Banyule Weed Management Strategy

2006



Part 1 Legislation and policy guiding weed management within the City of Banyule

Part 2 Reviewing the weed problem and determining weed management priorities in the City of Banyule

Part 3 A strategy for weed management in the City of Banyule

Banyule
CITY COUNCIL

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Banyule Weed Management Strategy: Part 1

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For Banyule City Council

Banyule
CITY COUNCIL

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1. INTRODUCTION

Weeds are a serious threat to biodiversity and community values in the City of Banyule. The threats and associated costs of weed invasion are numerous. For example, weeds:

- contribute significantly to land and water degradation.
- are second only to land clearing as a cause of biodiversity loss.
- jeopardise the long-term survival of threatened fauna species such as the Eltham Copper Butterfly.
- can cause acute respiratory problems (especially in children), dermatitis, and increased pollen loads affecting hay-fever and asthma sufferers.
- increase fuel loads resulting in more severe bushfires.
- cost Victoria $360 million and Australia $4 billion each year in lost agricultural production.

(Martin 2003; Vidler 2003)

Banyule City Council spends approximately $200,000 annually to control weeds to a 'manageable level' on public land. This includes managing weeds in nature reserves, roadsides, open space areas, and waterways to protect biodiversity and amenity values in the municipality (ENRC 1998).

Council seeks to develop a weed management strategy to guide future weed control initiatives in the municipality. The strategy is intended to identify weed issues, legislative and policy responsibilities, and recommend cost-effective approaches to weed control management in the municipality.

This strategy is divided into three sections.

Part 1 identifies and reviews relevant weed management legislation and policies at national, state, and local levels. Weed control responsibilities of different landowners in the municipality are identified and discussed according to land types (i.e. rail reserves, waterways, roads, private and public land) and weed status as defined by legislation and policy.

Part 2 documents current weed management issues within the City of Banyule. Priority weeds and weed control issues are identified and discussed.

Part 3 provides an integrated approach to proposed actions that will provide cost-effective weed control and prevention of their spread. This part consolidates all information contained in the two preceding sections to provide an informed weed management strategy for the City of Banyule.

2. PART 1: LEGISLATION AND POLICY GUIDING WEED MANAGEMENT WITHIN THE CITY OF BANYULE

2.1 Introduction

This section reviews national, state, and local policy and legislation relevant to local government and land owners in the municipality. Legislative and policy responsibilities are discussed in terms of how they are applicable to local government actions and the actions of land owners. Weed control responsibilities according to state legislation are also reviewed according to land type and weed status. Emphasis is placed on legislation and policy that can be incorporated into a weed management strategy for the municipality.

2.2 Legislation

Legislation is an essential tool for weed control management in stipulating the precise legal responsibilities of different parties. Australia has three tiers of government; local, state and commonwealth, each with their own set of policies and legislation. The majority of legislation relevant to weed management is at the state level whilst all three levels of government have policy regarding weed management. Council is obliged to consider all commonwealth and state legislation and policy in developing council strategies, policies, and revisions of the planning scheme.

2.2.1 Commonwealth Legislation

Numerous Commonwealth Acts are relevant to the management of environmental weeds in Australia. Local government is bound by these Acts in decision-making processes. In particular, local government must enforce relevant legislation in relation to the planning scheme. The following are Commonwealth Acts that are most relevant to weed control at the local government level, and hence, to Banyule Council:

Environment Protection and Biodiversity Conservation Act 1999 has taken the place of five Acts. The Act offers a direct approach to the control of weeds that are considered of national environmental significance.

Wildlife Protection (Regulation of Imports and Exports) Act 1982 ensures Australia complies with obligations under the *Convention on International Trade in Endangered Species of Wild Flora and Fauna* (CITES). This act also aims to protect native animals and plants of Australia by regulating the import of alien species that could have an adverse effect on their survival.

Biological Control Act 1984 works to establish authorities to oversee biological control or eradication of alien species.

Natural Heritage Trust Act 1997 provides the framework under which policies for alien-species research and coordinated control or eradication are launched. Under the Trust, a number of programs have been

initiated that seek to fulfil this role, namely the *National Feral Animals Control Program*, *the National Weeds Program* and the *Coasts and Clean Seas: Introduced Marine Pests Program* (Commonwealth of Australia 1997).

Quarantine Act 1908 contains provisions to control the importation of plant material through schedules prohibiting certain weed species. The Australian Quarantine and Inspection Service (AQIS) is the statutory authority responsible to the Federal Minister for Primary Industries and Energy. The act ensures that species of plants that are known to be weeds in other parts of world or are believed to have the potential to be weeds in Australia are not allowed into the country.

(Williams and West 2000)

2.2.2 State Legislation

State legislation is of primary importance to weed control in Victoria. The following Victorian State Acts have relevance for weed control:

- *Catchment and Land Protection Act 1994;*
- *Flora and Fauna Guarantee Act 1988;*
- *Crown Land (Reserves) Act 1978;*
- *Land Act 1958;*
- *Local Government Act 1989;*
- *Planning and Environment Act 1987; and*
- *Environment Protection Act 1970.*

(ENRC 1998)

2.2.2.1 The Catchment and Land Protection Act 1994

The *Catchment and Land Protection Act 1994* establishes a framework for the integrated management and protection of catchments through community participation in the management of land and water resources (DNRE 2001a). This Act is administered by the Department of Sustainability and Environment (DSE) and deals primarily with regulations regarding animal and plant pests.

Under DSE, the CaLP Act established 10 Catchment Management Authorities (CMAs) to manage 10 Catchment Regions (Government of Victoria 1994). The Port Phillip and Westernport Catchment Management Authority administers the Port Phillip and Westernport Region which, for the purpose of regional weed identification, is further divided into an east and west region – the City of Banyule is located in the Port Philip and Westernport East Region.

The CaLP Act established four types of status for weeds in the state:

- **State Prohibited Weeds**: weeds that do not occur in Victoria and present a significant threat if they establish, or, if already present in Victoria, pose a significant threat with eradication considered feasible;

- **Regionally Prohibited Weeds**: weeds that are generally not widespread in a region (Catchment Region), but are capable of spreading further with eradication considered possible. Landowners and public land authorities are responsible for control of these weeds on their lands;

- **Regionally Controlled Weeds**: Weeds usually widespread in a region, but causing enough impact that preventing further spread is considered important and desirable; and

- **Restricted Weeds**: Plants that pose an unacceptable risk of spread if they were sold or traded. No weeds have been declared in this category.

(Government of Victoria 1994)

The assigned status of a weed species, however, is not the same throughout the state, and differs according to each region as determined by each respective Catchment Management Authority. The status of weeds in Banyule is assigned by the Port Phillip and Westernport CMA. It is also important to note that any plant listed under these categories is termed as 'noxious'.

Currently there are 79 weed species listed as Regionally Prohibited or Regionally Controlled Weeds, 14 listed as State Prohibited Weeds, and no species listed as Restricted in Victoria (Victorian Government Gazette of 18 December 1997 and 22 May 2003; DSE 2003b). However, a list of Restricted weeds will be released sometime in 2004 to prohibit the sale and trading of environmental weed species (Daniel Joubert pers. comm.)

In the Port Philip East region 38 weed species are listed as Regionally Controlled, 8 as Regionally Prohibited, and 24 as State Prohibited.

The CaLP Act states that each land owner/occupier is responsible for the maintenance of the land they occupy including weed control. Under the CaLP Act 'public and private owners are to take all reasonable steps to avoid causing or contributing to land degradation that may damage land owned by another party (including roadsides).' The Act goes on to state that 'land owners should manage their land so as to…manage noxious weeds and pest animals (Government of Victoria 1994).' As a land manager Council thus has a legal responsibility to manage its own land accordingly.

The enforcement of the CaLP Act is invested in the Department of Sustainability and Environment (DSE) by issuing Land Management Notices for the control of noxious weeds. Amendments to the CaLP Act in 2003 altered provisions under Section 40 to include a Land Management Notice 'binding on –

a) the land owner served with it; and

b) each subsequent land owner for the time being of the land to which it applies as if each owner had been served with the land management notice on becoming the land owner.'

(Government of Victoria 2003)

Hence, a Land Management Notice now runs with the property (land) and is passed on to subsequent owners.

Enforcement of compliance with the CaLP Act is prioritized according to species threat and location as determined by the respective Regional Catchment Management Authority. Hence, the Port Phillip and Westernport CMA determine compliance with the CaLP Act in the City of Banyule. DSE regional officers acting under the directions of the Port Phillip and Westernport CMA may require landholders to undertake specific control work if they fail to comply with the CaLP Act. Land/Property owners can be prosecuted for failing to eradicate or control weeds. Alternatively, DSE is empowered to take further action and charge the landowner the cost of the work as per Section 72(4) under the CaLP Act 1994.

The CaLP Act also has provisions under Sections 70-71 restricting the movement of weed propagules through the trading, movement of vehicles, machinery, vegetative material (e.g. hay, grain, and fodder). Activities facilitating noxious weed spread are addressed in provisions prohibiting:

- the deposition on land of a noxious weed or seeds of a noxious weed without a permit from DSE
- the removal or sale of 'soil, sand, gravel or stone which contains or is likely to contain any part of a noxious weed, or which comes from land on which noxious weeds grow' without a permit from DSE.

(Government of Victoria 1994).

Recent amendments to the CaLP Act relevant to local government include restrictions relating to the sale and movement of weeds (Government of Victoria 2003). *The CaLP Amendment Act 2003* (Government of Victoria 2003), Section 71 (1) (b) states that 'A person must not…without a permit from the secretary –

(i) buy or offer to buy in Victoria; or

(ii) sell or offer to sell in Victoria; or

(iii) possess for the purpose of sale in Victoria; or

(iv) willfully bring or cause to be brought into Victoria; or

(v) transport within Victoria –'

any seed or part of a noxious weed capable of growing.'

(Government of Victoria 2003)

The recent amendments also restricts vehicle movement from land on to a road without first taking reasonable precautions to ensure that the vehicle is free from noxious weed material (Government of Victoria 2003). In addition, the minister now has powers to enact an Emergency declaration on a state prohibited weed.

Although powers of enforcement are invested in DSE, Council may play a role in identifying situations in which enforcement is required (Government of Victoria 2003). Council can also assist in enforcement through the prompt provision of property details to DSE.

2.2.2.2 The Flora and Fauna Guarantee Act 1988

The *Flora and Fauna Guarantee Act 1988* has numerous objectives aimed at protecting flora and fauna in the state. One of these is 'to manage potentially threatening processes'. Listed under Schedule 3 as a threatening process is the 'invasion of native vegetation by environmental weeds (Parliament of Victoria 2000).'

2.2.2.3 The Environment Protection Act 1970

Under the *Environment Protection Act 1970* local councils can impose fines for littering or dumping of rubbish. This is applicable to the dumping of garden waste that may contain noxious weed seeds or propagules. Recent amendments to the *Environment Protection Act 1970* ensure that enforcement powers of all litter enforcement officers are consistent across local and state organizations. Hence, Banyule Council litter enforcement officers have the same powers of enforcement as the overseeing body, the Environment Protection Authority (EPA).

2.2.2.4 Planning and Environment Act 1987

The *Planning and Environment Act 1987* empowers the Minister responsible for planning to delegate responsibility for Municipal Planning Schemes to the municipal councils. Council is responsible for setting the municipality's land use and development policies through the Planning Scheme, as well as establishing specific regulations for particular areas and types of development. For example, council can issue a permit making weed removal mandatory as part of a development project. Council can also stipulate that no environmental weeds are planted.

2.2.2.5 Other State Legislation

Legislation which may have relevance in particular circumstances include the:

- *Conservation, Forest and Lands Act 1987*: provides for landholders to enter into 'Land Management Cooperative Agreements', that are voluntary, cooperative conservation agreements. The Act provides for issuing of legally binding instruments linked to statutory planning schemes and commonly include an agreement on weed management.

- *Crown Land (Reserves) Act 1978*: frames legislative responsibilities for Crown Land and the establishment and responsibilities of Committees of Management for Crown Land.

2.2.3 Local Government

2.2.3.1 The *Local Government Act 1989* and Council local laws

The *Local Government Act 1989* (LGA) Section 111 provides the power for local governments to make local laws to enforce the control of weeds within their municipalities. These local laws must not be inconsistent with, nor duplicate other existing legislation.

Some local governments have enacted local laws for enforcement of declared weed control on small private rural or urban properties that are not under the focus of DSE enforcement activities. However, local laws may be challenged in court.

There are currently no local laws directly regarding weed control responsibilities in the City of Banyule.

However, local government is empowered to enforce control of vegetation that poses a fire hazard. In the interest of public safety, Banyule Council states that private properties must be free from fire hazards such as long grass, weeds, or other combustible material. Banyule Council may clear fire hazards at the owner's expense. Council is empowered under Section 225 of the *Local Government Act 1989* to undertake and recover costs to reduce fire risk.

Table 1. *Summary of legislation and corresponding government level.*

Government Level	Legislation
Commonwealth	*Environment Protection and Biodiversity Conservation Act 1999*
	Wildlife Protection (Regulations and Imports and Exports) Act 1982
	Biological Control Act 1984
	Natural Heritage Trust Act 1997
	Quarantine Act 1908
State	*Catchment and Land Protection Act 1994*
	Flora and Fauna Guarantee Act 1988
	Conservation, Forest and Lands Act 1987
	Crown Land (Reserves) Act 1978
	Local Government Act 1989
	Planning and Environment Act 1987
	Environment Protection Act 1970
Local	*Local Government Act 1989*

2.3 Legislative Responsibility According to Land Type

The legislative responsibility of landowners in the City of Banyule differs according to land type. There are multiple land types within the City including council managed, private, public, state, and crown managed land. Crown land, for example, differs in regards to responsible agents for weed control in several scenarios. Crown land can be in the hands of management committees, councils, or have no designated

responsible land manager. Cherry Street Grasslands until recently was an example of the latter. Weed control differs also according to the type of weed extent (as defined by the CaLP Act) on the differing land types. A good example is roadside weed control, in which adjacent landowners are responsible for Regionally Controlled Weeds, and DSE for all other types of weeds.

Legislative responsibility at the local governmental level is generally a composite of all national, state, and local government legislation, policies, and strategies. Local council is expected to follow national and state weed control strategies. In the majority of cases, implementation is intended at the local municipal level. The challenge of a weed strategy is in interpreting, in a coherent manner, a composite of all these government policies and how it relates to local government and landowners at the municipality level. Below is a discussion of the most relevant legislation, policy and strategy in regards to differing weed control responsibilities by different landowners.

