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Darebin Integrated Weed Management Strategy

2019 - 2023



Prepared by Practical Ecology Pty Ltd for the Darebin City Council.
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1. PURPOSE AND SCOPE

The purpose of this strategy is to provide a strategic framework for effective weed management by Darebin City Council, in conjunction with other land managers and private landowners to:

- manage weeds that threaten sites of biodiversity significance;
- manage weeds that threaten Parks and Gardens and sporting facilities and;
- manage weeds that impact on the amenity of the municipality

Additionally, this strategy has been designed as a resource for Darebin staff, its contractors, partners and the community.

The scope of work for this strategy included:

- Develop recommended actions to achieve weed management outcomes that include identifying new weeds, resourcing and responding to new and established weed infestations.
- Provide recommendations for priority weed control locations and identify opportunities to enhance collaboration between council departments, other public authorities and community groups.
- Identify aims and objectives for new and emerging weeds, current weeds being managed and established weeds with larger infestations
- Identify measures to prevent the spread of weeds through improving awareness, hygiene, managing small new infestations
- Identify the biodiversity value of bushland and Parks and Gardens areas and appropriate weed control techniques with ecological considerations
- Review current weed practices and develop standard weed management categories for various management areas such as laneways, sporting grounds, parks, etc.
- Prepare action plans for weed control for significant Darebin weeds identified in the Policy Guidelines, in particular contexts (e.g. laneways; roads; bushland). Action plans to include:
 - recommended improvements to equipment, herbicides and application techniques;
 - timing of treatments;
 - integration with other works e.g. mulching, differential mowing;
 - prioritisation of weeds in specific contexts;
 - weed hygiene procedures;
 - estimated costs of management regime; and
 - monitoring requirements
 - minimising chemical use across the municipality
- Options for Council to consider for reducing the use of Glyphosate use in the future
- Outline existing weed management initiatives in the region and funding opportunities for Council and its rate payers
- Provide recommendations for community engagement, resources and educational material to improve public awareness of the weed problem and its underlying causes.

- Discuss current planning controls, land use zones and overlays and their role in environmental protection and make recommendations to improve outcomes for weed control through specified permit conditions, development bonds and enforcement for non-compliance. Recommendations may include planning scheme revisions or the introduction of a weed schedule into the local planning provisions.

2. INTRODUCTION

2.1 The City of Darebin and its landscape

The City of Darebin covers 53 square kilometres of land. Stretching from Melbourne's inner northern suburbs of Northcote and Fairfield out to Reservoir and Bundoora. It is bounded by the Darebin Creek Corridor to the East and the Merri Creek Corridor to West. The northern area of Darebin is home to several major remnants of the Western Plains Grasslands and Grassy Eucalypt Woodlands. It contains some of the larger areas of Open Space that contain remnant native vegetation.

The waterways to the east and west of the municipality are important regional ecosystems providing habitat and connections for plants, animals and aquatic life. They are also important areas for leisure and community spaces.

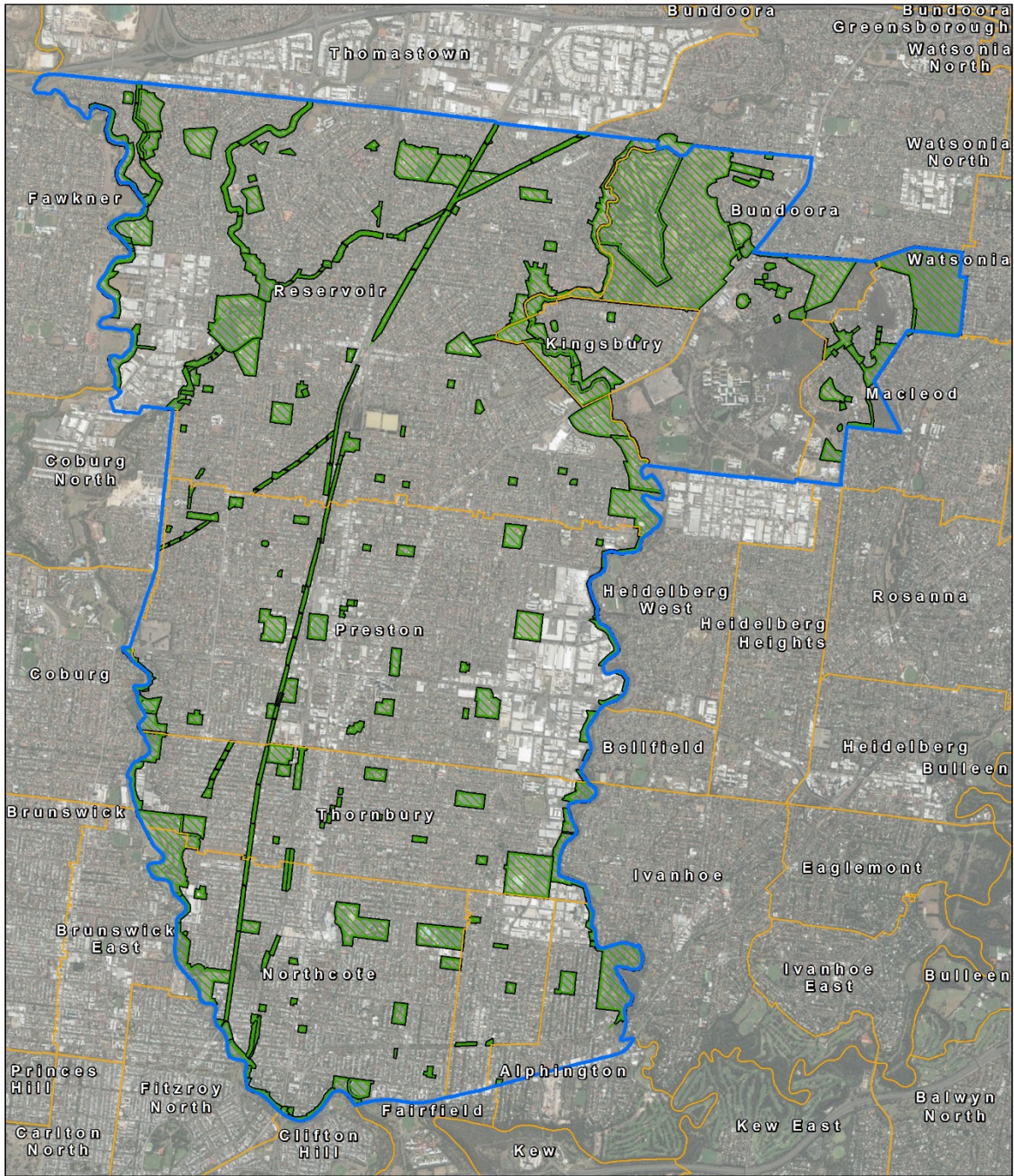
The Wurundjeri people of the Kulin Nation are the traditional owners and custodians of the land that is now known as the City of Darebin. The City of Darebin recognises that it manages many locations that are of particular significance and interest to the Wurundjeri.

The City of Darebin is home to a growing and culturally diverse community. It includes a mix of lower density suburban areas as well as higher density developments in activity centres and along transport corridors. Major centres include Northcote, Thornbury, Preston, Reservoir and Fairfield.

Population growth is a key driver of demand for open space. The City of Darebin is forecast to be home to approximately 196,000 people in 2028. This is an increase of more than 35,000 people from the 2018 population of approximately 161,000 and represents population growth of approximately 21 per cent.

The *Rewilding Darebin*, Open Space Strategy, 2019 sets a series of principles and direction for the management and development of existing and future open space that responds to the current and future requirements and expectations of the community.

There is approximately 750 hectares of open space within the City of Darebin, about half of which is managed by Darebin City Council (Figure 1).



	<p>Legend</p> <ul style="list-style-type: none"> Darebin LGA Localities Open Space 	<p>Details</p> <p>Date: 26/03/2019 Version: 1</p> <p>Data Source: Base layers courtesy of VicMap, Copyright © State of Victoria. Aerial photography from ArcGIS World Imagery.</p>	<p>Open Space Network Darebin LGA</p> <div style="text-align: center;"> </div> <div style="text-align: center;"> </div> <p>Scale 1:35,000 (Page size A3)</p>
<p>Disclaimer Practical Ecology bears no responsibility for the accuracy and completeness of this information and any decisions or actions taken on the basis of the map. While information appears accurate at publication, nature and circumstances are constantly changing.</p>			

Figure 1. Open Space in the City of Darebin

The Open Space Strategy (2019) classifies Open Space according to size and role:

- small local parks that meet the everyday needs of residents, usually located within 500 metres of their homes;
- district parks that provide a broader range of sport and recreation opportunities for residents at the suburb scale; and
- large regional parklands that are enjoyed by all residents of Darebin, as well as visitors to the municipality. Regional public open spaces in Darebin include Edwardes Lake Park, Bundoora Park, John Cain Memorial Park as well as several golf courses and other active open spaces.

As the Weed Management Strategy is concerned with the management of open space, a different categorisation of open space is applied that recognises the primary and secondary management focus within each park or reserve including:

- Conservation bushland (e.g. Cherry Street Reserve)
- Conservation Parks and Gardens, (e.g. Darebin and Merri Creek sections)
- Formal Parks and Gardens (e.g. Oldis Gardens)
- Informal open space (e.g. Dalglen Street Reserve)
- Links (e.g. Merri and Darebin Creeks, Cheddar Road)
- Sporting (e.g. Hayes Park)
- Landscape Amenity areas (e.g. Roadside planting areas)

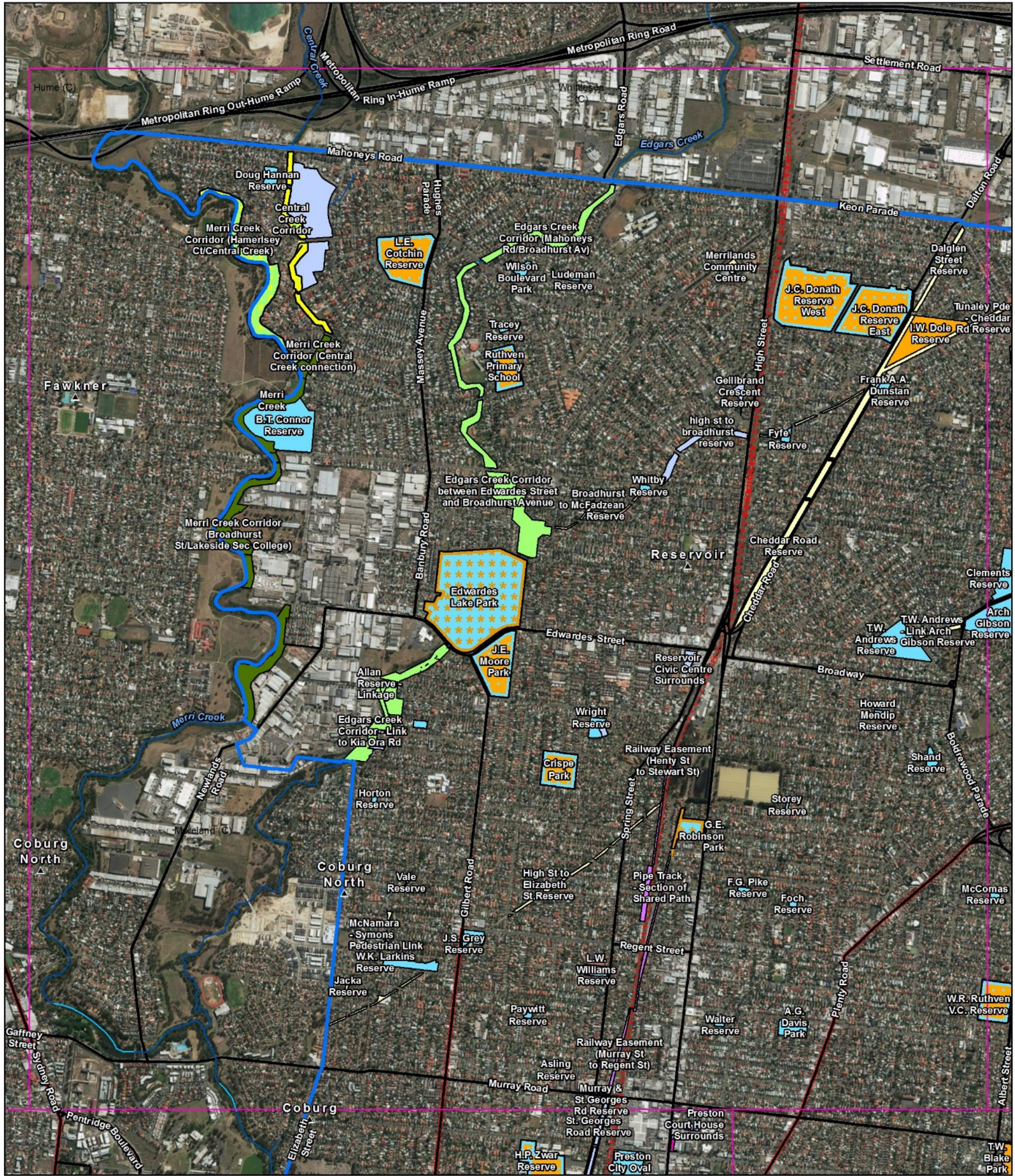
Open space with the primary and secondary open space categories are shown in the maps provided as Figure 2.

Additionally, the City of Darebin manages a large number of assets including more than 619 kilometres of road, 623 kilometres of drains, 345 buildings, 83,000 trees (53,000 street trees and 30,000 Parkland trees) and 193 structural items such as barbeques and shade-sails.

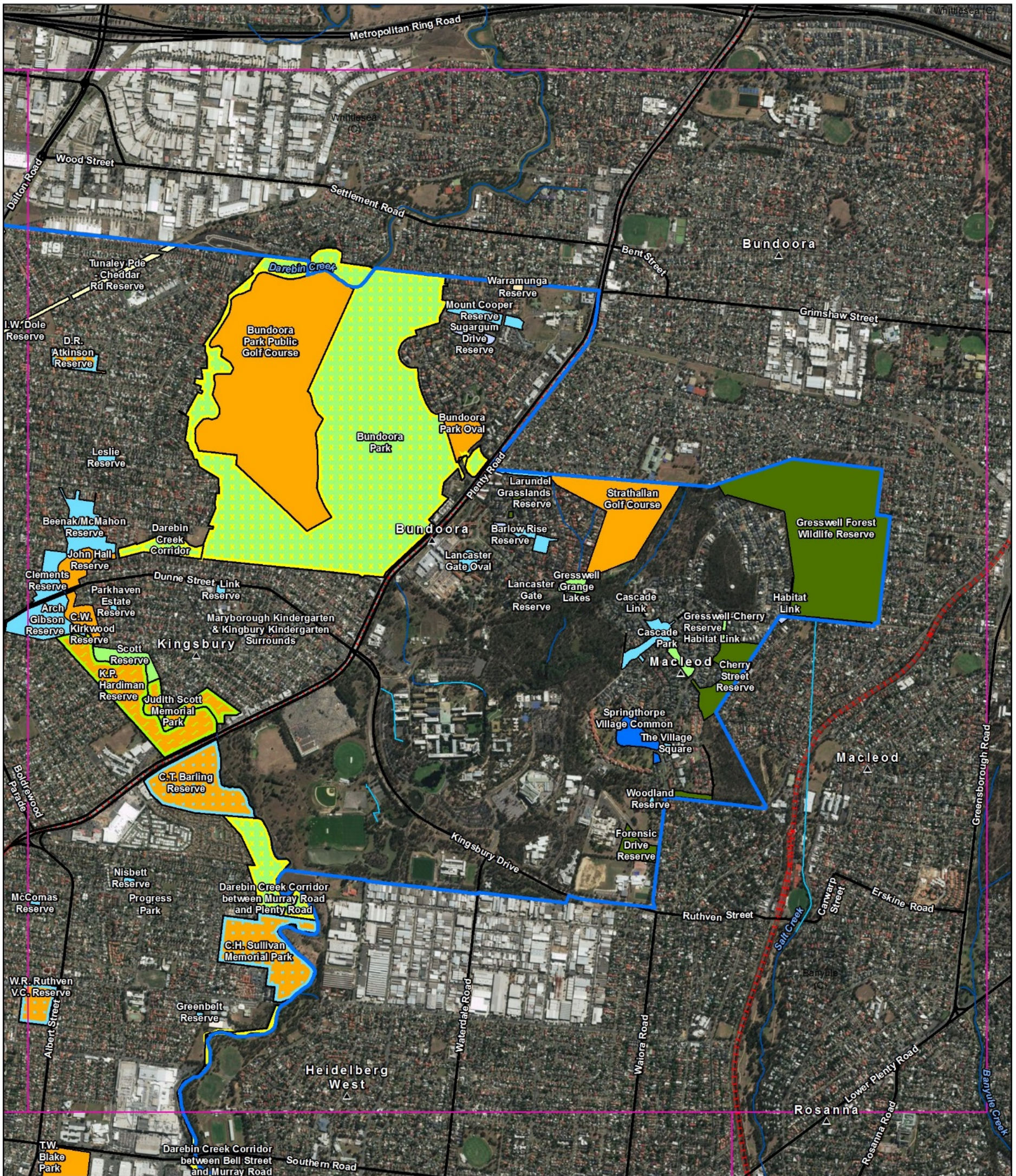
Weed management is recognised as an important component of Council's responsibility and accordingly it features in many areas of council activity.

Weed management is undertaken for reasons that include ensuring natural values are maintained and improved; amenity values are maintained; and that health and safety considerations such as exposure to allergenic plants are reduced.

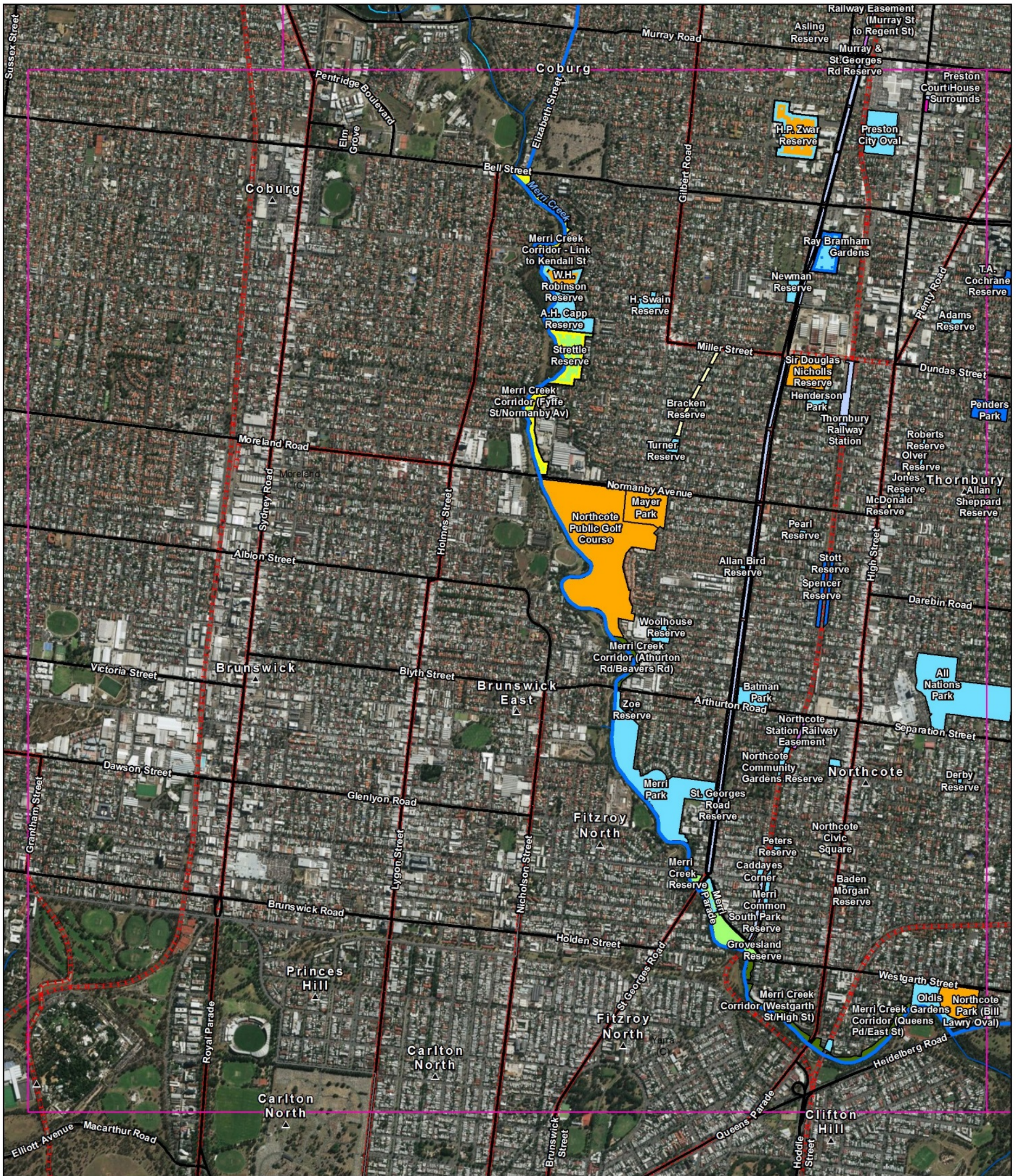
Figure 2. Open space with primary and secondary land management categories



	Legend Dashed line: Darebin LGA Solid line: Surrounding LGAs Thick black line: Major Roads Red dashed line: Railways Blue line: Constructed watercourse Light blue line: Natural watercourse Category Primary Green: Conservation Bushland Yellow-green: Conservation Park	Category Secondary Yellow: Parkland Light blue: Linkage Purple: Railway Land Orange: Sporting Pink: Streetscape Magenta: Urban Space Light blue: Other Yellow: None	Details Date: 25/03/2019 Version: 1 Data Source: Base layers courtesy of VicMap, Copyright © State of Victoria. Aerial photography from ArcGIS World Imagery.	Open Space with Management Categories Darebin LGA Page 1 of 4 Scale 1:18,600 (Page size A3)
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	Legend <ul style="list-style-type: none"> Darebin LGA Surrounding LGAs Major Roads Railways Constructed watercourse Natural watercourse Category Primary Conservation Bushland 	<ul style="list-style-type: none"> Conservation Park Formal Park Parkland Linkage Sporting Other None 	Category Secondary <ul style="list-style-type: none"> Conservation Bushland Conservation Park Parkland 	Details Date: 25/03/2019 Version: 1 Data Source: Base layers courtesy of VicMap, Copyright © State of Victoria. Aerial photography from ArcGIS World Imagery.	Open Space with Management Categories Darebin LGA Page 2 of 4 Scale 1:18,600 (Page size A3)
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Legend

- | | | |
|-------------------------|-------------|---------------------------|
| Darebin LGA | Formal Park | Category Secondary |
| Surrounding LGAs | Parkland | Conservation Bushland |
| Major Roads | Linkage | Formal Park |
| Railways | Sporting | Parkland |
| Constructed watercourse | Streetscape | |
| Natural watercourse | Urban Space | |
| Category Primary | Other | |
| Conservation Bushland | | |
| Conservation Park | | |

Details

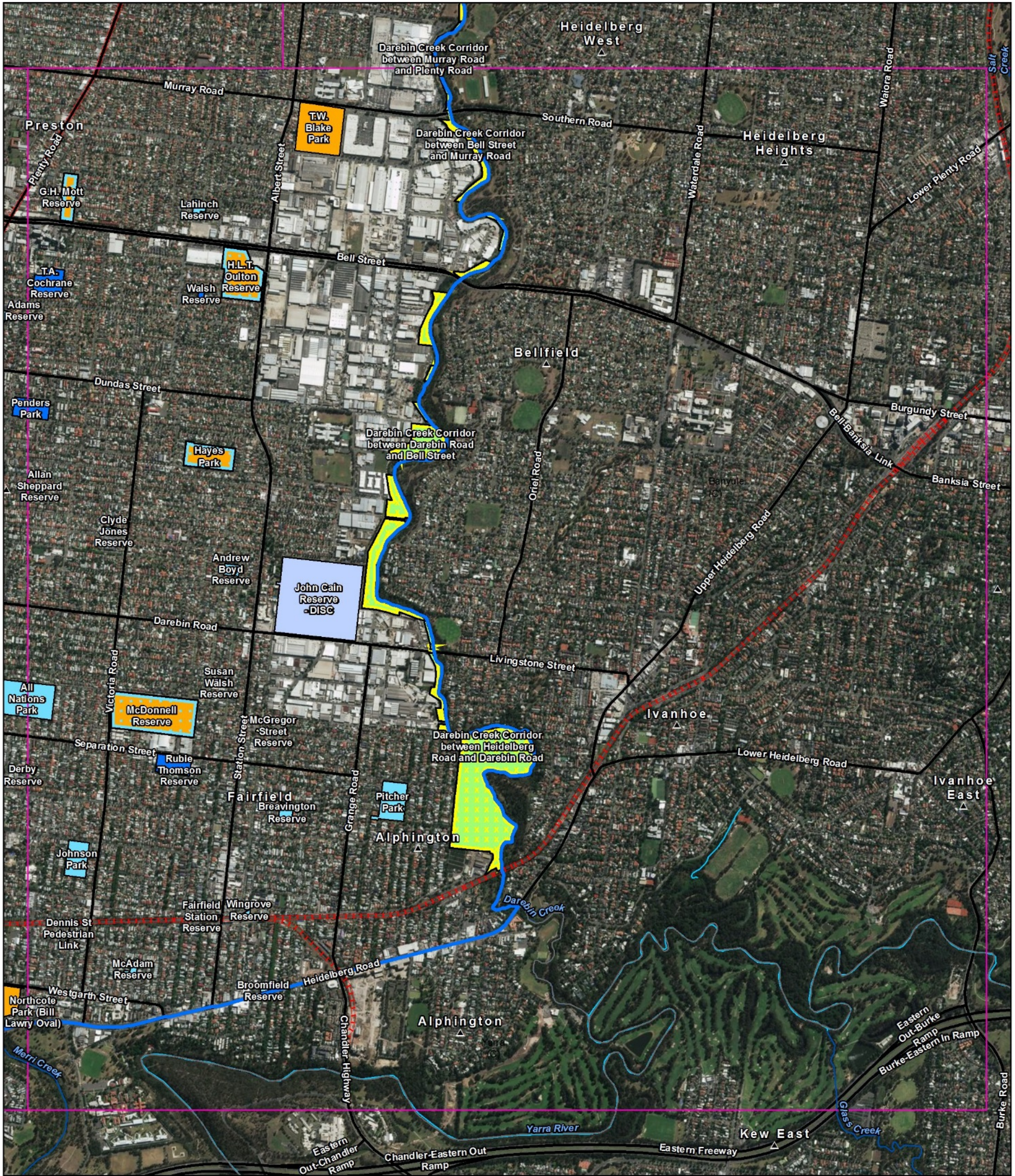
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**Open Space with Management Categories
Darebin LGA
Page 3 of 4**



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Legend

Darebin LGA	Conservation Park	Category Secondary
Surrounding LGAs	Formal Park	Conservation Bushland
Major Roads	Parkland	Parkland
Railways	Linkage	
Constructed watercourse	Sporting	
Natural watercourse	Other	
Category Primary		

Details

Date: 25/03/2019
Version: 1

Data Source: Base layers courtesy of VicMap, Copyright © State of Victoria. Aerial photography from ArcGIS World Imagery.

