

NILLUMBIK SHIRE COUNCIL ROADSIDE MANAGEMENT PLAN 2012



Final Version 1.0

August 2012

Nillumbik Shire Council Roadside Management Plan 2012

Acknowledgements

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Version	Date sent to client	Reviewed by:	
		Internal	External
0.1	12-11-2010	Austin O'Malley and Lincoln Kern	
0.2			Roadside Management Working Group and Steering Committee
0.3	19-03-2012		Public Consultation
0.4	21-06-2012		Recreational Trails Advisory Committee
1.0	02-08-2012		Final Version Issued
1.0	28-08-2012		Final version adopted by Council

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EXECUTIVE SUMMARY

Roadsides within the Shire of Nillumbik 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 some conflict between competing objectives. This Roadside Management Plan has been prepared to identify the unique value of roadsides within the Shire and respond to the management issues associated with maintaining these values in a context of the proper function of the roads and their reserves and the associated utility networks.

Nillumbik Shire Council developed its first Roadside Management Plan in 1997. The Country Fire Authority, Department of Sustainability and Environment (then DNRE), Service Authorities, Friends Groups, community members and Council staff provided input to its preparation. This revision of the Roadside Management Plan is aimed at focusing the Plan on the major impacts and management issues of roadsides within the current legislative and policy context and with the assistance of community sector comment.

It consists of three 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. These objectives are then used to guide management issue evaluation.

The issues identified have been considered under the following areas: Ecological conservation; Fire risk management; Recovery in fire-affected areas; Land management and practice; Culture and recreation; and Cooperation amongst authorities and managers.

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

Topics detailed are: Box clearances; Machinery access, Turnaround areas and Overnight parking; Vehicle and machinery servicing and hygiene; Job waste management; Stockpile and dump sites; Excess materials; Road construction, Widening and upgrading; Road surface maintenance; Road drainage and sediment management; Maintenance of drains; Pit cleaning; Revegetation and Site rehabilitation; Vegetation management; Service authorities; Special environmental areas; Pest plants and Recreational trails.

Part 3: Implementation details actions to be undertaken to ensure the successful implementation of the Plan.

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

NILLUMBIK SHIRE COUNCIL ROADSIDE MANAGEMENT PLAN



PART 1: BACKGROUND AND POLICY

Maintaining the environmental and landscape values of Nillumbik's roadsides while managing to mitigate risk

Contents – Part 1

Executive Summary	3
1 INTRODUCTION	7
1.1 Background	7
1.2 Council's responsibilities for roadsides	8
1.3 Roadside Management Plan objectives	9
1.4 Context of roadside management	9
1.5 Legislation and policies	10
1.5.1 Road Management Act 2004	10
1.5.2 Environment Protection and Biodiversity Conservation Act 1999.....	11
1.5.3 Flora and Fauna Guarantee Act 1988	11
1.5.4 Victoria's Native Vegetation Management Framework	12
1.5.5 Planning and Environment Act 1987 - Victorian Planning Provisions	13
1.5.6 Country Fire Authority Act 1958	13
1.5.7 Catchment and Land Protection Act 1994	14
1.5.8 Electrical Safety Act 1998	14
1.5.9 Victorian Bushfires Royal Commission 2009.....	15
1.6 Plans, guidelines and local laws	15
2 DEFINING ROADSIDES	18
2.1 Road and Roadside Management Zones	18
2.2 Road hierarchy and responsibility	18
3 ENVIRONMENT AND ROADSIDES IN NILLUMBİK	20
3.1 Conservation Value Assessment.....	21
3.1.1 Conservation Value Mapping	21
3.1.2 Significant species and Ecological Vegetation Classes	22
3.1.3 Determining Conservation Value and discussion of findings	23
3.1.4 Outcomes for management.....	25
4 ROADSIDE MANAGEMENT ISSUES.....	27
4.1 Fire risk management	27
4.1.1 Fire risks of roadside vegetation in Nillumbik	27
4.1.2 Objectives for roadside fire risk management	27
4.1.3 Roadsides and the Municipal Fire Prevention Plan 2009-2013	27
4.1.4 Local Law No. 5 and implications for fire risk management.....	28
4.1.5 General guidelines for fire risk management.....	28
4.2 Recovery issues in fire-affected areas	29
4.3 Maintaining the road space.....	32
4.4 Ecological conservation issues.....	32
4.4.1 Protecting and conserving indigenous vegetation remnants	32
4.4.2 Rare or threatened vegetation communities.....	33
4.4.3 Rare or threatened flora	33
4.4.4 Rare or threatened fauna	33
4.4.5 Regeneration of indigenous flora	34
4.4.6 Fauna habitat.....	34
4.4.7 Wildlife corridors	35
4.4.8 Unused road reserves	36
4.4.9 Depressions/boggy areas.....	37
4.4.10 Wildlife crossings	37
4.4.11 Significant Roadside Areas	38
4.5 Land management issues.....	38
4.5.1 Pest plants	38
4.5.2 Nillumbik Roadside Weed Control Program	39
4.5.3 Broad weed management objectives.....	41
4.5.4 Pest animals	42

4.5.5	Erosion and sediment control.....	43
4.5.6	Revegetation and site rehabilitation.....	43
4.6	Agricultural activities	43
4.6.1	Moving livestock/grazing on roadsides.....	43
4.7	Collection of dead or living vegetative material from roadsides	43
4.7.1	Firewood collection.....	43
4.7.2	Seed, flower and other plant material collection.....	44
4.8	Herbicide use	44
4.9	Horticulture, gardening and 'tidying up' roadsides	44
4.10	Cultural and recreation issues	45
4.10.1	Heritage and cultural values.....	45
4.10.2	Memorials	46
4.10.3	Recreational trails	46
5	REFERENCES	47
	APPENDIX 1.MAPPING OF ROADSIDE VEGETATION IN NILLUMBIK.....	48
	APPENDIX 2.ECOLOGICAL VEGETATION CLASSES WITHIN NILLUMBIK	72
	APPENDIX 3.RARE OR VULNERABLE PLANTS OF NILLUMBIK ROADSIDES	73
	APPENDIX 4.SUMMARY OF LEGISLATION AND RELEVANT EXTERNAL PLANS AND POLICIES	75
	APPENDIX 5.COUNCIL PLANS AND POLICIES	77
	APPENDIX 6.CONSERVATION VALUE ASSESSMENT DATA SCHEMA.....	78
	APPENDIX 7.RARE OR THREATENED FLORA WITHIN NILLUMBIK	80
	APPENDIX 8.NILLUMBIK RARE OR THREATENED FAUNA	87
	APPENDIX 9.COUNCIL ENVIRONMENTAL WEEDS LIST	90
	APPENDIX 10.WEEDS POSING SIGNIFICANT RISKS WITHIN NILLUMBIK	94

1 INTRODUCTION

1.1 Background

Nillumbik Shire Council is responsible for the management and maintenance of approximately 1,200 kilometres of rural roadsides. Roadsides are the areas within the road reserve which are not used by motorised vehicle traffic, including land either side of the road and between carriage ways. This Plan focuses on the management and maintenance of rural road reserves which often contain exotic and/or native vegetation, rural roadsides are different from urban footpaths and nature strips and require different management approaches.

In 1997, Council adopted the first edition of the *Roadside Management Plan* (Nillumbik Shire Council, 1997). This revised plan focuses on balancing the sometimes competing interests on roadsides between human safety, fire risk, management of remnant native vegetation located on roadsides and ensuring a safe and efficient transport network and utility corridor.

This Plan contains updated information regarding the environmental values of roadsides in Nillumbik based on revised conservation value mapping work undertaken in winter/spring 2010. This provides guidance to Council about where resources should be allocated to protect the more valuable of these roadside reserves.

This Plan retains the strong emphasis established in the 1997 Plan on operational management of roads so that works activities do not adversely impact flora and fauna values of roadsides.

In this regard, the Plan has been divided into three 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.

Part 3 Implementation: outlines the implementation of the Plan, cooperation with other agencies and the development of community awareness regarding the values of roadside reserves and the need for their protection.

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 Prevention Plan* (to be superseded by the *Municipal Fire Management Plan*), the *Road Management Plan*, the *Recreational Trails Strategy*, *Nillumbik Weed Action Plan* and other complementary strategies.

1.2 Council's responsibilities for roadsides

Council has a number of sometimes conflicting responsibilities in relation to the management of roadsides and road reserves.

The five key responsibilities for roadside management are:

a) Road safety

Council has a responsibility to enable the passage of vehicles in a variety of road conditions. Roadsides may contain potential hazards such as trees and animals which may cause a vehicle to be struck on the roadway.

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.

b) Managing fire risks

In some cases, roadside vegetation management 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 on roadsides is in proportion to the role they play in the broad landscape. This assessment must be in cooperation with other government agencies to ensure that fuel reduction work is strategic, effective and targeted.

c) Vehicle movement

Council has a responsibility to ensure that vehicles can move unimpeded along a road. Box clearance is undertaken along roadsides to enable vehicles to travel unimpeded; it also contributes to fuel management and is especially important during fire events where visibility can be reduced. In addition, box clearance ensures that roadside trees do not damage side mirrors or other parts of fire suppression vehicles during an emergency.

d) Protection of environmental values

Some roadsides represent the last fragments of remnant vegetation communities in areas where adjacent private property has been cleared for agricultural or other purposes. A significant proportion of Nillumbik roadside reserves have been assessed as having high conservation significance.

Council has a responsibility to ensure that these roadsides are managed appropriately to retain their conservation value. In these contexts, it is important to ensure that these reserves continue to exist and their important flora is maintained and not compromised by other activities that perhaps 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 needs should be carried out.

e) Roadside amenity

The abundance of vegetation on roadsides across the Shire provides a distinctive landscape character and amenity qualities. Residents and visitors to the Shire are offered a unique feel and atmosphere within a Melbourne-wide context.

Native vegetation on roadsides is clearly valued by the local community and is protected by law. These substantial vegetation remnants on roadsides also provide 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 responsibilities, it is important that Council works in partnership with other government agencies such as VicRoads and the CFA to assess and confirm the road purposes are agreed and managed into the future.

1.3 Roadside Management Plan objectives

The objectives of this Roadside Management Plan are to guide maintenance and construction techniques and planning decisions which may impact roadsides to:

- ensure the safe and effective function of roadways
- protect service assets located on roadsides
- minimise the risk and impact of fire
- 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 fuel modification, 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.

However, the ability of roadside reserves to fulfil these essential functions is 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.

Managing the values and threats of roadside reserves requires careful planning and consideration of all the roles they fulfil. Hence, roadside reserve management requires careful consideration of not only their ecological and environmental values but also safety and efficient functioning of the road itself as well as the utility and infrastructure function of the road corridor, fire risk management matters and the recreational, cultural and aesthetic values of the reserves.

A range of legislation applies to roadsides to ensure all these values and roles are considered and protected. This Roadside 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 and policies

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.

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.

The Act indicates that Freeways (includes Tollways) and Arterial Roads (Arterial-Highway and Arterial Other) are classified as Declared Roads.

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 Nillumbik roadsides include:

- collection of native orchids
- habitat fragmentation
- 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*
- 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.

1.5.4 Victoria's Native Vegetation Management Framework

The primary objective of the Native Vegetation Management Framework is the retention and management of native vegetation (Department of Natural Resources and Environment, DNRE, 2002).

According to Department of Sustainability and Environment (DSE) (2002:14) the goal of native vegetation management in Victoria is to achieve:

“A reversal, across the entire landscape, of the long-term decline in the extent and quality of native vegetation, leading to a Net Gain.”

Four individual actions to achieve the above goal are outlined in the DNRE (2002:14) Framework.

These are:

- active improvement of the quality of existing vegetation
- avoidance or minimisation of further permanent losses through clearing
- strategic increase in the cover of native vegetation through biodiverse revegetation
- support for landholders as they move towards more sustainable land use.

To achieve the most strategic outcome for native vegetation across Victoria, the DNRE (2002) Framework involves a system of classification that includes both the land protection and Conservation Significance of any given site.

The Net Gain methodology is intended to provide a systematic approach aimed at ensuring the conservation of the majority of remnant vegetation across Victoria. A three-step approach has been established to use when applying the Net Gain process (DNRE 2002:23).

These steps are as follows.

1. To avoid adverse impacts, particularly through vegetation clearance.
2. If impacts cannot be avoided, to minimise impacts through appropriate consideration in the planning processes with expert input to project design or management required.
3. Identify appropriate offset options where above fails.

Upon receiving planning applications to clear vegetation, responsible authorities make assessments relative to the Conservation Significance of the site. If all the preliminary processes have been correctly applied, approval may be granted.

The outcome of the Net Gain process is intended to ensure that the most significant vegetation incurs no losses (exceptions do apply) and less significant vegetation is adequately managed through commensurate offsets based on the level of significance.

During the process, it must be ensured that every effort has been made to avoid clearing remnant vegetation at the outset and if clearance is unavoidable, impacts have been minimised to avoid damaging the most significant vegetation and reduce the amount of overall vegetation cleared.

1.5.5 *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 Prevention Plan*.

The approval process for vegetation removal which is not covered by an exemption as specified under Clause 52.17 is guided by Victoria's *Native Vegetation Management: A Framework for Action* (DNRE 2002).

1.5.6 *Country Fire Authority Act 1958*

Section 43 of the *Country Fire Authority Act 1958* requires public authorities, councils and VicRoads 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 DSE has responsibility.

Among its multiple purposes, the Nillumbik *Municipal Fire Prevention Plan* (MFPP) in part identifies roadsides requiring fuel reduction or mitigation works. Fuel reduction works detailed in MFPPs 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. In Nillumbik's case, the Committee has produced the *Nillumbik Municipal Fire Prevention Plan 2009-2013* (Nillumbik Shire Council, 2009, see section 1.5.8.1).

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 all landowners of either private and public land to take all reasonable steps to avoid causing or contributing to land degradation.

The Act states that plants can be classified as a state prohibited weed, regionally prohibited weed, regionally controlled weed or restricted weed. Animals can be classified as a prohibited pest animal, controlled pest animal, regulated pest animal or an established pest animal.

The Act also stipulates that a landowner must take all reasonable steps to prevent the growth and spread of regionally controlled weeds and established pest animals on a roadside that is crown land and adjoins the landowner's property. In relation to roadsides on Crown land, Department of Primary Industries (DPI)/DSE) must take all reasonable steps to eradicate regionally prohibited weeds.

Under Clause 27(8), roadsides or a class of roadsides in an area may be recommended and declared to be a special area and a management plan developed for that special area. The Regional Catchment and Land Protection Board may recommend amendments to a Planning Scheme to give effect to that plan.

1.5.8 Electrical Safety Act 1998

The *Electricity Safety Act 1998* (Victoria) (ES Act) Section 86 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 *Municipal Fire Prevention Plan* outlines processes and procedures in relation to electrical line clearance.

1.5.9 Victorian Bushfires Royal Commission 2009

Saturday 7 February 2009 marked Australia's worst natural disaster – the Black Saturday bushfires. In Nillumbik, just under a quarter of the Shire was devastated. Lives were lost and many homes were destroyed. Council is committed to providing continuing support and information to its communities following the bushfires.

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 on 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 Prevention 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.

Local government has a key role to play in local emergency management planning and needs adequate funding support to fulfil its responsibilities. Council awaits further information from the Victorian Government regarding exactly what is expected and what increased responsibilities will mean. Appendix 4 provides a summary of legislation and offers an oversight of additional legislation that may have relevance to aspects of roadside management.

1.6 Plans, guidelines and local laws

1.6.1 Municipal Fire Prevention Plan

The *Municipal Fire Prevention Plan* (MFPP to be superseded by the Municipal Fire Management Plan) recognises that Nillumbik has a high fire risk due to the combination of vegetation, topography, climate and demography. The localities of North Warrandyte, Plenty Gorge, Christmas Hills and St Andrews are areas of higher risk due to poor access and water supply, coupled with concentrations of population (Nillumbik Shire Council, 2009).

The aim of the MFPP 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 MFPP was developed in cooperation with the Municipal Fire Prevention Committee which consists of delegates from 15 local CFA brigades and others (Parks Victoria and Nillumbik Shire Council), however it is currently being reviewed and the new Municipal Fire Management Plan is being developed in partnership with the Municipal Fire Management Planning Committee.

The MFPP sets out a range of works through a works plan to be undertaken to reduce fire risk and outlines strategies which address wildfire, structural fires and hazardous material incidents.

1.6.2 Nillumbik Roadworks Operations Handbook 1995

A key guidelines-type document prepared by Council some 15 years ago was the *Roadworks Operations Handbook* (Nillumbik Shire Council, 1995). This document offered advice regarding the various items that need to be considered before undertaking works along road reserves. It provided a pre-works checklist, advice on box clearances, managing site operations and undertaking site rehabilitation as well as advice regarding erosion control, vegetation management and special environmental areas.

The Handbook was an attempt to develop guidelines for improved roadside works and to reduce impacts on significant roadside reserves. Its contents were updated with the production of the first edition of the Roadside Management Plan in 1997. The 1997 Plan had a strong operational emphasis which has been retained by this Plan.

1.6.3 Local Law No. 5

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.

Amenity Local Law No. 5 dated 17 December 2003 has particular relevance to roadside management as shown by the following extract.

Subclause 20B Removal of Vegetation on Council Land states:

- a) Without a permit, a person must not on any Council land remove any vegetation, including dead trees and fallen timber, other than to prevent the spread of regionally controlled weeds pursuant to the provisions of the *Catchment and Land Protection Act 1994* and those weeds listed in the Council publication *Live Local Plant Local*.
- b) Subclause 20B (a) does not apply to the removal of material or vegetation from a road if it is:
 - i. Maintenance and mowing of nature strips comprising exotic vegetation; or
 - ii. Removal of vegetation that has fallen onto the road from abutting private land; or
 - iii. Removal of ground fuels (as defined in 20B) by immediately abutting landowners for fire hazard reduction purposes; or

- iv. Removal of vegetation for fire hazard reduction purposes when in accordance with a fire prevention notice issued by the Municipal Fire Prevention Officer or an Assistant Fire Prevention Officer under:
 - Section 41 of the *Country Fire Authority Act 1958*; or
 - Section 8 of the *Local Government Act 1989*; or
- v. Removal of vegetation for fire hazard reduction purposes when in accordance with a fire prevention notice issued by the Municipal Fire Prevention Officer or an Assistant Municipal Fire Prevention Officer.
- vi. Works undertaken by Friends groups, Landcare groups and community fireguard groups in accordance with a land management agreement approved by Council.

Further to the above, Local Law No. 5 has provided the following.

If a resident lives directly adjoining a roadside that has **low environmental significance**, the following can be undertaken without a permit:

- removal of fine ground fuels (grass, leaves, twigs, loose bark)
- removal of regionally controlled weeds and those weeds listed in Council's publication *Live Local Plant Local*
- maintenance and mowing of any part of the road reserve containing exotic vegetation abutting the property
- removal of vegetation that has fallen onto the road from the resident's land
- removal of vegetation that is the subject of a fire prevention notice
- participation in works undertaken by Friends groups, Landcare groups and community fireguard groups in accordance with an agreement approved by Council.

Under Local Law No.5, if a resident lives directly adjoining a roadside which has **high environmental significance**, the following can be undertaken without a permit:

- removal of regionally controlled weeds and those weeds listed in Council's publication *Live Local Plant Local*
- maintenance and mowing of any part of the road reserve abutting the resident's property comprising exotic vegetation
- removal of vegetation that has fallen onto the road from the resident's land
- removal of vegetation that is the subject of a fire prevention notice
- participation in works undertaken by Friends groups, Landcare groups and community fireguard groups in accordance with an agreement approved by Council.

A permit is required by residents who wish to undertake activities other than those listed.

All of Council's Local Laws are planned to be reviewed in 2013.

Appendix 5 lists Council plans and policies that need to be taken into account in roadside management.

2 DEFINING ROADSIDES

Roadsides are the areas within the road reserve which are not used by motorised vehicle traffic, including land either side of the road and between carriage ways.

2.1 Road and Roadside Management Zones

Based on their different functions and management regimes, road reserves can be divided into two major zones - the Road Management Zone and Roadside.

The Road Management Zone includes the road surface and the area one metre beyond the road surface edge or guidepost and a height of five metres from the highest part of the road. The roadside can be defined as the strip of land:

‘that is within the boundaries of a road reserve (other than the shoulders or verge 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.’

(Roadside Management Act 2004)

A pictorial description of these different zones is provided in Figure 1.

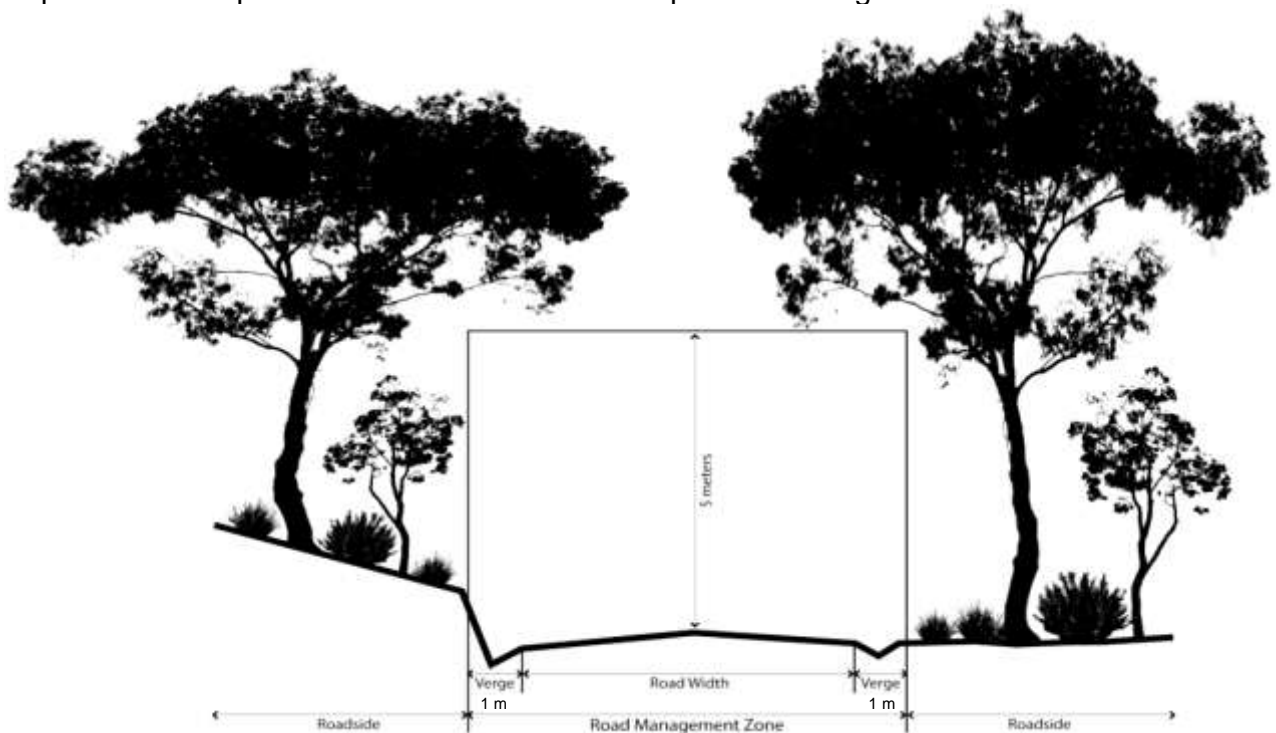


Figure 1. Defining the Roadside and Road Management Zone

2.2 Road hierarchy and responsibility

Management responsibility for roads within the Shire of Nillumbik falls under three categories:

- VicRoads is responsible for Declared roads which are Freeways (includes Tollways) and Arterial Roads (Arterial-Highway and Arterial Other). Note: Council has responsibility for areas behind the back of kerb on declared urban arterial roads.
- Nillumbik Shire Council is responsible for undeclared or local roads

- Minor access roads which fall within land under management by other authorities, is the responsibility of the relevant authority e.g. Parks Victoria, Melbourne Water, private land-owners.

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 (2009)* for details of the road hierarchy and levels of service.