2.3.1 Rail Reserves

VicTrack is the responsible authority for the maintenance of railway reserves. Under the CaLP Act, VicTrack has sole responsibility for the control of Regionally Prohibited and Regionally Controlled Weeds in railway reserves. DSE is responsible for the control of State Prohibited Weeds in all rail reserve land (Government of Victoria 1994; Tenni & Faithfull 1998).

2.3.2 Private Land

Landowners are responsible for controlling Regionally Prohibited Weeds on their land but DSE are responsible for any Regionally Prohibited Weeds on adjoining roadsides.

2.3.3 Council Land

Council is responsible for the control of Regionally Prohibited and Regionally Controlled Weeds on all Council managed or owned land. DSE is responsible for the control of State Prohibited Weeds in all public or council-owned land.

2.3.4 Crown Land

Under the Crown Land (Reserves) Act public authorities are responsible for the control of Regionally Prohibited and Regionally Controlled Weeds on Crown lands. Responsibility for weed control predominantly resides in established Committees of Management (COM). For example, La Trobe University has a Committee of Management for Gresswell Forest and the Campus Wildlife Reserves, as will the Cherry Street Grasslands in the near future. Councils also fill the role as Committee of Management for Crown land in the municipality and is responsible for the control of Regionally Prohibited and Regionally Controlled Weeds. DSE is responsible for the control of all State Prohibited Weeds on all Crown Land.

2.3.5 Waterways

Melbourne Water is responsible for the control of Regionally Prohibited and Regionally Controlled Weeds along river banks and river beds within public land. Council is responsible for the control of Regionally Prohibited and Controlled Weeds in most other areas along waterways. Councils commonly own freehold land and hence are responsible for the latter two types of weeds as defined in the CaLP Act. Private landowners are responsible for Regionally Prohibited and Controlled Weeds along waterways within private property boundaries. DSE is responsible for the control of State Prohibited Weeds in all areas.

2.3.6 DSE Flora and Fauna Reserves, Historic Reserves, State Parks and National Parks

DSE is responsible for all CaLP Act weed categories on DSE land.

2.3.7 Roadsides

VicRoads is responsible for road and roadside maintenance on declared roads in Victoria. DSE is responsible for control of State Prohibited and Regionally Prohibited Weeds on undeclared roads in Victoria. Adjacent landowners are responsible for the control of Regionally Controlled Weeds on undeclared roads. Regionally Prohibited Weeds on roadsides are the responsibility of VicRoads, Council, or DSE, depending on the class of road (refer Table 1). Landowners are responsible for taking all reasonable steps to control and prevent the spread of Regionally Controlled Weeds on roadsides adjoining their property (Faithfull 1999). Roadside is defined under the CaLP Act as:

1. 'If the road is sealed, formed or graded, the area between the made surface and the boundary of the land adjoining the road'; or

2. 'in the case of an unmade road on land alienated in fee simple by the Crown or Crown land occupied under a lease or license the land so alienated or occupied'; or

3. 'in the case of an unmade road on Crown land not occupied under a lease or license, the half width of the road.'

The responsibility for roadside weed control under the CaLP Act is determined by whether the road is a declared or undeclared road, and whether infestations are of State Prohibited or Regionally Controlled weed species (ENRC 1998). On undeclared roadsides, noxious weed and pest animal control is the shared responsibility of DSE and adjoining landowners (Table 1). DSE is responsible for overseeing and issuing permits in respect to management of native roadside vegetation whilst local government has primary responsibility for road maintenance (ENRC 1998).

Table 1. Responsibility for weed management according to type of road category.

Type of Road	State Prohibited Weeds	Regionally Prohibited Weeds	Regionally Controlled Weeds
Freeways, Highways, Tourist Roads	DSE	VicRoads	VicRoads

Type of Road	State Prohibited Weeds	Regionally Prohibited Weeds	Regionally Controlled Weeds
Some Tourist Roads	DSE	Municipality (as VicRoads agent)	Municipality (as VicRoads agent)
Main Roads	DSE	Municipality (as VicRoads agent)	Municipality (as VicRoads agent)
Some Main Roads	DSE	VicRoads	VicRoads
Undeclared	DSE	DSE	Adjoining Land Owner

From *ENRC 1998*

Table 2. *Summary of responsibility for weed management of weed categories according to land type.*

Type of Land	Owners/Managers	Weeds	Locality Example
Rail Reserves	VicTrack (Connex)	RP and RC	Hurstbridge Rail Reserve
Crown Land	La Trobe University	RP and RC	La Trobe University
-	Department of Defence	RP and RC	Simpson Army Barracks
-	Council as COM*	RP and RC	Harry Pottage Reserve (South)
-	Committees of Management	RP and RC	Cherry Street Grasslands
-	DSE	SP	La Trobe University
Waterways	Banyule Council	RP and RC	Darebin Creek
- river banks and beds	Melbourne Water	RP and RC	Plenty River
- all waterway land	DSE	SP	Darebin Creek
Public land	Council	RP and RC	Banyule Flats
Private Land	Landowners	RP and RC	Special Use Zone - Agricultural land in south-east corner of Banyule.
Undeclared Roads	DSE	SP and RP	Sherbourne Road (RDZ2)
-	Landowner	RC	Sherbourne Road (RDZ2)
Declared Roads	VicRoads	RP and RC	Lower Plenty Road (RDZ1)
-	DSE	SP	Lower Plenty Road (RDZ1)
All Land	DSE	SP	City of Banyule

SP = State Prohibited Weeds; RP = Regionally Prohibited Weeds; RC = Regionally Controlled Weeds.
*Committees of Management

2.4 Policy and Strategy

Local government policies must attempt to satisfy and hence incorporate recommendations given in state and national governmental weed management policies and strategies. Local policies and strategies should be viewed as an important source of guidance on weed management in the municipality.

2.4.1 National

The overarching policy framework at the national level in Australia is ***The National Weeds Strategy*** (NWS) of 1997. This policy was endorsed by the Australian and New Zealand Environment and Conservation Council (ANZECC), the Ministerial Council on Forestry, Fisheries and Aquaculture (MCFFA), and the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) in 1997. A revised edition was published in 1999 (Commonwealth of Australia 1999). This document describes the weed management problem currently facing Australia, discussing why existing weed management measures are inadequate, and detailing government, community, landowners and land users roles and responsibilities. An important aspect of the NWS has been designating 20 Weeds Of National Significance in a scientifically based list (Williams and West 2000). The NWS requires that effective regulations are developed and implemented at the state, territory, and local government levels to control the spread of weeds. The strategy also recognizes the need for land managers and users, in combination with commercial plant nurseries, to adopt procedures to prevent the spread of weeds (Commonwealth of Australia 1999; ENRC 1998).

According to *The National Weeds Strategy* (Commonwealth of Australia 1999) local governments have a role to:

- assist with data collection and information exchange;
- assist with the coordination of community weed management programs;
- act as a community advocate on weed issues;
- support the activities of local self-help groups to undertake weed management activities;
- develop and apply local weed management strategies;
- exercise statutory responsibilities to encourage responsible weed management; and
- manage weed problems on their own land responsibly, in cooperation with other land owners (Commonwealth of Australia 1999).'

Local Government (via the Victorian State Government) is also a signatory to two other strategies relevant to weed control. These are the ***National Strategy for the Conservation of Australia's Biological Diversity*** (NSCABD 1995) and the ***National Strategy for Ecologically Sustainable Development*** (NSESD 1992). The most relevant objective of the NSCABD strategy to weed control is to:

3.3 Control the introduction and spread of alien species and genetically modified organisms and manage the deliberate spread of native species outside their historically natural range.

The strategy also promotes the development and implementation of well-resourced programs to:

3.3.2 (d) ensure effectiveness and consistency of regulations governing the control of alien species, including their deliberate or unintended release or spread;

And:

3.3.2 (e) develop contingency plans and have the capacity to ensure rapid eradication of any newly established and unwanted alien species or populations.

The *National Strategy for Ecological Sustainable Development* requires that signatories:

- develop effective mechanism for minimizing weed impacts on ecological systems; and
- reduce existing impacts so that nature conservation values are maintained and enhanced.

2.4.2 State Policy

2.4.2.1 Victorian Pest Management Framework

The *Victorian Pest Management Framework* (VPMF) was developed by DSE to manage Victoria's weed problems, and has been applied to the development of Weed Action Plans (Faithfull 1999). The VPMF policy is intended to 'decrease the impact of established pests on natural and productive resources…and increase community capacity to successfully respond to new and existing pest problems (DNRE 2002a).' Funding for administrative support and assistance in implementation of strategic actions is provided by DSE (VCMC 2003).

Victorian Pest Management–A Framework for Action: Weed Management (DNRE 2002b) is a specific strategy for weed control and management. This document delegates only the control of weeds on public land as a 'key responsibility' of local government. However, the document does recommend that a role of local government in weed management be through

'rate incentives and planning controls in encouraging sustainable weed management'

and as a partner in numerous 'Strategic Actions (DNRE 2002b).'

2.4.2.2 Port Phillip and Westernport Weed Action Plan

Under the CaLP Act, it is required that each Regional Catchment Management Authority develops a Weed Action Plan. The Port Phillip and Westernport Weed Action Plan (PPWCMA 2003) states that the vision for the management of weeds in Victoria is: "Weeds no longer threaten the State's natural assets, its social values and productive capacity of its land and waters".

In regards to local government reviewing or preparing the local planning scheme, the VPMF states that "due regard must be given to relevant aspects of regional catchment strategies and any associated implementation plan or strategy approved under the CaLP Act" (DNRE 2002a).

The Action Plan recognizes 3 **Priority Weed** categories:

- **New and Emerging Weeds:** "New" weeds species do not occur in the region at present but potentially may be introduced leading to 'significant impacts on productive and/or natural systems'. "Emerging" weeds are those assessed as threatening that have been found in the region but only in isolated instances or in small areas and have not become widely established.

- **High Priority Established Weeds:** are established and in some cases widespread in the region with eradication considered generally not feasible. Infestations and impacts of these species should be reduced and contained through the adoption of best management practices by land managers.

- **Other Established Weeds:** occur commonly in the region and which are not considered feasible to eradicate. "Therefore, the goal is to contain and reduce the impacts of these species through adoption of best management practices by land managers".

(PPWCMA 2003)

The Action Plan states specific management goals for these categories:

- **New and Emerging Weeds and Rapid Response Plans:** Through the use of integrated and complementary actions including the Rapid Response Plans prevent the introduction of "new" weeds into the region and eradicate the existent infestations of '"emerging" weeds. Rapid Response Plans are key documents developed for each "new" and "emerging" weed species. The plans outline the specific procedures to be followed and/or sites to be dealt with so that the weed is prevented from entering the region or is rapidly eradicated when identified.

- **High Priority Established Weeds and Species Specific Action Plans:** Through the use of integrated and complementary actions including the development of Species Specific Action Plans all land owners to adopt best management practices to contain and reduce the infestations and impacts of High Priority Established Weeds. Species Specific Action Plans are key documents that will be developed for each high priority established weed species. They contain detailed and specific information on the extent and severity of infestations, define geographic priority areas and outline the specific actions to be undertaken. The priorities and actions contained in Species Specific Action Plans over-ride the broader Port Phillip and Westernport Weed Action Plan.

- **Other Established Weeds:** Through the use of integrated and complementary actions including the development of Species Specific Action Plans all land owners to adopt best management practices to contain and reduce the infestations and impacts of these species.

(PPWCMA 2003)

Categorical prioritisation determines the different levels of State Government (e.g. DSE) involvement and responsibility, but should also be considered by other landowners, including Banyule City Council. Incentives for landowners to control weeds listed under these categories is through State Government grant schemes such as the *Second Generation Landcare Grants Program*. In addition, the *Victorian Weeds Initiative Program* focuses on research and education on species listed under the Action Plan (PPWCMA 2003).

The plan states that all public and private land managers are expected to:

- Develop property management plans that incorporate and deliver weed management outcomes, eg Whole Farm Plans, Environmental Management Systems, Weed Management Plans.

- Undertake best management practice weed control programs to achieve and maintain an acceptable level of condition of their land.

- Ensure that weeds from their land do not impact on other land.

- Inspect land and promptly notify relevant contacts when a 'new' or 'emerging' weed species is detected.

- Assist government departments to control and monitor infestations' of 'new' and 'emerging' weeds.

- As part of a local group or community, take part in projects that will deliver long-term outcomes for high priority established weed control and other land management issues.

The plan states that all public land managers are:

- Expected to provide educational information to visitors to reduce the risk of spread of 'high priority established' and 'other established' weeds on to and from their land.

- Encouraged to utilise the internet-based Integrated Pest Management System (when the system becomes available) for reporting data on the occurrence of all weed species.

The plan expects local government to undertake the following actions:

- Implement initiatives to increase the community's awareness of 'new' and 'emerging' weed species and their management.

- Where appropriate incorporate the department's extension/education messages into their own initiatives for management of 'high priority established' weeds.

- Investigate potential incentive mechanisms (eg rate rebates) for management of 'high priority established' and 'other established' weeds.

- Where appropriate develop local laws to complement weed control programs for 'high priority established' and 'other established' weeds.

- 'Where possible provide relevant information through their communication networks for management of 'other established' weeds.

- Where appropriate undertake local trials for the management of 'other established' weeds.

2.4.2.3 Principles for Cost Sharing

The document "*Managing Victoria's Catchment – Partnerships in Action*" (DCNR 1998) sets Cost-Sharing arrangement guidelines for weed management. The following three principles should determine possible cost sharing arrangements:

1. Under the **duty of care** principle, private landowners and public land managers have a duty of care to ensure that no damage occurs to the land. Owners and managers are expected to meet the costs of weed control to ensure an acceptable level of condition of their land and that there are no weed impacts on adjoining land. Any costs of repairing damage to the land resulting from activities of people using the land must be met by those people.

2. Under the **Private benefit** principle 'people or organizations that use the land are expected to pay for activities that provide them with a private benefit.' For example, if weed control will provide an increase in income for a landowner, then the landowner is expected to meet the cost of the work.'

3. Under the **public benefit** principle, it is expected Government contributes to the costs of activities producing public or community benefit or where there is market failure. The activity must be technically sound, and the environmental, economic and social benefits must justify the costs for Government investment to be made. Where these activities are important components of sustainable resource management the Government will meet the costs of investigation, assessment, monitoring, planning, and research.

Multiple parties responsible for weed control in relevant areas must agree to Cost-Sharing arrangements. Cost-sharing agreements would be most applicable to land types with complicated tenures and multiple responsible agencies such as along waterways, roadsides, and some public lands.

2.4.3 Local government: Banyule City Council Policy

Local government has an important role to play in natural resource management as it has relatively broad powers in relation to environmental control, protection and conservation, as well as being a land manager. Local government, through the local planning scheme, determines the appropriate use and development of land. In preparing or reviewing the scheme, due regard must be given to relevant legislation, aspects and associated plans or strategies called for under the *Catchment and Land Protection Act 1994*. Statutory planning provides an essential framework for future sustainable regional development.

