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Baw Baw Shire Council

Roadside Conservation Management Plan 2014

BAW BAW SHIRE COUNCIL

ROADSIDE CONSERVATION MANAGEMENT PLAN 2014

Acknowledgements

Baw Baw Shire Council would like to acknowledge the contribution of Nillumbik Shire Council and Practical Ecology Pty Ltd in the production of this plan.

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This publication is intended to be of assistance to all people involved in the management of roadsides, but the Baw Baw Shire Council, its employees and consultants, do not guarantee that the publication is without flaw of any kind or that it is wholly appropriate for the particular purposes of individuals, and therefore disclaim any liability for any error, loss or other consequences which may arise from reliance on any information in this publication.

EXECUTIVE SUMMARY

Roadsides within Baw Baw Shire have multiple values, including providing safe and efficient function of the carriageway, an alignment for utility networks, opportunities for fire risk management as well as some unique ecological, cultural and recreational values.

Management of these values can often cause conflict where there are competing objectives. This Roadside Conservation Management Plan has been prepared to identify the unique values of roadsides within the Shire and respond to the management issues associated with maintaining these values. The plan explores roadside management in a context of proper function of the roads and their reserves and the associated utility networks.

Baw Baw Shire Council's former Roadside Management Plan was last revised in 2007. The Country Fire Authority, Department of Environment and Primary Industries (formerly Department of Sustainability and Environment), Service Authorities, Friends Groups, community members and Council staff provided input to its preparation. This Roadside Conservation Management Plan incorporates updated conservation mapping, changes to legislative and policy, and more explicit operational guidelines aimed at protecting conservation values.

The Plan consists of two parts:

Part 1: Background and context deals with the broader context, values, legislation and management issues associated with roadsides and their management. It also covers policy and functions relevant to roadsides and presents clear management objectives.

Part 2: Operational guidelines are primarily concerned with construction and maintenance works on roadsides. It does so by considering the issues identified in Part 1 and through the provision of guidelines relevant to specific management requirements.

The Plan is a document subject to ongoing review. Council, the community and agencies and authorities with responsibilities in the Shire are continuously adding to the knowledge required to effectively manage roadsides in Baw Baw Shire. Council welcomes community input into the background information which supports the Plan and in contributing to the implementation of the Plan.

BAW BAW SHIRE COUNCIL ROADSIDE CONSERVATION MANAGEMENT PLAN

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1 INTRODUCTION

1.1 Background

Baw Baw Shire Council is responsible for the management and maintenance of approximately 3,498 kilometres of roadsides (1749kms of roads). The *Road Management Act 2004* defines roadsides as:

‘any land that is within the boundaries of a road (other than the shoulders of the road) which is not a roadway or a pathway and includes the land on which any vehicle crossing or pathway which connects from a roadway or pathway on a road to other land has been constructed’

This Plan focuses on the management and maintenance of rural roadsides, which are different to urban footpaths and nature strips and thereby require different management approaches.

Baw Baw Shire Council’s former Roadside Management Plan was last revised in 2007 (Baw Baw Shire Council, 2007). This Roadside Conservation Management Plan will focus on balancing the often competing interests on roadsides between human safety, fire risk, vegetation management and ensuring a safe and efficient transport network and utility corridor.

This Plan contains updated information regarding the environmental values of roadsides in Baw Baw Shire based on revised conservation mapping undertaken in 2014. This information provides guidance to Council about the implementation of operational guidelines to protect the more valuable of these roadside reserves.

This Plan incorporates operational guidelines to ensure that works activities do not adversely impact the values of roadsides.

In this regard, the Plan has been divided into two parts:

Part 1 - Background and policy: deals with the broader context, values, legislation and management issues associated with roadsides and their management within the Shire. It also covers policy and functions relevant to roadsides and presents clear management objectives.

Part 2 - Operational guidelines: establishes guidelines for construction and maintenance works on road reserves.

This Plan forms part of a suite of documents relating to the management of Council land and assets and should be used in conjunction with the *Municipal Fire Management Plan*, the *Road Management Plan*, the *Weed Management Strategy* and other complementary strategies.

NB: As the life of this document will surpass that of other Baw Baw Shire documents, any reference to such documents will not include the year of publication. It is the intention that all references pertain to the most current version.

1.2 Council's Responsibilities for Roadsides

The management of roadsides is complex, especially when accounting for seemingly competing community needs. This Plan identifies the following key responsibilities for roadside management:

1. Road safety and vehicle movement

Council has a responsibility under the *Road Management Act 2004*, to enable the passage of vehicles in a variety of road conditions. Roadsides may contain potential hazards which may be struck by vehicles leaving the road or which obstruct the visibility of drivers. Similarly, vegetation or wildlife may come onto the road, creating additional hazards (VicRoads 2011).

A key objective of this plan is to minimise the potential for roadsides to adversely impact the safety of the road. Council needs to manage vegetation in road reserves so that the risk of blockage from falling trees can be mitigated. However, it is recognised that mitigation of risk will not cover all circumstances and that in storm events trees will blow over and occasionally roads will be impacted.

Removal of obviously hazardous trees is undertaken on a priority basis but it is apparent that many trees, which appear healthy and stable, can be blown over or drop limbs in strong winds. Council also needs to ensure that signage located on the road reserve is visible to road users.

2. Protection of environmental values

Some roadsides represent the last fragments of remnant vegetation in areas where adjacent private property has been cleared for agricultural or other purposes. In Baw Baw Shire a considerable number of roadside reserves have been assessed as having Medium or high conservation significance.

Council has a responsibility to ensure that these roadsides are managed appropriately to retain their conservation value. It is important therefore, to ensure that these reserves continue to exist and that their important flora is maintained and not compromised by other activities that attempt to attain other objectives.

There is a need for engagement and coordination with other organisations and utilities to ensure that roadside works take into account environmental values. In the event that fire prevention works are required, an assessment that considers both fire prevention and conservation values should be carried out.

3. Managing fire risks

In some cases, roadside vegetation can play an important role in Council's integrated fire management planning process. It is important that roadsides are assessed in the wider context of the local landscape and that fuel management objectives balance community safety with environmental protection. Roadside assessments must be made in cooperation with other government agencies to ensure that fuel reduction work is strategic, effective and targeted.

4. Preservation of roadside amenity

The amenity of roadsides can be particularly important to some communities. Native vegetation on roadsides is valued within the local community and is protected by law. Remnant vegetation on roadsides also provides practical ecosystem services such

as dust suppression, erosion prevention and assistance with sediment capture on unmade, rural roads. In addition, many residents enjoy using roadside reserves for recreational activities such as walking, cycling and horse-riding, and roadside reserves often support formal and in-formal trails.

In fulfilling these key responsibilities, it is important that Council works in partnership with other government agencies such as VicRoads and the CFA and the community to ensure that roadsides are managed appropriately into the future.

1.3 Roadside Conservation Management Plan Objectives

This plan has been developed to guide the maintenance and construction activities undertaken on roadsides and to ensure that areas of environmental significance are protected and that the values of roadsides are not compromised. The key objectives can be summarised as follows:

- Ensure the safe and effective function of roadways;
- Protect service assets located on roadsides;
- Minimise the risk and impact of fire;
- Minimise the potential for erosion and landslips;
- Protect, maintain and enhance the diversity of indigenous vegetation, particularly significant species and habitat corridors for wildlife;
- Prevent further land degradation and erosion on roadsides and improve water quality;
- Prevent the further spread of weeds and soil-borne disease organisms;
- Maintain and enhance the visual amenity and landscape quality of the roadside;
- Recognise the importance of roadside trails for recreational opportunities;
- Protect the cultural and heritage values of the roadside.

1.4 Context of Roadside Management

Road reserves were originally established to provide legal access and a safe route from one point to another but now encompass a wide range of other activities including areas for strategic fire breaks, service corridors for gas, electricity, telecommunications, drainage and sewerage, recreation and biological and cultural conservation. Road reserves and roadside vegetation in particular, now help fulfil and maintain essential ecological processes and functions as well as provide important amenity and cultural values.

These include:

- Supporting significant parcels of remnant vegetation and in some cases supporting the only remnant vegetation in a landscape
- Forming important wildlife habitat/corridors
- Buffering nearby land (what happens on roadsides can affect adjacent land)
- Providing a refuge for rare and threatened flora and fauna
- Impacts on water quality and erosion in nearby streams especially where roadside vegetation is of poor quality and unable to filter and dissipate the energy in stormwater runoff

-
- Preventing the spread of dust from road traffic
 - Acting as a source of seed for revegetation and regeneration and providing important genetic reference areas
 - Offering a potential source and buffer to combat the spread of weed and pest animals
 - Offering shade and shelter for livestock on adjoining cleared land
 - Assisting in fire control through slowing wind speed and the rate of spread of a fire (though this needs to be balanced with the fact that the reserve itself is a source of fuel, especially where excessive elevated or near-surface dead material and fine surface fuels are present)
 - Providing amenity and an attractive landscape
 - Providing recreational and social opportunities
 - Protecting cultural and heritage values.

The ability of roadside reserves to fulfil these essential functions is however, at risk from a range of threats including climate change, pest flora and fauna, erosion, altered hydrology, unsympathetic management techniques and a growing human population and associated infrastructure needs. These impacts are compounded on roadsides due to their inherent exposure to high levels of disturbance.

A range of legislation applies to roadsides to ensure all these values and roles are considered and protected. This Roadside Conservation Management Plan provides the opportunity to systematically overview this legislation. It will further enable Council officers and contractors responsible for construction and maintenance activities on roadsides to do their work effectively and with due regard for their values.

The diverse values and roles of roadsides ensure a wide range of organisations and individuals are interested and involved in the way roadsides are used and managed. Any one group using or doing works on the roadside should respect the interests and involvement of others to ensure the appropriate management objectives and values are considered before any works are undertaken.

1.5 Legislation

There are a range of policies and legislation that apply to the management of roadsides. The following section provides a brief outline of those most likely to require consideration and guide management. Appendix 1 provides a summary of additional legislation that may have relevance to roadside management.

1.5.1 Road Management Act 2004

The *Road Management Act 2004* established a coordinated management system for public roads promoting safe and efficient state and local public road networks and the responsible use of road reserves for other legitimate purposes such as the provision of utility services and public transport.

1.5.2 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) applies to roadsides where proposed modifications or projects may have a significant impact on matters of national environmental significance. This includes, but is not limited to, listed threatened species, ecological communities and significant cultural sites.

Under the Act, a proponent must refer proposed actions that may require approval to the Commonwealth Environment Minister (or delegate). The Minister then decides which assessment and reporting option is applied. The Minister may approve a 'controlled action' allowing the development to proceed provided conditions are applied to mitigate significant impacts on species and communities protected by this Act.

1.5.3 Flora and Fauna Guarantee Act 1988

The *Flora and Fauna Guarantee Act 1988* (FFG Act) was legislated to ensure the continued survival of all Victorian species of flora and fauna and all Victorian communities of plants and animals. The Act builds on broader national and international policy, including the principles of biodiversity conservation.

A key component of the Act is to ensure the sustainable use of flora and fauna resources whether they are threatened or not.

The FFG Act lists:

- Threatened species of flora and fauna
- Threatened communities of flora and fauna
- Protected flora
- Potentially threatening processes.

Schedule three of the FFG Act lists numerous Potentially Threatening Processes. These processes have been identified as a threat to the survival of one or more species of flora or fauna or a community. A number of threatening processes operate across Victoria and across all land tenures while some are specific to a defined locality.

Potentially Threatening Processes that may be relevant to Baw Baw Shire roadsides include:

- Collection of native orchids
- Habitat fragmentation as a threatening process for fauna in Victoria
- Blackberry *Rubus fruticosus* spp.agg. invasion
- 'environmental weed' invasion
- Loss of coarse, woody debris
- Loss of hollow-bearing trees
- Predation of native wildlife by the Cat *Felis catus*
- Predation of native wildlife by the introduced Red Fox *Vulpes vulpes*
- Habitat suitable for establishment of rabbits *Oryctolagus cuniculus*
- Reduction in biomass and biodiversity of native vegetation through grazing by Rabbit *Oryctolagus cuniculus*
- Spread of Sweet Pittosporum *Pittosporum undulatum* in areas outside its natural distribution
- Use of Phytophthora-infected gravel in construction of roads, bridges and reservoirs.
- Inappropriate fire regimes.

1.5.4 Planning and Environment Act 1987 - Victorian Planning Provisions

Under the *Planning and Environment Act 1987* (Vic) the Victorian Planning Provisions (VPPs) were introduced to simplify and standardise the planning process. This involved establishing new format Planning Schemes for each municipality.

Planning Schemes are legal instruments outlining provisions for land use, development and protection. They are constructed and sourced from the VPPs. Clause 52.17 of all local government Planning Schemes documents that a permit is required to remove, destroy or lop native vegetation.

There are, however, some exemptions. One of particular relevance to roadsides is that no planning permit is required to remove, destroy or lop native vegetation if the removal is to maintain the safe and efficient function of an existing public road managed by the relevant responsible road authority as defined by the *Road Management Act 2004* (Vic) and in accordance with *Managing native vegetation on roadsides: a guideline for implementing agreements under the local government public road exemption* (DSE 2009).

In addition, in November 2011 the Victorian Government amended the exemptions in Clause 52.17 to ensure that the provisions allow for a broad range of roadside works capable of reducing fire risk and providing specifically for a new exemption where the purpose of the works is to reduce bushfire risk.

The amendment provides that no permit is required if the vegetation is to be removed, destroyed or lopped to reduce fuel loads on roadsides to minimise risk to life and property from bushfire.

Under the exemption, road managers are required to:

- Undertake a roadside bushfire risk assessment, using an agreed process, focusing on priority roads
- Identify appropriate vegetation treatments for priority roads and record the results of this in a plan. This will be identified in Council's *Municipal Fire Management Plan*.

The approval process for vegetation removal which is not covered by an exemption as specified under Clause 52.17 is guided by 'Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines' (DEPI 2013).

1.5.5 Permitted Clearing of Native Vegetation - Biodiversity Assessment Guidelines

The *Permitted clearing of Native Vegetation- Biodiversity Assessment Guidelines* (the Guidelines) are incorporated into the Victorian Planning Provisions and all Victorian planning schemes. The guidelines set out how impacts on biodiversity should be considered when assessing an application for a permit to remove, lop or destroy native vegetation. These guidelines replace *Victoria's Native Vegetation – A Framework for Action* (DSE 2002).

The purpose of the Guidelines is to guide how impacts on biodiversity should be considered when assessing an application for a permit to remove, lop or destroy native vegetation. The primary objective of the Guidelines is “no net loss in the contribution made by native vegetation to Victoria's biodiversity” (DEPI 2013).

To ensure this objective is achieved, the following key strategies have been incorporated into the guidelines:

- Avoiding the removal of native vegetation that makes a significant contribution to Victoria's biodiversity
- Minimising impacts on Victoria's biodiversity from the removal of native vegetation
- Where native vegetation is permitted to be removed, ensuring it is offset in a manner that makes a contribution to Victoria's biodiversity that is equivalent to the contribution made by the native vegetation to be removed.

The Guidelines utilise a range of site-based and landscape scale biodiversity information tools to measure the contribution that native vegetation makes to biodiversity. Permit applications involving removal of native vegetation are subsequently assigned to a risk-based pathway that determines the process for how the application is assessed and how the decision guidelines are applied.

1.5.6 Country Fire Authority Act 1958

Section 43 of the *Country Fire Authority Act 1958* requires public authorities, councils and Vic Roads to take all practicable steps to prevent and minimise fires or the spread of fires on land or roads under their control or management. It does not apply to roads on public land for which DEPI has responsibility.

Among its multiple purposes, the *Baw Baw Shire Municipal Fire Management Plan* (MFMP) identifies roadsides requiring fuel reduction or mitigation works. Fuel reduction works detailed in MFMPs are exempt from the planning controls of the *Planning and Environment Act 1987*.

Section 41 of the Act states that the fire prevention officer of any municipal council may direct the owner or occupier (not being a public authority), to remove material that constitutes a fire danger on the adjacent half width of any private street that abuts the owner's property.

Section 42 states that the members of any brigade, at the request of the owner or occupier or the municipal council, may carry out fire prevention works on any highway, road, street or thoroughfare. This is undertaken as part of the Municipal Fire Prevention Planning Process.

Under Section 53, a municipal fire prevention committee must plan the burning or clearing of firebreaks and recommend to the appropriate authorities any action that should be taken to remove fire hazards.

The Act also places specific requirements upon municipalities and municipal fire prevention committees regarding their involvement and responsibilities for fire prevention activities, namely:

- Section 55A of the Act outlines the responsibilities of councils with regard to municipal fire prevention planning.
- Section 43 of the Act outlines the duties and powers of councils and public authorities in relation to fire.
- Section 55 of the Act specifies the functions of the municipal fire prevention committee, are undertaken by the Municipal Fire Management Planning

Committee (MFMPC). In Baw Baw Shire's case, the MFMPC has produced the MFMP.

1.5.7 Catchment and Land Protection Act 1994

The *Catchment and Land Protection Act 1994 Act* (CaLP Act) provides a framework for the integrated management and protection of catchments. It encourages community participation in the management of land and water resources and provides a system of controls on noxious weeds and pest animals.

In 2013, the Act was amended to clarify responsibilities for management of noxious weeds and pest animals on roadsides and to provide for the introduction of a Roadside Weed and Pest Management Plan to be prepared by Council. Prior to the amendment, responsibility for roadsides depended on the category of the pest and the status of the road, which often lead to confusion among local councils and private landowners.

The CaLP Act states that all landowners have legal obligations in relation to the management of noxious weeds and pest animals on their land. The definition of land owner includes municipal councils. Therefore, if a municipal road (including roadside) is affected by noxious weeds and pest animals, Council is the authority responsible for their control.

The amendment to the CaLP Act states that the Minister determines which districts require a roadside weed and pest animal management plan to be prepared. If required, Council must prepare, submit for approval and publish a roadside weed and pest animal management plan in accordance with the Act. At the time of publication, Baw Baw Shire had an approved Roadside Weed and Rabbit Control Plan.

1.5.8 Electrical Safety Act 1998

The *Electricity Safety Act 1998* (Victoria) (ES Act) Section 86B provides that a municipal council must specify, within its municipal fire prevention plan:

- (a) Procedures and criteria for the identification of trees that are likely to fall onto or come into contact with an electric line (hazard trees)
- (b) Procedures for the notification of responsible persons of trees that are hazard trees in relation to electric lines for which they are responsible.

Council's MFMP outlines procedures to address this requirement.

1.5.9 Victorian Bushfires Royal Commission 2009

The Royal Commission into the 2009 Bushfires (VBRC 2010) presented 67 recommendations in response to the events surrounding the fires.

Several of these may impact the management of roadsides, including:

Recommendation 30: The State amend the regulatory framework for electricity safety to require that distribution businesses adopt, as part of their management plans, measures to reduce the risks posed by hazard trees – that is, trees that are outside the clearance zone but that could come into contact with an electric power line having regard to foreseeable local conditions.

Recommendation 31: Municipal councils include in their municipal fire prevention plans for areas of high bushfire risk, provision for the identification of hazard trees and for notifying the responsible authorities with a view to having the situation redressed. This is included in Council's Municipal Fire Management Plan.

Recommendation 60: The State amend the exemptions in clause 52.17-6 of the Victoria Planning Provisions to ensure that the provisions allow for a broad range of roadside works capable of reducing fire risk and provide specifically for a new exemption where the purpose of the works is to reduce bushfire risk. This has been completed and was gazetted in November 2011.

Recommendation 61: The State and Commonwealth provide for municipal councils adequate guidance on resolving the competing tensions arising from the legislation affecting roadside clearing and where necessary, amend environment protection legislation to facilitate annual bushfire prevention activities by the appropriate agencies. This has been completed and was gazetted in November 2011.

1.6 Plans, Guidelines and Local Laws

1.6.1 Municipal Fire Management Plan

The aim of the MFMP is to provide measures to mitigate the risk of fire and to subsequently protect life, property, community assets and the natural environment. The Plan also aims to develop good working relationships with other key land management and fire agencies to reduce the occurrence of fire in the Shire through appropriate fire prevention strategies. The delivery of community education/information is a further key aim of this plan to assist residents in the preparation of their individual fire preparedness arrangements.

The MFMP was developed in cooperation with the Municipal Fire Management Planning Committee (MFMPCC), a sub-committee to the Municipal Emergency Management Planning Committee which consists of delegates from two local CFA Groups, District CFA Staff, and others (DEPI, VicRoads, and Shire Officers).

The MFMP provides a risk based plan that enables a whole of landscape approach to fire management planning and an integrated and coordinated approach that benefits the Shire community and those that adjoin it.

The MFMP identifies five key themes. These are:

1. Planning together
2. Implementing collaboration
3. Building knowledge
4. Building capacity
5. Using fire

The MFMP recognises that sections of the Shire have a high fire risk due to the combination of vegetation, topography, climate and demography. The MFMP provides more detailed and specific fire risk management guidance for roadsides within the Shire and should be referred to as the primary document for managing fire risks on roadside reserves.

1.6.2 Community Local Law 2008

Local laws can cover a myriad of subjects and provide local municipalities with the flexibility to protect specific characteristics of the region and to set particular standards of practice.

The following local laws have particular relevance to roadside management and may be utilised to ensure the protection of roadside assets.

2.5 Droving

Without a permit the owner of livestock or a person in charge of livestock must not drive the livestock in a public place.

3.8 Protection of Council assets

- (1) A person must not obstruct or make unsafe or cause to make unsafe a footpath, nature strip or road.
- (2) Without a permit a person must not undertake any activity which may damage, interfere with or destroy any asset vested in or under the control of Council.

4.4 Vegetation

- (1) A person must not destroy, damage, remove or otherwise interfere with any vegetation (whether living or dead) in any public place.

4.6 Storage of fodder on public places

A person must not place, keep, store or authorise another person to place, keep or store fodder in any public place.

2 2 DEFINING ROADSIDES

2.1 Road Reserves and Roadsides

The *Road Management Act 2004* defines road reserves as:

‘all of the area of land that is within the boundaries of a road’ (Figure 1),

and roadsides as:

‘any land that is within the boundaries of a road (other than the shoulders of the road) which is not a roadway or a pathway and includes the land on which any vehicle crossing or pathway which connects from a roadway or pathway on a road to other land has been constructed.’

Road reserves are therefore divided into two distinct zones – the road formation and the roadside. Any nature strip, forest, bushland, grassland or landscaped area within the road reserve, would be considered roadside.

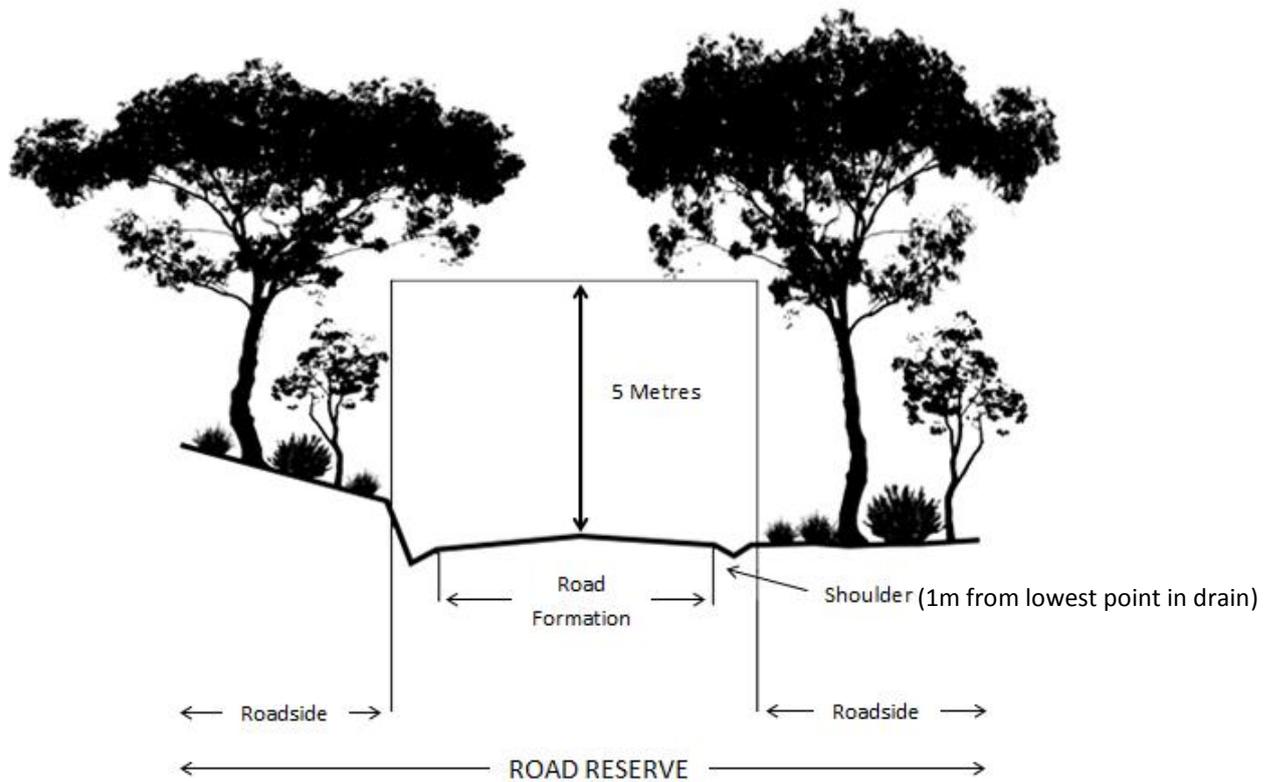


Figure 1. Road Reserves. (Adapted from Nillumbik Shire Council 2012)

2.2 Road Hierarchy and Responsibility

Management responsibility for roads within Baw Baw Shire falls under three categories:

- Vic Roads is responsible for Declared roads which are Freeways (includes Tollways) and Arterial Roads (Arterial-Highway and Arterial Other). Note: Council has management responsibility for areas behind the back of kerb on declared urban arterial roads.
- Baw Baw Shire Council is responsible for link, collector, local and local minor roads as described in the *Register of Public Roads*.
- Limited access roads which fall within land under management by other authorities are the responsibility of the relevant authority e.g. the Department of Environment and Primary Industries, Parks Victoria, Melbourne Water.