Open Space with Management Categories
Darebin LGA
Page 4 of 4

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3. Weed Management – legislative and policy context

Weeds can threaten wildlife and habitat, rare or threatened species, native vegetation communities and ecosystems. They are also often visible to the community and in some cases reduce amenity and contribute to reduction in the safe access or use of public spaces.

This strategy recognises that in the City of Darebin the definition of what constitutes a ‘weed’ varies depending on the management context.

In all cases the concept that a weed is ‘a plant in the wrong place’ is applicable. Taking this into account, for the purposes of this weed strategy a weed is considered to be “plants that have, or may have, a negative impact on natural, economic or community-based values.”

In order to prioritise weeds and weed management at the municipal or regional level, the following items are relevant. These being:

- Legislative and policy requirements
- Guiding principles and frameworks
- Regional knowledge and expertise
- Community expectations and feedback

3.1 Legislative requirements

The Victorian *Catchment and Land Protection Act 1994* (CaLP Act) provides the primary legislative direction and requirement for the management of weeds in Victoria, under which weeds may be declared noxious. The Victorian *Fisheries Act*, 1995 provides for noxious aquatic species.

However, many weeds that affect natural values have not been declared ‘noxious’. These weeds may be managed under the environmental objectives of a range of Acts, including the *Flora and Fauna Guarantee Act 1988* (FFG Act), *National Parks Act 1975* and *Sustainable Forests (Timber) Act 2004*.

Over and above these legislative requirements, national, state and regional strategies provide useful frameworks to guide management programs.

3.1.1 Catchment and Land Protection Act, 1994

The intent of this Act is to manage land degradation including detrimental environmental or economic impacts of declared noxious weeds and pest animals.

Under section 20 of the (Catchment and Land Protection Act 1994) CaLP Act, all land owners, including the Crown, public authorities and licensees of Crown lands, must, in relation to their land, take all reasonable steps to:

- avoid causing or contributing to land degradation which causes or may cause damage to land of another land owner;
- eradicate regionally prohibited weeds;
- prevent the growth and spread of regionally controlled weeds on their land;

- prevent the spread of, and as far as possible, eradicate established pest animals.

These are also provisions within the Act to prevent the spread of declared noxious weeds, through regulating the purchase, sale, possession for the purposes of sale, display, propagation or transport of these species into or within Victoria.

Declared noxious weeds are categorised into four groups depending on their known and potential impact and specific circumstances for each region. These categories are:

- State Prohibited Weeds (SP) are either currently absent in Victoria or are restricted enough to be eradicated. The Victorian Government is responsible for their control.

Relevance to City of Darebin weed management:

There are 25 State Prohibited Weeds. The State Government is responsible for management of these weeds and runs management programs for where these weeds are known to occur. There is one SP weed present within Darebin, Alligator Weed **Alternanthera philoxeroides*. This occurs in a number of locations along the Merri Creek and at Edgars Lake. Management activities have reduced these infestations with eradication the primary objective.

The State Government also runs the *Weed Spotters* Program which provides training and information to volunteers who register as *Weed Spotters* which focus on the early identification and reporting of State Prohibited weeds.

- Regionally Prohibited Weeds (P) are not widely distributed in a region but are capable of spreading further. It is reasonable to expect that they can be eradicated from a region and they must be managed with that goal. Land owners, including public authorities responsible for crown land management, must take all reasonable steps to eradicate regionally prohibited weeds on their land.
- Regionally Controlled Weeds (C) are usually widespread but it is important to prevent further spread. It is the responsibility of the landowner to control these weeds on their property and on adjacent roadside reserves.
- Restricted Weeds (R) include plants that pose unacceptable risk of spreading in the State or other Australian states and are considered to be a serious threat to primary production, Crown land, the environment and/or community health if they were traded in Victoria.

Trade in these weeds and their propagules, either as plants, seeds or contaminants in other material is prohibited. This can be reported to the relevant State Government department via their general number, 136 186.

3.1.2 Environmental weed management with relevance to the Flora and Fauna Guarantee Act, 1988

‘The invasion of native vegetation by environmental weeds’ is listed as a potentially threatening process under the FFG Act.¹ Section 4 of that Act states that it is the responsibility of all public authorities to have regard to

the flora and fauna and management objectives of the Act. The FFG Act also lists the establishment of several environmental weeds as potentially threatening processes: Sweet Pittosporum (*Pittosporum undulatum*) in areas outside its natural distribution; Blackberry (*Rubus fruticosus* spp. agg.); the Cord-grasses (*Spartina* spp.); and Tall Wheat-grass (*Lophopyrum ponticum*). The FFG Act restricts these species from being released or abandoned into the wild in Victoria.

Environmental weeds are plants that invade native ecosystems and have the potential to adversely affect the survival of native flora or fauna or the functioning of ecosystems. They include species that have been introduced to Australia from other countries, as well as native species that have spread beyond their previous (natural) range. Environmental weeds are a threat to Australia’s biodiversity because they may displace native species, disrupt ecological processes such as fire and soil erosion patterns, and may alter the genetic composition of native plant populations (Carr et al. 1992; Carr 1993).

3.1.3 Fisheries Act 1995

Some aquatic plants pose a serious threat to fisheries, the aquatic environment or human health. The *Fisheries Act 1995* has declared some species as noxious aquatic plants. It is an offence to bring them into Victoria or possess, sell, transport or release them.

3.2 Local policy

The Weed Management Strategy takes direction from relevant sections of the strategies and policies shown in Figure 3.

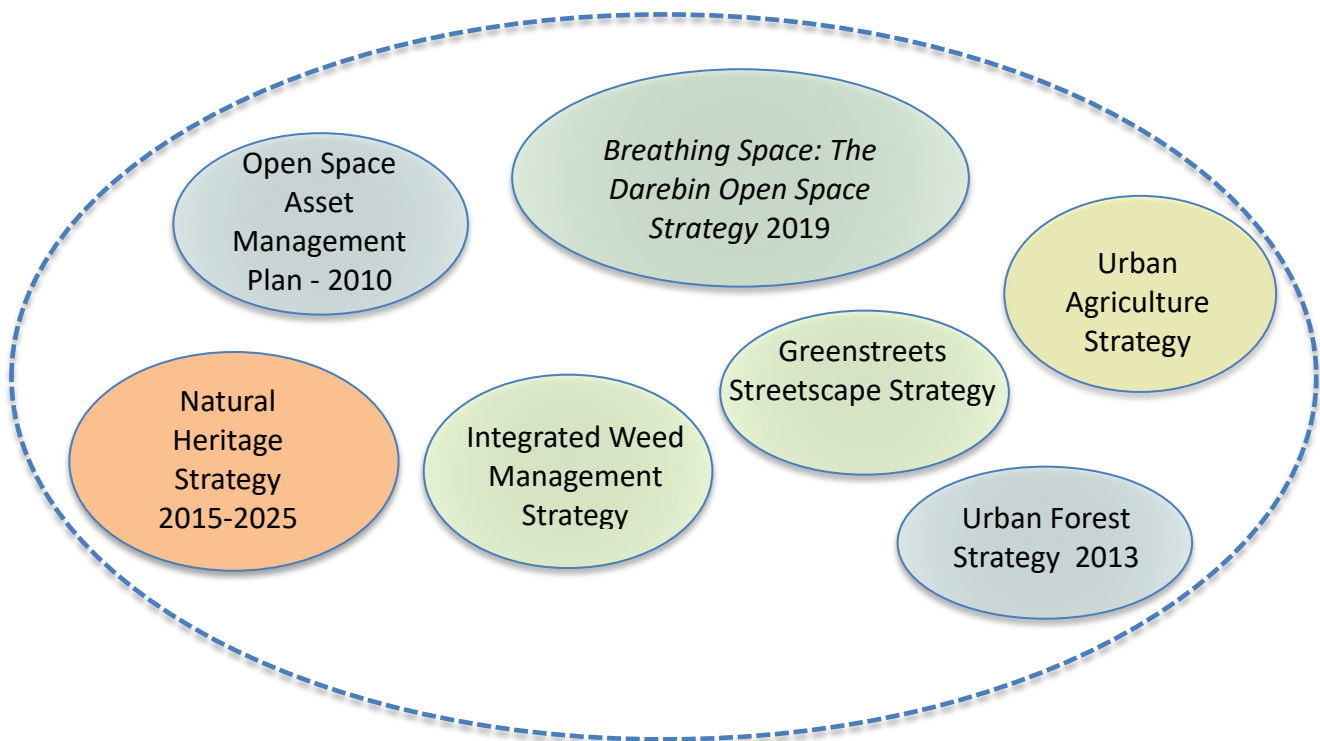


Figure 3. Current local policy context

In addition to the policies shown in Figure 3, a Biodiversity Strategy is intended for development as an action from *Breathing Space: The Darebin Open Space Strategy 2019*. As well as taking direction and seeking to incorporate the relevant elements from all relevant local strategies, the Weed Management Strategy will particularly be guided by the Open Space Strategy and the Natural Heritage Strategy for bushland and conservation areas.

To this end, the Open Space Strategy (2019) contains a number of key directions that are recognised as providing strategic direction for weed management. This includes:

- As a key component of Council's response to the Climate Emergency declared in Darebin, the strategy outlines key actions to manage, mitigate and repair damage done through climate change.
- As an articulation of the importance of planning for biodiversity and increasing the conservation and improvement of habitat.
- As a means to improving active transport throughout the municipality through improving the walkability, amenity and provision of shade on residential streets and in activity precincts.
- As a practical way to improve the wellbeing of people by providing opportunities for them to live their lives well.
- As a vehicle for planning for the population growth and change that is predicted for the short and long term. The strategy also provides a framework to inform Council's decision making regarding investments in open space. The prioritisation of areas which require additional or improved open space is a fundamental role of *Breathing Space: The Darebin Open Space Strategy 2019*.

3.2.1 Policy of partner organisations and land managers

Melbourne Water, *Healthy Waterways Strategy – 2018–2028*

- Melbourne Water is responsible for the waterways within the municipality and has responsibilities associated with stormwater, water quality and drainage. These elements are all important considerations in weed management, particularly as land managers have identified that the waterways have the ability to act as weed vectors and nutrients, sediment and runoff affect weed management.
- Melbourne Water has priority work areas and operations that are directed by its Healthy Waterway Strategy and Capital Investment Plan and operations plans. It provides grants for waterway related activities and is an active partner in weed-related management for the City of Darebin.

Latrobe Sanctuary Management Plan and Latrobe University Masterplan (2019)

- Latrobe University, located in the north-east of the municipality owns or manages some of the larger blocks of significant bushland reserves within the municipality. It has a long history in on-ground management, active ecological research and engagement with the community and project-specific volunteers.
- The Latrobe Wildlife Sanctuary has trialled many different management techniques and achieved impressive weed management outcomes. It has a number of long-term, dedicated staff and future plans indicate that the University itself aims to employ its own staff to focus on complimentary management of natural areas that adjoin the Sanctuary land and across the campus.

Darebin Creek Management Plan (2017 update)

- The Darebin Creek Management Committee (DCMC) is jointly funded by four Councils in the catchment and La Trobe University. The Committee is responsible for:
 - Coordinating implementation of its Concept Plans and the Darebin Creek Management Plan.

- Facilitating actions between Councils, with the actual on-ground works completed by the Council staff or contractors.
 - Staff who manage and implement works at the Darebin Parks and Gardens.
 - Facilitating community involvement in works along the Creek.
 - Applying for funding to implement the recommendations in this Plan.
 - Commenting on planning proposals along the creek.
 - A catchment wide education program.
- Darebin Council's bushland crew manage Darebin Creek as a natural heritage site in collaboration with DCMC and Friends Groups. This involves maintaining existing remnant indigenous vegetation via a combination of burning (in grassland areas), weeding and replanting activities as well as maintaining, mapping and recording changes over time.

Merri Creek and Environs Strategy, 2012

- The Merri Creek Management Committee Inc. (MCMC) is an environmental coordination and management agency formed to achieve a shared vision for the waterway corridors of the Merri catchment. Its members include all municipalities in the catchment: Darebin, Hume, Moreland, Whittlesea, Yarra and Mitchell, plus the Friends of Merri Creek and the Friends of Wallan Creek. Representatives of these member groups form a Committee of Management that guides MCMC's activities. MCMC's primary aim is to ensure the preservation of natural and cultural heritage, and the ecologically sensitive restoration, development and maintenance of the Merri Creek and tributaries, their corridors and associated ecological communities. It employs specialist staff to achieve this aim.
- The Merri Creek and Environs Strategy (MCES) is a document intended to give direction to managers of the waterway corridors of the Merri catchment. While the title indicates it has a strategic intent, it also captures some important, often site-specific actions, which underpin its strategic direction. It contains a specific chapter relevant to Land Management including pest plants and animals

Metro Train's Biodiversity Management Plan and Vegetation Management Plan

- Victorian Rail Track (VicTrack) is a State Government-owned utility which owns the rail reservation land which includes some conservation areas. It conducts some land maintenance activities associated with rail reserves (e.g. near Rushall Station).
- Metro Trains currently delivers on land management work within the rail corridor and associated land on behalf of VicTrack. Their work is dictated by a Biodiversity Management Plan and Vegetation Management Plan. The Biodiversity Management Plan focusses on high priority sites for threatened species and involves weed management to conserve these locations. The Vegetation Management Plan has traditionally focussed on ensuring access and safety within the rail corridor but will include some activities to address weed management to improve amenity and conservation values.

3.3 Weed management frameworks

National: The *Australian Weeds Strategy* (2017–27) provides a national framework that aims to address weed issues with the dual focus of maintaining the profitability and sustainability of Australia’s primary industries and also reducing the impact of weeds on the environment. Its general principles align with those of the state and regional frameworks that are mentioned below. It differs in that it reflects its interest in managing weeds in the national interest.

The *Australian Weeds Strategy* (2017) includes the identification of Weeds of National Significance (WONS) and the resultant coordinated actions across all States and Territories.

State: For Victoria, the ‘Invasive Plants and Animal Policy Framework 2010 (IPAPF) approaches the management of existing and potential invasive species within the context of the whole of government *Victorian Biosecurity Strategy* (2009).

It incorporates a biosecurity approach and provides a framework to guide future policy, planning and community activity specific to invasive species. This framework is also reflected in the Port Phillip and Western Port (PP&WP) Regional Catchment Strategy and the PP&WP Invasive Plant and Animal strategy.



Figure 4. Framework for weed management planning

This framework provides for the allocation of resources to priority locations and forms the basis of this weed strategy.

3.4 Principles of weed management

The level of impact and potential that weeds have on natural values and the community should guide priority-setting for weed management.

The highest priority is given to actions that will have a lasting positive effect at higher value locations. Additional considerations may include elements related to community values and priorities relevant to other areas of local government and management.

It is most cost effective to prevent new weeds establishing and small infestations should be eradicated followed by containment or asset-based protection.

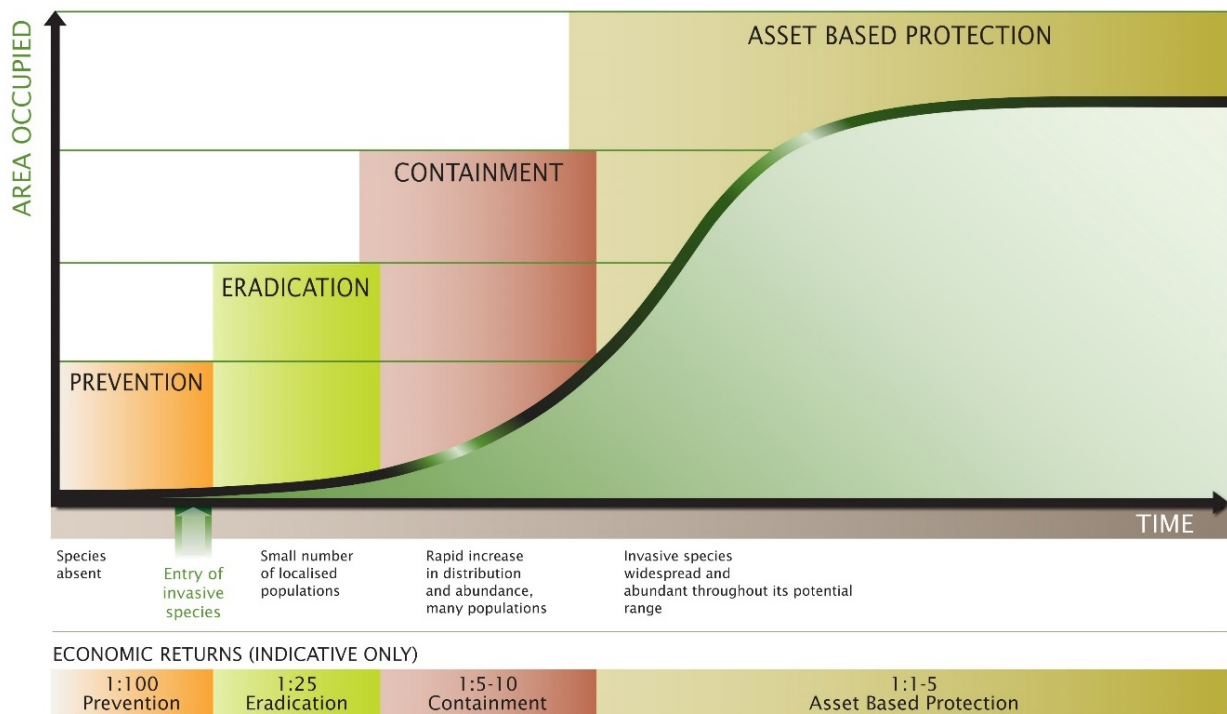


Figure 5. Invasion curve for weed management – a framework that illustrates management approaches and the benefit of investing in control effort at different stages of the invasion process.

(Source: Victorian Government 2010)

3.4.1.1 Categories for weed priority determination

- ‘New and emerging weeds’ also known as ‘sleeper weeds’: where the management goal for these species is for prevention and eradication
- ‘High priority established weeds’: the goal is containment and eradication
- ‘Other established weeds’: medium and low priority, the goal is containment and suppression

3.4.1.2 Criteria for weed priority determination

This Weed Management Strategy has utilised the *Advisory list for environmental weeds* (DELWP, 2018) as its starting point for considering regional weed priorities. This method and list, updated in 2018 uses the following factors to allocate a risk ranking score which is then translated into a ‘risk rating’ from very high to low:

- including weed attributes
- potential impacts
- potential for spread
- potential for invasion
- rate of dispersal and
- range of susceptible habitat types

These risk ratings were then applied to weeds that are listed within Public land in the City of Darebin (Appendix 1). Informed opinion was then sought from Darebin staff and experts apply rankings that reflect obligations under the CaLP Act (1994), biosecurity legislation, invasiveness, and threat posed natural and community values.

3.5 Translating regional priorities to onsite planning and action

First priority should be given to protect significant values at significant locations. Resources should first be targeted towards actions that will have a lasting effect (DSE 2006).

Following weed removal and site rehabilitation using integrated weed management techniques, monitoring and ongoing maintenance is required where reinvasion is likely to occur.

Future assessments should include the role of climate change and explore the potential increased risk of weed species extending their range or becoming more invasive.

3.5.1.1 Weed Management approaches

Best practice weed management approaches include the following activities in order of priority:

1. Weed prevention and hygiene
2. Early detection and eradication
3. Integrated weed management: biological, physical and chemical control measures
4. Ongoing maintenance and capacity

Planning for effective weed management involves the following activities.

- Information gathering
- Setting goals and objectives based on knowledge, priorities and resources
- Develop and implement actions to achieve objectives with partners
- Monitor and document performance and review and revise plan as necessary

Good weed management planning and implementation should result in the following outcomes:

- Increased protection of identified key priority assets from the threat of weeds for the future.
- An integrated approach to the protection of natural and community valued assets.
- Increased recreational and open space engagement opportunities.
- Strengthened partnerships between all land managers within and adjoining the City of Darebin.

4. Darebin’s weed management strategy

4.1 Background review and stakeholder engagement

This Weed Management Strategy updates a previous iteration entitled the Integrated Weed Management Strategy (Greening Australia, 2008). Preparation of this update involved a review of relevant documents, research and updated information related to weed management. It also involved a stakeholder engagement process which resulted in much of the direction and ideas that have been used to guide the goals and actions that form the basis of implementation of this strategy (see Section 6 and Table 3).

Stakeholder engagement focussed on the three key groups:

- Community representatives
- Staff directly involved in on-ground weed and land management
- Partners and external stakeholders involved in on-ground weed and land management

Workshops were held with each group which involved focussed discussions around changes, trends and issues in weed management. Future requirements and specifically sought ideas from each group for how the City of Darebin might transition to practices that involve less herbicide use. Follow up with some stakeholders was undertaken to seek further information, clarification or involvement in shaping recommendations within this strategy.