Banyule's Environmental Strategy (2003a) has relevant objectives regarding the natural environment, which relate to weed management within in the municipality. Specific objectives are:

- 'to ensure the diversity of Banyule's indigenous flora and fauna is conserved'

- 'to enhance Banyule's natural environment as habitat for indigenous wildlife and provide for its ecological sustainability'

- 'to recognise the value of waterways and wetlands as major assets of Banyule's environment and to protect and enhance their natural amenity'

- 'to manage Banyule's parks and reserves as major assets of our community and for the benefit of our natural environment'.

The following are key actions regarding weed control from Council's Environment Strategy (2003a), as well as the State of the Environment Report 2003 (2003b):

- To 'develop a weed management strategy for the entire municipality in co-operation with landholders and relevant agencies identifying priority weeds and areas for control.'

- 'Liaise with relevant public authorities such as Melbourne Water, VicRoads and VicRail to encourage the removal of environmental weeds from land under their control.'

- 'Protect significant habitat by targeting potentially invasive weeds for removal from surrounding areas and encouraging the cooperation of adjoining landholders in their control.'

- 'Encourage the whole community to be involved in the eradication of environmental weeds through information and incentives.'

- 'Maintain detailed records of habitat rehabilitation and weed eradication works, so that the most effective methods can be identified and utilized in similar situations elsewhere.'

- 'Develop guidelines and controls for the minimisation of soil disturbance, relocation of soil and the retention of topsoil in areas supporting indigenous vegetation.'

- 'Develop and implement programs for the control of weeds and re-establishment of the indigenous vegetation of waterways and wetlands.'

- 'Continue programs for the removal of existing environmental weeds along waterways and controlling their spread.'

- 'Seek the cooperation and involvement of private landowners, DSE, Parks Victoria and Melbourne Water in the development and implementation of a long-term strategy for the weeding and revegetation with indigenous species of degraded areas of the riparian strip of all waterways in Banyule.'

- 'Ensure that the policy against the planting of environmental weed species within parks and reserves is implemented and that updates on environmental weeds provided by DNRE are included in the policy.

- 'Implement the weed management strategy for the entire municipality in co-operation with landholders and relevant agencies.'

There are also recommended measures for weed management in the *Banyule Wildlife Corridor Program* (Brown 2000) under Actions 3, 9, and 14. Action 9 recommends programs targeting the control of specific environmental weeds.

In addition to the above, Banyule's City Plan 2004 – 2008 has goals that relate to weed control within the municipality. Council plans, to 'protect, maintain and enhance indigenous flora, fauna and wildlife habitat' and protect and enhance our waterways. wetlands, parks and reserves' (Banyule City Council 2004).

2.5 Legislation and Policy Summary

The primary legislation determining responsibilities for weed control is the *Catchment and Land Protection Act 1994*. This act determines which authorities are responsible for which weed categories on different land types. The City of Banyule can be divided into numerous land types. These are rail reserves, private land, council/public land, crown land, waterways, roadsides, and DSE land, according to responsibility for weed control. Entities responsible for weed control in the City of Banyule include Banyule Council, DSE, private landowners, VicTrack, VicRoads, Darebin Creek Management Committee Inc., Committees of Management, Department of Defence, Department of Housing, and La Trobe University. As a general rule, legislation states that all parties are responsible for weed control on land they own or manage as Committees of Management. The main exception is State Prohibited Weeds which are the responsibility of DSE.

***Table 3**. Summary of Weed Control Responsibilities According to Weed Status and Land Managers/Owners in the City of Banyule.*

Weed Status	DSE	VicRoads	Municipality	Landowner	VicTrack
State Prohibited Weeds	All Areas	-	-	-	-
Regionally Prohibited Weeds	Undeclared Roads Public Land	Freeways Highways Main Roads Tourist Roads	Main Roads* Tourist Roads* Public Land	Private Land	Rail Reserves
Regionally Controlled Weeds	Public Land	Freeways Highways Main Roads Tourist Roads	Main Roads* Tourist Roads* Public land	Private Land Undeclared Roads	Rail Reserves
Environmental Weeds	Public Land	Freeways Highways Main Roads Tourist Roads	Main Roads* Tourist Roads* Public land	Private Land Undeclared Roads	Rail Reserves

* Municipality as VicRoads Agent

Enforcement provisions are contained in the *Catchment and Land Protection Act 1994* (CaLP Act), the *Environment Protection Act 1970*, the *Planning and Environment Act 1987* and the *Local Government Act 1989*. The *Planning and Environment Act 1987* provides powers of weed control enforcement to prevent spread through dumping of weed propagules and through Planning Scheme and Planning Permit provisions. The *Local Government Act 1989* Section 111 also makes provisions for Banyule Council to make local laws enforcing weed control.

Council has the legislative responsibility to control weeds on land Council owns or manages as Committee of Management under the CaLP Act. For example, Council is responsible for the control of Regionally Controlled and Regionally Prohibited categories on declared roads for which VicRoads have contracted responsibilities.

Local government must consider both Commonwealth and State Policy when determining actions for weed control in the municipality. The *National Weed Strategy 1997* states that local government plays a key role in weed control, including collecting and exchanging weed information, coordination of community weed programs, developing local weed management strategies, managing weed problems in cooperation with other landowners, and exercising statutory responsibilities to encourage responsible weed management.

National and State government policies and strategies dictate that Council has responsibility for supporting community weed control efforts, educating other landowners on their weed control responsibilities and encouraging the implementation of these responsibilities. Council also has policies that recommend supporting community weed control efforts.

The *Port Phillip and Westernport Weed Action Plan* (PPWCMA 2003) emphasises the prevention of 'new' weed species entering the region, the eradication of 'emerging' species within the region and the adoption of best management practices by all land owners to contain and reduce infestations and impacts of "high priority established' and 'other established' weeds. The CaLP Act 1994 states that Council has a responsibility for ensuring that new noxious weed species do not establish in the municipality and for reducing the impact of established regional priority weeds.

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Banyule Weed Management Strategy: Part 2

August 2005

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For Banyule City Council

Banyule
CITY COUNCIL

Contents

1. PART 2: REVIEWING THE WEED PROBLEM AND DETERMINING WEED MANAGEMENT PRIORITIES IN THE CITY OF BANYULE

1.1 Introduction

This document identifies priority weed species and reviews ecological factors important to weed management in the municipality. This will ensure the correct prioritization of actions in Part 3 of this report.

Information is sourced primarily from land management documents, particularly previous surveys of reserves in the municipality. The concentration on council reserves serves to highlight those species of weeds most frequently invading indigenous vegetation and hence constituting a high threat to biodiversity values in the City of Banyule.

The data collected has been summarized and presented in a way that demonstrates major weed species in reserves and indigenous vegetation within the municipality. On deciding which weeds were of high priority in the City of Banyule the following information was considered:

- frequency of weed species occurrence in reserves;
- expert evidence from weed managers;;
- nominated rating of 'risk' to indigenous vegetation (sourced from Carr *et. al.* 1992);
- weed species state legislative and regional policy status; and
- dispersal by water and animals.

The prioritization of weed species mostly relates to the impacts on indigenous vegetation in public open space, as rural agricultural land is of minimal extent in the City of Banyule. The invasion of environmental weeds into public open space, including reserves supporting indigenous vegetation, from adjoining private properties is expected to be the major problem in weed control management. Moreover, private urban blocks not adjoining open space, yet supporting weeds capable of being dispersed long distances by animals (particularly birds), are expected to be major sources of weeds invading open space. The dumping of garden refuse in open space areas and poor maintenance of private urban blocks is also predicted to be a major source of weed infestation. Spreading of weed materials on vehicles and machinery is also of concern. Other processes such as nutrient enrichment, disturbance, and erosion facilitate the establishment and persistence of weed infestations.

1.2 Definitions

The term *weed* is broadly applied to mean an *undesirable plant*. A plant may be desirable in one setting but not in another. For example, Kikuyu *(Pennisetum clandestinum)* is a highly desirable lawn and turf grass but because it vigorously outcompetes other ground-flora, it is highly undesirable in natural and semi-natural areas.

Noxious weeds are plants that have a legal status as pest plants. Governments declare plants *noxious* for economic, social and environmental reasons. In Victoria, plants are declared noxious under the *Catchment and Land Protection Act 1994*.

Environmental weeds are plants that invade semi-natural and natural areas. Any non-indigenous plant that establishes within a local ecosystem to the detriment of the indigenous flora and fauna is considered an environmental weed (Muyt, 2001).

1.3 Weeds in Banyule

Banyule Council has reported that 150 exotic flora species are established within the municipality (Banyule City Council 2003b; Brown 1995a). This is a substantial number, considering that Beardsell (2000) confirmed 401 indigenous flora species occurred naturally in the City of Banyule and its immediate vicinity. The main sources of environmental weeds are residential gardens, agricultural production, and the dumping of garden refuse in bushland areas (Banyule City Council 2003a). The dispersal of weeds by water, wind, animals and human movement of weed vegetative material and topsoil are also major sources of spread.

Beardsell (1996) notes that the few remnants of Grassy Wetland communities along the Plenty River Flats and creek floodplains (such as the headwaters of Banyule Creek) are heavily dominated by exotic grasses such as Paspalum *Paspalum dilatatum*, Cocksfoot *Dactylis glomerata*, Brown-top Bent *Agrostis capillaris,* and Toowomba Canary-grass *Phalaris aquatica*. He also notes Blackberry *Rubus fruticosus* spp. agg. infestations in house-block frontages of the Plenty River. The Friends of Darebin Creek note in a newsletter the spread of Patterson's Curse *Echium plantagineum*, a listed noxious weed, along Darebin Creek (Friends of Darebin Creek 2003).

Degraded creeks and drainage lines are a major source of weeds in the municipality. Beardsell (1996) noted the extent of this, citing the pollution and degradation of Banyule Creek: 'the water is mostly polluted urban runoff and the creek is overgrown with weeds, promoted by nutrient enrichment. It has low biological and aesthetic values and appears and functions as a drain (Beardsell 1996).' Similarly, weeds dominate along the length of Sweetwater Creek (a tributary of Plenty River), presenting a significant threat to the viability of extant indigenous vegetation and being a source of weeds (including Bridal Creeper *Asparagus asparagoides* and Wandering Tradescantia *Tradescantia fluminensis* for the connecting Plenty River. Beardsell (1996) also noted the serious weed infestations of the Yarra River and corresponding floodplain. In particular, Banyule Billabong and the adjacent Yarra River have been heavily modified and invaded by weeds. Infestations of the significant weed, Chilean Needle-grass *Nassella neesiana*, in conjunction with a host of other threatening weeds were found to be present around Banyule Swamp and along Banyule Creek and the adjoining slopes' (Beardsell 1996).

Beardsell (1996) also identified the most serious weeds in Simpsons Barracks. Weed species included Hawthorn *Crataegus monogyna*, Montpellier Broom *Genista monspessulana*, Bulbil Watsonia *Watsonia meriana* var. *bulbillifera*, Cleavers *Galium aparine*, Wandering Tradescantia *Tradescantia fluminensis*, Paspalum *Paspalum dilatatum*, Kikuyu *Pennisetum clandestinum*, Blue Periwinkle *Vinca major*, English Ivy *Hedera helix*, and Blackberry *Rubus fruiticosus* spp. agg. along the creekline. He also noted that Panic Veldt-grass *Ehrharta erecta*, Cocksfoot *Dactylis glomerata*, Sweet Vernal-grass *Anthoxanthum odoratum*, and Yorkshire Fog *Holcus lanatus* infestations were distributed throughout grasslands, sheltered slopes and wetland areas in the Simpsons Barracks (Beardsell 1996). The Army has targeted Desert Ash *Fraxinus angustifolia* and Paterson's Curse *Echium plantagineum* (Beardsell 1996).

Weed infestations are also present along the Hurstbridge Rail Line. Weed species include St Johns Wort, *Hypericum perforatum*, Fennel *Foeniculum vulgare*, Blackberry *Rubus fruiticosus* spp. agg., and Yorkshire Fog *Holcus lanatus*. These infestations are significant because the rail line dissects the whole municipality and functions as a corridor through which weed species can spread.

Weed invasion threatens numerous biological values in the municipality including flora, fauna, and water quality. For example, weed infestations threaten the Eltham Copper Butterfly, listed as Vulnerable under the ***Flora and Fauna Guarantee Act 1988***, in Andrew Yandell Reserve, Greensborough (Vaughan 1988; Vidler 2003). Weed species threatening the Eltham Copper Butterfly's indigenous habitat include Montpellier Broom *Genista monspessulana* and Large Quaking-grass *Briza maxima* (Robinson and Carmichael 1993; Vaughan 1988). In addition, the only population of the indigenous Feather Spear-grass *Austrostipa elegantissima* in the municipality, a species uncommon south of the Great Dividing Range, is recorded along a road cutting of Lower Heidelberg Road. This species is threatened by weed invasion, predominantly by a garden escapee of Prickly Pear *Opuntia* sp.

Weed invasion is recognised by Belcher et al. (1991) as the most significant management problem concerning the indigenous vegetation of the area. They identify woody weeds such as Willows *Salix spp.*, Desert Ash *Fraxinus angustifolia* and Boxthorn *Lycium ferocissimum* and certain herbaceous weeds such as Wandering Tradescantia *Tradescantia fluminensis* and Fennel *Foeniculum vulgare* as major threats to remnant vegetation.

1.4 Methodology for Prioritising Weed Species

An exotic species list for the City of Banyule was compiled using previous studies of public land supporting indigenous vegetation, with additional weedy exotic species sourced from Brown (1995a), Muyt (Adam Muyt pers. comm) and Banyule Council staff. In addition, information on dispersal by water and/or animal vectors, weed Risk Rating (Carr *et al.* 1992), state legislative and regional policy status was also recorded for each species where available.

This data was used to prioritise weed species for recommended actions in Part 3 of this document. Weed priorities in the municipality were determined using:

- A Ranking System
- Expert opinion

The Ranking System was based on the number of study sites each exotic species was recorded being present in, expert opinion, and the species' designated Risk Rating (Carr *et. al.* 1992). The Rank Score of each species is equal to:

- Number of information sources (Number between 0-9) + Risk Rating (Number between 1 and 4)

This Ranking System therefore combines the frequency of weed species across sites supporting indigenous vegetation with the level of threat it presents in displacing that vegetation.

