA
Victoria Mack, adult education, environment and planning consultant, Land Connect Australia
Patrick Connor, Civil Engineer and environmental consultant

Appendix B - Training Program Options

Environmental management and works planning for roadsides

Introduction
The RBRMP project reference group identified specialised training as an important element of roadside biodiversity risk management. It was also considered that there was a need for a range of training program options to assist and encourage progressive skills development. Subsequently the reference group worked with training provider Land Connect[6] to develop several training program outlines covering environmental planning and management for roadsides. Emphasis was given to learning practical roadside management practices through the use of case studies and field trips. This approach provides the opportunity to adapt the course delivery to specific council issues, sites etc. The programs are aimed at anyone involved in local government (and others) who may have some role in environmental management.

Land Connect then developed accredited training course packages covering the training program outlines developed with the reference group. The courses and agendas are described in the following pages.

[6] Land Connect Australia Pty Ltd, Registered Training Organisation No. 6801

Course 1

This course is a very good introduction to environmental management and works planning for roadsides. It provides participants with a general awareness and background to environmental factors, management issues, work practices and planning. The emphasis of the course agenda and delivery is on practical applications, case studies and field demonstration.

Environmental Works Planning

Covers: Certificate II in Conservation and Land Management:

Unit of Competency: RTC2702A Observe environmental work practices

As part of the accreditation procedure, participants will be assessed during the course. Assessment procedures will be clearly explained at the commencement of the day.

Duration:	One day including a field trip.
Principal Trainer:	Patrick Connor, civil engineer and environmental consultant
Trainer/Assessor:	Victoria Mack, Land Connect Australia

Who should attend?
This course is specifically designed for Council staff involved with roadside management issues and others involved in road works including:

- Contract managers, planners, customer service, environmental engineers, supervisors, rangers, parks and gardens and outdoor staff, grader drivers, backhoe operators, environmental officers and road maintenance crews;
- Earth moving contractors and road making contractors,
- VicRoads staff; Shire councillors and senior managers.

One and a half day program*

*This course can also be presented as a shorter one day program

DAY 1

7.45am **Introduction**
Presenters and participants
Course content
Participant expectations

8.15am **Overview of ecosystem function**
How natural systems function
- complexity and interactions
- interconnection with adjoining landscape
- fragmentation and simplification

What benefits natural systems provide
- usable water, air, food etc
- sustainability

What is biological diversity?

What links biological diversity and sustainability

What are biodiversity assets?

- remnant vegetation and habitat
- vegetation corridors
- threatened species
- wetlands
- waterways

How do roadsides relate to biodiversity and sustainability?

- often only remaining remnants
- quality native vegetation and habitats
- wildlife habitat and corridors
- framework for landscape restoration
- seed source / genetic pool
- salinity control
- reduced wind speed
- enhanced water quality
- amenity and landscape values
- Interconnection with adjoining landscape

9.20am **Native vegetation and habitat**

- More than just trees
- tree stresses
- groundcover/grasslands
- difficulty of replacement
- habitat-many components

9.45am **Morning tea**

10.00am **Managing works in road reserves**

Need to manage multiple functions/uses/demands

- Roads
- Environment
- Third party activities
- etc

10.15am **Weed management**

- characteristics of weeds
- reducing the spread of weeds
- controlling weeds

10.40am **Erosion, siltation and water quality**

- drain profiles
- water velocity
- Q = AV
- effects of turbidity
- effects of vegetation

10.50am **Planning works**

Identify works activities for planned works
- what needs to be done
- alternative techniques

Identify biodiversity assets that may be affected
- what to look for
- what information is available

Identify potential impacts of proposed works
- effects on biodiversity assets eg tree stresses, loss of groundcover, etc

Assess likelihood of potential impacts

Identify measures to address potential impacts
- communication/consultation
- permit requirement
- Implement codes of practice and work procedures
- minimum disturbance - only do what has to be done
- water quality - effects on waterways or wetlands
- selection of machinery
- limits of works - contain all activities to the work site
- turning and parking areas and stockpile locations
- signage
- effects of disturbance, drain forming
- weeds
- plant and equipment hygiene
- controlling imported materials

Implementation plan for adopted measures
- assign responsibility
- monitor

11.30am **Case study 1 (introduction to check lists)**
Group analysis of proposed roadside rehabilitation works scenario
Application of management process and check lists to proposed works

12.15noon **Lunch**

1.00pm **Field trip**
Practical field identification of biodiversity assets (use check list)

Review and discuss on site
- native vegetation and habitats
- weeds and management
- erosion, siltation, water quality

Gather information for case studies scenarios (use check lists and notes)
- what works are planned
- identify potential impacts
- assess likelihood of impacts
- identify measures to avoid potential impacts

3.00pm **Afternoon tea**

3.15pm **Discussion**

Examples of works that can adversely affect biodiversity assets

- road construction and maintenance
- roadside rehabilitation
- fire prevention works
- slashing and spraying
- firewood collection
- livestock movement and grazing
- road reserve boundary fencing and property access

3.30pm **Application of checklists to field trip sites**

4.00pm **Finish**

DAY 2

8.00am **Review of day 1**

8.15am **Case study 2**
Group analysis of slashing and spraying works

Application of management process to proposed works

- analysis of potential impacts
- practical mitigation measures/practices

9.30am **Legislative context**

- Planning and Environment Act – Native Vegetation Retention Controls
- Road Management Act
- Aboriginal Heritage Act
- Environment Protection and Biodiversity Conservation Act
- Flora and Fauna Guarantee Act
- Victoria's Native Vegetation Management – a framework for action
- State Biodiversity Strategy
- Catchment and Land Protection Act

10.00am **Morning tea**

10.20am **Case study 3 and assessment**
Application of management process to proposed works from field trip site

Issues to be considered.