4.2 Review of the 2008 Integrated Weed Management Strategy

The previous iteration of the Weed Management Strategy was in 2008. In that time there have been many changes. A suite of themes that reflect changes relevant to weed management in Darebin. Engagement with staff and land management stakeholders provided their insights into change that they’ve observed in the past ten years. This assists in setting the scene for the direction of the current iteration of the Weed Management Strategy.

Table 1. Changes in weed management relevant to Darebin in the past 10 years

Theme	Changes in the past 10 years
Types of weeds	<ul style="list-style-type: none">• Reduction in woody weed cover and elimination in many locations. For example Boxthorn on Darebin Creek• New weeds are being seen, especially along the waterways coming from the north. These have included Cobbler’s Peg; Jerusalem Artichoke and more instances of Hemlock.• New trends in garden plants that are now known to be invasive. This includes African Feather-grass *<i>Cenchrus macrourus</i>, a Regionally Prohibited weed, yet readily purchased and grown.• Weeds spreading down the waterways (north to south).• Seemingly a wider range of environmental weeds requiring more knowledge and different management

Theme	Changes in the past 10 years
	<ul style="list-style-type: none"> • Different weeds have become higher priorities i.e. many sites of woody weeds have been reduced and new weeds are emerging or becoming a higher priority. • Climate and seasonal changes resulting in new/different plant behaviour e.g. Blackberry and Tradescantia
Weed management techniques	<ul style="list-style-type: none"> • Changes in technology: e.g. drones being used by Melbourne Water to map willows. • Some new herbicides • More trials of non-herbicide approaches • Using less herbicide and aiming to be more targeted. • Safety standards and PPE use has increased. • More care in use of persistent herbicides near waterways. • We've become smarter in how we control weeds.
Public knowledge, engagement and expectations	<ul style="list-style-type: none"> • More interest and scrutiny from the public. • Society's expectations have changed around management of public space and also of herbicide use. They want to see less herbicides. • More public use of Open Space, a trend that is likely to continue and increase. • Public perception – seeing increased willingness to get involved, take more ownership and have more say. • Increased profile of weed issues/management on social media. Including community discussion and/or opinion. • Different weeds have become higher priorities i.e. many sites of woody weeds have been reduced and new weeds are emerging or becoming a higher priority. • More community interest, including wanting to 'take on' sites. Involving hand weeding instead of herbicide. • Focus on weed management in public spaces other than high quality bushland e.g. playgrounds etc.
Communication around weed management issues	<ul style="list-style-type: none"> • We're better at sharing information. • Public access to information via the internet sometimes provides mis-information e.g. people believing that marker dye on grass is a toxic chemical. • Staff, contractors and the public are more aware of the impacts of herbicides.
Requirements for accountability, transparency	<ul style="list-style-type: none"> • Accountability and government expectations – i.e. from the top down, expectations around 'asset management' and meeting service levels, plus policy. • More focus on collaboration, 'we can't do it alone', grants and accountability (paperwork), auditing. Inconsistency is a big problem. • Challenges in collecting relevant data from the field. • More focus on weed management as 'customer experience and perception of the rail corridor' is becoming more of a focus over and above 'rail function' (keeping the tracks clear).

Theme	Changes in the past 10 years
	<ul style="list-style-type: none"> • More emphasis on data collection and mapping resulting in improved efficiency. • New and updated range of strategies including a Darebin Urban Forest Strategy, updated Open Space Strategy and others.
Other influences	<ul style="list-style-type: none"> • Requirements to plant trees in new and challenging sites. Sometimes hard to find suitable trees due to site conditions (dry, hard soil and other restrictions). • Urban growth pressures (population growth, asset growth): Opportunity from this via increased budget for Melbourne Water but have to make case to see it prioritised for weed management work. • Consideration of the requirement to retain weeds or undertake staged treatment to maintain habitat. • Less State Government influence/involvement – used to be more.

Feedback from the staff and stakeholder engagement process identified that the current iteration of the Weed Management Strategy should include the following areas of focus:

- Collaboration
- Procedures
- Training, professional development and ongoing learning
- Communication and information sharing
- Resources and technology
- Consider the impacts (and future impacts) of Climate Change
- Reduction in herbicide use

4.3 Goals for the weed management strategy

The Darebin Integrated Weed Management Strategy will be guided by the following goals. These reflect the themes that resulted from the background research, review and stakeholder engagement processes that were completed to inform this strategy. Relevant actions to deliver these objectives including timeframes and targets is provided in Table 3 in Section 6.

1. Research, monitor and act with a view to preventing new and emerging weeds from establishing in the municipality
2. Minimise the impact of priority weeds on the natural, economic and community-held values in the City of Darebin.
3. Minimise the risk of weed spread within the municipality including any that have originated within the municipality
4. Set targets, strategically plan, monitor and report the impact of weed management activity.

5. Develop and implement an effective communication and engagement plan that aims to see all land managers and the community better informed and taking positive action in weed management.
6. Use appropriate technology and tools with a view to continually improving practice in the areas of effectiveness, efficiency and safety.
7. The weed management program aims to move to a low herbicide future.

4.4 Weed species within the City of Darebin

There are more than 403 exotic or naturalised plants recorded in the City of Darebin with those located in public land. Of these, nineteen are 'weeds of national significance' (WONS); and thirty are 'declared noxious weeds'. Including:

- one State Prohibited weed;
- one Regionally Prohibited weed;
- eighteen Regionally Controlled weeds; and
- ten restricted weeds.

Of those that are recorded 129 plant species recorded are recognised as environmental weeds with a risk rating of very high or high risk according to the *Advisory list of environmental weeds* (DELWP 2018).

Weeds can be classified by a number of growth and reproductive characteristics such as annuals, biennials or perennials. Identification of the life cycle of each weed is crucial to stop further seeding and for setting priorities for weed management, timing, and management methods.

Pest plants will always be present in a disturbed landscape such as Darebin, and significant weed infestations occur throughout the municipality and continue to threaten natural values.

In addition to the environmental weeds listed above, a number of plants are recognised as weeds for their characteristics that are relevant for community-related values such as amenity and safety. These are relevant to various sections of Councils that include:

- Parks and Gardens – focus on grass management exotic plants that grow excessively along pathways, within garden beds and 'look messy'.
- Pathways, laneways, roads, railway lines, drains, kerbs – any plant that has the potential to colonise this infrastructure, potentially obstructing or hindering its effectiveness.
- Sportsgrounds and golf courses – plants (usually grasses and herbs) that reduce the quality of the playing surface. This may include 'rough, spiky' or 'slippery' plants for example, Capeweed.
- Street trees – trees or shrubs that are known to be invasive or that have particularly unfavourable characteristics for inclusion in the public realm. For example they are prickly such as Golden Locust Tree, allergenic for some such as Norfolk Island Hibiscus, particularly 'messy' as they drop fruit or excess bark or have significant root systems.

4.4.1 History and influencers of current weed management

The City of Darebin was subject to European settlement shortly after the settlement of Melbourne in 1835. Its land was initially used for grazing and then in 1837 much of the southern portion divided into long rectangular blocks each with water frontage, intended for farming. However, farming activity was relatively limited in these areas and included market gardens along some portions of the waterways.

Higher density settlement occurred in the south in the vicinity of the Northcote township, and in subsequent years, housing estates comprising radiated out from that centre, moving further north in each decade.

Civic pride and the preferences of the population has dictated the plants that are now seen in Open Space and that characterise streetscapes and private gardens.

Exotic plants associated with the earliest pastoralist activities and settlement include Clover, Peppercorn Trees, Hawthorn, fruit trees and Willows.

Early programs associated with settlement include the activities of the 'Acclimatisation Societies'. These organisations aimed to introduce 'useful' plants and animals into the newly settled areas which saw the introduction of Blackberry and other plants and animals that have since taken a huge toll on their native counterparts (Tout-Smith, 2003).

This landscape history can shape management requirements today. For example, the former path of the Merri Creek south of Darebin Road originally flowed through what is now the Northcote Golf Course. This means that the golf course management needs to accommodate this low-lying, naturally wet portion of the landscape, while the new riparian corridor may not 'match' the natural substrate and growing conditions of the sections to the north and south. Other locations along the waterways where basalt was quarried directly from the creek valley itself may have similar issues.



Figure 6. Section of the Merri Creek to the south of Darebin Road in 1945. Source: <https://1945.melbourne>

Additional considerations arise in areas that have been subject to fill material such as quarries and lower points in the landscape such as former swamps, small or ephemeral creek lines or historic rubbish pits before the time of municipal 'tips'. Often these locations were not recorded but can sometimes now be the site of Parks and Gardens. Some well documented examples in Darebin include All Nations Park, the site of the Northcote Brickworks quarry and the Sir Douglas Nicholls Sportsground in Thornbury. In these cases, capping materials

may not be conducive to the growth of a preferred plant, such as turf or Parks and Gardens species. Alternately they can also be the sites of high levels of nutrients, weed seed and recurrent weed problems.



Figure 7. Sir Douglas Nicholls Sports fields in 1945. Source: <https://1945.melbourne>

Each decade of settlement has seen different trends in cultural and societal influencers on land management. The City of Darebin has provided a home to many different cultural groups who have brought their own plants and land management ideas and interests.

Darebin's current weed management environment and challenges:

The municipality today reflects the wider Melbourne region's trends in diversity and age distribution with a highly culturally diverse population.

Increased international mobility, widening opportunities to access a diversity of exotic plants and increased interest, particularly in middle-income areas around home gardening has led to an increased diversity of exotic plants within the urban matrix and a fast pace of plant industry response.

Many environmental weeds including some that are of the highest priority are garden plants. Some of which such as African Feather-grass, still regularly planted have high-mobility due to their wind-borne seeds.

Carr et al, (1992) outline some of the factors that contribute to the potential invasiveness of plants and the *Advisory list of environmental weeds* updated by DELWP, (2018) provide further guidance on the factors contribute to a plant's risk rating.

Increased land fragmentation, increased population and public use and increased pressure from urban growth, are likely current and future influencers affecting weed management.

Increasingly urbanised areas resulting in higher amounts and impacts of stormwater fluxes increases pressure on waterways and provides increased opportunity for weed seed and nutrients to be transported from suburban areas, to the waterway corridor. Higher, more rapid flows also means that there is increased potential for weed seed to be deposited on the banks of waterways, rather than travelling further downstream.

Observation by on-ground management staff has identified that some new weed occurrences are presenting first in the north and moving south along waterways. This is potentially as a result of new urban growth activity to the north potentially resulting in increased and more diverse weed sources, increased runoff, nutrients and

soil. There is also the potential that decreased open space opportunities in the north will lead to greater reliance of waterways for animal movement and resources, also increasing the potential for weed mobility.

Altered ecological processes such as decreases in native pollinators has also been considered as a factor that may lead to decreased opportunity for native species to propagate, leading to increased opportunities for exotic species.

Importantly, Climate Change is now widely recognised as influencing the natural environment and this is relevant to how the City of Darebin approaches the management of its natural values, open space and the private realm. Of relevance to weed management, staff and stakeholders have reported changes in the types of weeds that are being observed and also of different behaviour in weed growth and their life cycles. For example

New weed observations include Cobblers Pegs **Bidens pilosa* and Jerusalem Artichoke **Helianthus tuberosus* both present along the waterways now. Cobblers Pegs was one of the weeds mapped as an example of weed movement under Climate Change Scenarios in 2008 by DPI presented in *Climate change and potential distribution of weeds. Whither the weeds under climate change?* In those modelled weed distribution scenarios, Cobblers Pegs was not anticipated close to Melbourne until later.

4.5 Municipal weed management priorities

Listed weeds have been reviewed and prioritised by staff and experts within the municipality reflecting Council's legal obligations and the invasiveness and threat posed to natural and community values and using the principles outlined in Section 3.4.

A final list of 149 'priority plants' has been compiled which includes:

- 19 new and emerging weeds. Consistent with the *Bio-security Strategy for Victoria* (www.land.vic.gov.au), weed species with the highest priority for control (or elimination) are 'new and emerging' weeds. By definition, new and emerging weed species are unfamiliar and their (local) ecology poorly known (Waterhouse 2003). Accordingly it is intended that these plants will receive the highest targeted management priority and the aim is to eradicate infestations before they spread.
- 29 very high priority weeds. These include *Weeds of National Significance* or noxious weeds that are Regionally Prohibited or Regionally Controlled or are plants that have been identified as very high priority by Darebin staff or contractors.
- 37 high priority e.g. High priority (H) = species with a very high-risk rating category from the *Advisory List for Environmental Weeds*, DELWP, 2018 or are plants that have been identified as very high priority by Darebin staff or contractors.
- 63 medium priority weeds. These include other weeds that have a very high or high-risk rating category from the *Advisory List for Environmental Weeds*, DELWP, 2018

All the species listed in the priority weed list (Appendix 1) are of varying threat to wildlife habitat, native flora and fauna, including rare or threatened plants.

The one State Prohibited weed which must be managed in accordance with the provisions of the CaLP Act is Alligator Weed **Alternanthera philoxeroides*.

5. Weed management by council area

5.1 Bushland and waterways

The *Darebin Natural Heritage Strategy* (2015) recognises

- 51 sites of local significance
- 24 sites of regional significance
- 2 sites of regional–state significance
- 34 sites of state significance
- 2 sites of regional–national significance; and
- 26 sites of national significance.

These are shown in Figure 8. Survey detail and onsite management information for this strategy is provided by *the Darebin Heritage Study – Natural Heritage Plan*, (Context, 2010) which builds on information summarised within the *City of Darebin Biodiversity Review* completed by Practical Ecology in 2005 (O'Malley and Kern, 2005).

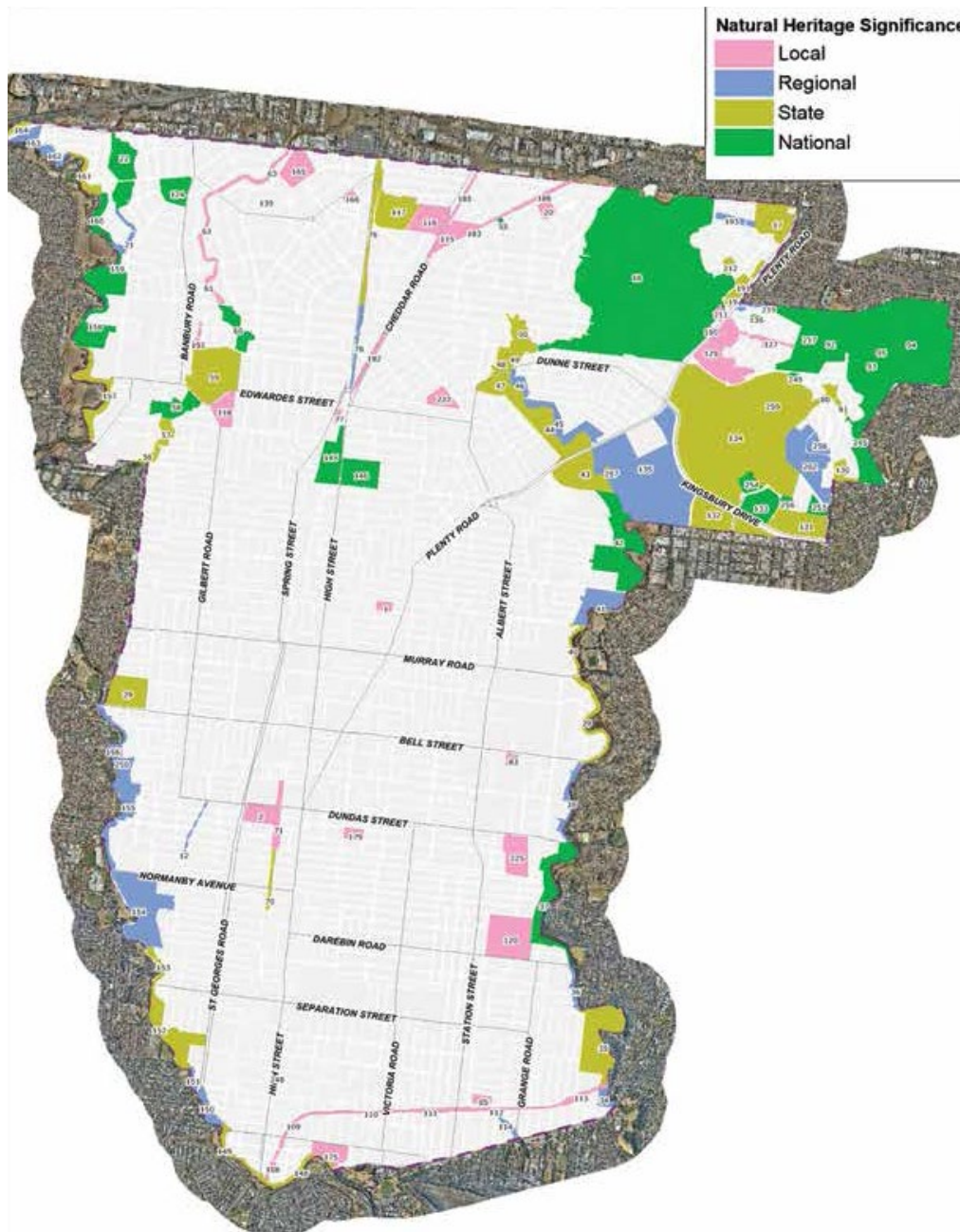


Figure 8. City of Darebin, Sites of Natural Heritage Significance

Areas of high natural value in the municipality falls under a variety of ownership and management arrangements. These include:

- The La Trobe University precinct, including the La Trobe Wildlife Sanctuary, containing natural heritage areas of state and national significance, is owned by Latrobe University with land management subject to legislation including the *La Trobe University Act 2009*.
- The Gresswell Nature Conservation Reserves, located in Darebin’s north-east corner, including Gresswell Hill, Gresswell Forest and Gresswell Habitat Link are owned by the Victorian government. Parks Victoria has been responsible for managing these reserves since May 2012.
- Land adjacent to Merri, Darebin, Edgars and Central Creeks is owned by a range of private landholders both residential and industrial, Council, Melbourne Water and other Victorian government departments.

Council plays a key role in collaborating with a broad range of land owners to protect and enhance natural heritage assets within the municipality.

- Waterways are the primary consideration of Melbourne Water who are responsible for the bed and banks of the waterway environment. The Merri Creek, Darebin Creek, Central and Edgars Creek all fall into this category.

The *Natural Heritage Plan* (Context, 2010) noted that ‘Invasion of remnant vegetation sites and geological sites by weeds is the most significant threat to biodiversity values in Darebin. Over two thirds of the sites in the 2005 biodiversity review and many of the sites surveyed in the current study were threatened by weed invasion’.



Figure 9. A Darebin bushland conservation area



Figure 10.A hand weeding site

Council-managed conservation areas are the focus of the Bushland Management team, but some work, particularly along the Merri Creek is contracted to the Merri Creek Management Committee (MCMC). Other contractors are also engaged for some locations/tasks.

Council’s Bushland Management team have developed site management plans and monthly, seasonal and annual work plans for sites that they manage. The Merri Creek and Darebin Creek Committees also have overarching documents that they use for general guidance and priorities for the waterways.

Specific site management plans are reviewed periodically by the Bushland crew in accordance with operational requirements and available resources.

The main on-site tasks for bushland management involve a focus on maintaining and enhancing remnant indigenous vegetation via a combination of burning (in grassland areas), weeding and replanting activities as well as monitoring, mapping and recording changes over time. For sites undergoing revegetation, activities include site preparation and replanting of indigenous vegetation, ongoing weeding and monitoring, mapping and recording changes over time.



Figure 11. Bushland management team working along a waterway



Figure 12. Bushland management involves ecological burning in some sites

At present the following plans and guidance documents are in place:

- Monthly, Seasonal and Annual Work Plans for various locations
- Bundoora Park: Flora and Fauna Management Plan 2011–2016, Ecology Australia
- Central Creek Grassland (Ngarri–djarrang) 5 Year Works Plan 2010–2015
- Baseline Vegetation Monitoring for the Larundel Grassy Woodland Reserve, Bundoora, Victoria 2005
- Management Plan, Cherry Street Grasslands Reserve 2004, Practical Ecology
- Forensic Drive Grassy Woodland Management Report 2004
- Buffer and Matted Flax–lily (*Dianella amoena*) Management Plan, Springthorpe Estate, MacLeod 2004
- Darebin Creek Design & Development Guidelines 2000

The level of consistent documentation of weed occurrences and weed cover mapping is variable across the areas of bushland management. Management Plans for some locations include details of weed occurrences that were observed at the time of assessment. Some other bushland areas have had weed species presence/absence surveys completed but without a consistent or regular process. In 2008, 180 different weed species had been recorded within the Bushland Management areas of the City of Darebin.

Annual and monthly works plans are developed and implemented for significant bushland sites indicating the weed species, the timing for works and in some cases an appropriate control technique (e.g. burning, spraying or hand removal). However to date, this has not been consistently documented. Rather the knowledge and expertise sits largely with the management team. This shows that Darebin has been lucky to engage good staff who form an affinity with their management areas but in order to measure progress against targets assigned for weed management and to be strategic, more formal documentation, planning and monitoring will be required.

Recommendations:

Strategic weed management:

To date strategic weed management has occurred in an informal manner and not been clearly documented. However, it has been identified that there will be great benefit in undertaking this process annually. This would involve all relevant land managers including the Bushland Management team, Melbourne Water, Parks Victoria, bushland contractors such as the MCMC, Bundoora Park Managers, staff from adjoining councils, including from Whittlesea to the north and other members of the Open Space Management team.

Weed management trends and staff observations indicate that weed issues are often observed in the north of the catchment and move south, particularly along waterways. Latrobe University Wildlife Sanctuary staff also note that while their reserve receives strong weed management focus, the nearby Darebin Creek corridor harbours some weeds that have been eradicated from adjoining land. Additionally, some of the largest and highest quality areas of bushland are located in the north of the municipality.

On this basis, it is recommended that strategic planning include a focus area in the north of the municipality. This would involve coordinated effort across all 'bushland and waterway reserves' aiming to eliminate all woody weeds from bushland areas and reduce the cover of priority grassy and herbaceous weeds to create a 'weed free zone' in the north of the municipality.

The exact area of the 'weed free zone' will require negotiation and agreement, but there are some landscape features that suggest that it could include all reserves down to the confluence of Edgar's and Merri Creeks in the west and all reserves down to Southern Road in the east, as shown in Figure 13.