Although this ranking system gives an indication of priority weeds, it is insufficient by itself. As a result, expert opinion on current weed species priorities and distribution has also been utilized to prioritise weed species. A list of environment weeds, combining species designated as priorities by the Ranking System and expert opinion, has been produced. These designated priority species are termed **Banyule Priority** weeds, representing species considered of greatest threat to biodiversity values in the municipality (Appendix 1).

Current legislative status under the *Catchment and Land Protection Act 1994* (CaLP Act 1994) was sourced from DSE (Leigh Dennis pers comm.). Regional priority status of weed species is sourced from the *Port Phillip and Westernport Weed Action Plan* (PPWCMA 2003). All species names are according to Ross & Walsh (2003).

1.5 Results

This study found 240 naturalised exotic species recorded in the municipality. This figure represents a relatively high proportion of the naturalised exotic flora recorded in Victoria and a very high proportion of all flora species recorded in the municipality (Table 1).

In addition, over half the flora is dispersed by animals and a similarly large percentage of flora are dispersed by water. This represents a high percentage of weed species recorded in the municipality and should be considered when formulating weed management actions. However, its use for prioritising weed species is questionable as this variable only distinguishes approximately half of the flora recorded.

Table 1. *Exotic flora statistics for the City of Banyule.*

Category	Statistic
Total number of naturalised exotic flora in Victoria*	1190
Number of naturalised exotic flora in Banyule	240
Percentage of Victorian naturalised exotic flora	20%
Percentage of total flora in Banyule	37%
Number of flora species dispersed by water	118
Number of flora species dispersed by animals	140

*Sourced from Vitousek *et al.* 1997

1.5.1 Noxious Weed Species

Twenty-five noxious weed species requiring control under legislation were recorded in the City of Banyule. The majority of these species are listed as Regionally Controlled with two species listed Regionally Prohibited under the CaLP Act 1994. Noxious weeds comprise 10.5% of all exotic flora in the municipality, or in other words, about one in ten exotic species is a Noxious weed (Refer Table 2 and Table 3).

Landowners are required by legislation to control Regionally Prohibited and Regionally Controlled weeds on their land.

***Table 2**. Species recorded in Banyule with legislative status under the* CaLP Act 1994*.*

Legislative Status	Species Name	Common Name
Regionally Prohibited	*Marrubium vulgare*	Horehound
	Xanthium spinosum	Bathurst Burr
Regionally Controlled	*Allium triquetrum*	Angled Onion/Three-cornered Garlic
	Carduus tenuiflorus	Slender Thistle
	Carthamus lanatus	Saffron Thistle
	Chrysanthemoides monilifera	Boneseed/Bitou Bush
	Cirsium vulgare	Spear Thistle
	Conium maculatum	Hemlock
	Crataegus monogyna	Hawthorn
	Cynara cardunculus	Spanish Artichoke
	Cytisus scoparius	English Broom
	Dittrichia graveolens	Stinkweed
	Echium plantagineum	Patersons Curse
	Foeniculum vulgare	Fennel
	Genista linifolia	Genista
	Genista monspessulana	Montpellier Broom
	Hypericum androsaemum	Tutsan
	Hypericum perforatum	St Johns Wort
	Lycium ferocissimum	African Box-thorn
	Nassella trichotoma	Serrated Tussock
	Rosa rubiginosa	Sweet Briar
	Rubus fruiticosus spp. agg.	Blackberry
	Silybum marianum	Variegated Thistle
	Ulex europaeus	Furze (Gorse)
	Watsonia meriana var. *bulbillifera*	Bulbil Watsonia

1.5.2 Regional Priority Weed Species

Five High Priority and 53 Other Established weed species were recorded in Banyule (Table 3). Regional weed priorities are determined by the regional Catchment Management Authority Board and are recommended for control measures by state departments and landowners in the Port Phillip and Westernport region. In this regard, landowners and particularly Council have a responsibility to control the weed species listed below and should consider these weed priorities in determining Council priorities.

***Table 3**. Species recorded in Banyule listed as Priority weeds under* The Port Philip and Westernport Weed Action Plan (PPWCMA 2003)

Regional Priority	Species name	Common name
HIGH PRIORITY ESTABLISHED WEEDS	*Asparagus asparagoides*	Bridal Creeper/Smilax
	Hypericum perforatum	St Johns Wort
	Nassella neesiana	Chilean Needle-grass
	Nassella trichotoma	Serrated Tussock
	Pittosporum undulatum	Sweet Pittosporum
OTHER ESTABLISHED WEEDS	*Acacia baileyana*	Cootamundra Wattle
	Acacia elata	Cedar Wattle
	Agrostis capillaris	Brown-top Bent
	Allium triquetrum	Angled Onion / Three-cornered Garlic
	Anthoxanthum odoratum	Sweet Vernal Grass
	Briza maxima	Large Quaking-grass
	Carduus pycnocephalus	Slender/Shore Thistle
	Carduus tenuiflorus	Slender Thistle
	Carthamus lanatus	Saffron Thistle
	Chrysanthemoides monilifera	Boneseed/Bitou Bush
	Cirsium vulgare	Spear Thistle
	Conium maculatum	Hemlock
	Cotoneaster spp.	Cotoneaster
	Crataegus monogyna	Hawthorn
	Cynara cardunculus	Artichoke Thistle
	Cyperus eragrostis	Drain Flat-sedge
	Cytisus scoparius	English Broom
	Delairea odorata	Cape Ivy
	Dittrichia graveolens	Stinkweed
	Echium plantagineum	Patersons Curse
	Ehrharta erecta	Panic Veldt Grass
	Erica lusitanica	Spanish Heath
	Foeniculum vulgare	Fennel
	Galenia pubescens	Blanket Weed
	Genista linifolia	Genista
	Genista monspessulana	Montpellier Broom
	Hedera helix	English Ivy
	Hypericum androsaemum	Tutsan
	Juncus articulatus	Jointed Rush
	Lonicera japonica	Japanese Honeysuckle
	Marrubium vulgare	Horehound
	Nassella hyalina	Fine Needle-grass
	Nassella leucotricha	Pale Needle-grass
	Opuntia monocantha	Drooping Prickly-pear
	Oxalis pes-caprae	Soursob
	Paspalum distichum	Water Couch
	Pennisetum clandestinum	Kikuyu
	Pinus radiata	Radiata pine
	Ranunculus repens	Creeping Buttercup
	Reseda luteola	Wild mignonette/Weld
	Rosa rubiginosa	Sweet Briar
	Rubus fruiticosus spp. agg.	Blackberry
	Salix alba	White Willow
	Salix fragilis	Basket Willow

Regional Priority	Species name	Common name
	Salix X rubens	Crack Willow
	Salpichroa origanifolia	Pampas Lily-of-the-valley
	Silybum marianum	Variegated Thistle
	Solanum pseudocapsicum	Madeira Winter-cherry
	Tradescantia fluminensis	Wandering Tradescantia
	Ulex europaeus	Furze (Gorse)
	Vinca major	Blue Periwinkle
	Watsonia meriana var. *bulbillifera*	Bulbil Watsonia
	Xanthium spinosum	Bathurst Burr

1.5.3 Banyule Priority Weeds

The combination of priority weeds designated by the Ranking System and expert opinion resulted in a list of 60 exotic flora species. The majority of these species are dispersed by animals and a large proportion are dispersed by water. This suggests that animal and water dispersed exotic flora are more likely to become invasive priority weeds, raising the relative threat these species pose to indigenous vegetation in the municipality (Loyn and French 1991; Table 4).

In addition, many of the flora listed as Banyule Priority weeds are also listed as Noxious and/or Regional Priority weeds (Appendix 1; Tables 2, 3, and 4). Therefore, many of the most frequent and highest threat weeds are also listed by the CaLP Act and the Port Phillip and Westernport Catchment and Land Protection Board as significant weeds. Overlap between State, Regional, and municipal weed priorities is desirable in allowing a greater number of responsibilities to be fulfilled with less resources and the legislative and policy tools for more effective weed management.

Table 4. *Statistics for designated Banyule Priority weed species.*

Category	Statistic
Total number of Banyule Priority species	60
Number of Banyule Priority species from Ranking System	20
Number of Banyule Priority species dispersed by water	24
Number of Banyule Priority species dispersed by animals	38

Any further prioritisation of weed species should be according to legislative, regional, dispersal, and land type status.

1.6 Important Ecological Factors to Consider in Prioritising Actions.

Weed invasion is generally the result of disruptions to natural ecosystem processes and hence, does not occur in isolation of other factors. Hence, weed management involves not only determining which weed

species to control but also the factors that drive weed invasion of indigenous vegetation and maintenance of existing infestations. Factors facilitating weed invasion include nutrient enrichment and pollution, soil profile disturbance, dispersal mechanisms, and input of weed propagules (Buchanan 1995).

Each of these factors must be considered in the development of either municipal-wide or site-specific weed control strategies (Rawling 1994). Hence, discussions and associated recommendations are intended to both explain and link this section of the strategy with the recommended weed management actions given in Part 3.

1.6.1 Weed Dispersal

Dispersal is important to consider when determining which species require ongoing targeted control, liaison with other authorities and the public, and the way in which weed control is structured through time and space. Weeds can be spread through the mechanisms of animals, water, and human mediated seed dispersal.

1.6.1.1 Water Dispersal

Riparian weed species such as Box Elder, Wandering Tradescantia, Willows, and Bridal Creeper are known to spread rapidly and suppress regeneration of native species and crowd out native groundcover species. These weed species have the ability to spread alternatively by broken vegetative material, or by floating seeds carried downstream by water currents, where they and establish on areas of bare substrate or low competition (Howell and Benson 2000).

The mechanism of water dispersal allows a weed species to spread large numbers of propagules long distances and at fast rates. In addition, density of weed propagules increases with distance downstream in a water catchment (Gabrielle Vivian-Smith pers. comm.). This results in very high densities of propagules towards lower sections of a catchment. Flood events further accentuate this process, increasing the number of propagules substantially and allowing spread further up the catchment slope and into adjacent floodplains. Weed seed also tends to move down the slope of the catchment, providing another source of propagules for downslope areas cleared of weeds.

Since it is the lower sections of the Plenty and Yarra Rivers that flow through the City of Banyule, it is estimated these rivers would have very high densities of weed propagules (Carr *et. al.* 1992; Howell and Benson 2000).

Considering these factors, weed control along waterways should endeavour to reduce the number of water dispersed weed propagules through:

- A long-term strategy involving agencies and municipalities along the upstream lengths of catchments;
- Revegetation with indigenous species of any areas cleared of exotic vegetation exposing bare substrates along river banks; and
- The staged removal of water dispersed species along waterways starting at the highest point of the catchment slope and the furthest upstream point of the waterway in the municipality. This should be

followed by successive removal down the slope of the catchment valley and downstream of the watercourse.

1.6.1.2 Animal Dispersal

Weed species with fleshy fruit capable of being dispersed by vertebrates can be dispersed considerable distances (Loyn and French 1991). For example, seeds of Sweet Pittosporum can be dispersed several kilometers, traversing the entire municipality, leading to costly infestations of significant indigenous vegetation. This highlights the possibility of rapid spread of new weed species through wildlife corridors, such as the Yarra River and Plenty River corridors. This emphasizes the importance of:

- Removal of animal dispersed weeds from private urban blocks;
- Animal-dispersed weeds as a priority in community education actions; and
- Inter-council collaboration.

1.6.1.3 Human Dispersal

Human facilitated movement of weed propagules is a major dispersal mechanism for weed species. Dispersal can be via vehicles, equipment, soil, vegetative material (including garden rubbish), and clothing (Carr *et al.* 1992). The extent to which humans are implicit has been shown by:

- research suggesting that people were responsible for 90% of noxious weed invasions, and
- people identified as the sole agent of spread for 21% of 233 noxious weeds during 1995

(Martin 2003)

Numerous activities are associated with the spread of weed propagules into new areas including illegal dumping of garden rubbish, the movement of soil containing seed between sites, contaminated vehicles through lack of hygiene standards when moving between sites, and the re-use of noxious, and environmental weed material in mulching and composting. These factors suggest that:

- correct hygiene standards for Council and Council contractors be developed and applied to all persons, vehicles and equipment;
- the movement of off-site soil be restricted in any works conducted in the municipality;
- noxious or environmental weed material be disposed of or appropriately treated to ensure destruction of all noxious and environmental weed material; and
- all material used in Council works be free of noxious and environmental weed propagules.

1.6.2 Pollution and Nutrient Enrichment

Nutrient enrichment has been well documented as facilitating weed invasion of indigenous vegetation communities. Pollution or nutrient enrichment may initially result in the death of indigenous vegetation and allow the later colonization by weed species, or alternatively give exotic vegetation a competitive advantage over indigenous species (Muyt 2001; Prober and Thiele 1995).

Pollution and nutrient enrichment is commonly associated with weed invasion of waterways and drainage lines. Pollution and excessive nutrients enter waterways from stormwater drains or as sewerage effluent. King and Buckney (2000) found that a general increase of nutrients in urban stream sediments enhanced exotic weed invasion. Similarly, Cronk and Fuller (1995) found that excessive mineral nutrients provide favourable conditions to the growth of invasive species. Nutrient enrichment tends to favour exotic species, which are generally mesic plants adapted to grow vigorously in nutrient-enriched conditions. In comparison, indigenous species are generally adapted to low nutrient conditions (Howell and Benson 2000).

These factors suggest that weed management should incorporate:

- a reduction in pollution and effluent inputs into waterways and drainage lines by council activities;
- a reduction in the use of fertilizers, pollutants or mineral nutrients in Council or Council-contracted activities;
- community education on the impacts of chemicals and other nutrient sources entering stormwater drains (e.g. chemicals used in washing cars) on indigenous vegetation; and
- prioritisation of weed control activities in areas that do not experience high nutrient or pollution inputs.

1.6.3 Habitat and Weeds

Weed invasion of indigenous vegetation reduces or alters food sources for indigenous fauna and alters the structure and function of native communities. In addition, it produces simplified landscapes unable to support many indigenous fauna, and in severe cases, results in the local extinction of fauna species. For example, weed invasion threatens habitat supporting the state vulnerable Eltham Copper Butterfly in the municipality (Carr *et al* 1992; Rawling 1994; Vaughan 1988).

However, many weed species do provide valuable habitat for indigenous fauna where no alternative indigenous habitat exists. For example, Blackberry *Rubus fruiticosus* spp. agg. thickets provide important habitat for small, ground foraging bird species, such as the Superb Fairy Wren and White-browed Scrubwren. Blackberry *Rubus fruiticosus* spp. agg. thickets are also recorded as offering protection to Wallabies from dogs and other predators, while large Pines (*Pinus radiata*) are known to be favoured roosts of Powerful Owls. In areas where most indigenous habitat has been drastically altered or removed, weeds therefore may provide critical habitat for indigenous fauna (Low 2002; Robert Taylor pers. comm.).