- identification of biodiversity assets: native plants, waterways, wetlands, habitat values
- Identification of biodiversity liabilities: weeds, development pressure, clearing and fragmentation
- other environmental issues
- cultural issues identified

- planning/permit issues resolved
- road safety requirements
- Implementation plan for mitigation measures adopted
- defining limits of works
- locating parking and turning areas
- stockpile locations
- plant and equipment hygiene
- drainage, erosion, siltation and water quality
- pruning trees / debris removal
- slashing / timing to suit seed set
- pest plants and animals / off target damage
- monitoring of adherence to planning permit requirements
- reporting mechanisms - responsibility
- communication
- Case study assignments to be completed and handed in

12.30pm **Lunch and finish**

Course 2

This course supplements the introductory and general awareness environmental management and works planning for roadsides courses. It provides participants with the opportunity to refresh their knowledge and learn advanced skills in environmental assessment, management and works planning. The emphasis of the course agenda and delivery is on developing practical applications through the use of case studies, field assessment, communications and teamwork.

Environmental Works Planning - Supplementary (Refresher) course

Covers: Certificate III in Conservation and Land Management:

Unit of Competency: RTC3218A Undertake site assessment

As part of the accreditation procedure, participants will be assessed during the course. Assessment procedures will be clearly explained at the commencement of the day.

Duration:	One day including a field trip.
Principal Trainer:	Patrick Connor, civil engineer and environmental consultant
Trainer/Assessor:	Victoria Mack, Land Connect Australia

Who should attend?
This course is specifically designed for Council staff involved with roadside management issues and others involved in road works including:

- Contract managers, planners, customer service, environmental engineers, supervisors, rangers, parks and gardens and outdoor staff, grader drivers, backhoe operators, environmental officers and road maintenance crews;
- Earth moving contractors and road making contractors,
- VicRoads staff; Shire councillors and senior managers.

Prerequisite – ideally participants should have already attended a general awareness course

ONE-DAY PROGRAM

Participants to be provided with a folding chair for the field trip

Lunch to be arranged at local hotel on route.

7.45am **Introduction**
Enrolment, completion of participant details: current role and qualifications
Presenters and participants
Course content
Participant expectations

8..00am **Overview / refresher session**
Identify purpose for the site assessment (RTC3218A Element 1):
Ecosystem function
How natural systems function
What benefits natural systems provide

What is biological diversity?
What links biological diversity and sustainability
What are biodiversity assets?
How do roadsides relate to biodiversity and sustainability?
Native vegetation and habitat
Managing works in road reserves
Legislative context
Need to manage multiple functions/uses/demands
Weed management
Erosion, siltation and water quality

9.30am **Morning tea**

9.45am **Environmental Works Planning Checklist**
Work through key elements of the checklist
Discussion

10.15am **Travel to Case Study 1 site**

10.40am **Case Study site 1 - Planning works – Reference EWP Checklist**
Collect relevant base information (RTC3218A Element 2);
Prepare for site visit (RTC3218A Element 3)
Undertake site inspection (RTC3218A Element 4)

1. Identify works activities for planned works
   - what needs to be done
   - alternative techniques
2. Identify biodiversity assets that may be affected
   - what to look for
   - what information is available
3. Identify potential impacts of proposed works
   - effects on biodiversity assets eg tree stresses, loss of groundcover, etc
4. Evaluate likelihood of potential impacts
5. Identify measures to address potential impacts (risk mitigation)
   - communication/consultation
   - permit requirement
   - Implement codes of practice and work procedures
   - minimum disturbance - only do what has to be done
   - water quality - effects on waterways or wetlands
   - selection of machinery
   - limits of works - contain all activities to the work site
   - turning and parking areas and stockpile locations
   - signage
   - effects of disturbance, drain forming
   - weeds
   - plant and equipment hygiene
   - controlling imported materials

6. Implementation plan for adopted measures, monitoring and reporting
- assign responsibility
- monitor

11.45am **Travel to lunch venue**

12.00noon **Lunch at local hotel or café on route**

12.45pm **Travel to Case Study 2 site**
Repeat steps 1. – 6. As in Case Study 1

2.00pm **Travel to Case Study 3 site**
Repeat steps 1. – 6. As in Case Study 1

3.15pm **Return to main venue**

3.30pm **Afternoon tea**

3.45pm **Case study assessment**
Document information (RTC3218A Element 5)
In three groups choose one case study site each to be written up for assessment. Use case study assessment sheets provided