Council operates a municipal register of public roads that establishes a road hierarchy. The relevant road categories are used to differentiate service levels and maintenance standards. Refer to Council's *Road Management Plan* for details of the road hierarchy and levels of service.

3 ENVIRONMENT AND ROADSIDES IN BAW BAW

Within Baw Baw Shire there are significant areas of native vegetation remaining on roadsides. Roadside vegetation has multiple values associated with ecological and environmental functions as well as its role in defining local character and landscape amenity.

Much of the remnant native vegetation occurs in relatively undeveloped areas of the municipality where blocks of private land are larger or where adjacent land is Crown land or in various types of reserves. Often in these areas there has been less historical clearing and roads are often unsealed and comparatively narrow.

Several rare species of flora and fauna occur throughout the Shire (Appendix 2 and 3) and have the potential to occur along roadsides. Although specific data about roadside vegetation is limited, it is likely that roadside vegetation provides important habitat for flora and fauna species in many cases. There are also several Ecological Vegetation Classes (EVCs) occurring in roadside reserves that are classified as endangered and vulnerable according to their Bioregional Conservation Status (BCS). Table 1 identifies some of the commonly encountered EVC's in the municipality and the associated bioregional conservation status.

Table 1. Bioregional Conservation Status of commonly encountered EVC's in Baw Baw Shire.

Ecological Vegetation Class (EVC)	Bioregional Conservation Status (BCS)		
	Gippsland Plain	Strzelecki Ranges	Highlands-Southern Fall
Lowland Forest	Vulnerable	Vulnerable	Least Concern
Damp Forest	Endangered	Endangered	Least Concern
Wet Forest	Depleted	Depleted	Least Concern
Swampy Riparian Woodland	Endangered	Endangered	Vulnerable

Whilst a GIS analysis has not been undertaken to determine the most commonly found EVC's on roadsides, it is likely that there is significant commonality between the most common EVC's in the municipality and those on roadsides.

Bioregional Conservation Status refers to the amount of a particular EVC that remains today, compared with the amount that existed prior to European settlement (WGCMA 2003). The BCS also provides a reasonable indication of the likely quality of the EVC within the Shire. For instance, within the Gippsland Plain bioregion, Wet Forest has a BCS of 'Depleted' whereas Damp Forest is 'Endangered'. This coincides with the significant remnants of Wet Forest within the Shire, whereas much of the Damp Forest has been cleared or severely degraded.

When assessing the Conservation Value of roadsides within the Shire the Bioregional Conservation Status of associated EVC's was considered.

3.1 Conservation Value Assessment

3.1.1 Conservation value mapping

The Conservation Value of Baw Baw Shire's roadsides were first assessed in the late 1990's. The assessment methodology is documented in the Roadside Assessment Handbook (1999) developed by the Victorian Roadside Conservation Advisory Committee.

The assessment process used requires a 'windscreen survey' of roadsides to identify and map a range of roadside vegetation attributes, such as extent of weed and native vegetation present, level of regeneration of native species, presence of rare species and habitat features such as tree hollows, logs and the potential wildlife corridor function. A numerical value is attached to each attribute to achieve a final score resulting in the classification of a roadside into a particular Conservation Value (i.e. High, Medium and Low). Additionally, if rare or threatened species were present, a score of High Conservation Value was attributed.

Following data collection, a desktop analysis of Bioregional Conservation Status was conducted to identify areas of roadside vegetation occurring within endangered EVC's. Any 'Medium' Conservation Value roadside in an endangered EVC was increased to 'High'. This approach was adopted to ensure that resources and/or management actions are directed towards the most important roadside vegetation within the municipality.

In 2014, all Medium and High conservation value roadsides were reassessed and the updated mapping was incorporated into the current Plan. In addition, several previously unclassified roads were assessed and mapped.

Key objectives of the 2014 mapping were to:

- Review the existing Conservation Value to ensure the current classification and management was appropriate;
- Document threats and management issues for specific roadside sections, to assist in prioritising management and reviewing management practices and threats affecting roadsides in general.

Because of seasonal changes in vegetation conditions it is important to note that the assessment was a snap shot at a particular time of year although the broad level of assessment also helps to limit variance due to seasonal factors.

Data was collected on a hand-held GPS. Appendix 4 outlines the methodology employed to undertake the vegetation mapping through use of a proforma.

3.1.2 Determining conservation value

The 2014 assessment split roadsides into four levels of Conservation Value – High, Medium, Low and unclassified. This is consistent with the previous classification system used by Council, which allows for a clear distinction between categories and

is relevant to on-ground management actions. The assessment methodology and scoring categorisation was taken from the VRCAC (1999).

The following describes the features such roadsides are likely to exhibit.

- **High Conservation Value:** Usually greater than 20m wide, relatively low level of disturbance, various vegetation layers present although not necessarily all, native vegetation occurs across much of the area, low weed levels, supports a range of habitats, may form a wildlife corridor, is linked to other native vegetation (adjoining), or may provide habitat for rare or threatened flora, fauna species, represent an EVC with a threatened bioregional conservation status (endangered, rare, vulnerable), or may have other significant features such as areas of cultural significance.
- **Medium Conservation Value:** Includes areas of semi-natural indigenous vegetation, modified vegetation with extensive regeneration or road reserves with wide patches of native vegetation. Usually contains more than 25 per cent indigenous groundstorey but there is considerable invasion of weeds and/or other disturbance, some capacity for natural regeneration, few other habitat features.
- **Low Conservation Value:** Poor condition substantially disturbed and or modified, little if any native vegetation on site or adjacent, low natural regenerative capacity and few habitat features.
- **Unclassified Roadsides:** The conservation values of these roadsides have not been assessed. These roadsides need to be identified and targeted for imminent assessment. Until these assessments can be carried out, DEPI will need to be consulted to provide an interim assessment.

3.1.3 Outcomes for management

Conservation Value mapping provides the basis for guiding management of roadsides within the Shire. The guidelines presented in this Plan are detailed in relation to roadside Conservation Value. A general overview to guide management of each roadside Conservation Value is presented in 2 below.

Table 2. Overview of management guidelines based on Conservation Value

Conservation Value	Overview of management guidelines		
	Maintenance and access	New Works	Ecological Management
High Generally all layers of native vegetation present or significant species present	Avoid removal of native vegetation unless within allowable road maintenance exemptions	If new works are required, consult with Environmental Works Officer Permits likely to be required	Highest priority for: <ul style="list-style-type: none"> • minimising disturbance • weed management • retaining ecological values and habitat 
Medium Significant presence of native vegetation including groundstorey	Minimise access by machinery Fuel reduction for fire management purposes only to be conducted following Council assessment and approval	New works require detailed assessment to minimise impacts Consider relocating strategic fuel breaks elsewhere	
Low Very little or no native vegetation present	Machinery access should have minimal impact on vegetation if care is taken to avoid Tree Protection Zones (as per Australian Standard AS 4970-2009)	Higher potential to locate new works without significant impacts to native vegetation Unlikely to require permit May be suitable for fuel reduction	

4 ROADSIDE MANAGEMENT ISSUES

This section provides an overview of roadside management issues within the Shire and provides some general management guidelines. More specific guidelines regarding management practices and particularly those relating to maintenance and construction of road function are presented in Part 2: Operational guidelines.

4.1 Fire Management

Under the CFA Act, councils have a responsibility to prevent fires on roadsides and to contain roadside fires (refer to Appendix 3 – Part 2). The *CFA Roadside Fire Management Guidelines* (CFA 2001) lists four fire management objectives in relation to bushfire management on roadsides which were supported by the 2009 Victorian Bushfires Royal Commission.

These objectives are:

- Prevent fires on roadsides
- Contain roadside fires
- Manage safety of road users
- Provide control lines.

The Municipal Fire Management Plan (MFMP) developed by the Municipal Fire Prevention Committee (MFPC), details work necessary for the CFA and Council to meet its legislative responsibilities. This Roadside Conservation Management Plan is subordinate to the MFMP.

The methods used for fire prevention works on roadsides vary. The impact of these methods on the conservation value of the roadside is equally variable. For instance, grazing will reduce the fuel loads of the understorey but may also discourage natural regeneration; mineral earth breaks are prone to invasion by weeds.

The method selected for fire prevention works must be chosen to minimise the impact on the conservation significance of the roadside. In some instances, e.g. burning of native grassland, the treatment may be beneficial for both conservation and fire prevention goals if carried out at the appropriate time.

Fire plays an important role in the ecology of native vegetation. In most vegetation communities, infrequent fire is a requirement to encourage natural regeneration. The frequency and intensity of fire to achieve ecologically beneficial results varies and depends on the vegetation type.

General guidelines

- Fire prevention works on roadsides will be carried out in accordance with the MFMP.
- The MFPC will consider the conservation values of roadsides when reviewing the plan, in particular the location of strategic firebreaks. Strategic firebreaks will be located where practical, on roadsides of low conservation rating.
- All proposed bushfire mitigation works on roadsides involving the removal, destruction or lopping of native vegetation requires prior written agreement between Council and the secretary of the DEPI under Clause 52.17-6 – Fire protection of the Victorian Planning Provisions. To acquire written agreement, the DEPI require that a risk assessment and works plan be prepared for roadside locations to be subjected to bushfire mitigation works.
- Consider, where possible, implementing fuel management on adjacent land where roadsides are of High or Medium Conservation Value.
- Council will encourage the use of the CFA Roadside Fire Management Guidelines (2001).
- The DEPI will be consulted if burning is to be carried out on roadsides of High or Medium Conservation value.
- Regenerating indigenous vegetation should be retained where it does not conflict with fuel management specifications.
- Consider fuel reduction burns to be consistent with ecological burning regimes and account for the potential impacts on both flora and fauna.
- Ensure fuel reduction burns are followed up with comprehensive weed and pest control programs. Ensure that weed control is incorporated into the burn plan.
- Consider habitat and the presence of rare or threatened flora and fauna on roadside and adjacent land and the potential importance of limiting fuel management in particular areas.

-
- Where fuel reduction burns are undertaken on land adjacent to Medium and High conservation value roadsides, consultation with Council must be sought.

4.1.1 Recovery in fire affected areas

Part of the fire recovery process involves dealing with roadside vegetation in fire-affected areas. This may include:

- Erosion management – vegetation loss and changes to soil structure and composition as a result of fire may make soils vulnerable to erosion and result in damage to roads and roadsides.
- Assessment and treatment of fire-affected trees and other vegetation.
- Maintenance of regenerating vegetation to ensure visibility and to minimise obstruction of the road.
- Weed control.
- The re-establishment of vegetation in eroded and denuded areas.

Council has collected a range of data and information regarding the impacts of the 2009 fires across issues such as erosion, weed responses, flora regeneration and infrastructure damage. The ongoing monitoring and management response required is considerable and essential to providing a safe and effective functioning of the road network while protecting important environmental, cultural and amenity values.

General Guidelines

- Conduct post fire site assessments to determine if immediate measures need to be implemented.
- Identify biodiversity assets prior to post fire management works.

4.2 Vegetation Management

The quality of roadside vegetation is the principal determinant of the conservation value of the roadside. Appropriate management of roadside vegetation is crucial to retaining or improving the roadside conservation and landscape values. By incorporating Bioregional Conservation Status of EVC's into the roadside assessment, this Plan aligns with the priorities identified in the West Gippsland Native Vegetation Plan 2003 (WGCMA 2003) and the Port Phillip and Westernport Native Vegetation Plan (PPWCMA 2006). The mechanisms used within the methodology enable Baw Baw Shire to strategically prioritise management of rural roadsides to ensure protection, enhancement and restoration, respectively.

Objective: To maintain the diversity of indigenous vegetation and wildlife habitat and ensure the protection of significant ecological values.

General guidelines

- A planning permit is required from Council to remove, lop or destroy any indigenous vegetation, including fallen or dead timber, along any roadside. Some exemptions apply. Contact Council before undertaking any vegetation removal.
- Roadsides that contain vegetation of High or Medium conservation value will require specific management (see operational guidelines).
- The conservation status of roadsides within the Shire has been assessed and mapped. This map must be consulted as part of the planning process before any

works that impact on roadside vegetation, including maintenance, are carried out. If new works are proposed on roadsides with high conservation value, appropriate methods will be determined in consultation with DEPI.

- Ensure vegetation management aligns with objectives and priorities of the West Gippsland Regional Catchment Strategy 2013-2019 and Port Phillip and Western Port Regional Catchment Strategy.
- DEPI will provide management guidelines for rare or threatened EVCs and Sites of Biological Significance that occur within roadsides in Baw Baw Shire.
- Permits for clearing must be monitored to ensure compliance with Council regulations.
- Approval and/or a permit required from Council to plant any type of vegetation on rural road reserves. Contact the Natural Environment Department prior to commencing works.

If works are to be undertaken by contractors or service authorities in areas where there are known occurrences of rare or threatened flora, Council may request works plans and/or documentation that takes these values into account.

4.2.1 Vegetation removal guidelines

General guidelines

In circumstances where Council is required to remove vegetation, the following guidelines apply:

- Under Clause 52.17-6 of the Victorian Planning Provisions (VPP), no planning permit is required to remove, lop or destroy native vegetation to the minimum extent necessary if:
 - The native vegetation is to be removed, destroyed or lopped to maintain the safe and efficient function of an existing public road managed by the relevant responsible road authority (DSE 2009).
 - The vegetation is to be removed, destroyed or lopped to reduce fuel loads on roadsides to minimise risk to life and property from bushfire of an existing public road managed by the relevant responsible road authority (DSE 2009).
- Baw Baw Shire Council and the DEPI have signed an Agreement that enables Council to utilise the 'Public Roads' exemption in Clause 52.17-6 of the Planning Scheme. Council staff must refer to '*Managing Native Vegetation on Roadsides*' (DSE 2009) for guidelines on vegetation removal thresholds and allowable roadside maintenance activities under the Agreement.

4.2.2 Regeneration of indigenous flora

Regeneration is a naturally occurring process where plant communities spread and re-establish from seed dispersal or where plants display root suckering or rhizome spread. Regeneration often happens as a result of natural disturbances such as fire or opening up of the canopy through death or felling of a tree. Regeneration ensures local species are naturally conserved and is a preferable method of vegetation management and spread rather than revegetation. It is also less expensive and assists with retention of the landscape character of an area.

General guidelines

Within the limits of its capacities, Council encourages:

- Control of exotic grasses and weeds around regenerating vegetation
- Protection of existing regeneration from grazing, slashing or other disturbance
- Promotion of new areas of regeneration.

4.2.3 Fauna habitat

Native fauna habitat (e.g., for mammals, birds, reptiles, amphibians, insects and microorganisms) is provided by a diversity of vegetation types at various stages of maturity with a mosaic of age groups producing the most structurally complex habitat, which in turn is capable of supporting a greater diversity of fauna. In modified landscapes, such as exist in Baw Baw Shire, both exotic and native vegetation play a crucial role in providing essential fauna habitat.

Specific fauna habitat can be found in:

- Leaf litter;
- Rocks and crevices;
- Trees with hollows;
- Fallen limbs and logs;
- Dead vegetation in various stages of decay;
- Dense native and exotic groundstorey vegetation;
- Standing pools of water;
- Marshy land.

When roadside reserves are disturbed, some of these habitat components can be impacted or eliminated. Any disturbance puts extra pressure on available habitat. Some fauna can move on to another location but most cannot as most niche space is utilised. Displacement of fauna may also induce additional pressure on available habitat elsewhere. Furthermore, reduction in fauna habitat for one species such as the removal of logs providing habitat for reptiles and insects can have consequent flow on effects to other larger animals such as mammals and birds that are dependent on these smaller animals for food.

4.2.4 Wildlife corridors

Ecological connectivity is essential for the protection and enhancement of habitat. Both native and exotic vegetation play important roles in providing suitable habitat along corridors. Un-vegetated or sparsely vegetated areas on roadsides also have the potential to provide some wildlife corridor function, hence important ecological links for a variety of wildlife.

Wildlife corridors and linkages can provide the following benefits.

- Increased plant and animal movement between patches allowing dispersal, breeding, gene flow and access to foraging areas.
- Increased flora and fauna population size therefore reducing the risk of extinction through improved habitat and connection of larger and smaller populations.
- Increased gene flow between populations reducing the risk of inbreeding.

-
- Maintenance of biodiversity.
 - Additional (and a variety of) habitat in the landscape as well as buffering land-use change and land clearing in areas near roadside reserves.
 - Refuge from predators such as domestic pets and feral animals (foxes).
 - Assist the movement of wide-ranging or migrating animals across the landscape.
 - Facilitating dispersal of individual animals between population sources and otherwise isolated habitats or population sinks.
 - Increasing the probability of long-term species persistence in the region.

In some cases, roadsides are the only available corridors for linking habitat. It is important these areas are recognised for their significance in the landscape. Although wildlife corridors were considered in the Conservation Value assessment process, no strategic analysis of roadside wildlife corridors has been undertaken to identify crucial wildlife corridors that play major roles in connecting isolated vegetation remnants.

4.3 Land Management Issues

4.3.1 Pest plants

Weeds are a major threat to biodiversity and agriculture and also have the potential to create a significant fire risk. Roadsides provide potential conduits for the spread of weeds, which is further exacerbated by the potential for vehicles, machinery, animal and human traffic to facilitate their movement. Disturbance by machinery and vehicles, water run-off and dumping of spoil also increases potential weed spread by exposing fresh soil to weed invasion.

The *Catchment and Land Protection Act 1994* (CaLP Act) is the principal legislation regarding the management of weeds within Victoria. Under this Act, weeds may be declared as noxious.

There are four categories of noxious weeds depending on their known and potential impact and specific circumstances for each region. These are:

- i. State Prohibited Weeds (S) are either currently absent in Victoria or are restricted enough to be eradicated. The Victorian Government is responsible for their control.
- ii. Regionally Prohibited Weeds (P) are not widely distributed in a region but are capable of spreading further. It is reasonable to expect that they can be eradicated from a region. Regionally Prohibited weeds are the responsibility of:
 - Vic Roads on roads declared highways, freeways, tollways and arterial roads
 - Local Government on Municipal Roads
- iii. Regionally Controlled Weeds (C) are usually widespread in a region. To prevent their spread on-going management is required. Regionally Controlled Weeds are the responsibility of:
 - Vic Roads on roads declared highways, freeways, tollways and arterial roads

- Local Government on Municipal Roads

- iv. Restricted weeds occur in other states and are considered to be a serious threat to primary production, Crown land, the environment and/or community health if they were traded in Victoria.

In addition to weeds listed under the CaLP Act, there are additional weeds that have the potential to degrade areas of indigenous vegetation (environmental weeds) and in doing so potentially increase fire risk. These weeds also require management with Council supporting Landcare and community projects that target environmental weeds along roadsides. Identification of these weeds and other weed management issues are detailed in the *Baw Baw Shire Council Weed Management Strategy*.

4.3.2 Baw Baw Shire's Roadside Weed Control Program

Baw Baw Shire's Roadside Weed Control Program adopts a Biosecurity Approach to tackling roadside weeds (Figure 2). This approach supports the management of invasive species at all stages of invasion – from preventing the entry of new species to managing widespread infestations. It acknowledges that economic returns for managing weeds are much higher when weed infestations are new or small, thus the adage: prevention is better than cure.

When managing established environmental weeds, the biosecurity approach prioritises the protection of areas with the greatest natural values that are at the highest risk of damage from weeds. In some cases this will involve managing high threat weeds growing outside these areas, if they are likely to spread into these high priority areas.

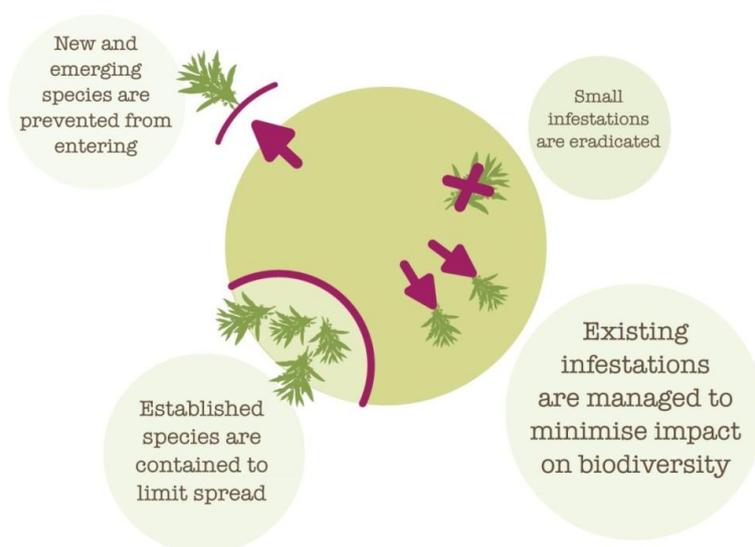


Figure 2: Biosecurity Approach (Source: UFWMI Operational Plan 2011)

When applying the Biosecurity Approach to weed management, Council considers three categories of weeds: new and emerging weeds; established weeds (high threat and other); and pathways of threat.

4.3.2.1 New and emerging weeds

The Victorian Government (2010) defines a new and emerging weed as:

‘A recognised weed that has recently been detected or a plant species that has been known in the area for some time, but has only recently been recognised as having invasive properties.’

Invasive Plants and Animals Policy Framework 2010

The project considers new and emerging weeds at all scales, thus a weed is considered new and emerging if it is new to the Shire, new to a region within the Shire or new to a roadside. The biosecurity approach gives priority to preventing new and emerging weeds establishing and if possible eradicating small infestations for the most cost effective and long-term result.

4.3.2.2 Established weeds

Weeds that are already established in an area or on a particular roadside are less cost effective to manage but may pose a significant threat to biodiversity values. Following the biosecurity approach, roadside weed control works should aim to contain the extent of established weeds and minimise their impact on areas with High conservation values.

4.3.2.3 Pathways of threat

Weeds disperse onto roadsides from many sources and by many processes. Without managing these pathways of threat, weed control works may be ineffective in the long-term.

Weed mapping and monitoring aims to identify where weeds are dispersing in from outside the road reserve and help determine which weed sources are practical to manage.

4.3.3 Broad weed management objectives

Using an asset and threat prioritisation and applying the biosecurity approach, Council has developed broad weed management objectives for each asset group and type of weed threat (see Table 3). These broad weed management objectives are used as the basis for setting specific weed management objectives and actions. Specific objectives may vary from the broad weed management objectives depending on the:

- biodiversity assets to be protected
- level of threat
- extent of infestation
- weed’s ecology
- ownership of the land
- accessibility
- feasibility of control.

Works within these broad objectives will be prioritised based on:

- The impact of weed on biodiversity/conservation values
- Contribution of the weed to the fire hazard of the roadside
- Complementary work on adjoining land
- Customer complaints/requests
- Amenity value of controlling the weed.

Table 3. Broad weed management objectives

 Highest priority High priority Medium priority Lowest priority

	New and emerging weeds	High threat established weeds	Other established weeds
All roadsides	<ul style="list-style-type: none"> Minimise impacts on public safety Minimise impacts on access and egress Minimise impacts on the visibility of road signage Manage fire risks on roadside as per the <i>Municipal Fire Prevention Plan</i>. 		
Biologically significant roadsides High/Medium Conservation Value and/or adjacent to a significant biological reserve	<ul style="list-style-type: none"> Monitor for new and emerging weeds Prevent new weeds from entering Eliminate infestations of weeds new to the road reserve if the infestation is likely to persist and significantly impact biodiversity values If new and emerging weeds become established and are significantly impacting biodiversity values; manage according to the high threat established weed objectives 	<ul style="list-style-type: none"> Map and monitor infestations Minimise impact on specific biodiversity values Prevent spread to or within significant biological reserves, biologically significant roadsides or Priority/Fuel Modified roadsides Eliminate isolated infestations¹ Contain core infestations and reduce if practical and funding is available¹ If cost effective eliminate core infestations² Manage specific weeds according to regional priorities³ Seek opportunities to modify existing slashing programs to reduce weed cover and encourage establishment of native species 	<ul style="list-style-type: none"> Map and monitor infestations if practical. Control according to high threat established weed objectives if a weed is significantly impacting biodiversity values or significantly contributing to fuel hazard.
Other roadsides		<ul style="list-style-type: none"> Map and monitor infestations Minimise impact on specific biodiversity values If feasible contain infestations to prevent spread to biologically significant and Priority/Fuel Modified roadsides Where native grasses are present seek opportunities to modify existing slashing programs to reduce weed cover and encourage establishment of native species Manage specific weeds according to regional priorities³ 	
Pathways of threat	<ul style="list-style-type: none"> Manage threatening processes that encourage the growth of weeds on and dispersal of weeds onto and between roadsides Identify, map and monitor weed sources as practical If feasible contain weeds sources to prevent spread of weeds onto roadsides 		<ul style="list-style-type: none"> No objective

¹ It may not be practically possible to eliminate or reduce the extent of some grassy, herbaceous or difficult to control weeds. When this is the case the aim will be to contain these infestations.

² Some infestations pose such a high threat and spread so rapidly that elimination is the most cost effective solution.

³ Regional priorities may be set for specific weeds to contain or eliminate the weed at a landscape scale.

General guidelines

Council will support the following practices in relation to weed management of roadsides:

- Adopt a biosecurity approach and the broad weed management objectives as outlined above to controlling weeds on roadsides.
- Comply with the *Baw Baw Shire Weed Management Strategy*.
- Employ techniques with the least disturbance to native vegetation.
- Ensure machinery is cleaned down after working in areas infested with priority noxious weeds to prevent further spread and transfer to 'clean areas'.
- Seek opportunities to modify existing slashing programs to reduce weed cover and encourage establishment of native species.

4.3.4 Pest Animals

Pest animals are a major threat to biodiversity and agriculture within Baw Baw Shire. The major pest animals on roadside reserves are rabbits and foxes. The CaLP Act specifies that the control of pest animals on roadsides is the responsibility of:

- Vic Roads on roads declared highways, freeways, tollways and arterial roads
- Local Government on Municipal Roads

Objective: To minimise pest animals through appropriate and effective integrated methods that minimise impacts on remnant vegetation and native wildlife habitat.

General guidelines

- Minimise disturbance to remnant vegetation and native wildlife habitat with particular care given to High and Medium Conservation Significant Roadsides.
- Consult relevant pest animal action plans and DEPI for advice.