Hence, although the ultimate goal should be to remove weeds from all land over time, weed management activities should entail:

- the provision of alternative habitats, through revegetation of nearby areas with appropriate indigenous species;
- staggered removal of weed infestations; and
- ideally removing weed infestations at a rate that allows indigenous plants to naturally replace them.

1.6.4 The Propagation and Sale of Weeds

Numerous plants sold or traded are regarded as environmental weeds that can invade and displace indigenous vegetation. The sale of weed species through the nursery industry is a major issue contributing to the spread of weed infestations and assures the continual re-invasion of managed sites in Banyule. To exemplify the extent of this problem, a survey in 1999 identified 700 species of plants available from Australian nurseries that were of invasive risk to the environment (Burnett and Roush 1999). The connection between the sale of such plants and their establishment as environmental weeds was made by reviewing horticultural imports and species that became environmental weeds between 1971-95. Imported species accounted for 65% of environmental weeds during this period, suggesting that many originated in our parks and gardens (Martin 2003).

A factor in this connection is the similarity in characteristics between an ideal garden plant and an environmental weed:

- tolerates a wide range of climates and soil types;
- grows from cuttings and seed;
- requires little water or maintenance;
- matures quickly and produces an abundant display of flowers and fruit;
- attractive to birds; and
- is generally easy to grow.

(Rawling1994)

A reason why many exotic plant species in the horticulture industry are a threat is that they come into Australia without their natural predators, competitors, and pathogens. Exotic plants are freed from these constraining factors that, in their natural range, restrict their spread and abundance (Turchin *et al.* 2003). In addition, plants are often restricted to a given area due to geographic barriers, such as oceans, mountain ranges, or inhospitable surrounding landscapes. Humans facilitate plants overcoming these barriers through trading, transporting, selling, purchasing, and planting species that are not indigenous to a local area. The widespread planting of a species can also facilitate the establishment of a major environmental weed.

These processes not only apply to exotic species, but also native Australian plant species. An appropriate example is Sweet Pittosporum, a native species originally confined to eastern Victoria and Southern New South Wales, and now one of the worst environmental weeds in Australia. This species was adopted by the landscape industry in the 1970s as an 'ideal street tree' throughout Victoria. It was planted widely

throughout Australia and overseas, and once naturalized in indigenous plant communities, spread rapidly. It has since become an environmental weed in Tasmania, Western Australia, Central and Western Victoria, South Australia, Cuba, Hawaii, Jamaica, Lord How Island, Cape Province (South Africa), and a number of Pacific and Atlantic ocean islands (Low 2002; Rawling 1994; Rose 1998).

The spread of such species is avoidable through the horticulture industry and individuals ceasing to trade in species recognised as environmental weeds or as potential ones (Csurhes and Edwards 1998). Carr *et al.* (1992) note that for the majority of such species, alternative non-invasive indigenous species are readily available. Therefore it is recommended that Council act in:

- reducing the sale, trade, and purchasing of noxious, existing or potential environmental weeds in the municipality;
- educating and encouraging the community to not purchase noxious, existing or potential environmental weeds in the municipality;
- ceasing planting noxious, existing or potential environmental weeds on Council-managed land and gradual replacement of existing non-heritage exotic plantings with indigenous alternatives; and
- liaising with the horticulture industry to inform them of noxious weed legislative restrictions under the CaLP Act (refer Part 1) and the threat of environmental weeds to natural values.

(Csurhes and Edwards 1998)

1.6.5 Weeds and Non-indigenous Plants in Private Gardens and Public Parks.

Environmental weeds and other non-indigenous plants in both private gardens and public parks are significant in contributing to present and future weed management issues. Environmental weeds planted widely in the municipality are a source of propagules invading indigenous vegetation, whilst other non-indigenous plants have the potential to do so in the future. Martin (2003) states that exotic garden plants have 'fuelled the weed explosion' whilst Rawling (1994) states that many environmental weeds have an origin as 'garden escapees', particularly in the bushland of cities and towns.

Presently benign ornamental plants grown in parks and gardens may in the future become invasive after a process of 'naturalisation'. The naturalisation of an introduced species refers to an exotic species that can successfully reproduce and spread without the requirement of cultivation, usually in the wild. Widespread planting of a non-indigenous plant potentially facilitates the process of naturalisation by introducing propagules into remnant bushland. Once naturalised, populations of garden escapees commonly remain small and localized, often for long periods, before a sudden explosive range expansion (Groves 1999; Hobbs and Humphries 1995). For example, Pampas Grass *Cortaderia selloana* was a 'sleeper' weed for over 100 years before becoming a major environmental weed (Rawling 1994).

'Sleeper weeds' are those species that are at the initial stage of this population expansion. Sleeper weeds may stay 'asleep' indefinitely, however, the greater number of sleeper weed species in bushland the more likely that a new environmental weed will emerge. Similarly, the greater the number of exotic or non-indigenous species or cultivars grown in private gardens and public parks, the greater the probability of new environmental weeds - that can adapt and proliferate in the local environment - emerging (Hobbs and Humphries 1995). Csurhes and Edwardes (1998) produced a list of potential environmental weeds for

Australia including species known as weeds overseas. Many of these species are still available from nurseries and promoted in the horticultural industry.

The targeting of naturalised garden escapees and sleeper weeds represents a long-term cost-effective approach to weed control. Likewise, the process of naturalisation and subsequent control requirements can be avoided altogether if only indigenous species are used in private gardens and public parks (Hobbs and Humphries 1995).

In light of the above issues, the following recommendations are made:

- Weed management should be pre-emptive rather than solely reactive.
- Weed management should involve the early detection and control of environmental weeds.
- Council should gradually replace non-indigenous plantings with indigenous species on all Council-managed land, unless there are heritage, aesthetic or functional reasons for not doing so.
- Council should promote the use of indigenous species and discourage the use of environmental weeds and potential environmental weeds in private gardens.

(Csurhes and Edwardes 1998)

1.6.6 Disturbance and Weeds

Disturbance is a natural component of healthy functioning ecosystems and occurs continuously through mechanisms such as floods, animal diggings, and fire. However, each natural vegetation community is adapted to persist under a certain type, size, distribution, and frequency of disturbances. Humans have both altered these disturbance parameters and introduced new types of disturbance that have never before been experienced by indigenous vegetation (Vitousek et al. 1997). It is generally accepted that such new and altered disturbance regimes are a major factor affecting the potential for invasion of natural ecosystems (Prober and Thiel 1995; Hobbs and Humphries 1995).

Disturbance reduces the ability of indigenous vegetation communities to resist weed invasion and creates an ideal environment for weeds to colonize. The latter is due to many weed species being 'colonizers': species adapted to establish in disturbed habitats or bare substrates. Hence, disturbance allows weeds to at first establish and, where disturbance is ongoing, to eventually replace indigenous plant communities. Disturbances from activities such as grazing, slashing / mowing, development, soil movement and vehicular traffic can promote weed invasions of indigenous vegetation. In fact, removal of an existing weed infestation may be a disturbance event if it creates conditions that are suitable for another weed invasion (Buchanan 1995; Frood 1988).

In addition, many weeds, once established, can cause additional ecosystems disturbances such as changes in soil composition, and nutrient and light availability. Through time, many weed species alter abiotic conditions of their environment in such a way as to successfully replace indigenous species (Prober and Thiele 1995).

Management practices can be a form of disturbance that contributes to the spread of weeds and weed propagules. For example, in some circumstances leaving mown grass on site can eventually elevate

nutrient levels, a situation that can favour weeds adapted to higher nutrient levels and disadvantage indigenous species that have adapted to lower nutrient levels. Other management practices that can disturb vegetation and aid the spread of weeds include poorly timed mowing, poorly timed removals, and vehicle / machinery traffic.

The complex relationship between disturbance and weed invasion should be considered in all weed management actions and it is recommended that:

- management of sites supporting indigenous vegetation be informed by knowledge of the disturbance types and frequencies required for healthy maintenance of indigenous communities and those that facilitate weed invasion;
- weed control works minimise disturbance types that may facilitate weed invasion;
- where weed control creates substantial disturbance, sites (*in situ* or nearby) should, at a minimum, be rehabilitated with indigenous plantings;
- Council and contractors avoid any activities that may involve deleterious disturbance of indigenous vegetation or waterway banks and levees; and
- Council combat the establishment of new weed species in the municipality and in sites supporting indigenous vegetation.

1.7 Summary

Weed species recorded in the City of Banyule have been discussed and prioritised according to legislation, policy, and threat to indigenous vegetation. The nature of weed distribution as recorded by numerous authors has also been discussed. Important ecological factors important to weed control management have been reviewed and related to recommended weed management actions contained in Part 3 of this strategy. The following are some important results of this assessment that should be considered in actions for weed management in the municipality.

- 25 noxious weed species were identified as occurring in the municipality.
- 58 regional priority weeds were identified as occurring in the municipality.
- 60 species were designated as Banyule Priority weeds.
- Further ranking of weed species can be made according to land type.
- Significant weed infestations in the City of Banyule are concentrated along waterways. Waterways may be a continual source for re-infestation of indigenous vegetation.
- The factors of weed dispersal, nutrient enrichment and pollution, disturbance, weeds on private land, and the propagation and sale of weeds should be considered in all Council actions.
- Water or animal dispersed High Threat (Tables 2 and 3) weed species should be of high priority in Public Education of weed control.

- Regionally Controlled and Banyule Priority weed species should be of high priority in public education and enforcement of weed control responsibilities on private land.
- On Council managed land, Regionally Controlled, Regionally Prohibited, and Banyule Priority weeds should be of high priority.

2. APPENDIX 1: PRIORITY ENVIRONMENTAL WEEDS IN THE CITY OF BANYULE.

LEGEND KEY

AD: = Animal Dispersed (birds and mammals) dispersal internal or external*

WD = Water Dispersed*

Risk Rating (RR)

4 for a very serious threat

3 for a serious threat

2 for a potential threat

1 for a non-threatening weed species

*Sourced from Carr *et al.* 1992

***Table 5**. Banyule Priority weeds including animal dispersal and water dispersal status, and rank score.*

Species name	Common name	AD	WD	RR
Acacia baileyana	Cootamundra Wattle			4
Acacia decurrens	Early Black Wattle	X		4
Acacia floribunda	White-sallow wattle	X		2
Acacia longifolia	Sallow Wattle	X		4
Acacia saligna	Golden-wreath Wattle			4
Acer negundo	Box Maple		X	2
Agrostis capillaris	Brown-top Bent			4
Allium triquetrum	Angled Onion		X	4
Anredera cordifolia	Madiera Vine			3
Anthoxanthum odoratum	Sweet Vernal Grass	X	X	4
Araujia hortorum	Cruel Plant		X	2
Arctotheca calendula	Cape Weed			3
Asparagus asparagoides	Bridal Creeper	X		4
Bromus catharticus	Prairie Grass	X	X	4
Chamaecytisus palmensis	Tree Lucerne	X		4
Chrysanthemoides monilifera	Boneseed/Bitou Bush	X	X	4
Cirsium vulgare	Spear Thistle	X	X	3
Conium maculatum	Hemlock	X	X	3
Coprosma repens	Taupata	X		4
Cotoneaster glaucophyllus	Cotoneaster	X		4
Cotoneaster pannosus	Cotoneaster	X		4
Crataegus monogyna	Hawthorn	X		4
Cynara cardunculus	Spanish Artichoke	X		4

Species name	Common name	AD	WD	RR
Cytisus scoparius	English Broom	X	X	4
Dactylis glomerata	Cocksfoot			3
Delairea odorata	Cape Ivy			4
Echium plantagineum	Patersons Curse	X	X	3
Ehrharta erecta	Panic Veldt Grass			4
Foeniculum vulgare	Fennel	X	X	4
Fraxinus angustifolia	Desert Ash		X	4
Galium aparine	Cleavers	X	X	4
Genista linifolia	Genista	X	X	4
Genista monspessulana	Montpellier Broom		X	4
Hakea salicifolia	Willow-leaf Hakea			4
Hedera helix	Ivy	X		4
Holcus lanatus	Yorkshire Fog	X		4
Hypericum androsaemum	Tutsan	X	X	4
Hypericum perforatum	St Johns Wort	X	X	4
Hypochoeris radicata	Cat's Ear	X		4
Ligustrum vulgare	Common Privet	X		3
Lonicera japonica	Japanese Honeysuckle	X	X	4
Lycium ferocissimum	African Box-thorn	X		4
Nassella hyalina	Fine Spear-grass	X		3
Nassella leucotricha	Pale Needle-grass			4
Nassella neesiana	Chilean Needle-grass	X		4
Nassella trichotoma	Serrated Tussock	X	X	4
Oxalis pes-caprae	Soursob	X		4
Paraserianthes lophantha	Cape Wattle	X	X	4
Paspalum dilatatum	Paspalum			4
Phalaris aquatica	Toowoomba Canary-grass			4
Pittosporum undulatum	Sweet Pittosporum	X		4
Plantago lanceolata	Ribwort	X	X	3
Prunus cerasifera	Cherry-plum	X	X	4
Rubus fruiticosus spp. agg.	Blackberry	X		4
Salix spp.	White Willow		X	4
Senecio angulatus	Climbing Groundsel			4
Sollya heterophylla	Bluebell Creeper	X		4
Sonchus oleraceus	Milk Thistle	X	X	4
Tradescantia fluminensis	Wandering Tradescantia		X	4
Trifolium repens	White Clover	X	X	4
Ulex europaeus	Gorse			4
Watsonia meriana var. *bulbillifera*	Bulbil Watsonia			4

3. APPENDIX 2: WEED SPECIES RECORDED IN BANYULE

LITERATURE SPECIES LISTS:

Site	Reference
BC = Lower Banyule Creek	Beardsell 1996
BF = Banyule Flats	Ritman 1992
BN = Brown's Nature Reserve	Paget 1989
HB = Horseshoe Bend, Ivanhoe	Kern 2002
SH = Saint Helena's Reserve	Robinson and Carmichael 1992
VA = Viewbank Area, Yarra Valley Parklands	Muir 1996
W = Wilson's Reserve	Robinson 1993
Y = Andrew Yandell Reserve	Robinson and Carmichael 1993

EXPERT LIST FOR BANYULE

EX = List of additional weed species known to occur in Banyule, sourced from Brown (1998), Adam Muyt (Environmental Weed Consultant) pers. comm. and Banyule City Council Staff.