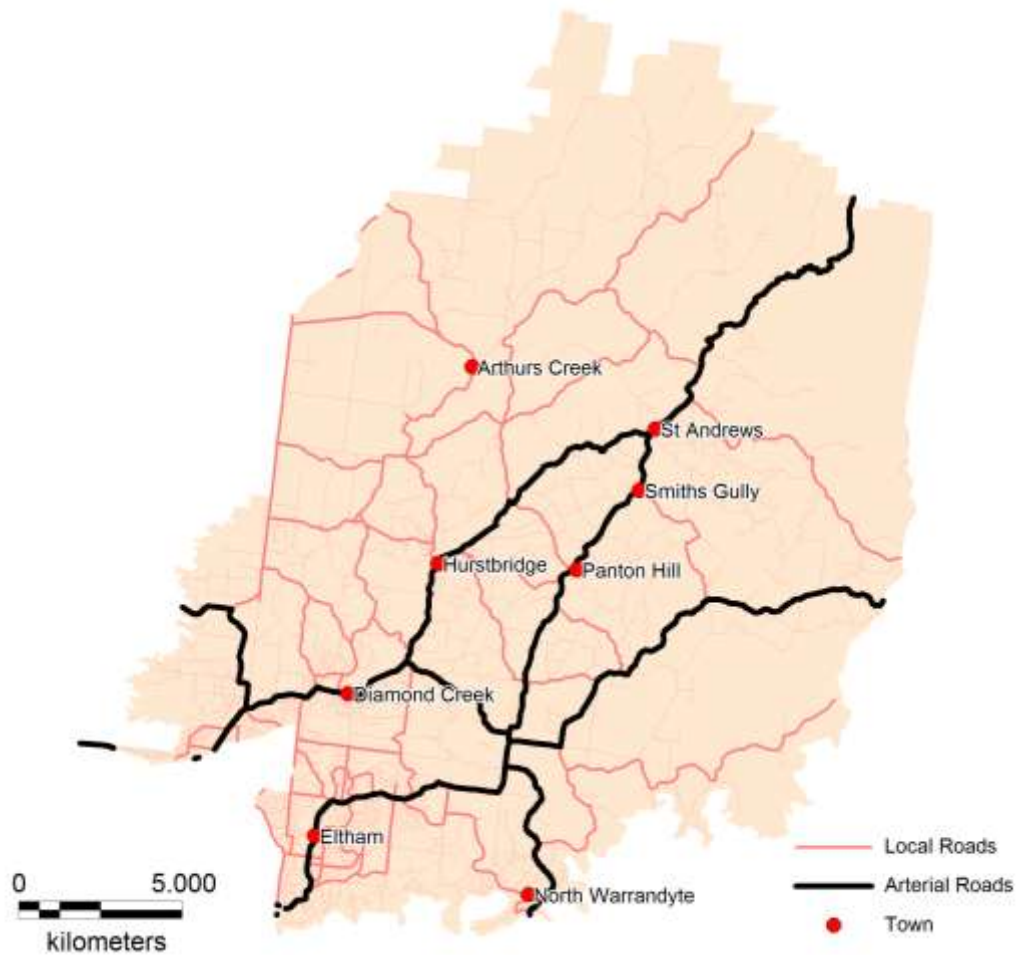


Figure 2. Local and Arterial Roads in Nillumbik

3 ENVIRONMENT AND ROADSIDES IN NILLUMBIK

Significant areas of native vegetation remain on roadsides in the Shire of Nillumbik. 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 this 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 disturbance and roads are often unsealed and comparatively narrow.

The specific vegetation types that occur and significant species of flora and fauna that potentially occur on roadsides are listed in Appendices 3, 7 and 8. Many significant and rare flora and fauna species occur throughout the Shire and although specific data about roadside vegetation is limited it is likely that roadside vegetation is important habitat for fauna species in many cases. There are also several Ecological Vegetation Classes (EVCs) occurring in roadside reserves that are considered endangered and vulnerable in the bioregion (Appendix 2).

The EVCs most commonly found on roadsides within the Shire are approximately consistent with those EVCs most commonly occurring in the Shire including, from most to least common:

- **22. Grassy Dry Forest:** dominant eucalypts include Red Stringybark, Long-leaf Box and Red Box. The groundstorey is generally open and grassy, dominated by Silvertop Wallaby Grass, Weeping-grass and Wattle-Mat-rush, there is likely many small shrubs such as Common Rice Flower, Honey-pots and Cranberry Heath and members of the Fabaceae and Mimosaceae families and herbaceous dicots such as Kidney-weed, Shady Wood-sorrel and Common Raspwort. Larger shrubs are generally sparse with Cherry Ballart, Sweet Bursaria and Black Wattle commonly present. Weed invasion is often limited due to the poor soils and dry sites it occupies.
- **47. Valley Grassy Forest:** often occurs down-slope of Grassy Dry Forest with which it shares many species. Dominant eucalypts include Yellow Box, Candlebark, Red Stringybark, Long-leaf Box, Red Box and Narrow-leaf Peppermint. Burgan and Common Cassinia are prominent shrubs, graminoids include Kangaroo-grass, Wattle Mat-rush, Weeping-grass and Grey-tussock Grass, many herbs and often evident and ground creepers are also common.
- **23. Herb-rich Foothill Forest:** often occurs down-slope of Grassy Dry Forest on relatively fertile, moderately well-drained soils in damper sites that are generally steep easterly and southerly aspects; eucalypts include Narrow-leaf Peppermint, Messmate Stringybark, Yellow Box, Swamp Gum and others from typically drier EVCs; there is generally a large shrub component ranging from tall to prostrate; graminoids include Wattle Mat-rush, Weeping Grass, Grey Tussock-grass and there is a diverse component of herbaceous dicots and many orchids and lilies. There is often some weed invasion, as is often the case in damper EVCs.
- **20. Heathy Dry Forest:** generally found in the more northern parts of the Shire, particularly around Strathewen and St Andrews, where shallow and skeletal rock soils are evident, from undulating hills to exposed aspects on ridge tops and steep slopes; eucalypts include Broad-leaved Peppermint, Mountain Grey-gum, Narrow-leaf Peppermint, Messmate Stringybark; understorey is dominated by heaths and peas; graminoids are common but not extensive, although Thatch Saw-sedge has often regenerated densely after fire. The weed component is often low due to the poor soils.

- **18. Riparian Forest:** found along watercourses on alluvial terraces; Manna Gum is the typical eucalypt; the midstorey is dense with many medium trees including Silver Wattle and Blackwood and other small trees/shrubs including Hazel Pomaderris and Burgan; the ground storey is also thick with tussock grasses and sedges; medium sized herbs are also common. This EVC is often badly weed invaded.
- A possible exception to this order is **61 Box-Ironbark Forest:** generally all of this EVC in the Shire is located in urban environments and as such is exposed to numerous disturbance impacts; it occurs on infertile stony soils; eucalypts include Red Ironbark, Red Stringybark, Long-leaf Box and Red Box; the midstorey and groundstorey are often open with species such as Golden Wattle, heaths and peas, Spear Wallaby Grasses and a range of small herbaceous dicots.

Bioregional Conservation Status of the EVC is also a reasonable indication of the likely quality of the EVC within the Shire. For instance, Grassy Dry Forest has a Bioregional Conservation Status of 'Least Concern' whereas Valley Grassy Forest is 'Vulnerable'. This coincides with the significant remnants of high-quality, undisturbed Grassy Dry Forest within the Shire, whereas much of the Valley Grassy Forest within Nillumbik suffers from weed invasion and other disturbances, such as past grazing.

Some of the EVCs that occur only in the north of the Shire and mainly in Kinglake National Park are not going to be particularly common on Council-managed road reserves. Such EVCs are the tall forests EVCs – Wet Forest, dominated by Mountain Ash and Damp Forest – generally comprised of Messmate Stringybark and Mountain Grey Gum. Likewise, it is usually only small sections of roadside that contain Riparian Forest due to roads not often following gully lines and needing to be located higher in the landscape to avoid inundation.

The Conservation Value of roadsides within the Shire (Appendix 1) was assessed to ensure those sections of road reserve that contain intact, undisturbed weed-free vegetation with significant fauna habitat was rated higher compared with roadsides where remnant vegetation has been replaced by weed species or where EVC quality is substantially diminished and fauna habitat limited. All EVCs across the Shire have the potential to provide some High Conservation Value roadsides.

The most often observed rare or threatened flora species on roadsides included Velvet Apple Berry, Wine-lipped Spider Orchid and Round-leaf Pomaderris (Appendix 3). Endangered EVCs occurring on roadsides include Swampy Riparian Complex, Plains Grassy Woodland, Floodplain Riparian Woodland and Escarpment Shrubland.

3.1 Conservation Value Assessment

3.1.1 Conservation Value Mapping

The Conservation Value of Nillumbik roadsides were first assessed during 1994-1995. The assessment methodology is documented in the Roadside Assessment Handbook (undated) developed by the Victorian Roadsides 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, Medium-Low and Low). Additionally, if rare or threatened species or endangered EVCs were present, a score of High Conservation Value was attributed.

In 2005, medium value roadsides were reassessed and the updated mapping was incorporated into the 1997 *Roadside Management Plan*. For the 2010 assessment, High and Medium Conservation Value roadsides as well as any other roadsides with greater than 25 per cent indigenous ground storey were reassessed.

Key objectives of the 2010 mapping were to:

- review the existing Conservation Value to ensure the current classification and consequent management was appropriate
- provide up-to-date mapping of significant weeds, including filling a significant knowledge gap with Council data regarding the distribution of environmental woody weeds (refer to section 2.4.1)
- record significant species located on assessed roadsides (refer to section 2.1.3)
- 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 hand-held GPS enabled Personal Digital Assistant (PDA).

The resultant GIS database allows the analysis of each attribute assessed and can be utilised for more detailed consideration of the data and roadside area in question. The windscreen survey permits the identification of broad categories of vegetation. As such, if major works are planned on roadsides, a more detailed assessment must be undertaken.

Appendix 6 outlines the methodology employed to undertake the vegetation mapping through use of a proforma.

3.1.2 Significant species and Ecological Vegetation Classes

Significant species observed during assessment were recorded with a GPS location. Significant species recorded in the previous roadside assessments in 1997 and 2005 were also reviewed and included in this assessment. Victorian Flora Site Database (DSE 2009) records post-1985 within 50 metres of roadsides scoring Medium-Low or above were considered to occur and the roadside Conservation Value duly adjusted with the addition of 15 points.

Incorporation of the conservation status of Ecological Vegetation Classes (EVC) was considered during the assessment process. Endangered EVCs from DSE 2005 EVC Mapping (DSE 2005) occurring on roadsides of Medium Conservation Value or above were considered to be of High Conservation Value.

3.1.3 Determining Conservation Value and discussion of findings

The 2010 assessment split roadsides into four levels of Conservation Value. Previous classification systems used by Council had five categories. The 2005 categories were: A) Very High, B) High, C) Moderate, D) Moderate/Low and E) Low.

It was simplified to four categories to ensure that distinction between categories was relevant to on-ground management actions.

For instance, it was noted that there is very little on-ground management differences between High and Very High Conservation Value Roadsides. Hence, these categories were grouped. However, it was still considered important to acknowledge the variability between Moderate and Moderate/Low roadsides. It was noted during assessment that some sections of roadside previously assessed as Moderate/Low were observed to contain significant native groundstorey but may score low for other features.

Groundstorey vegetation is particularly vulnerable to disturbance and as such is generally the scarcest layer of native vegetation within the Shire. It is especially vulnerable where there are few trees or shrubs present as it may be easily overlooked and disturbed. Furthermore, intact groundstorey remnants once lost are the hardest to rehabilitate. Hence, an important outcome of the new mapping was ensuring that areas containing greater than 25 per cent indigenous groundstorey were recognised so they can be managed appropriately. As such, wherever greater than 25 per cent groundstorey was observed the section was reassessed. It is also useful to identify areas without indigenous groundstorey that may have previously been included in the Moderate category due to trees or shrubs as it will assist in identifying areas where actions such as fuel reduction or infrastructure works will have lesser impacts on indigenous flora.

The assessment method and scoring categorisation was taken from the Victorian Roadsides Conservation Advisory Committee (VRCAC) Assessment Handbook (undated). Previous Council assessments altered the scoring categorisation detailed in VRCAC. Although, it is unclear as to why the system was altered exactly, it may be presumed that it allowed the increased distinction of roadside quality. As there was a desire to simplify the classification system in this assessment, it was proposed that the VRCAC scoring system be used. This may also reduce the variation in scoring that may result due to seasonal variations in vegetation quality and also variances amongst assessors.

It should be noted that as previous assessments were not collected electronically, areas not reassessed in 2010 could not be adjusted to reflect this change. The 2010 assessment split roadsides into four levels of Conservation Value. Although the numerical analysis provided the method for determining a Conservation Value the following describes the features such roadsides are likely to exhibit.

- **High Conservation Value:** 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, or EVCs, or may have other significant features such as areas of cultural significance.
- **Medium Conservation Value:** More than 25 per cent indigenous groundstorey but there is considerable invasion of weeds and/or other disturbance, native vegetation occurs mainly in patches, some capacity for natural regeneration, few other habitat features.

- **Medium-Low Conservation Value:** Contains highly disturbed indigenous vegetation, with a groundstorey comprising mostly weeds (i.e. less than 25 per cent indigenous groundstorey). Often only indigenous canopy trees remaining and a patchy mid-storey of shrubs and small trees, 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.

The results of the 2010 mapping are detailed in Table 1 and shown in comparison to the 2005 results.

Table 1. 2010 Conservation Value Assessment Scoring Review

2010 Assessment			2005 Assessment		
New Categories:	Score	Lineal km	2005 Categories	Equivalent	Lineal km
High (A)	15+ or contains Endangered EVC	375.99	A Very High	21+	82.29
			B High	17-20	154.86
Medium (B)	8-14 and >25% indigenous understorey	172.78	C Moderate	12-16	314.99
Medium-Low (C)	8-14 and <25% indigenous understorey or if not reassessed was previously mapped as moderate-low	400.63	D Moderate-Low	3-11	416.99
Low (D)	1-7 and medium adjusted likewise or if not reassessed was previously mapped as low	241.34	E Low	1-3	225.94

Due to the varying scoring, it is difficult to account for the changes in lineal kilometres of each category across the years. Table 2 compares the variation in roadside assessment scores used in the 1997, 2005 and 2010 assessments.

Table 2. Roadside Conservation Value Comparison of Results 1997, 2005 and 2010

Categories	1997 Lineal km	2005 Lineal km	2010 Lineal km
A) Very High 21+	83.76	82.29	58.27*
B) High 17-20	156.99	154.86	209.77*
C) Moderate 12-16	428.68	314.99*	237.42*
D) Moderate-Low 3-11	323.50	416.99*	460.55
E) Low 1-3	217.86	225.94	224.74
Total	1210.79	1195.07	1190.74
* Indicates categories which were reassessed during each review			

There are number of factors that may account for changes in scoring across the years. Major factors likely to have impacted are the effects of fire, seasonal timing and climatic conditions of assessment. Assessment in 2010 was mostly undertaken during late-winter and spring, which is the optimal time for observing flora.

Furthermore, the wetter conditions in 2010 than in previous assessment years is also likely to resulted in increased growth and flowering further aiding observation. Conversely, weed growth would have also been favoured so otherwise dry soils that may contain indigenous vegetation may have supported dense growth of weedy annual grasses and other herbs.

For instance, a substantial decline in Very High sections is evident in the 2010 assessment; rather than assuming that vegetation condition has declined over the years since 1997, it is highly likely that a major result of this is the effect of fire and climatic conditions at time of assessment. For instance, fire would have removed canopy cover and some of the older trees with hollows may also have been burnt or removed for safety concerns, litter levels reduced and weed cover and soil disturbance through erosion increased. These changes would have negatively impacted scoring, although future recovery of these areas is likely.

This reduction in the scores of roadsides of Very High Conservation Value has led to an increase in High Value Roadsides, as they have dropped down a category. It is also possible that some of the previously assessed Moderate roadsides may have increased to become High due to increase regeneration of woody species from fire.


Once again, optimal survey timing may have also revealed additional native species, including orchids and lilies that may have been absent during previous assessments, also affecting results. Conversely, weed invasion, post fire and loss of other values, may have also resulted in the decrease of some Moderate roadsides to Moderate-Low.

While care was taken to use consistent methodology with assessment methodology from previous years, variation amongst assessors is also likely to have affected results. Due to the coarse nature of the assessment methodology as categories become smaller, more variation is likely to occur due to factors such as fire, season, climatic conditions and assessor variability. Therefore, it is important to acknowledge the potential for variations particularly as the scoring system is broken down into smaller categories.

3.1.4 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 Table 3 below.

Table 3. 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	Minimise access to machinery Minimise removal of vegetation and avoid impacts to groundstorey	If new works are required, consult with Environmental Works Officer Permits likely to be required New works require detailed assessment to minimise impacts Consider relocating fuel reduction elsewhere	Highest concern for: <ul style="list-style-type: none"> • minimising disturbance • weed management • retaining ecological values and habitat 
Medium Significant presence of native vegetation including groundstorey	Undertake any required fuel modification sensitively	May be possible to locate new works without significant impacts to native vegetation Permit application may be avoidable May be suitable for fuel reduction	
Medium-Low Native vegetation present but the groundstorey weedy	Machinery access should not impact vegetation if care is taken to avoid tree root zones	Can locate new works without significant impacts in native vegetation Unlikely to require permit Most suitable for fuel reduction	
Low Very little or no native vegetation present	Machinery access should not impact vegetation if care is taken to avoid tree root zones	Least likely to contain ecological values	

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 risk management

4.1.1 Fire risks of roadside vegetation in Nillumbik

In some cases, roadside vegetation management 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 on roadsides is in proportion to the role they play in the broad landscape. This assessment must be in cooperation with other government agencies to ensure that fuel reduction works is strategic, effective and targeted. It should also be highlighted that changes to assessment methods and standards of roadsides may require changes to approaches in fire risk management processes.

4.1.2 Objectives for roadside fire risk management

Under the CFA Act, councils have a responsibility to prevent fires on roadsides and to contain roadside fires. 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.

4.1.3 Roadsides and the *Municipal Fire Prevention Plan 2009-2013*

The aim of the *Municipal Fire Prevention Plan 2009-2013* (MFPP, to be superseded by the Municipal Fire Management Plan) is to provide measures to mitigate the risk of fire and to subsequently protect life, property, community assets and the natural environment.

The MFPP has a number of objectives including:

- creating a partnership between the community, Council, CFA and other relevant agencies through education and fire prevention strategies
- recognising environmental significance and incorporating this into fire prevention planning
- innovation, cooperation and negotiation in fire prevention planning
- setting measurable goals and being accountable
- facilitating effective fire prevention measures
- undertaking multi-level reporting and accountability
- educating the community on fire prevention and personal safety.

The MFPP recognises that the Shire has a high fire risk due to the combination of vegetation, topography, climate and demography. The MFPP 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.

4.1.4 Local Law No. 5 and implications for fire risk management

As outlined in 1.6.3, Local Law No. 5 provides scope for landholders to manage fuel on roadside reserves adjacent to their property.

In response to the circumstances of the Black Saturday bushfires, Council provided permits in 2009 to approximately 4,200 residents living adjacent to roadsides with low conservation significance. This enabled them to remove fallen trees, logs, branches and dead shrubs up to 1.5 metres high.

It was noted that although, in terms of fuel hazard, removal of logs is largely ineffectual – as fine fuel is the more significant factor in fire spread – it was considered impractical that distinctions be drawn between the size of twigs and logs.

At the same time, residents living adjacent to roadsides with high conservation significance, were invited to apply for a free permit of which 39 were issued.

Residents issued with a permit in 2009, were advised they could contact Council in 2010 and a permit would be reissued valid until August 2011. During the 2010-2011 fire season, a total of 12 permits were issued. The issuing of these permits has resulted in some increased fuel reduction activity on roadside reserves, while also ensuring that high conservation significance roadside reserves are not subject to unauthorised disturbance or activities that could excessively damage valuable groundlayer species in particular.

4.1.5 General guidelines for fire risk management

Council will support the following in relation to fire management of roadsides associated with the measures discussed previously.

- Implement fire prevention works as outlined in the *Municipal Fire Prevention Plan* (to be superseded by the *Municipal Fire Management Plan*).
- Utilise the CFA *Roadside Fire Management Guidelines* (2001).
- Ensure residents with land abutting High Conservation Value roadsides (as defined currently under Local Law No. 5) or identified strategic wildlife corridors, have the roadside inspected prior to issuing of a permit under Local Law No. 5.
- Consider, where possible, implementing fuel management on adjacent land where roadsides are of High or Medium Conservation Value.
- Employ the weed mapping database generated from the mapping work for this Plan to address areas of high woody weed and groundstorey weed levels suitable for fuel reduction.
- Regenerating indigenous vegetation should be retained where it does not conflict with fuel management specifications.
- Carefully target fuel reduction burns to achieve fire risk management ends if that is the purpose. Otherwise, where burns take place to address vegetation management and promote regeneration, ensure burns are consistent with ecological burning regimes and account for the potential impacts on both flora and fauna.
- 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 undertaking fuel reduction on High and Medium Conservation Value roadsides:
 - o fuel management works to be undertaken with hand-held machinery where practicable
 - o avoid soil disturbance unless an emergency arises
 - o brush-cutting/slashing of understorey to be timed so that flowering and seeding of indigenous flora is permitted every second year, with a reasonable regime being alternate slashing during September-November or during January-February following seed set of grasses.

4.2 Recovery issues in fire-affected areas

The Black Saturday bushfires and the 2008-2009 bushfire season had devastating impacts across the Shire. Part of the recovery process involves dealing with a range of issues regarding roadsides and roadside vegetation in fire-affected areas.

This includes:

- erosion: in addition to the natural skeletal nature of soils in most parts of the municipality, vegetation loss and changes in structure and composition as a result of the fires have made soils extremely vulnerable to erosion resulting in considerable damage to roads and roadsides requiring specific management and amelioration
- the assessment and treatment of unsafe fire-affected trees and other vegetation
- regenerating vegetation requiring extra ongoing maintenance to ensure:
 - o maintenance of box-clearances and sight lines
 - o visibility of roadside signage and road markings
 - o vegetation does not fall onto and obstruct roads as it thins
 - o management of increased fuel loads from dense regeneration
- ensuring indigenous regeneration is not severely impacted by weeds
- ensuring weed species do not spread into new areas
- the re-establishment of vegetation in eroded and denuded areas
- the recovery of indigenous flora and fauna across the landscape
- the loss of structural connectivity and reduction in available habitat in the landscape for fauna, compounded by potentially severe population reduction due to bushfire events
- appropriate replacement and repair of road and roadside infrastructure such as bridges, signs, drains and culverts, side barriers and poles that have been either directly affected by fire or are under increased pressure in the post-fire landscape.

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.

As a result of the fires, there has been increased demand for additional road infrastructure works including:

- passing bays
- road widening
- drainage and erosion control works
- additional tree removal close to roads.

The documentation of values and management issues and threats described in this Plan should help inform the appropriate response and implementation of these works.

EVCs within Nillumbik that support areas of dense regeneration include the following even though some of these EVCs are not represented to a large extent within the municipality (Appendix 2).

- Valley Grassy Forest
- Creekline Herb-rich Woodland
- Herb-rich Foothill Forest
- Damp Forest
- Wet Forest
- Riparian Forest
- Riparian Scrub/Swampy Riparian Woodland Complex.

Several *Acacia* species, in particular Blackwood *Acacia melanoxylon*, Black Wattle *Acacia mearnsii* and Silver Wattle *Acacia dealbata* have undertaken *en-masse* regeneration and were initially over-bearing eucalypts (Figure 3). Some understorey species such as Thatch Saw-sedge *Gahnia radula* have also experienced dense regeneration.



Figure 3. Dense regeneration of Silver Wattle on Ninks Road, St Andrews

The dense regeneration of flora, particularly eucalypt and *Acacia* species, following intense fire is a well-known phenomenon in moist sclerophyll forests of south-eastern Australia (Ashton 1981; Chesterfield 1984, Adams and Attiwill 1984). Successional thinning occurs with time as plants compete for nutrients and light. Dense regeneration

of *Acacia* species has been linked with increasing available soil nitrogen, benefiting the growth of additional flora species as *Acacia* density thins (Adams and Attiwill 1984). Dense areas of vegetation following fire are also potentially providing increased protection to fauna from predation (Clarke 2009).