4.3.5 Erosion and sediment control

Erosion and sediment run off from unsealed roads is a major cause of land degradation and a significant factor affecting water quality in local waterways. Roads interrupt the natural drainage pattern of the landscape. Stormwater is concentrated in drainage channels and directed away from the road into surrounding areas to protect the road structure and road users from flood waters. Consequently, water is concentrated in drainage channels and directed to receiving waters. This combination of exposed surfaces and concentrated stormwater can lead to the significant erosion problem including landslips, and the potential for stormwater quality issues. Erosion is also a major threat to road function and requires ongoing management.

Objective: Retention of roadside vegetation to mitigate the impacts of stormwater on soil erosion and water quality.

Management of erosion and sedimentation is documented in the Operational guidelines.

4.3.6 Revegetation and site rehabilitation

This issue is covered in the Operational guidelines. Any party wishing to carry out revegetation or rehabilitation activities on a section of roadside should consult Part 2 of this Plan and make prior contact with Council's Natural Environment Coordinator or Environmental Planner.

4.4 Agricultural Activities

4.4.1 Moving livestock/grazing on roadsides

The impact of moving livestock and grazing on roadside vegetation is variable and depends on the number of stock, duration of the stay, type of livestock, seasonal conditions and vegetation type. Within Baw Baw Shire the owner of livestock, or a person in charge of livestock, must not

drive the livestock in a public place without a permit. Proposals for livestock movement, droving and grazing on roadsides must therefore be referred to Council Local Laws staff for compliance with Community Local Laws. Site conditions and conservation values must guide recommendations.

Objective: Avoid disturbance to roadside vegetation in Medium and High conservation value roadsides.

General guidelines

- Council will discourage grazing on roadsides unless it can be demonstrated that it is consistent with the objectives of this Plan or the MFMP.
- A permit will be required for roadside grazing or livestock movement.
- Permits will be conditional and reflect the conservation rating of the roadside.
- All permit holders must have appropriate Public Liability insurance.

4.4.2 Storage of fodder

A person must not place, keep, store or authorise another person to place, keep or store fodder in any public place without a permit. Proposals for the storage of fodder on roadsides must be referred to Council Local Laws staff for compliance. Site conditions and conservation values must guide recommendations.

4.4.3 Firewood collection

Collecting firewood and harvesting timber from roadsides is not permitted on Council managed roads. Community Local Law 4.4 (1) states that “a person must not destroy, damage, remove or otherwise interfere with any vegetation (whether living or dead) in any public place. This includes roads and land which is owned, occupied or managed by Council.

DEPI allow roadside collection of firewood in State forests in designated firewood collection areas. A permit is not required however limits apply to the amount of firewood that may be collected.

4.4.4 Seed, flower and other plant material collection

Native vegetation on roadsides is protected under legislation and removal by collection can only be undertaken with a permit from DEPI and the relevant land management agency. Restrictions can be placed on the volume and species collected.

4.5 Landscape and Amenity Management

The landscape and amenity values of roadsides vary. Roadsides provide a variety of recreational opportunities.

Frequent use of roadsides for horse riding may trample and destroy vegetation, introduce weeds and promote soil erosion. While these impacts may not be significant, the outcome will depend on the type of vegetation, soil type and frequency of use. The use of roadsides for informal horse riding is not considered to cause unacceptable changes to the vegetation.

Roadside vegetation is a significant element of the rural landscape and is an important consideration in roadside planning. The location and management of wayside stops plays an important role in the local economy, tourism, and road safety. They are often suitable sites to the interpretation of the local environment. Littering is another issue that impacts roadside amenity.

General guidelines

- Landscape assessment will be included in the works planning for all new roadwork.
- Council will not site amenities in roadsides of High and Medium conservation rating.
- Council approval is required for roadside plantings.

4.6 Cultural and recreation issues

4.6.1 Heritage and cultural values

Roadsides frequently contain sites of cultural and heritage significance. These include sites of archaeological and historical significance, all of which contribute to the conservation assets of the roadside. Road construction and maintenance has the potential to detrimentally affect these sites.

Archaeological sites are of particular importance. Some sites have been mapped by Aboriginal Affairs Victoria (AAV) but many have not. Roadsides may also contain sites of geological and educational importance.

VicRoads keeps a register of historic bridges. Historic sites are listed on a Register held by DEPI.

Objective: Consideration of heritage and cultural values should inform planning and management of roadsides.

General guidelines

- Maintain confidentiality of specific sites of significant cultural, heritage or landscape value where disclosure would present a significant risk.
- Consult Council's Planning Department before removing planted exotic heritage trees.
- Ensure that all new road construction works (not maintenance) have a planning permit.
- When undertaking natural resource management within a site of Aboriginal Cultural Heritage, ensure works are carried out in accordance with *Aboriginal Heritage Act 2006* and the *Aboriginal Heritage Regulations 2007*.

4.6.2 Memorials

Objective: Ensure memorials are erected and constructed in suitable locations that do not pose an increased safety risk nor adversely impact on the roadside.

General guidelines

-
- Permission is needed from Council to construct or place a memorial on a roadside.
 - Permission is needed from VicRoads to construct or place a memorial on an arterial road.

4.6.3 Recreational trails

Objective: Recognise the importance of roads and roadsides for recreational use and be mindful of the Conservation value of the roadside in which they are located.

General guidelines

- Recreational clubs and commercial enterprises wishing to use existing roadside trails for club events or commercial purposes are recommended to consult with Council prior to use. If there are no existing roadside trails on the proposed routes, Council must be consulted on the route.
- Design and construction of recreational trails should attempt to avoid or minimise impacts on native vegetation on Medium and High conservation value roadsides.
- Trail-bikes are not permitted on roadsides.

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APPENDIX 1. LEGISLATION, EXTERNAL PLANS AND POLICIES

The following provides a summary of the relevant legislation and policies that impact and guide roadside management.

<i>Aboriginal and Torres Strait Islander Cultural Heritage Protection Act 1984 (Commonwealth)</i>	Allows for the preservation and protection from injury or desecration areas and objects that are of particular significance to Aboriginals in accordance with Aboriginal tradition. Powers allocated to the Commonwealth Minister for Aboriginal Affairs are in turn delegated to the responsible Victorian Minister (in accordance with the <i>Aboriginal Heritage Act 2006 (Vic)</i>).
<i>Aboriginal Heritage Act 2006 (Vic)</i>	Provides for the protection of Aboriginal cultural heritage in Victoria, including the requirement for a permit when any works may impact upon Aboriginal cultural heritage. Includes the provision for the nomination of a place or object onto the Heritage Register.
<i>Catchment and Land Protection Act 1994 (Vic)</i>	Identifies responsibility for the control of pest plants and animals.
<i>Charter of Human Rights and Responsibilities Act 2006 (Vic)</i>	The Victorian Charter of Human Rights and Responsibilities is a law that protects the human rights of all people in Victoria. All public authorities must consider the Charter before making decisions. The Charter was implemented to protect basic human rights such as freedom of expression, freedom of religion and protection against cruel, inhuman and degrading treatment.
<i>Conservation, Forest and Lands Act 1987 (Vic)</i>	Prior to works being undertaken which may disturb critical habitat, a plan of works must be submitted to DSE.
<i>Country Fire Authority Act 1958 (Vic)</i>	Municipalities are responsible for managing roadside vegetation for fire prevention.
<i>Crown Land (Reserves) Act 1978 (Vic)</i>	Allocates ownership for all vegetation on roadsides, royalties for timber collection, cropping and haymaking to the Crown. Allows of the prosecution for unauthorised cutting of timber.
<i>Electrical Safety Act 1998 (Vic)</i>	Details required clearances between powerlines and vegetation through the Code of Practice for Powerline Clearances.
<i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i>	Promotes the conservation of environment and biodiversity by providing legal protection for listed species, communities and areas of national significance.
<i>Environment Protection Act 1970 (Vic)</i>	Provides for the control of polluted runoff from disturbed roads.
<i>Flora and Fauna Guarantee Act 1988 (Vic)</i>	Public authorities must have regard to flora and fauna conservation and management objectives which aim to ensure that Victoria's flora and fauna can survive, flourish and retain their potential for evolutionary development in the wild. The Act places a responsibility on government, business organisations and the community to act in a way so as to conserve Victoria's flora and fauna and their genetic diversity.
<i>Forests Act 1958 (Vic)</i>	Gives local municipalities responsibility for managing all trees, saplings, shrubs and wood on local roads.
<i>Heritage Act 1995 (Vic)</i>	All Victorian historical sites are protected. The Act prohibits the wilful destruction or disturbance of any cultural heritage site, place or object, whether on private or public land.
<i>Land Act 1958 (Vic)</i>	Allows prosecution for removal of timber from roadsides.

Local Government Act 1989 (Vic)	Gives local government responsibility for management of undeclared roads. Gives Council power to create certain local laws relating to roadsides. Allows for councils to enact local by-laws targeting specific weeds.
Litter Act 1964 (Vic)	Makes it an offence to litter roadsides and other specified public places.
Planning and Environment Act 1987 (Vic)	Controls the removal of native vegetation from roadsides under local section planning provisions and the Native Vegetation Retention Controls, and seeks to encourage the retention of native vegetation on private and public land. Prior to removing, destroying or lopping an area of native vegetation on any roadside for works not exempt under the controls, the responsible authority must issue a permit. In certain circumstances, application for permits to remove native vegetation on roadsides must be referred to the Department of Natural Resources and Environment.
'Servicing Authority' Acts	Permits servicing authorities to locate assets on roadsides and gives them rights of access for maintenance works, including exemptions for vegetation removal.
Transport Act 1983 (Vic)	VicRoads responsible for management of declared roads.
Telecommunications Act 1997 (Vic)	Among other things, the legislation establishes a scheme for the regulation of overhead and underground cables, which generally are not exempt from planning laws regarding vegetation clearance.
Wrongs Act 1958 (Vic)	Governs claims for <i>damages</i> for personal injury (or resulting death) particularly in cases not involving transport accidents or work injuries.

Current non-council plans and policies relevant to roadside management include:

- A Code of Practice for Telecommunications Facilities in Victoria 1999
- *A Guide to Working on the Road Reserve: Road Management Act 2004* – MAV, VicRoads December 2009
- *Biosecurity Strategy 2009* – State of Victoria, 2009
- Code of Practice for Powerline Clearance (Vegetation)
- Electrical Safety (Electric Line Clearance) Regulations 2010
- Environment practices manual for rural sealed and unsealed roads – ARRB Transport Research, 2002
- Environmental Protection – Project Management – VicRoads 2000
- *EPA Environmental Guidelines for Major Construction Sites* – Publication 480 1996
- Managing Native Vegetation on Roadsides – DSE 2009
- *Native Vegetation Plan* – PPWPCMA 2006
- *Native Vegetation Removal Guidelines* – VicRoads 2009
- *Rabbit Management Action Plan* – DNRE 2000
- *Region Weed Action Plan* – DNRE 2001
- *West Gippsland Regional Catchment Strategy 2013-2019*
- *Port Phillip and Western Port Regional Catchment Strategy*
- *Roadside Fire Management Guidelines* – CFA 2001
- *Roadside Handbook* – VicRoads 2006

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- *Roadside Management Guidelines* – VicRoads 1999
 - *Roadside Management Guidelines for Fire Prevention Planners* – CFA 2010
 - *Roadside Vegetation Management for Bushfire Mitigation Purpose* – DSE 2011
 - *Regional Codes of Practice for Roadside Maintenance and Construction* – VicRoads 1999
 - *Vegetation Management Plan for Powerline Clearance*
 - *VicRoads Environment Strategy 2005-2015*
 - *VicRoads Roadside Management Strategy 2011*
 - Victoria's Land and Biodiversity White Paper – DSE
 - Victoria's Native Vegetation Management Framework – 2002

APPENDIX 2. RARE OR THREATENED FLORA WITHIN BAW BAW SHIRE

Key Victorian Rare or Threatened Species (VROTS) x: Presumed extinct, e: Endangered, v: Vulnerable, r: rare and k: poorly known	EPBC Conservation Status EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant	Conservation status under FFG Act 1988: L: Listed, N: Nominated, I: Invalid or ineligible and D: Delisted				
		Scientific Name	Common Name	VROTS	EPBC	FFG
		<i>Acacia alpina</i>	Alpine Wattle	r		
		<i>Acacia howittii</i>	Sticky Wattle	r		
		<i>Acacia leprosa</i> var. <i>graveolens</i>	Common Cinnamon-wattle	k		
		<i>Acacia nano-dealbata</i>	Dwarf Silver Wattle	r		
		<i>Adelanthus bisetulus</i>	Twin-tooth Featherwort	r		
		<i>Adiantum diaphanum</i>	Filmy Maidenhair	e		L
		<i>Argyrotegium poliochlorum</i>	Grey-green Cudweed	r		
		<i>Asplenium appendiculatum</i> subsp. <i>appendiculatum</i>	Ground Spleenwort	r		
		<i>Astelia australiana</i>	Tall Astelia	v	VU	L
		<i>Australopyrum velutinum</i>	Mountain Wheat-grass	r		
		<i>Austrostipa rudis</i> subsp. <i>australis</i>	Veined Spear-grass	r		
		<i>Baeckea latifolia</i>	Subalpine Baeckea	r		
		<i>Bartramia mossmaniana</i>	Tall Apple-moss	r		
		<i>Billardiera scandens</i> s.s.	Velvet Apple-berry	r		
		<i>Brachyscome obovata</i>	Baw Baw Daisy	r		
		<i>Brachyscome tadgellii</i>	Tadgell's Daisy	r		
		<i>Burnettia cuneata</i>	Lizard Orchid	r		
		<i>Callitriche umbonata</i>	Winged Water-starwort	r		
		<i>Cardamine papillata</i>	Forest Bitter-cress	r		
		<i>Carex alsophila</i>	Forest Sedge	r		
		<i>Carex blakei</i>	Alpine Sedge	r		
		<i>Carex canescens</i>	Short Sedge	r		
		<i>Carex chlorantha</i>	Green-top Sedge	k		
		<i>Carex jackiana</i>	Carpet Sedge	r		
		<i>Carpha alpina</i>	Small Flower-rush	r		
		<i>Carpha nivicola</i>	Broad-leaf Flower-rush	r		
		<i>Cassinia monticola</i>	Mountain Cassinia	r		
		<i>Celmisia latifolia</i>	Victorian Snow-daisy	r		
		<i>Celmisia tomentella</i>	Silver Snow-daisy	r		
		<i>Cephalomanes caudatum</i>	Jungle Bristle-fern	r		
		<i>Chiloglottis jeansesii</i>	Mountain Bird-orchid	r		
		<i>Chiloscyphus suboppositus</i>	Oily Crestwort	k		
		<i>Coprosma moorei</i>	Turquoise Coprosma	r		
		<i>Coprosma perpusilla</i> subsp. <i>perpusilla</i>	Creeping Coprosma	r		

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		Scientific Name	Common Name	VROTS
<i>Correa reflexa</i> var. <i>lobata</i>	Powelltown Correa	r		
<i>Corybas aconitiflorus</i>	Spurred Helmet-orchid	r		
<i>Cyathea X marcescens</i>	Skirted Tree-fern	V		
<i>Deparia petersenii</i> subsp. <i>congrua</i>	Japanese Lady-fern	v		
<i>Derwentia nivea</i>	Milfoil Speedwell	r		
<i>Deyeuxia carinata</i>	Keeled Bent-grass	r		
<i>Dicranoloma platycaulon</i>	Wavy Fork-moss	r		
<i>Diplaspis nivis</i>	Snow Pennywort	r		
<i>Drosera arcturi</i>	Alpine Sundew	r		
<i>Epacris microphylla</i> var. <i>rhombofolia</i>	Mountain Coral Heath	r		
<i>Epacris petrophila</i>	Snow Heath	r		
<i>Epilobium curtisiae</i>	Bald-seeded Willow-herb	r		
<i>Epilobium sarmentaceum</i>	Mountain Willow-herb	r		
<i>Eragrostis leptostachya</i>	Paddock Love-grass	k		
<i>Erigeron tasmanicus</i>	Tasmanian Fleabane	v		
<i>Eucalyptus fulgens</i>	Green Scentbark	r		
<i>Eucalyptus glaucescens</i>	Tingaringy Gum	r		
<i>Eucalyptus ignorabilis</i> s.s.	Grey Scentbark	r		
<i>Eucalyptus kybeanensis</i>	Mallee Ash	r		
<i>Eucalyptus neglecta</i>	Omeo Gum	r		
<i>Eucalyptus pauciflora</i> subsp. <i>acerina</i>	Baw Baw Sally	r		
<i>Eucalyptus perriniana</i>	Spinning Gum	r		
<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	v	VU	L
<i>Eucalyptus yarraensis</i>	Yarra Gum	r		I
<i>Euchiton traversii</i>	Mat Cudweed	r		
<i>Euchiton umbricola</i>	Cliff Cudweed	r		
<i>Euphrasia gibbsiae</i> subsp. <i>subglabrifolia</i>	Broad Eyebright	r		
<i>Euphrasia scabra</i>	Rough Eyebright	e		L
<i>Gahnia microstachya</i>	Slender Saw-sedge	r		
<i>Gentianella bawbawensis</i>	Baw Baw Snow-gentian	k		
<i>Geranium neglectum</i>	Swamp Crane's-bill	r		
<i>Grammitis magellanica</i> subsp. <i>nothofageti</i>	Beech Finger-fern	v		
<i>Grevillea barklyana</i>	Gully Grevillea	v		L
<i>Grevillea miqueliana</i>	Oval-leaf Grevillea	v		
<i>Grevillea miqueliana</i> subsp. <i>cincta</i>	Selma Saddle Grevillea	e		
<i>Grevillea miqueliana</i> subsp. <i>miqueliana</i>	Oval-leaf Grevillea	v		

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		Scientific Name	Common Name	VROTS
<i>Herpolirion novae-zelandiae</i>	Sky Lily	r		
<i>Huperzia australiana</i>	Fir Clubmoss	r		
<i>Huperzia varia</i>	Long Clubmoss	v		
<i>Lachnagrostis meionectes</i>	Alpine Blown-grass	r		
<i>Lastreopsis hispida</i>	Bristly Shield-fern	r		
<i>Leionema bilobum</i>	Notched Leionema	r		
<i>Leionema bilobum subsp. serrulatum</i>	Toothed Leionema	r		
<i>Leionema lamprophyllum subsp. lamprophyllum</i>	Shiny Leionema	r		
<i>Lepidozia procera</i>	Fingerwort	r		
<i>Lindsaea microphylla</i>	Lacy Wedge-fern	r		
<i>Lycopodium scariosum</i>	Spreading Clubmoss	r		
<i>Monotoca oreophila</i>	Mountain Broom-heath	r		
<i>Montia fontana subsp. fontana</i>	Water Blinks	k		
<i>Nymphoides montana</i>	Entire Marshwort	r		
<i>Olearia asterotricha</i>	Rough Daisy-bush	r		
<i>Olearia phlogopappa var. flavescens</i>	Dusty Daisy-bush	r		
<i>Oreobolus oxycarpus subsp. oxycarpus</i>	Tuft-rush	r		
<i>Oreobolus pumilio subsp. pumilio</i>	Alpine Tuft-rush	r		
<i>Oxalis magellanica</i>	Snowdrop Wood-sorrel	r		
<i>Oxalis thompsoniae</i>	Fluffy-fruit Wood-sorrel	k		
<i>Pellaea nana</i>	Dwarf Sickle-fern	r		
<i>Pentachondra pumila</i>	Carpet Heath	r		
<i>Persoonia arborea</i>	Tree Geebung	v		I
<i>Phebalium squamulosum subsp. squamulosum</i>	Forest Phebalium	r		
<i>Pimelea curviflora var. gracilis</i>	Curved Rice-flower	k		
<i>Pittosporum undulatum subsp. X emmettii</i>	Hybrid Pittosporum	r		
<i>Plantago alpestris</i>	Veined Plantain	r		
<i>Plantago muelleri</i>	Star Plantain	v		
<i>Platylobium reflexum</i>	Victorian Flat-pea	r		
<i>Poa sieberiana var. cyanophylla</i>	Blue-leaf Tussock-grass	k		
<i>Psychrophila introloba</i>	Alpine Marsh-marigold	r		
<i>Pterostylis chlorogramma</i>	Green-striped Greenhood	v	VU	L
<i>Pterostylis grandiflora</i>	Cobra Greenhood	r		
<i>Pterostylis sp. aff. excelsa</i>	Small Dryland Rustyhood	k		

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		Scientific Name	Common Name	VROTS
<i>Ranunculus collinus</i>	Strawberry Buttercup	r		
<i>Ranunculus gunnianus</i>	Gunn's Alpine Buttercup	r		
<i>Richea victoriana</i>	Serpent Heath	r		
<i>Rytidosperma nivicola</i>	Snow Wallaby-grass	r		
<i>Schizacme montana</i>	Mountain Mitrewort	r		
<i>Senecio pectinatus var. major</i>	Alpine Groundsel	r		
<i>Sowerbaea juncea</i>	Rush Lily	r		
<i>Sticherus tener s.s.</i>	Tasman Fan-fern	r		
<i>Taraxacum aristum</i>	Mountain Dandelion	r		I
<i>Tasmannia vickeriana</i>	Baw Baw Pepper	r		
<i>Tetrarrhena turfosa</i>	Smooth Rice-grass	r		
<i>Tetraloche stenocarpa</i>	Long Pink-bells	r		
<i>Thelymitra circumsepta</i>	Naked Sun-orchid	v		
<i>Thelymitra simulata</i>	Graceful Sun-orchid	r		
<i>Tmesipteris elongata</i>	Slender Fork-fern	v		
<i>Tmesipteris ovata</i>	Oval Fork-fern	r		
<i>Tmesipteris parva</i>	Small Fork-fern	r		
<i>Trachymene humilis</i>	Alpine Trachymene	r		
<i>Trachymene humilis subsp. breviscapa</i>	Alpine Trachymene	r		
<i>Treubia tasmanica</i>	Treubia	e		L
<i>Trochocarpa clarkei</i>	Lilac Berry	r		
<i>Utricularia uniflora</i>	Single Bladderwort	k		
<i>Viola hederacea subsp. nov. (Baw Baws)</i>	Baw Baw Violet	k		
<i>Viola improcera</i>	Dwarf Violet	k		
<i>Wittsteinia vacciniacea</i>	Baw Baw Berry	r		
<i>Xanthosia leiophylla</i>	Parsley Xanthosia	r		

Source:

Victorian Biodiversity Atlas, © The State of Victoria, Department of Environment and Primary Industries (accessed January, 2014).

APPENDIX 3. BAW BAW RARE OR THREATENED FAUNA

Key: Victorian Rare or Threatened Species (VROTS) EX: Extinct, RX: Regionally extinct, WX: Extinct in the Wild, CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near Threatened, DD: Data Deficient	EPBC Conservation Status EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant, M1: Migratory Listed Species, M2: Marine Listed Species. Int. Treaty – JAMBA / CAMBA Listed Species L: Listed, N: Nominated, I: Invalid or ineligible, D: Delisted	Conservation status under FFG Act 1988: L: Listed, N: Nominated, I: Invalid or ineligible and D: Delisted		
Scientific Name	Common Name	VROTS	EPBC	FFG
<i>Accipiter novaehollandiae novaehollandiae</i>	Grey Goshawk	VU		L
<i>Acrobolbus cinerascens</i>	Grey Pouchwort	VU		
<i>Actitis hypoleucos</i>	Common Sandpiper	VU		
<i>Alcedo azurea</i>	Azure Kingfisher	NT		
<i>Anas rhynchotis</i>	Australasian Shoveler	VU		
<i>Anthochaera phrygia</i>	Regent Honeyeater	CR	EN	L
<i>Ardea intermedia</i>	Intermediate Egret	EN		L
<i>Ardea modesta</i>	Eastern Great Egret	VU		L
<i>Aythya australis</i>	Hardhead	VU		
<i>Biziura lobata</i>	Musk Duck	VU		
<i>Botaurus poiciloptilus</i>	Australasian Bittern	EN	EN	L
<i>Calamanthus pyrrhopygius</i>	Chestnut-rumped Heathwren	VU		L
<i>Calyptorhynchus banksii graptogyne</i>	Red-tailed Black-Cockatoo	EN	EN	L
<i>Canis lupus dingo</i>	Dingo	DD		L
<i>Canthocamptus dedeckkeri</i>		VU		
<i>Canthocamptus sublaevis</i>		DD		
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	NT		I
<i>Chlidonias hybridus javanicus</i>	Whiskered Tern	NT		
<i>Chthonicola sagittatus</i>	Speckled Warbler	VU		L
<i>Cinclosoma punctatum</i>	Spotted Quail-thrush	NT		
<i>Circus assimilis</i>	Spotted Harrier	NT		
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (south-eastern ssp.)	NT		
<i>Coturnix chinensis victoriae</i>	King Quail	EN		L
<i>Dasyurus maculatus maculatus</i>	Spot-tailed Quoll	EN	EN	L
<i>Dasyurus viverrinus</i>	Eastern Quoll	RX		L
<i>Dromaius novaehollandiae</i>	Emu	NT		
<i>Egretta garzetta nigripes</i>	Little Egret	EN		L
<i>Engaeus curvisuturus</i>	Curve-tail Burrowing Crayfish	EN		L
<i>Engaeus phyllocercus</i>	Narracan Burrowing Crayfish	EN		L
<i>Engaeus sternalis</i>	Warragul Burrowing Crayfish	CR		L

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Scientific Name	Common Name	VROTS	EPBC	FFG
<i>Engaeus tuberculatus</i>	Tubercle Burrowing Crayfish	EN		
<i>Euastacus neodiversus</i>	South Gippsland Spiny Crayfish	EN		L
<i>Falco subniger</i>	Black Falcon	VU		
<i>Galaxias sp. 9</i>	West Gippsland Galaxias	CR		N
<i>Galaxiella pusilla</i>	Dwarf Galaxias	EN	VU	L
<i>Gallinago hardwickii</i>	Latham's Snipe	NT		
<i>Gelochelidon nilotica macrotarsa</i>	Gull-billed Tern	EN		L
<i>Gymnobelideus leadbeateri</i>	Leadbeater's Possum	EN	EN	L
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	VU		L
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	CR	VU	L
<i>Hirundapus caudacutus</i>	White-throated Needletail	VU		
<i>Isoodon obesulus obesulus</i>	Southern Brown Bandicoot	NT	EN	L
<i>Ixobrychus minutus dubius</i>	Little Bittern	EN		L
<i>Larus pacificus pacificus</i>	Pacific Gull	NT		
<i>Lathamus discolor</i>	Swift Parrot	EN	EN	L
<i>Lewinia pectoralis pectoralis</i>	Lewin's Rail	VU		L
<i>Lichenostomus melanops cassidix</i>	Helmeted Honeyeater	CR	EN	L
<i>Lissolepis coventryi</i>	Swamp Skink	VU		L
<i>Litoria raniformis</i>	Growling Grass Frog	EN	VU	L
<i>Litoria spenceri</i>	Spotted Tree Frog	CR	EN	L
<i>Litoria verreauxii alpina</i>	Alpine Tree Frog	CR	VU	L
<i>Maccullochella peelii</i>	Murray Cod	vu	VU	L
<i>Macquaria ambigua</i>	Golden Perch	NT		I
<i>Macquaria australasica</i>	Macquarie Perch	EN	EN	L
<i>Mastacomys fuscus mordicus</i>	Broad-toothed Rat	EN		L
<i>Megascolides australis</i>	Giant Gippsland Earthworm	EN	VU	L
<i>Melanodryas cucullata cucullata</i>	Hooded Robin	NT		L
<i>Melanotaenia fluviatilis</i>	Murray-Darling Rainbowfish	VU		L
<i>Miniopterus schreibersii GROUP</i>	Common Bent-wing Bat			L
<i>Myotis macropus</i>	Southern Myotis	NT		
<i>Nannoperca sp. 1</i>	Flinders Pygmy Perch	VU		
<i>Ninox connivens connivens</i>	Barking Owl	EN		L

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Scientific Name	Common Name	VROTS	EPBC	FFG	
<i>Ninox strenua</i>	Powerful Owl	VU		L	
<i>Numenius madagascariensis</i>	Eastern Curlew	VU			
<i>Nycticorax caledonicus hillii</i>	Nankeen Night Heron	NT			
<i>Oxyura australis</i>	Blue-billed Duck	EN		L	
<i>Petauroides volans</i>	Greater Glider	VU			
<i>Phalacrocorax varius</i>	Pied Cormorant	NT			
<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	VU		L	
<i>Philoria frosti</i>	Baw Baw Frog	CR	EN	L	
<i>Platalea regia</i>	Royal Spoonbill	NT			
<i>Plegadis falcinellus</i>	Glossy Ibis	NT			
<i>Porzana pusilla palustris</i>	Baillon's Crane	VU		L	
<i>Prototroctes maraena</i>	Australian Grayling	VU	VU	L	
<i>Pseudemoia cryodroma</i>	Alpine Bog Skink	EN		L	
<i>Pseudomys fumeus</i>	Smoky Mouse	EN	EN	L	
<i>Pseudophryne dendyi</i>	Dendy's Toadlet	DD			
<i>Pseudophryne semimarmorata</i>	Southern Toadlet	VU			
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VU	VU	L	
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail Bat	DD		L	
<i>Sminthopsis leucopus</i>	White-footed Dunnart	NT		L	
<i>Sminthopsis murina murina</i>	Common Dunnart	VU			
<i>Stagonopleura guttata</i>	Diamond Firetail	NT		L	
<i>Stictonetta naevosa</i>	Freckled Duck	EN		L	
<i>Tandanus tandanus</i>	Freshwater Catfish	EN		L	
<i>Tanjistomella verna</i>		VU			
<i>Thaumatoperla robusta</i>		DD			
<i>Thylogale billardierii</i>	Rufous-bellied Pademelon	RX		L	
<i>Tringa nebularia</i>	Common Greenshank	VU			
<i>Tyto novaehollandiae novaehollandiae</i>	Masked Owl	EN		L	
<i>Tyto tenebricosa tenebricosa</i>	Sooty Owl	VU		L	
<i>Varanus varius</i>	Lace Monitor	EN			

Source:

Victorian Biodiversity Atlas, © The State of Victoria, Department of Environment and Primary Industries (accessed January, 2014).