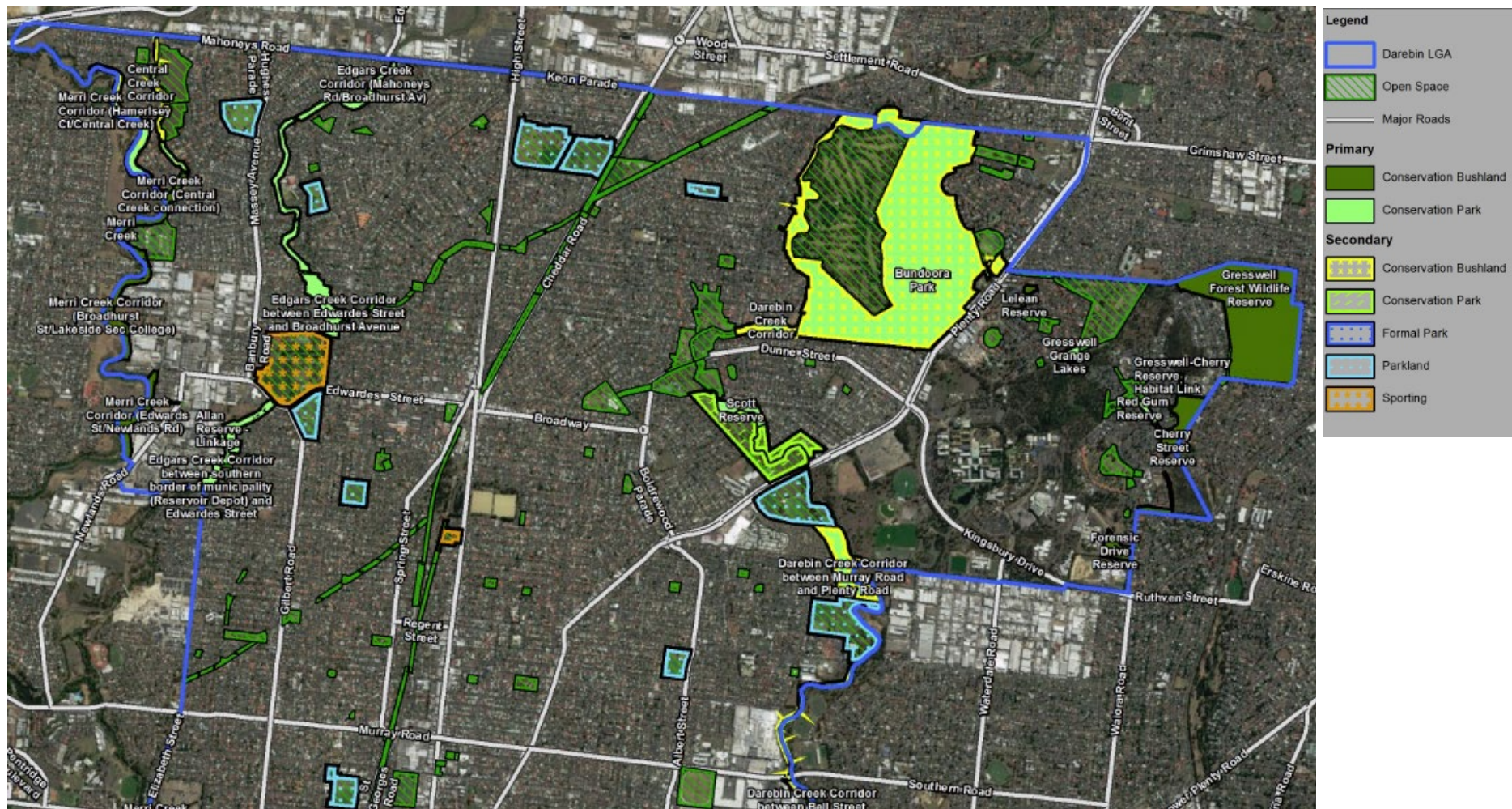


Figure 13. Proposed 'northern buffer' area for strategic weed management focus.

Annual planning, monitoring, goal and target setting:

All areas of bushland management focus (including those of contractors) should have baseline weed cover assessment and occurrences of priority weeds noted. Then this process should be undertaken bi-annually at the same time each the year in order to inform management approaches and planning for future years.

As a minimum, each of the above-listed documents should be reviewed by the relevant management team and a documented annual works plan with clear goals and targets, using the best practice weed management principles be developed and documented.

Additional guidance for general weed management is provided in Appendix 4. This may be information that the Bushland Management team could adjust and build on to develop a fact sheet and as the basis for sharing bushland management weed techniques with other Darebin staff and contractors in the future.

Recognition and support for the role of bushland management staff, contractors and partners:

Bushland management staff have a key role to play as experts in flora and ecological management and in plant and weed identification.

In particular their observations are critical for ensuring new and emerging weeds do not enter or establish within the municipality nor, very high priority environmental weeds. This will include not only City of Darebin staff but each of its contractors and other bushland managers within the municipality including those within Latrobe University, the Greswell Forest Reserves, Melbourne Water contractors and Bundoora Park. Some members of the Bushland Team participate in the state's Weedspotter program.

The Bushland Management team and bushland contractors are also actively engaged in community engagement activities. They have developed their own education resources such as postcards for their highest focus weed species and run tree planting and weeding events. They also attend and participate in Darebin-led community events and festivals where they have displays on weed awareness. This important work could easily be more formally recognised and extended.

5.2 Parks and Gardens

Parks and Garden areas within the Darebin's Open Space network includes both formal and informal parks and reserves. Spaces which provide important spaces for passive and active recreation. These areas are often located alongside sporting fields, conservation or bushland areas and include a variety of infrastructure such as pathways, playgrounds, picnic or barbeque facilities and more.

The primary aim in managing weeds within Parks and Gardens are to:

- provide safe and inclusive spaces for a variety of active and passive recreation
- maintain the visual aesthetic and amenity
- meet legislative requirements of the CaLP Act, 1994

The focus of weed management activities that are undertaken by the in-house management team include:

- mowing or slashing,
- edge definition via slashing or spraying around fences, paths, bollards or other park infrastructure
- maintenance of garden beds via spraying, mechanical removal and inhibitors such as mulch

- Council records location of mowing activities. The mowing regime for these areas is determined by the status of the reserve (e.g. sporting open space, formal open space, informal open space, linkage open space or undeveloped open space) and will generally include up to 18 cuts per year.



Figure 14. Parks and Gardens environment

Key weeds:

Key weeds for management consideration within Parks and Gardens areas include all of the new, emerging, very high and high priority weeds that are relevant to Bushland areas. Although within most Parks and Gardens spaces these weeds are much less likely to be present or to threaten important natural values.

The Darebin Parks and Gardens team have identified the following plants as comprising their 'top ten' priority weeds:

1. Couch **Cynodon dactylon* var. *dactylon*
2. Kikuyu **Cenchrus clandestinus*
3. Desert Ash **Fraxinus angustifolia* subsp. *angustifolia*;
4. Ribwort **Plantago lanceolata*;
5. White Bladder-flower **Araujia sericifera*,
6. Annual Veldt-grass **Ehrharta longiflora*,
7. Texas Needle-grass **Nassella leucotricha*,
8. Wild Oat **Avena* spp.,
9. Small-flower Mallow **Malva parviflora*,
10. Sow-thistle **Sonchus oleraceus*

Of particular relevance to Parks and Gardens management are grasses that are recognised as noxious weeds under the CaLP Act (1994) such as the *Nassella* spp. Over and above Texan Needle-grass, recognised as a priority for management, other *Nassella* spp. include Chilean Needle-grass **Nassella neesiana* and Serrated Tussock **Nassella trichotoma*. Under the CaLP Act, 1994, Council is obliged to prevent the spread of these grasses which are very easily spread to new locations via methods such as slashing. As a large component of Parks and Gardens management involves mowing and slashing, a clear focus for Council management in all open space must be to ensure that these practices are not acting as a vector for seed spread of these weeds. Each of these plants have

the potential to harbour seed in the base of the plant, so mowing at any time not just when there are 'obvious seedheads' has the potential to spread these plant and appropriate management must be undertaken.



Figure 15.Chilean Needle-grass Photograph:
Michelle Patrick

Key actions associated with managing noxious and highly invasive grasses:

- At a minimum, all parks or reserves must be inspected for these grasses and locations and extent are mapped.
- Staff must be required to adhere to mowing and slashing practice that ensures that machines are free of weed seed between locations. This will include:
 - All equipment/machinery brought on-site should be free of plant propagules.
 - All equipment/machinery leaving the site should be cleaned (on-site) of plant propagules.
 - Slashing works should be designed to minimise spread of weed propagules (i.e. work from higher-quality to lower-quality areas – washing down equipment between sites as required).
- Procedures, appropriate infrastructure and resources will be required.

Direction provided by *Breathing Space: The Darebin Open Space Strategy (2019)*:

Parks and Gardens is a particular focus of *Breathing Space: The Darebin Open Space Strategy (2019)* which sets a new vision for Open Space, particularly articulated as *Objective 11: Make native bushland character the default choice*. Under this objective its strategy is to: *Plan new and upgraded open space as partially or wholly native bushland or grassland, unless a clear demand for alternative uses is established*

With corresponding actions to consider:

- Use indigenous vegetation rather than native or exotic where possible to improve complexity and recover biodiversity, including in water sensitive urban design treatments.
- Increase indigenous vegetation cover in lower quality open spaces

This new theme in Parks and Gardens planning, design and management will require the Open Space and Parks and Gardens focussed team to take on new skills and adjust their management focus as part of a longer-term transition process.

An important element of the Open Space Strategy and this transition process will be to ensure that at every stage of future design and planning the opportunities for reducing weed management especially via the use of herbicides is considered especially close to public areas.

Lower maintenance/herbicide reliant design principles will include:

- Less fences, bollards, edges and other linear structures or infrastructure that will have grass directly around or under them.
- Increased and more strategic use of mulch/permeable yet weed reducing surfaces in place/garden design.



Figure 16. Parkland including natural features in a semi-formal setting



Figure 17. Planted garden bed featuring indigenous plants

Planning and goal setting for parks and gardens:

Feedback from engagement processes has identified the importance of planning, setting goals and review of management plans.

The Open Space Strategy results in the development of Open Space Asset Management Plans which could be further developed to specifically include weed, vegetation and habitat management requirements.

This could be undertaken for individual reserves or as a group for reserves that are smaller or have simple management requirements.

5.3 Pathways, laneways, roads, railway lines, drains, kerbs –

For these locations of built often linear infrastructure, the main weed management objective is to ensure weed cover is kept very low (ideally zero) for the purpose of ensuring that safe egress and access is maintained and also for amenity value.

5.3.1 Pathways, laneways (rights of way), gutters, drains:

The City of Darebin undertakes weed management activities within Right of Way locations including laneways as well as along roads and streetscape infrastructure such as gutters, drains, some footpath edges and around shopping precincts.

Current practice includes a focus on the use of glyphosate which is applied to a regular schedule.

Opportunities to reduce chemical use:

Background research has identified that these locations provide a high potential for trialling methods to see the use of herbicide reduced within the municipality. In this case, options include increased use of steam weeding as well as alternative plant-derived herbicides.

Additional suggestions for this realm include the adoption of a 'no-spray register' and reducing the amount of treatment or altering the type of treatment used close to sensitive public places such as shopping strips or properties such as Child Care centres or elderly citizen's homes.

At this stage (July 2019) there are no viable alternatives to glyphosate available. Currently trials are underway with organic, plant-based herbicides and further use of steam processes. The cost of both are significantly more than the costs associated with glyphosate. Parks and Open Space estimates based on previous trials have determined that moving to a no glyphosate program using plant-based herbicide would require an additional \$500,000 to be added to the \$200000 current weed control budget. The plant-based herbicides will require 2-3 additional applications to achieve the same level of effectiveness.

Use of steam weed control could be an effective method of control for smaller areas such as playspaces, around schools etc.

5.4 Sportsgrounds and golf courses

A large proportion of the open space (approximately 250 ha), in 30 different reserves owned by the City of Darebin comprises of sporting grounds including ovals, sports fields and three golf courses: Northcote (24 ha), Strathallan (17 ha) and the Bundoora Park Golf Courses (65 ha).



Figure 18. Golf Course environment

These sports grounds and sports fields support public participation in sport and also provide spaces for other active and passive recreation such as dog-walking.

Management focusses on achieving a playing surface that is consistent with the expectations of the sporting groups.

Accordingly for sportsgrounds, the management objective is to:

- provide a 'consistent warm season grass surface (Kikuyu **Cenchrus pennisetum* or Couch **Dactylus glomeratus*) with less than 2% weed cover present'.

Plants that are considered weeds for sportsgrounds include broadleaf weeds (summer and winter annuals such as Capeweed **Arctotheca calendula*) and grass type weeds (such as Winter Grass **Poa annua*, Ryegrass **Lolium spp.*, Summer Grasses **Digitaria spp.* and Paspalum **Paspalum dilatatum*). Generally the herbicides applied aim to manage these different types in broad spectrum applications.

Council records show that management of sportsgrounds and golf courses results in high amounts of herbicide use. Opportunities to reduce this have been undertaken and the following management protocols are adopted:

- All sportsground herbicide applications are completed by contractors who maintain and provide records of the locations sprayed and herbicides applied.
- Contractors use only chemicals registered for turf and at label rates and work to the recommended wind thresholds. Wind conditions are monitored via an anemometer at Crispe Park, installed to assist with enquiries around community interest
- Machines are fitted with shrouded hooded applicators (Figure 19?) which significantly reduces the likelihood or eliminates spray drift even in windy conditions.
- Spray units use GPS to guide application; meaning no overspray and exact amount of active chemical applied.



Figure 19. Spray unit with hooded applicator Source: Darebin City Council

Opportunities to reduce chemical use in sportsground management include:

- Closer consideration of the requirements for each sportsground and adjustments in the management objectives for each. For example some sportsgrounds or uses will not require such low weed cover thresholds.
- Introduction of cultivation techniques to reduce/impede weed cover
- More considered management based on seasonal variables.

5.5 Street trees

Street Trees are an important element of Council business. In accordance with Council priorities and those of state government, there are strong objectives to increase tree canopy cover. This is for a variety of amenity and community health reasons including to reduce the effects of urban heat stress.

Strategic direction for Street Tree and Urban Forest management is provided by:

- *Breathing Space: The Darebin Open Space Strategy 2019*;
- Green Streets Streetscape Strategy; and
- the Urban Forest Strategy.

In delivering these targets, the Street Tree team need to establish many more trees within the municipality, in new locations and often within roadside conditions and soil that is not always well suited for growing. This impacts on tree choice as well as methods for site preparation and growth.

All street trees are mapped and the street tree inventory shows that some of the trees include very small numbers of noxious weeds and many plants that are recognised as environmental weeds. However, while this is the case in most situations these trees are planted in locations that have limited capacity to impact upon higher value bushland locations.

The current street tree inventory has been reviewed and assigned environmental weed risk ratings provided by the advisory list for environmental weeds (DELWP 2018). This list has identified 36 tree species with a very high-risk rating and 39 tree species with a high risk rating (see Appendix 3). It should be noted though, that these ratings will not necessarily be relevant to all situations.



Figure 20. A street tree less than 2 years old in Thornbury

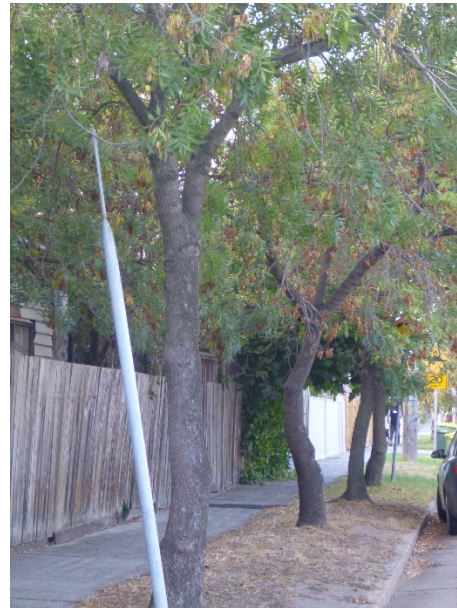


Figure 21. Desert Ash, an environmental weed, commonly planted in previous decades

Recommendations for Street Trees:

- No trees that are listed as very high or high environmental weeds are to be planted within 100 m of a waterway.
- The cohort of trees with a very high environmental weed risk rating are to be strategically managed as a priority within 5 years and no further planting is to occur. This is with the notable exception of Spotted Gum *Corymbia maculata* which should be restricted to areas away from waterways.
- Trees with a high environmental weed risk rating should generally be avoided for planting within the municipality.
- Continue to trial native or indigenous street tree plantings and share information with other Councils with similar site constraint issues.
- Trial and if appropriate, adopt steam treatment or an alternative low-glyphosate herbicide solution for weed management during the two-year tree establishment phase.

5.6 Private land and Darebin's community

The community of Darebin have the potential to be engaged in positive weed management activity and also to influence the policy, direction and action of both Council and other organisations.

Management of private land:

Land management activities on private land that can influence weed management in the wider municipality includes:

- garden plant choices and gardening practices
- involvement in weed control in streetscapes

- maintenance of nature–strips and
- influence over volume and content of stormwater

To this end there are opportunities for Council to seek that Darebin residents are aware of their own potential to influence land management outcomes. Examples include:

Education and awareness activities that may be targeted to certain locations or segments of the community. Examples from other areas include:

- Letterbox drops, attendance at local festivals or school events, engagement with the local schools via relevant school projects.
- Weeding days (well publicised and targeted)
- Campaigns with local plant nurseries (plant this not that)
- Garden awareness programs such as Gardens for Wildlife that focus on positive initiatives while also discourage negative activities.
- Grants programs for private land management that focus on group initiatives or example projects.
- Subsidies such as buy one indigenous plant get one free to encourage preferred planting practice.
- Free weed free mulch.
- Showcasing positive examples through Council marketing opportunities.

Target locations may include those adjacent to areas of high natural values or areas which have stormwater that feeds directly to sensitive ecosystems such as the waterways or wetlands. They may also be streets which have high occurrences of priority weeds. Mapping of the municipality should be undertaken of known or likely weed management priority areas to inform target areas on private land. This weed target mapping should include consideration of stormwater catchments that feed to the waterways and any other relevant vectors.

A dedicated staff role that focussed on engagement with the community as well as across all on–ground staff and external land managers on land management issues would assist Darebin to enable this activity.

It is also acknowledged that the City of Darebin supports some community engagement activities that are undertaken by groups like the Merri Creek Management Committee and Darebin Creek Management Committee such as water quality and land management education and engagement. This is important to maintain but a dedicated in–house role would complement this activity.

Community involvement in weed management on public land:

In some cases a trend towards private landholders and community groups seeking to manage areas of land in the public realm has seen some of the weed management activity ‘taken on’ by these groups. Some groups like the Friends of Merri Creek and its subsidiary groups have a very long history of this type of activity. But other groups and individuals are more recent. In these cases some of the work that would otherwise be undertaken by Council is being completed and often without herbicide use. These hands–on activities also foster a sense of connection and pride of place, likely encouraging greater appreciation by the wider community too. This is likely to be something that the City of Darebin wishes to encourage. However, these activities especially if encouraged by Council and/or involve Council–owned land require adequate oversight and governance.

A dedicated staff role that focussed on engagement with the community as well as across all on–ground staff and external land managers on land management issues would assist Darebin to enable this activity.

If a ‘no spray’ register is introduced community involvement in weed control would be an expectation of the program.

Strategic and statutory planning requirements:

The Darebin Planning Scheme contains some instruments that seek to address land management issues through strategic and statutory measures. These include items in strategic clauses as well as appropriate zoning and overlays such as the Environmental Significance Overlays for the Merri Creek and Darebin Creek Environs. Currently, there is no up-front requirement for permit applicants related to include best-practice landscaping or ecologically-friendly design. A guide produced by the Inner Melbourne Action Plan (IMAP) initiative does not provide specific information regarding land management requirements. At a minimum this would include a list of plants that should be excluded from landscaping and a list of plants that are encouraged.

Additionally there is no current requirement for building, renovation or demolition practices to involve a Construction and Environment Management Plan. A Sustainable Management Plan (SMP) is required for larger developments and includes some elements of land management consideration but more specific requirements for a wider range of permit applications are required, specifically within the vicinity of natural values.

Complimentary support material will include landholder and staff guidance documents or website to ensure that Landscape Plans do not include any noxious or priority environmental weeds and that construction activities avoid negative impacts on land management priorities.

Examples of similar initiatives in regard to landscaping and construction requirements and advice are available from other municipalities such as Manningham Shire Council.

Local Law:

The CaLP Act, 1994 requires all landholders to adhere to its requirements. On private land the land owner is generally responsible for this. Other local governments commonly refer to this requirement and enable Council staff to act on this requirement in some circumstances via inclusion under a local law.

An example (from Cardinia Shire Council, Local Law 17), being:

58. Weeds and pest animals

58. The owner or occupier of land must not allow the land or adjoining nature strip to be a haven for noxious weeds, environmental weeds or pest animals. Maximum penalty: 20 penalty units

Explanatory note: Under the Catchment and Land Protection Act it is the responsibility of land owners to take all reasonable steps to prevent the spread of regionally controlled weeds and established pest animals on a roadside that adjoins the land owner's land.

Noxious weed and pest animal have the same meanings as set out in the Catchment and Land Protection Act 1994. A full list of noxious weed and pest animal species can be obtained from the Council, or from the Department of Environment and Primary Industries.

Considering the growth and transformation that the City of Darebin is experiencing it is recommended that planning capacity in the form of dedicated staff resources be allocated with a specific role dedicated to land management considerations. This role would ideally work on the introducing and implementing the planning scheme updates and guidance material recommended in this strategy and also provide specialist guidance and advice within the planning department on these matters.

Recommendations for private landholders and the community include:

- Draft and adopt a local law similar to other councils that empowers Council to serve a notice for management under the CaLP Act, 1994.
- Update the Darebin Planning Scheme to require Landscape Plans to consider relevant land management considerations including appropriate plant selection. Also to require a Construction Environment Management Plan (CEMP) or similar.

- Develop landholder and staff guidance material to ensure that Landscape Plans do not include any noxious or priority environmental weeds or involve construction activities that will negatively impact on land management priorities via the requirement of a CEMP or similar.
- Resource a staff position within the Planning Department to deliver these planning scheme updates and to advise and respond to land management related items.
- Resource a staff position to engage with the community as well as across all on-ground staff and external land managers on land management issues.
- Increased program of education and activity focussed on landholder awareness around garden plants and how their choices and management have the potential to either impact positively or negatively on natural values.
- Mapping of the municipality of known or likely weed management priority areas to inform target areas on private land. Consider stormwater catchments that feed to the waterways and any other relevant vectors.
- Develop guidelines to encourage constructive community involvement in weed (and land management) activities and ensure that this is undertaken in accordance with relevant council requirements.

5.7 Complimentary programs and strategies to deliver weed management outcomes

5.7.1 Capacity development

The success of this weed management strategy will be dependent on an investment in Council capacity to support its staff and contractors in:

- Record-keeping and monitoring
- Technical capacity and training
- Planning and goal-setting
- Communication (internal and external) detailed further below.
- Process – ensuring good practice and consistency across departments

5.7.2 Communication

Effective weed management, especially during a time of transition, will require a communication plan that includes: immediate priority actions; develops communication resources and capacity and establishes frameworks and processes to guide ongoing and sustained implementation.

Communications needs that have been identified include:

- Communication of the priorities and actions identified within this strategy to all sectors of Darebin Council
- Communication of priorities, standards, innovation and processes to Darebin on-ground staff and contractors

- Promotion of achievements, innovation and ideas internally, to Councillors and to the community including external stakeholders
- Education, encouragement and engagement of the community in improving the natural environment, including weed management activities and reducing behaviour that contributes to weed issues.
- Communication resources that will assist in supporting all on-ground staff in their role as ambassadors to the public.
- Training for on-ground staff in effective communication.

In order to assist in achieving these needs, a supporting in-house role is recommended.

5.7.3 Leadership and collaboration

A focus on leadership and collaboration will be important in delivering this strategy. Darebin has established a strong base in its excellence in long-term bushland management and high-quality open space management, coupled with innovative thinking around streetscapes and city futures from which to lead in its initiatives on weed management.

A whole of council approach will be required to transition to a lower-herbicide future that will involve many areas of council including open space design, environment and sustainability, communications, as well as all Darebin staff and contractors involved in on-ground management.

Recommendations for a greater level of collaboration internally and with external stakeholders have been identified in earlier sections and are formalised in the Action Plan provided in Table 3.

5.8 Transition to a low-herbicide future

A key direction for this iteration of the Weed Management Strategy is to see the City of Darebin transition to a low-herbicide future.

On this basis, all staff and stakeholder consultation requested ideas for how Darebin might seek to achieve this result. Table 2 includes a summary of these ideas which then form the basis of recommended goals and actions provided in Table 3.

In considering this transition, baseline information was sought in regard to current levels of herbicide use, location and purpose. Results showed that this information is not collected with a consistent approach across all areas of relevant on-ground activity. One current, consistent measure that is available is via the inventories for chemical purchase. However, in the future this needs to be complimented by herbicide use data. Without consistent baseline use data the City of Darebin will not be able to measure its progress towards herbicide reduction targets. On this basis, no targets have yet been set.

A future that involves significantly lower herbicide use within the City of Darebin will involve many different strategies and should include elements of each of the themes included in Table 2, below.