The rate of thinning due to plant mortality will be dependent on a range of variables including species composition, climatic factors, nutrient availability, canopy replenishment and herbivory (Ashton and Martin 1996). *Acacia* species have been shown to rapidly decline in the years following fire. For example, within the first three years following canopy loss and fire in Wet Forest, *Acacia* densities declined so that approximately one quarter of individuals present at year one survived to year three (Adams and Attiwill 1984).

Ashton and Martin (1996) showed the survival of canopy species following regeneration varied greatly depending on the survival of canopy trees. For instance, in Wet Forest where only the understorey was burnt, no eucalypt seedlings survived beyond the first two years. However, in adjacent vegetation where canopy loss (and death) occurred, a thicket developed with canopy stratum closure within five years. In both instances, the initially slower growing canopy species replaced the dominance of understorey species, such as *Acacia*, in less than five years (Adams and Attiwill 1984; Ashton and Martin 1996). The rate at which the canopy species over-grew the understorey species to dominate the sites was considered to be dependent on how favourable the growing conditions were with more favourable growing conditions leading to the more rapid dominance of canopy species.

Perhaps in contrast to that experience, in drier EVCs such as those which often occur in Nillumbik where growing conditions are less favourable and fuels were driest and therefore fire temperatures were very hot, regeneration is generally sparser. Regeneration is also not favoured by steep terrain where topsoil erosion occurs. Often, the most dominant regrowth is vegetative recovery of eucalypts and other species with underground rhizomes such as Wattle Mat-rush *Lomandra filiformis*. In these EVCs, limited regeneration of *Acacia* and eucalypt species is occurring from seed and is most successful in islands of retained topsoil and moss that can often be surrounded by bare eroded areas.

The Black Saturday bushfires also stimulated germination of eucalypts (in addition to epicormic growth) and wattles in areas where pre-fire vegetation densities were substantially modified and sparse. Areas where eucalypts occurred over an understorey comprised of mainly exotic grasses and a few scattered indigenous shrubs (generally wattles), now consist of a greater density of eucalypts and wattles through the understorey stratum. The exotic grassy layer has generally also recovered but has obviously not excluded the eucalypts and wattles.

In terms of management of regenerating vegetation, the slashing of regenerating woody species while they are still young is a priority as newly recruited individuals are less likely to have developed the energy reserves to coppice from underground or surface level buds. Left to a later time, the removal of these species will require not only more effort to fell larger, thicker stemmed specimens but be continually hampered by coppicing. Ongoing recruitment from seed is likely to occur for a significant period as long as there are suitable areas of bare earth available to support germination, especially where the roadside is subject to ongoing disturbance, through road traffic, erosion and management actions.

Yearly slashing should be sufficient in most areas, although in some of the denser reaches twice yearly may be more appropriate. For both feasibility and ecological benefit, treatment via slashing will encourage the development of more grassy open vegetation and this is preferable to broad-scale herbicide application which will only invite costly reapplication and will diminish amenity/visual outcomes.

The following considerations should be made when undertaking slashing of selected roadside Vegetation Zones to enable woody species thinning.

- Verge arm mowers should be employed to minimise soil disturbance, the impact on groundstorey flora and introduction of weeds.
- Depending on its bulk, vegetative material should be removed from the site so as not to hamper future regeneration, reduce fuel build up and prevent material from obstructing the roadway.
- Not all of the roadside Vegetation Zone should be slashed within the designated areas:
 - Only the available verge arm reach should be slashed (this is assumed be no greater than approximately two metres into the Vegetation Zone)
 - The presence of standing eucalypts will limit the ability and efficiency to slash in their vicinity. Contractors should consider this limitation and work around areas where slashing is severely hampered by standing eucalypts; more labour intensive techniques may need to be employed in these areas such as the use of light chainsaws or power trimmers.
 - Where verge arms reach over the entire roadside, small islands of vegetation (several metres in length) should be retained toward the back of the vegetation zone every 10-20 metres.
- Care should be taken not to impact regenerating mature canopy species by leaving ample space around them and being careful not to damage trunks with the verge arm.

4.3 Maintaining the road space

Objective: Maintain box and line of sight clearances in order to allow adequate movement of road traffic at any time, safe passage of road machinery and emergency vehicles, and to allow adequate vision for the movement of traffic. Box clearance and line of sight clearance is covered in the Operation Guidelines.

4.4 Ecological conservation issues

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

4.4.1 Protecting and conserving indigenous vegetation remnants

There is a range of legislation protecting remnant indigenous vegetation on roadsides. Council acknowledges the significant ecological, cultural, social and economic value of indigenous roadside vegetation and aims to retain and enhance existing remnant vegetation through effective management practices.

4.4.2 Rare or threatened vegetation communities

A vegetation community consists of a commonly occurring assemblage of indigenous flora responding to a given context and conditions, such as geology, aspect, altitude, rainfall and temperature.

Victoria has a state-wide system of classification of vegetation communities known as Ecological Vegetation Classes (EVCs). Appendix 2 lists the EVCs within Nillumbik, their Conservation Status and area of distribution. All of these EVCs have the potential to occur on roadsides within the Shire. Roadsides containing remnants of Endangered EVCs have been considered through the roadside Conservation Value assessment process, to be of High Conservation Value regardless of quality.

4.4.3 Rare or threatened flora

In Nillumbik, 82 rare or threatened flora species have been recorded (DSE 2009a). Many of these species have the potential to occur on roadside reserves within the Shire. A range of resources have been used to identify records of rare or threatened flora on roadsides within Nillumbik, including observations during the recent assessment. These records contribute to the Conservation Value scoring and are accounted for in the mapping. Appendix 7 provides a list and a brief summary of the rare or threatened flora recorded in Nillumbik.

Significant species observed during assessment, were recorded with a GPS location. Significant species recorded in the previous roadside assessments in 1997 and 2005 were also reviewed and included in this assessment. Victorian Flora Site Database (DSE 2009) records post-1985 within 50 metres of roadsides scoring Medium-Low or above were considered to occur and the roadside Conservation Value duly adjusted with the addition of 15 points.

Mapping of rare or threatened flora is available through Council's GIS database and under current arrangements there are limitations on the availability of this information beyond those with responsibility for construction and maintenance works on roads and road reserves.

General guidelines

When any major works undertaken by contractors or service authorities occur in or close to areas of rare, threatened or significant flora and fauna, Council must inform the contractor or authority and ensure that the works plans and documentation take these values into account. Documentation could include either or both of the following: an Environmental Management Plan for the works indicating impacts and their mitigation and a Task Risk Assessment assessing the risks associated with the conduct of each works task and their management.

4.4.4 Rare or threatened fauna

Roadside reserves provide potential habitat for 85 rare or threatened fauna species recorded in Nillumbik (DSE 2009b and Appendix 8). Due to the mobile nature of fauna species, all habitat has the potential to support a range of rare or threatened fauna. Retention and enhancement of important habitat values such as canopy trees and understorey, tree hollows, logs, and leaf litter provided by roadsides may be vital to ensure the continued survival of such fauna. Roadside reserves can also provide the only habitat link (via wildlife corridors) between separate areas of habitat.

General guidelines

Works that may significantly impact habitat values should be examined for their potential effects on specific species and managed to minimise potential impacts.

4.4.5 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

The Operational guidelines (see Part 2) provides guidelines for the protection of regenerating plant communities when carrying out construction and maintenance activities. However, 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.

4.4.6 Fauna habitat

Fauna habitat (for mammals, birds, reptiles, 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 Nillumbik, both exotic and native vegetation play a crucial role in providing essential fauna habitat.

Specific wildlife habitat niches 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.

General guidelines

To protect roadside wildlife habitats, the following guidelines should be observed:

- avoid unnecessary removal of essential habitat features or disturbance of roadsides such as dead or alive hollow bearing trees or fallen logs
- sensitively implement fuel reduction (see Operational guidelines – Part 2)
- when maintaining trees limit pruning habitat trees, so that pruned trees retain habit features where possible
- where feasible, retain onsite dead limbs or trees which have been felled for safety reasons. If retention onsite is not feasible, relocation to another site to offer habitat should be pursued
- incrementally and sensitively implement weed control and removal, coupled with revegetation to ensure no dramatic loss of habitat
- seek opportunities for building increased community awareness and understanding of the habitat value of roadside vegetation.

4.4.7 Wildlife corridors

Ecological connectivity is essential for the protection and enhancement of habitat and dependent species. Extensive consideration of existing and potential wildlife corridors occurred in preparation of the North East Regional Organisation of Councils (NEROC) report (Nillumbik Shire Council, 1997).

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. Strategic revegetation of these potential wildlife corridors can play a significant role in survival of many animal populations.

Wildlife corridors and linkages can provide the following benefits.

- Increased plant (via seed) 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. A more detailed assessment that focuses on the less vegetated areas where roadsides are the only available corridors linking vegetation, is required to acknowledge their strategic importance and guide future planning and management.

General guidelines

On roadsides which are part of a wildlife corridor or have the potential to form part of a corridor, Council, within the limits of its capacities, will encourage:

- regeneration or revegetation of the original vegetation
- retention and enhancement of vegetation structural complexity (groundstorey, mid-storey and overstorey), along with ground level components such as logs and litter
- consideration of how weed control can potentially impact wildlife corridor function
- maintenance or establishment of complementary vegetation along the boundaries of properties by adjoining landholders located next to corridor links
- identification of roadsides likely, or with the potential, to provide structural connectivity among isolated patches of habitat and relative priority for protection and enhancement (strategic wildlife corridors or biolinks) and their incorporation into roadside Conservation Value maps and GIS databases
- review of existing roadside conservation value status where restoration work or identification enhances the roadside's value as a wildlife corridor
- continuous vegetated, strategic wildlife corridors within the Shire.

Council will pursue inter-council cooperation in identifying, protecting and enhancing roadside vegetation and wildlife corridors across the broader landscape.

4.4.8 Unused road reserves

Unused road reserves are small corridors of land originally surveyed as road reserves but never utilised as roads. Their management is not part of this Roadside Management Plan, but the value of well vegetated, unused road reserves as wildlife corridors or for providing recreation opportunities needs to be acknowledged.

General guidelines

- Ensure unused road reserves are managed so ecological values and wildlife corridor function is enhanced and protected.
- Support adjoining landholders and any existing local Landcare or Friends groups to 'adopt' nearby unused road reserves through helping organise rehabilitation efforts such as weed and vermin control, revegetation and regeneration.
- Unused road reserves sold by the state government may be referred to Council for comment prior to the sale. If referrals are received, consideration should be given to flora, fauna and/or recreational values or specific forms of sympathetic ongoing management.
- Identify unused road reserves that have the potential to provide structural connectivity among patches of habitat now or in the future and prioritise according to potential benefit to multiple fauna groups or threatened species of particular importance.

4.4.9 Depressions/boggy areas

Swampy, boggy areas and depressions on roadsides can provide plant species and communities of significance. These small areas have been noted in the roadside conservation value assessments.

General guidelines

- Consider and minimise impacts on depressed wet areas when undertaking management works.
- Avoid and minimise use of herbicides in and near depressed wet areas.
- Protect wetlands from sedimentation generated by road runoff.

4.4.10 Wildlife crossings

Death or mortality from road traffic is a major threat to a wide range of native fauna, including marsupials such as kangaroos, wallabies, bandicoots, and possums and also birds, reptiles, frogs and insects. Collision with wildlife also has potential for disastrous consequences for drivers and passengers. Roads can act as significant barriers to movement across the landscape for many fauna species. Management and implementation of wildlife crossings can play a significant role in reducing barriers and potential mortality, while also decreasing impacts to humans.



Figure 4. Wildlife canopy bridge on Wattletree Road, Eltham

General guidelines

- Identify areas of high mortality and develop priorities according to the fauna species conservation status.
- Require fauna culverts and feeder fencing or other fauna crossings such as canopy bridges (Figure 4) to be installed in areas of high mortality or where roads dissect significant patches of habitat, particularly where threatened or rare mammal species are identified. Also maintain areas of thick vegetation cover at culvert entry and exit points to facilitate utilisation and reduce predation pressure from foxes and cats.

- Appropriately consider the impacts of upgrading and particularly the sealing of roads, especially where roadside vegetation has been identified as constituting a significant wildlife corridor or where high mortality rates have been recorded.
- Develop driver education and signage regarding fauna crossings and protection in areas of significant wildlife corridors.

4.4.11 Significant Roadside Areas

Significant Roadside Areas have significant landscape, historic or conservation values. These areas may be particularly vulnerable and require special consideration in addition to Conservation Value mapping.

They may contain:

- remnant vegetation not common in the district
- regenerating native plants necessary for the conservation of roadside vegetation
- native grasslands and wildflower areas that might be overlooked because of a perception that trees and shrubs are more important
- rare or threatened species
- sites of significant cultural, heritage or landscape value.

Across the Shire roadside signage documents Significant Roadside Areas. This signage is not considered to be comprehensive but has been put in place to respond to prominent or particular areas of interest. Appendix 1 provides comprehensive documentation of roadside Conservation Values and should be referred to by any party wishing to undertake works on roadsides.

General guidelines

Council is committed to:

- investigating the incorporation of Conservation Value mapping into hand-held or machinery mounted GIS equipment as resources become available
 - investigating the mapping, ongoing listing and system of identifying Significant Roadside Areas, including the incorporation of roadsides that play essential functions as wildlife corridors
 - maintaining confidentiality associated with a specific Significant Roadside Area to ensure protection of significant species or communities
 - investigating the creation of management plans for relevant Significant Roadside Areas which may include topics such as fire risk management.
- Further information relating to Fire Risk Management on significant roadsides is covered in Part 2 3.4Vegetation and fire management.

4.5 Land management issues

4.5.1 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. Noxious weeds are weeds declared under this Act.

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

- 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) in the Port Phillip Catchment Management Authority (CMA) area are weeds that are not necessarily widespread but have the potential to become widespread. It is expected that weeds that meet this criteria can be eradicated from the region. Regionally Prohibited weeds are the responsibility of:
 - o VicRoads on roads declared highways, freeways, tollways and arterial roads
 - o Local Government on Municipal Roads
 - o the Land manager on all other types of roads.
- iii. Regionally Controlled Weeds (C) are usually widespread but nevertheless it is deemed important to prevent further spread. Regionally Controlled Weeds are the responsibility of:
 - o VicRoads on roads declared highways, freeways, tollways and arterial roads
 - o Local Government on Municipal Roads
 - o the Land manager on all other types of 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 agricultural land (agricultural weeds) and in doing so potentially increase fire risk. These weeds also require management and Council is committed to their ongoing management. Identification of these weeds and other weed management issues are detailed in the *Nillumbik Weed Action Plan 2008* (see Appendix 9).

4.5.2 Nillumbik Roadside Weed Control Program

Nillumbik's Roadside Weed Control Program adopts a Biosecurity Approach to tackling roadside weeds (Figure 5). The biosecurity 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 old 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.

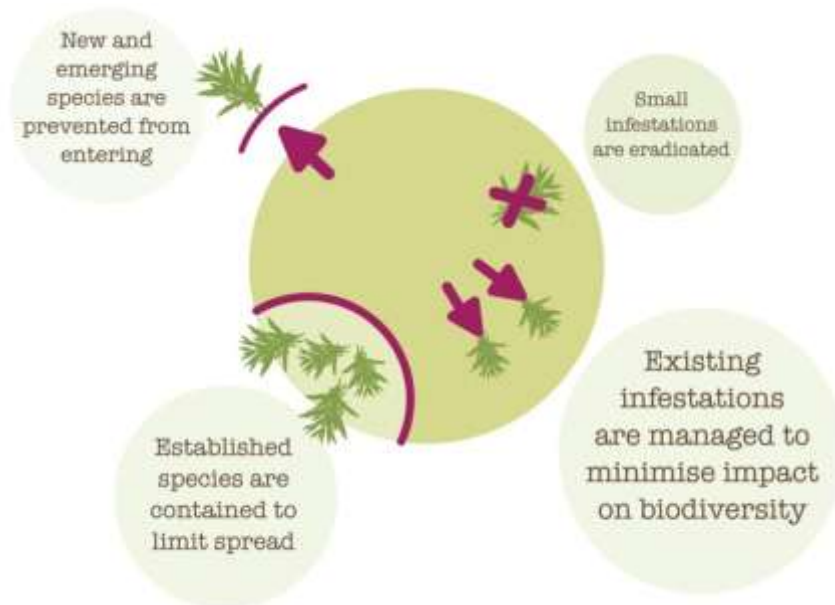


Figure 5: Biosecurity Approach (Source: UFWMI Operational Plan 2011)

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.

4.5.2.1 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.

4.5.2.2 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.

4.5.2.3 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.

4.5.3 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 4). 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 4. 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"> • 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 • 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 		<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.
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 (e.g. Chilean needle grass) 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 *Nillumbik Weed Action Plan 2008*.
- Employment of the most effective techniques with least disturbance to native vegetation.
- Assess the habitat value of weeds before removal, including checking for nests, used hollows and roosting sites; and considering that some weeds provide food and other resources that are limited in fire-affected areas. Undertake staged removal, delayed removal or planting replacement indigenous species as appropriate.
- Where Landcare and Friends groups are involved in removing weeds from roadsides and public reserves, Council will provide a service to dispose of the weeds so that they do not pose any ongoing threat.
- When transporting livestock and/or stock feed, ensure that spillage of manure and feed from vehicles is minimised to prevent spread of pasture, and possibly noxious weeds along roadsides.
- Ensure machinery is cleaned down after working in areas infested with priority noxious weeds such as Chilean Needle Grass, Serrated Tussock and St Johns Wort to prevent spread into new areas and continuing efforts are made to prevent infection of these weeds into 'clean' areas.
- Seek opportunities to modify existing slashing programs to reduce weed cover and encourage establishment of native species.

More specific guidelines are detailed in Part 2: Operational guidelines. Appendix 10 lists weeds which may pose a significant risk within the Shire.

4.5.4 Pest animals

Pest animals are a major threat to biodiversity and agriculture within Nillumbik. The major pest animals on roadside reserves are hares, rabbits, foxes and feral cats. The CaLP Act stipulates that a landowner (owner of the land, lessee or licensee of the land, a public authority or local government as managers of the land) must take all reasonable steps to prevent the growth and spread of established pest animals on a roadside.

The control of pest animals on roadsides is the responsibility of:

- VicRoads on roads declared highways, freeways, tollways and arterial roads
- Local Government on Municipal Roads
- the Land manager on all other types of 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.

- Work with adjoining landowners to implement landscape-scale pest animal control programs.
- Consult relevant pest animal action plans and DPI advice.

4.5.5 Erosion and sediment control

Erosion and sediment run off from unsealed roads is a major cause of land degradation and a significant factor in poor stream 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 problems and the potential for stormwater quality issues. Erosion is also a major threat to road function and requires ongoing management. Management of erosion and sedimentation is documented in the Operational guidelines.

4.5.6 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 Coordinator Environmental Works or an Environmental Planner.

4.6 Agricultural activities

4.6.1 Moving livestock/grazing on roadsides

The following are not permitted on roadsides within the Shire:

- moving livestock or grazing
- cropping and haymaking
- ploughing, cultivating and grading for the purposes of creating a firebreak, due to their limited benefit compared with the severe ground disturbance they cause.

Grading activities for road management are covered in the Operational guidelines.

4.7 Collection of dead or living vegetative material from roadsides

Objective: Avoid disturbance and clearance or modification of vegetation and wildlife habitat.

4.7.1 Firewood collection

Collecting firewood and harvesting timber from roadsides in the Shire of Nillumbik is not permitted unless:

- it is undertaken adjacent to an owner's or lessee's property and permitted under Local Law No. 5, Clause 20B
- it is from cut and piled stacks of excess timber from permitted vegetation removal undertaken by Council staff or contractors, after being considered for retention for habitat.

4.7.2 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 DSE and the relevant land management agency. Restrictions can be placed on the volume and species collected.

4.8 Herbicide use

Objective: Promote responsible use of herbicides on roadsides.

General guidelines

The *Agricultural and Veterinary Chemicals (Control of Use) Act 1992* (Vic) regulates the use of herbicides in Victoria.

General guidelines for the use of herbicides are to:

- ensure consistency in use with legislation and Health and Safety regulations
- consider alternative and complementary weed control measures to herbicides
- spot spray grasses and herbs and cut and paint, or drill and fill woody weeds where practicable
- use the minimum herbicide required to do the job
- use non-residual herbicides where possible
- spray weeds prior to seed set and at appropriate growing time whenever possible
- consider impacts of weather conditions including wind, rain and temperature prior to use
- maintain records of the chemicals sprayed, location and date of spraying, weather conditions and target species sprayed and monitor success.

4.9 Horticulture, gardening and 'tidying up' roadsides

Objective: Avoid the removal of vegetation and wildlife habitat on roadsides and prevent the spread of weeds.

General guidelines

These guidelines relate to landowners or lessees wishing to undertake gardening and other vegetation management on roadsides adjacent to their property.

- Mowing
 - Only mow when essential; all roadside vegetation can provide significant ecological values, including habitat for many species.
 - Only exotic grass is to be mown, no native vegetation is to be removed, unless a permit is obtained to do so, or if the removal is consistent with a fire prevention notice or land management agreement.
 - Do not mow high or medium significance roadsides or roadsides identified as strategic wildlife corridors.
 - Do not mow other areas unless clear identification of exotic and native grasses is possible.

Avoid mowing or disturbing soil in known weed infested areas, especially during seed set, as this causes disturbance that can promote the spread of weeds.

- Planting and Landscaping
 - Planting on roadsides is not permitted without consultation with the Coordinator Environmental Works and the Coordinator Emergency Management on rural roadsides and the Infrastructure Maintenance Section for urban roadsides and nature strips.
 - A Road Opening Permit is required for any planting or landscaping within the road reserve.
 - Where planting is permitted on high, medium and medium-low conservation value roadsides only indigenous species sourced from local stock is permitted.
 - Where planting is permitted on low significance roadsides, planting with indigenous species sourced from local stock is encouraged and no environmental weeds allowed.
 - If planting and landscaping has been undertaken without a permit or approval, the landowner can be asked to remove the objects and reinstate the road reserve to its original state.
- All other works should be either:
 - permitted fuel reduction under Local Law No. 5, the MFPP or subject to a fire prevention notice (see Code of Conduct)
 - removal of vegetation that may have fallen onto the road reserve from the adjoining private land
 - weed control of regionally controlled weeds and those weeds listed in Council's Weed Action Plan or Council's *Live Local Plant Local*
 - works undertaken by Friends groups, Landcare groups and community fireguard groups in accordance with an agreement approved by Council.

4.10 Cultural and recreation issues

4.10.1 Heritage and cultural values

Objective: Roadsides may potentially contain significant heritage and cultural values. Consideration of these values should inform planning and management of roadsides.

General guidelines

- Council will:
 - continue to incorporate the documentation of heritage and cultural values into roadside Conservation Value mapping
 - ensure relevant sites of significant cultural, heritage or landscape value are identified as Significant Roadside Areas
 - maintain confidentiality of specific sites of significant cultural, heritage or landscape value where disclosure would present a significant risk.

- Aboriginal Affairs Victoria should be consulted prior to works with the potential to impact upon indigenous cultural values.
- Consult Council's Planning Department before removal of planted exotic heritage trees.

4.10.2 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.

4.10.3 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.