APPENDIX 4. CONSERVATION VALUE ASSESSMENT DATA

The table below provides an outline of what fields were used and captured as part of the review of the Conservation Value of roadsides.

Field	Data type	Example
Road Name	Text	Main Jindivick Road
Recorders Name	Text	
Sheet no.		
Date of Assessment	Date	
Side of Road	Text	North, South, Both
Roadside width	Short interval	1,2,3
Trees with hollows	Short interval	0,3
Trees/shrubs	Short interval	0,2
Grasses	Short interval	0,2
Leaf litter	Short interval	0,2
Logs	Short interval	0,2
Rocks/crevices	Short interval	0,2
Wet/marshy land	Short interval	0,2
Fauna habitat section total	Short interval	0,2,3,4,5
Regeneration	Short interval	0,1,2,3
Wildlife corridor	Short interval	0,1,2,3
Weed cover	Short interval	0,1,2,3
Site disturbance	Short interval	0,2,4,6
Rare species	Short interval	0,15
Total score	Short interval	
Conservation value	Text	Low, Medium, High

BAW BAW SHIRE COUNCIL
ROADSIDE CONSERVATION
MANAGEMENT PLAN

PART 2: OPERATIONAL GUIDELINES FOR
CONSTRUCTION AND MAINTENANCE
WORKS ON ROAD RESERVES



Contents – Part 2

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1 INTRODUCTION

Baw Baw Shire Council is responsible for the construction and maintenance of roads and road reserves under their control. The operational guidelines address the functional values of roads and road reserves and provide guidelines for all construction and maintenance works to ensure that they are carried out with due regard to the other values of roads and road reserves, especially conservation and cultural and recreational values. These values are described in Part 1 of the *Roadside Conservation Management Plan*.

The operational guidelines apply to all levels of Council, contractors and service authorities for any works on roads and road reserves within the Shire that are under the control of Council. Its application may also be relevant to roads managed by VicRoads within the Shire where the use of these guidelines is encouraged.

These operational guidelines form part of a suite of documents relating to the management of Council land and assets and are to be used in conjunction with the *Municipal Fire Management Plan*, the *Road Management Plan*, *Baw Baw Shire Council's Weed Management Strategy* and other complementary strategies which are developed. The EPA guidelines for road construction and stormwater runoff protection are also a useful reference document. Of particular note is the publication, *Sediment Control on Unsealed Roads: A Handbook of Practical Guidelines for Improving Stormwater Quality* (Cardinia, Casey and Mornington Peninsula Councils and EPA, 2004).

1.1 Roadside Management Conditions

The Index of Roads & Conservation Rating (Appendix 1) lists roads within the Shire that have been assessed as having Medium or High conservation value. It is not a complete list of roads within the Shire. Some roads may contain both Medium and High conservation value. Where the delineation is not apparent, consultation may need to be sought with the Natural Environment Department.

In situations where only one side of the road was assessed as having Medium or High conservation value, the GIS map layer clearly displays these values (Appendix 2). However, where opposing sides of the road were assessed as having different conservation values, the higher conservation rating was applied. For example, if the north side of a road was deemed to have High conservation value and the south side Medium, the map will show High conservation value for both sides of the road for the specified length.

Reference to the Roadside Conservation Map and the Index of Roads and Conservation rating is required before maintenance works commence. Previously the 'Enviromark' Conservation Area markers were used to help contractors recognise areas of conservation value. The revised GIS mapping and production of quality maps however, will provide the primary mechanism for locating areas with different conservation rankings and negate the need for a marker system.

The inclusion of the Roadside Conservation value onto the council GIS system will enable maintenance works, and permits to be evaluated from the desk top. Site inspection may be required.

1.2 Pre-works checklist

1. Ensure relevant permits and/or approval is obtained prior to commencing works. If removing native vegetation, determine whether works are covered by an exemption (Figure 4).

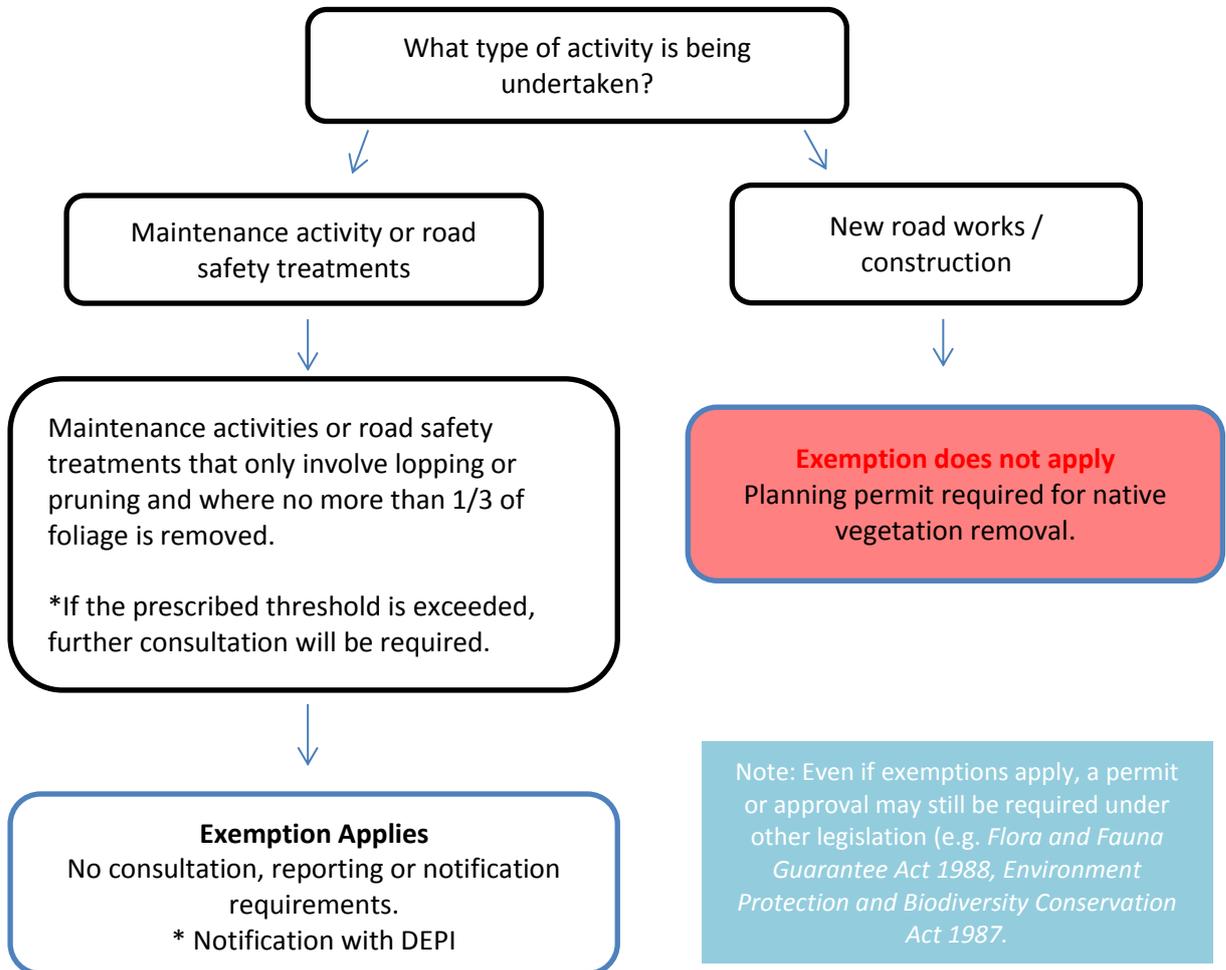


Figure 4. Native Vegetation Removal – process for exempt works

2. Determine roadside conservation value and additional requirements as specified in the RCMP (Figure 5).

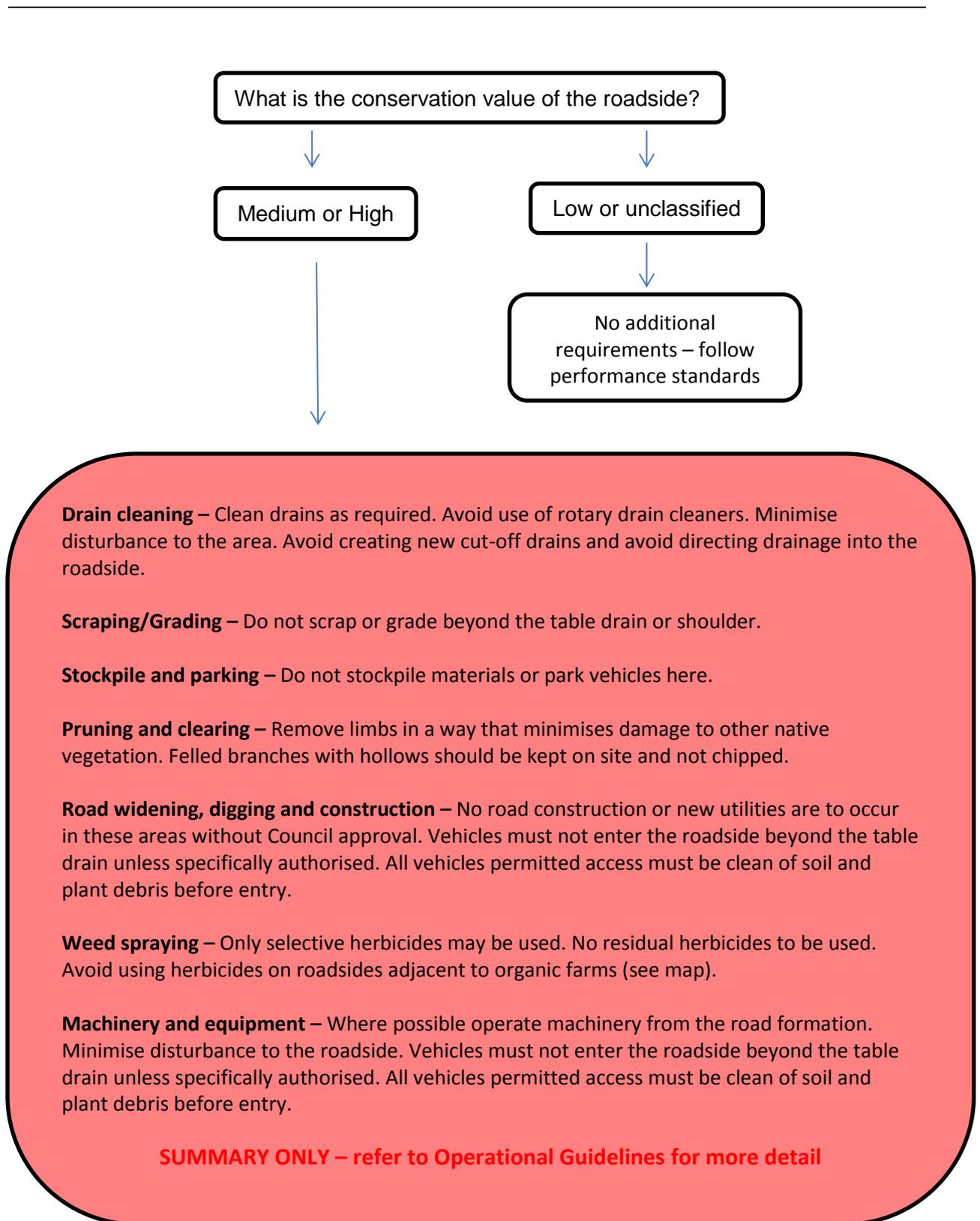


Figure 5. Additional requirements for roadside conservation areas

3. Check to see if the roadside forms part of a Secondary Fuel Break (Appendix 3), or fire access road. If so, liaise with the Emergency Management Coordinator or Municipal Fire Prevention Officer.
4. As part of the planning of works, inspect the roadside in order to:

-
- Identify areas suitable for turning around, passing bays, overnight parking and/or for removing vegetation,
 - Identify areas to be protected and 'no go' zones,
 - Identify areas where the potential run-off may create problems with drainage and erosion.
5. Where required, ensure an Environmental Management Plan (EMP) has been completed to address risk issues and mitigation of impacts from works.
 6. Ensure vehicles and machinery working within the road reserve are free from soil and debris prior to entering the site.
 7. Where required, nominate the location of the nearest site designated for disposal of spoil and vegetative material.

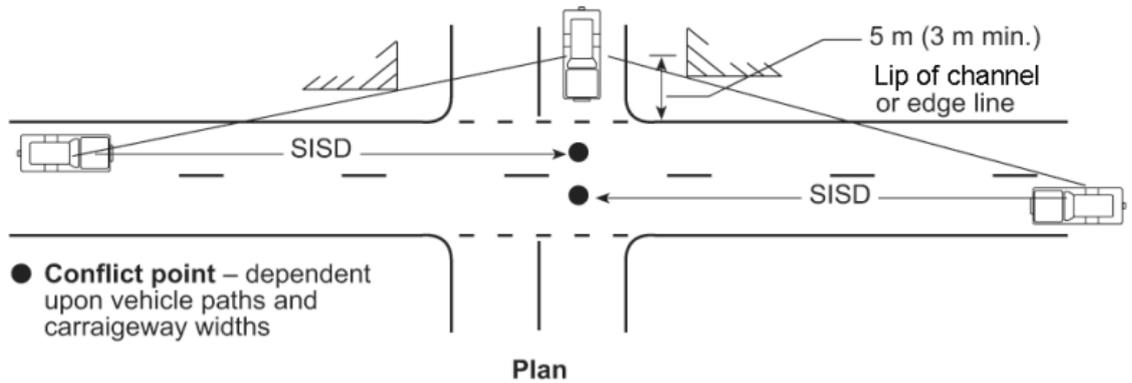
2 SITE OPERATIONS

2.1 Safe Vehicle Movement and Line of Sight Clearance

Objective: Maintain roadside vegetation (i.e. a vegetation-free rectangle along the road corridor) in order to allow the safe passage of road traffic at any time.

General guidelines

1. Vegetation maintenance must be in accordance with *Managing Native Vegetation on Roadsides* (DSE 2009).
2. Inspection of overhanging vegetation is to be included in any road maintenance and construction program.
3. Clearance or removal of vegetation is to be carried out with minimal disturbance to the soil and existing vegetation using sound removal and pruning techniques (Australian Standard 4373-2007 Pruning of amenity trees) and equipment, including:
 - Felling trees/branches onto roads to minimise disturbance to the ground and to vegetation on the road reserve;
 - pruning for habitat value retention;
 - Using verge mowers where applicable;
 - Retaining logs (e.g. with diameter greater than 30 centimetres) for habitat and where not feasible consider relocation to another site;
 - Mulching smaller felled indigenous vegetation for use on-site or elsewhere.
4. Clearances may be larger where increased sight lines are required, such as intersections, around curves or where clearance is necessary around roadside infrastructure. The amount of clearance will be determined by specific site requirements and in accordance with *Managing Native Vegetation on Roadsides* (DSE 2009).
5. The Austroads Standards should be used for determining clearance for sight triangles at intersections (Figure 6).



Design Speed (km/h)	40	50	60	70	80	90	100	110	120	130
SISD (m)	73	97	123	151	181	226	262	300	341	383

Figure 6. Austroads Standards for Safe Intersection Sight Distance (SISD).
Adapted from the Austroads Guide to Road Design (2010).

- Use of heavy machinery/vehicles on the roadside within the drip line of trees should be minimised to avoid root damage and soil compaction.

2.2 Hazardous Trees

A tree is deemed hazardous if it has been assessed by a suitably qualified Council Officer (arborist) and has structural flaws and/or poor health that is posing an immediate risk to property or life.

Objective:

Assess and make safe trees that have been deemed hazardous and limit the potential for tree fall onto roads.

General guidelines:

17. Inspection

- Carried out by a qualified Council officer (arborist).
- The tree assessment is risk based, and likely to occur given normal season weather conditions within the next 12 months.
- Each assessment is to be recorded.
- Assessments are to recommend the most appropriate method to reduce the hazard this may include pruning, removal, weight reduction.

18. Hazardous tree maintenance works

-
- All works are to be undertaken to *Australian Standard 4373-2007 Pruning of amenity trees*.
 - Pruning of major and minor limbs to reduce the hazard risk of the tree.
 - Habitat pruning is a technique used to prune back the smaller limbs leaving the large limbs for habitat. This pruning technique is to be used only when the pruned tree does not remain as a hazard.
 - Use of 'cut and paint method' with Glyphosate to prevent regrowth from trees cut from roadsides
 - Felling trees/branches onto roads to minimise disturbance to the ground and to vegetation on the road reserve.

2.3 Machinery Access, Turnaround Areas and Overnight Parking

Objective: Minimise vehicle and machinery movement on road reserves in order to limit disturbance to vegetation and ground compaction.

General guidelines:

19. Design specifications and site plan must indicate areas suitable for access, parking and turning.
20. Vehicles and machinery are not permitted off-road, unless there is a designated turning bay or driveway available for the purpose of manoeuvring.
21. Vehicles and machinery are not permitted to be parked on High or Medium conservation value roadsides, and are to avoid drip lines of trees in low conservation value roadsides.
22. Use existing, designated machinery access, turnaround and overnight parking areas.
23. On narrow unsealed roads, if designated access/parking and turning areas do not exist and are required, they are to be created and maintained at approximately one kilometre intervals except where constrained by topography and vegetation. If possible select a low conservation value roadside where:
 - There will be least disturbance to indigenous vegetation, soil and animal habitat such as an existing clearing or an area covered by exotic grasses and weeds
 - The area can be cleared and covered in crushed rock to provide a clear parking area
 - Such areas can double as passing bays or act as a fuse break (Figure 7) - if such an area is no longer required it is to be rehabilitated to its original state or better.

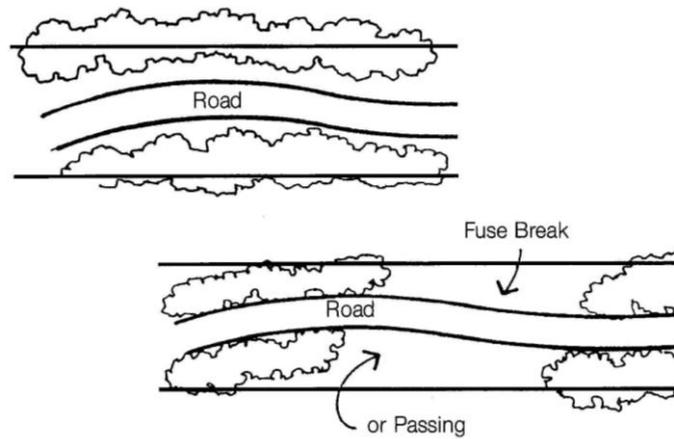


Figure 7. Existing cleared area which can be designated as a passing bay for vehicle/machinery parking or as a fuse break.

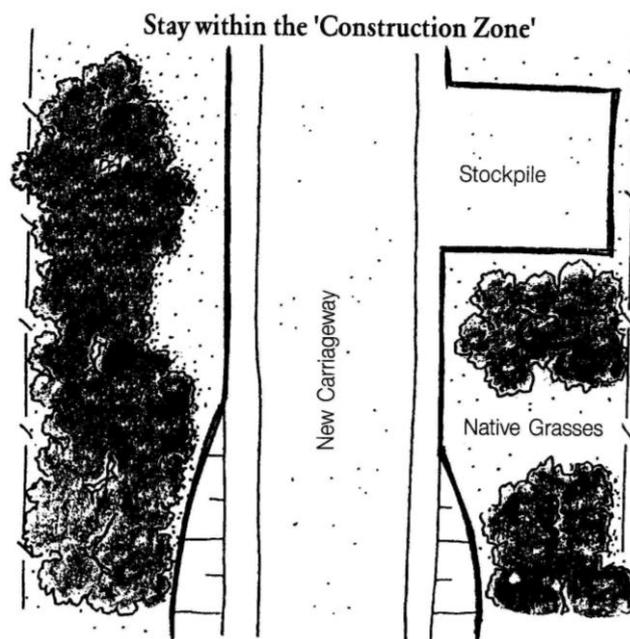


Figure 8. Clearly identify area of disturbance or machinery access or 'Construction Zone'.

2.4 Vehicle and Machinery Servicing and Hygiene

Objective: Ensure all grass cutting and earthmoving machinery working in the road reserve are cleaned so as to be free of weed seeds and soil borne pathogens before commencing work on other sites elsewhere in the Shire.

General guidelines

24. When significant works are to be undertaken develop a hygiene strategy to:

- Determine the nature, source and extent of any possible weed or pathogen contamination.
- Deal with the contamination of vehicles/machinery and/or to avoid contamination on-site.

-
- Treat any contamination of vehicles/machinery off-site.
 - Confirm that the vehicle/machinery operator has followed the approved hygiene procedures before moving vehicles/machinery to a new site.
 - Ensure documentation of hygiene practices.
25. Develop and implement operationally feasible procedures to clean slashers and other machinery before moving to a new site.
26. If possible, work from areas of least weed infestation to highest.
27. Emergency servicing of vehicles/machinery may be carried out in the field providing:
- Vehicles/machinery are parked in a designated cleared area
 - No spillage occurs of fluids when servicing vehicles and machinery on the roadside when it is not possible to move to a more appropriate site
 - All packaging, used parts etc. are cleared from the site and the site is reinstated if it is damaged by repair vehicles.

2.5 Job Waste Management

Objective: Dispose of job waste resulting from site operations with minimal disturbance to the roadside.

General guidelines:

28. Seek advice regarding the need for planning approval to temporarily store job waste at a works site.
29. Job related waste and litter is to be removed from roadsides and disposed of and/or recycled in a responsible manner.
30. Waste materials from earthworks, resealing or re-sheeting, in particular that are associated with bitumen works, is not to be disposed of on roadsides or parking sites. An appropriate disposal site must be discussed with Council (refer to section 2.7)
31. Investigate where surplus bitumen may be used to 'spray-seal' exposed surfaces of newly formed drains, to seal the surface and reduce dust and run-off after rain.
32. Excess aggregate must be removed from roads and drains.

2.6 Stockpiles and Dump Sites

Objective: Locate stockpiles and dump sites to minimise negative impacts on the road and road reserve with material only to be placed on a site designated and managed for this purpose.