Environmental Weed Risk Rating*

V = very serious threat;
S = serious threat;
P = potential threat; and
n = not a threat (but may have negative visual impact)
*Sourced from Carr et al. 1992

State Legislative Status

CALP: RC = Regionally Controlled; RP = Regionally Prohibited (Status under *Catchment and Land Protection Act 1994*)

Regional Policy Status

RP = Regional Priority as determined by the Port Phillip and Westernport Catchment Management Board (Refer to Part 1 of this document for full definitions of priority status).
HP = High Priority Weed species
OE = Other Established Weed species

Dispersal*:

AD = Animal Dispersed (birds and mammals) dispersal internal or external
WD = Water Dispersed

Ranking System Score

RS = Ranking System Score for weed species

Ranking score for species combines frequency of weed in Banyule and Risk Rating* and indicates level of threat to indigenous vegetation (refer to Part:2 Section 1.4).

i.e. Rank = Number of information sources (Number between 0-9) + Risk Rating (Number between 1 and 4)

where, Risk Rating = 4 for a very serious threat

= 3 for a serious threat

= 2 for a potential threat

= 1 for a non-threatening weed species

*Sourced from Carr et al. 1992

***Table 6**. Weed species recorded in the City of Banyule, assigned environmental risk status, legislative status, and dispersal status.*

Species name	Common name	BC	BF	BN	EX	HB	SH	VA	W	Y	RISK	CALI	RP	AD	WD	RS
Acacia baileyana	Cootamundra Wattle						X			X	V		OE			6
Acacia decurrens	Early Black Wattle				X						V			X		5
Acacia elata	Cedar Wattle				X						V		OE	X		5
Acacia floribunda	White-sallow wattle						X			X	P			X		4
Acacia iteaphylla	Flinders Ranges Wattle			X							P			X		3
Acacia longifolia	Sallow Wattle						X			X	V			X		6
Acacia pravissima	Ovens Wattle									X	P			X		3
Acacia prominens	Golden-rain Wattle				X						S			X		4
Acacia saligna	Golden-wreath Wattle									X	V					5
Acer negundo	Box Maple					X					P				X	3
Acer pseudoplatanus	Sycamore Maple				X						P					3
Acetosa sagittata	Climbing Dock				X						S				X	2
Acetosella vulgaris	Sheep Sorrel	X		X			X				S					6
Achillea millefolium	Yarrow				X						P					3
Agapanthus praecox	Agapanthus						X			X	S				X	5
Agave americana	Century Plant				X						N					2
Agrostis capillaris	Brown-top Bent	X		X			X	X		X	V		OE	X		9
Agrostis stolonifera	Creeping Bent				X						V			X		5
Aira caryophyllea	Silvery Hair-grass						X			X	S			X		5
Aira cupaniana	Hair-grass				X						P			X		3
Aira elegantissima	Elegant Hair-grass							X			S			X		4
Aira praecox	Early Hair-grass	X					X				P			X		4
Allium triquetrum	Angled Onion/Three-cornered Garlic	X	X	X				X		X	V	RC	OE		X	9
Aloe saponaria	Aloe									X	S					4
Alopecurus pratensis	Meadow Fox-tail				X						P			X		3
Anagallis arvensis	Pimpernel			X				X			S					5
Anredera cardifolia	Madeira Vine				X						S					4
Anthoxanthum odoratum	Sweet Vernal-grass						X	X			V		OE	X	X	6
Aptenia cordifolia	Heart-leaf Ice-plant				X						P					3
Araujia hortorum	Cruel Plant					X					P				X	3
Araujia sericifera	White Bladder-flower							X			P					3
Arctotheca calendula	Cape Weed			X			X	X	X	X	S					8
Artemisia verlotiorum	Chinese Wormweed			X							V				X	5
Asparagus asparagoides	Bridal Creeper		X	X				X		X	V		HP	X		8
Aster subulatus	Aster-weed	X		X			X	X			S			X	X	7
Atriplex prostrata	Creeping Saltbush							X			S					4
Avena barbata	Bearded Oat						X				S			X		4
Avena fatua	Wild Oat								X		V			X		5
Bambusa spp.	Bamboo								X							1
Brachypodium distachyon	False Brome				X						P			X		3
Briza maxima	Large Quaking-grass						X	X		X	V		OE	X	X	7
Briza minor	Quaking-grass							X			P			X	X	3
Bromus catharticus	Prairie Grass	X		X		X		X			V			X	X	8
Bromus diandrus	Great Brome						X	X			V			X	X	6
Bromus hordeaceus	Soft Brome				X						S			X	X	4
Callitriche stagnalis	Water Starwort	X		X				X			P				X	5
Calystegia silvatica	Greater Bindweed					X					S				X	4

Species name	Common name	BC	BF	BN	EX	HB	SH	VA	W	Y	RISK	CALI	RP	AD	WD	RS
Carduus pycnocephalus	Slender/Shore Thistle							X			S		OE	X	X	4
Carduus tenuiflorus	Slender Thistle							X			P	RC	OE	X	X	3
Carthamus lanatus	Saffron Thistle				X						P	RC	OE	X	X	3
Centaurium erythraea	Common Centaury						X				S				X	4
Centaurium tenuiflorum	Centaury			X				X			S				X	5
Cerastium glomeratum	Chickweed			X			X	X		X	S			X	X	7
Chamaecytisus palmensis	Tree Lucerne				X						V			X		5
Chrysanthemoides monilifera	Boneseed/Bitou Bush			X			X			X	V	RC	OE	X	X	7
Cicendia quadrangularis	Square Cicendia				X						P			X	X	3
Cirsium vulgare	Spear Thistle	X		X				X	X		S	RC	OE	X	X	7
Conium maculatum	Hemlock				X						S	RC	OE	X	X	4
Conyza albida	Fleabane	X		X				X			S			X	X	6
Coprosma repens	Taupata									X	V			X		5
Cordyline australis	New Zealand Cabbage Tree							X			P			X		3
Cortaderia selloana	Silver Pampass Grass							X			V				X	5
Cotoneaster glaucophyllus	Cotoneaster							X		X	V		OE	X		6
Cotoneaster pannosus	Cotoneaster									X	V		OE	X		5
Cotula coronopifolia	Water Buttons			X							S			X	X	4
Crataegus monogyna	Hawthorn	X	X	X		X		X	X	X	V	RC	OE	X		11
Critesion murinum spp. *Leporinum*	Wall Barley-grass							X			V			X	X	5
Crocosmia X crocosmiiflora	Montbretia				X				X		V		OE	X	X	6
Cucumis myriocarpus	Paddy Melon				X						P			X	X	3
Cynara cardunculus	Spanish Artichoke			X							V	RC	OE	X		5
Cynodon dactylon	Couch	X		X				X			S			X	X	6
Cynosurus echinatus	Rough Dog's-tail			X			X	X			S			X	X	6
Cyperus eragrostis	Drain Flat-sedge	X		X				X			S		OE	X	X	6
Cyperus tenellus	Tiny Flat-sedge				X						P			X	X	3
Cytisus palmensis	Tree Lucerne / Tagasaste				X						V			X	X	5
Cytisus scoparius	English Broom		X								V	RC	OE			5
Dactylis glomerata	Cocksfoot	X		X			X	X	X	X	S			X	X	9
Delairea odorata	Ivy Groundsel/Cape Ivy		X			X		X		X	V		OE			8
Dittrichia graveolens	Stinkweed			X							P	RC	OE	X	X	3
Echium plantagineum	Patersons Curse		X					X			S	RC	OE	X	X	5
Echium vulgare	Vipers Bugloss				X						P			X	X	3
Ehrharta erecta	Panic Veldt Grass	X		X		X	X	X	X	X	V		OE	X		11
Ehrharta longiflora	Annual Veldt Grass						X	X		X	V			X		7
Elytrigia repens	English Couch										-					
Epilobium sp.	Willow-herb				X						P				X	3
Erica lusitanica	Spanish Heath				X						V		OE		X	5
Erodium moschatum	Storksbill			X							S			X		4
Eucalyptus botryoides	Bangalay				X						S				X	4
Eucalyptus cladocalyx	Sugar Gum				X						S				X	4
Euphorbia peplus	Petty Spurge			X			X				S				X	5
Festuca arundinacea	Tall Fescue	X		X				X			S			X	X	6
Foeniculum vulgare	Fennel					X		X	X		V	RC	OE	X	X	7
Fraxinus angustifolia	Desert Ash					X		X	X		V				X	7
Freesia leichtlinii	Freesia			X							V					5

Species name	Common name	BC	BF	BN	EX	HB	SH	VA	W	Y	RISK	CALI	RP	AD	WD	RS
Fumaria sp.	Fumitory							X			P				X	3
Galenia pubescens	Blanket Weed				X						S		OE			4
Galium aparine	Cleavers	X		X		X		X*	X	X	V			X	X	9
Galium murale	Small Bedstraw									X	P			X		3
Gamochaeta pensylvanica	Purple Cudweed				X						S					4
Gazania rigens	Gazania						X				P				X	3
Genista linifolia	Genista						X				V	RC	OE		X	5
Genista monspessulana	Montpellier Broom			X			X	X		X	V	RC	OE		X	8
Geranium dissectum	Cut-leaf Cranesbill							X			P			X		3
Geranium molle	Dove's-Foot									X	P					3
Gladiolus undulates	Gladiolus				X						V				X	5
Gnaphalium purpureum	Purple Cudweed									X	S			X		4
Hakea salicifolia	Willow-leaf Hakea				X						V					5
Hedera helix	Ivy		X	X			X			X	V		OE	X		8
Helminthotheca echioides	Ox-tongue	X		X							S					5
Holcus lanatus	Yorkshire Fog	X		X			X	X		X	V			X	X	9
Hypericum androsaemum	Tutsan				X						V	RC	OE	X	X	5
Hypericum perforatum	St Johns Wort				X						V	RC		X	X	5
Hypochoeris glabra	Smooth Cat's Ear						X	X			S			X	X	5
Hypochoeris radicata	Cat's Ear	X		X			X	X	X	X	S			X	X	9
Ipomoea congesta	Morning Glory			X							V			X		5
Ipomoea indica	Blue Morning Glory				X						S					4
Iris pseudacorus	Yellow Water Iris							X			S				X	4
Isolepis hystrix	Awned Club-rush				X						P			X	X	3
Juncus articulatus	Jointed Rush			X				X	X		S		OE	X	X	6
Kennedia rubicunda	Dusky Coral-pea						X				P					3
Lactuca saligna	Willow-leaf lettuce							X			P			X	X	3
Lactuca serriola	Prickly Lettuce							X			P			X	X	3
Leersia oryzoides	Cut-grass				X						V				X	5
Leontodon taraxacoides	Hairy Hawkbit			X							S			X	X	4
Lepidium africanum	Common Pepper-cress			X			X			X	P			X		5
Ligustrum lucidum	Large-leaf Privet					X		X			P			X		4
Ligustrum vulgare	Common Privet							X			S			X		4
Linum trigynum	French Flax				X						-					1
Lolium perenne	Perennial Rye-grass	X						X			S			X	X	5
Lolium rigidum	Wimmera Rye-grass	X						X			S			X	X	5
Lonicera japonica	Japanese Honeysuckle		X			X	X	X		X	V		OE	X	X	9
Lotus corniculatus	Bird's-foot Trefoil	X		X				X			V			X	X	7
Lychnis coronaria	Catchfly/Rose Campion						X				-					1
Lycium ferocissimum	African Box-thorn		X	X							V	RC		X		6
Malus domestica (hybrid)	Apple							X			N			X	X	2
Malva parviflora	Small-flowered Mallow			X			X	X			-					3
Marrubium vulgare	Horehound				X						V	RP	OE	X	X	5
Medicago arabica	Spotted Medic			X							-					1
Medicago polymorpha	Burr Medic			X				X	X		S			X		6
Medicago sativa	Lucerne				X						-			X		1
Melaleuca armillaris	Giant Honey-myrtle									X	V				X	5
Modiola caroliniana	Carolina Mallow			X					X		P				X	4
Myosotis sylvatica	Wood Forget-me-not							X		X	S			X	X	5

Species name	Common name	BC	BF	BN	EX	HB	SH	VA	W	Y	RISK	CALI	RP	AD	WD	RS
Myriophyllum aquaticum	Parrot's-feather Milfoil				X						P					3
Nassella hyalina	Fine Spear-grass				X						S		OE	X		4
Nassella leucotricha	Pale Needle-grass							X			-		OE			1
Nassella neesiana	Chilean Needle-grass							X			V		HP	X		5
Nassella trichotoma	Serrated Tussock							X			V	RC	HP	X	X	5
Olea europaea subsp. *europaea*	Olive							X			S			X		4
Opuntia monocantha	Drooping Prickly-pear				X						S		OE	X		4
Opuntia robusta	Wheel Cactus				X						S			X		4
Oxalis incarnata	Pale Wood-sorrel				X						S					4
Oxalis pes-caprae	Soursob			X			X	X	X	X	V		OE	X		9
Paraserianthes lophantha	Cape Wattle				X						V			X	X	5
Paspalum dilatatum	Paspalum	X		X				X	X		V			X	X	8
Paspalum distichum	Water Couch	X		X				X			V		OE	X	X	7
Pennisetum clandestinum	Kikuyu	X					X	X			V		OE		X	7
Persicaria maculosa	Knotweed				X						P				X	3
Petrorhagia velutina	Hairy Pink									X	S			X		4
Petroselium crispum	Parsley						X			X	-					2
Phalaris aquatica	Toowoomba Canary-grass	X						X			V			X	X	6
Pinus radiata	Monterey Pine									X	V		OE	X	X	5
Piptantherum millaceum	Rice Millet				X						P			X	X	3
Pittosporum undulatum	Sweet Pittosporum		X	X		X			X	X	V		HP	X		9
Plantago coronopus	Buck's-horn Plantain			X							S			X	X	4
Plantago lanceolata	Ribwort			X			X	X	X	X	S			X	X	8
Plantago major	Greater Plantain	X				X		X	X		P			X	X	6
Poa annua	Annual Meadow-grass						X	X	X		-					3
Poa pratensis	English Meadow-grass						X	X			S			X	X	5
Polycarpon tetraphyllum	Four-leafed Allseed				X						P					3
Polypogon monspeliensis	Annual Beard-grass							X			S			X	X	4
Populus alba	White Poplar				X						P					3
Populus X canescens	Grey Poplar				X						P					3
Populus nigra	Lombardy Poplar				X						P				X	3
Prunus cerasifera	Cherry-plum	X	X					X	X	X	V			X	X	9
Prunus spinosa	Sloe				X						P			X	X	3
Ranunculus muricatus	Sharp Buttercup			X				X			-					2
Ranunculus repens	Creeping Buttercup					X		X	X		S		OE	X	X	6
Raphanus raphanistrum	Wild Radish			X					X		-					2
Raphistrum rugosum	Wild Mustard				X						-					1
Reseda luteola	Wild mignonette/Weld								X		-		OE			1
Romulea longifolia	Onion Grass								X		-					1
Romulea rosea	Common Onion-grass			X				X		X	V			X		7
Rorippa palustris	Marsh Bitter-cress	X						X			S			X	X	5
Rosa rubiginosa	Sweet Briar		X	X				X			V	RC	OE	X	X	7
Rubus fruiticosus spp. agg.	Blackberry	X	X	X		X		X	X	X	V	RC	OE	X		11
Rubus ulmifolius	Blackberry					X					V	RC		X		5
Rumex conglomeratus	Clustered Dock							X			S			X	X	4
Rumex crispus	Curled Dock	X				X		X			S			X	X	6
Rumex spp.	Sorrel			X		X					-			X		2