Table 2. Ideas from Darebin staff and stakeholders for less herbicide use

Theme	Ideas
Invest in improved technology	<ul style="list-style-type: none"> • Focus on sections of Council that use the most herbicide. • Consider: <ul style="list-style-type: none"> ○ More precise spray guns for when herbicide is used

Theme	Ideas
	<ul style="list-style-type: none"> ○ Smaller vehicle for right-of-way use ○ Battery operated brushcutters
Procedures	<ul style="list-style-type: none"> • Develop a procedure for application of herbicides (whether chemical/other) that focus on: <ul style="list-style-type: none"> ○ using the right method for the right weed with consideration of seasonality and plant growth cycle ○ correct/appropriate use of the product ○ appropriate documentation: location, amount, reason, weather ○ All herbicides to be mixed to appropriate rates. Not more. ○ regular calibration and maintenance of equipment ○ efficiency in practice (application) • All herbicide use to be undertaken in line with a reserve management plan that has goals and targets are clearly articulated and measured. • Aim to use herbicides as last resort. • More use of steam but communicate results of trials to each other. • Limit Glyphosate use only to weeds and sites where there aren't alternatives. • Use alternate methods including: <ul style="list-style-type: none"> ○ Hand weeding – it's more expensive but it works! ○ Goats – proven to work in some situations ○ Steam in some situations ○ Fire in some situations (develop working relationship with Country Fire Authority, Metropolitan Fire Brigade and others) ○ Bio-herbicides ○ Other mechanical methods ○ Use of vegetation to displace weeds ○ Mulch or permeable weed inhibiting products
Review, redesign and plan	<p>Review each management area:</p> <ul style="list-style-type: none"> • Identify where weed management is necessary. • Allocate an appropriate method or trial a new method. • Redesign where possible to reduce reliance on herbicides. For example less fences, bollards, pathways and linear infrastructure that requires 'edge maintenance'. Use mulch or other permeable weed inhibiting surface. • Consider sealing or impervious surfaces in some locations. • Consider some sites to focus on eradication using herbicides – then problem is eliminated. <p>Plan for longer-term management:</p> <ul style="list-style-type: none"> • Use plants to smother and outcompete weeds • More use of mulch of non-flood prone areas. This has resulted in measurable reduction in herbicide in bushland management.

Theme	Ideas
	<ul style="list-style-type: none"> • Increase density of native plantings and less rapid increase of revegetation areas versus dense planting to out-compete weeds. More use of revegetation in less disturbed areas.
Communicate	<ul style="list-style-type: none"> • Council needs to show leadership and foster culture change • Aim to alter public perception – need to be open to change – both staff and the public • Public statements on direction, targets, learnings and progress. • Ensure there are open channels of communication between community and council • Sharing knowledge/communicating • Provide up to date public health safety information for Glyphosate and alternatives. • Consult public at meetings and continue to gauge opinions. • Increase communication with the public and with other areas of council – be open about what’s happening. Increased communication to ratepayers on why council uses herbicides. • Promote ‘good news’ stories.
Invest in Darebin’s capacity	<p>Moving away from herbicides will require increased capacity in a variety of areas. Specifically, it will require more:</p> <ul style="list-style-type: none"> • Staff time • Equipment • Support and systems from other areas of Council • Training budget – particular items included training all outdoor staff in weed identification, life cycle considerations and methods for treatment.
Understand, map, monitor	<ul style="list-style-type: none"> • Ensure volumes and locations of herbicide use are known and reported. • Map zones that use most herbicide: then focus on reducing • Plan management (based on monitoring, mapping and weed knowledge) to focus on effective, appropriate, and timely measures to help control weed spread. • Map weeds and schedule control work to better interface with growth seasons and seeding. Adjust according to season. • Monitor so that effectiveness is understood and approaches can be adjusted. • Better training of inhouse staff and increased expectations from contractors on how weeds are or should be managed. • Better training, auditing, process issues.

Theme	Ideas
Innovation and trials	<ul style="list-style-type: none"> • Consider alternatives like steam; pine oil; sealing with permeable hard surfaces if appropriate. • Keep an open mind on new technology for weed management. • Explore alternatives – share information around trials and results. E.g. Melbourne Water trial using drill and fill on Desert Ash resulted in 70% less herbicide use. • Look at Integrated Pest Management techniques and how they can be applied. • Pilot/demonstrate alternative approaches at particular locations. • Stay up to date with new products.



Figure 22. Mulched areas can be used to inhibit weeds, reducing the need for slashing/spraying. Dense plantings can achieve a similar outcome.



Figure 23. Weed scorching is a method that can work in some instances.

5.8.1 Other management alternatives being undertaken by other municipalities

Plant-derived herbicides:

There are a number of councils and organisations now within Australia and internationally that are moving to naturally sourced, lower toxicity herbicides.

Christchurch City Council in New Zealand is one organisation that has moved almost entirely to an organic plant-based alternative. It now uses 40,000 litres of organic weed killer each year and only uses Glyphosate at sites that have no public access or where there is no other alternative. Their product is a combination of natural pine oil and fatty acids. It is non-residual and non-selective. Although Pine Oil acts as a masking agent this product reportedly has a strong smell to which there has been some public response. The Council reports that with good communication, this is understood and they are also working with the suppliers to seek methods to reduce the smell further.

Steam weeders:

Similarly many local councils are investigating the use of steam weeding as an addition to their weed management activity.

A number of councils have now purchased their own mobile steam weeding machines. These include Cook Shire Council in Queensland and Byron Shire Council in New South Wales. Others hire the machines.

This method is noted to have pros and cons. It has been found to be of most use in areas that have easy, clear access such as roads, open Parks and Gardens, kerbs and gutters but not in bushland areas.

This method is also relatively expensive in comparison to herbicides, but these costs may reduce in time if a unit is purchased and used for a long period of time.

Additional benefits for park management are that it can be used to clean park furniture and barbeques. It can also be used in windy conditions.

Other restrictions include that it is best suited to areas with lower weed growth. It also only kills on contact, unlike herbicides which can penetrate to the root system of a plant. This may result in regrowth. Although a benefit of the method is that the steam can sterilise seeds, which helps reduce plant re-germination.

On balance, it is recommended that the City of Darebin purchase a suitable unit primarily for streetscape and pathway use and aim to maximise its use in the future. The results should be monitored and information used to improve practice and use.

Darebin Steam Weeder Trial – summary and recommendations

A trial of steam weed control was conducted in four locations over seven months in 2017. These locations were:

- Wright St Senior Citizens Centre
- Keon Park Childrens Hub
- Edwardes Lake Park All Abilities Playspace
- Taylor Ave Reservoir road, fencelines and pavement

This trial involved the hire of a steam weeder and Darebin staff were then trained in its use. The cost of the program was \$14,400 for four treatments. This included some handweeding to remove larger weeds.

It was found that this method was effective against some weeds and the results over the trial period were quite good but that the costs were not competitive when considered against herbicide use.

On this basis, a move to increased use of steam weeding would need to be investigated as part of a wider weed-management approach. Perhaps one that resulted in cost-savings elsewhere to enable investment in steam infrastructure.



Figure 24. Darebin staff with steam weeder trial unit



Figure 25. Darebin staff using the steam weeder

6. Darebin Weed Management Strategy Action Plan

The Action Plan provided in Table 3 aims to provide the detail and targets for the City of Darebin to implement this Weed Management Strategy. It includes goals, implementation objectives and measures as well as assigning responsibility and indicative timelines.

The items included within the Action Plan are predominantly derived from relevant strategies and legislation, staff and stakeholder feedback and consideration of best practice approaches combined with examples from other locations.

6.1 Goals

The Darebin Weed Management Strategy Action Plan has been formed around the following key goals:

1. Research, monitor and act with a view to preventing new and emerging weeds from establishing in the municipality
2. Minimise the impact of priority weeds on the natural, economic and community-held values in the City of Darebin.
3. Minimise the risk of weed spread within the municipality including any that have originated within the municipality
4. Set targets, strategically plan, monitor and report the impact of weed management activity.
5. Develop and implement an effective communication and engagement plan that aims to see all land managers and the community better informed and taking positive action in weed management.
6. Use appropriate technology and tools with a view to continually improving practice in the areas of effectiveness, efficiency and safety.
7. The weed management program will move to a low herbicide future, aiming to reduce and eventually phase out the use of glyphosate once alternatives are found

6.2 Implementation

The ultimate responsibility for the implementation of this Strategy will sit primarily with the Parks and Open Space department who oversee the majority of weed management work relative to Bushland Management, Open Space (Parks and Gardens) and streetscapes. To a lesser extent delivery will sit with the City Works department who have some oversight of management and maintenance of rights of way and cleansing operations.

The Environment and Sustainable Transport department will have a role in supporting the activities and implementation of this strategy, particularly via a supporting role in community awareness raising initiatives and through incorporation of relevant information into the development of a future Biodiversity Strategy.

The Community Empowerment and Engagement team will be important implementation partners by supporting the team with effective and timely communication to the community and to relevant internal and external stakeholders.

The Local Laws team are identified to assist with facilitating development of a new Local Law relevant to weed management on private land.

6.3 Monitoring

Monitoring will be required at various levels and for a variety of purposes. These include:

- Progress against objectives and actions. This includes reporting bi-annually across all relevant departments on key implementation actions, particularly those which have short or ongoing timeframes.
- Onsite results in weed management against regional targets. These will particularly relate to actions around new and emerging weeds and highest and very high priority weeds.
- Monitoring herbicide use with a view to seeing reduced rates of use across all relevant areas of Council.

6.4 Reporting and Review

- To maintain the relevance of this strategy, priority actions, resources and training requirements will be determined annually following a review of performance measures towards achieving objectives.
- Reports on actions outlined in this Strategy will be provided to Council quarterly.
- This strategy includes provisions for periodic review and adjustment.
- This will occur via annual internal and external progress reviews. These review processes will be informed by consultation with other stakeholders and the community.
- An annual report on herbicide use and the progress of the action plan.
- A detailed review will take place at the end of the five year period.

Table 3. Darebin Weed Management Strategy Action Plan

Goal	Priority Actions	Implementation	Measures	Responsible	Timeframe
1. Research, monitor and act with a view to preventing new and emerging (N&E) weeds from establishing in the municipality	Stay up to date on potential N&E weeds and their likelihood to present within the municipality. Consider factors such as climate change and upstream landuse change.	Stay informed of N&E weed modelling and research. Stay up to date of any occurrences regionally.	Bi-annual communication/update from relevant authority(ies) on N&E weeds communicated to relevant Darebin staff and contractors.	Bushland Management (lead) with support from Open Space Management	Ongoing
	Avoid N&E weeds entering the municipality	Form working relationship with upstream land-managers	Annual meeting of land-managers to discuss weed management including N&E issues.		Each year
		Staff training in identification of N&E weeds	All Bushland team members and contractors trained as Weedspotters.		Within 2 years
	Eradicate N&E weeds	Develop an agreed process for responding to any N&E weeds for adoption by all relevant land managers, including those upstream.	No new or emerging weed established in the Municipality.		Ongoing
			Darebin Council assigns an emergency budget allowance for reactionary management activity.	Year 1 allocation then ongoing annual budget allowance	
	Work towards a 'weed free zone' in the north of the municipality. This will aim to create a region of low weed cover across all public land in the north.	Work with all land managers in the north on a plan to establish a 'weed free zone'. Confirm the area (possibly all public land as far south as Southern Road); choose priority weeds; set clear targets and timelines aiming to achieve low levels of priority weeds across all public land.	A plan for a weed free zone in the north with priority weed targets and goals by reserve, and agreed actions for each land manager.	Bushland Management (lead) with support from Open Space Management	By end Year 2
		Translate to a 5 year plan for Council-managed land and determine budget requests	Council works plan and budget proposal for implementation of the 'weed free zone' plan over 5 years.	Bushland Management (lead) with support from Open Space Management	By end Year 2

Goal	Priority Actions	Implementation	Measures	Responsible	Timeframe
2. Minimise the impact of priority weeds on the natural, economic and community-held values in Darebin.	Complete baseline weed cover mapping across all Conservation Bushland (CB) and Conservation Parkland (CP) and document priority weed species for each area.		Baseline weed cover mapping and documentation of priority weed species for CB and CP areas completed and reported.	Bushland Management team	First year
	Complete weed cover monitoring on a bi-annual basis at the same times each year and report on the results. Test and improve data-collection systems for use in the field.		Report and review in the annual report to Council.		Ongoing
	Eradicate highest priority weeds within Council owned/managed land within 5 years	Confirm, map and plan across Council for eradication priorities. Consider all land types but develop actions for Council-managed land.	List of weeds for eradication in certain locations. Mapped priority locations and plan for implementation communicated to all relevant on-ground managers.	Open Space Management and Bushland Management	First year
	Reduce the % cover of all very high priority weeds within Council owned/managed land by 50% within 5 years and by 70% within 10 years	Confirm priorities with all on-ground managers and set annual plans that translate this goal into annual targets. Timing to be suitable for budget requests.	Report on progress in the annual report to Council.		First year and then ongoing.
	Establish a Darebin priority weeds database that is accessible to all on-ground staff and contractors and in limited form to the public	Scope and choose appropriate technology eg. staff intranet or other technology (App/Facebook) for all staff to access information on priority weeds (ID tools, management methods, resources, maps, monitoring results and trials)	All on-ground staff (and contractors) have access to shared weed management information.	Open Space Management with IT support	First year
			Populate with appropriate information for sharing.		First year
Training for staff (and contractor) use and update			First year		
3. Minimise the risk of weed spread within the municipality including any that have originated	Develop regional weed spread/vector map and 5 year plan that documents weed spread methods. Include cross-council and tenure blind management actions.	Mapping to inform regional planning both internally and externally. Adjust in future years.	Mapping in place to guide on-ground council and external partner initiatives.	Bushland Management	By end of Year 2
		Mapping to inform target areas on private land. Consider stormwater catchments that feed to the waterways and any other relevant vectors.	Target areas for private land initiatives documented and reported to guide complimentary initiatives.	Bushland Management	By end of Year 2

Goal	Priority Actions	Implementation	Measures	Responsible	Timeframe
within the municipality		Annual survey of all Council-managed land to identify any new occurrences of priority weeds and consider their methods of spread. Feed into planning.	Survey completed and results documented and reported.	Bushland Management and Open Space Management	First year and ongoing
		All on-ground staff training in identification of N&E and priority weeds	Training completed	Bushland Management and Open Space Management	Within 2 years
	Develop and implement a policy on vehicle and equipment hygiene	Scope activities, infrastructure and resources needed to see machinery hygiene activities implemented.	Scoping document and business case to Council.	Open Space Management	First year
		Use scoping document to seek budget and implement machinery hygiene policy via purchase/installation of new equipment, training or more time allocation to implement.	Required resources in place to implement vehicle and equipment hygiene policy.	Open Space Management	Within 2 years
		Vehicle and equipment hygiene policy operational and adopted by all on-ground staff and contractors.	Used as part of all staff induction. Applied and measured via record keeping/auditing.	Open Space Management	Within 3 years
	Take measures to ensure that street trees do not contribute to weed management issues.	Develop and adopt a Street Tree planting and retirement guideline for all relevant staff based on the Street Tree environmental weed risk rating table (see Appendix 3) that aims to ensure street trees are not contributing to weed management issues. Include all following actions.	Annual audits of tree planting records reflect this action.	Street Tree Management	First year

Goal	Priority Actions	Implementation	Measures	Responsible	Timeframe
		No trees that are listed as very high or high risk weeds (see Appendix 3) are to be planted within 100 m of a waterway or within its immediate stormwater catchment.		Street Tree Management	Annually
		The cohort of trees with a very high environmental weed risk rating are to be strategically managed as a priority within 5 years and no further planting is to occur. This is with the notable exception of Spotted Gum <i>Corymbia maculata</i> .			
		Trees with a high weed risk rating or above (see Appendix 3) should generally be avoided for planting within the municipality.			
4. Plan, monitor and report on the impact of weed management activity.	Internal planning: Undertake annual works planning across all areas of Council and with relevant contractors to review past year's performance; set annual objectives; and plan for any extra requirements/ budget requests	Review all management targets within existing management plans for Conservation Bushland and Conservation Parkland Areas	All relevant plans are reviewed and new/updated targets set. Use as the basis for annual planning in subsequent years	Bushland Management	First Year and all subsequent years Complete prior to budget forecast cycle
		Review management using best practice principles and weed priorities. Set objectives and targets for the year for all other areas of bushland management (over and above those mentioned above)	Annual management plans and targets documented and widely understood.		
		Complete internal reserve management plans applying best practice weed management principles to all areas of parkland. Set objectives and targets for the year.	Annual management plans and targets documented and widely understood.	Open Space Management	
	External planning:	Complete an abridged version of the abovementioned planning process	Results of external planning discussions are documented	Bushland Management and	Year 1 and all subsequent years

Goal	Priority Actions	Implementation	Measures	Responsible	Timeframe
	Undertake annual works planning across all areas of Council and with relevant contractors to review past year's performance; set annual objectives; and plan for any extra requirements/budget requests	with all relevant external stakeholders prior to annual internal planning to set direction for annual plans and ensure consistency in approaches for the year.	and reflected in all stakeholder plans for that year.	Open Space Management	
	Ensure the Darebin Planning Scheme reflects land management best practice (including weed management)	Scope whether there is a requirement to update the Darebin Planning Scheme/Guidelines to require Landscape Plans that consider relevant land management items including appropriate plant selection and that no weed species are used in new developments. Also to require a Construction Environment Management Plan (CEMP) or equivalent.	Updates completed	Planning Department	End of Year 3
Draft and adopt a local law similar to other councils that empowers Council to serve a notice for management under the CaLP Act, 1994.		Local law update adopted	Planning Department	End of Year 3	
Resource a staff position within the Planning Department to deliver these planning scheme updates and to advise and respond to land management related items.		Staff position resourced, engaged and active	Planning Department	End of Year 2	
Develop landholder and staff guidance material (booklet) to ensure that Landscape Plans do not include any noxious or priority weeds or involve construction activities that will negatively impact		Appropriate material developed and in use.	Planning Department in partnership with Bushland Management	End of Year 2	

Goal	Priority Actions	Implementation	Measures	Responsible	Timeframe
		on land management priorities via the requirement of a CEMP or similar.			
5. Develop and implement an effective communication and engagement plan that aims to see all land managers and the community better informed and taking positive action in weed management.	Communicate the priorities and actions identified within this strategy to all relevant sectors of Darebin Council.	Open Space management utilise all appropriate opportunities to promote the priorities of this strategy to relevant sectors of Council.	The priorities, actions and outcomes of this Weed Management Strategy are reflected in Council strategy, policy and practice.	Open Space Management (lead)	First year
	Communicate the priorities, standards, innovation and processes to relevant Darebin staff and contractors.	Managers present the findings of this strategy to staff and incorporate its actions into regular process.	80% of actions are implemented annually.	Open Space Management teams (lead) and all other relevant Darebin teams	First year then subsequent years
	Promote weed management achievements and initiatives to Councillors, colleagues, the community and external stakeholders.	Methods including Darebin mailouts, media releases and internal communication are utilised for promotion of weed management initiatives.	At least three promotional pieces per year.	Communi-cations team; Parks and Open Space and Biodiversity Officer	Annually
	Education and engagement of the community in improving the natural environment, including weed management activities and reducing behaviour that contributes to weed issues.	Resource a staff position to engage with the community; all on-ground staff and external land managers on land management issues.	Staff allocation and engagement completed	Open Space and Sustainability and Environment	By end of Year 2
		Increased program of education and activity focussed on landholder awareness around garden plants and how their choices and management have the potential to either impact positively or negatively on natural values.	Darebin on-ground staff work with communications staff to develop a suite of resources and activities to educate and engage the community	Open Space Management, Sustainability and Environment and Communications teams	By end of Year 2
	Develop communication resources that will assist in supporting all on-ground staff in their role as ambassadors to the public. Including resources for weed management messaging.	On-ground staff feel confident and comfortable in their work.	Open Space Management, and Communications teams	By end Year 2	

Goal	Priority Actions	Implementation	Measures	Responsible	Timeframe
	Communication support for on-ground staff in recognition of their role as public ambassadors for Council	<p>Training for on-ground staff in effective communication.</p> <p>Regularly review trial results and consider incorporation of new technologies and innovation during every annual planning session.</p>	<p>On-ground staff feel confident and comfortable in their work. Plans include section that records consideration and adoption or otherwise of new technology or innovations.</p>	<p>Open Space Management, and Communications teams</p> <p>Open Space Management and Bushland Management</p>	<p>By end Year 2</p> <p>Ongoing</p>
6. Use appropriate technology and tools with a view to continually improving practice in the areas of effectiveness, efficiency and safety	Ensure planning for on-ground management (strategic and annual) includes consideration and incorporation of innovation and on-ground trials	Establish and maintain a register of Climate Change observations.	Register in place and results shared internally and with external stakeholders as relevant	Open Space Management and Bushland Management	Ongoing
	Monitor and consider the impacts of Climate Change on practice	Regularly review Climate Change related observations and consider incorporation of and consider this during strategic and annual planning	Plans include section that records consideration and any responses or otherwise of Climate Change considerations.	Open Space Management and Bushland Management	Ongoing
		Technology such as intranet/Facebook or App is investigated for staff information sharing and implemented as appropriate.	Scoping undertaken and business case developed if appropriate.	Open Space Management	First year
	Ensure ongoing information sharing and learning is incorporated into all on-ground practice.	Results of any on-ground trials are recorded and promoted in-house and through external networks.	Trials are recorded and documented appropriately. Results are shared as appropriate.	Open Space Management Street Tree Management	First Year
		Biannual training for all on-ground staff on best practice weed management including sharing any in-house learnings or results of trials.	Training complete		First year then every 2 years
		Continue to trial native or indigenous street trees. Share information with other Councils with similar site constraint issues.	Trials are recorded and documented appropriately. Results are shared as appropriate.	Reported with Urban Forest Strategy every 5 years.	

Goal	Priority Actions	Implementation	Measures	Responsible	Timeframe
		Work across Council to develop and implement the technology for the public to register their property on a 'no spray register'	Register operational and in use	Open Space Management, IT support	By end of Year 2
7. Move to a low herbicide future.	Adopt and implement a 'no spray register'	Put mechanisms in place with on-ground staff to ensure implementation of each request/registered property	Systems in place and operational. No complaints received.	Open Space Management	By end of Year 2
		Work with Communications team to ensure appropriate communication and promotion of the register as well as the requirements/expectations of property owners and their neighbours.	No spray register widely known and understood in the community. Some registrations have occurred. Few complaints are received.	Open Space Management and Communications team	By end of Year 2
		Scope and clarify the information/data needs to ensure the City of Darebin is able to measure progress towards reduced herbicide use and to inform future decisions.	Information/data requirements are reported to all relevant stakeholders including staff and Councillors.	Open Space Management	First Year
	Ensure consistent and relevant record-keeping for all herbicide purchase and use.	Identify any capacity or resource gaps relevant to the recommended data collection approach and solutions to address these.	Appropriate budget case for Council to implement the best 'fit for purpose' solution.	Open Space Management	End of First Year
		Implement the recommended data collection method via relevant approaches which may include, extra staff time allocation; software purchase or development; purchase of new technology for data recording. Develop relevant procedures and train all relevant staff and contractors.	Data recording system is in place, all staff are using the system correctly and relevant data is being collected.	Open Space Management	By end of Year 2
		Trial options of one or more alternative methods (steam/plant-based herbicide or another suitable method)	Alternative measures to herbicide use in place and results measured: Organic-based herbicide trial	Open Space Management	By end of Year 2

Goal	Priority Actions	Implementation	Measures	Responsible	Timeframe
			Purchase weed steamer for use in playspaces and high profile areas.		
	Stop the use of herbicides by changing the type of treatment close to sensitive public places such as shopping strips or properties such as child care centres or elderly citizen's homes.	Plan a budget and seek investment from Council	Sufficient budget allocated.	Open Space Management	First Year
		Work with the Darebin Communications team on a campaign to promote the new measures and ask for patience or lenience during trials.	Trials or changes in practice are widely known and understood in the community. Few complaints are received.	Open Space Management and Communications teams	By end of Year 2
		Train staff in new techniques, weed knowledge and communications.	Training complete	Open Space Management	By end of Year 2
		All implementation actions as per the item above.	Alternative measures to herbicide use (eg. steam) are in place and results measured.	Street Tree Management	By end of Year 3
	Street Trees: adopt steam treatment or an alternative limited glyphosate solution for weed management during the two year tree establishment phase.	All new park or reserve upgrades or purchases to include design features that require less herbicide use. Or are designed with non-herbicide reliant maintenance in mind. For example, increased use of mulch.	Design guidance and examples in place and in use.	Open Space Management and City Futures	By end of Year 2
	Open Space Strategy and any subsequent outputs such as other strategies and Open Space Asset Management Plans to incorporate measures that will meet this goal.	Engage with sporting clubs to outline the issue and seek short term and long term solutions. Include consideration of increasing the weed cover thresholds, use of different treatments and adjustments for seasonality (in grasses used and annual growing conditions). Seek consent to implement trials where appropriate.	Updated management plan or agreement incorporating short and longer term objectives and trial options completed for each sports field and golf club.	Turf Management in conjunction with Recreation and Leisure	By the end of Year 2

Goal	Priority Actions	Implementation	Measures	Responsible	Timeframe
	Review the management and objectives for each sports ground and golf course with a view to reducing herbicide use.	Develop a protocol that focuses on effective use of herbicide.	Protocol in place	Bushland Management	Year 1
	Ensure best practice for use of herbicides	Undertake training for all on-ground staff involved in herbicide application	Training complete	Open Space Management	End of Year 2
		Use as induction and procedural document in house and for contractors	Protocol adopted and in use	Open Space Management	End of Year 2

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Appendix 1. Priority environmental weeds for the City of Darebin

Key:

Suggested priorities:

- Very high priority weeds: Weeds of National Significance, State or Regionally Prohibited with a 'Very High' or 'High' Risk Rating
- High priority weeds: all other weeds with a 'Very High' or 'High' Risk Rating

Risk rating categories from the *Advisory List for Environmental Weeds*, DELWP, 2018

Noxious weed categories:

SP = State prohibited P = Regionally prohibited C = Regionally controlled R = Restricted

State prohibited weed

Managed by State Government. Occurrences in both Merri and Darebin Creek Catchments. Weedspotters to report. Waterway managers to remain in contact with appropriate State Government staff.