General guidelines:

33. Stockpiles and dump sites are to be located:
- On public land of low conservation value;
 - Away from drainage lines, floodways and culverts;

-
- In areas of low visual amenity and/or landscape value;
 - Away from the bases or drip-lines of trees.
34. Use only designated stockpile sites, selecting sites closest to the job. Works supervisor is responsible for providing an up to date list and map of stockpile sites.
 35. Manage the stockpile to prevent erosion, wind-borne material loss and possible siltation of drains, roadside vegetation and waterways, or weed recruitment. Methods can include: enclosing the pile with a silt fence, establishing a cut-off drain, covering the stockpile, spraying for weeds, moistening it down and sealing it with sprayed binder and cellulose emulsion.
 36. Council is to be contacted prior to any application of herbicides to stockpiles or dump sites.
 37. To avoid theft from or damage to stockpiles, establish them as close to the time of use as practicable.
 38. All stockpile and dump sites are to be secured after hours to prevent theft of materials and dumping of household rubbish.

2.7 Excess Materials

Objective: Minimise disturbance to vegetation and soil from removal of excess material, such as overburden from site operations.

General guidelines

39. Rectification of disturbance to vegetation and the ground surface is a required element of the contracted works and is to be completed to the satisfaction of the Natural Environment Coordinator for High conservation value roadsides (refer to section 3).
40. All overburden beyond the edge of the road formation is to be removed as close as possible to the original natural surface level of the topsoil.
41. Avoid a build-up of excess graded material against established vegetation growing on batters outside the road formation (Figure 8). Remove this material as it is generated.
42. Excess material which cannot be safely retained on the road formation is to be stockpiled at a designated site.
43. On narrow, unsealed roads designated vehicle or machinery turnaround, parking or refuge areas may be used to temporarily stockpile excess materials.
44. Earth moving works are to keep disturbance of the ground and native vegetation to the minimum necessary to achieve the works.



Figure 9. Excess materials should not be stockpiled against the base of a tree.

2.8 Road Construction, Widening and Upgrading

Objective: Avoid and minimise environmental damage and negative impacts on vegetation, wildlife habitat and existing pathway infrastructure as a result of construction or maintenance works, while preserving a safe and efficient road system.

General guidelines

45. Prior to any works relevant permits will be sought.
46. New road works may require a planning permit. Check with Council prior to commencing works.
47. Ensure environmental values are considered prior to undertaking works on Medium and High conservation value roadsides. Where Rare or Threatened species have been identified on a roadside, there may be a requirement to produce an Environmental Management Plan.
48. Prior to each road construction project a timetable and budget for the works is to be formulated by the project proponent. This should include design, permit applications, construction, ordering materials, letting of tenders, reinstatement works, seed collection etc., as required for each particular road.
49. Works are to be designed so that they minimise vegetation loss and do not encroach tree protection zones.
50. Appropriate sediment control measures are to be incorporated into the design and planning of works to prevent excess materials being washed into roadside vegetation or waterways during construction. Refer to EPA *Environmental Guidelines for Major Construction Sites* 1996.
51. The boundaries of all construction operations must be clearly marked prior to commencing works. This can be done with temporary fencing.
52. Vegetation to be retained within the construction zone is to be clearly marked and not disturbed.
53. Where possible, work should be avoided within the drip line of trees so that root damage and soil compaction is minimised (Figure 9).

-
54. Where possible, construction works are to be carried out in stages to minimise the area of disturbance.
 55. Vehicles and machinery are to be confined to access tracks and existing or proposed road alignments.
 56. No new amenities are to be sited within High conservation value roadsides.
 57. The importing or use of weed and/or disease contaminated materials for construction works on all roadsides is to be minimised by:
 - Adhering to vehicle and machinery hygiene guidelines (Section 2.5)
 - Buying from reputable licensed quarries
 - Monitoring new work sites for outbreaks of weeds
 - Treating any weed/disease outbreaks as soon as they appear and
 - Determining the source of infestation.
 58. Construction and maintenance contractors are to liaise with those carrying out rehabilitation works to ensure an appropriate finish and enable adequate preparation for rehabilitation.
 59. Begin reinstatement and prepare for rehabilitation of the site as soon as works are completed in accordance with the approved design, and when conditions are favourable.

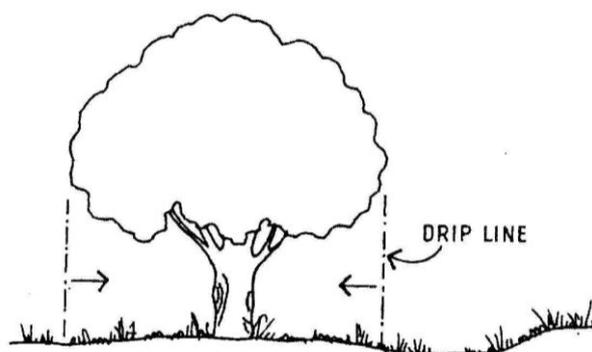


Figure 10. Avoid using heavy machinery and disturbing soil under drip lines

2.9 Road Surface Maintenance

Objective: Ensure the efficient and safe functioning of the road while minimising impacts on the roadside vegetation and wildlife habitat.

General guidelines:

60. Unless an exemption applies, vegetation beyond the road formation is not to be disturbed during road maintenance works on Medium and High conservation value roadsides.
61. Borrow pits are not to be dug to extend fill to be used in road maintenance works on the roadside unless it is within the work area and remnant vegetation is not disturbed.
62. Materials for road maintenance works on all roadsides must be sourced from reputable dealers and where possible, limit the spread of weeds by sourcing from weed free areas.

63. When working close to existing trees, contractors are to avoid:

- Working within the drip line of trees to minimise root damage and soil compaction.
- Placing sealed surfaces hard up against vegetation. If vegetation removal is required refer to section 3.1 of this document.
- Changing the finished ground level around vegetation.

64. Material needed for road works is to be stockpiled on a daily basis on the road formation or in a cleared area in close proximity to the work site. Erodible stockpile material is to be covered or sealed.

65. Road shoulders and unsealed roads are to be graded as required. Grading should:

- Not extend beyond the road formation
- Ensure sufficient compaction of the road surface to ensure the new surface can adequately resist erosion
- Avoid grading off the road crown.

66. Spoil from grading is to be directed towards the centre of the road and removed to a designated dump site if it cannot be safely retained on the road formation and/or the shoulders. Soil is not to be spread onto the roadside, left in heaps, or windrowed onto the roadside vegetation or into the adjacent reserve.

67. Where possible, original soil levels should be maintained. Soil should not be placed against tree trunks or on top of the existing soil level as this can result in the death of the tree. Caution should also be taken not to alter the existing hydrology of the road reserve which may also result in vegetation death and weed invasion.

2.10 Road Drainage and Erosion Control

Victorian councils have a statutory requirement to:

“...maintain and, where relevant, manage roads and infrastructure to minimise erosion and sediment and pollutant transport, particularly along urban, unsealed and forestry roads.” (EPA Victoria, 2003, State Environment Protection Policy [Waters of Victoria]. Victorian Government Gazette)

Baw Baw Shire has numerous unsealed roads which are subject to erosion by stormwater and have the potential to generate substantial amounts of sediment. Research has shown that unsealed roads can produce one hundred times more sediment in stormwater runoff than a sealed road (ARRB Transport Research, 2002).

Stormwater is concentrated in drainage channels alongside roads and directed away from the road to protect the road structure and road users from flood waters. The combination of exposed surfaces and concentrated stormwater can lead to significant erosion problems and the potential for stormwater quality issues from excessive sediment generation.

Sediment and suspended solids are considered to be the most significant of all road runoff pollutants due to the numerous effects on ecosystem health. Sediment

produced from unsealed roads is typically very fine. These types of particles have the potential to be suspended in stormwater for long periods and carried long distances through the catchment.

Discharge of muddy or turbid water into waterways can cause serious environmental damage. Reduced amounts of sunlight caused by suspended sediments can affect the growth of plant life and make it difficult for visual predators, such as fish and birds, to hunt. Sediment can also clog the gills of fish and other stream life and interfere with the uptake of oxygen.

Coarse sediment deposited in the waterway, can change the nature of creek beds. High levels of sediment can fill pools, cover rocky bottoms and coat woody debris or 'snags'. This sediment deposition can smother fish eggs, plants, algae, insects, snails, worms and shrimps, and reduce the available habitat for breeding, shelter and feeding. As a result, fish and invertebrate communities within the waterway can be significantly altered.

Objectives:

- Road-related drainage works should aim to minimise erosion, sedimentation and subsequent impacts on waterways.
- Drainage works should be planned in accordance with the following documents:
 - *Water Sensitive Road Design* (Wong, Breen and Lloyd, 2000)
 - *Sediment Control on Unsealed Roads: A Handbook of Practical Guidelines for Improving Stormwater Quality* (Cardinia, Casey and Mornington Peninsula Councils and EPA, 2004).

In addition, road drainage should observe the following three principles:

- **Slow the flow** – slowing the flow of stormwater will reduce its carrying capacity and allow particles to settle. It has been shown that where the velocity of water is doubled, its capacity to erode and transport sediment increases 64 times (Cardinia, Casey and Mornington Peninsula Councils and EPA, 2004).
- **Reduce the volume of runoff** – a large volume of stormwater has increased capacity to erode and transport sediment. By diverting and dispersing water away from the road at periodic intervals, the catchment area of the roadway is reduced.
- **Catch and treat the runoff** – by identifying discharge points from the road, the runoff can be detained and treated before it reaches the stream. A variety of sediment trapping techniques are available depending on the characteristics of the site.

General guidelines:

68. The road formation should be maintained at a higher elevation than adjacent drains to prevent the road becoming a drain, except where drain capacity is exceeded and the road may therefore need to transmit flood flows and in rare

cases where the road might be designated as a floodway in order to protect nearby assets.

69. Where possible road design should limit water collected into drains to runoff from the road surface and not also collect runoff from adjacent land, though this is not always possible, especially where slopes exist adjacent to road reserves.
70. Rainfall runoff from roads and into roadside drains should be channelled to a natural point of discharge (a stream or valley) where it is practical to provide connection for discharge to the stream or regional drain. Where this is not practical, flows should be guided onto the adjacent land via relatively frequent and short channels so as to minimise volume and velocity of stormwater. This should be undertaken with the formal agreement of the adjoining landowner.
71. On Medium and High conservation value roadsides, minimise or avoid directing drainage into the roadside. Where practical direct drainage past the conservation area or into existing drains. In situations where this is not practical, minimise disturbance to the conservation area.
72. The use of rotary drain cleaners on High conservation value roadsides will be avoided. In situations where the verge is highly disturbed there may be exceptions (Figure 10). In addition, where there is potential to modify practice to reduce the spread of spoil exceptions may be made. Contact the Natural Environment Department for approval.



Figure 11. High conservation value roadside with disturbed verge.

73. The use of rotary drain cleaners on Medium conservation value roadsides should be avoided where noxious weeds occur (see Appendix 4 or 'Weeds of Concern').
74. Where constraints exist in managing volume and velocity of stormwater, and where funds are available, an option may be to construct a vegetated pond (or series of ponds) to pool flows and reduce energy.

-
75. The type of drain and treatment is to be selected according to the slope of the land, soil or rock type, and conservation status of the roadside.
 76. Maximising the amount of vegetation retained and minimising ground disturbance will minimise erosion.
 77. Earthworks on steep slopes and along streams must be minimised.
 78. Earthworks on Medium and High conservation value roadsides and in significant roadside habitat and wildlife corridors must be minimised.
 79. Channel gradients are to be kept as low as possible to reduce velocities and possible erosion.
 80. Adjoining landholders are to be consulted where roadside drainage enters their properties.
 81. Where formal recreational trails or other intersects occur on roadsides, the design and construction of road drainage and erosion solutions should take into consideration the ability of recreational users to exit/enter roads and to cross drains and culverts.
 82. Stormwater run-off and sediment capture is to be provided for as soon as the project is begun as per the EPA *Environmental Guidelines for Major Construction Sites* 1996. Sediment capture must be a deliberate element of works design and should be provided for through various means including sediment pits, silt fences, hay bales, rock check dams and other means. The detail of sediment capture must be provided to Council.
 83. When grading roads, windrows are to be pulled onto road pavement and removed onto a designated dump site, unless the material can be safely spread and compacted.
 84. As soon as practicable, newly exposed surfaces must be stabilised by revegetation, paving, sealing or mulching.

There are three different types of road profile (Figure 11). The use of an outsloping crossfall can be effective in reducing the concentration of road drainage water. It allows diffuse drainage off the road into the environment and avoids the need to concentrate drainage in table drains. Alternatively, where there are erosive soils and drainage water needs to be contained, the use of an insloped crossfall can be effective in reducing drainage impacts.

The choice of the most appropriate pavement crossfall design will depend on the local environmental, topographical and safety factors (Cardinia, Casey and Mornington Peninsula Councils and EPA, 2004).

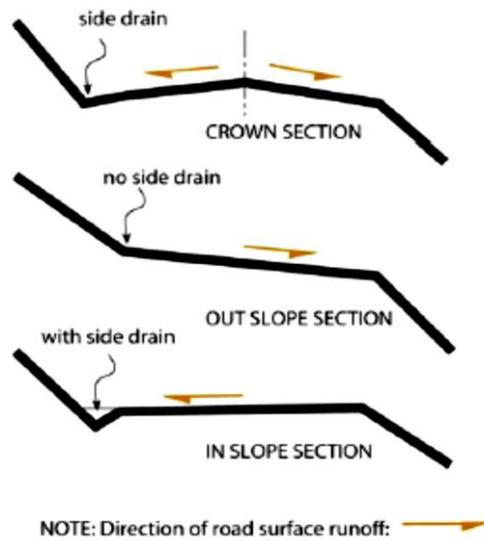


Figure 11. Three types of road profile
 Reproduced with permission from Cardinia Shire Council.

2.10.1 Table drains

Table drains are the drains that run parallel with a road and receive run-off from the crowned surface. They are usually the principal means by which road drainage is managed.

Shape

The shape of table drains is important with drains requiring sufficient capacity to carry required flows and adequate integrity to resist the erosive action of stormwater. A flat-based profile with a wide, shallow channel will prevent scour. Low sloping sides will also reduce the risk of the drain sides undermining and failing.

Ideally, and where funding permits, drains should be of parabolic or trapezoid cross section. 'V' or steep-sided 'U' shapes are less desirable, although they are quick and easy to construct and maintain with a grader, they are extremely prone to erosion along the invert as all the tractive forces generated by the flowing water are concentrated along a narrow corridor. Drain sides should be no steeper than 3 horizontal: 1 vertical and an excavator or backhoe is better suited to achieving the preferred shape than a grader (Cardinia, Casey and Mornington Peninsula Councils and EPA, 2004).

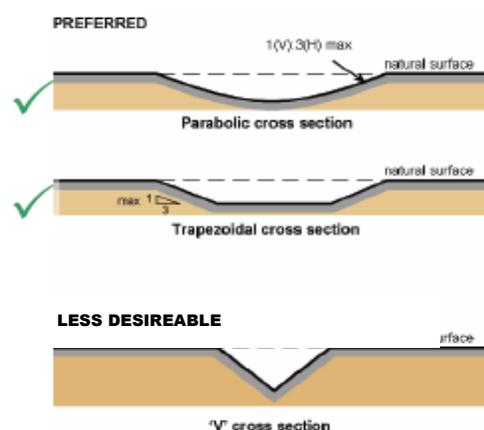


Figure 12. Optimal Table Drain Shape
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On rural roads, the formal design of table drains is often limited, resulting in exceeded capacity during flood events. This can lead to damage of the road surface and even danger to motorists from localised ponding of water. Usually table drains remain unsurfaced and therefore additional measures are required in order to capture sediment.

Importantly, table drains (and cut-off drains) should be prevented from discharging directly into waterways. These channels provide an easy pathway for sediment to reach streams and adversely impact on water quality.

Prevention of sediment transport along table drains

There are a number of options available by which sediment transported in table drains can be prevented from entering streams. Where funding and resources allow, the following types of Check Dams may be used:

- Rock Check Dams – installation of small rock barriers at regular intervals along the table drain to dam water and permit sediment drop-out.
- Silt Fences and Hay Bale Check Dams – can also be placed across the table drain or even used in tandem to facilitate sediment capture.
- Bio-degradeable or Synthetic Log or Gravel Sausage Check Dams – biodegradable logs can be made from coir (fibre from coconut husks), straw or wool and typically break down over three to six months. Synthetic logs have a longer life than biodegradable materials and some can be reused if they only have a temporary use at one site. Gravel Sausages are permeable sacks made of either geotextile or synthetic netting filled with coarse sand or rock aggregate up to 50 millimetres.

Grassed or vegetated swales

Table drains can also undergo a grassed or vegetated swale treatment in order to trap sediment. Such treatment would involve revegetation of the constructed table drain with various types of vegetation ranging from direct seeding with exotic grass species, through to revegetation with indigenous sedges, semi-aquatics, grasses and other suitable species. This would provide greater water filtration through slowed flows as opposed to the rapid transport down unvegetated or slashed drains. Sediment capture and some pollutant removal would also be possible, especially through the use of the indigenous semi-aquatics which are capable of attaching pollutants to their stems. Swales are most effective on low to moderate slopes with a gradient between two per cent to four per cent (Cardinia, Casey and Mornington Peninsula Councils and EPA, 2004).

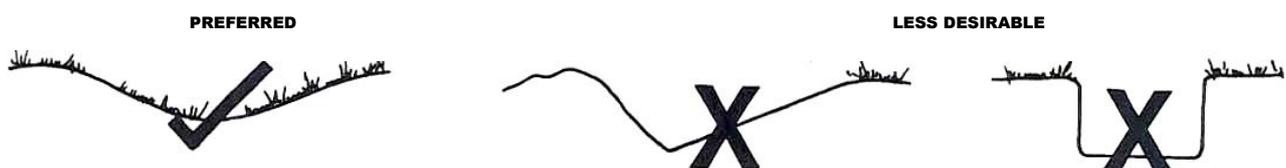


Figure 13. Grassed or Vegetated Swale Drain Formation

In some situations, table drains alongside unsealed roads are not able to sustain vegetation growth due to large volumes of runoff at high velocities which disturb root

zones. The large volumes of sediment generated from unsealed roads can also smother vegetation and prevent growth at those locations where sediment deposits. Maintenance requirements of table drains also mean that drains require regular cleaning, thus damaging or removing vegetation, especially where table drains are narrow and vegetation has mainly been planted in the floor of the drain, or where machinery scrapes the whole of the drain (floor and sides) in seeking to remove build-up of sediment.

These problems highlight the importance of good design where a grassed swale treatment is the preferred approach. Design should seek, within reason, to increase the width of the drain and reduce its depth with formation of a less pronounced pilot channel enabling low flows to readily disperse within the drain area potentially forming a number of flow paths. This will tend to overcome the concentration of flows that leads to increased velocities and root disturbance. In addition, it has greater potential to increase the spread of sediment deposition, thus resulting in less smothering. There would also tend to be less frequent need for clean-outs as other flow paths are likely to be available should the initial flow path become choked with sediment. Any vegetation disturbed as part of the clean-out would also be more likely to recover where it was surrounded by remaining vegetation as seed would be available from these plants and therefore the need for revegetation work could be minimised.

Lining of table drains

Where necessary, such as on highly erodible soils, table drains can be stabilised with a cement treatment or spray sealants so that the drain does not become a source of sediment itself.



Figure 14. Cement-treated table drain on Rankines Road, Strathewen.

Photo courtesy of Nillumbik Shire Council

In certain circumstances, another option may be to use rock rubble placed in drain sections to slow and disperse the flow. Rocks must be large enough to resist dislodgment by peak water flows and it is recommended that an assortment of rock sizes be used, instead of a single uniform size. Rough angular rock is more resistant to scouring, as it interlocks and resists overturning better than smooth rounded rock. The base of such drains should be evenly graded to prevent water ponding and becoming stagnant. The rock rubble should be laid in the same shape as the table drain to prevent water diverting around the rock. Use of a geotextile underneath the rock will reduce the likelihood of water undermining the rock. Such a treatment is

relatively expensive, but may be necessary in certain situations of steep grades and erosive soils. Rock lining can also help trap sediment.

Table drains – Operational guidelines summary

Objective: minimise erosion of table drains and their capacity to transport sediment to through various treatments described herein.

General guidelines

85. Undertake design of table drains to ensure they can transmit the 1:5 year ARI storm event, noting that a revision of ARI events is likely to be formalised in the near future with current 1:5 year capacities likely to be revised down to 1:3 year or thereabouts. Where possible capacity issues should be addressed by increasing width, not depth of drains. An increased number of cut-off drains may need to be considered to assist with meeting updated ARI information.
86. Where possible, design table drains to reduce concentration and velocity of run-off so that the integrity of the drains can be maintained and points of discharge from the drain (e.g. at cut-off drains, or connection to streams or other drainage lines) can be managed effectively without causing undue scour. Where necessary, construct grade controls to reduce energy/velocities and potential for headward erosion cuts.
87. Design table drains with the flattest and broadest profile possible within site constraints – parabolic or trapezoidal shapes can be used as a guide.
88. Where table drains are employed in areas of highly erodible soils consider sealing drains or lining with rocks to reduce the energy of flows and limit erosion.
89. On Medium and High conservation value roadsides, table drains should be sensitively designed and where possible permit opportunities for sediment dispersion within the drain channel, or allow sediment drop-out at various points where flows are checked by rock or other devices.
90. Avoid discharging road drainage to natural drainage lines or streams without appropriate energy dissipation and treatment for sediment deposition.
91. Where a vegetated swale approach is employed, use species that permit passage of flows, reduce potential for weed invasion and will not produce excessive biomass thereby choking and potentially diverting flows out of channel.
92. Monitor table drains for signs of erosion.
93. Ensure periodic clean-outs are conducted in a way that minimises damage to drains and protects vegetation where it has been used to trap sediment.
94. If table drains are cleaned with a rotary drain cleaner, grade excess material into roadway and remove. Special care needs to be taken in areas where the soil is subject to slumping. In these situations a back hoe may be more suitable than rotary cleaning of drains.

2.10.2 Cut-off or mitre drains

Cut-off drains, also known as turn-outs, push-outs or mitre drains, divert water away from the table drain into a suitable area of the road reserve adjacent to the table

drain. Their function is to reduce the volume and velocity of stormwater flow along the table drain. This helps preserve the capacity of the table drain to manage flow volumes while also reducing velocities. The cut-off drain also allows sediment management through permitting some of the sediment load in the table drain to drop out into the cut-off drain. Cut-off drains have been found to effectively remove sediment load of runoff water by up to 50 per cent (Cardinia, Casey and Mornington Peninsula Councils and EPA, 2004).

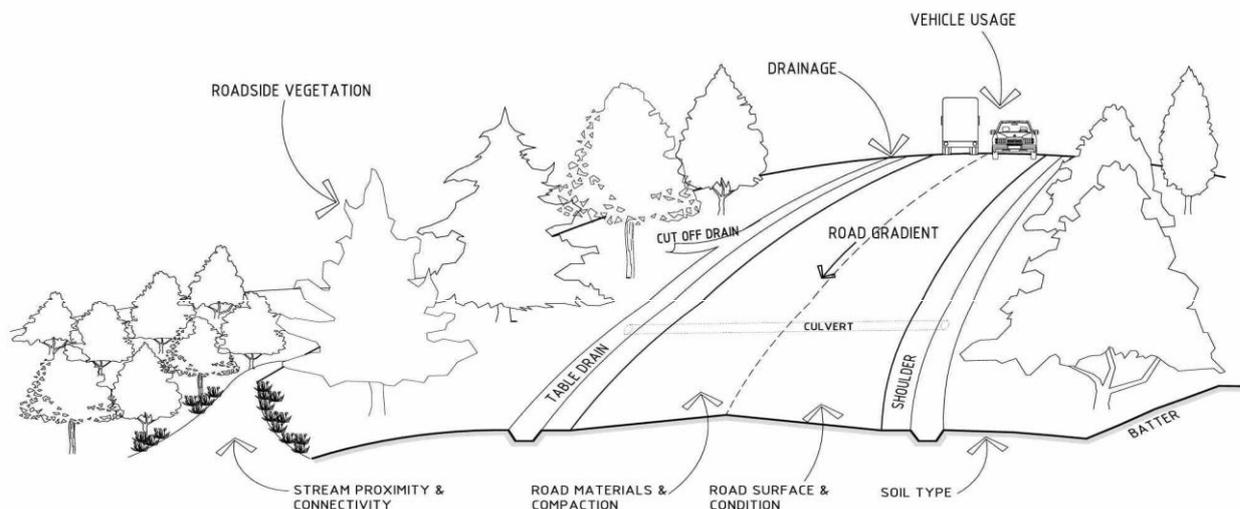


Figure 15. Cut-off and table drains

Reproduced with permission from Cardinia Shire Council

Impacts of cut-off drains

Cut-off drains have the potential to negatively impact roadside vegetation. Concentrated stormwater in localised areas has the potential to change natural hydrologic regimes. Should a cut-off drain be directed to an area that was previously not impacted by stormwater runoff, indigenous vegetation could potentially be changed by the altered hydrology. This could potentially cause tree or shrub death or result in significant weed invasion as opportunistic weeds occupy the wetter soils. In the case of high significance areas, such changed conditions are an unacceptable threat to vegetation and cut-off drains must be designed to enter reserves at points where lower significance vegetation is located.

In addition, vegetation can be impacted by sediment smothering where cut-off drains discharge a high sediment load to a particular point and sediment accumulation over time smothers indigenous vegetation. Where sediment is eventually removed, this may also cause loss of indigenous vegetation and open up opportunities for weed invasion.

Design of cut-off drains

General guidelines:

Cut-off drains should:

- **Have a broad flat base** (> one metre width) with gentle sides and feathering at the exit point
- **Be adequately spaced** as the greater the distance between cut-off drains, the greater the stormwater volume and velocity. Distance between cut-offs should be determined in part by the grade of the road, although it should not be

inferred that flat sections of road would not need cut-off drains. In these circumstances cut-off drains would not be critical for velocity management, but they would still be important for sediment and flow volume management. As a general rule, cut-off drains should be placed approximately 100 metres apart with intervals between cut-off drains shortened with increasing steepness. Table drain liners or check dams can also be used as an alternative to cut-off drains to control erosion and sediment.