Species name	Common name	BC	BF	BN	EX	HB	SH	VA	W	Y	RISK	CALI	RP	AD	WD	RS
Salix alba	White Willow				X						S		OE		X	4
Salix babylonica	Weeping Willow	X							X		S				X	5
Salix fragilis	Basket Willow		X			X		X			-		OE		X	3
Salix X rubens	Crack Willow	X									V		OE		X	5
Salpichroa origanifolia	Pampas Lily-of-the-valley							X			V		OE	X		5
Senecio angulatus	Climbing Groundsel				X						V					5
Silybum marianum	Variegated Thistle		X						X		S	RC	OE	X	X	5
Sisymbrium officinale	Hedge Mustard							X			-					1
Solanum mauritianum	Tobacco Nightshade					X		X			P			X	X	4
Solanum nigrum	Black Nightshade			X				X		X	S			X	X	6
Solanum pseudocapsicum	Madeira Winter-cherry					X		X			V		OE	X	X	6
Sollya heterophylla	Bluebell Creeper									X	V			X		5
Sonchus asper	Rough Sow-thistle			X		X		X			S			X	X	6
Sonchus oleraceus	Milk Thistle	X					X	X	X	X	S			X	X	8
Sparaxis bulbifera	Sparaxis							X			V					5
Sporobolus indicus	Indian Rat-tail Grass			X				X			S			X	X	5
Stellaria media	Chickweed			X			X			X	S			X		6
Tanacetum vulgare	Tansy									X	-					1
Taraxacum officinale	Dandelion			X					X		-			X	X	2
Taraxacum Sect. Ruderalia	Garden Dandelion						X	X		X	-					3
Tradescantia fluminensis	Wandering Tradescantia	X	X	X		X		X	X	X	V		OE		X	11
Tragopogon porrifolius	Salsify				X						P				X	3
Trifolium spp.	Clover	X		X					X		-					3
Trifolium angustifolium	Narrow-leaf Clover			X			X			X	S			X		6
Trifolium campestre	Hop Clover						X				S			X		4
Trifolium cernum	Drooping-flower Clover						X				-					1
Trifolium dubium	Suckling Clover							X			S			X		4
Trifolium glomeratum	Cluster Clover				X						S			X		4
Trifolium repens	White Clover			X			X	X		X	V			X	X	8
Trifolium striatum	Knotted Clover							X			S			X		4
Trifolium subterraneum	Subterraneum Clover						X			X	S			X		5
Tritonia lineata	Lined Tritonia				X						P					3
Tropaeolum majus	Nasturtium				X						P					3
Typha latifolia	Great Reedmace				X						V			X	X	5
Ulex europaeus	Furze (Gorse)		X					X	X		V	RC	OE	X	X	7
Ulmus aff. *procera*	English Elm					X					-				X	1
Verbena bonariensis	Purple-top Verbena							X			S			X	X	4
Veronica peregrina	Wandering Speedwell				X						-					1
Veronica persica	Persian Speedwell			X							-					1
Vicia hirsuta	Tiny Vetch			X							P			X		3
Vicia sativa subsp *sativa*	Common Vetch							X		X	S			X	X	5
Vicia sativa subsp. *nigra*	Narrow-leaf Vetch						X				P			X		3
Vicia tetrasperma	Slender Vetch						X				P			X	X	3
Vinca major	Blue Periwinkle		X				X	X			V		OE			7
Viola odorata	Fragrant Violet				X						P				X	3
Vulpia bromoides	Squirrel-tail Fescue							X		X	V			X		6
Vulpia muralis	Wall Fescue							X			-					1
Watsonia meriana var. bulbillifera	Bulbil Watsonia							X			V	RC	OE		X	5

Species name	Common name	BC	BF	BN	EX	HB	SH	VA	W	Y	RISK	CALI	RP	AD	WD	RS
Xanthium spinosum	Bathurst Burr				X						S	RP	OE	X	X	4
Zantedeschia aethiopica	White Arum Lily			X							V			X	X	5

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Banyule Weed Management Strategy: Part 3

August 2005

by Austin O'Malley, Lincoln Kern and Andrew Stephens

For Banyule City Council

Banyule
CITY COUNCIL

Contents

1. PART 3: A STRATEGY FOR WEED MANAGEMENT IN THE CITY OF BANYULE

This section recommends actions proposed for advancing weed management and control in the municipality. Information presented in the two preceding parts of this document is incorporated within and provides guidance in determining the recommendations of this strategy. As such, recommendations are informed by current legislation, policy, weed distributions and priorities, and current issues highlighted with weed control management in the municipality. The recommendations also take into account ecological considerations important in weed control management. This strategy identifies key goals and objectives and recommends actions to fulfill these goals.

1.1 Goals and Objectives for Council Actions

1. **Improve efficiency and effectiveness of weed control on Council land.**
2. **Reduce the spread of established weeds in the municipality on Council land, other public land and private land.**
3. **Reduce the risk of new weed species establishing in the municipality.**
4. **Set an example for the community by fulfilling weed control responsibilities and communicate Council achievements effectively.**
5. **Reduce noxious and environmental weed infestations on non-Council managed public land and private land and increase level of community involvement in weed control activities.**
6. **Increase awareness of weed control responsibilities and specific threats in the municipality on the part of other public land managers and the wider community.**
7. **Conduct and cooperate with other public land managers and private land owners in on-going monitoring and assessment of weed infestations and control strategies at both municipal and site-specific levels.**

1.2 Management of Weeds on Council Land

It is considered imperative that council control and eradicate weeds on their own land. The focus of Council actions in the initial part of implementing this strategy should be on eradicating and controlling weeds on council-owned or council-managed land. Banyule City Council can be leaders in environmental management and build on the Council's environmentally enlightened image. Council should endeavour to uphold this image and lead by example. The latter is the most effective way to elicit change in the weed control attitudes and actions of landowners and management authorities in the City of Banyule. Council's

efforts should not only provide a general example but also provide specific guidance for complementary actions on other public and private land.

1.2.1 Municipal Level Management

Weed control should be coordinated both at a site-specific scale and at a municipal scale. Water, animal, and soil dispersal effectively connect all areas in Banyule and allow the possible establishment of new species from outside the City of Banyule. Controls must therefore be implemented council-wide to effectively achieve the goals of reducing the spread of existing weed species and establishment of new species in the municipality.

Current weed control activities and policies of Council can be improved to increase their effectiveness in reducing weed spread, abundance, and threats to indigenous vegetation. In addition, new initiatives recommended in this document focus on reducing weed abundance and threats to indigenous vegetation in the long-term on Council-managed land and across the municipality.

The strategy for Council land incorporates weed distribution and priority results (Part 2), ecological knowledge (Part 2), and legislation and policy (Part 1).

Table 1. Weed management strategy for municipality.

Action No.	Action	Priority	Timeline	Goal (s)
1.1	Target Regionally Controlled weed species (Part 2: Table 2) on Council-owned and Council-managed land as necessary.	High	Spring 2005 - Ongoing	2, 4
1.2	Target Banyule Priority weed species (Part 2: Table 5) in cooperation with community groups and other authorities, particularly in: ➢ Wildlife Corridors and along Waterways; ➢ Areas supporting significant habitat or indigenous vegetation, and surrounding areas.	High	Spring 2005 - Ongoing	2, 4
1.3	Target Regionally Prohibited weeds until eradicated from municipality (Part 2: Table 2). Liaise with adjacent municipal Councils to counter re-infestation.	High	Spring 2005 - Spring 2008	2, 4
1.4	Prioritise areas for intensive weed control activities, including: ➢ Areas of high biological value ➢ Waterways ➢ Wildlife Corridors	High	Winter 2005	2, 3
1.5	Continue programs for the removal of existing environmental weeds along waterways and wetlands and controlling their spread.	High	Ongoing	2, 4
1.6	Where weed control works result in the creation of a significantly unvegetated area, ensure that post-weed indigenous revegetation follows in appropriate areas. (Indigenous plantings should always be sourced from local provenance stock).	Mod	Ongoing	2, 3

Action No.	Action	Priority	Timeline	Goal (s)
1.7	Maintain detailed records of habitat rehabilitation and weed eradication works: ➢ Develop weed-assessment-record-sheet in format that data can easily be entered into a database ➢ Use combined site-specific data to inform municipal-wide weed control actions.	Mod	Ongoing	1, 7
1.8	Investigate setting up an appropriate weed management database and record keeping system (such as Weedmanager.net).	Mod	Ongoing	1,7
1.9	Adopt policy and procedures requiring soil, mulch and compost to be free of viable weed seed or vegetative material in all council and contracted operations.	Mod	Ongoing	2, 6
1.10	Develop guidelines for safely handling and removing weed infestation material as required under the CALP Act (Amendment) 2003 (Government of Victoria 2003).	Mod	2005 Autumn	1
1.11	Adopt policy directing safe movement and destruction of weed seed and vegetative material for all Council and contractor work as informed by CALP Act (1994) Section 71	High	Ongoing	2,6
1.12	Restrict movement of soil from sites in Banyule with Priority, noxious, or Regional Priority weed species.	High	Ongoing	2
1.13	Establish requirement that all Council and contractor vehicles and equipment are free of viable weed material prior to entering areas with indigenous vegetation.	High	Ongoing	2,3
1.14	Adopt policy that requires Council and contractors to minimize disturbance to topsoil or indigenous vegetation in all works undertaken in Banyule.	Mod	Ongoing	2,5
1.15	Educate the community on the threat to indigenous vegetation of illegal dumping of garden waste on council land and council powers of enforcement.	Mod	Spring	6
1.16	Increase community involvement in weed control activities on public land through education, incentives, and utilizing friends groups.	Mod	2005 Summer - Ongoing	6
1.17	Continue to incorporate community involvement and education in future management plans	Mod	Ongoing	6
1.18	Continue policy against the planting of environmental weed species within parks, reserves, nature strips and shopping centres; where appropriate, undertake gradual replacement of existing non-heritage exotic plantings with indigenous alternatives (as an example to the community).	Mod	Ongoing	1, 3

1.2.2 Site-specific Management

Recommendations are made for weed management at the site scale as most current management strategies are conducted at this scale, and as differences in historical management regimes, hydrological processes, weed species assemblages, and other characteristics unique to each site will determine specific priorities and actions. The recommended actions generally reflect the need for site-specific weed management strategies and long-term structured monitoring and assessment. They propose both target weed priorities and general weed control principles.

The following strategy should be used in the management of Council reserves and other land. It is intended as a general guide to weed control management that may be applied to various land types including reserves and open space areas.

Table 2. Weed management strategy for Council Land

Action No.	Action	Priority	Timeline	Goal (s)
2.1	Record and monitor weed infestations at site. Record weed species present and percentage cover.	High	Ongoing	1, 7
2.2	1. Target Regionally Controlled and Regionally Prohibited weed species 2. Determine and target weed species with greatest cover and posing greatest threat to indigenous vegetation at the site within each Council-managed site. 3. Record and monitor weed species priorities.	High	Ongoing	1, 2, 4, 7
2.3	Develop long-term weed management and restoration plan for site.	Mod	Ongoing	1
2.4	Work outwards from areas of highest value to areas of low value vegetation as a priority in each reserve or site.	Mod	Ongoing	1
2.5	Minimize disturbance during weed control, indigenous vegetation planting, and other work on the site.	High	Ongoing	1
2.6	Where weed control works result in the creation of a significantly unvegetated area ensure that post-weed indigenous revegetation follows. (Indigenous plantings should always be sourced from local provenance stock).	Mod	Ongoing	1
2.7	Ensure weed management of revegetated areas.	Mod	Ongoing	1
2.8	Where weeds provide significant fauna habitat undertake staggered weed removal to allow time for indigenous plant establishment and development of alternate fauna habitat.	Mod	Ongoing	1

Action No.	Action	Priority	Timeline	Goal (s)
2.9	Encourage and work with landowners adjoining management site to remove noxious, environmental, and Banyule Priority weeds from their land, particularly species spreading into adjacent reserves and sites.	Mod	Ongoing	1, 2
2.10	Record details of weed control and indigenous revegetation for future entry into municipal database, to ensure: ➢ Effective methods can be identified and used at other sites ➢ Retention of site-specific knowledge for integration in a long-term strategy for the site. ➢ Indigenous plantings are sourced from local provenance stock.	High	Ongoing	1, 7

1.3 Management of Weeds on Private Land

Council reasonably expects every land owner to manage weeds on their properties through a process of assessing, controlling, and monitoring weeds. As stated above Council can provide a good example by fulfilling their specific responsibilities on their land and facilitating and supporting the control of weeds on private land. Private land owners are responsible for Regionally Controlled weeds on their land and adjoining roadsides, and Regionally Prohibited weeds on their land but not on adjoining roadsides. The appropriate management of weeds on privately owned land will have flow-on effects in decreasing the frequency of weed infestations on other public land and Council-managed land. It is recommended that Council can achieve the goals of this strategy by facilitating the following principles:

- Discourage the planting of noxious and environmental weeds on private land;
- Increase community knowledge of their weed control responsibilities; and
- Support the control of existing and emerging infestations on private land.

Council should use the tools of education, enforcement, and incentives in implementing these principles.

1.3.1 Education

Education is a powerful tool in changing the attitudes and encouraging positive actions in individuals. The success of educational measures is indicated by the increasing level of community involvement in managing environmental weeds and the growing interest in Weedbuster Week in Australia. The threat that environmental weeds pose to valued indigenous flora and fauna must be realised by the community for landowners to be active in controlling weeds and ensuring they are not contributing further to weed issues through activities such as dumping garden waste in bushland or planting serious environmental weeds in their garden.

It has been suggested that 'increased knowledge of the ecology…of environmental weeds is required for their improved management (Williams and West 2000)'. This is particularly an issue on private land where

landowners may lack the knowledge, skills, and appropriate resources to be successful in their weed control efforts. It makes sense for Council to facilitate landowners in their control efforts through education and community involvement. Therefore, informing landowners of ecological processes driving weed invasion and persistence in Banyule (such as those outlined in Part 2 of this document) is important for improved weed control activities on private land, increased community participation in weed control on council land and in building support for Council weed control actions and recommended Planning Scheme Amendments.