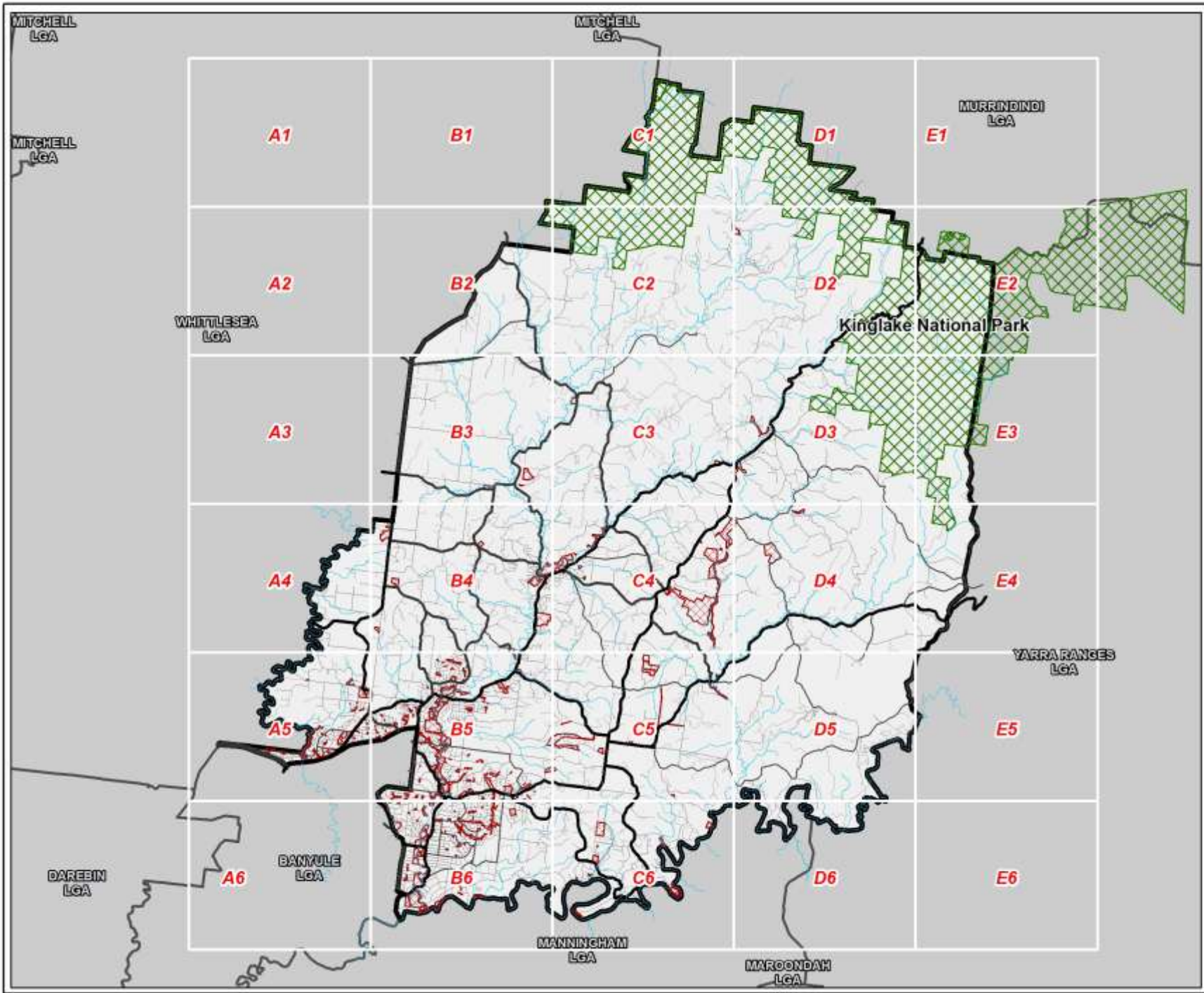
General guidelines

- 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.
- Proposed formal recreational trails have been identified in the Nillumbik Trails Strategy 2011. As outlined in the Trails Strategy design and construction of these trails should attempt to avoid or minimise impacts on native vegetation on High and Medium Conservation Value roadsides.
- If an existing or proposed on-road formal recreational trail has been identified in the Nillumbik Trails Strategy 2011, and if road sealing is proposed along that section, a suitable trail on the roadside must be considered as part of the scope of works, with due consideration given to the Conservation Value of the roadside.
- Prior to any road sealing, the current recreational use of the road must be established. Where road sealing is proposed along a rural road and recreational values have been identified, the issue will be referred to Council's Recreation Trails Advisory Committee (RTAC) to look at making provision for an off-road trail or if impossible, an alternative link. Any recommendation from RTAC will be referred to Council for consideration.
- All recreational users of roadside trails should minimise impacts upon native vegetation within the roadside.
- Trail-bikes are not permitted on roadsides.

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APPENDIX 1. MAPPING OF ROADSIDE VEGETATION IN NILLUMBIK



MAP INDEX
ROADSIDE MANAGEMENT PLAN
 Nillumbik Shire Council

- LEGEND**
- Roadways
 - Waterways
 - Map index
 - Nillumbik LGA
 - National Parks
 - Council Reserves

MAP AND SURVEY DETAILS

Surveyed by: Andrew Stephens et. al.
 July-Oct 2010
 Mapping by: Colin Broughton
 Nov 2010
 Generated from:
 GIS data created by Practical Ecology
 and additional GIS base map layers
 provided by Nillumbik Shire Council

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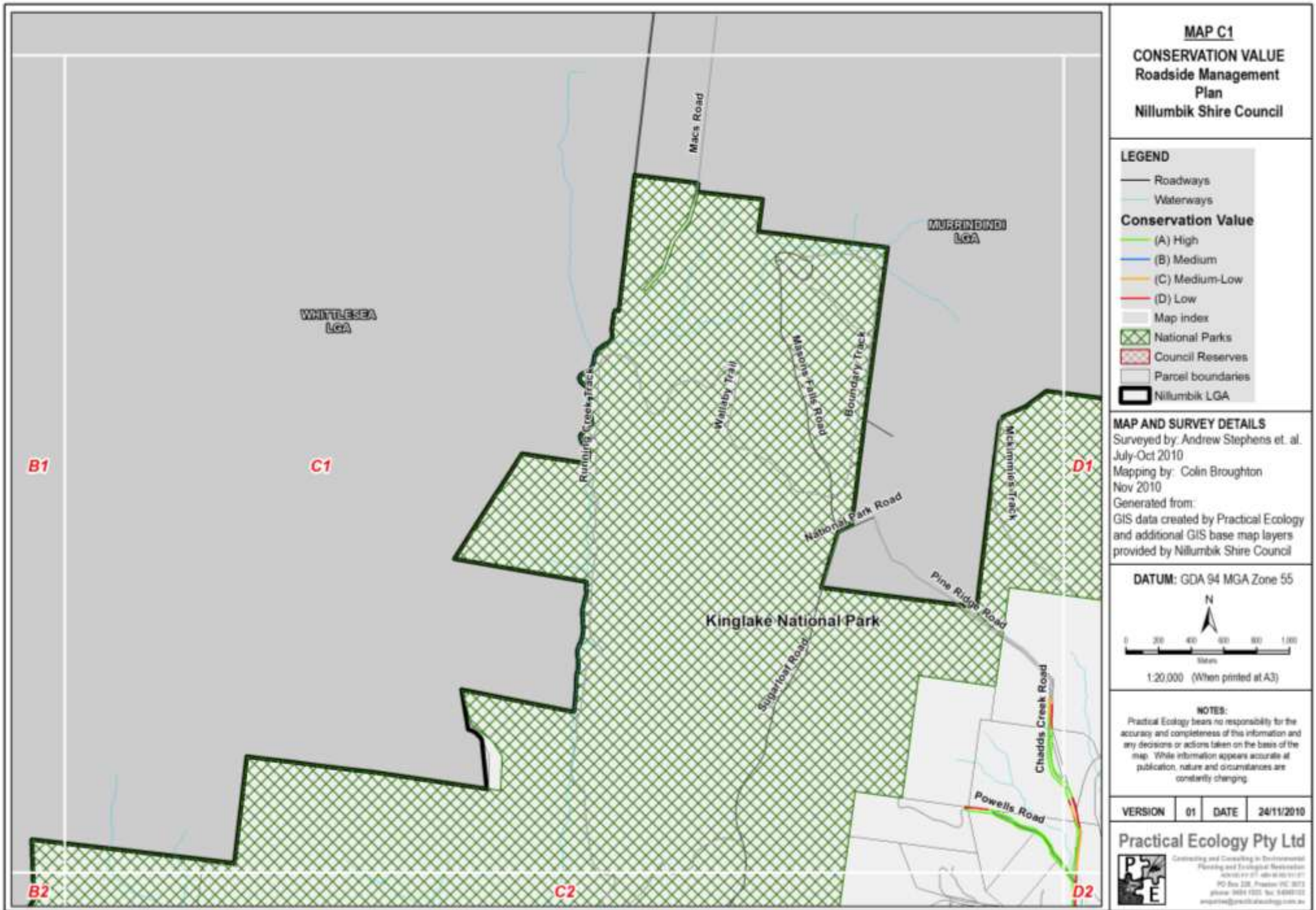
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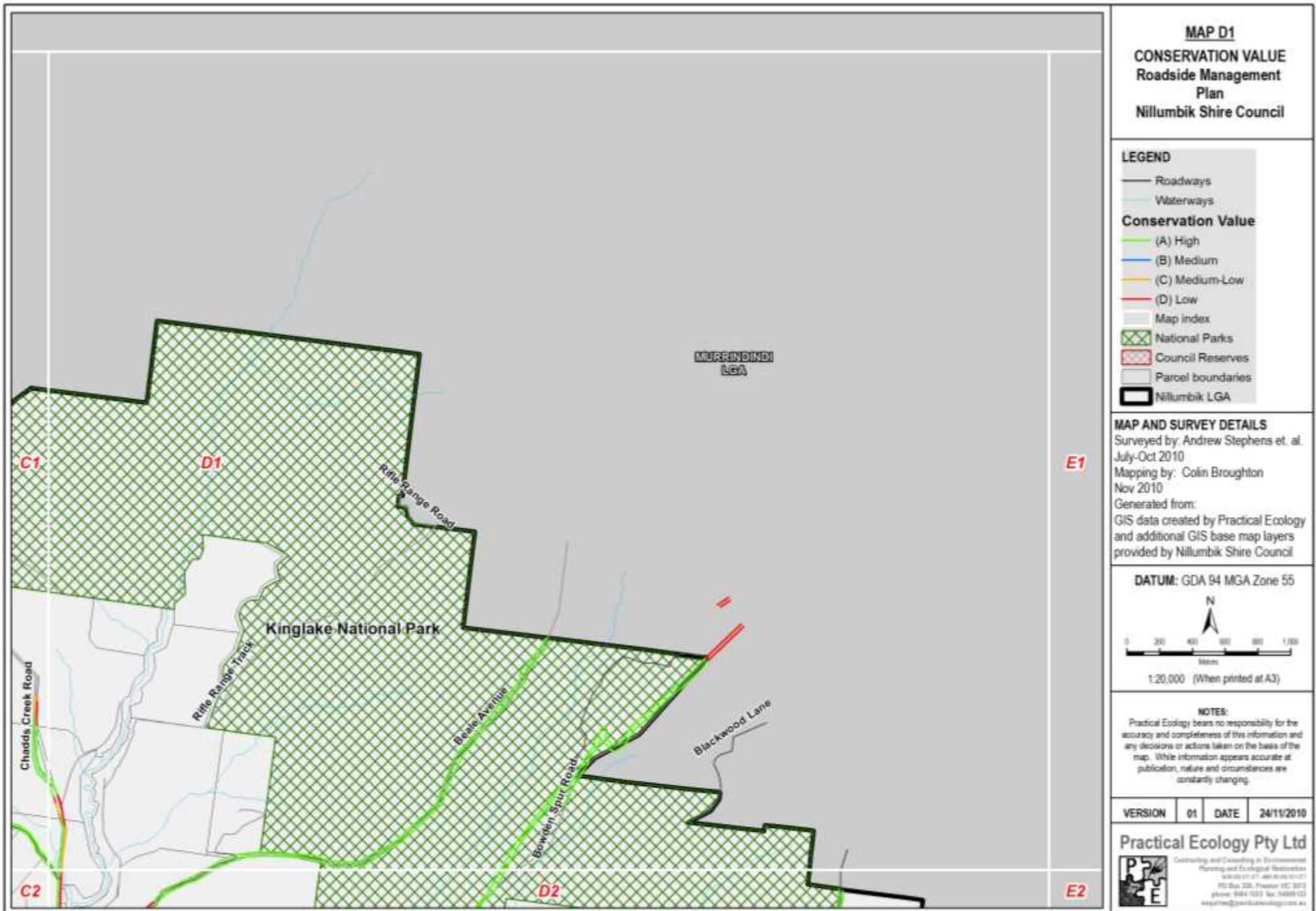
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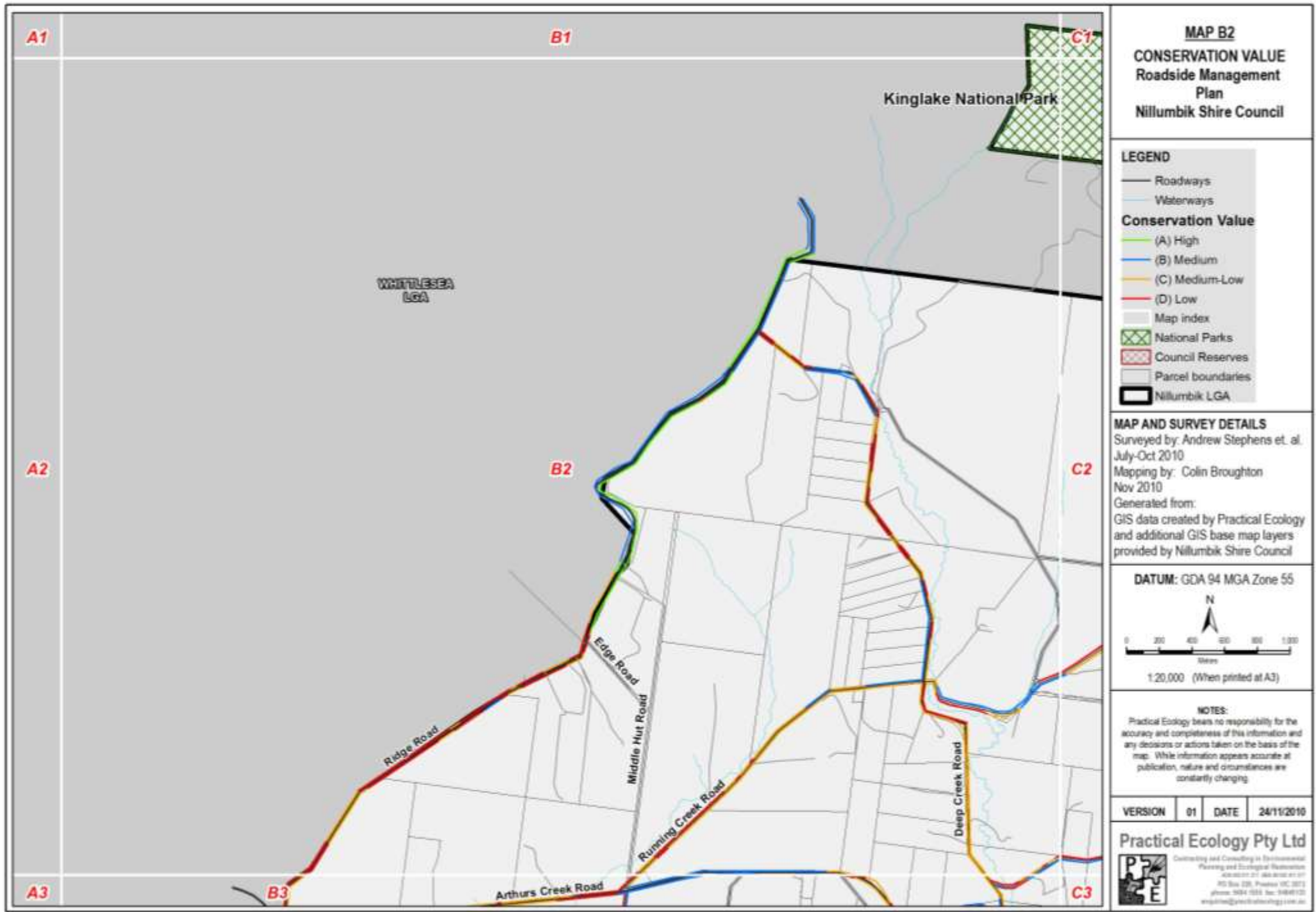
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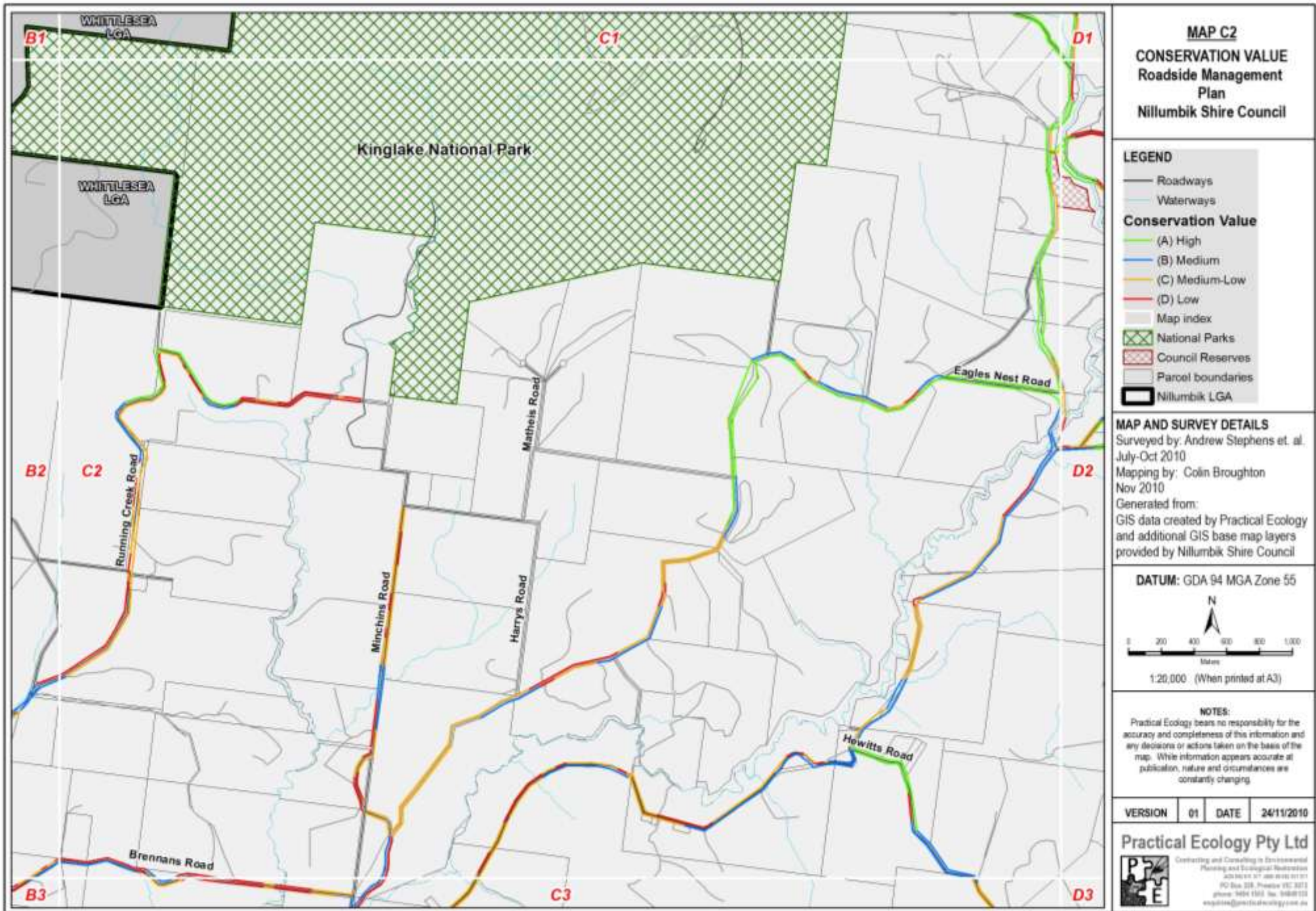
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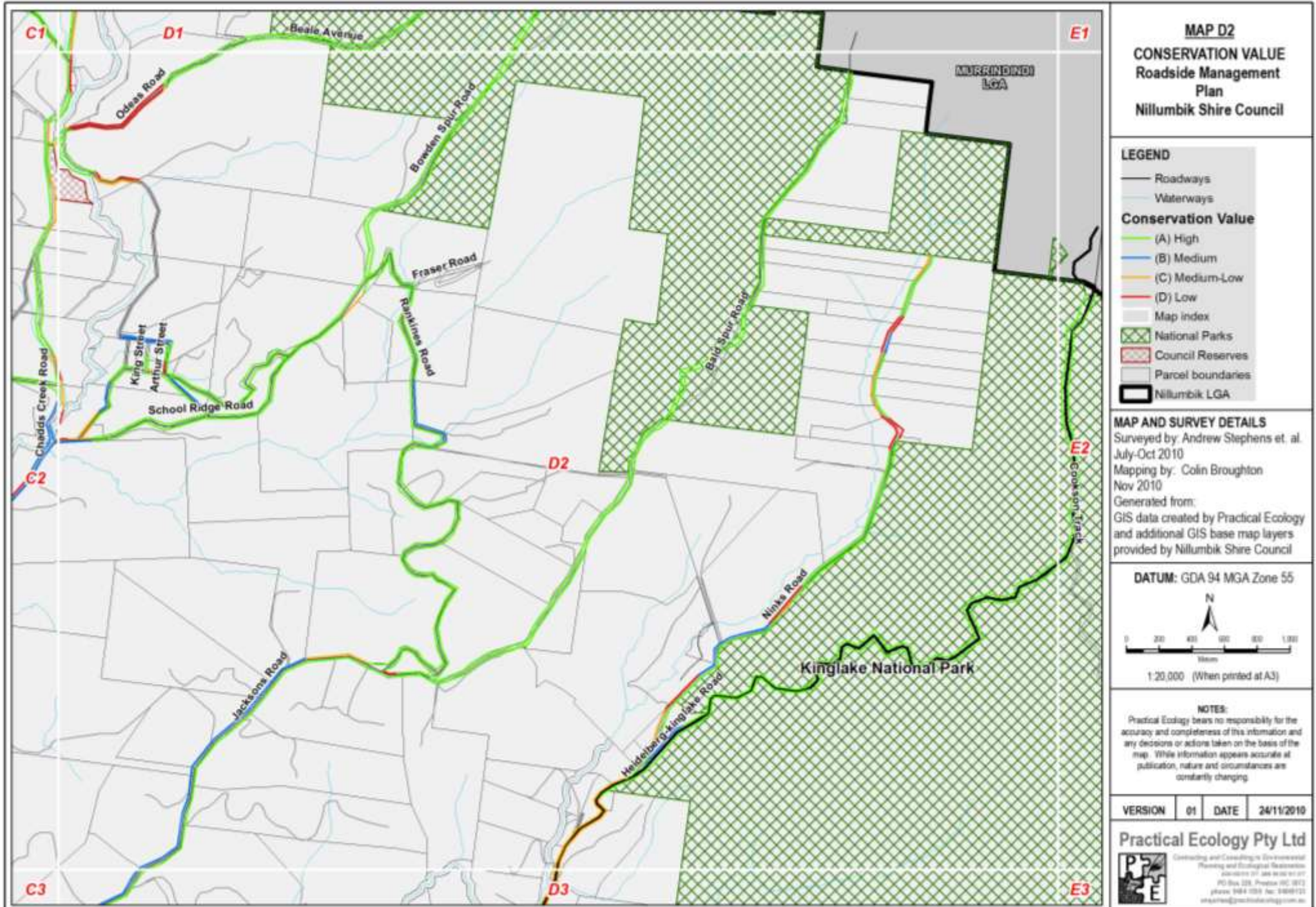
Practical Ecology Pty Ltd
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 PO Box 228, Preston VIC 3072
 phone: 3464 1155 fax: 34641133
 info@practical-ecology.com.au











MAP D2
CONSERVATION VALUE
Roadside Management
Plan
Nillumbik Shire Council

- LEGEND**
- Roadways
 - Waterways
- Conservation Value**
- (A) High
 - (B) Medium
 - (C) Medium-Low
 - (D) Low
- Map index
 - National Parks
 - Council Reserves
 - Parcel boundaries
 - Nillumbik LGA