Issues to be considered include:
- identification of biodiversity assets: native plants, waterways, wetlands, habitat values
- Identification of biodiversity liabilities: weeds, development pressure, clearing and fragmentation
- other environmental issues
- cultural issues identified
- planning/permit issues resolved
- road safety requirements
- Implementation plan for mitigation measures adopted
- defining limits of works
- locating parking and turning areas
- stockpile locations
- plant and equipment hygiene
- drainage
- erosion, siltation and water quality
- pruning trees / debris removal
- slashing / timing to suit seed set
- pest plants and animals / off target damage
- monitoring of adherence to planning permit requirements
- reporting mechanisms - responsibility
- communications

Case study assignments to be completed and handed in

4.30pm **Report back from groups 1 – 3.**
Concluding remarks by trainers
Thanks and acknowledgements

5.00pm **Close**

Course 3

This course provides participants with the opportunity gain skills and a qualification in developing environmental management plans (EMP) with a focus on roadsides. The emphasis of the course agenda and delivery is on developing practical EMP applications through the use of case studies and individual site plans.

Environmental Management Plan (EMP)

Duration: 3 months, 4 – 5 days intensive training plus online support

Principal Trainer: Patrick Connor, civil engineer and environmental consultant

Trainer/Assessor: Victoria Mack, Land Connect Australia

Assessment: Each participant will develop an EMP for their nominated project. The final EMP forms the basis of the assessment, along with attendance and participation during the program.

Covers: Certificate 5 in Conservation and Land Management:

Unit of Competency: RTC5504A Develop a management plan for a designated area

Elements:

- *Define the need for a management plan;*
- *Undertake preliminary planning activities;*
- *Prepare a site description;*
- *Analyze site information and description;*
- *Identify management strategies;*
- *Prepare the management plan.*

Course Content:

- Introduction to EMP - content processes;
- Using the EMP templates;
- Legislative and strategic context;
    - Setting objectives;
- Risk assessment and processes, consequences;
- Mechanisms for controlling identified risk:
    - Types and location of environmental protection measures;
    - Designs of environmental protection measures and structures;
    - Standard drawings;
- Site Specific EMP aspects;
    - Management;
    - Noise pollution;
    - Dust suppression;
    - Erosion and sediment control;
    - Waste management and site contamination;
    - Chemicals;
    - Native vegetation and fauna;
    - Use of resources
    - Air quality;
    - Cultural heritage;
    - Water quality and waterway protection;

  - Landscaping and rehabilitation;
- Communication with clients, stakeholders and operations;
- Monitoring and record keeping;
  - Establishing parameters, measuring mechanisms and record keeping;
- Using checklists:
  - EMP development checklist;
  - EMP site checklist;
- Auditing
- Completing the plan.

Indicative program plan

Day 1	Day 2	Day 3	Day 4	Day 5 (Optional)
Introduction Environmental Management Planning processes and content	EMP theory – recap Day 1 theory	Site visit	Site visit	Site visit
Using the EMP templates	Site visit	Site visit	Site visit	Site visit
Legislative and strategic context	Site visit	Site visit	Site visit	Site visit
Communication - client consultation - stakeholder analysis	Site visit	Refining the EMP - timelines	Discussion - issues	Implementing the EMP
Risk assessment processes	Discussion – issues	Issues and problem analysis	Monitoring and record keeping	Communication
Site Specific EMP aspects	Report back – participants case study selection - issues	Risk analysis	EMP development issues	Participant presentations
Monitoring and record keeping	Report back – participants case study selection - issues	Resource management	EMP development issues	Participant presentations
Assessment 1 – EMP case study analysis	Report back – participants case study selection - issues	Landscape issues	Refining EMP processes	Participant presentations
Case study selection criteria	Planning the EMP – using the template	Site planning	Individual plans	Participant presentations

Course 4

This short course provides the opportunity to review the implementation of environmental work practices and encourages continuous improvement.

Environmental Audit of Roadsides

Half day including a field trip.

Principal Trainer: Patrick Connor, civil engineer and environmental consultant

This audit is specifically designed for staff involved with roadside management issues and other road workers including:

- Contract managers, planners, environmental engineers, supervisors, rangers, parks and gardens staff, grader drivers, backhoe operators, environmental officers and road maintenance crews;
- Earth moving contractors and road making contractors.

The aim of the audit is to ascertain improvements in work methods achieved from previous training sessions and to highlight areas for further improvement.

Half Day Program

12.30pm **Lunch and introduction**
What the audit will cover.
Expectations of participants?

1.00pm **Audit of Council work site.**
Assess site using checklist provided.

2.00pm **Audit of Contractor work site.**
Assess site using checklist provided.

3.00pm **Afternoon tea**

3.30pm Debrief and discussion.

Analyse where improvements can be effected:

- planning
- process
- communication
- design
- specification
- supervision
- training
- contracting
- execution
- post works monitoring

4.30pm Finish