Council should endeavor to educate landowners in:

- weed control responsibilities;
- ecological factors driving weed invasion;
- weed control and revegetation activities; and
- environmental and noxious weed species,

These issues are incorporated into recommendations tabulated below (Table 3).

Table 3. Actions addressing education priorities.

Action No.	Action	Priority	Timeline	Goals
3.1	Make water and animal dispersed Banyule Priority weed species (Part 2: Table 5) the focus of Public Education activities.	Mod	Ongoing	5
3.2	Develop and run weed management workshops on an ongoing basis to: ➢ increase land-owner and land-manager skills in weed management. ➢ increase awareness of weeds and the damage they do to native ecosystems.	Mod	Half Yearly - Yearly	2,3,5,6,7
3.3	Promote and facilitate access to workshops and seminars run by other organisations such as: ➢ Greening Australia Victoria ➢ Cooperative Research Centre for Australian Weed Management ➢ local Friends groups ➢ other Municipalities			
3.4	Publicize DSE/DPI contact details and relevant information sources and services that answer landowners questions on weed control issues such as: ➢ Landowners legal responsibilities ➢ Conservation and weed issues (including ecological factors detailed in Part 2 of this document) ➢ Weed control services and activities.	High	Ongoing	6
3.5	Survey local nurseries for sale of noxious and environmental weeds:	High	Once every season	6

Action No.	Action	Priority	Timeline	Goals
	➢ as a format for educating nurseries on legislative controls in the CALP Act 1998. ➢ to develop a council-specific list of weed species for landowners to avoid (referring to Banyule Priority, CaLP, Regional Priority, and Potential weeds listed by Csurhes and Edwards 1998). ➢ Incorporate list of CaLP Restricted weeds once released.			
3.6	Liaise with landcare groups, State government departments, CRC for Australian Weed Management, and other authorities to develop joint weed education program with several activities each year specifically addressing weed issues in Banyule.	Mod	Ongoing	5, 6
3.7	Support the creation and maintenance of local 'friends' and landcare groups, encouraging and supporting community weed control activities.	Mod	Ongoing	5
3.8	Where the issue of weed control is addressed ensure that adequate information is provided highlighting the importance of replacing weeds with suitable indigenous plant species in appropriate areas.	Mod	Ongoing	2,5
3.9	Educate the community on the importance of minimising disturbance in areas of indigenous vegetation.	Mod	Ongoing	2,5
3.10	Continue to promote planting of indigenous plant species in gardens through incentives.	Mod	Ongoing	2, 5
3.11	Educate the community on the threat to indigenous vegetation of illegal dumping of garden waste on council land and council powers of enforcement.	Mod	Spring	6
3.12	Encourage the whole community to be involved in the eradication of environmental weeds through information and incentives.	Mod	Ongoing	5, 6

1.3.2 Enforcement and incentives

Education is an effective tool, but enforcement is also needed, and is a powerful educational format through which landowners can learn their responsibilities. Although enforcement of weed control responsibilities remains a State government responsibility, Council Officers are able to assist DSE Officers with the provision of property information when requested.

In addition, Council can enforce some weed control measures through the Planning Scheme. There are major gains to be made in influencing private land management within the planning permit process. Provisions of weed control and removal can be incorporated as policy into all new planning permits. This

initiative would greatly reduce the risk of weed invasion, and reduce environmental and noxious weed abundance in the long-term.

The provision of a list of Prohibited Weeds for sale also allows Council a role in restricting the sale of environmental and noxious weed species. Banyule Council should work with nurseries in the municipality to ensure these are not sold within the council. Council should also target and enforce control of illegal dumping of garden waste, initially in high value areas and then across all public and council managed land.

Table 4. Actions for enforcement of weed control and incentives for landowners.

Action No.	Action	Priority	Timeline	Goal (s)
4.1	Lobby state and federal government in cooperation with other councils for greater resources to be allocated to DSE to adequately enforce control of noxious weeds on private land.	Mod	Ongoing	5
4.2	Record and monitor private properties with significant noxious or Banyule Priority weed infestations, particularly those adjoining reserves or other areas with significant indigenous vegetation.	Mod	Ongoing	6, 7
4.3	Record and monitor private properties with weed infestations that may pose a fire risk and issue letter of notice to landowners with fire risk weed infestations recommending appropriate weed management and suitable revegetation. Also reassess the current fire hazard notice and attempt to ensure it provides suitable advice about containing weeds.	Mod	Ongoing	6, 7
4.4	Where appropriate, pursue opportunities through the Planning Scheme and planning permit conditions to achieve control of noxious and Banyule Priority weeds including: 1. Removal of noxious and Banyule Priority weeds on land affected by permits. 2. The inclusion of a standard note on permits which advised that, under the CALP Act Section 71, any movement of soil/mulch/compost is required to be free of noxious weed seed or material . 3. The inclusion of a requirement in Environmental or Sustainability Management Plans for major developments that disturbance, nutrient enrichment, and water use is kept to a minimum and for smaller developments by inclusion of conditions on planning permits where appropriate. 4. Requiring that no Noxious, Regional Priority, or Banyule Priority weeds are used in plantings.	High	2004 – after Information Kit distribution	2, 3, 5, 6
4.5	Assist DSE in preventing the sale of noxious weed seed or vegetative material: 1. Provide business details to DSE within 14 days of request.	Mod	Ongoing	1, 5

Action No.	Action	Priority	Timeline	Goal (s)
	2. Produce list of environmental weeds available in nurseries, for liaising with nurseries and distribution to the community.			
4.6	Ensure that noxious and 'Banyule Priority' environmental weeds are controlled on council land to fulfill Council responsibilities and as an example to other landowners.	High	2004 – Intensive (Ongoing)	4
4.7	Enforce laws to prosecute dumping of garden waste on public and council managed land. Nominate areas at risk of rubbish dumping, ensure area is designed to prevent dumping, and install signs displaying enforcement information.	Mod	Ongoing	1, 2, 6
4.8	Work with and help coordinate community, friends, and landcare groups to tackle large infestations involving many properties, particularly waterways (i.e. Sweetwater Creek)	Mod	Ongoing	5
4.9	Investigate possible incentives for landowners whom undertake weed control on their land.	Mod	Ongoing	5
4.10	Provide financial and other support to priority sites on private land.	Mod	2004 – Spring	5

1.4 Public Authority Liaison

Liaison with other authorities outside Council jurisdiction should be of secondary focus to Banyule managing weeds on it's own land and encouraging weed eradication on urban private land. However, there are significant benefits in liaising with other public authorities over weed control issues.

Public authorities responsible for weed control along rail lines have been noted (Part 2) as not fulfilling their legal responsibilities to date but could be encouraged to do so through liaison. For example, Banyule Council should liaise directly with Connex and encourage them to implement a weed control strategy for rail lines under their maintenance. Rail lines support large infestations of noxious and environmental weeds through Banyule which provide a large source of weed propagules for re-infestation of areas cleared of weeds by council.

Other important activities for the achievement of weed control goals will be through the development of long-term strategies and cost-sharing agreements with waterway authorities and for areas of shared weed control responsibility in the City of Banyule.

Council should seek to reduce weed propagule loads in waterways by liaising with other councils upstream of Banyule, including City of Manningham, City of Whittlesea, Nillumbik Shire, and Shire of Yarra Ranges. Council should also liaise with other public authorities and landowners responsible for weed control along waterways to develop:

- A long-term strategy for the reduction of weed propagule loads in waterways.
- Cost-sharing agreements for weed control and revegetation along waterways with other landowners and authorities responsible for weed control.

Table 5. Actions for improved public authority liaison in weed control.

Action No.	Action	Priority	Timeline	Goal (s)
5.1	Inform other public authorities of their weed control legal responsibilities, particularly in areas adjacent to Council-managed land where works are undertaken.	Low	2004 - Winter	6
5.2	Liaise with other relevant public authorities such as Melbourne Water, VicRoads and VicRail to encourage the removal of noxious and environmental weeds from land under their control	Low	Ongoing	2, 5
5.3	Develop a long-term strategy in cooperation with other upstream Councils, Melbourne Water, private landowners, DSE, and Parks Victoria for weed control and indigenous revegetation of degraded waterways in Banyule. Strategy may focus on targeting water and animal dispersed Banyule Priority weed species in the municipality.	Mod	2004 - Winter	1, 2
5.4	Encourage and participate in the development of weed control strategies by other public land authorities and use assessments by other authorities to guide Council actions.	Low	Ongoing	1, 7
5.5	Instigate and negotiate coordinated schemes with other public authorities for waterways and wildlife corridors, targeting noxious and Banyule Priority weed infestations; and other areas of shared responsibilities as detailed in Part 1 of this document.	Mod	Ongoing	1, 4
5.6	Ensure that actions involving other public authorities is of secondary focus to Council managing weeds on it's own land and encouraging weed control on private land.	High	Ongoing	4

Council may also be asked over time to participate in the development of weed control policy from other layers of government and public authorities. Council should instigate and help guide and inform strategies being developed for weeds that occur locally. For example, strategies to address several weeds of national significance are currently being developed by the federal government, as is a list of environmental weeds for nomination as Restricted Weeds under the CaLP Act 1994 (Daniel Joubert pers comm.; Kate Blood pers. comm.; Commonwealth of Australia 1999).

In addition, the management of weeds by other authorities with land in the municipality should inform council activities in those areas. For example, a Vegetation Management Plan for the 220v lines managed by SPIPowernet within Yarra Valley Park (partially within Banyule) is currently being developed and it will partially address some weed issues. Council could help ensure that weeds are dealt with in a

complementary way by reviewing such locally focussed strategies and developing complementary strategies on their adjacent land. Melbourne Water (MW) develops Waterway Action Plans (WAP) over time, such as the Plenty River WAP. It is now being implemented and Council has been involved in guiding the projects. MW also has general guidelines for weed management on waterways. It is recommended that Council comment on such documents using the principles and recommendations given in this document.

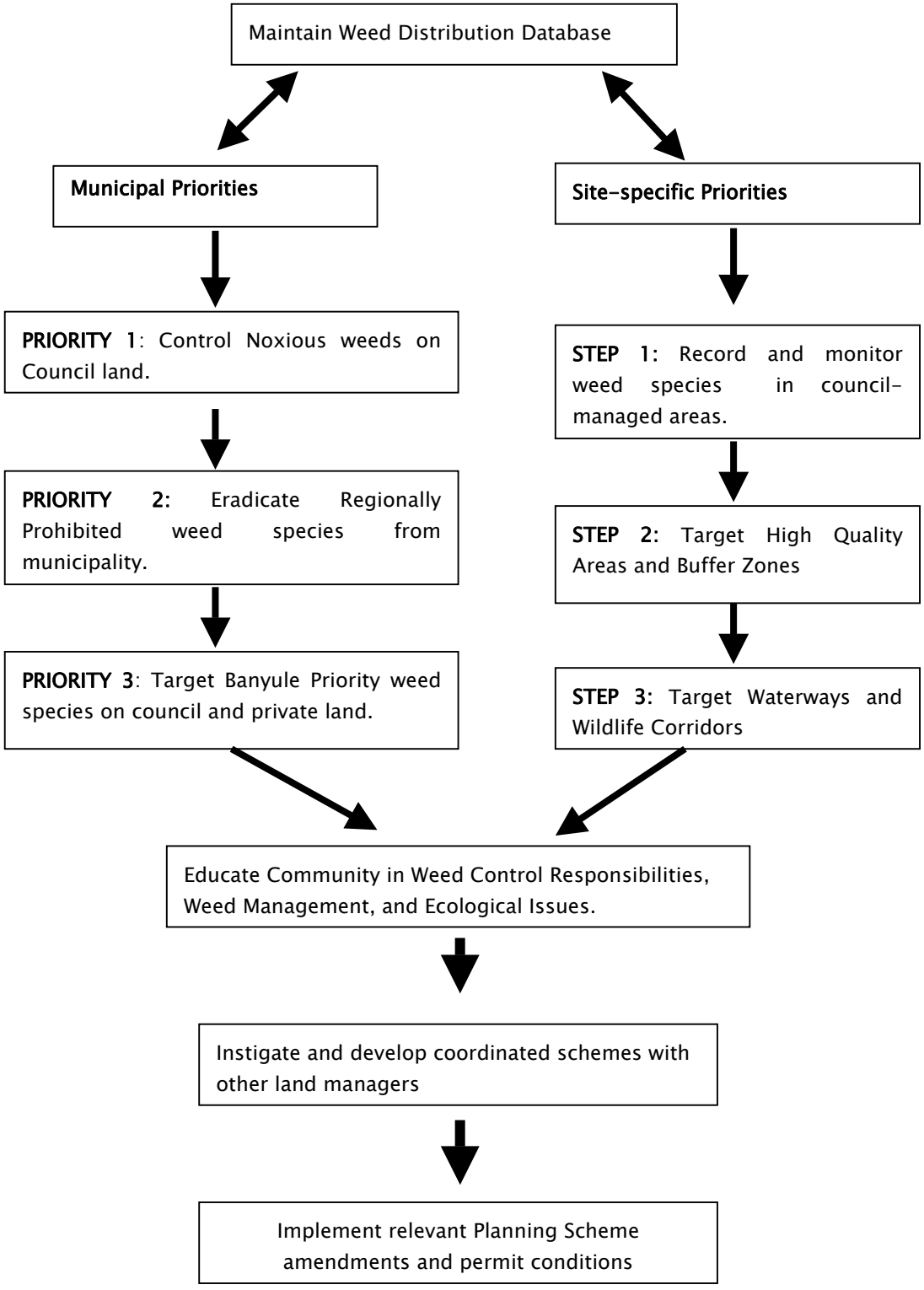
1.5 Summary

This strategy should be consulted to guide Council actions regarding issues relating to weed control in the municipality but also as a guide for other Council and Council-contracted actions. Major actions and priorities could be implemented according to site-specific and municipal-specific priority actions, followed by education, liaison, and Planning Scheme amendments (Fig. 1). Ongoing evaluation of actions implemented should occur through Banyule Council's Annual *State Of The Environment* reporting process.

The strategy recommends that Council:

- Concentrate first on Council land
- Prioritise control of species using Noxious, regional, and Banyule Priority weed lists.
- Fulfil legislative requirements and government policy for weed management.
- Support, educate, involve, and encourage the community in weed management.
- Liaise with public authorities and develop a long-term waterway weed management strategy.
- Develop site-specific management in an informed, consistent manner with long-term goals and strategies to fulfil them.
- Instigate changes to the planning scheme to facilitate the long-term goal of reducing environmental weed abundance in the municipality.

Figure 1. Flow-chart of municipal priorities and recommended actions.



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