- **Ensure that discharge of the cut-off drain onto steep slopes is avoided** or carefully managed as this can cause further erosion beyond the road reserve and potentially impact on stream banks in the vicinity. These circumstances can readily occur where a cut-off drain is located in the floor of a natural valley and the reserve width in which to disperse and/or treat the stormwater is limited. In such cases the critical issue is to manage velocities through stepping flows down slopes via the use of small ponds and drops to reduce velocity. Should this not be possible due to reasons of space, a pipe and drop pit may need to be employed to take flows from the road to a point at the bottom of the slope where it can be discharged on flatter ground.
 - **Have an evenly shaped outlet** (or end) so that the concentrated flow is converted back to sheet flow that is more widely distributed into the road reserve. In this way stormwater and sediment can disperse over a wider area, rather than be concentrated in a localised area. By treating the cut-off outlet with either vegetation or rock rubble the sediment load transported beyond the defined drain length can be substantially decreased. In addition, sediment can be trapped at the end of cut-off drains via silt fences, hay bales, check dams, or a small sacrificial sediment pond that allows settling (see further 2.10.3 below). All of these measures are more expensive than a simple bladed cut into the roadside reserve, but such measures need to be employed where there is high conservation significance vegetation, or where sediment management is a critical issue.
 - **Use semi-aquatic indigenous vegetation** on the floor of cut-off drains to help take up excess moisture and thereby help protect remnant vegetation from increased stormwater volumes. Vegetation can also assist with creating sheet flow conditions at the outlet of the cut-off drain
95. All cut-off drains are to be cut in the same place (subject to need) at each regrade.
96. Cut-off drains require regular inspections to monitor weed infestations, the condition of surrounding vegetation and erosion at the outlet. The drain inlet may also need to be reopened if blocked by road grading. Regular maintenance to remove deposited sediment should ensure that cut-off drains do not gradually become deeper and wider where that would impact significant vegetation. Machinery should avoid damaging or removing adjacent vegetation.
97. When cleaning drains:
- Spoil from drain maintenance operations is to be removed to a designated dump site, unless it can be safely retained or re-used on the road shoulder. Do not spread spoil on the roadside or leave in heaps or windrow onto roadside vegetation.

- Where funding and resources are available, cut-off drains may be cleaned out with a back hoe rather than a grader blade.
98. Avoid locating cut-off drains in areas of significant bushland or in areas identified as High Conservation Value.
99. Roads are to be left in a clean and safe condition after maintenance works.

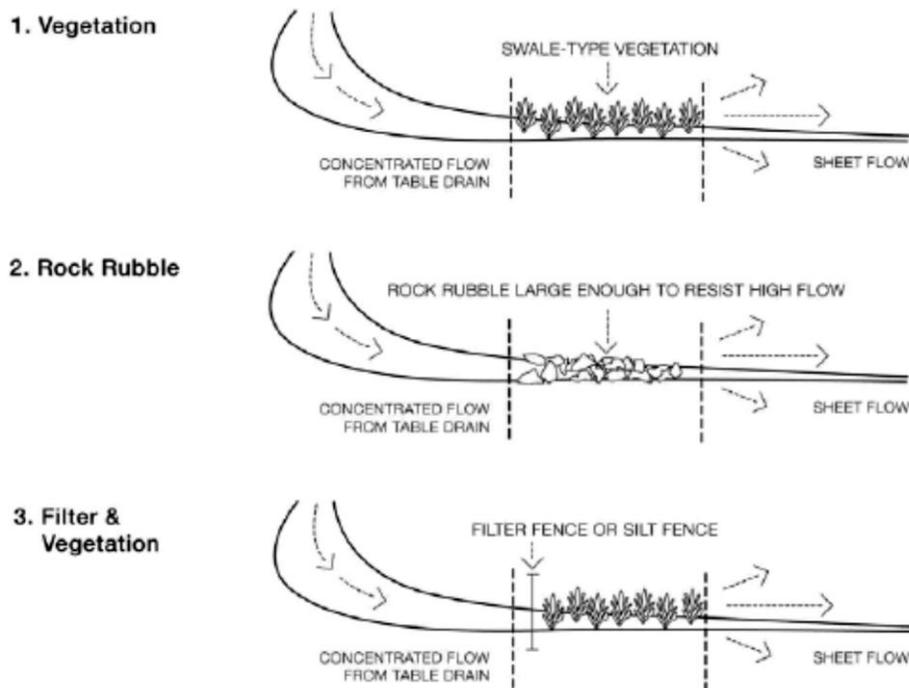


Figure 16. Treatment methods for cut-off drains to minimise sediment run off
 Reproduced with permission from Cardinia Shire Council

2.10.3 Settling ponds

Settling ponds may be used to help settle and filter sediment and leaf litter in road run-off and can help to maintain water quality in local streams through their localised capture of sediment. They are possibly best employed at the outfall of cut-off drains, though there may be situations where they could be employed as part of a table drain, although this would need to be measured against the risk of blockage of outlets and overflow during flood events.

The major constraint on use of settling ponds is not only the additional expense – which could be relatively small depending on size – but the area required to construct a pond that can achieve worthwhile sediment detention without being of such a small size that regular clean-outs would be required.

Settling ponds should only be deployed on low conservation significance roadsides as their construction would cause extensive disturbance.

General guidelines:

100. Settling ponds are to be formed and maintained with minimal disturbance to vegetation. Procedures for de-silting should be checked with EPA, but generally wet silt should be left in small piles until dry enough to spread and/or remove to landfill.
101. Ensure that settling ponds are not a hazard to young children and are designed with a shallow fringe prior to any deeper waters.
102. Clean settling ponds out with a back hoe.

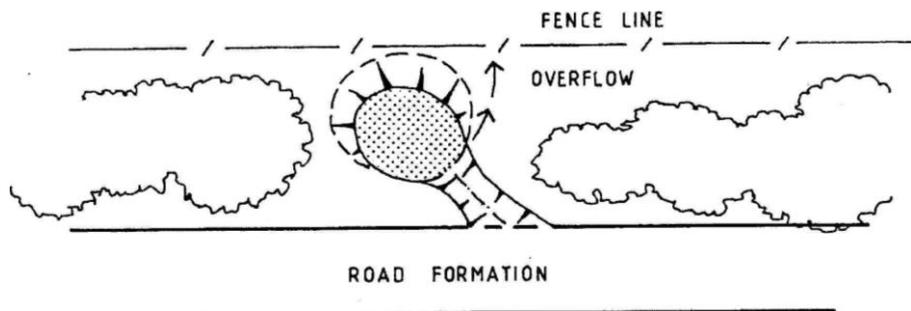


Figure 17. Typical settling pond

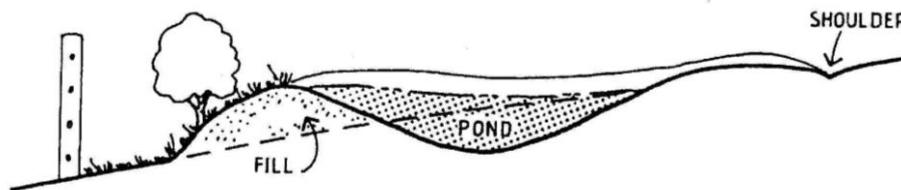


Figure 18. Settling pond, typical cross section

2.10.4 Culverts

Culverts are used on sealed and unsealed roads as cross drains to direct the flow of stormwater from the high side to the low side of the road. Similar to cut-off drains, cross drains should be adequately spaced to reduce the volume and velocity of stormwater in the table drain. Under average conditions cross drains should be a maximum of 150 metres apart. Optimum spacing distance can be determined by the 'rule of thumb method':

Spacing in metres = $300 \div \% \text{ grade}$

Objective: Ensure erosion scour and sedimentation at the points of entry and discharge of culverts are minimised.

General guidelines

103. Depending on flows, culvert size, location and other site constraints, culvert design should:
 - Where possible employ adequate protection of entry and exit points such that the concentration of flows caused by the culverts does not cause scour

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- Where possible use energy dissipation structures (upstream and downstream ponds, large rocks or drop structures), to slow velocities and reduce scour effects
 - Provision of adequate, sympathetically designed bypass for flows in excess of culvert capacity
 - Provide sufficient grade through the culvert to prevent excessive sediment accumulation
 - Consider the need for occasional clean-out in order to protect culvert capacity. Under drive-way culverts are the responsibility of the landowner.
 - Consider the need for occasional clean-out of upstream and downstream ponds to overcome any loss of capacity.
104. If it is feasible to divert run-off to a nearby dam, consult with adjoining landowners and obtain their formal approval.
105. Ensure rockwork is sufficiently keyed in or grouted to prevent movement under high flow conditions.
106. Monitor culverts, drop structures and any sediment ponds for sediment accumulation and conduct clean-outs to ensure retention of capacity.



Figure 19. Rocking of culvert outlet absorbs the energy of run-off and traps sediment. Photo courtesy of Nillumbik Shire Council.

2.10.5 Roadside batters

During road construction, batters may be formed on the low side of the road (fillslope) and high side of the road (cutslope). Being an exposed area, batters can make a substantial contribution to sediment runoff. This can be overcome by establishing vegetation on the batter slope through grassing or planting with appropriate indigenous species where slopes permit.

Objective: Within site constraints, design and construct roadside batters with shallow slopes.

General guidelines:

107. Design batters to be no steeper than 1:3 and preferably shallower to prevent rilling and possible slumping.
108. Where site conditions do not permit batter grades of 1:3 and grades must be steeper:
 - Where possible, step batters to create benches that can be revegetated
 - Cover the batter with a geotextile and revegetate with appropriate indigenous species.
109. Where site conditions are even more constrained, it may be necessary to build a retaining wall (especially if close to a boundary fence) or install a rock/wire gabion, although these options should be considered as a last resort as gabions have a finite life and eventually need replacement.
110. Design specifications are to indicate whether batter is to be spread with topsoil from the site, although this may not be possible on many steeper slopes unless a bench is created.
111. Run-off down a batter to be minimised by designing a catch drain across the top of the batter to divert run-off away from the batter face (Figure 20).
112. Ensure stabilisation measures are installed immediately after construction is complete.
113. Vegetation can be established quickly using a variety of techniques, including rapid seeding of sterile rye grass. Installation of biodegradable matting can control erosion while the vegetation is being established.
114. Prevent grading activities from undercutting the batter.
115. Monitor vegetative growth on batters to ensure vegetation stays low growing and free of regenerating trees that may ultimately interfere with box clearance.

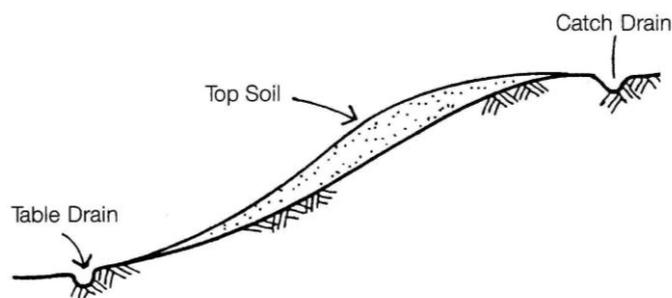


Figure 20. Catch drain to prevent erosion of batter.

2.10.6 Pit cleaning

Objective: Ensure regular maintenance of drainage pits and pipes so that blockages do not occur and proper function is maintained.

General guidelines:

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116. Litter and/or silt traps are to be installed where appropriate to reduce potential for pits and pipes to become blocked with leaf litter, rubbish or sediment.
 117. Ensure contractors/staff are familiar with appropriate designated dump sites for depositing material from pit cleaning.
 118. All pits are to be placed on a maintenance program for regular cleaning.
 119. When pits are being cleaned, check adjacent pipework and clear any blockages.
 120. Depending on EPA guidelines and requirements and methods of extraction (e.g. suction truck or otherwise), all extracted material to be removed from the site immediately and taken to an appropriate landfill.

2.11 Revegetation and Site Rehabilitation

Objective: Rehabilitate areas of roadside disturbed during construction and maintenance activities through re-establishment of indigenous flora while also considering existing plantings and planned uses of roads and roadsides.

General guidelines

121. Regeneration of native vegetation will be encouraged as the preferred revegetation process. Where planting is required, only plants grown from seed of local provenance will be used. Planting lists will reflect local current or historic species diversity of the appropriate vegetation type (refer to Indigenous Plants of Baw Baw – Revegetation Guide booklet, or DEPI’s EVC Benchmarks). Records of all such plantings and their seed source will be provided to Council.
122. Any revegetation works and methods must be planned to minimise disturbance and be undertaken in a best practice manner. Proposals for these works must demonstrate:
 - Consideration of priorities in the MFMP;
 - Appropriate planting density;
 - Allowance from fence-lines to enable future maintenance of such assets;
 - They do not impede traffic line of sight or compromise any future road maintenance activities such as clearing of table drains;
 - That the movement of roadside users (e.g. walkers) is not impeded;
 - How maintenance will occur (i.e. who, when, what);
 - A strategy to minimise the risk of weed establishment
 - That underground services will not be damaged as a result of planting.
123. Approval and/or a permit required from Council to plant any type of vegetation on rural road reserves. Contact Council prior to commencing works.
124. Retention and enhancement of vegetation structural complexity (groundstorey, mid-storey and overstorey), along with ground level components such as logs and litter.
125. Any plant listed as an ‘environmental weed’ (Appendix 4) must not be used in roadside rehabilitation.
126. Select appropriate methods of establishment according to the site conditions, giving consideration to the following:
 - Seedlings (tube stock, cells) are usually a quick and reliable planting method, but success depends on good quality plants, good site preparation and adequate maintenance, especially weed control
 - Direct seeding is economical and maintenance inputs can be low where effective weed control has taken place or the soil-stored weed seed bank is low, but results can be variable and dependent on favourable conditions

-
- Natural regeneration is ideal where nearby remnant vegetation is of desirable species though establishment can be variable and limited to the species present. Cultivation, scalping or herbicides can be used to encourage regeneration but where weeds are present soil disturbance is to be kept to a minimum.
127. Where possible retain salvageable elements of the site including:
- Plant rescue and/or collection of local indigenous plant seed;
 - Top-soil;
 - Large logs and branches
128. Where existing topsoil the following guidelines are to be followed:
- Avoid mixing weedy topsoil with topsoil from weed free sites
 - Avoid mixing topsoil and subsoil
 - Mounding of topsoil following earthworks to allow for settlement (Figure 21)
 - Compaction of backfill in layers no thicker than 300 millimetres to minimise shrinkage.
 - Ripping to a minimum depth of 300 millimetres on compacted subsoil prior to spreading topsoil. On steep sites only contour rip and avoid tree drip lines
 - Follow the original height and contour of the land when rehabilitating after works and remove any unused spoil
 - Water topsoil once it is spread to minimise dust and moisten prior to revegetation
 - Cover exposed ground as soon as possible to minimise weed spread and erosion
129. Avoid chipping and mulching weeds, instead they should be removed from the site and delivered to landfill or included in local composting/green waste collection system.
130. Successful establishment requires good maintenance of plantings, appropriate species selection for the site and planting at the correct time, proper ground preparation prior to planting and weed control before and after planting.

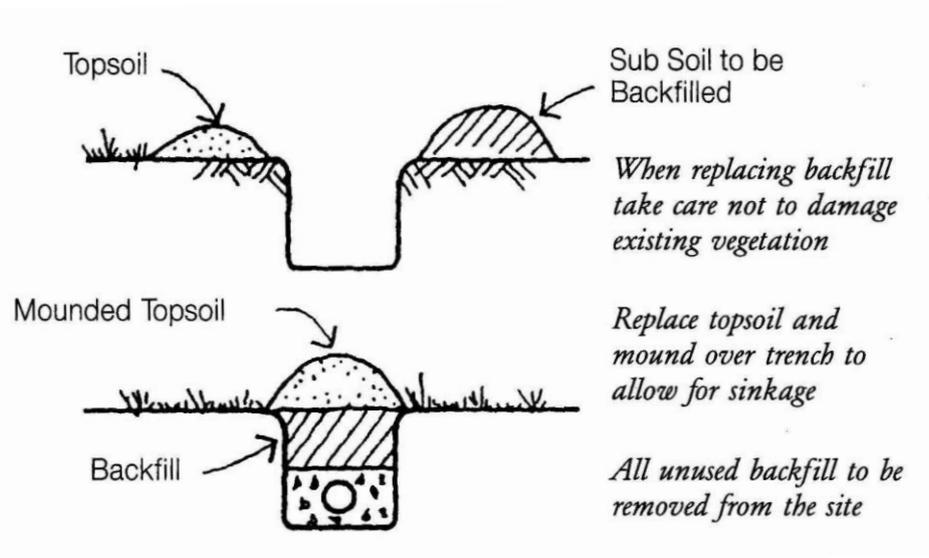


Figure 21. Correct placement of top soil and sub soil.

3 VEGETATION MANAGEMENT

3.1 Vegetation Removal

Objective: Minimise vegetation removal and site disturbance.

General guidelines:

131. Other than exempt vegetation removal, no vegetation is to be removed without a planning permit. Under Clause 52.17-6 of the VPP, no planning permit is required to remove, lop or destroy native vegetation to the minimum extent necessary if:
 - The native vegetation is to be removed, destroyed or lopped to maintain the safe and efficient function of an existing public road managed by the relevant responsible road authority (DSE 2009).
 - The vegetation is to be removed, destroyed or lopped to reduce fuel loads on roadsides to minimise risk to life and property from bushfire of an existing public road managed by the relevant responsible road authority (DSE 2009).
132. Avoid unnecessary removal of essential habitat features or disturbance of roadsides such as dead or alive hollow bearing trees or fallen logs
133. When maintaining trees, limit pruning of habitat trees, so that pruned trees retain habit features where possible
134. Identify 'work zones', avoid disturbing vegetation outside the work zones and construct temporary fencing if required.
135. Timber is to be felled so that machinery does not enter the road reserve. If machinery has to move off the road formation or onto adjacent land this must be authorised by the responsible Council Officer or the owner of the land.
136. Vegetation is to be felled in a safe manner that minimises damage to surrounding vegetation.
137. Consider retaining logs for habitat in suitable areas. Otherwise larger felled vegetation which cannot be chipped may be stored by Council for future use. In some cases, felled vegetation may have to be disposed of at a designated landfill.
138. Smaller felled indigenous vegetation can be chipped and used on site for rehabilitation works.
139. Where felled vegetation is to be sawn, split, or chipped, this should be undertaken with due regard to the understorey. Restrict these activities to as few sites as possible and use a cleared site if one is available close by.
140. Do not grub out tree stumps in environmentally sensitive areas or stumps that provide habitat. If stumps have to be removed for fire prevention works such as slashing they should be cut level with the ground or treated by a stump grinder.
141. Tree stumps of no habitat value left after pruning or vegetation removal are to be cut as close to the ground as possible unless located where regrowth is desirable.

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142. Larger felled vegetation containing hollows will be retained for use on site or at another location.
 143. Burning of felled material on site will be discouraged. If burning must be carried out on site, consultation is required with the Municipal Fire Prevention Officer (MFPO) and/or the CFA. Once burnt, the area will be revegetated.
 144. Grazing will not be permitted on roadsides of High conservation value.
 145. Droving may be permitted on roadsides under strict conditions to limit degradation to conservation values.
 146. Cropping and or/haymaking will not be permitted on roadsides with High conservation value.

3.2 Herbicide Use

Objective: Spraying is undertaken on roadsides for a number of reasons including weed control, maintenance of guideposts, signs and drains as well as for fuel reduction. Consent from Council is required for all works that are to be undertaken within a municipal road reserve by a third party such as an adjoining landowner, community group or contractor. This is to ensure that care is taken in assessing and managing risks associated with working in the road reserve. Contact with Council is encouraged before any works are undertaken to confirm how this consent is administered.

A Planning Permit may be required under the Baw Baw Shire Scheme in relation to the removal or destruction of native vegetation (including grasses). Some exemptions apply such as those relating to weed control and pest animal burrows.

Guidelines:

Spraying on roadsides has a high risk of removing or destroying native vegetation, incurring loss of or damage to habitats and causing accidental spread of weeds. Council must ensure third parties are aware of the potential impacts of the works and requirements for mitigation measures to be implemented. Community enquiries must be referred to Council's Natural Environment staff.

Damaging plants other than weeds can cause greater weed problems due to larger areas of disturbance. The following guidelines have been designed to minimise the amount of disturbance.

147. Ensure staff/contractors can accurately identify weeds and native species;
148. Avoid spraying grassed or vegetated swale drains;
149. Avoid or minimise the use of herbicide to control grass on roadside verges on High and Medium conservation value roadsides;
150. Avoid or minimise the use of herbicide in areas prone to soil erosion and landslip;
151. Only use selective herbicides on Medium and High conservation value roadsides;
152. Do not use residual herbicides on any roadside;
153. Do not use herbicide on roadsides near or adjacent to registered organic farms (Appendix 2) without consultation with the property owner;

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154. Avoid or minimise the use of herbicide in areas where landowners are maintaining roadsides to a high standard;
 155. Only spraying 1m around guideposts and guard rails;
 156. Cutting and poisoning tree suckers in drains and of shoulder of road;
 157. Ensuring staff/contractors hold an Agricultural Chemical Users Permit (A-CUP) or equivalent;
 158. Only spraying in suitable weather conditions;
 159. Spraying weeds from a close distance;
 160. Using low pressure and large droplet size to minimise drift;
 161. Minimise off target damage to native vegetation by using appropriate weed control techniques;
 162. While conducting weed control works, consideration must be given to managing spread of weeds. This can be controlled by:
 - Brushing/blowing/washing down machinery before leaving weed infested areas;
 - Brushing/blowing/washing down machinery before entering areas which have low weed infestation; and
 - Beginning work in areas of low infestation then moving to areas of high infestation.

Dead vegetation created by spraying works can be left to undergo decomposition rather than being 'cleaned up'.

3.3 Removal of Dead Vegetation

Objective: Maintain habitat values of dead vegetation by only removing if it poses a risk to public safety or a high fire hazard.

General guidelines:

163. Permits for the collection of firewood will not be issued. Stumps, dead or fallen trees will not be removed unless considered a safety hazard.
164. Removal of dead vegetation requires a planning permit unless exemptions apply.
165. Dead limbs overhanging road reserves are to be removed only after assessing public safety and environmental values.
166. Hollows in dead trees and stumps often provide important habitat to native animals. Consider habitat pruning of dead vegetation where pruning is required.
167. Retain felled limbs containing hollows on site for wildlife habitat or consult with the Natural Environment Department for another site where limbs can be relocated.
168. Unless exemptions apply, do not 'tidy up' areas of indigenous vegetation, leaf litter, rocks, trees with hollows, naturally fallen limbs and dead vegetation at various stages of decay, standing pools and marshy ground. These all provide quality habitat for wildlife and should be retained on the roadside.

3.4 Vegetation and Fire Management

Section 4 in Part 1 outlined and discussed fire management for roadsides in Baw Baw Shire. The purpose of this section is to overview operational procedures and guidelines for assisting with roadside fire management.

Roadside fuel reduction works are likely to be carried out either by local CFA brigades and/or Council.

Objective: Ensure fuel reduction works are planned with a clear and beneficial purpose and meet the objectives set for the particular road and that the works are carried out with minimal disturbance to the ground and existing native vegetation, and do not result in the spread or introduction of weed species.

General guidelines:

169. Works need to be designated under the MFMP.

170. All fire prevention/fuel reduction works should be undertaken with consideration of the conservation value.

171. When planning fuel reduction works consider the following:

- Utilising CFA's *Roadside Fire Management Guidelines* (2001).
- Implementing fuel management on low conservation value roadsides where possible and avoiding fuel management on Medium and High conservation value roadsides.
- Consider locating fuel management on adjacent land when roadsides are of Medium or High conservation value.
- Consider fuel management works on roadsides where fuels on adjacent land are low and therefore wildfire potential is reduced.
- Locate fuse breaks at road junctions, driveways, stream crossings or where powerlines cross to minimise ground and vegetation disturbance.
- Where possible fuel reduction works should target reduction in exotic rather than indigenous flora, particularly addressing exotic pasture grasses and woody weeds.
- Regenerating indigenous vegetation should be retained where it does not conflict with fuel management specifications.
- Consider fuel reduction burns to be on a comparable rotation with ecological burning regimes.
- Consider habitat and presence of rare or threatened flora and fauna.
- Identify areas of regenerating vegetation prior to fuel reduction works and seek advice from the Municipal Fire Prevention Officer and Natural Environment Coordinator as to whether this vegetation is a fire hazard or needs to be protected.

172. Medium and High Conservation Value roadsides:

- Where practicable fuel management works to be undertaken with hand-held machinery.

-
- No soil disturbance unless in the event of an emergency
 - Undertake works when soils are dry to minimise disturbance
 - Target removal of exotic rather than native flora and consider how management techniques can be modified to limit weed spread.

173. Management techniques on Medium and High Value roadsides include:

- Burning:
 - Burning regimes are to be determined by the ecological values of the roadside
 - Periodic burning removes fine fuels and is particularly appropriate for roadsides dominated by native grasses
 - Consult with the MFPO and the Natural Environment Coordinator for guidance on burning intervals and time of year
 - If burning is undertaken, it should be followed up with a comprehensive weed control program.
- Slashing/brush-cutting:
 - Slashing/brush-cutting of understorey to be timed so that flowering and seeding of indigenous flora is permitted every second year. A reasonable regime being alternate slashing during September-November or during January-February following seed set of grasses. Blades on machines are to be set no lower than 200 millimetres.
- Manual techniques:
 - Thinning of midstorey using handheld machinery (i.e. chainsaw, bladed brush-cutter)
 - Removal of twigs, thin branches, and fallen bark by hand without disturbance to soil.

174. Low conservation value roadsides:

- Fine fuels can be reduced by slashing grass, where there is sufficient width, to a minimum of three metres behind guide posts and to a height no lower than 100 millimetres
- Target removal of exotic flora and examine management techniques that limit weed spread
- Consider how habitat loss can be minimised
- Select smaller equipment for slashing exotic grasses co-located with remnant trees or midstorey
- If burning is undertaken, it must be followed up with a comprehensive weed control program.

4 SERVICE AUTHORITIES

Installing new services and maintaining them can require substantial vegetation clearing which may also initiate erosion, weed spread and damage to vegetation.

Objective: Compliance with the Operational guidelines for all works on road reserves carried out by service authorities and contractors, including methods of undertaking works, vegetation removal and rehabilitation of work sites.