MAP AND SURVEY DETAILS
 Surveyed by: Andrew Stephens et. al
 July-Oct 2010
 Mapping by: Colin Broughton
 Nov 2010
 Generated from:
 GIS data created by Practical Ecology
 and additional GIS base map layers
 provided by Nillumbik Shire Council

DATUM: GDA 94 MGA Zone 55

N

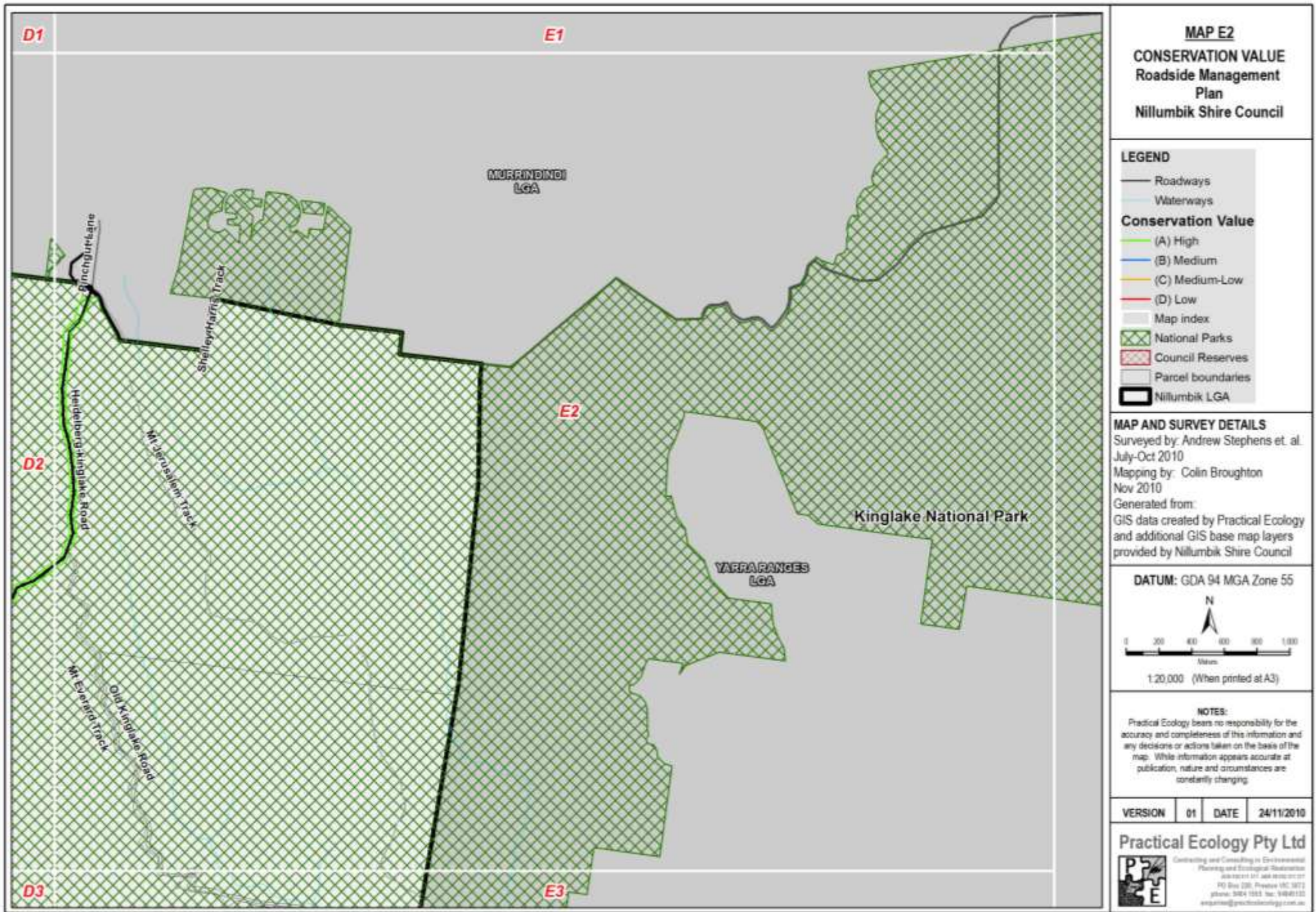
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Metres

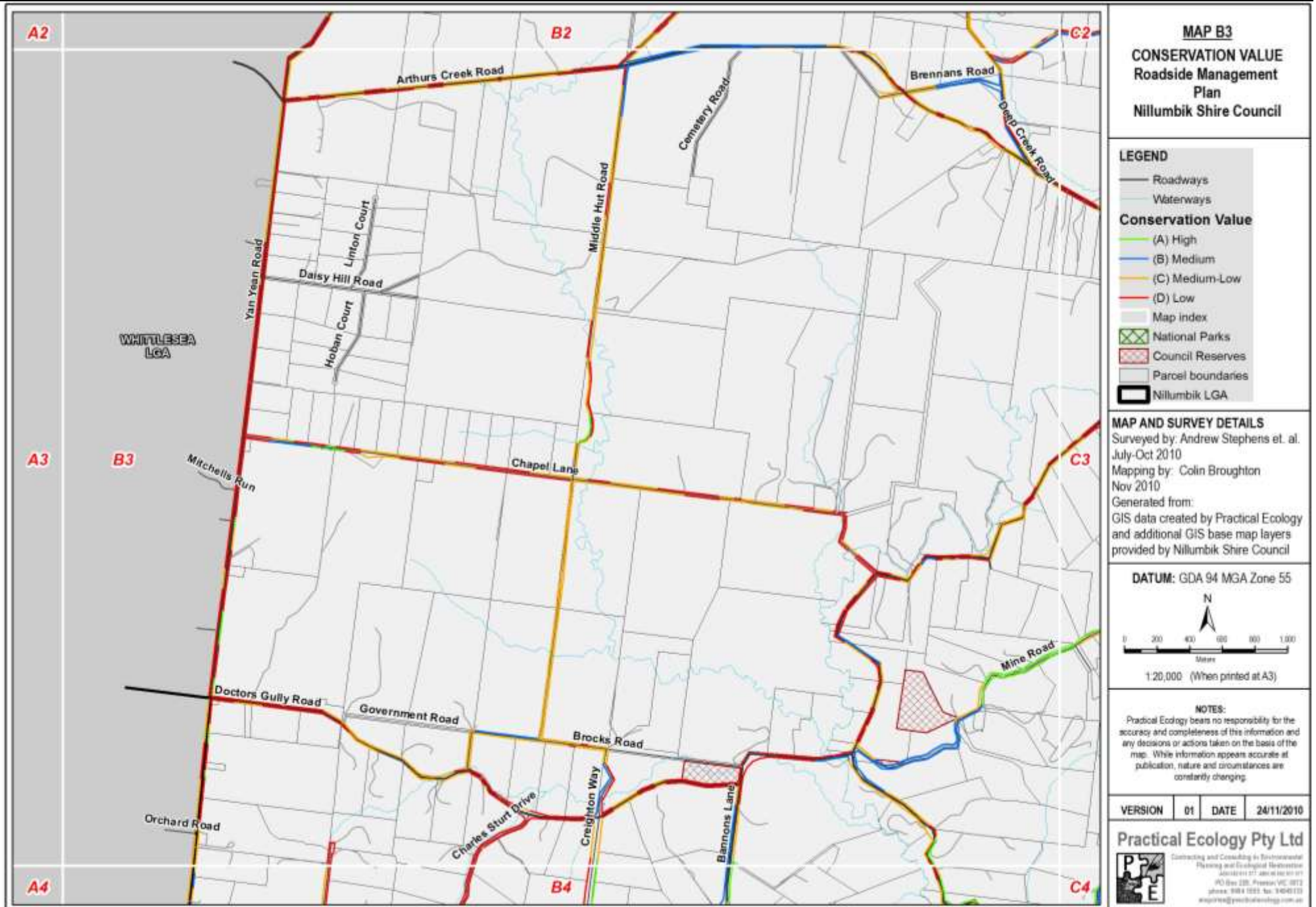
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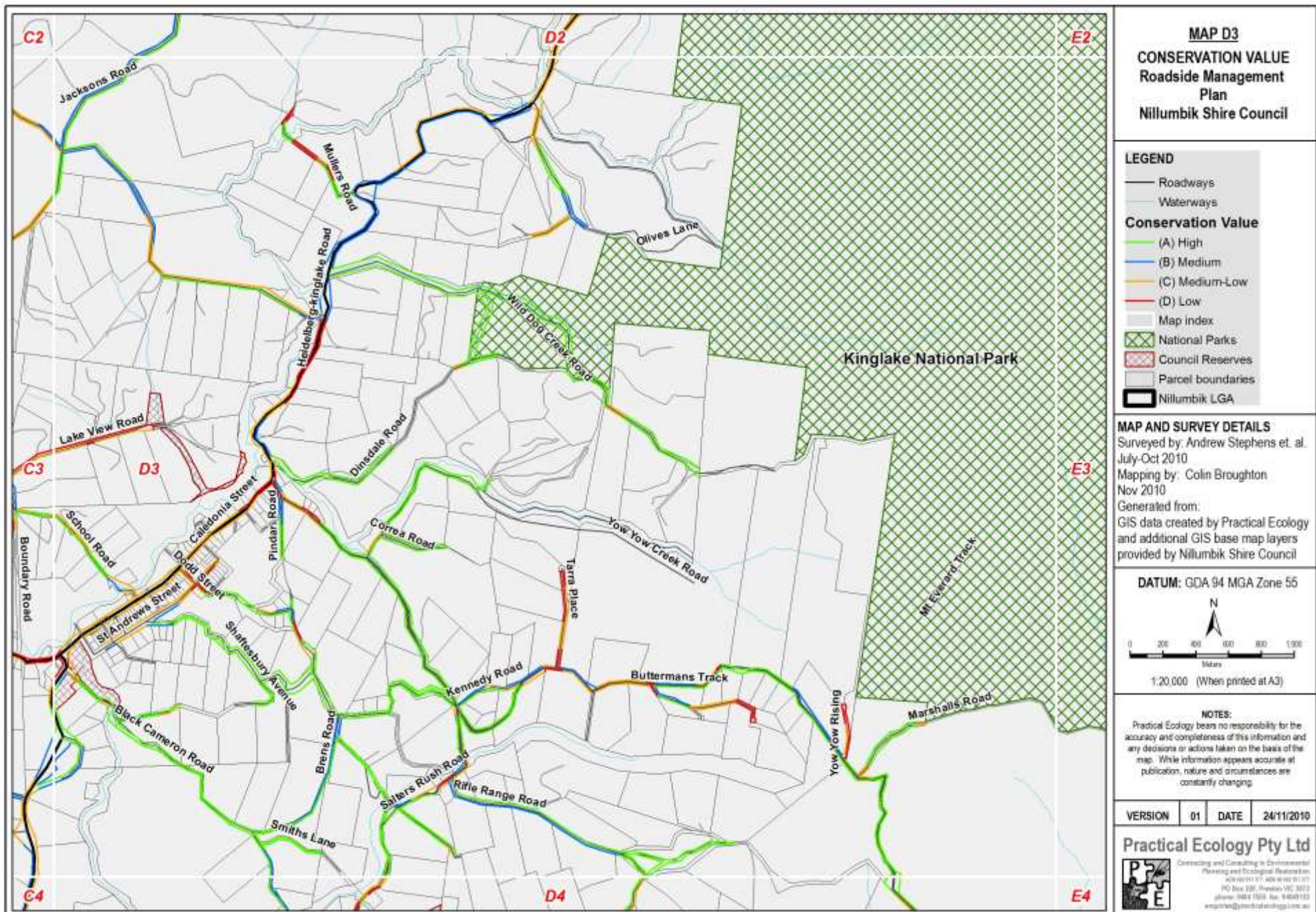
NOTES:
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VERSION	01	DATE	24/11/2010
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MAP D3
CONSERVATION VALUE
Roadside Management
Plan
Nillumbik Shire Council

- LEGEND**
- Roadways
 - Waterways
 - Conservation Value**
 - (A) High
 - (B) Medium
 - (C) Medium-Low
 - (D) Low
 - Map index
 - ▨ National Parks
 - ▨ Council Reserves
 - ▭ Parcel boundaries
 - ▭ Nillumbik LGA

MAP AND SURVEY DETAILS
 Surveyed by: Andrew Stephens et. al.
 July-Oct 2010
 Mapping by: Colin Broughton
 Nov 2010
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DATUM: GDA 94 MGA Zone 55

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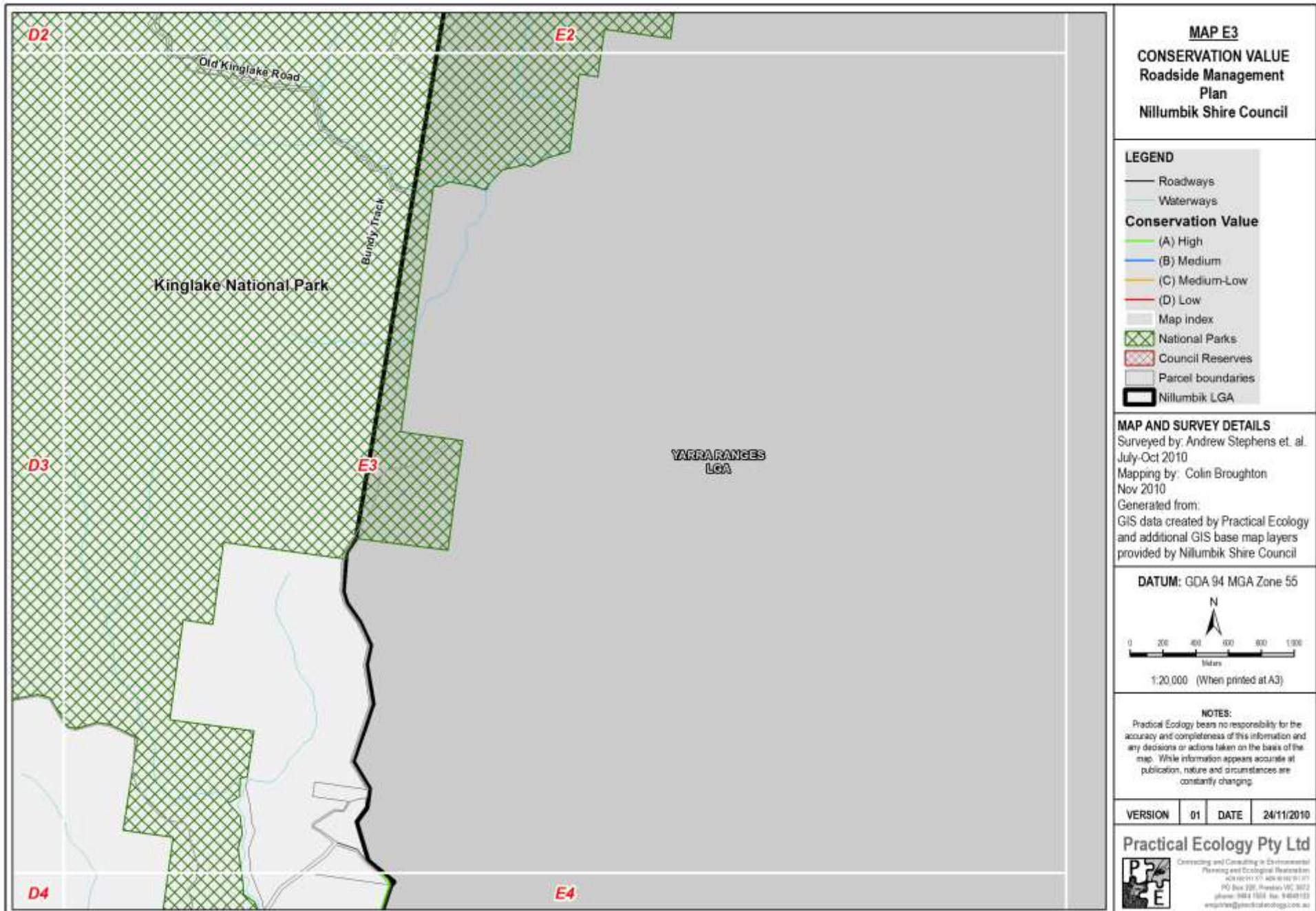
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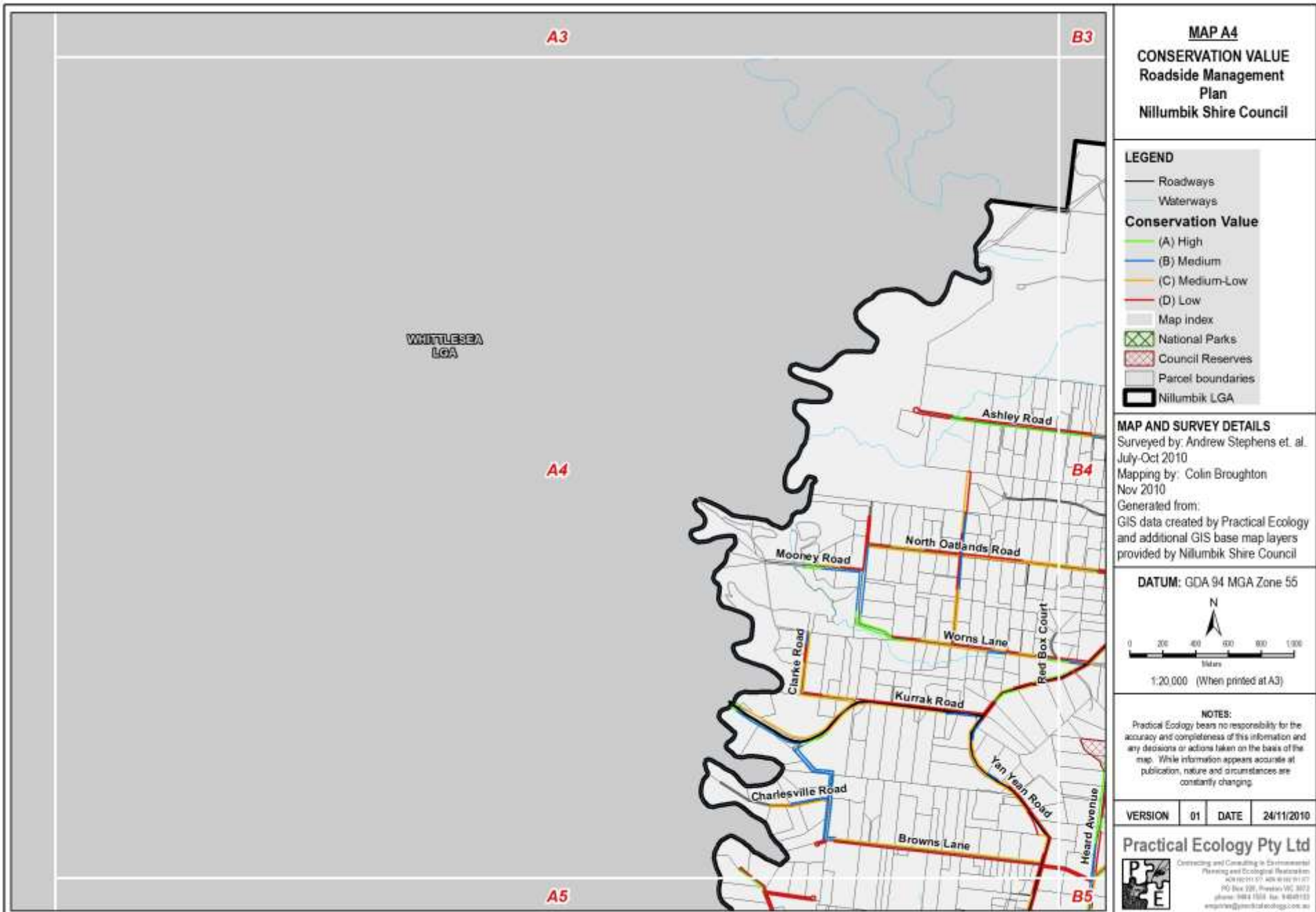
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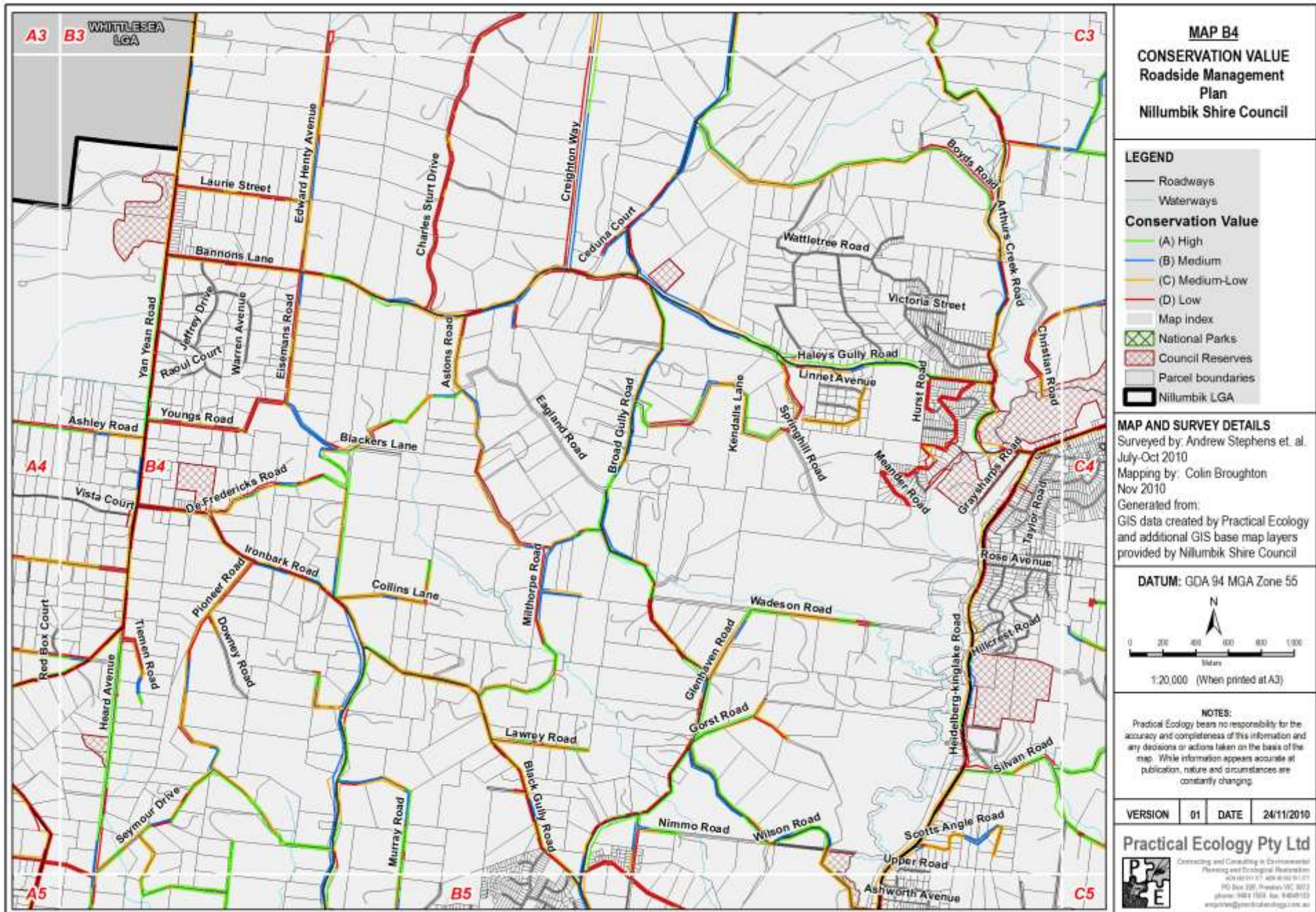
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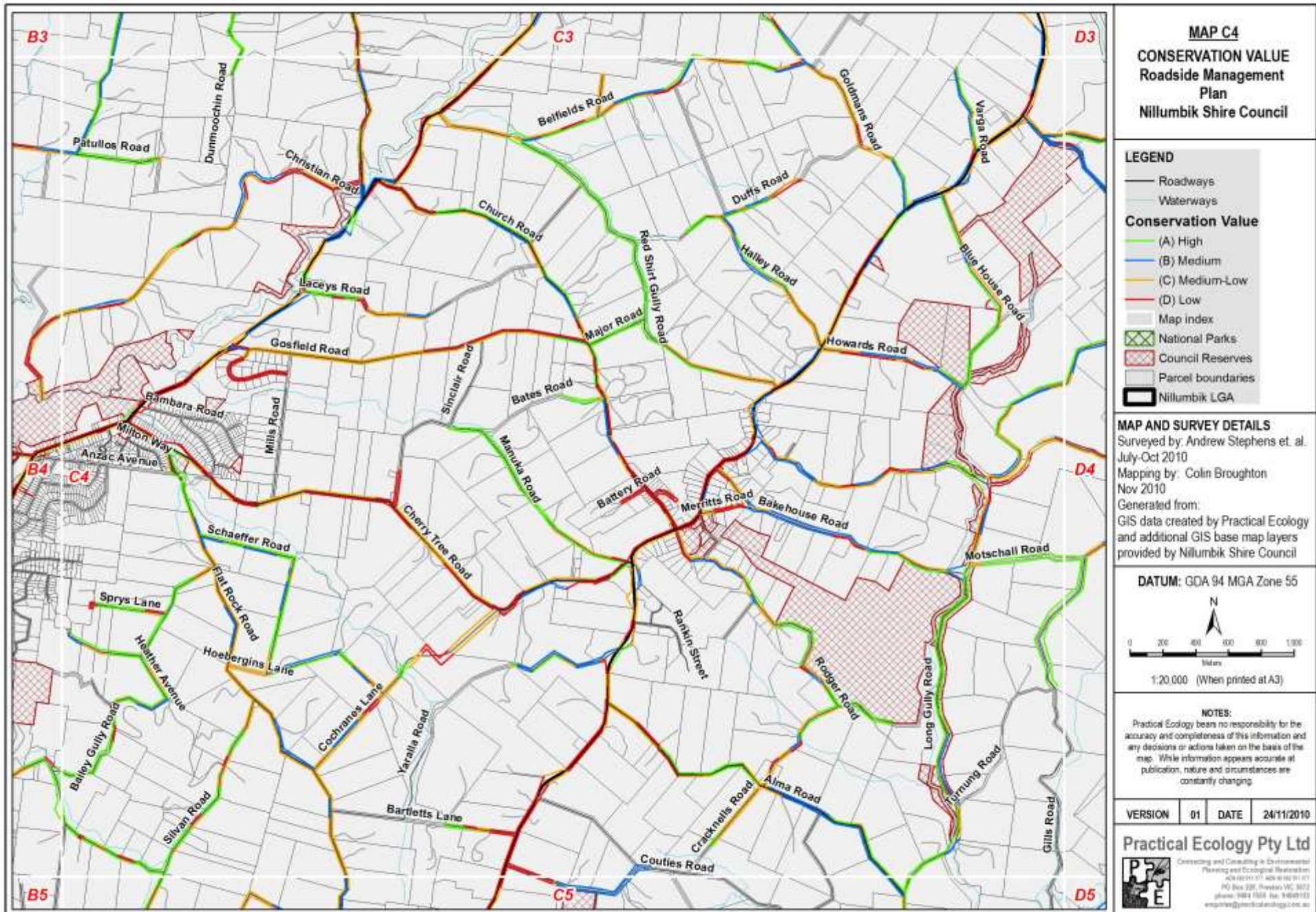
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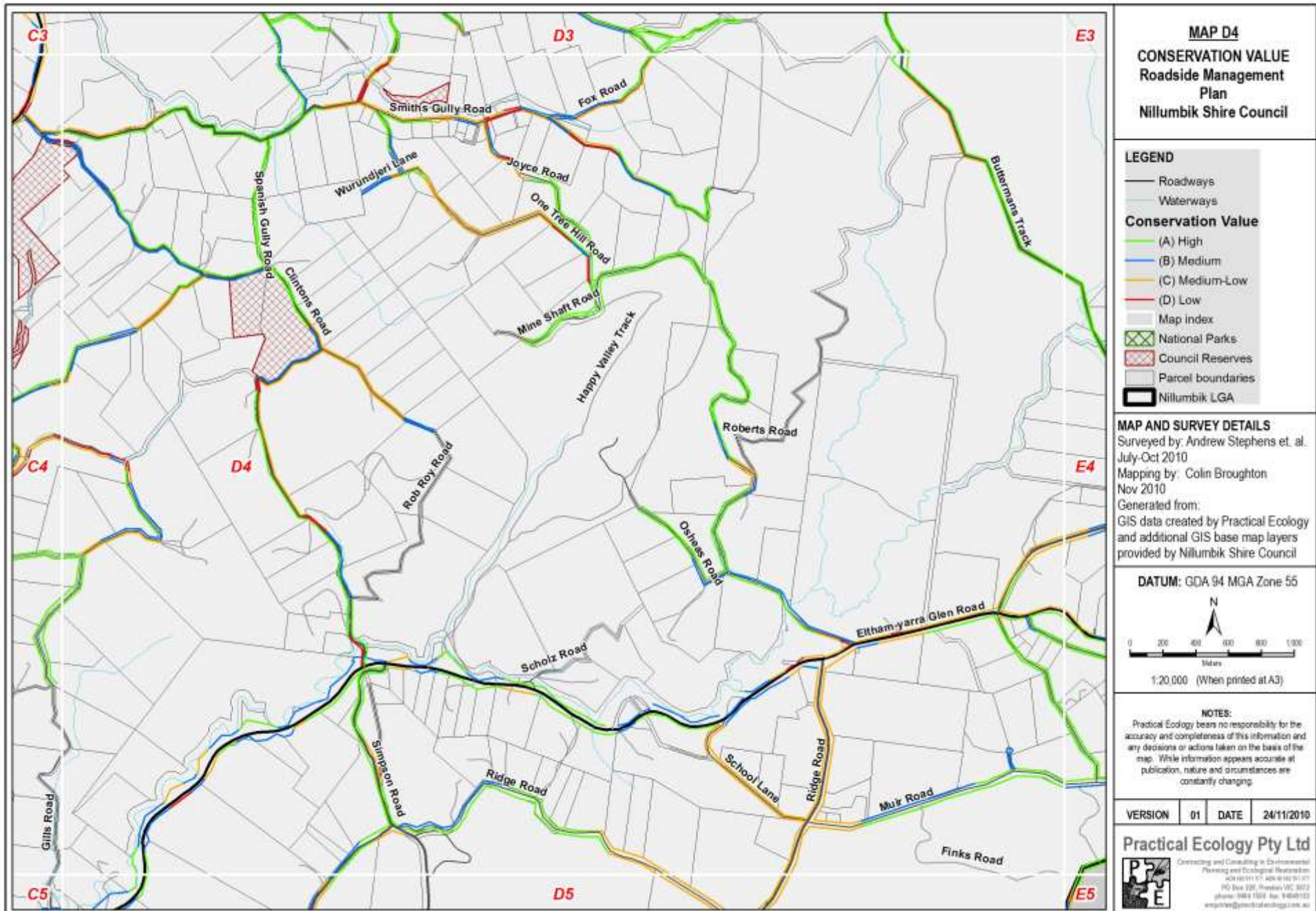
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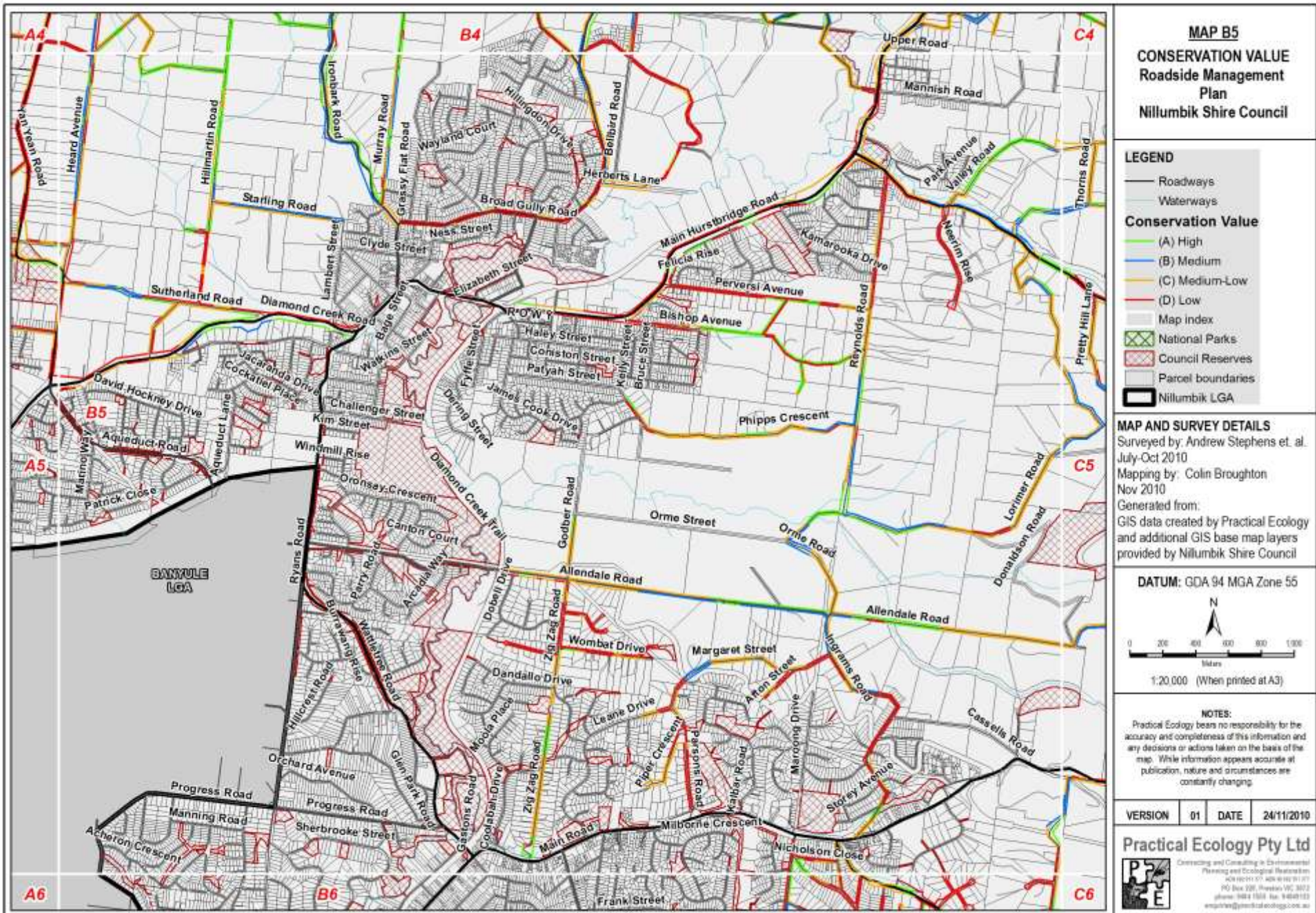












APPENDIX 2. ECOLOGICAL VEGETATION CLASSES WITHIN NILLUMBIK

EVC Name	EVC Code	Bioregion *	Bioregional Conservation Status	Area (m ²)	% of Shire
Grassy Dry Forest	22	HSF	Least Concern	82322017.49	19.05
Valley Grassy Forest	47	HSF	Vulnerable	51778395.52	11.98
Herb-rich Foothill Forest	23	HSF	Least Concern	44448363.02	10.29
Heathy Dry Forest	20	HSF	Least Concern	21881565.85	5.06
Riparian Forest	18	HSF	Least Concern	16554631.67	3.83
Swampy Riparian Complex	126	HSF	Endangered	16517827.63	3.82
Creekline Herb-rich Woodland	164	HSF	Vulnerable	15913907.42	3.68
Damp Forest	29	HSF	Least Concern	13750380	3.18
Box Ironbark Forest	61	HSF	Vulnerable	10870169.7	2.52
Water Body - man-made	998	HSF	Not Applicable	4265294.796	0.99
Gully Woodland	902	HSF	Vulnerable	3261569.8	0.75
Shrubby Foothill Forest	45	HSF	Least Concern	2937912.745	0.68
Plains Grassy Woodland	55	HSF	Endangered	1694325.815	0.39
Grassy Woodland	175	HSF	Depleted	936233.1012	0.22
Floodplain Riparian Woodland	56	HSF	Endangered	920103.1462	0.21
Damp Heathy Woodland	793	HSF	Depleted	846713.5169	0.2
Escarpment Shrubland	895	HSF	Endangered	782279.0356	0.18
Wet Forest	30	HSF	Least Concern	772991.3713	0.18
Riparian Scrub/Swampy Riparian Woodland Complex	17	HSF	Vulnerable	326270.066	0.08
Bare Rock/Ground	993	HSF	Not Applicable	142483.3406	0.03
Swamp Scrub	53	HSF	Endangered	53007.60582	0.01
Escarpment Shrubland	895	VVP	Endangered	6693.144876	0.002
Plains Grassy Woodland	55	VVP	Endangered	16015.10356	0.004
Wetland Formation	74	HSF	Endangered	48.688704	0.00001
				TOTAL %	67.33

HSF = Highlands Southern Fall, VVP = Victorian Volcanic Plain

APPENDIX 3. RARE OR VULNERABLE PLANTS OF NILLUMBIK ROADSIDES

Velvet Apple-berry *Billardiera scandens* s.s



This was the most commonly observed listed species observed on roadsides in Nillumbik. It is listed as rare (r) in Victoria by DSE. A small shrub which grows to 1.2 metres high. Restricted to the Diamond Creek-Eltham-Hurstbridge areas within the Highlands–Southern Fall Bioregion. In the study area found in Grassy Dry Forest and Box-Ironbark Forest EVCs.

Wine-lipped Spider-orchid *Caladenia oenochila*



Listed as vulnerable (v) in Victoria by DSE (2005) and as Nationally vulnerable (V) by Ross and Walsh (2003). This species was until recently regarded as widespread and variable and was included in the taxonomic concept of *Caladenia patersonii* s.l. Upon revision, *Caladenia patersonii* s.l. was described into 13 species and *Caladenia oenochila* was one of these species. Plants occur in Grassy Dry Forest.

Rosemary Grevillea, *Grevillea rosmarinifolia* subsp. *rosmarinifolia*



Listed as rare (r) in Victoria by DSE. There is some difficulty in accurately determining the taxonomy of this subspecies. There are known natural hybrids between *Grevillea rosmarinifolia* and *Grevillea lanigera* in the Yarra Valley (Olde and Marriot 1994) and also known hybrids and naturalised, non-indigenous *Grevillea rosmarinifolia* plants previously recorded in the study area (FIS 2009). It is unclear if indigenous populations *Grevillea rosmarinifolia* subsp. *rosmarinifolia* remain within the Shire or if the population has become fully integrated into a hybrid one and as such further scientific analysis is required.

A currently used method for determining the rare indigenous taxon is to look for the presence of hairs on the style of the fresh flower (Reid, J National Herbarium of Victoria pers. comm.); however, the certainty of this method also requires clarification. The indigenous taxon is generally less than one metre high, though height is also not a standalone method for identification. Because of the difficulty of identification, populations of this rare plant have not been located on a specific level. Instead, records of the broad *Grevillea rosmarinifolia* population(s) have been recorded within the geo-database attached to this report, but these records are not considered to be uniquely the rare species and as such incorporated into roadside Conservation Value assessments.

Round-leaf Pomaderris, *Pomaderris vacciniifolia*



Few individuals of this Victorian endemic remain in the Shire. Thus, the one known occurrence on a Nillumbik roadside requires careful management. It has a limited distribution within the upper catchment of the Yarra, Plenty and Yea Rivers, and grows in moist forest and scrub (Walsh and Entwisle 1999).

APPENDIX 4. SUMMARY OF LEGISLATION AND RELEVANT EXTERNAL PLANS AND POLICIES

The following provides a summary of the 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.
<i>Local Government Act 1989 (Vic)</i>	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.
<i>Litter Act 1964 (Vic)</i>	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

List of Relevant External Plans and Policies

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
- *Regional Catchment Strategy – 2003*
- *Roadside Fire Management Guidelines – CFA* 2001
- *Roadside Handbook – VicRoads* 2006
- *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 5. COUNCIL PLANS AND POLICIES

This Roadside Management Plan takes account of other Council documents including:

- *Art in Public Places Policy (2007)*
- *BMX/Skateboard Facility Study (2001)*
- *BMX Jump and Mountain Track Policy (2005)*
- *Community Consultation Framework (2004)*
- *Cultural Plan (2000)*
- *Council Plan 2009-2013*
- *Disaster Recovery Plan*
- *Domestic Animal Management Plan (2008)*
- *Domestic Waste Water Management Plan (2003)*
- *Environment Strategy (2001)*
- *Footpath Strategy (2006)*
- *Municipal Emergency Management Plan (2010)*
- *Municipal Fire Prevention Plan (2009-2013)*
- *Municipal Public Health Plan (2006-2010)*
- *Native Vegetation Offsets Management Policy*
- *Neighbourhood Character Study (2000)*
- *Nillumbik Asset Management Policy (2011)*
- *Nillumbik Asset Management Strategy (2011)*
- *Nillumbik Information Strategy (2006-2009)*
- *Nillumbik Planning Scheme (2000) – Municipal Strategic Statement, Zones, Overlays, Local Policies*
- *Minor maintenance agreements with VicRoads and other Municipalities*
- *Nillumbik Shire Council Integrated Transport Strategy (2001)*
- *Occupational Health and Safety Policy (2005)*
- *Open Space Strategy (2005)*
- *Plenty Gorge Integrated Fire Management Plan (2005)*
- *Rabbit Action Plan (2010)*
- *Recreation Strategy (2011)*
- *Recreation Trails Strategy (2011)*
- *Risk Management Strategy (2006)*
- *Road Management Plan (2009)*
- *Road Safety Strategy (2003)*
- *Service Agreement for Road Service Maintenance*
- *Stormwater Management Plan (2002)*
- *Sustainable Water Management Plan (2007)*
- *Weed Action Plan (2008)*

APPENDIX 6. CONSERVATION VALUE ASSESSMENT DATA SCHEMA

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 name	Alias	Data type	Example	PDA form representation	GIS post processing
Rd_Name	Road name	Text 50	Red Shirt Gully Road	N/A	Intersect with external GIS data to obtain value
Suburb	Suburb	Text 50	Panton Hill	N/A	Intersect with external GIS data to obtain value
Side_of_Rd	Side of road	Text 5	North, South, Both	Radio button	For records where both sides of road selected, these require GIS data edits
Date_Ass	Date of assessment	Date		Date checkbox	
Assessor	Assessor name	Text 30	Andrew Stephens	N/A	
Width	Roadside width	Short int	1,2,3	Radio button	
Trees	Tree Canopy	Text 30	Continuous, Patchy, Few or Absent	Radio button	
Tree_hollow	Trees with hollows	Short int	0,3	Radio button	
Tree_Shrub	Trees/shrubs	Short int	0,2	Radio button	
Grasses	Grasses	Short int	0,2	Radio button	
Leaf_Lit	Leaf litter	Short int	0,2	Radio button	
Logs	Logs	Short int	0,2	Radio button	
Rock_Crev	Rocks/crevices	Short int	0,2	Radio button	
Wet_Marsh	Wet/marshy land	Short int	0,2	Radio button	
Fauna_Total	Fauna habitat section total	Short int	0,2,3,4,5	N/A	Calculate using desktop GIS
Regen	Regeneration	Short int	0,1,2,3	Combo box	
WL_Corridor	Wildlife corridor	Short int	0,1,2,3	Combo box	
Weed_Cov	Weed cover	Short int	0,1,2,3	Combo box	
Disturb	Site disturbance	Short int	0,2,4,6	Combo box	
Rare_Spec	Rare species	Short int	0,15	Radio button	

Field name	Alias	Data type	Example	PDA form representation	GIS post processing
Con_Score	Conservation score	Short int		N/A	Calculate using desktop GIS
Con_Value	Conservation value class	Text 10	Low, Medium, Medium-Low, High	N/A	Calculate using desktop GIS
Con_Val_Subject	Subjective Conservation Value	Text 10	Low, Medium, Medium-Low, High	Combo box	Used to consider additional significant features
Ind_Cover	Proportion indigenous cover	Text 10	<25%, 25-50%,50-75%,>75%	Combo box	
EVC_1	EVC 1	Text 12	HsF_143	Combo box	
EVC_1_BCS	EVC_1_BCS	Text 15	Endangered, Rare, Threatened, Least concern	N/A	Obtain Bioregional Conservation Status from DSE database
EVC_2	EVC 2	Text 12	HsF_144	Combo box	
EVC_2_BCS	EVC_2_BCS	Text 15		N/A	Obtain Bioregional Conservation Status from DSE database
EVC_Com	EVC Comments	Text 30		Edit box	
Threat_1	Threat 1	Text 20	Grazing, grading, fire break, dirt bike	Combo box	
Threat_2	Threat 2	Text 20		Combo box	
Threat_Com	Threat Comments	Text 30		Edit box	
Photo_1	Photo 1 name	Text 15	PH1009B	Edit box	
Photo_2	Photo 2 name	Text 15		Edit box	
Comments	General comments	Text 50		Edit box	

APPENDIX 7. RARE OR THREATENED FLORA WITHIN NILLUMBIK

Scientific Name	Common Name	EPBC Code	VROTS	FFG Code	Habitat Notes	
<i>Acacia leprosa</i> (Dandenong Range variant)	Dandenong Range Cinnamon Wattle		r		Open eucalyptus (particularly Messmate) forests and woodlands, particularly in valleys of Dandenong Ranges and western foothills, with damp, well-drained soil. (Costermans 1989; Tame 1992; Walsh and Entwisle 1996, p. 620; Australian Plants Society Maroondah 2001)	
<i>Acacia leprosa</i> (large phyllode variant)	Large-leaf Cinnamon Wattle		r		Scattered in sclerophyll forests from near Trentham east to Buxton and Orbost (Walsh and Entwisle 1996, p.622).	
<i>Acacia leprosa</i> (type variant)	Eastern Cinnamon Wattle		k		Scattered in sclerophyll forests in Orbost district and in ranges of the Warburton-Marysville region. (Walsh and Entwisle 1996, p.619)	
<i>Acacia verniciflua</i> (southern variant)	Southern Varnish Wattle		k		Damp valley sclerophyll forests, open, low grassy forest, but also dry open, or montane forest, often in sandy or rocky soil. Common south of the Great Dividing Range, from Grampians across to Orbost. (Walsh and Entwisle 1996, p. 618; Australian Plants Society Maroondah 2001)	
<i>Amphibromus fluitans</i>	River Swamp Wallaby-grass	v		X	Moist soils, usually confined to permanent swamps and tolerates inundation. Mainly distributed along Murray River, it is rarer in southern Victoria. (Walsh and Entwisle 1994, p. 449; Australian Plants Society Maroondah 2001)	
<i>Austrostipa rudis subsp. australis</i>	Veined Spear-grass		r		Uncommon with scattered populations across southern Victoria. Mostly in cool areas of moderate altitude, in dry open forest, or low grassy forest on sandy or sandstone-derived soil. (Walsh and Entwisle 1994, p. 396; Australian Plants Society Maroondah 2001)	
<i>Billardiera scandens s.s.</i>	Velvet Apple-berry		r		Shrub to 1.2m high, occurring chiefly in dry open forests and woodlands (Walsh and Entwisle 1996, p. 531)	
<i>Bolboschoenus fluviatilis</i>	Tall Club-sedge		k		Scattered and rather uncommon, requires moist to wet habitat, usually in shallow water on swamp or lake margins of valley sclerophyll forest. (Walsh and Entwisle 1994, p.322; Australian Plants Society Maroondah 2001)	
<i>Caesia parviflora var. minor</i>	Pale Grass-lily		k		Moist, well-drained soils of damp lowland grassland, open grassy woodland and tea-tree heath. (Walsh and Entwisle 1994, p. 657; Australian Plants Society Maroondah 2001)	
<i>Caesia parviflora var. vittata</i>	Pale Grass-lily		k		Uncommon/not well known in Victoria. Moist, well-drained soils of damp lowland grassland, open grassy woodland and tea-tree heath. (Walsh and Entwisle 1994, p. 656)	
Key EPBC Conservation Status EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant		Victorian Rare or Threatened Species (VROTS) (DSE 2005) x: Presumed extinct, e: Endangered, v: Vulnerable, r: rare and k: poorly known Definitions of Conservation Status Codes can be found on the DSE website under Advisory List of Rare or Threatened Plants			Conservation status under FFG Act 1988: L: Listed, N: Nominated, I: Invalid or ineligible and D: Delisted	