General guidelines:

175. At the time of a planning application or at notification of works commencement, Council will provide the service authority with a copy of the Operational guidelines, in addition to a map indicating the conservation value of the roadsides subject to works.
176. Where beneficial, Council will investigate sharing of other relevant data with service authorities including weed mapping and rare or threatened species locations.
177. When notified of specific works Council will consider any other specific areas of environmental concern where special management practices may be necessary, including rare or threatened species of flora and fauna, wildlife habitat, occurrences of priority weeds or disease organisms such as *Phytophthora cinnamomi* (Cinnamon fungus). An Environmental Management Plan will be required to be prepared by service authorities for approval prior to commencement of works.
178. Where possible, new services on roadsides are to be located where least native vegetation disturbance will occur with consideration being given to location on the least significant side of the road or on abutting land that has been cleared. This may have various positive implications including: reduced environmental impact; lower construction costs; reduced maintenance costs; and possible trench sharing.
179. Council reserves the right to enter into particular agreements with service authorities.
180. Where a service installation is to be located on a High conservation value roadside, it may be necessary to undertake the Issue Resolution Procedure. Alternative sites may also need to be considered where high value sites could potentially be impacted.
181. Trees which present a long term maintenance problem by continually growing into powerlines, should be removed rather than pruned, and replaced with more suitable lower growing species.
182. Do not disturb any other vegetation except that which is necessary to undertake the works and which has been approved.

4.1 Cooperation amongst authorities and managers

Objective: to ensure that the relevant authorities are informed of the roadside management issues and guidelines documented in this plan.

4.1.1 Adjacent municipalities and other land-management authorities

Where Baw Baw Shire shares a road boundary with another municipality (Cardinia Shire Council, South Gippsland Shire, Latrobe City Council, Mansfield Shire, Wellington Shire Council, Shire of Yarra Ranges) or authority (VicRoads, DEPI, West Gippsland CMA, Melbourne Water), it is important that prior to any works by any agency, they are aware of the values of the roadside and objectives and guidelines of this management plan.

General guidelines:

183. Ensure consultation between the relevant municipalities and authorities to provide works and maintenance programs consistent with the policies, strategies and/or roadside management plans of those authorities.
184. Encourage inter-council/inter-authority engagement and liaison to share information and management tools.
185. Encourage inter-council/inter-authority cooperation in identifying, protecting, and enhancing roadside vegetation and wildlife corridors across the broader landscape.

4.1.2 Service authorities and Council contractors

Service authorities with assets within road reserves include:

186. Water authorities – sewer pits, trenches and pipes, water supply valves, hydrants and pipelines
187. Gas pits and pipelines
188. VicTrack – rail tracks, crossings and signage used by both pedestrians and vehicles
189. Telstra and other communication providers – poles, overhead and underground cables, pits and trenches
190. Electricity – poles, overhead and underground? electric cables, sub stations, pits and trenches
191. VicRoads – pavements, surfaces, road drainage, kerb and channel and signage.

Successful implementation of this Plan requires knowledge of and adherence by all personnel involved with management of roadsides in the Shire. Prior to any work, Council should ensure contractors and service authorities are aware of this plan and understand the requirements for its implementation.

General guidelines:

192. Council will ensure relevant authorities are informed of this Plan and investigate the potential for a formal agreement ensuring works are undertaken in accordance with its provisions.

5 SIGNIFICANT ROADSIDE AREAS

Significant Roadside Areas are those that have significant landscape, historic or conservation value (see 0 in Part 1).

Objective: Ensure the protection of significant roadside areas by informing Council works crews and contractors of locations and special management considerations and requirements and their enforcement.

General guidelines:

193. Tenders for works will be informed by information from Council regarding the values of significant roadside areas and the need to prepare an EMP should the tender be accepted.
194. Roadside markers, signage and/or GPS tracking may be used in areas that have Medium or High conservation value.
195. Temporary fencing may be necessary to protect plants under immediate threat from new or ongoing construction and maintenance activities. In some areas permanent fencing may be necessary.

6 PEST PLANT MANAGEMENT

Objective: Prevent the further spread of weeds and maintain the diversity of indigenous vegetation and wildlife habitat in accordance with the *Baw Baw Shire Council's Weed Management Strategy*.

General guidelines:

196. Adopt the broad weed management objectives as outlined in Section 4.3.3 of Part 1.
197. Comply with the Baw Baw Shire Council's Weed Management Strategy.
198. Where weeds require transport for disposal a contravention of the CaLP Act (1994) Section 71 may arise. Seek advice from the Catchment Management Authority.
199. Works must be undertaken by an approved contractor familiar with: weed identification; occupational health and safety obligations regarding the use of herbicides and equipment; and obligations under the Road Management Act 2004 and the Road Safety Act 1986 relating to works undertaken in road reserves.
200. Works undertaken to control weeds should: avoid disturbing native vegetation and soil; utilise the most effective and cost efficient method; treat isolated weeds or patches before heavily infested sites; avoid removal of weeds after they have set seed in order to avoid spread; dispose of weeds so as not to cause further infestation offsite; and ensure follow up to prevent re-infestation.
201. To minimise the spread of weeds contractors will ensure:
 - Operationally feasible measures are implemented to clean vehicles and machinery of soil and vegetative material prior to arriving at the site so as not to spread weed seed.

-
- All mulch, soil or other material brought on site is from reputable dealers and is as free of weed seed and other propagules as possible.
202. When removing weeds care is taken to prevent damage to habitat for indigenous birds and animals. Where the weed being removed provides shelter, control weeds in stages and revegetate with indigenous plants.
203. Where operationally feasible, seek opportunities to modify existing slashing programs to reduce weed cover and encourage establishment of native species.

7 RECREATIONAL TRAILS

Objective: Recognise the importance of roads and roadsides for recreational use and be mindful of the conservation value of the roadside in which they are located.

General guidelines

204. Recreational clubs and commercial enterprises wishing to use existing roadside trails for club events or commercial purposes are recommended to consult with Council prior to use. If there are no existing roadside trails on the proposed routes, Council must be consulted.
205. Maintenance of recreational trails should attempt to avoid or minimise impacts on native vegetation on High and Medium Conservation Value roadsides.
206. All recreational users of roadside trails should minimise impacts upon native vegetation within the roadside.
207. Trail-bikes are not permitted on roadsides.
208. Firewood collection is not permitted.

8 REVIEW

This Plan is to be reviewed after 5 years. Periodic amendments may however, be required to improve practical implementation of the Plan and to maintain currency.

REFERENCES

ARRB Transport Research (2002). *Environmental practices manual for rural sealed and unsealed roads: managing the roadside environment including erosion, sediment, drainage and vegetation*. Vermont South, Victoria.

Cardinia, Casey and Mornington Peninsula Councils and EPA (2004). *Sediment Control on Unsealed Roads: A Handbook of Practical Guidelines for Improving Stormwater Quality*. Cardinia Shire Council, Victoria.

Wong, T., Breen, P. and Lloyd, S. (2000) *Water Sensitive Road Design – Design Options for Improving Stormwater Quality of Road Runoff – Technical Report 00/1*. Cooperative Research Centre for Catchment Hydrology.

APPENDIX 1. INDEX OF ROADS AND CONSERVATION RATING

Road Name	Conservation Value	Map Reference	Grid Reference
Alcorn Road	High and Medium	1	B11
Allambee Estate Road	High and Medium	4	F16, F17
Allambee-Childers Road	High and Medium	4	G16, H16
Allen Road	Medium	2	C15
Allen Road East	Medium	2	D15
Andersons Road	Medium	4	H13
Araluen Road	High and Medium	4	G 12-13,H 12-13
Ashdowns Road	High and Medium	4	J12
Balfours Road	High	4	I12
Bayleys Road	Medium	4	H13
Bayview Road	Medium	1	D10
Beanland Road	High	3	H11
Beard Road	Medium	2	C12
Beards Track	High and Medium	3	G11, G12
Blazes Track	High	2	D15
Blue Rock Road East	High	3	J11
Bluff Road	High and Medium	6	M10
Bona Vista Road	High and Medium	2	E 14, F15
Boola Boola Road	High	6	M13
Bride Road	High and Medium	3	G7
Brock Road	High	2	C15, C16
Browns Road	Medium	6	M10, M11
Camp Creek Road	Medium	3	H10
Campbell Road	High	2	C14
Carroll Road	High and Medium	2	C14
Cathcart Road	High and Medium	2	B13, B14
Cervi Road	High	3	J11, J12
Cheesemans Road	High and Medium	4	J12
Childers Settlement	Medium	4	G16, H17
Clarke And Barr Road	Medium	1	E11

Road Name	Conservation Value	Map Reference	Grid Reference
Clifton Road	Medium	2	B15
Coalville Road	High and Medium	4	J15, J16, K15
Cobbledick Road	High	2	C15
Cochrane Road	High	2	C13
Coopers Creek Road	High	6	M10
Coster Road	High and Medium	2	A14, B14
Cowwarr Road	High	6	O10
Cummings Road	Medium	4	I13
Currie Road	High	2	C14, D14
Danks Road	High and Medium	3	G7
Darnum Park Road	High and Medium	4	F14
Darnum-Allambee Road	High and Medium	4	F15, F16
Darnum-Shady Creek Road	Medium	4	F14, G13, G14
Daveys Road	High and Medium	4	I12
David Lane	Medium	2	B13, C13
Dawsons Track	High	4	F12
Depot Road	Medium	6	M9
Dick Clark Lane	Medium	1	D10
Donnellys Creek Road	High	5	M4
Duggan North Road	High and Medium	3	H8
Durhams Road	High	4	F12
Eagles Road	High	3	I11
Earls Road	High	4	H15
Edgar Road	High	2	B13, B14
Embletons Road	Medium	4	I13, I14
Falls Road	High	4	J16
Ferndale Road	High and Medium	2	E16, E17
Ferndale-Strzelecki Road	High and Medium	2	D17, E17
Fisher Road	Medium	2	C12
Fisher Road	High and Medium	1	C11
Forest Road	High	1	C10, C11

Road Name	Conservation Value	Map Reference	Grid Reference
Fraser Spur Road	High and Medium	3	F10
Gardner And Holman Road	High and Medium	2	B14, C13, C14
Gearys Road	Medium	4	F17
Gibson Brothers Road	High and Medium	4	I13
Gibsons Road	High and Medium	4	I13, I14
Giles Road	High	4	I15
Grand Ridge Road	High and Medium	2	E16
Grand Ridge Road	High and Medium	4	F16, F17
Grays Road	Medium	4	K12
Greenshields Road	High	2	D14
Gunn Road	High	1	E11
Gunn Road	High	3	F11
Hamiltons Road	High	2	D15
Hasthorpe Road	Medium	4	J12
Hawkey Road	High	2	D14
Hayes Road	High and Medium	3	G7
Haynes Track	High	4	H15
Heartsridge Road	High and Medium	4	J13, J14, I13
Honneckers Road	Medium	4	F12
Hume Road	Medium	4	H16
Hunter Road	High and Medium	4	K12
Hunts Road	Medium	3	I11
Ingleman Road	High and Medium	3	F11, G11
Invermay Road West	High and Medium	2	B15, C15
Ireland Road	Medium	4	H13
Jackson Drive	Medium	1	C11
Jacksons Track	High and Medium	1	C11, D10, D11, E11
Jacobs Creek Road	High and Medium	6	M10
Jalna Park Road	Medium	4	J12
Knights Road	Medium	4	J12
Knotts Siding Road	Medium	6	M9

Road Name	Conservation Value	Map Reference	Grid Reference
Labertouche North Road	High and Medium	1	B10, B11, C11
Labertouche North Road	High	2	B12
Laidlaw Road	Medium	4	J12
Lang Lang Park Road	High and Medium	2	B15, C16
Lardner Road	High	2	D14
Lardners Track	High	2	D15
Latrobe River Road	High and Medium	3	F10
Lawrences Road	Medium	4	J15
Lilleys Road	High	4	J16
Little Moe River Road	Medium	4	F14, G14
Loch Street	High	4	G15
Loch Valley Road	High and Medium	3	F6, F7
Lye And Dixon Road	High and Medium	2	B14
Mackintosh Road	Medium	1	E10
Mahoney Road	High and Medium	3	G7
Main Jindivick Road	High and Medium	1	D11, D12
Main South Road	Medium	2	C14, C15, C16
Mapleson Road	High and Medium	3	F10
Mason Road	High and Medium	1	D11, E11
Matheson Road	Medium	6	L9, M10
Maxwells Road	High	2	D15
McClure Road	Medium	2	C14
McConachys Road	High	6	M10
McCullochs Road	High	4	H14
McCullough Road	High and Medium	3	F9
McDonald Street	High and Medium	1	C11
McDonalds Track	High and Medium	4	F16, J16, K15, K16
McDougal Road	High and Medium	3	F10, F11
McIntosh Road	Medium	2	B15
McIntyre Road	High	4	G15
McKenzie Road	High and Medium	3	F9

Road Name	Conservation Value	Map Reference	Grid Reference
McLelland Road	High	6	M9
Middleton Road	High and Medium	1	B11
Millers Road	Medium	4	J13, J14
Mills Road	High	4	K15
Mirboo-Yarragon Road	High and Medium	4	G16, G17
Mitchells Road	High	4	J14
Mizpah Settlement Road	High and Medium	3	F11
Mizpah Settlement Road	High and Medium	4	F12
Moe South Road	High	4	J15
Moondarra Reservoir Road	High	6	L12, M12
Moondarra Road	Medium	6	L10
Moore Road	High	2	C14, D14
Morgans Outlet Road	High	4	J16
Morrison Road	High and Medium	1	B11
Morrison Road	High and Medium	2	B12
Murray Road	High	2	A14
Mylrea Road	Medium	1	D10
Nangara Road	Medium	1	D10
Narracan Connection	High	4	J16
Nayook-Powelltown Road	High and Medium	1	D8, E8
Needhams Road	High	4	I12
Needhams Road	High and Medium	3	H11, I11
Neerim North-Noojee Road	High	3	F8
Nilma-Shady Creek Road	High	4	G12, G13, F13
Normanby Street	Medium	2	E13
North Yannathan Road	High	2	A15
Obriens Road	High and Medium	4	I13
Old Coach Road	High and Medium	6	M10
Old Drouin Road	High and Medium	2	B13, C13
Old Fumina Road	High	3	F8

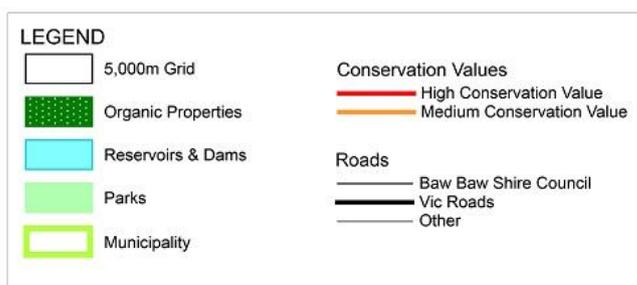
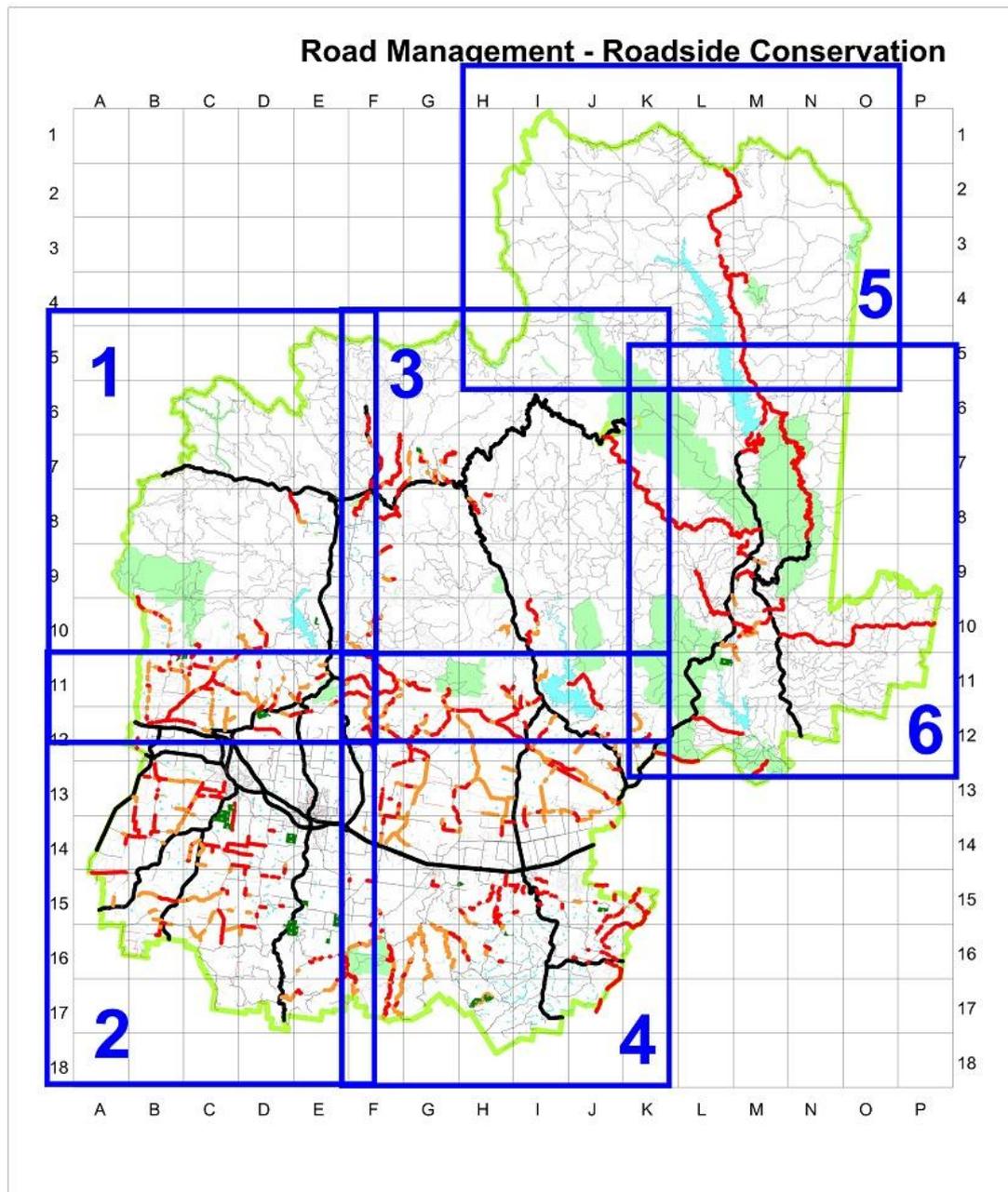
Road Name	Conservation Value	Map Reference	Grid Reference
Old Main Jindivick Road	High and Medium	1	D11
Old Main Jindivick Road	High	2	D12
Old Sale Road	High	2	D12
Old Sale Road	High and Medium	4	F12, G12, H12, I12-13, J13
Old Telegraph Road	High and Medium	1	D11, D12
Old Telegraph Road East	High and Medium	1	E11
Old Telegraph Road East	High	3	F11
Old Telegraph Road East	High	2	E12
Old Telegraph Road West	High and Medium	1	C11, D11, D12
Old Telegraph Road West	High	2	E12
Old Thorpdale Road	High	4	I15
Old Traralgon Road	Medium	6	M10
Old Walhalla Road	Medium	6	L10
Orchard Road	Medium	4	H13, H14
Ortons Road	High and Medium	4	K12
Phillips Road	Medium	2	A15
Pleasances Road	High and Medium	4	F13, F14
Princes Way	High and Medium	2	B12, C12
Prudens Track	High and Medium	4	J13
Pryor Road	High	2	C13
Ranch Road	High and Medium	4	J13
Rees Road	Medium	3	H10
Rhodes Road	Medium	4	F14
Ridge Road	High and Medium	3	F7
Ringin Road	Medium	2	C13
River Connection Road	High and Medium	3	I11
Rogers Road	High	4	I15
Rokeby-Jindivick Road	High and Medium	1	E11
Rosatos Road	High	4	J15
Rosatos Road	Medium	4	K15
Rule Road	Medium	2	D15

Road Name	Conservation Value	Map Reference	Grid Reference
Rusks Road	High	6	L10
Russell Creek Road	High and Medium	3	I10
Ryans Road	High	4	I15
Saviges Road	High	4	J16
School Road	Medium	1	C11
School Road	High and Medium	1	E11
School Road	High	4	I15
Settlement Road	High	2	C13
Shanahans Lane	High	6	M9
Sheehan Road	High and Medium	2	C16, D16
Sheehan Road	High and Medium	4	G14
Shorthouses Road	High	4	G12
Simpson Road North	Medium	2	D16
Simpson Road North	High	2	D14, D15
Slatters Road	High	4	I15
Snapes Road	High and Medium	3	I11
South Face Road	High	6	K8
Stock Road	Medium	2	C12
Stockdales Road	High and Medium	2	D15, D15
Stoll Road	High	1	D10
Stoll Road	Medium	4	F12
Stoll Road	Medium	3	F11
Stuhrs Road	Medium	4	G14
Stuhrs Road	High and Medium	4	F13, F14
Sunny Creek Connection Rd	High and Medium	4	H15, I15
Sunny Creek Road	High and Medium	4	H15, H16
Swan Road	High and Medium	2	B16
Tanjil River Road	Medium	4	K12
Telbit Road	High	6	L9, L10
Ten Mile Creek Road	High	4	J16, J17
Thompson Road	High and Medium	2	C14

Road Name	Conservation Value	Map Reference	Grid Reference
Thomson River Road	High	6	M7
Tonkin Road	High	1	C11
Toorong Valley Road	High and Medium	3	F7, G7
Town Road	Medium	1	E11
Tripp McDonalds Road	High and Medium	4	F13, G13
Twigg Lane	Medium	2	C14
Vesper Road	High and Medium	3	G7
Veysey Road	Medium	3	F10
Walhalla Road	High	6	N7
Walhalla Road	High	5	L2, M5
Walton Road	High	2	C12, D12
Warragul-Lardner Road	High	2	D14
Webbs Road	High and Medium	4	G12
Weebar Road	High and Medium	2	C13, C14
Weirs Road	High	4	J15
West Jindivick Road	High and Medium	1	D11
Wilkes Road	High	4	H12, I12
Williams Road	High	2	B12
Williamsons Road	High	4	F13
Woodbridge Road	Medium	3	H11
Yarragon South Road	High and Medium	4	H15, H16
Yarragon-Leongatha Road	High and Medium	4	F17, G16
Yarragon-Shady Creek Road	High and Medium	4	G12- G14, H14
Yulungah Road	High and Medium	4	H14

APPENDIX 2. MAPPING OF ROADSIDE VEGETATION IN BAW BAW

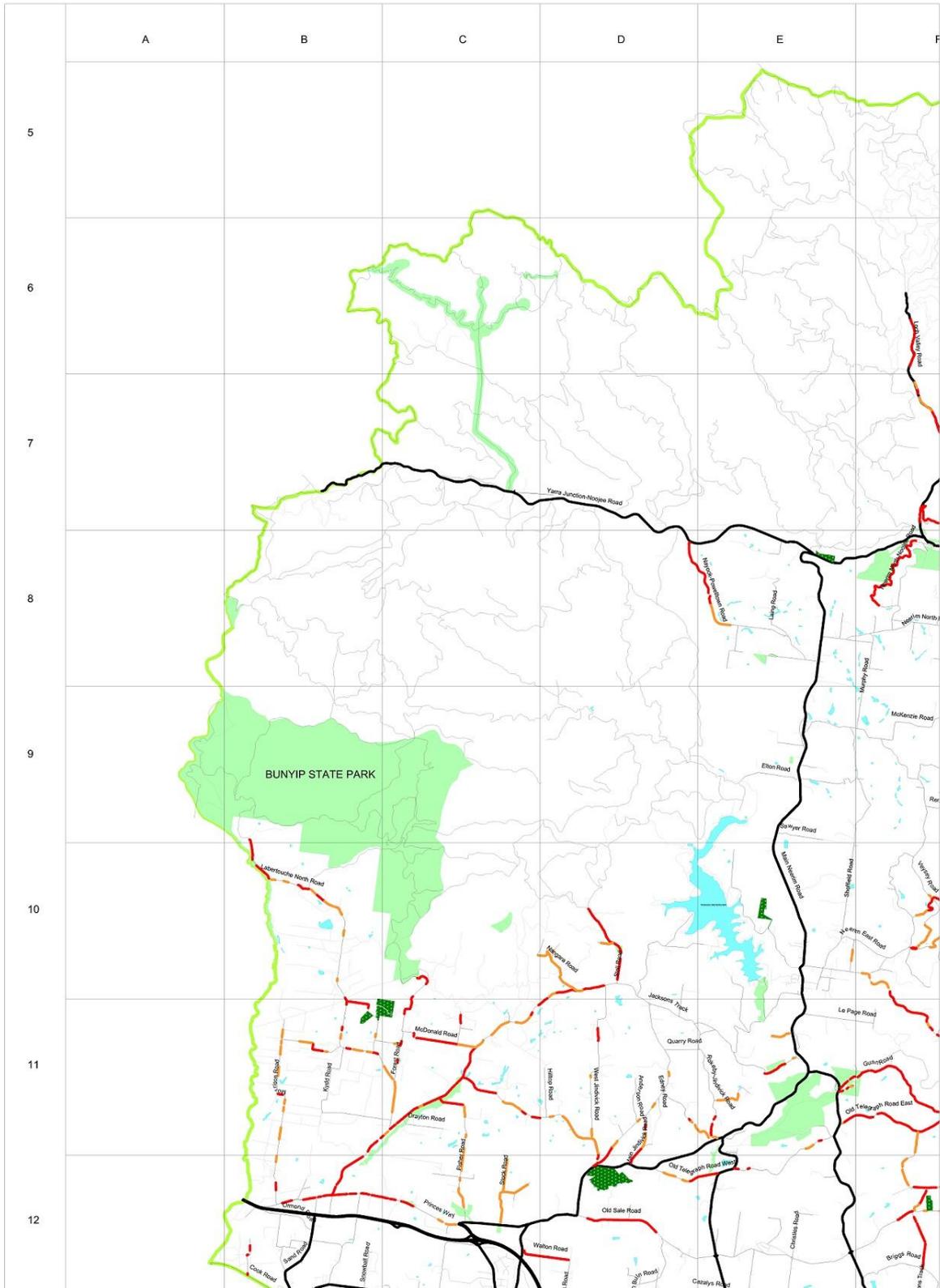
NB. Contractors and Shire staff will be provided with higher quality maps as required.