Scientific Name	Common Name	EPBC Code	VROTS	FFG Code	Habitat Notes
<i>Caladenia amoena</i>	Charming Spider-orchid	E	e	L	Confined to poorer quality dry soil ridges in dry sclerophyll (particularly box-ironbark) forests fringing north-eastern Melbourne. (Walsh and Entwisle 1994, p.775; Australian Plants Society Maroondah 2001; Jeanes and Backhouse 2006)
<i>Caladenia australis</i>	Southern Spider-orchid		k		Mainly distributed in hinterland or coastal southern Victoria, in well-drained soil of heath, heathy woodland, and dry sclerophyll lowland forest. (Walsh and Entwisle 1994, p.780; Australian Plants Society Maroondah 2001; Jeanes and Backhouse 2006)
<i>Caladenia concolor</i>	Crimson Spider-orchid	V	e	L	Sporadic and uncommon distribution in dry open, or heathy, box-ironbark forests. (Walsh and Entwisle 1994, p. 791; Jeanes and Backhouse 2006)
<i>Caladenia oenochila</i>	Wine-lipped Spider-orchid		v		Moist, well-drained soils in low hills and damp foothill and valley sclerophyll forests; often in shaded or grassy areas, and less commonly in heathy woodland. (Walsh and Entwisle 1994, p. 791; Australian Plants Society Maroondah 2001; Jeanes and Backhouse 2006)
<i>Caladenia prolata</i>	Fertile Finger-orchid		k		Distributed throughout Western Victoria, in heathy woodland or open forest. (Walsh and Entwisle 1994, p. 766; Jeanes and Backhouse 2006)
<i>Caladenia robinsonii</i>	Frankston Spider-orchid	E	e	L	Rare, with extremely limited distribution, near Rosebud on the Mornington Peninsula, grows in well-drained deep sandy soil in coastal heathy woodland, or in red sandy loam in grassy woodland. (Walsh and Entwisle 1994, p. 781-82; Australian Plants Society Maroondah 2001; Jeanes and Backhouse 2006)
<i>Caladenia rosella</i>	Little Pink Spider-orchid	E	e	L	Very restricted distribution, on the north-eastern outskirts of Melbourne, in box-ironbark woodland, on well-drained, skeletal soil. (Walsh and Entwisle 1994, p. 792-3; Australian Plants Society Maroondah 2001; Jeanes and Backhouse 2006)
<i>Caladenia venusta</i>	Large White Spider-orchid		r	X	Coastal and subcoastal heath (particularly tea-tree), and heathy woodlands west of Melbourne, original range around Port Phillip Bay has declined. (Walsh and Entwisle 1994, p. 787-8; Australian Plants Society Maroondah 2001; Jeanes and Backhouse 2006)
<i>Callitriche palustris</i>	Swamp Water-starwort		k		With floating or creeping stems, this species grows in shallow, still water or on mud in riparian scrub or valley sclerophyll forest. (Walsh and Entwisle 1999, p. 463; Australian Plants Society Maroondah 2001)
<i>Calochilus herbaceus</i>	Leafless Beard-orchid		k		Scattered across Victoria, mostly growing in damp habitat; around swamps and in wet heath, but also on dry stony hillside (a population in Gippsland). (Jeanes and Backhouse 2006)
<i>Calochilus imberbis</i>	Naked Beard-orchid		r		Coextensive with <i>C.robertsonii</i> but much rarer and occurring as odd individuals within populations of that species. Possibly merely a growth form of <i>C.robertsonii</i> . <i>C.robertsonii</i> is found mainly in dryish open woodlands and heaths throughout and is widespread across Victoria. Flowers October to December (vol 2, p.856-7).
<i>Cardamine papillata</i>	Forest Bitter-cress		r		Hilly forest across Victoria. (Walsh and Entwisle 1996, p. 440-1)

Scientific Name	Common Name	EPBC Code	VROTS	FFG Code	Habitat Notes
<i>Cardamine tenuifolia</i>	Slender Bitter-cress		k		On moist to wet soils subject to inundation throughout southern Victoria; in streams, swamp margins, plains grassland, and sclerophyll forest valleys. (Walsh and Entwisle 1996, p. 438; Australian Plants Society Maroondah 2001)
<i>Carex chlorantha</i>	Green-top Sedge		k		Rather uncommon and scattered throughout cooler, mostly southern Victoria from near sea-level (Orbost) to the alps (e.g. Buckety Plain). Usually situated on open sites, such as swamps with permanently moist to wet, fertile soils. (Walsh and Entwistle 1994, p. 351, Australian Plants Society Maroondah 2001)
<i>Cladium procerum</i>	Leafy Twig-sedge		r		Occurring occasionally across Victoria in coastal and sub-coastal riparian scrub and wattle/tea-tree scrub. Usually along margins of watercourses and swampy areas, tolerating low to moderate levels of salinity. (Walsh and Entwisle 1994, p. 272-3; Australian Plants Society Maroondah 2001)
<i>Corybas fimbriatus</i>	Fringed Helmet-orchid		r		Forms colonies, mainly in coastal scrub, and heath, also in lowland sclerophyll forest valleys, and heathy woodland; usually on moist, shaded sandy soil with leaf and bark litter. Distribution is mostly east of Westernport, but with isolated colonies on north-eastern outskirts of Melbourne. (Walsh and Entwisle 1994, p. 836; Australian Plants Society Maroondah 2001; Jeanes and Backhouse 2006)
<i>Cymbonotus lawsonianus</i>	Bear's-ear		r		Scattered throughout woodland habitat, from Upper Murray to Hattah-Kulkyne, south to Little Desert and in dryish areas south of the Great Dividing Range in East Gippsland. (Walsh and Entwisle 1999, p. 717)
<i>Desmodium varians</i>	Slender Tick-trefoil		k		An uncommon species mostly from inland parts of Eastern Victoria where found mainly in woodland and open-forest (Walsh and Entwistle 1996).
<i>Dianella amoena</i>	Matted Flax-lily	E	e	N	This plant is known to occur in lowland grasslands, grassy woodlands and grassy wetlands. It ranges from well drained to seasonally wet soils (DSE 2005).
<i>Dianella sp. aff. longifolia (Benambra)</i>	Arching Flax-lily		v		Occasional, and rarely common in dryish forest and <i>Themeda</i> grassland, sometimes forming colonies through spreading rhizomes. (Walsh and Entwisle 1999, p. 649-50)
<i>Diuris behrii</i>	Golden Cowslips		v		Locally common in grassland and open woodland around Derrinallum, Stawell and the Grampians. Flowers October to November (Walsh and Entwisle 1994, p. 860-861)
<i>Diuris palustris</i>	Swamp Diuris		v	L	Often found in swampy depressions within grasslands or open woodland communities throughout western Victoria. (Walsh and Entwisle 1994, p. 859)
<i>Diuris X palachila</i>	Broad-lip Diuris		r		Found in a broad range of habitats, this hybrid is often found in heathlands or drier open forests. (Walsh and Entwisle 1994, p. 862-863)
<i>Encalypta vulgaris</i>	Common Extinguisher-moss		r		
<i>Eucalyptus camaldulensis</i>	River Red-gum			N	Common along rivers, which can either be well-watered or seasonally semi-arid in nature. (Walsh and Entwisle 1996, p. 960)

Scientific Name	Common Name	EPBC Code	VROTS	FFG Code	Habitat Notes
<i>Eucalyptus fulgens</i>	Green Scentbark		r		Open forest areas, tolerating damp conditions (Walsh and Entwistle 1996).
<i>Eucalyptus leucoxylon subsp. connata</i>	Melbourne Yellow-gum		v		Generally found in well-watered areas with deep soil, or on stony hills. (Walsh and Entwistle 1996, p. 991-993)
<i>Eucalyptus X studleyensis</i>	Studley Park Gum		e		A naturally occurring hybrid (<i>E. ovata</i> × <i>E. camaldulensis</i>) found in Studley Park/Yarra Bend and along the Yarra Valley (Australian Plants Society Maroondah 2001).
<i>Eucalyptus yarraensis</i>	Yarra Gum		r		Tree to 15m, endemic in Victoria, distribution fragmented: open forest areas, from Traralgon to north west Victoria, near Ararat. Flowers September to December (Walsh and Entwistle 1996, vol. 3, p.964) Also a swamp dwelling eucalypt (ANBG 2010).
<i>Euchiton umbricola</i>	Cliff Cudweed		r		Uncommon in Victoria (mostly distributed in eastern Victoria), almost entirely confined to shaded cliff-faces, often near waterfalls; and boulders above 1000m, with disjunct populations at 400m (Kinglake National Park). (Walsh and Entwistle 1999, p. 823-824)
<i>Fissidens integerrimus</i>	Pocket Moss		k		
<i>Fissidens strictus</i>	Water Pocket-moss		r		
<i>Gentianella polysperes</i>	Early Forest-gentian		r		
<i>Geranium solanderi var. solanderi s.s.</i>	Austral Crane's-bill		v		An uncommon species of damp to dryish, usually sheltered sites in grassy woodlands. Often along drainage line or in seepage areas (Walsh and Entwistle 1999, p. 224).
<i>Geranium sp. 3</i>	Pale-flower Crane's-bill		r		Open, grassy areas of dry woodland to forest, northern outskirts of Melbourne (Eltham, Yan Yean), and in central western Victoria (Stawell). (Walsh and Entwistle 1999, p. 225)
<i>Glycine latrobeana</i>	Clover Glycine	V	v	L	Widespread, infrequent populations in southern Victoria (Walsh and Entwistle 1996). Plains Grassland and Woodlands in moist well drained soils (Australian Plants Society Maroondah 2001).
<i>Goodia lotifolia var. pubescens</i>	Silky Golden-tip		r		Sporadic distribution throughout south-western and central Victoria, in dry and wet sclerophyll forest. (Walsh and Entwistle 1996)
<i>Goodia medicaginea</i>	Western Golden-tip		r		Favouring drier habitat to <i>Goodia lotifolia</i> this species has a distribution in dry sclerophyll forest throughout south-western (i.e north of Portland/Mt Arapiles), central (Eaglehawk/Killawarra Forest), north-eastern Victoria (Suggan Buggan), also west of Melbourne at Long Forest. (Walsh and

Scientific Name	Common Name	EPBC Code	VROTS	FFG Code	Habitat Notes
					Entwisle 1996)
<i>Grevillea repens</i>	Creeping Grevillea		r		Endemic to Victoria, with disjunct occurrences in dry sclerophyll habitat in mountains north-east and north-west of Melbourne. Grows in moist to well-drained shallow clayey soils. (Walsh and Entwisle 1996)
<i>Helichrysum aff. rutidolepis</i> (Lowland Swamps)	Pale Swamp Everlasting		v		Moist well drained sites in open grassy forest or woodland. Frequent, widespread populations across much of Victoria, excluding the north-west (Walsh and Entwistle 1999).
<i>Hibbertia pedunculata</i>	Stalked Guinea-flower		r		Uncommon and localised distribution in eastern Victoria, in rocky montane to subalpine areas, with some lowland occurrences (i.e. Genoa and Snowy River gorges). (Walsh and Entwisle 1996)
<i>Hypsela tridens</i>	Hypsela		k		Occurs along margins of lakes and reservoirs, and fringes of creeks and billabongs where silty substrate on edges dries hard over summer. (Walsh and Entwisle 1999)
<i>Kunzea leptospermoides</i>	Yarra Burgan		k		Widespread and very common along escarpments, terraces and gullies in the Yarra Valley (Cam Beardsell pers. comm.).
<i>Lachnagrostis filiformis var. 2</i>	Wetland Blown-grass		k		Shallow herbaceous seasonal wetlands of grassy lowland plains areas. (DSE 2009)
<i>Lepidium hyssopifolium</i>	Basalt Peppercross	E	e	L	Grows on basalt plains; rarely reported in western Victoria and only present at two known locations north and north-east of Melbourne. (Walsh and Entwisle 1996)
<i>Levenhookia sonderi</i>	Slender Stylewort		r		Distributed mainly in south-western Victoria but also occurs in central Victoria (Rushworth) and south-central Victoria (Beaconsfield); grows in seasonally damp ground and in drying swamps in lowland areas. (Walsh and Entwisle 1999)
<i>Montia fontana subsp. fontana</i>	Water Blinks		k		Only known distribution is on the eastern Baw Baw Plateau; growing in mossy bogs. (Walsh and Entwisle 1996)
<i>Olearia speciosa</i>	Netted Daisy-bush		k		Scattered distribution from the south-west to the eastern ranges of Victoria; grows in cool, well-watered areas from near sea-level to subalpine areas. (Walsh and Entwisle 1999)
<i>Oxalis thompsoniae</i>	Fluffy-fruit Wood-sorrel		k		Poorly known distribution in Victoria, mostly associated with disturbed ground in urban areas. (Walsh and Entwisle 1999)
<i>Pellaea nana</i>	Dwarf Sickle-fern		r		Grows in a wide variety of habitats throughout eastern, central and south-western Victoria; from alluvial flat in forests, to open woodland and scrub; amongst rocks to damp, cleared rocky slopes. (Walsh and Entwisle 1994)

Scientific Name	Common Name	EPBC Code	VROTS	FFG Code	Habitat Notes
<i>Pimelea pauciflora</i>	Poison Rice-flower		r		Distributed in a few isolated regions of south-central and north-eastern Victoria; grows along mountain streams. (Walsh and Entwisle 1994)
<i>Pomaderris vacciniifolia</i>	Round-leaf Pomaderris		e		Endemic to Victoria; a limited distribution within the upper catchment of the Yarra, Plenty and Yea Rivers, growing in moist forest and scrub. (Walsh and Entwisle 1999)
<i>Prasophyllum frenchii</i>	Maroon Leek-orchid	E	e	L	Infrequent, widespread populations in south western Victoria. Grasslands heathlands and grassy woodlands on moist well drained soils, including roadsides or rail reserves (Jeanes and Backhouse 2006).
<i>Prasophyllum pyriforme</i> s.s.	Silurian Leek-orchid		e		Few known populations, occurring to the north-east of Melbourne in dry open forest with shrubby understory (Jeanes and Backhouse 2006).
<i>Prasophyllum suaveolens</i>	Fragrant Leek-orchid	E	e	L	A Victorian endemic, distributed on basalt plains of south-western Victoria. Grows in remnant native grassland in heavy clay soil. (Jeanes and Backhouse 2006)
<i>Pteris comans</i>	Netted brake		r		Locally abundant in shady forests of wetter regions in south-central Victoria, mainly growing on seepages, stream banks and damp flats. (Walsh and Entwisle 1994)
<i>Pterostylis aciculiformis</i>	Slender Ruddyhood		k		Sporadic, but widespread throughout Victoria, mainly in drier, inland areas, particularly mallee, woodland and box-ironbark forest. (Jeanes and Backhouse 2006)
<i>Pterostylis planulata</i> s.l.	Flat Rustyhood		k		Growing in mallee, mallee heath, and dry woodland, this species is mainly distributed in north-western Victoria, often in rocky areas. (Jeanes and Backhouse 2006)
<i>Pterostylis smaragdina</i>	Emerald-lip Greenhood		r		Victorian endemic with a widespread, but patchy distribution. Grows in dry forests and woodlands on foothills from north-eastern to western Victoria. (Jeanes and Backhouse 2006)
<i>Pterostylis</i> sp. aff. <i>parviflora</i> (Southern Victoria)	Red-tip Greenhood		r		Distribution limited to southern Victoria, grows in damp situations in foothill forests (Jeanes and Backhouse 2006). In well drained loams of valley sclerophyll forests, sclerophyll woodland and swamp scrub (Australian Plants Society Maroondah 2001).
<i>Pterostylis</i> sp. aff. <i>plumosa</i> (Woodland)	Woodland Plume-orchid		r		Grows in dry woodland and foothill forest with a distribution from the north-eastern outskirts of Melbourne to western Victoria. (Jeanes and Backhouse 2006)
<i>Pterostylis</i> sp. aff. <i>striata</i> (Silurian)	Silurian Striped Greenhood		e		Endemic in north-eastern Melbourne where it occurs in lowland box-stringybark and box-ironbark woodland between Greensborough, research, Cottles Bridge and Yarrambat. It occurs on hill crests and river spurs (Cam Beardsell pers. comm.)
<i>Pterostylis X ingens</i>	Sharp Greenhood		r		Infrequent, widespread colonies across Victoria. Occurring in areas of moist open forest (Walsh and Entwistle 1994). A generally rare hybrid with a scattered distribution across southern Victoria, mainly in mountainous areas and extending as far inland as Beechworth. (Bishop 2000, p. 67)

Scientific Name	Common Name	EPBC Code	VROTS	FFG Code	Habitat Notes
<i>Pultenaea weindorferi</i>	Swamp Bush-pea		r	L	Scattered distribution in south-central Victoria (including areas in or near Tonimbuk, Daylesford and Kinglake), confined to swamps and drainage lines. (Walsh and Entwisle 1996, p. 780)
<i>Scaevola calendulacea</i>	Dune Fan-flower		v		Scattered and rather uncommon in Victoria, ranging mostly between the Glenelg River-mouth and Gabo Island. Mainly growing on coastal sand-dunes, it often forms hummocks through build-up of windblown sand. (Walsh and Entwisle 1999, p. 612)
<i>Sclerolaena muricata var. muricata</i>	Black Roly-poly		k		Occasional distribution along the Murray River and associated lakes and floodplains (Kerang to near SA border). Isolated historic records (1920) from Sunbury. (Walsh and Entwisle 1996, p.180)
<i>Senecio campylocarpus</i>	Floodplain Fireweed		r		Grows in forests and woodlands with loam to clay soils, often where seasonal inundation occurs; distribution in Victoria ranges from central regions along the Murray River, down to Port Welshpool. (National Herbarium of NSW 2010 - online resource)
<i>Senecio macrocarpus</i>	Large-headed Fireweed	V	e	L	Distribution within Victoria largely limited to <i>Themeda</i> grasslands on loamy clay soils derived from basalt, ranging from near Melbourne to Skipton in the west. Also found in auriferous soils near Stawell. (Walsh and Entwisle 1999, p. 964)
<i>Thelymitra X irregularis</i>	Crested Sun-orchid		r		A rare hybrid that prefers heathy forests and heathlands - occurring sporadically where 'parent' plants are present - it is most widespread in eastern Victoria. (Bishop 2000, p. 25)
<i>Thryptomene calycina</i>	Grampians Thryptomene		r		Distribution limited to the Grampians, occurring in heathlands and heathy woodlands, mainly on sandy soils. (Walsh and Entwisle 1996, p. 1042)
<i>Tripogon loliformis</i>	Rye Beetle-grass		r		Uncommon, scattered occurrence throughout drier, mostly rocky regions of central northern Victoria, particularly the basalt plains just west of Melbourne, and the areas of Mt. Arapiles, Strathbogie Ranges, Killawarra Forest, and Suggan Buggan. (Walsh and Entwisle 1994, p. 559-560)

List sourced: DSE 2009a *Victorian Flora Site Database* ©. The State of Victoria, Department of Sustainability and Environment (accessed via the 'Flora Information System', © Viridans Biological Databases)

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APPENDIX 8. NILLUMBIK RARE OR THREATENED FAUNA

Common Name	Scientific Name	FFG	EPBC	VROTS
Australasian Bittern	<i>Botaurus poiciloptilus</i>	L		e
Australasian Shoveler	<i>Anas rhynchotis</i>			v
Australian Grayling	<i>Prototroctes maraena</i>	L	V	v
Australian Painted Snipe	<i>Rostratula australis</i>	L	V	c
Azure Kingfisher	<i>Alcedo azurea</i>			n
Baillon's Crake	<i>Porzana pusilla</i>	L		v
Barking Owl	<i>Ninox connivens</i>	L		e
Barred Galaxias	<i>Galaxias fuscus</i>	L	E	c
Bearded Dragon	<i>Pogona barbata</i>			d
Black Falcon	<i>Falco subniger</i>			v
Black-chinned Honeyeater	<i>Melithreptus gularis</i>			n
Black-eared Cuckoo	<i>Chrysococcyx osculans</i>			n
Blue-billed Duck	<i>Oxyura australis</i>	L		e
Broad-shelled Turtle	<i>Macrochelodina expansa</i>	L		e
Brown Quail	<i>Coturnix ypsilophora</i>			n
Brown Toadlet	<i>Pseudophryne bibronii</i>	L		e
Brown Treecreeper (south-eastern ssp.)	<i>Climacteris picumnus victoriae</i>			n
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>	L		v
Bush Stone-curlew	<i>Burhinus grallarius</i>	L		e
Cape Barren Goose	<i>Cereopsis novaehollandiae</i>			n
Caspian Tern	<i>Hydroprogne caspia</i>	L		n
Chestnut-rumped Heathwren	<i>Calamanthus pyrrhopygius</i>	L		v
Common Bent-wing Bat	<i>Miniopterus schreibersii (group)</i>	L		
Common Dunnart	<i>Sminthopsis murina</i>			v
Diamond Dove	<i>Geopelia cuneata</i>	L		n
Diamond Firetail	<i>Stagonopleura guttata</i>	L		v
Dwarf Galaxias	<i>Galaxiella pusilla</i>	L	V	v
Eastern Barred Bandicoot	<i>Perameles gunnii</i>	L	E	c
Eastern Great Egret	<i>Ardea modesta</i>	L		v
Eastern Horseshoe Bat	<i>Rhinolophus megaphyllus</i>	L		v
Eastern Pygmy-possum	<i>Cercartetus nanus</i>			n
Eastern Quoll	<i>Dasyurus viverrinus</i>	L		x
Eltham Copper	<i>Paralucia pyrodiscus lucida</i>	L		v
Fat-tailed Dunnart	<i>Sminthopsis crassicaudata</i>			n
Key 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	Victorian Rare or Threatened Species (VROTS) (DSE 2009b) EX: Extinct, RX: Regionally extinct, WX: Extinct in the Wild, CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near Threatened, DD: Data Deficient Definitions of Conservation Status Codes can be found on the DSE website under Advisory List of Rare or Threatened Fauna	Conservation status under FFG Act 1988: L: Listed, N: Nominated, I: Invalid or ineligible and D: Delisted		

Common Name	Scientific Name	FFG	EPBC	VR0TS
Freckled Duck	<i>Stictonetta naevosa</i>	L		e
Freshwater Catfish	<i>Tandanus tandanus</i>	L		e
Glossy Grass Skink	<i>Pseudemoia rawlinsoni</i>			n
Glossy Ibis	<i>Plegadis falcinellus</i>			n
Golden Sun Moth	<i>Synemon plana</i>	L	C	e
Grey Goshawk	<i>Accipiter novaehollandiae</i>	L		v
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>	L		e
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	L	V	v
Growling Grass Frog	<i>Litoria raniformis</i>	L	V	e
Hardhead	<i>Aythya australis</i>			v
Hooded Robin	<i>Melanodryas cucullata</i>	L		n
Intermediate Egret	<i>Ardea intermedia</i>	L		c
King Quail	<i>Coturnix chinensis</i>	L		e
Lace Goanna	<i>Varanus varius</i>			v
Large Ant Blue	<i>Acrodipsas brisbanensis</i>	L		r
Latham's Snipe	<i>Gallinago hardwickii</i>			n
Lewin's Rail	<i>Lewinia pectoralis</i>	L		v
Little Bittern	<i>Ixobrychus minutus</i>	L		e
Little Button-quail	<i>Turnix velox</i>			n
Little Egret	<i>Egretta garzetta</i>	L		e
Macquarie Perch	<i>Macquaria australasica</i>	L	E	e
Magpie Goose	<i>Anseranas semipalmata</i>	L		n
Major Mitchell's Cockatoo	<i>Lophocroa leadbeateri</i>	L		v
Masked Owl	<i>Tyto novaehollandiae</i>	L		e
Murray Cod	<i>Maccullochella peelii peelii</i>	L	V	e
Murray River Turtle	<i>Emydura macquarii</i>			d
Musk Duck	<i>Biziura lobata</i>			v
Nankeen Night Heron	<i>Nycticorax caledonicus</i>			n
Pacific Gull	<i>Larus pacificus pacificus</i>			n
Painted Honeyeater	<i>Grantiella picta</i>	L		v
Pied Cormorant	<i>Phalacrocorax varius</i>			n
Plains-wanderer	<i>Pedionomus torquatus</i>	L	V	c
Powerful Owl	<i>Ninox strenua</i>	L		v
Regent Honeyeater	<i>Anthochaera phrygia</i>	L	E	c
River Blackfish	<i>Gadopsis marmoratus</i>			d
Royal Spoonbill	<i>Platalea regia</i>			v
Sooty Owl	<i>Tyto tenebricosa</i>	L		v
Southern Myotis	<i>Myotis macropus</i>			n
Southern Toadlet	<i>Pseudophryne semimarmorata</i>			v
Speckled Warbler	<i>Pyrrholaemus sagittatus</i>	L		v
Spot-tailed Quoll	<i>Dasyurus maculatus</i>	L	E	e
Spotted Harrier	<i>Circus assimilis</i>			n
Spotted Quail-thrush	<i>Cinclosoma punctatum</i>			n