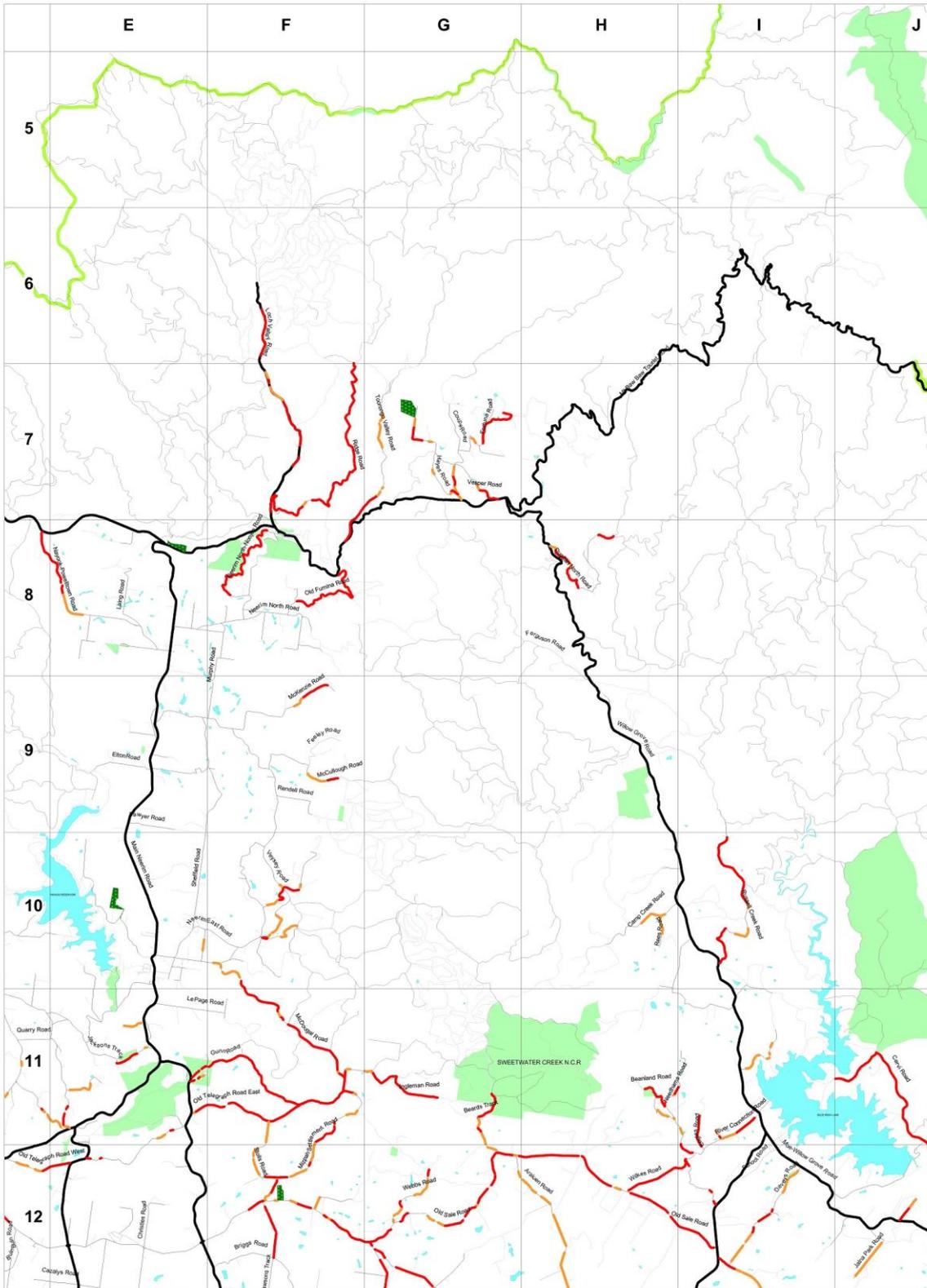
Revised October
2014



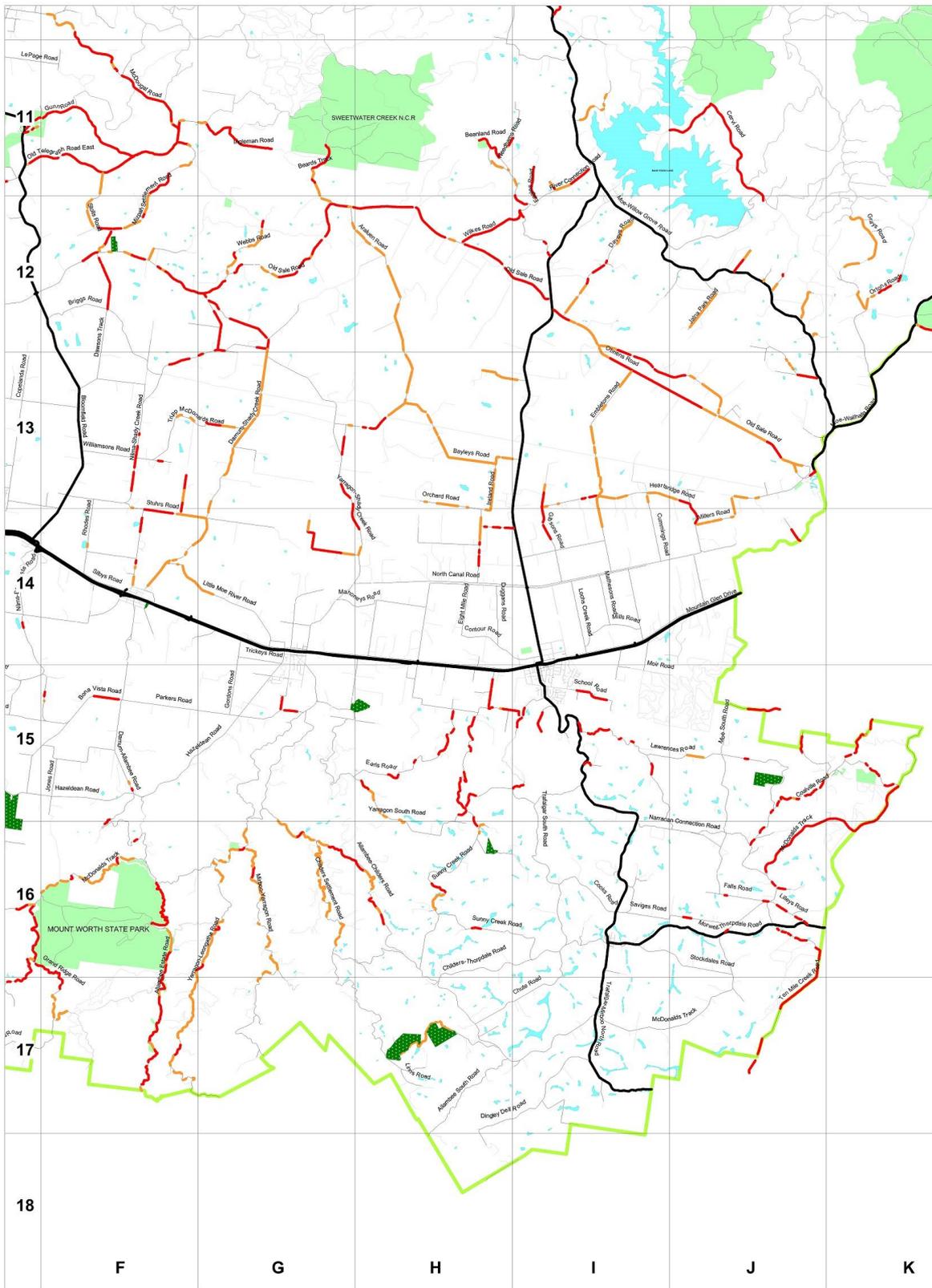
Roadside Conservation - Enlarged Map 1



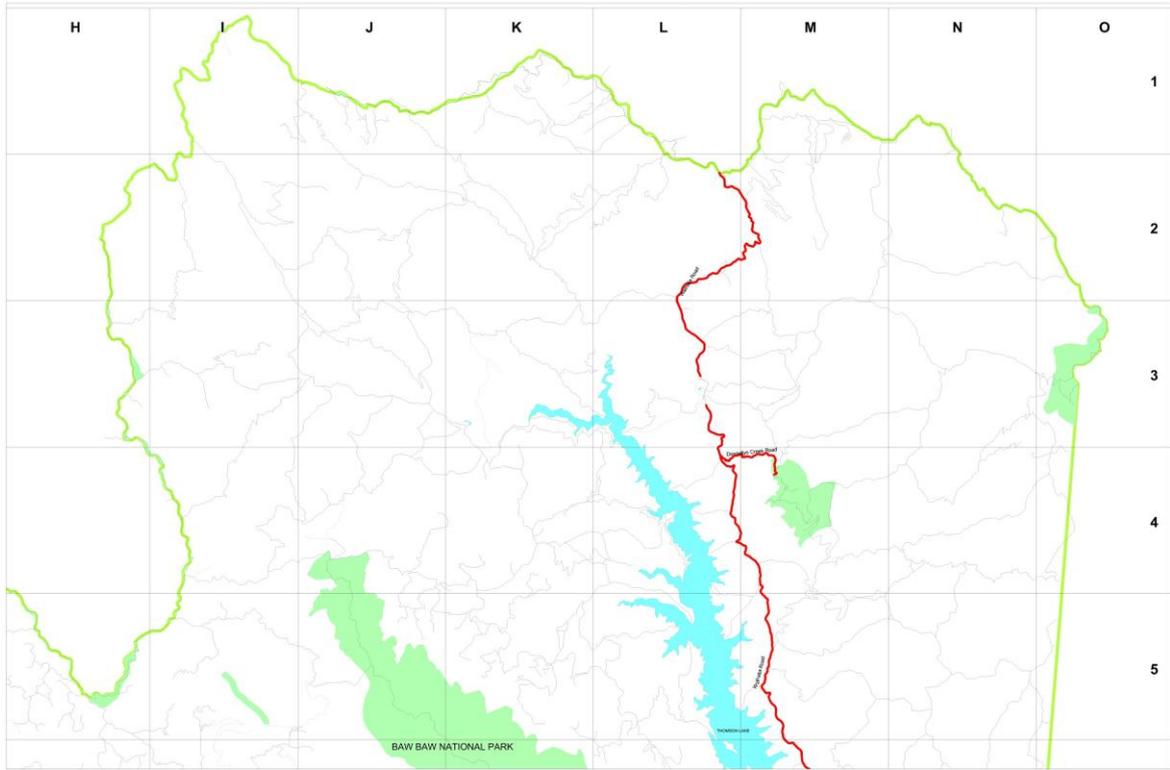
Roadside Conservation - Enlarged Map 3



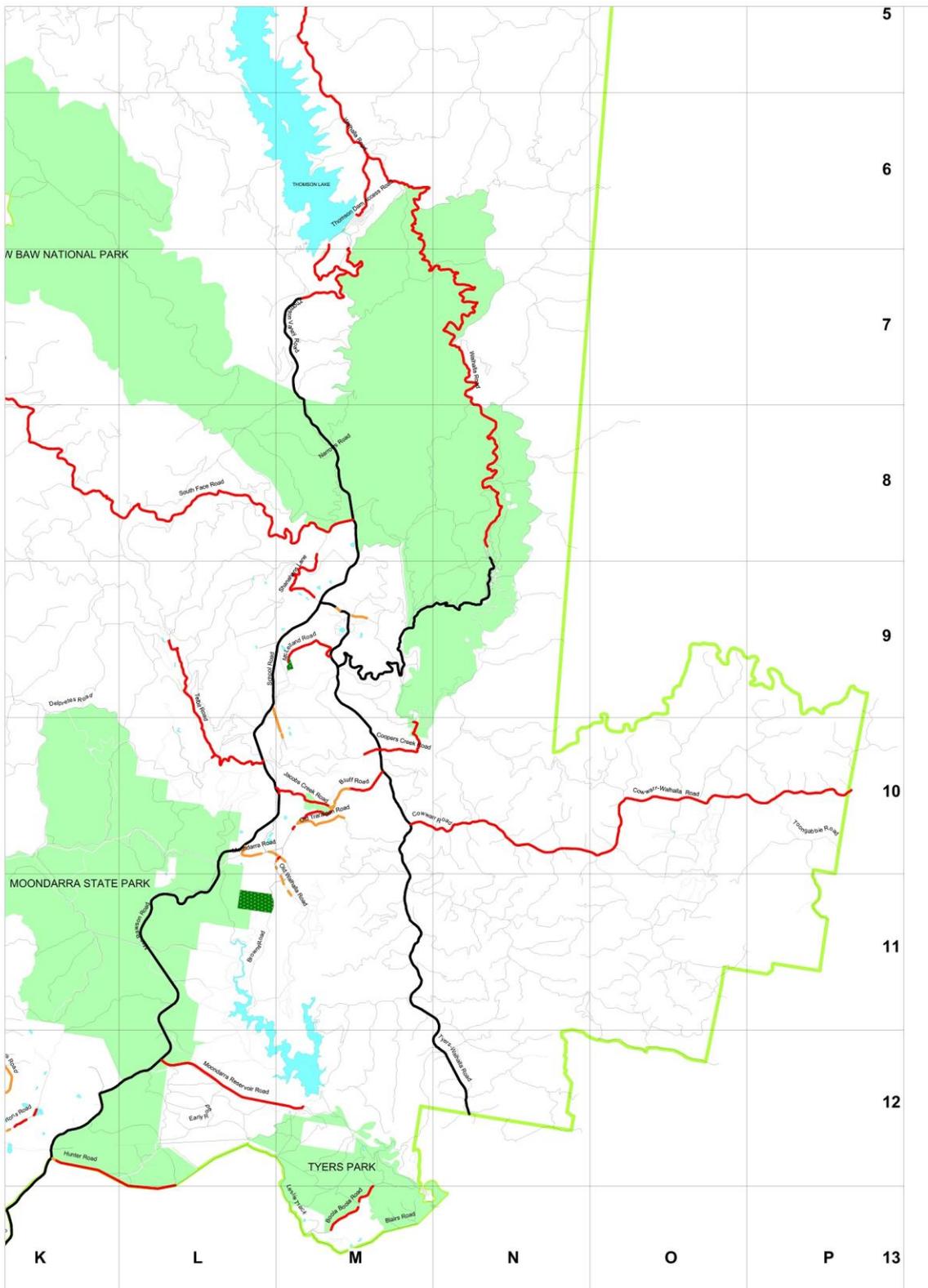
Roadside Conservation - Enlarged Map 4



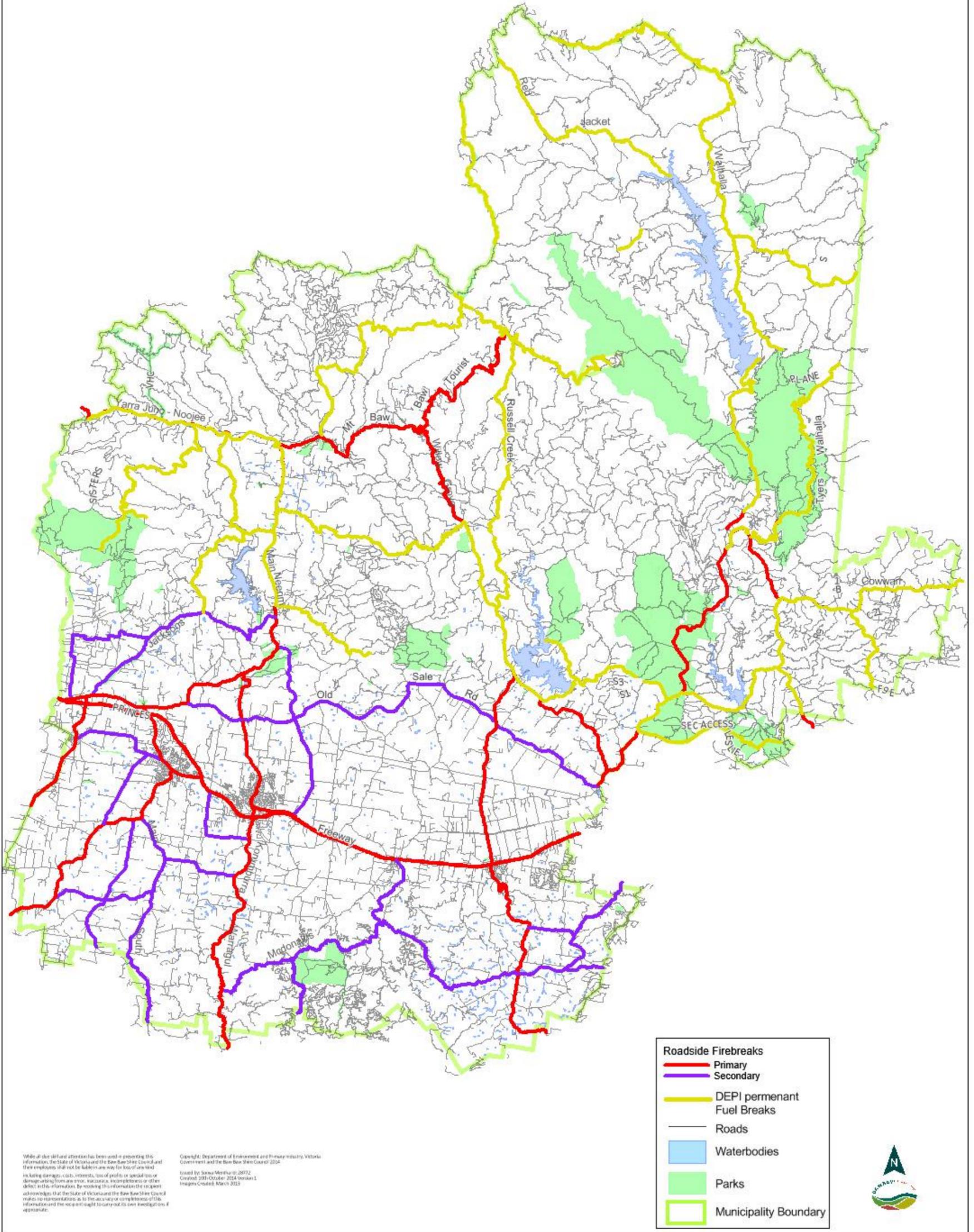
Roadside Conservation - Enlarged Map 5



Roadside Conservation - Enlarged Map 6



Road Management - Fire Breaks



APPENDIX 4. BAW BAW SHIRE'S ENVIRONMENTAL WEEDS LIST

These species are listed in the schedule to the Environmental Significance Overlay in the Baw Baw Shire Planning Scheme.

Common Name	Scientific Name
African Boxthorn*	<i>Lycium ferocissimum</i>
African Feather Grass*	<i>Pennisetum macrourum</i>
African Lily or Agapanthus	<i>Agapanthus praecox ssp. Orientalis</i>
African Lovegrass	<i>Eragrostis curvula</i>
African Olive	<i>Olea europaea var. cuspidata</i>
Alkante	<i>Pentaglottis sempervirens</i>
Alligator weed*	<i>Alternanthera philoxeroides</i>
American Aspen	<i>Populus tremuloides</i>
Angled Onion*	<i>Allium triquetrum</i>
Apple	<i>Malus spp.</i>
Artichoke Thistle	<i>Cynara cardunculus</i>
Asparagus Fern	<i>Myrsiphyllum scandens</i>
Banana Passionfruit	<i>Passiflora tarminiana (syn. P mollissima)</i>
Belladonna Lily	<i>Amaryllis belladonna</i>
Berry Flower Heath	<i>Erica baccans</i>
Black Locust	<i>Robina pseudacacia</i>
Blackberry*	<i>Rubus fruticosos spp. agg.</i>
Blue Periwinkle	<i>Vinca major</i>
Blue Psoralea or Blue Butterfly Bush	<i>Psoralea pinnata</i>
Bluebell Creeper	<i>Sollya heterophylla</i>
Boneseed*	<i>Chrysanthemoides monilifera</i>
Bridal Creeper	<i>Asparagus asparagoides</i>
Bulbil Watsonia	<i>Watsonia meriana var. Bulbillifera</i>
Butterfly Bush	<i>Buddleia davidii, B. madagascariensis</i>
Cactus Pears	<i>Opuntia spp.</i>
Camphor Laurel	<i>Cinnamomum camphora</i>
Cape Broom*	<i>Genista monspessulana</i>
Cape Ivy	<i>Delairea odorata</i>
Cape Tulips*	<i>Moraea spp.</i>
Cape Wattle	<i>Paraserianthis lophantha var lophantha</i>
Cedar Wattle	<i>Acacia elate</i>
Cestrum	<i>Cestrum elegans</i>
Cherry laurel	<i>Prunus laurocerasus</i>
Cherry Plum	<i>Prunus cerasifera</i>
Chilean Needle – grass*	<i>Nassella neesiana</i>
Common Bindweed*	<i>Convolvulus arvensis</i>
Common Dipogon or Dolichos Pea	<i>Dipogon lignosus</i>

Common Name	Scientific Name
Common Forget-me-not	<i>Myosotis sylvatica</i>
Cootamundra Wattle	<i>Acacia baileyana</i>
Cotoneaster	<i>Cotoneaster spp.</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Darwins's Berberry	<i>Berberis darwinii</i>
Desert Ash	<i>Fraxinus angustifolia spp angustifolia (syn F.oxycarpa)</i>
Dietes	<i>Dietes grandiflora, D. bicolor</i>
Drain Flat- sedge	<i>Cyperus eragrostis</i>
Drooping Prickly Pear*	<i>Opuntia monacantha</i>
Early Black Wattle	<i>Acacia decurrens</i>
English Broom	<i>Cytisus scoparius</i>
English Ivy	<i>Hedra helix</i>
Euryops	<i>Euryops abrotanifolius</i>
Evening Primrose	<i>Oenothera stricta</i>
Evergreen Dogwood	<i>Cornus capitata</i>
Fennel *	<i>Foeniculum vulgare</i>
Firethorns	<i>Pyracantha spp.</i>
Flax Leaf Broom*	<i>Genista linifolia</i>
Fountain Grass	<i>Pennisetum setaceum</i>
Fragrant Violet	<i>Viola odorata</i>
Freesia	<i>Freesia alba x lechtlinii</i>
Gazania	<i>Gazania lineraris</i>
Giant Honey Myrtle	<i>Melaleuca armillaris</i>
Goldren Wreath Wattle	<i>Acacia saligna</i>
Gorse*	<i>Ulex europaeus</i>
Great Mullein*	<i>Verbascum thapsus</i>
Harlequin Flowers	<i>Sparaxis spp.</i>
Hawthorn*	<i>Crategus monogyna</i>
Hemlock*	<i>Conium maculatum</i>
Himilayan Honeysuckle	<i>Leycesteria Formosa</i>
Holly	<i>Ilex aquifolium</i>
Honey Myrtle	<i>Melaleuca hypericifolia</i>
Italian Buckthorn	<i>Rhamnus alaternus</i>
Japanese Honeysuckle	<i>Lonicera japonica</i>
Karamu	<i>Coprosma robusta</i>
Karo	<i>Pittosporum crassifolium</i>
Kikuyu	<i>Pennisetum clandestinum</i>
Lantana*	<i>Lantana camara</i>
Laurestinus	<i>Viburnum tinus</i>
Manna Ash	<i>Fraxinus ornus</i>

Common Name	Scientific Name
Montbretia	<i>Crocoshia x crocosmiifolia</i>
Monterey Pine or Radiata Pine	<i>Pinus radiata</i>
Morning Glory	<i>Ipomoea indica</i>
Myrtle Leaf Milkwort	<i>Polygala myrtifolia</i>
New Zealand Mirror Bush or Taupata	<i>Coprosma repens</i>
Olive	<i>Olea europaea var. europaea</i>
Ox-eye Daisy*	<i>Leucanthemum vulgare</i>
Pampas Grass	<i>Cortaderai selloana</i>
Patersons Curse	<i>Echium plantagineum</i>
Pepper Tree	<i>Schinus areira</i>
Peruvian Lily	<i>Alstromeria aurea</i>
Plum	<i>Prunus spp.</i>
Portugal Laurel	<i>Prunus lusitanica</i>
Prickly Pear*	<i>Opuntia aurantiaca</i>
Privet	<i>Ligustrum vulgare</i>
Quaking Grass	<i>Briza maxima</i>
Ragwort*	<i>Senecio jacobaea</i>
Sallow Wattle	<i>Acacia longifolia</i>
Shasta Daisy	<i>Chrysanthem maximum</i>
Silky Oak	<i>Grevillea robusta</i>
Smilax	<i>Myrsiphyllum asparagoides</i>
Spanish Heath	<i>Erica lusitanica</i>
Spear Thistle*	<i>Cirsium vulgare</i>
Spiny Rush*	<i>Juncus acutus</i>
St Johns Wort*	<i>Hypericum perforatum</i>
Sticky Hop Bush	<i>Dodonea viscosa</i>
Strawberry Tree	<i>Arbutus unedo</i>
Sugar Gum	<i>Eucalyptus cladocalyx</i>
Swamp Foxtail - grass	<i>Pennisetum alopecuroides</i>
Sweet Briar or Briar Rose or Wild Rose	<i>Rosa rubiginosa</i>
Sweet Pea	<i>Lathyrus latifolius</i>
Sweet Pittosporum	<i>Pittosporum undulatum</i>
Sycamore Maple	<i>Acer pseudoplatanus</i>
Tall Fleabane	<i>Conyza bonariensis</i>
Tiger Pear	<i>Opuntia aurantiaca</i>
Topped Lavender*	<i>Lavandula stoechas</i>
Tree Lucerne	<i>Cytisus palmensis</i>
Tree Tobacco	<i>Solanum mauritianum</i>
Tutsan*	<i>Hypericum androsaemum</i>
Wandering Trad (formerly Wandering Jew)	<i>Tradescantia fluminensis</i>

Common Name	Scientific Name
Water Hyacinth	<i>Eichhornia crassipes</i>
Watsonia	<i>Watsonia spp.</i>
Wheel Cactus*	<i>Opuntia robusta</i>
White Arum Lily	<i>Zantedeschia aethiopica</i>
White Sallow Wattle	<i>Acacia floribunda</i>
Wild Oat	<i>Avena fatua</i>
Willow Hakea	<i>Hakea salicifolia</i>
Willows*	<i>Salix spp.</i>
Wood Violet	<i>Viola riviniana</i>

* denotes noxious weeds listed under the CaLP Act.