Common Name	Scientific Name	FFG	EPBC	VROTS
Square-tailed Kite	<i>Lophoictinia isura</i>	L		v
Stonefly	<i>Thaumatoperla robusta</i>			r
Superb Parrot	<i>Polytelis swainsonii</i>	L	V	e
Swift Parrot	<i>Lathamus discolor</i>	L	E	e
Turquoise Parrot	<i>Neophema pulchella</i>	L		n
Whiskered Tern	<i>Chlidonias hybridus</i>			n
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	L		v
Wood Sandpiper	<i>Tringa glareola</i>			v
Key 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		Victorian Rare or Threatened Species (VROTS) (DSE 2009b) EX: Extinct, RX: Regionally extinct, WX: Extinct in the Wild, CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near Threatened, DD: Data Deficient Definitions of Conservation Status Codes can be found on the DSE website under Advisory List of Rare or Threatened Fauna		Conservation status under FFG Act 1988: L: Listed, N: Nominated, I: Invalid or ineligible and D: Delisted

List Source: DSE 2009b *Atlas of Victoria Wildlife* ©. The State of Victoria, Department of Sustainability and Environment (accessed via the 'Victorian Fauna Database', © Viridans Biological Databases)

APPENDIX 9. COUNCIL ENVIRONMENTAL WEEDS LIST

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

Scientific Name	Common Name
<i>Acacia baileyana</i>	Cootamundra Wattle
<i>Acacia decurrens</i>	Early Black Wattle
<i>Acacia elata</i>	Cedar Wattle
<i>Acacia floribunda</i>	White Sallow Wattle
<i>Acacia howittii</i>	Sticky Wattle
<i>Acacia longifolia</i> var. <i>longifolia</i>	Sallow Wattle
<i>Acacia pravissima</i>	Ovens Wattle
<i>Acacia retinodes</i> var. <i>retinodes</i>	Wirilda
<i>Acacia saligna</i>	Golden Wreath Wattle
<i>Acer negundo</i>	Box-elder Maple/ Sycamore
<i>Acetosa sagittata</i>	Rambling Dock
<i>Acetosella vulgaris</i>	Sheep Sorrel
<i>Agapanthus praecox</i> ssp. <i>orientalis</i>	Agapanthus
<i>Agave americana</i>	Agave, Century plant
<i>Alisma lanceolata</i>	Water Plantain
<i>Allium triquetrum</i> *	Angled Onion
<i>Alternanthera philoxeroides</i> *	Alligator Weed
<i>Amaranthus</i> sp.	Amaranth
<i>Amaryllis belladonna</i>	Belladonna Lily
<i>Anagallis arvensis</i>	Scarlet Pimpernel
<i>Anredera cordifolia</i>	Madeira vine
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass
<i>Araujia sericifera</i>	Cruel Plant
<i>Asparagus asparagoides</i> *	Smilax/ Bridal Creeper
<i>Asparagus officinalis</i>	Asparagus
<i>Asparagus scandens</i>	Asparagus Fern
<i>Aster subulatus</i>	Aster –weed
<i>Atriplex prostrata</i>	Hastate Orache
<i>Avena</i> spp.	Oat
<i>Billardiera heterophylla</i>	Bluebell Creeper
<i>Briza maxima</i>	Quaking Grass
<i>Briza minor</i>	Lesser Quaking Grass
<i>Bromus hordeaceus</i>	Soft Brome
<i>Capsella bursapastoris</i>	Shepherds Purse
<i>Chamaecytisus palmensis</i>	Tree Lucerne
<i>Chenopodium album</i>	Fat Hen
<i>Chrysanthemoides monilifera</i> *	Boneseed/ Bitou Bish
<i>Cirsium vulgare</i> *	Spear Thistle
<i>Conium maculatum</i> *	Hemlock
<i>Convolvulus arvensis</i>	Common Bindweed

Scientific Name	Common Name
<i>Conyza sp.</i>	Fleabane
<i>Coprosma repens</i>	Mirror-bush
<i>Cortaderia selloana</i>	Pampas Grass
<i>Cotoneaster species</i>	Cotoneasters
<i>Crataegus monogyna</i> *	Hawthorn
<i>Crocasmia x crocosmiiflora</i>	Montbretia
<i>Cupressus macrocarpa</i>	Monterey Cypress
<i>Cynara cardunculus</i> *	Artichoke Thistle
<i>Cynodon dactylon var. dactylon</i>	Couch
<i>Cytisus scoparius</i> *	English Broom
<i>Delairea odorata</i>	Cape Ivy
<i>Dipogon lignosus</i>	Common Dipogon
<i>Dipsacus fullonum spp. Fullonum</i>	Wild Teasel
<i>Echium plantagineum</i> *	Paterson's Curse
<i>Egeria densa</i>	Dense Waterweed
<i>Ehrharta erecta var. erecta</i>	Panic Veldt-grass
<i>Ehrharta longiflora</i>	Annual Veldt-grass
<i>Eichhornia crassipes</i> *	Water Hyacinth
<i>Elytrigia repens</i>	English Couch
<i>Erica arborea</i>	Tree Heath
<i>Erica lusitanica</i>	Spanish Heath
<i>Euphorbia sp.</i>	Spurge
<i>Foeniculum vulgare</i> *	Fennel
<i>Fraxinus sp.</i>	Ash
<i>Freesia species</i>	Freesia
<i>Fumaria sp.</i>	Fumitory
<i>Galium aparine</i>	Cleavers
<i>Gazania sp.</i>	Gazania
<i>Genista linifolia</i> *	Flax-leaf Broom
<i>Genista monspessulana</i> *	Cape Broom/ Montpellier Broom
<i>Geranium dissectum</i>	Cut-leaf Cranes bill
<i>Gladiolus species</i>	Gladiolus
<i>Hakea salicifolia</i>	Willow hakea
<i>Hedera helix</i>	Ivy
<i>Hemerocallis fulva</i>	Day Lily
<i>Hypericum androsaemum</i> *	Tutsan
<i>Hypericum perforatum</i> *	St John's Wort
<i>Ilex aquifolium</i>	Holly
<i>Ipomoea indica</i>	Morning Glory
<i>Iris species</i>	Iris
<i>Ixia polystachya</i>	Variable Ixia
<i>Juncus acutus ssp. acutus</i> *	Spiny Rush
<i>Kniphofia uvaria</i>	Red-hot Poker
<i>Ligustrum species</i>	Privet

Scientific Name	Common Name
<i>Lonicera fragrantissima</i>	Winter Honeysuckle
<i>Lonicera japonica</i>	Japanese Honeysuckle
<i>Lycium ferocissimum</i> *	African Boxthorn
<i>Melaleuca armillaris ssp. armillaris</i>	Giant Honey-myrtle
<i>Moraea sp.*</i>	Cape Tulip
<i>Nassella neesiana</i> *	Chilean Needle-grass
<i>Nassella trichotoma</i> *	Serrated Tussock
<i>Opuntia stricta</i>	Common Prickly-pear
<i>Opuntia vulgaris</i>	Drooping Prickly-pear
<i>Oxalis pes-caprae</i>	Soursob
<i>Papaver somniferum</i>	Opium Poppy
<i>Paraserianthes lophantha</i>	Cape Wattle
<i>Paspalum dilatatum</i>	Paspalum
<i>Passiflora caerulea</i>	Blue Passion flower
<i>Passiflora mollissima</i>	Banana Passion-fruit
<i>Pennisetum clandestinum</i>	Kikuyu
<i>Pennisetum villosum</i>	Long – style Feather Grass
<i>Phalaris spp.</i>	Canary-grass
<i>Pinus radiata</i>	Monterey (Radiata) Pine
<i>Pittosporum undulatum</i>	Sweet Pittosporum
<i>Polygala myrtifolia</i>	Myrtle-leaf Milkwort
<i>Populus alba</i>	White Poplar
<i>Populus nigra 'Italica'</i>	Lombardy Poplar
<i>Prunus cerasifera</i>	Cherry Plum
<i>Prunus spinosa</i>	Blackthorn
<i>Rhamnus alaternus</i>	Italian Buckthorn
<i>Rosa rubiginosa</i> *	Sweet Briar
<i>Rubus fruticosus agg.*</i>	Blackberry
<i>Salix species**</i>	Willows
<i>Salvinia molesta</i> *	Water Fern, Giant Salvinia
<i>Schinus molle</i>	Peppercorn Tree
<i>Senecio angulatus</i>	Climbing Groundsel
<i>Senecio jacobaea</i> *	Ragwort
<i>Solanum pseudocapsicum</i>	Madeira Winter Cherry
<i>Stenotaphrum secundatum</i>	Buffalo Grass
<i>Taraxacum Sect. Ruderalia</i>	Garden Dandelion
<i>Tradescantia fluminensis</i>	Wandering Jew
<i>Typha latifolia</i>	Great Reedmace
<i>Ulex europaeus</i> *	Gorse/ Furze
<i>Ulmus procera</i>	Common Elm
<i>Verbascum blattaria</i>	Moth Mullein
<i>Verbascum virgatum</i>	Twiggy Mullein
<i>Vinca major</i>	Blue Periwinkle
<i>Vulpia spp.</i>	Fescues

Scientific Name	Common Name
<i>Watsonia meriana</i> 'Bulbillifera'*	Wild Watsonia
<i>Zantedeschia aethiopica</i>	White Arum Lily

* denotes noxious weeds listed under the CaLP Act

** all *Salix* species are noxious except *S. matsudana* 'Tortuosa', *S. alba* var. *caerulea*, *S. alba* x *matsudana*, *S. babylonica*, *S. calodendron*, *S. caprea* 'Pendula', *S. matsudana* 'Aurea', *S. myrsinifolia*, *S. x reichardtii*.

Source: *Weed Action Plan* (Nillumbik Shire Council, 2008).

APPENDIX 10. WEEDS POSING SIGNIFICANT RISKS WITHIN NILLUMBIK

The following list presents significant weed risks found within the Shire. It includes weeds that are either listed weeds under the CALP Act 1994, are a Victorian Alert Weed, National Alert Weed or Weed of National Significance. It also includes weeds that were observed to be actively invading remanent vegetation and recorded during assessments and other Very High Risk and High Risk weeds listed in the *Advisory list of Environmental Weeds* series by Adair, Cheal and White (2008) that are recorded within the Shire (as determined by DSE 2009a *Victorian Flora Site Database*) but have not necessarily been recorded during roadside assessments.

Preventing new weeds from becoming established should be the highest priority for weed control works. As such, these weeds require treatment regardless of context in which infestations occur such weeds have been marked as 'Emergent' weeds. Other longer established, more widespread and successfully invasive plants that are not possible to eradicate, should have treatment prioritised to ensure infestations posing the highest risk to assets are managed over those posing less risk. This list is not considered to be conclusive there are many other weeds that may also require treatment given the context in which they occur; furthermore there are also other emergent weeds, which although not previously recorded in the Shire pose a risk within Victoria which also require consideration.

List arrangement

1. Record Count: Number of infestations recorded during 2010 roadside assessments. Those listed n/a where either considered too common to record or not identifiable with the survey method used. It is worth noting that due to the nature of 'windscreen survey' there is an inherent bias towards the larger more easily observed species than smaller herbaceous weeds and as such these records should not be considered conclusive.

2. Risk Ranking Score: as per *Advisory list of Environmental Weeds* series by Adair, Cheal and White (2008), the lower the number the higher the risk. Note that the ranking used is from the region (ranges, plains, aquatic, heathy forest) within the Shire where the weed poses the most risk. Where a genus has been used the ranking is generally for the highest risk weed within that genus.

3. CALP Act: Indicates that the species is listed in the CALP Act and as such there are legal requirements associated with its trade, spread, management or control www.dse.vic.gov.au. Where a genus has been used the listing considers any weed within that genus recorded within the Shire.

4. Victorian Alert Weed: Indicates that the species is listed as a Victorian Alert Weed and is under voluntary management schemes organised by the Victorian Department of Primary Industries www.dpi.vic.gov.au. Where a genus has been used the listing considers any weed within that genus recorded within the Shire.

5. National Alert Weed: Indicates that the species is listed as a National Alert Weed www.weeds.gov.au/weeds/lists/alert.html or National Sleeper Weed www.weeds.gov.au/weeds/lists/sleeper.html. Where a genus has been used the listing considers any weed within that genus recorded within the Shire.

6. Weed of National Significance: Indicates that the species is listed as a Weed of National Significance www.weeds.org.au/natsig.htm. Where a genus has been used the listing considers any weed within that genus recorded within the Shire.

Scientific Name	Common Name	Record Count ¹	Risk Ranking Score ²	CALP Act ³	Vic Alert Weed ⁴	National Alert Weed ⁵	WO NS ⁶	Emergen t ⁷
<i>Acacia baileyana</i>	Cootamundra Wattle	260	39					
<i>Acacia decurrens</i>	Early Black-wattle	84	42					
<i>Acacia elata</i>	Cedar Wattle	4	39					
<i>Acacia floribunda</i>	White Sallow-wattle	28	93					
<i>Acacia howittii</i>	Sticky Wattle	10	84					
<i>Acacia longifolia</i>	Sallow Wattle	123	41					
<i>Acacia prominens</i>	Gosford Wattle	13	66					
<i>Acer negundo</i>	Box-elder Maple	0	1					Y
<i>Acer pseudoplatanus</i>	Sycamore Maple	0	11					Y
<i>Agapanthus praecox subsp. orientalis</i>	Agapanthus	101	147					
<i>Agave americana</i>	Century Plant	1	156					
<i>Agrostis stolonifera</i>	Creeping Bent	n/a	40					
<i>Ailanthus altissima</i>	Tree of Heaven	0	90	Y				
<i>Allium spp.</i>	Garlic	1	12					
<i>Allium triquetrum</i>	Angled Onion	84	12	Y				
<i>Alternanthera philoxeroides</i>	Alligator Weed	0	2	Y	Y		Y	Y
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	n/a	31					
<i>Artemisia verlotiorum</i>	Chinese Wormwood	n/a	46					
<i>Asparagus asparagoides</i>	Bridal Creeper	201	10	Y			Y	
<i>Asparagus scandens</i>	Asparagus Fern	0	10	Y				
<i>Asphodelus fistulosus</i>	Onion Weed	n/a	242	Y				
<i>Berberis darwinii</i>	Darwin's Barberry	0	39					
<i>Billardiera heterophylla</i>	Bluebell Creeper	74	37					
<i>Briza spp.</i>	Quaking-grass	n/a	44					
<i>Calicotome spinosa</i>	Spiny Broom	0	207	Y				
<i>Carduus pycnocephalus</i>	Slender Thistle	0	97	Y				
<i>Carduus pycnocephalus</i>	Slender Thistle	n/a	181	Y				
<i>Carduus tenuiflorus</i>	Winged Slender-thistle	0	97	Y				
<i>Carduus tenuiflorus</i>	Winged Slender-thistle	n/a	181	Y				
<i>Carex divisa</i>	Divided Sedge	0	20					
<i>Carthamus lanatus</i>	Saffron Thistle	n/a	85	Y				
<i>Chamaecytisus palmensis</i>	Tree Lucerne	43	213					
<i>Chasmanthe floribunda</i>	African Cornflag	9	66					
<i>Chrysanthemoides monilifera</i>	Boneseed	166	13					

Scientific Name	Common Name	Record Count ¹	Risk Ranking Score ²	CALP Act ³	Vic Alert Weed ⁴	National Alert Weed ⁵	WO NS ⁶	Emergen t ⁷
<i>Cirsium vulgare</i>	Spear Thistle	95	115					
<i>Conium maculatum</i>	Hemlock	1	104	Y				
<i>Convolvulus arvensis</i>	Common Bindweed	n/a	69	Y				
<i>Coprosma repens</i>	Mirror Bush	5	73					
<i>Cortaderia selloana</i>	Pampas Grass	1	73					
<i>Cotoneaster spp.</i>	Cotoneaster	69	10					
<i>Crassula multicava subsp. multicava</i>	Shade Crassula	2	102					
<i>Crassula tetragona subsp. robusta</i>	Shrubby Crassula	10	102					
<i>Crataegus monogyna</i>	Hawthorn	12	13					
<i>Crocsmia X crocosmiiflora</i>	Montbretia	2	3					
<i>Cynara cardunculus</i>	Artichoke Thistle	2	76	Y				
<i>Cytisus scoparius</i>	English Broom	11	3	Y				
<i>Datura spp.</i>	Thorn Apple	0	179	Y				
<i>Delairea odorata</i>	Cape Ivy	14	77					
<i>Diploaxis tenuifolia</i>	Sand Rocket	n/a	230	Y				
<i>Dipsacus fullonum subsp. fullonum</i>	Wild Teasel	0	44	Y				
<i>Dittrichia graveolens</i>	Stinkwort	n/a	130	Y				
<i>Echium plantagineum</i>	Paterson's Curse	1	214	Y				
<i>Echium vulgare</i>	Viper's Bugloss	n/a	232	Y				
<i>Egeria densa</i>	Dense Waterweed	0	2					
<i>Ehrharta erecta var. erecta</i>	Panic Veldt-grass	n/a	40					
<i>Ehrharta longiflora</i>	Annual Veldt-grass	n/a	40					
<i>Eichhornia crassipes</i>	Water Hyacinth	0	5	Y	Y			
<i>Elodea canadensis</i>	Canadian Pondweed	0	14					
<i>Equisetum spp.</i>	Horsetail	0	12	Y	Y	Y		Y
<i>Erica arborea</i>	Tree Heath	10	93					
<i>Erica lusitanica</i>	Spanish Heath	48	11					
<i>Foeniculum vulgare</i>	Fennel	n/a	26	Y				
<i>Fraxinus angustifolia</i>	Desert Ash	2	11					
<i>Fraxinus spp.</i>	Ash	2	11					
<i>Freesia spp.</i>	Freesia	27	102					
<i>Genista linifolia</i>	Flax-leaf Broom	69	12	Y				
<i>Genista monspessulana</i>	Montpellier Broom	233	11	Y				
<i>Glyceria spp.</i>	Manna Grass	n/a	20					
<i>Hakea drupacea</i>	Sweet Hakea	2	216					
<i>Hakea salicifolia subsp. salicifolia</i>	Willow-leaf Hakea	9	201					
<i>Hedera helix</i>	English Ivy	24	1					

Scientific Name	Common Name	Record Count ¹	Risk Ranking Score ²	CALP Act ³	Vic Alert Weed ⁴	National Alert Weed ⁵	WO NS ⁶	Emergen t ⁷
<i>Holcus lanatus</i>	Yorkshire Fog	n/a	52					
<i>Hypericum androsaemum</i>	Tutsan	0	118	Y				Y
<i>Hypericum perforatum subsp. veronense</i>	St John's Wort	0	43	Y				Y
<i>Hypericum tetrapterum var. tetrapterum</i>	St Peter's Wort	0	53	Y				Y
<i>Ilex aquifolium</i>	English Holly	2	10					
<i>Ipomoea indica</i>	Blue Morning-glory	1	201					
<i>Iris spp.</i>	Iris	4	211					
<i>Juncus acutus subsp. acutus</i>	Spiny Rush	0	52					
<i>Juncus articulatus</i>	Jointed Rush	0	52					
<i>Lavandula stoechas subsp. stoechas</i>	Topped Lavender	0	90	Y				
<i>Lonicera japonica</i>	Japanese Honeysuckle	18	1					
<i>Lycium ferocissimum</i>	African Box-thorn	10	49	Y				
<i>Marrubium vulgare</i>	Horehound	n/a	19	Y				
<i>Moraea spp.</i>	Moraea	8541	2					
<i>Myosotis sylvatica</i>	Wood Forget-me-not	n/a	20					
<i>Myriophyllum aquaticum</i>	Parrot's Feather	0	5					
<i>Nassella charruana</i>	Lobed Needle-grass	0	4	Y	Y	Y		Y
<i>Nassella neesiana</i>	Chilean Needle-grass	1	94	Y			Y	Y
<i>Nassella spp.</i>	Needle Grass	n/a	1	Y				Y
<i>Nassella trichotoma</i>	Serrated Tussock	18	94	Y				Y
<i>Onopordum acanthium subsp. acanthium</i>	Scotch Thistle	n/a	103	Y				
<i>Onopordum illyricum subsp. illyricum</i>	Illyrian Thistle	n/a	232	Y				
<i>Opuntia spp.</i>	Prickly Pear	14	75	Y				
<i>Opuntia stricta</i>	Common Prickly-pear	4	75	Y				
<i>Osteospermum fruticosum</i>	Dimorphotheca	2	201					
<i>Paraserianthes lophantha subsp. lophantha</i>	Cape Wattle	11	237					
<i>Passiflora tarminiana</i>	Banana Passion-fruit	0	11					
<i>Pinus spp.</i>	Pine	176	6					
<i>Pittosporum undulatum</i>	Sweet Pittosporum	274	10					
<i>Polygala myrtifolia var. myrtifolia</i>	Myrtle-leaf Milkwort	2	210					

Scientific Name	Common Name	Record Count ¹	Risk Ranking Score ²	CALP Act ³	Vic Alert Weed ⁴	National Alert Weed ⁵	WO NS ⁶	Emergen t ⁷
<i>Prunus spp.</i>	Prunus	154	96					
<i>Ranunculus repens</i>	Creeping Buttercup	n/a	20					
<i>Rosa rubiginosa</i>	Sweet Briar	31	98	Y				
<i>Rubus fruticosus spp. agg.</i>	Blackberry	166	4	Y			Y	
<i>Salix spp.</i>	Willow	0	10	Y			Y	
<i>Salpichroa organifolia</i>	Pampas Lily-of-the-Valley	n/a	213	Y			Y	
<i>Scabiosa atropurpurea</i>	Pincushion	0	38					
<i>Scolymus hispanicus</i>	Golden Thistle	n/a	202	Y				
<i>Sedum praealtum subsp. praealtum</i>	Shrubby Stonecrop	5	210					
<i>Senecio jacobaea</i>	Ragwort	0	91	Y				
<i>Silybum marianum</i>	Variiegated Thistle	n/a	213	Y				
<i>Sparaxis spp.</i>	Harlequin Flower	n/a	48					
<i>Tradescantia fluminensis</i>	Wandering Jew	1	20	Y				
<i>Ulex europaeus</i>	Gorse	7	15	Y			Y	
<i>Vinca major</i>	Blue Periwinkle	19	15					
<i>Watsonia meriana var. bulbillifera</i>	Bulbil Watsonia	105	15	Y				
<i>Xanthium spinosum</i>	Bathurst Burr	n/a	242	Y				
<i>Xanthium strumarium spp. agg.</i>	Noogoora Burr species aggregate	n/a	8	Y				
<i>Zantedeschia aethiopica</i>	White Arum-lily	0	21					