Scientific Name	Common Name	Risk Rating	WONS	CALP	Priority
<i>Alternanthera philoxeroides</i>	Alligator Weed	Very High Risk	YES	SP	VH

New or emerging weeds:

All new or emerging weeds are the highest priority for 'targeted' management in the City of Darebin.

Scientific Name	Common Name	Risk Rating	WONS	CALP
<i>Anredera cordifolia</i>	Madeira Vine	High Risk	YES	R
<i>Bidens pilosa</i>	Cobbler's Peg	Lower Risk	0	0
<i>Cassinia sifton</i>	Drooping Cassinia	Medium Risk	0	0
<i>Convolvulus arvensis</i>	Bindweed	High Risk	0	0
<i>Cynara cardunculus subsp. flavescens</i>	Artichoke Thistle	Medium Risk	0	C
<i>Dianella callicarpa</i>	Swamp Flax-lily	N/A	0	0
<i>Disa bracteata</i>	African Orchid	Very High Risk	0	0
<i>Epilobium hirsutum</i>	Hairy Willowherb	High Risk	0	0

Scientific Name	Common Name	Risk Rating	WONS	CALP
<i>Galenia pubescens var. pubescens</i>	Galenia	Moderately High Risk	0	0
<i>Helianthus tuberosus</i>	Jerusalem Artichoke	Lower Risk	0	0
<i>Moraea flaccida</i>	One-leaf Cape Tulip	High Risk	0	0
<i>Moraea miniata</i>	Two-leaf Cape Tulip	Moderately High Risk	0	0
<i>Nassella leucotricha</i>	Texas Needle-grass	Very High Risk	0	0
<i>Piptochaetium uruguense</i>	Uruguayan Bunch-grass	Very High Risk	0	0
<i>Rhagodia parabolica</i>	Fragrant Saltbush	Very High Risk	0	0
<i>Salpichroa organifolia</i>	Pampas Lily-of-the-Valley	Moderately High Risk	0	C
<i>Scabiosa atropurpurea</i>	Pincushion	Moderately High Risk	0	0
<i>Setaria parviflora</i>	Slender Pigeon-grass	High Risk	0	0
<i>Watsonia meriana subsp. bulbilifera</i>	Bulbil Watsonia	Very High Risk	0	C

Priority weeds:

Scientific	Common Name	Risk Rating	WONS	CALP	Priority	Comments
<i>Araujia sericifera</i>	White Bladder-flower	Moderately High Risk	0	0	VH	Very high priority identified by all on-ground staff
<i>Asparagus asparagoides</i>	Bridal Creeper	High Risk	YES	R	VH	
<i>Cenchrus clandestinus</i>	Kikuyu	Very High Risk	0	0	VH	Very high priority identified by most on-ground staff
<i>Cenchrus macrourus</i>	African Feather-grass	Very High Risk	0	P	VH	
<i>Chrysanthemoides monilifera subsp. monilifera</i>	African Boneseed	High Risk	YES	C	VH	
<i>Chrysanthemoides monilifera subsp. rotundata</i>	Bitou Bush	Very High Risk	YES	0	VH	
<i>Cynodon dactylon var. dactylon</i>	Couch	Moderately High Risk	0	0	VH	Very high priority identified by some on-ground staff
<i>Ehrharta longiflora</i>	Annual Veldt-grass	High Risk	0	0	VH	Very high priority identified by some on-ground staff
<i>Elytrigia repens</i>	English Couch	Moderately High Risk	0	0	VH	Very high priority identified by some on-ground staff

Scientific	Common Name	Risk Rating	WO NS	CALP	Priority	Comments
<i>Festuca arundinacea</i>	Tall Fescue	High Risk	0	0	VH	Very high priority identified by some on-ground staff
<i>Fraxinus angustifolia subsp. angustifolia</i>	Desert Ash	Very High Risk	0	0	VH	Very high priority identified by some on-ground staff
<i>Genista monspessulana</i>	Montpellier Broom	Very High Risk	YES	C	VH	
<i>Ipomoea indica</i>	Morning Glory	High Risk	0	0	VH	Very high priority in Merri, Edgars and Central Creek Catchments
<i>Lycium ferocissimum</i>	African Box-thorn	High Risk	YES	C	VH	
<i>Nassella neesiana</i>	Chilean Needle-grass	Very High Risk	YES	R	VH	Very high priority identified by all on-ground staff
<i>Nassella trichotoma</i>	Serrated Tussock	Very High Risk	YES	C	VH	Very high priority identified by all on-ground staff
<i>Opuntia stricta</i>	Erect Prickly Pear	Very High Risk	YES	R	VH	
<i>Paspalum dilatatum</i>	Paspalum	Medium Risk	0	0	VH	
<i>Phalaris aquatica</i>	Toowoomba Canary-grass	High Risk	0	0	VH	Very high priority identified by some on-ground staff
<i>Rubus anglocandicans</i>	Common Blackberry	High Risk	YES	C	VH	
<i>Rubus fruticosus spp. agg.</i>	Blackberry	Very High Risk	YES	C	VH	Very high priority identified by most on-ground staff
<i>Rubus polyanthemus</i>	Forest Blackberry	High Risk	YES	C	VH	
<i>Rubus ulmifolius var. ulmifolius</i>	Elm-leaf Blackberry	High Risk	YES	C	VH	
<i>Salix alba var. vitellina</i>	Golden Willow	Moderately High Risk	YES	R	VH	
<i>Salix fragilis</i>	Crack Willow	Very High Risk	YES	R	VH	
<i>Salix X rubens</i>	Basket Willow	Very High Risk	YES	R	VH	
<i>Salix X sepulcralis var. sepulcralis</i>	Weeping Willow	Very High Risk	YES	R	VH	
<i>Tradescantia fluminensis</i>	Wandering Jew	Very High Risk	0	0	VH	Very high priority identified by some on-ground staff
<i>Ulex europaeus</i>	Gorse	High Risk	YES	C	VH	
<i>Acacia saligna</i>	Golden Wattle	Wreath Very High Risk	0	0	H	
<i>Agrostis capillaris var. capillaris</i>	Brown-top Bent	High Risk	0	0	H	
<i>Allium triquetrum</i>	Angled Onion	High Risk	0	R	H	
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	High Risk	0	0	H	
<i>Carex divulsa</i>	Grey Sedge	Very High Risk	0	0	H	
<i>Clematis vitalba</i>	Old Man's Beard	Very High Risk	0	0	H	
<i>Conium maculatum</i>	Hemlock	Moderately High Risk	0	C	H	
<i>Cotoneaster spp.</i>	Cotoneaster	#N/A	0	0	H	
<i>Dactylis glomerata</i>	Cocksfoot	High Risk	0	0	H	

Scientific	Common Name	Risk Rating	WO NS	CALP	Priority	Comments
<i>Delairea odorata</i>	Cape Ivy	Very High Risk	0	0	H	
<i>Echium plantagineum</i>	Paterson's Curse	High Risk	0	C	H	
<i>Ehrharta erecta</i>	Panic Veldt-grass	Very High Risk	0	0	H	
<i>Erigeron bonariense</i>	Flaxleaf Fleabane	Moderately High Risk	0	0	H	
<i>Foeniculum vulgare</i>	Fennel	Very High Risk	0	R	H	
<i>Fraxinus angustifolia</i>	Desert Ash	#N/A	0	0	H	
<i>Fumaria bastardii</i>	Bastard's Fumitory	High Risk	0	0	H	
<i>Fumaria capreolata</i>	White Fumitory	High Risk	0	0	H	
<i>Galium aparine</i>	Cleavers	High Risk	0	0	H	
<i>Hedera helix</i>	English Ivy	Very High Risk	0	0	H	
<i>Hypericum perforatum</i> subsp. <i>veronense</i>	St John's Wort	High Risk	0	C	H	
<i>Ligustrum lucidum</i>	Large-leaf Privet	Very High Risk	0	0	H	
<i>Muehlenbeckia complexa</i>	Wire Weed	N/A	0	0	H	
<i>Nassella hyalina</i>	Cane Needle-grass	Very High Risk	0	??	H	
<i>Parietaria judaica</i>	Wall Pellitory	Medium Risk	0	0	H	
<i>Paspalum distichum</i>	Water Couch	Very High Risk	0	0	H	
<i>Phalaris spp.</i>	Canary Grass	#N/A	0	0	H	
<i>Phoenix canariensis</i>	Canary Island Date-palm	Very High Risk	0	0	H	
<i>Pittosporum undulatum</i>	Sweet Pittosporum	Very High Risk	0	0	H	
<i>Plantago lanceolata</i>	Ribwort	Medium Risk	0	0	H	
<i>Ricinus communis</i>	Castor Oil Plant	Moderately High Risk	0	0	H	
<i>Rosa rubiginosa</i>	Sweet Briar	High Risk	0	C	H	
<i>Sedum spp.</i>	Stonecrop	High Risk	0	0	H	
<i>Senecio angulatus</i>	Climbing Groundsel	Very High Risk	0	0	H	
<i>Sonchus oleraceus</i>	Sow-thistle	Moderately High Risk	0	0	H	
<i>Vicia sativa subsp. sativa</i>	Common Vetch	Medium Risk	0	0	H	
<i>Vinca major</i>	Blue Periwinkle	High Risk	0	0	H	
<i>Zantedeschia aethiopica</i>	White Arum-lily	Very High Risk	0	0	H	
<i>Acer negundo</i>	Box-elder Maple	Very High Risk	0	0	M	
<i>Agapanthus praecox subsp. orientalis</i>	Agapanthus	Very High Risk	0	0	M	
<i>Arbutus unedo</i>	Irish Strawberry Tree	Very High Risk	0	0	M	
<i>Artemisia verlotiorum</i>	Chinese Wormwood	Very High Risk	0	0	M	
<i>Billardiera heterophylla</i>	Bluebell Creeper	Very High Risk	0	0	M	
<i>Brachypodium distachyon</i>	False Brome	Very High Risk	0	0	M	
<i>Chamaecytisus palmensis</i>	Tree Lucerne	Very High Risk	0	0	M	
<i>Coprosma repens</i>	Mirror Bush	Very High Risk	0	0	M	
<i>Coprosma robusta</i>	Karamu	Very High Risk	0	0	M	

Scientific	Common Name	Risk Rating	WO NS	CALP	Priority	Comments
<i>Cotoneaster pannosus</i>	Velvet Cotoneaster	Very High Risk	0	0	M	
<i>Dipogon lignosus</i>	Common Dipogon	Very High Risk	0	0	M	
<i>Egeria densa</i>	Dense Waterweed	Very High Risk	0	0	M	
<i>Eragrostis curvula</i>	African Love-grass	Very High Risk	0	C	M	
<i>Hakea salicifolia</i> subsp. <i>salicifolia</i>	Willow-leaf Hakea	Very High Risk	0	0	M	
<i>Oxalis incarnata</i>	Pale Wood-sorrel	Very High Risk	0	0	M	
<i>Pinus radiata</i>	Radiata Pine	Very High Risk	0	0	M	
<i>Piptatherum miliaceum</i>	Rice Millet	Very High Risk	0	0	M	
<i>Ranunculus repens</i>	Creeping Buttercup	Very High Risk	0	0	M	
<i>Typha latifolia</i>	Lesser Reed-mace	Very High Risk	0	0	M	
<i>Viola odorata</i>	Common Violet	Very High Risk	0	0	M	
<i>Acacia decurrens</i>	Early Black-wattle	High Risk	0	0	M	
<i>Acanthus mollis</i>	Bear's Breach	High Risk	0	0	M	
<i>Alisma lanceolatum</i>	Water Plantain	High Risk	0	0	M	
<i>Avena barbata</i>	Bearded Oat	High Risk	0	0	M	
<i>Avena fatua</i>	Wild Oat	High Risk	0	0	M	
<i>Brassica fruticulosa</i>	Twiggy Turnip	High Risk	0	0	M	
<i>Bromus catharticus</i> var. <i>catharticus</i>	Prairie Grass	High Risk	0	0	M	
<i>Bromus rubens</i>	Red Brome	High Risk	0	0	M	
<i>Crassula sarmentosa</i>	Jade Plant	High Risk	0		M	
<i>Crataegus monogyna</i>	Hawthorn	High Risk	0	C	M	
<i>Cynosurus echinatus</i>	Rough Dog's-tail	High Risk	0	0	M	
<i>Daucus carota</i>	Carrot	High Risk	0	0	M	
<i>Eucalyptus cladocalyx</i>	Sugar Gum	High Risk	0	0	M	
<i>Freesia leichtlinii</i>	Freesia	High Risk	0	0	M	
<i>Geranium dissectum</i>	Cut-leaf Crane's-bill	High Risk	0	0	M	
<i>Helminthotheca echioides</i>	Ox-tongue	High Risk	0	0	M	
<i>Helosciadium nodiflorum</i>	Water Celery	High Risk	0	0	M	
<i>Hirschfeldia incana</i>	Buchan Weed	High Risk	0	0	M	
<i>Holcus lanatus</i>	Yorkshire Fog	High Risk	0	0	M	
<i>Juncus articulatus</i> subsp. <i>articulatus</i>	Jointed Rush	High Risk	0	0	M	
<i>Ligustrum ovalifolium</i>	Hedge Privet	High Risk	0	0	M	
<i>Malva parviflora</i>	Small-flower Mallow	High Risk	0	0	M	
<i>Melaleuca incana</i> subsp. <i>incana</i>	Grey Honey-myrtle	High Risk	0	0	M	
<i>Melilotus indicus</i>	Sweet Melilot	High Risk	0	0	M	
<i>Moraea setifolia</i>	Thread Iris	High Risk	0	0	M	
<i>Oxalis obtusa</i>	Yellow-eye Wood-sorrel	High Risk	0	0	M	

Scientific	Common Name	Risk Rating	WO NS	CALP	Priority	Comments
<i>Oxalis purpurea</i>	Large-flower Wood-sorrel	High Risk	0	0	M	
<i>Persicaria maculosa</i>	Redshank	High Risk	0	0	M	
<i>Phalaris minor</i>	Lesser Canary-grass	High Risk	0	0	M	
<i>Prunus cerasifera</i>	Cherry Plum	High Risk	0	0	M	
<i>Romulea rosea var. reflexa</i>	Large-flower Onion-grass	High Risk	0	0	M	
<i>Rorippa palustris</i>	Marsh Yellow-cress	High Risk	0	0	M	
<i>Rumex conglomeratus</i>	Clustered Dock	High Risk	0	0	M	
<i>Rumex crispus</i>	Curled Dock	High Risk	0	0	M	
<i>Solanum chenopodioides</i>	Whitetip Nightshade	High Risk	0	0	M	
<i>Solanum pseudocapsicum</i>	Madeira Winter-cherry	High Risk	0	0	M	
<i>Sporobolus africanus</i>	Rat-tail Grass	High Risk	0	0	M	
<i>Trifolium repens var. repens</i>	White Clover	High Risk	0	0	M	
<i>Trifolium striatum</i>	Knotted Clover	High Risk	0	0	M	
<i>Trifolium subterraneum</i>	Subterranean Clover	High Risk	0	0	M	
<i>Vicia hirsuta</i>	Tiny Vetch	High Risk	0	0	M	
<i>Vicia tetrasperma</i>	Slender Vetch	High Risk	0	0	M	
<i>Vulpia muralis</i>	Wall Fescue	High Risk	0	0	M	

Appendix 2. Weed species list for City of Darebin

Key:

* denotes exotic species

denotes native species extended beyond natural range

Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>Acacia baileyana</i>	Cootamundra Wattle	*	6	15/06/2017
<i>Acacia cultriformis</i>		*	1	1/09/1975
<i>Acacia cyclops</i>	Western Coastal Wattle	*	1	1/01/2000
<i>Acacia decurrens</i>	Early Black-wattle	*	5	3/03/2011
<i>Acacia iteaphylla</i>	Flinders Range Wattle	*	1	18/05/1998
<i>Acacia prominens</i>	Gosford Wattle	*	1	18/05/1998
<i>Acacia saligna</i>	Golden Wreath Wattle	*	6	28/10/2001
<i>Acacia spp. (naturalised)</i>	Wattle (naturalised)	*	1	17/01/2011
<i>Acanthus mollis</i>	Bear's Breach	*	2	4/10/2006
<i>Acer negundo</i>	Box-elder Maple	*	3	21/12/2010
<i>Acetosella vulgaris</i>	Sheep Sorrel	*	9	3/03/2011
<i>Agapanthus praecox subsp. orientalis</i>	Agapanthus	*	7	4/10/2006
<i>Ageratina adenophora</i>	Crofton Weed	*	1	30/10/2012
<i>Agrostis capillaris</i>	Brown-top Bent	*	55	17/01/2011
<i>Agrostis capillaris var. capillaris</i>	Brown-top Bent	*	9	20/02/2009
<i>Agrostis gigantea</i>	Red-top Bent	*	1	18/05/1998
<i>Aira caryophyllea subsp. caryophyllea</i>	Silvery Hair-grass	*	28	17/01/2011
<i>Aira cupaniana</i>	Quicksilver Grass	*	9	20/02/2009
<i>Aira elegantissima</i>	Delicate Hair-grass	*	16	17/01/2011
<i>Aira praecox</i>	Early Hair-grass	*	1	6/11/1990
<i>Aira spp.</i>	Hair Grass	*	7	29/05/2006
<i>Alisma lanceolatum</i>	Water Plantain	*	3	28/10/2010
<i>Allium spp.</i>	Garlic	*	1	18/05/1998
<i>Allium triquetrum</i>	Angled Onion	*	24	19/10/2006
<i>Allium vineale</i>	Crow Garlic	*	4	10/01/2011
<i>Alternanthera philoxeroides</i>	Alligator Weed	*	25	19/11/2008
<i>Amaranthus retroflexus</i>	Red-root Amaranth	*	1	30/03/2018
<i>Amaryllis belladonna</i>	Belladonna Lily	*	1	1/09/2004
<i>Amblystegium serpens</i>	Creeping Feather-moss	*	1	9/04/1996
<i>Anredera cordifolia</i>	Madeira Vine	*	4	3/03/2011
<i>Anthemis spp.</i>	Chamomile	*	1	6/11/1990
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	*	134	1/12/2011
<i>Aphanes arvensis</i>	Parsley Piert	*	1	17/01/2011
<i>Apium graveolens</i>	Celery	*	2	28/10/2010
<i>Aptenia cordifolia</i>	Heart-leaf Ice-plant	*	1	7/03/2018
<i>Araujia sericifera</i>	White Bladder-flower	*	5	17/01/2011
<i>Arbutus unedo</i>	Irish Strawberry Tree	*	2	31/03/1998
<i>Arctotheca calendula</i>	Cape weed	*	30	15/06/2017

Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>Arrhenatherum elatius</i> <i>var. bulbosum</i>	False Oat-grass	*	1	21/01/1997
<i>Artemisia verlotiorum</i>	Chinese Wormwood	*	9	22/12/2010
<i>Arundo donax</i>	Giant Reed	*	1	3/03/2011
<i>Asparagus asparagoides</i>	Bridal Creeper	*	6	15/06/2017
<i>Asparagus officinalis</i>	Asparagus	*	1	06/11/1883
<i>Atriplex prostrata</i>	Hastate Orache	*	4	17/06/1997
<i>Avena barbata</i>	Bearded Oat	*	11	17/01/2011
<i>Avena fatua</i>	Wild Oat	*	6	28/09/2005
<i>Avena spp.</i>	Oat	*	9	31/05/2010
<i>Avena sterilis</i>	Sterile Oat	*	4	11/11/2009
<i>Avena sterilis subsp.</i> <i>sterilis</i>	Sterile Oat	*	1	28/09/2005
<i>Billardiera heterophylla</i>	Bluebell Creeper	*	4	17/01/2011
<i>Brachypodium distachyon</i>	False Brome	*	2	4/11/1992
<i>Brassica fruticulosa</i>	Twiggy Turnip	*	14	17/01/2011
<i>Brassica rapa</i>	White Turnip	*	2	15/04/2003
<i>Brassica spp.</i>	Turnip	*	3	15/06/2017
<i>Briza maxima</i>	Large Quaking-grass	*	99	3/03/2011
<i>Briza minor</i>	Lesser Quaking-grass	*	36	17/01/2011
<i>Bromus catharticus</i>	Prairie Grass	*	41	17/01/2011
<i>Bromus catharticus var.</i> <i>catharticus</i>	Prairie Grass	*	3	29/05/2006
<i>Bromus diandrus</i>	Great Brome	*	33	15/06/2017
<i>Bromus hordeaceus</i>	Soft Brome	*	27	3/03/2011
<i>Bromus rubens</i>	Red Brome	*	2	6/11/1990
<i>Calendula officinalis</i>	Garden Marigold	*	1	6/11/1990
<i>Callitriche stagnalis</i>	Common Water-starwort	*	8	4/10/2006
<i>Calystegia silvatica</i>	Greater Bindweed	*	1	6/11/1990
<i>Canna indica</i>	Indian Shot	*	1	26/05/2004
<i>Capsella bursa-pastoris</i>	Shepherd's Purse	*	3	4/10/2006
<i>Cardamine hirsuta s.l.</i>	Common Bitter-cress	*	2	4/10/2006
<i>Cardamine hirsuta s.s.</i>	Common Bitter-cress	*	1	28/09/2005
<i>Carduus spp.</i>	Slender Thistle	*	1	6/11/1990
<i>Cassinia sifton</i>	Drooping Cassinia	*	25	1/12/2011
<i>Casuarina</i> <i>cunninghamiana subsp.</i> <i>cunninghamiana</i>	River Oak	*	2	15/06/2017
<i>Casuarina glauca</i>	Swamp Oak	*	3	24/08/2002
<i>Catapodium rigidum</i>	Fern Grass	*	1	6/11/1990
<i>Cenchrus clandestinus</i>	Kikuyu	*	55	15/06/2017
<i>Cenchrus longisetus</i>	Feathertop	*	2	01/06/1887
<i>Cenchrus setaceus</i>	Fountain Grass	*	1	10/02/2006
<i>Centaureum erythraea</i>	Common Centaury	*	53	1/12/2011
<i>Centaureum spp.</i>	Centaury	*	3	17/06/1997
<i>Centaureum tenuiflorum</i>	Slender Centaury	*	15	3/03/2011
<i>Cerastium glomeratum s.l.</i>	Common Mouse-ear Chickweed	*	11	15/06/2017
<i>Cerastium glomeratum s.s.</i>	Sticky Mouse-ear Chickweed	*	3	1/12/2011

Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>Chamaecytisus palmensis</i>	Tree Lucerne	*	4	18/05/1998
<i>Chenopodium album</i>	Fat Hen	*	6	17/01/2011
<i>Chenopodium murale</i>	Sowbane	*	2	18/05/1998
<i>Chrysanthemoides monilifera</i>	Boneseed	*	13	3/03/2011
<i>Chrysanthemoides monilifera subsp. monilifera</i>	African Boneseed	*	9	4/06/2006
<i>Chrysanthemoides monilifera subsp. rotundata</i>	Bitou Bush	*	3	5/05/1987
<i>Cicendia filiformis</i>	Slender Cicendia	*	1	4/11/1992
<i>Cicendia quadrangularis</i>	Square Cicendia	*	7	1/12/1986
<i>Cirsium vulgare</i>	Spear Thistle	*	29	15/06/2017
<i>Clematis vitalba var. vitalba</i>	Traveller's Joy	*	1	19/03/1993
<i>Coleonema pulchellum</i>	Pink Diosma	*	2	24/08/2002
<i>Conium maculatum</i>	Hemlock	*	9	19/10/2006
<i>Convolvulus arvensis</i>	Common Bindweed	*	1	18/05/1998
<i>Coprosma repens</i>	Mirror Bush	*	10	17/01/2011
<i>Coprosma robusta</i>	Karamu	*	1	17/01/2011
<i>Cortaderia selloana</i>	Pampas Grass	*	2	18/05/1998
<i>Corymbia citriodora subsp. citriodora</i>	Lemon-scented Gum	*	1	7/06/2002
<i>Cotoneaster glaucophyllus</i>	Large-leaf Cotoneaster	*	6	1/12/2011
<i>Cotoneaster pannosus</i>	Velvet Cotoneaster	*	13	29/05/2006
<i>Cotoneaster spp.</i>	Cotoneaster	*	4	3/03/2011
<i>Cotula coronopifolia</i>	Water Buttons	*	8	20/12/2007
<i>Crassula multicava subsp. multicava</i>	Shade Crassula	*	1	21/09/1988
<i>Crassula tetragona subsp. robusta</i>	Shrubby Crassula	*	1	21/09/1988
<i>Crataegus monogyna</i>	Hawthorn	*	24	15/06/2017
<i>Crococsmia X crocosmiiflora</i>	Montbretia	*	2	6/11/1990
<i>Cupressus spp.</i>	Cypress	*	1	6/11/1990
<i>Cynara cardunculus subsp. flavescens</i>	Artichoke Thistle	*	10	15/06/2017
<i>Cynodon dactylon var. dactylon</i>	Couch	*	12	3/03/2011
<i>Cynosurus echinatus</i>	Rough Dog's-tail	*	10	17/01/2011
<i>Cyperus brevifolius</i>	Mullumbimby Couch	*	1	28/03/1993
<i>Cyperus eragrostis</i>	Drain Flat-sedge	*	38	1/12/2011
<i>Cyperus esculentus</i>	Yellow Nutgrass	*	1	1/02/1995
<i>Dactylis glomerata</i>	Cocksfoot	*	90	15/06/2017
<i>Datura stramonium</i>	Common Thorn-apple	*	1	18/05/1998
<i>Daucus carota</i>	Carrot	*	2	17/01/2011
<i>Delairea odorata</i>	Cape Ivy	*	7	23/12/2010
<i>Dianthus armeria</i>	Deptford Pink	*	1	01/01/1853
<i>Digitaria sanguinalis</i>	Summer Grass	*	2	10/02/2006
<i>Diplotaxis tenuifolia</i>	Sand Rocket	*	9	17/01/2011

Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>Dipogon lignosus</i>	Common Dipogon	*	3	10/01/2011
<i>Dittrichia graveolens</i>	Stinkwort	*	2	15/06/2017
<i>Drosanthemum candens</i>	Rodondo Creeper	*	2	17/01/1992
<i>Dysphania ambrosioides</i>	Mexican Tea	*	2	25/04/1997
<i>Dysphania multifida</i>	Scented Goosefoot	*	1	28/09/2005
<i>Echium plantagineum</i>	Paterson's Curse	*	8	10/01/2011
<i>Egeria densa</i>	Dense Waterweed	*	1	22/12/2010
<i>Ehrharta erecta</i>	Panic Veldt-grass	*	61	15/06/2017
<i>Ehrharta longiflora</i>	Annual Veldt-grass	*	35	1/12/2011
<i>Eleusine tristachya</i>	American Crows-foot Grass	*	3	17/01/2011
<i>Elodea canadensis</i>	Canadian Pondweed	*	2	17/09/2002
<i>Elytrigia repens</i>	English Couch	*	6	4/10/2006
<i>Epilobium ciliatum</i>	Glandular Willow-herb	*	2	1/03/1983
<i>Erigeron bonariense</i>	Flaxleaf Fleabane	*	6	3/03/2011
<i>Erigeron spp.</i>	Fleabane	*	6	17/01/2011
<i>Erigeron sumatrensis</i>	Tall Fleabane	*	8	17/01/2011
<i>Eriobotrya japonica</i>	Loquat	*	1	17/09/2002
<i>Erodium botrys</i>	Big Heron's-bill	*	2	15/06/2017
<i>Erodium cicutarium</i>	Common Heron's-bill	*	2	17/01/2011
<i>Erodium moschatum</i>	Musky Heron's-bill	*	2	28/09/2005
<i>Eucalyptus cladocalyx</i>	Sugar Gum	*	14	15/06/2017
<i>Eucalyptus spp.</i> (naturalised)	Eucalypt	*	2	17/01/2011
<i>Euphorbia peplus</i>	Petty Spurge	*	6	31/05/2010
<i>Festuca arundinacea</i>	Tall Fescue	*	4	8/12/2010
<i>Festuca rubra s.l.</i>	Red Fescue	*	1	19/11/1990
<i>Foeniculum vulgare</i>	Fennel	*	40	15/06/2017
<i>Fraxinus angustifolia</i>	Desert Ash	*	14	23/12/2010
<i>Fraxinus angustifolia</i> <i>subsp. angustifolia</i>	Desert Ash	*	18	17/01/2011
<i>Fraxinus spp.</i>	Ash	*	8	3/03/2011
<i>Freesia leichtlinii</i>	Freesia	*	2	1/12/1986
<i>Fumaria bastardii</i>	Bastard's Fumitory	*	4	27/08/2003
<i>Fumaria capreolata</i>	White Fumitory	*	6	19/10/2006
<i>Fumaria muralis subsp.</i> <i>muralis</i>	Wall Fumitory	*	1	28/09/2005
<i>Fumaria spp.</i>	Fumitory	*	13	15/06/2017
<i>Galenia pubescens var.</i> <i>pubescens</i>	Galenia	*	11	15/06/2017
<i>Galium aparine</i>	Cleavers	*	59	15/06/2017
<i>Gamochaeta purpurea s.l.</i>	Purple Cudweed	*	4	17/01/2011
<i>Gaudinia fragilis</i>	Fragile Oat	*	1	10/12/1993
<i>Gazania rigens var.</i> <i>leucolaena</i>	Trailing Gazania	*	1	10/02/2006
<i>Gazania rigens var.</i> <i>uniflora</i>	Trailing Gazania	*	1	10/02/2006
<i>Genista linifolia</i>	Flax-leaf Broom	*	1	18/05/1998
<i>Genista monspessulana</i>	Montpellier Broom	*	20	15/06/2017
<i>Genista X spachiana</i>	Madeira Broom	*	1	24/08/2002

Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>Geranium dissectum</i>	Cut-leaf Crane's-bill	*	6	28/09/2005
<i>Grevillea curviloba</i> subsp. <i>incurva</i>		*	1	12/09/2002
<i>Grevillea</i> hybrids (naturalized)	Grevillea hybrids and cultivars	*	1	1/05/1984
<i>Grevillea juniperina</i> x <i>victoriae</i>	Grevillea 'Poorinda Constance' hybrid	*	1	24/08/2002
<i>Grevillea robusta</i>	Silky Oak	*	1	10/01/2011
<i>Hakea salicifolia</i> subsp. <i>salicifolia</i>	Willow-leaf Hakea	*	4	17/01/2011
<i>Hedera helix</i>	English Ivy	*	7	28/09/2005
<i>Helianthus tuberosus</i>	Jerusalem Artichoke	*	3	27/03/2018
<i>Heliotropium europaeum</i>	Common Heliotrope	*	1	10/01/1982
<i>Helminthotheca echioides</i>	Ox-tongue	*	50	3/03/2011
<i>Helosciadium nodiflorum</i>	Water Celery	*	12	23/12/2010
<i>Hesperocyparis</i> <i>macrocarpa</i>	Monterey Cypress	*	2	28/10/2001
<i>Hibiscus tridactylites</i>	Narrow-leaf Bladder Ketmia	*	2	17/01/2011
<i>Hirschfeldia incana</i>	Buchan Weed	*	5	17/01/2011
<i>Holcus lanatus</i>	Yorkshire Fog	*	80	17/01/2011
<i>Hordeum leporinum</i>	Barley-grass	*	1	6/11/1990
<i>Hordeum marinum</i>		*	1	14/12/1966
<i>Hordeum</i> spp.	Barley Grass	*	1	28/09/2005
<i>Hypericum perforatum</i> subsp. <i>veronense</i>	St John's Wort	*	1	17/01/2011
<i>Hypochaeris glabra</i>	Smooth Cat's-ear	*	7	17/01/2011
<i>Hypochaeris radicata</i>	Flatweed	*	117	1/12/2011
<i>Ipomoea indica</i>	Blue Morning-glory	*	2	10/02/2006
<i>Ipomoea purpurea</i>	Common Morning-glory	*	3	4/10/2006
<i>Iris</i> spp.	Iris	*	1	18/05/1998
<i>Isolepis levynsiana</i>	Tiny Flat-sedge	*	17	17/01/2011
<i>Juncus articulatus</i> subsp. <i>articulatus</i>	Jointed Rush	*	2	18/05/1998
<i>Juncus capitatus</i>	Capitate Rush	*	5	6/01/2005
<i>Juncus microcephalus</i>	Tiny-headed Rush	*	1	4/12/1986
<i>Lactuca serriola</i>	Prickly Lettuce	*	7	17/01/2011
<i>Lactuca</i> spp.	Lettuce	*	1	6/11/1990
<i>Lagunaria patersonia</i> subsp. <i>patersonia</i>	Pyramid Tree	*	1	17/01/2011
<i>Leersia hexandra</i>		*	2	7/04/2007
<i>Leontodon saxatilis</i> subsp. <i>saxatilis</i>	Hairy Hawkbit	*	33	17/01/2011
<i>Lepidium africanum</i>	Common Peppergrass	*	18	15/06/2017
<i>Leptospermum petersonii</i>	Lemon-scented Tea-tree	*	1	12/09/2002
<i>Ligustrum lucidum</i>	Large-leaf Privet	*	3	25/06/2009
<i>Ligustrum ovalifolium</i>	Hedge Privet	*	1	1/05/1984
<i>Ligustrum sinense</i>	Chinese Privet	*	3	17/06/1997
<i>Ligustrum</i> spp.	Privet	*	1	21/09/1988
<i>Ligustrum vulgare</i>	European Privet	*	1	5/11/1990
<i>Lilium</i> spp.	Lily	*	1	21/01/1997

Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>Linum trigynum</i>	French Flax	*	24	1/12/2011
<i>Linum usitatissimum</i>	Flax	*	1	6/11/1990
<i>Lolium perenne</i>	Perennial Rye-grass	*	24	17/01/2011
<i>Lolium rigidum</i>	Wimmera Rye-grass	*	13	17/01/2011
<i>Lolium spp.</i>	Rye Grass	*	2	31/05/2010
<i>Lolium temulentum</i>	Darnel	*	2	26/11/1986
<i>Lonicera japonica</i>	Japanese Honeysuckle	*	4	3/03/2011
<i>Lotus angustissimus</i>	Slender Bird's-foot Trefoil	*	2	17/01/2011
<i>Lotus corniculatus</i>	Bird's-foot Trefoil	*	3	28/10/2001
<i>Lotus spp. (naturalised)</i>	Trefoil	*	2	1/12/2011
<i>Lotus subbiflorus</i>	Hairy Bird's-foot Trefoil	*	3	18/05/1998
<i>Lycium ferocissimum</i>	African Box-thorn	*	12	17/01/2011
<i>Lysimachia arvensis</i>	Pimpernel	*	23	1/12/2011
<i>Malus pumila</i>	Apple	*	8	17/01/2011
<i>Malva arborea</i>	Tree Mallow	*	1	1/09/1983
<i>Malva nicaeensis</i>	Mallow of Nice	*	2	18/05/1998
<i>Malva parviflora</i>	Small-flower Mallow	*	11	15/06/2017
<i>Malva sylvestris</i>	Tall Mallow	*	5	4/10/2006
<i>Matthiola incana</i>	Stock	*	1	24/08/2002
<i>Medicago arabica</i>	Spotted Medic	*	2	28/09/2005
<i>Medicago polymorpha</i>	Burr Medic	*	13	4/10/2006
<i>Medicago spp.</i>	Medic	*	3	23/10/2007
<i>Medicago truncatula</i>	Barrel Medic	*	1	17/09/2002
<i>Melaleuca incana subsp. incana</i>	Grey Honey-myrtle	*	2	12/09/2002
<i>Melaleuca styphelioides</i>	Prickly Paperbark	*	2	24/06/2003
<i>Melilotus indicus</i>	Sweet Melilot	*	4	4/10/2006
<i>Modiola caroliniana</i>	Red-flower Mallow	*	13	15/06/2017
<i>Moraea lewisiae</i>	Golden Iris	*	2	7/12/1988
<i>Moraea setifolia</i>	Thread Iris	*	2	1/03/1983
<i>Moraea spp.</i>	Moraea	*	1	2/09/1998
<i>Myriophyllum aquaticum</i>	Parrot's Feather	*	1	18/05/1998
<i>Narcissus pseudonarcissus</i>	Daffodil	*	1	1/09/2004
<i>Narcissus spp.</i>	Narcissus	*	1	21/09/1988
<i>Nassella charruana</i>	Lobed Needle-grass	*	9	27/10/2008
<i>Nassella hyalina</i>	Cane Needle-grass	*	3	17/01/2011
<i>Nassella leucotricha</i>	Texas Needle-grass	*	1	11/11/2009
<i>Nassella neesiana</i>	Chilean Needle-grass	*	24	17/01/2011
<i>Nassella tenuissima</i>	Mexican Feather-grass	*	2	5/02/2009
<i>Nassella trichotoma</i>	Serrated Tussock	*	21	15/06/2017
<i>Nasturtium officinale</i>	Watercress	*	6	28/10/2010
<i>Nephrolepis cordifolia</i>	Fishbone Fern	*	1	10/05/2004
<i>Nothoscordum borbonicum</i>	Fragrant False-garlic	*	1	5/11/1990
<i>Oenothera stricta subsp. stricta</i>	Common Evening-primrose	*	1	21/09/1988
<i>Opuntia robusta</i>	Wheel Cactus	*	4	18/05/1998

Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>Opuntia schickendantzii</i>	Lion's Tongue	*	1	4/10/2006
<i>Opuntia</i> spp.	Prickly Pear	*	3	3/03/2011
<i>Orobanche minor</i>	Lesser Broomrape	*	1	4/11/1992
<i>Oxalis articulata</i>	Sourgrass	*	2	4/10/2006
<i>Oxalis incarnata</i>	Pale Wood-sorrel	*	6	4/10/2006
<i>Oxalis obtusa</i>	Yellow-eye Wood-sorrel	*	1	5/08/1999
<i>Oxalis pes-caprae</i>	Soursob	*	36	15/06/2017
<i>Oxalis purpurea</i>	Large-flower Wood-sorrel	*	2	1/09/2004
<i>Oxalis</i> spp. (naturalised)	Wood Sorrel	*	1	17/01/2011
<i>Panicum gilvum</i>	Sweet Panic	*	2	1/12/2011
<i>Papaver dubium</i>	Long-headed Poppy	*	1	16/10/2010
<i>Papaver somniferum</i> subsp. <i>setigerum</i>	Small-flower Opium-poppy	*	1	6/11/1990
<i>Parapholis incurva</i>	Coast Barb-grass	*	1	01/01/1770
<i>Parentucellia latifolia</i>	Red Bartsia	*	3	6/01/2005
<i>Parietaria judaica</i>	Wall Pellitory	*	7	7/03/2018
<i>Paspalum dilatatum</i>	Paspalum	*	74	15/06/2017
<i>Paspalum distichum</i>	Water Couch	*	22	15/06/2017
<i>Paspalum quadrifarium</i>	Golden-top Grass	*	1	6/11/1990
<i>Persicaria maculosa</i>	Redshank	*	1	27/03/2018
<i>Petroselinum crispum</i>	Parsley	*	1	1/05/1984
<i>Phalaris aquatica</i>	Toowoomba Canary-grass	*	30	15/06/2017
<i>Phalaris minor</i>	Lesser Canary-grass	*	2	17/01/2011
<i>Phalaris</i> spp.	Canary Grass	*	2	23/05/2002
<i>Phoenix canariensis</i>	Canary Island Date-palm	*	5	13/12/2010
<i>Pinus canariensis</i>	Canary Island Pine	*	1	17/01/2011
<i>Pinus radiata</i>	Radiata Pine	*	14	3/03/2011
<i>Piptatherum miliaceum</i>	Rice Millet	*	4	4/10/2006
<i>Piptochaetium uruguense</i>	Pampas Rice-grass	*	2	16/11/2004
<i>Plantago coronopus</i>	Buck's-horn Plantain	*	19	3/03/2011
<i>Plantago lanceolata</i>	Ribwort	*	166	15/06/2017
<i>Plantago major</i>	Greater Plantain	*	10	4/10/2006
<i>Plumbago auriculata</i>	Cape Leadwort	*	1	10/02/2006
<i>Poa annua</i> s.l.	Annual Meadow-grass	*	15	4/10/2006
<i>Poa pratensis</i>	Kentucky Blue-grass	*	4	23/01/1997
<i>Polycarpon tetraphyllum</i>	Four-leaved Allseed	*	5	1/12/2011
<i>Polygala myrtifolia</i>	Myrtle-leaf Milkwort	*	1	9/08/2002
<i>Polygonum aviculare</i> s.l.	Prostrate Knotweed	*	3	17/01/2011
<i>Polygonum aviculare</i> s.s.	Hogweed	*	2	3/03/2011
<i>Polypogon monspeliensis</i>	Annual Beard-grass	*	5	6/11/1990
<i>Populus alba</i>	White Poplar	*	1	21/09/1988
<i>Populus nigra</i> 'Italica'	Lombardy Poplar	*	2	18/05/1998
<i>Populus</i> spp.	Poplar	*	2	10/02/2006
<i>Prunella vulgaris</i>	Self-heal	*	1	03/11/1899
<i>Prunus cerasifera</i>	Cherry Plum	*	27	10/01/2011
<i>Prunus cerasifera</i> 'Nigra'	Purple-leaf Cherry-plum	*	2	17/01/2011

Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>Prunus persica</i>	Peach	*	1	17/01/2011
<i>Prunus spinosa</i>	Blackthorn	*	2	18/05/1998
<i>Prunus spp.</i>	Prunus	*	10	3/03/2011
<i>Pyracantha crenulata</i>	Nepal Firethorn	*	1	17/11/2001
<i>Pyracantha spp.</i>	Firethorn	*	1	21/09/1988
<i>Quercus spp.</i>	Oak	*	1	28/10/2001
<i>Ranunculus muricatus</i>	Sharp Buttercup	*	1	6/11/1990
<i>Ranunculus repens</i>	Creeping Buttercup	*	15	21/12/2010
<i>Raphanus raphanistrum</i>	Wild Radish	*	9	19/10/2006
<i>Raphanus sativus</i>	Common Radish	*	1	25/10/1883
<i>Rapistrum rugosum</i>	Giant Mustard	*	13	17/01/2011
<i>Ricinus communis</i>	Castor Oil Plant	*	7	15/06/2017
<i>Robinia pseudoacacia</i>	Locust Tree	*	1	5/11/1990
<i>Romulea minutiflora</i>	Small-flower Onion-grass	*	1	8/12/2010
<i>Romulea rosea</i>	Onion Grass	*	117	1/12/2011
<i>Romulea rosea var. australis s.s.</i>	Common Onion-grass	*	23	17/01/2011
<i>Romulea rosea var. reflexa</i>	Large-flower Onion-grass	*	4	1/09/2004
<i>Rorippa palustris</i>	Marsh Yellow-cress	*	6	17/01/2011
<i>Rosa rubiginosa</i>	Sweet Briar	*	70	15/06/2017
<i>Rubus anglocandicans</i>	Common Blackberry	*	30	15/06/2017
<i>Rubus fruticosus spp. agg.</i>	Blackberry	*	28	1/12/2011
<i>Rubus polyanthemus</i>	Forest Blackberry	*	1	31/03/1998
<i>Rubus ulmifolius var. ulmifolius</i>	Elm-leaf Blackberry	*	3	31/03/1998
<i>Rumex conglomeratus</i>	Clustered Dock	*	32	17/01/2011
<i>Rumex crispus</i>	Curled Dock	*	28	15/06/2017
<i>Rumex obtusifolius subsp. obtusifolius</i>	Broad-leaf Dock	*	1	17/09/2002
<i>Rumex pulcher subsp. pulcher</i>	Fiddle Dock	*	8	17/01/2011
<i>Rumex spp. (naturalised)</i>	Dock (naturalised)	*	1	17/06/1997
<i>Sagina procumbens</i>	Spreading Pearlwort	*	2	4/10/2006
<i>Salix alba</i>	White Willow	*	1	3/11/2003
<i>Salix alba var. vitellina</i>	Golden Willow	*	2	2/10/1994
<i>Salix babylonica s.l.</i>	Weeping Willow	*	3	18/05/1998
<i>Salix fragilis</i>	Crack Willow	*	5	21/12/2010
<i>Salix fragilis var. fragilis</i>	Crack Willow	*	1	3/11/2003
<i>Salix spp.</i>	Willow	*	5	28/09/2005
<i>Salix X mollissima</i>	Willow hybrid	*	1	12/09/2002
<i>Salix X rubens</i>	Basket Willow	*	3	4/10/2006
<i>Salix X sepulcralis var. sepulcralis</i>	Weeping Willow	*	2	17/01/2011
<i>Salpichroa organifolia</i>	Pampas Lily-of-the-Valley	*	2	24/05/2001
<i>Salvia verbenaca</i>	Wild Sage	*	1	6/11/1990
<i>Scabiosa atropurpurea</i>	Pincushion	*	7	17/01/2011
<i>Schinus molle</i>	Pepper Tree	*	4	28/09/2005
<i>Sedum spp.</i>	Stoncrop	*	1	6/11/1990

Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>Senecio vulgaris</i>	Common Groundsel	*	1	6/11/1990
<i>Setaria parviflora</i>	Slender Pigeon Grass	*	2	6/01/2005
<i>Setaria pumila</i> subsp. <i>pumila</i>	Pale Pigeon-grass	*	1	10/01/2011
<i>Silene gallica</i>	French Catchfly	*	3	17/01/2011
<i>Silene</i> spp.	Catchfly	*	2	10/01/2011
<i>Silybum marianum</i>	Variegated Thistle	*	2	15/06/2017
<i>Solanum chenopodioides</i>	Whitetip Nightshade	*	3	23/01/2018
<i>Solanum nigrum</i> s.l.	Black Nightshade	*	9	10/01/2011
<i>Solanum nigrum</i> s.s.	Black Nightshade	*	9	3/03/2011
<i>Solanum pseudocapsicum</i>	Madeira Winter-cherry	*	4	28/10/2010
<i>Sonchus asper</i> s.l.	Rough Sow-thistle	*	17	17/01/2011
<i>Sonchus asper</i> s.s.	Rough Sow-thistle	*	2	12/08/2009
<i>Sonchus oleraceus</i>	Common Sow-thistle	*	70	15/06/2017
<i>Sparaxis bulbifera</i>	Harlequin Flower	*	1	21/09/1988
<i>Sparaxis</i> spp.	Harlequin Flower	*	1	1/03/1983
<i>Spartium junceum</i>	Spanish Broom	*	1	21/09/1988
<i>Sporobolus africanus</i>	Rat-tail Grass	*	33	1/12/2011
<i>Stachys arvensis</i>	Stagger Weed	*	1	10/01/2011
<i>Stellaria media</i>	Chickweed	*	11	1/12/2011
<i>Stenotaphrum secundatum</i>	Buffalo Grass	*	2	3/03/2011
<i>Symphotrichum subulatum</i>	Aster-weed	*	21	7/03/2018
<i>Tagetes patula</i>	French Marigold	*	1	25/04/1997
<i>Tagetes</i> spp.	Marigold	*	1	6/11/1990
<i>Taraxacum officinale</i> spp. <i>agg.</i>	Garden Dandelion	*	6	10/02/2006
<i>Taraxacum</i> species group 1	Garden Dandelion	*	4	4/10/2006
<i>Tradescantia fluminensis</i>	Wandering Jew	*	21	4/01/2011
<i>Tragopogon porrifolius</i> subsp. <i>porrifolius</i>	Salsify	*	15	29/05/2006
<i>Tribolium acutiflorum</i> s.l.	Desmazeria	*	2	23/01/1997
<i>Tribolium obliterum</i>	Desmazeria	*	1	3/03/2011
<i>Trifolium angustifolium</i> var. <i>angustifolium</i>	Narrow-leaf Clover	*	29	17/01/2011
<i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover	*	1	26/11/1986
<i>Trifolium campestre</i> var. <i>campestre</i>	Hop Clover	*	13	17/01/2011
<i>Trifolium dubium</i>	Suckling Clover	*	25	10/01/2011
<i>Trifolium fragiferum</i> var. <i>fragiferum</i>	Strawberry Clover	*	2	18/05/1998
<i>Trifolium glomeratum</i>	Cluster Clover	*	17	17/01/2011
<i>Trifolium repens</i> var. <i>repens</i>	White Clover	*	25	19/10/2006
<i>Trifolium</i> spp.	Clover	*	6	31/05/2010
<i>Trifolium striatum</i>	Knotted Clover	*	3	17/01/2011
<i>Trifolium subterraneum</i>	Subterranean Clover	*	12	1/12/2011
<i>Trifolium tomentosum</i> var. <i>tomentosum</i>	Woolly Clover	*	1	02/11/1884

Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>Tropaeolum majus</i>	Nasturtium	*	4	28/09/2005
<i>Typha latifolia</i>	Lesser Reed-mace	*	4	6/11/1990
<i>Ulex europaeus</i>	Gorse	*	9	17/01/2011
<i>Ulmus spp.</i>	Elm	*	4	4/10/2006
<i>Urtica urens</i>	Small Nettle	*	2	6/11/1990
<i>Vellereophyton dealbatum</i>	White Cudweed	*	1	1/02/1987
<i>Verbena bonariensis s.l.</i>	Purple-top Verbena	*	2	5/11/1990
<i>Verbena bonariensis var. bonariensis s.s.</i>	Purple-top Verbena	*	1	4/10/2006
<i>Verbena officinalis var. officinalis</i>	Verbena	*	3	11/06/2018
<i>Veronica hederifolia</i>	Ivy-leaf Speedwell	*	1	6/11/1990
<i>Veronica peregrina subsp. xalapensis</i>	Wandering Speedwell	*	2	21/09/1988
<i>Veronica persica</i>	Persian Speedwell	*	2	15/04/2003
<i>Vicia hirsuta</i>	Tiny Vetch	*	6	27/08/2003
<i>Vicia sativa</i>	Common Vetch	*	29	15/06/2017
<i>Vicia sativa subsp. cordata</i>	Common Vetch	*	1	11/11/2009
<i>Vicia sativa subsp. nigra</i>	Narrow-leaf Vetch	*	21	17/01/2011
<i>Vicia sativa subsp. sativa</i>	Common Vetch	*	11	17/01/2011
<i>Vicia spp.</i>	Vetch	*	12	25/06/2009
<i>Vicia tetrasperma</i>	Slender Vetch	*	10	29/05/2006
<i>Vicia villosa subsp. villosa</i>	Hairy Vetch	*	1	1/01/1994
<i>Vinca major</i>	Blue Periwinkle	*	6	3/03/2011
<i>Viola odorata</i>	Common Violet	*	6	11/06/2018
<i>Vulpia bromoides</i>	Squirrel-tail Fescue	*	24	1/12/2011
<i>Vulpia muralis</i>	Wall Fescue	*	2	17/01/2011
<i>Vulpia myuros</i>	Rat's-tail Fescue	*	11	23/10/2007
<i>Vulpia spp.</i>	Fescue	*	32	17/01/2011
<i>Zantedeschia aethiopica</i>	White Arum-lily	*	15	28/10/2010

Appendix 3. Street trees with weed risk ratings

Key:

WONS= Weeds of National Significance

Risk ratings provided by the *Advisory List for Environmental Weeds*, DELWP, 2018

Noxious weed categories: SP = State prohibited P = Regionally prohibited C = Regionally controlled R = Restricted

Botanical Name	Common Name	No. of street trees	Weed Category	Risk Rating - Adv list of env weeds, 2018
<i>Acacia floribunda</i>	White Sallow-wattle	82		Very High Risk
<i>Acacia longifolia</i>	Sallow Wattle	38		Very High Risk
<i>Acacia saligna</i>	Golden Wreath Wattle	8		Very High Risk
<i>Acer negundo</i>	Box-elder Maple	55		Very High Risk
<i>Acer negundo Sensation</i>	Box-elder Maple	42		Very High Risk
<i>Arbutus unedo</i>	Irish Strawberry Tree	8		Very High Risk
<i>Coprosma repens</i>	Mirror Bush	30		Very High Risk
<i>Corymbia maculata</i>	Spotted Gum	1156		Very High Risk
<i>Cotoneaster glaucophyllus var. serotinus</i>		23		Very High Risk
<i>Eucalyptus conferruminata</i>	Bald Island Marlock	33		Very High Risk
<i>Fraxinus angustifolia</i>	Desert Ash	743		Very High Risk
<i>Fraxinus angustifolia subsp. oxycarpa</i>	Syrian Ash	398		Very High Risk
<i>Fraxinus ornus</i>	Flowering Ash	491		Very High Risk
<i>Genista monspessulana</i>	Montpellier Broom	17	WONS	Very High Risk
<i>Gleditsia triacanthos</i>	Honey Locust	467		Very High Risk
<i>Gleditsia triacanthos Sunburst</i>	Honey Locust	47		Very High Risk
<i>Hakea petiolaris</i>	Sea-urchin Hakea	4		Very High Risk
<i>Hakea salicifolia</i>	Willow-leaved hakea	64		Very High Risk
<i>Leptospermum laevigatum</i>	Coast Tea-tree	4		Very High Risk
<i>Ligustrum lucidum</i>	Large-leaf Privet	74		Very High Risk
<i>Ligustrum sp.</i>	Privet	1		Very High Risk
<i>Melaleuca diosmifolia</i>	Green Honey-myrtle	3		Very High Risk
<i>Olea europaea</i>	Olive	1250		Very High Risk
<i>Phoenix canariensis</i>	Canary Island Date-palm	229		Very High Risk
<i>Pinus halepensis</i>	Aleppo Pine	5		Very High Risk
<i>Pinus radiata</i>	Radiata Pine	69		Very High Risk
<i>Pittosporum eugenioides</i>	Tarata	78		Very High Risk
<i>Pittosporum undulatum</i>	Sweet Pittosporum	197		Very High Risk
<i>Prunus lusitanica</i>	Portugal Laurel	1		Very High Risk
<i>Pyrus calleryana</i>	Callery Pear	4332		Very High Risk
<i>Salix babylonica</i>	Weeping Willow	19		Very High Risk
<i>Salix caprea</i>	Goat Willow	7		Very High Risk
<i>Salix humboldtiana 'Pyramidalis'</i>	Pencil Willow	2		Very High Risk
<i>Salix matsudana Tortuosa</i>	Tortured willow	2		Very High Risk

Botanical Name	Common Name	No. of street trees	Weed Category	Risk Rating - Adv list of env weeds, 2018
<i>Salix sp.</i>	Willow	2		Very High Risk
<i>Schinus molle</i>	Pepper Tree	102		Very High Risk
<i>Acacia decurrens</i>	Early Black-wattle	34		High Risk
<i>Acacia elata</i>	Cedar Wattle	3		High Risk
<i>Acacia howittii</i>	Sticky Wattle	3		High Risk
<i>Acacia pravissima</i>	Ovens Wattle	5		High Risk
<i>Acacia prominens</i>	Gosford Wattle	6		High Risk
<i>Ailanthus altissima</i>	Tree of Heaven	3		High Risk
<i>Betula pendula</i>	Silver Birch	127		High Risk
<i>Betula pendula Dalecarlica</i>	Silver Birch	1		High Risk
<i>Callitris columellaris</i>	White Cypress-pine	3		High Risk
<i>Casuarina glauca</i>	Swamp Oak	35		High Risk
<i>Cordyline australis</i>	New Zealand Cabbage-tree	11		High Risk
<i>Crataegus monogyna</i>	Hawthorn	2		High Risk
<i>Eucalyptus cladocalyx</i>	Sugar Gum	553		High Risk
<i>Eucalyptus leucoxylon subsp. megalocarpa</i>	Large-fruit Yellow-gum	98		High Risk
<i>Eucalyptus saligna</i>	Sydney Blue-gum	20		High Risk
<i>Eucalyptus stricklandii</i>	Strickland's Gum	26		High Risk
<i>Eucalyptus woodwardii</i>	Lemon-flowered Gum	6		High Risk
<i>Ficus carica</i>	Fig	53		High Risk
<i>Fraxinus excelsior</i>	English Ash	4		High Risk
<i>Fraxinus excelsior Aurea</i>	English Ash	62		High Risk
<i>Hesperocyparis lusitanica</i>	Mexican Cypress	3		High Risk
<i>Juglans nigra</i>	Walnut	18		High Risk
<i>Juglans regia</i>	Walnut	5		High Risk
<i>Ligustrum ovalifolium</i>	Hedge Privet	1		High Risk
<i>Melaleuca hypericifolia</i>	Hillock Bush	4		High Risk
<i>Melaleuca linariifolia</i>	Flax-leaf Paperbark	3359		High Risk
<i>Paraserianthes lophantha</i>	Cape Wattle	1		High Risk
<i>Pittosporum tenuifolium</i>	Kohuhu	54		High Risk
<i>Populus nigra 'Italica'</i>	Lombardy Poplar	31		High Risk
<i>Populus X canadensis</i>		22		High Risk
<i>Prunus cerasifera</i>	Cherry Plum	214		High Risk
<i>Prunus cerasifera 'Nigra'</i>	Purple-leaf Cherry-plum	977		High Risk
<i>Prunus domestica</i>	Plum	8		High Risk
<i>Robinia pseudoacacia</i>	Locust Tree	220		High Risk
<i>Rosa sp.</i>		2		High Risk
<i>Sequoia sempervirens</i>	Coast Redwood	3		High Risk
<i>Ulmus procera</i>	English Elm	154		High Risk
<i>Ulmus sp.</i>	Elm	5		High Risk
<i>Ulmus X hollandica</i>	Dutch Elm	23		High Risk
<i>Acacia baileyana</i>	Cootamundra Wattle	66		Moderately High Risk
<i>Acacia boormanii</i>	Snowy River Wattle	10		Moderately High Risk
<i>Acacia cognata</i>	Narrow-leaf Bower-wattle	50		Moderately High Risk
<i>Acacia iteaphylla</i>	Flinders Range Wattle	38		Moderately High Risk
<i>Acacia pendula</i>	Weeping Myall	8		Moderately High Risk
<i>Acacia podalyriifolia</i>	Queensland Silver Wattle	8		Moderately High Risk
<i>Angophora costata</i>	Smooth-barked Apple	519		Moderately High Risk
<i>Callistemon linearis</i>	Stiff Bottlebrush	33		Moderately High Risk

Botanical Name	Common Name	No. of street trees	Weed Category	Risk Rating - Adv list of env weeds, 2018
<i>Callitris endlicheri</i>	Black Cypress-pine	8		Moderately High Risk
<i>Celtis australis</i>	European Nettle Tree	445		Moderately High Risk
<i>Celtis occidentalis</i>	North American Hackberry	7		Moderately High Risk
<i>Cinnamomum camphora</i>	Camphor Laurel	375		Moderately High Risk
<i>Coleonema pulchellum</i>	Pink Diosma	1		Moderately High Risk
<i>Cornus sp.</i>	Himalayan Strawberry-tree	1		Moderately High Risk
<i>Corymbia citriodora</i>	Lemon-scented Gum	768		Moderately High Risk
<i>Cotoneaster sp.</i>	Cotoneaster	10		Moderately High Risk
<i>Crassula ovata</i>	Jade Plant	2		Moderately High Risk
<i>Elaeocarpus reticulatus</i>	Blue Oliveberry	2		Moderately High Risk
<i>Eriobotrya japonica</i>	Loquat	175		Moderately High Risk
<i>Eucalyptus astringens</i>	Brown Mallet	13		Moderately High Risk
<i>Eucalyptus botryoides</i>	Southern Mahogany	136		Moderately High Risk
<i>Eucalyptus gomphocephala</i>	Tuart	71		Moderately High Risk
<i>Eucalyptus occidentalis</i>	Swamp Yate	67		Moderately High Risk
<i>Grevillea robusta</i>	Silky Oak	159		Moderately High Risk
<i>Grevillea sp.</i>	Grevillea	28		Moderately High Risk
<i>Hakea sericea</i>	Silky Hakea	4		Moderately High Risk
<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	70		Moderately High Risk
<i>Lagunaria patersonia</i>	Norfolk Island Hibiscus	109		Moderately High Risk
<i>Melaleuca armillaris</i>	Giant Honey-myrtle	540		Moderately High Risk
<i>Melaleuca decussata</i>	Totem-poles	1		Moderately High Risk
<i>Melaleuca nesophila</i>	Showy Honey-myrtle	48		Moderately High Risk
<i>Pittosporum crassifolium</i>	Karo	22		Moderately High Risk
<i>Ricinus communis</i>	Castor Oil Plant	3		Moderately High Risk
<i>Acacia cardiophylla</i>	Wyalong Wattle	1		Medium Risk
<i>Acacia cultriformis</i>		1		Medium Risk
<i>Acacia pycnantha</i>	Golden Wattle	159		Medium Risk
<i>Acer palmatum</i>	Japanese Maple	31		Medium Risk
<i>Agonis flexuosa</i>	Willow Myrtle	657		Medium Risk
<i>Brachychiton populneus</i>		118		Medium Risk
<i>Buddleja sp.</i>	Butterfly Bush	2		Medium Risk
<i>Callistemon citrinus</i>	Crimson Bottlebrush	259		Medium Risk
<i>Callistemon salignus</i>	Willow Bottlebrush	1258		Medium Risk
<i>Eucalyptus globulus</i>	Southern Blue-gum	130		Medium Risk
<i>Eucalyptus longifolia</i>		1		Medium Risk
<i>Homalanthus populifolius</i>	Bleeding Heart	3		Medium Risk
<i>Malus domestica</i>	Apple	80		Medium Risk
<i>Malus sp.</i>		23		Medium Risk
<i>Melia azedarach</i>	White Cedar	1356		Medium Risk
<i>Picea abies</i>	Norway Spruce	4		Medium Risk
<i>Pinus canariensis</i>	Canary Island Pine	8		Medium Risk
<i>Pinus pinea</i>	Stone Pine	1		Medium Risk
<i>Populus alba</i>	White Poplar	27		Medium Risk
<i>Populus alba Pyramidalis</i>		5		Medium Risk
<i>Quercus robur</i>	English Oak	93		Medium Risk
<i>Viburnum tinus</i>	Laurestinus	11		Medium Risk
<i>Abelia sp.</i>		1		Lower Risk
<i>Abelia x grandiflora</i>	Glossy Abelia	1		Lower Risk
<i>Cedrus deodara</i>	Deodar	25		Lower Risk
<i>Cordyline stricta</i>	Slender Palm-lily	1		Lower Risk

Botanical Name	Common Name	No. of street trees	Weed Category	Risk Rating - Adv list of env weeds, 2018
<i>Cupressus sempervirens</i>	Italian Cypress	82		Lower Risk
<i>Cydonia oblonga</i>	Quince	4		Lower Risk
<i>Dodonaea viscosa</i>	Sticky Hop-bush	23		Lower Risk
<i>Eucalyptus crenulata</i>	Buxton Gum	6		Lower Risk
<i>Eucalyptus macarthurii</i>	Camden Woollybutt	4		Lower Risk
<i>Eucalyptus viridis</i>	Green Mallee	18		Lower Risk
<i>Ficus macrophylla</i>	Moreton Bay Fig	17		Lower Risk
<i>Fraxinus pennsylvanica</i>	Green Ash	227		Lower Risk
<i>Laurus nobilis</i>	Bay Laurel	63		Lower Risk
<i>Leptospermum petersonii</i>	Lemon-scented Tea-tree	60		Lower Risk
<i>Maclura pomifera</i>	Osage Orange	1		Lower Risk
<i>Melaleuca styphelioides</i>	Prickly Paperbark	3025		Lower Risk
<i>Metrosideros excelsa</i>	New Zealand Christmas Tree	17		Lower Risk
<i>Nerium oleander</i>	Oleander	78		Lower Risk
<i>Photinia glabra</i>	Red-leaf Photinia	196		Lower Risk
<i>Photinia serratifolia</i>	Chinese Hawthorn	1		Lower Risk
<i>Picea sp.</i>		1		Lower Risk
<i>Prunus dulcis</i>	Almond	32		Lower Risk
<i>Pyrus communis</i>	Pear	30		Lower Risk
<i>Quercus suber</i>	Cork Oak	1		Lower Risk
<i>Trachycarpus fortunei</i>	Chusan Fan Palm	15		Lower Risk
<i>Ulmus parvifolia</i>	Chinese Elm	1426		Lower Risk
<i>Washingtonia filifera</i>	California Fan-palm	138		Lower Risk
<i>Washingtonia robusta</i>	Mexican Fan-palm	43		Lower Risk
<i>Olea europaea subsp. cuspidata</i>	African Olive	1		Potential Risk

Appendix 4. General principles of weed management – for guidance

Weed management should be a well-planned process that combines ecological and horticultural theories and applies them to practical bushland, Parks and Gardens or streetscape management. Weed control should also be adaptive to site conditions and changes that may occur seasonally or long-term, along with the responses of weeds to particular types of control implemented as observed by land managers.

Some guiding on-going principles for any site regarding weed management are to:

- identify the highest quality areas and work outwards from these areas, using a systematic approach;
- on waterways it may be best to work systematically from upstream areas through to downstream areas,
- consider fauna habitat and in particular habitat for significant species, before undertaking works (which may require staged weed removal in conjunction with replacement planting works);
- protect and increase regeneration of any native vegetation areas through sensitive bush regeneration principles;
- consider the presence of indigenous flora species, particularly those of National or State significance;
- ensure that weed control is done in a manner that facilitates effective follow-up management of weeds where work has been started;
- treat weeds at the appropriate time in their life cycle to maximise effectiveness and to minimise off-target damage to indigenous species;
- follow-up all work with ongoing maintenance and resist starting on new projects until a high level of weed control has been achieved on current projects;
- ensure all green waste that contains weed seed is removed off-site and disposed of appropriately;
- use the most eco-sensitive approach to weed control, to avoid negative effects of herbicide on the natural environment, particularly near water-bodies and watercourses; and,
- where practical, weed control should be undertaken by alternative measures such as slashing, hand weeding, burning with a weed burner or weed dragon and other means, such as frill-and-fill, cut-and-paint or drill-and-fill, with minimal herbicide use.

Following-up on areas that have been subjected to weed control is of paramount importance. Weed management requires consistent work and is long-term. This is in order to interrupt the life cycles of the weeds and allow indigenous species to gain an ecological advantage. Any weed control should be done with minimal disturbance to soil and surrounding vegetation; soil disturbance can lead to further weed infestation and increase erosion. Weed control should aim to contain and control weeds first and then seek complete elimination. Elimination of some weed species requires a long-term approach, due to soil seed banks and reinfestation that may occur from outside the management area.

The principles of weed management outlined above are based on those in 'Bringing back the bush: The Bradley method of bush regeneration' (Bradley 1988). The 'Bradley Method', as it is commonly known, has three principles which guide the management of weeds in areas to be regenerated:

1. Always work from good to bad areas;

2. Disturb the soil as little as possible and restore it to its natural condition; and
3. Allow the rate of regeneration to dictate the rate of clearing. This is particularly important for removal of woody weeds and the weedy understorey.

7.1.1 Weed Management in practice

Within any management area the eradication of all weeds may not be realistic. The main focus should be on the removal and management of high-threat weeds, control weeds within higher quality areas of vegetation and systematically control and enhance vegetation in significant fauna habitat. Over the long-term this process will be facilitated by the removal of weeds in poorer quality areas and replacement with indigenous vegetation, through regeneration and/or revegetation.

Removal of weeds has the potential to affect fauna species using these weeds for habitat. A staggered approach to woody weed control and revegetation of woody species should be adopted to maintain fauna habitat.

For each site, document the weeds, their extent and cover and set longer term targets for their management.

The aim of woody weed control is to cut-and-paint or drill-and-fill with herbicide all mature plants and hand pull juveniles in Year 1. Plants should be left *in situ* where there is the potential to provide suitable habitat. There should be ongoing follow up and treatment where any seedlings or plants have been treated to ensure eradication of the species.

Provision of habitat should always be considered for example, it is recommended that for box-thorn control, where there is no suitable fauna habitat directly adjacent, that large box-thorn shrubs be killed using the drill-and-fill method. Then cut (and remove from the site) the lowest branches (to one metre above the ground), which will allow retention of some suitable habitat for small birds in the mid-storey while also eliminating lower shrub cover and thus, shelter for pest animals such as rabbits, foxes and cats. This temporary measure will allow for habitat to remain until suitable replacement shrubs (with similar features, i.e. mid-storey, prickly shrubs) reach maturity.

Grassy weed species will require an ongoing effort to control. Any large patches that are controlled should be planted out with indigenous species to prevent further weed invasion.

Herbaceous weeds will also requiring ongoing effort, and will include a variety of methods as outlined below. While a number of control methods have been outlined, the type of method used will depend on the location at which the weed occurs and the impact the control method may have on the surrounding vegetation.

The following guidelines should be applied to weed control within a bushland management or Parks and Gardens site:

- preference should be given to hand-weeding techniques near area of indigenous vegetation;
- works should first be focussed on high threat weeds;
- large areas cleared as a result of weed control should be revegetated with appropriate species that are consistent with the EVC;
- all woody weeds on slopes should be controlled using the cut-and-paint method to reduce soil erosion;
- woody weeds with a stem diameter of less than four (4) cm at the base can be cut-and-painted;

- larger specimens of woody weeds, with a stem diameter of greater than four (4) cm at the base should be frilled-and-filled and left in-situ;
- burning, steaming, slashing and hand removal of particular weeds, such as members of the Iridaceae family and introduced grasses and herbs, should be used as an alternative to herbicide application when practical;
- annual grasses and herbs should be controlled where possible at the two leaf/seedling stage with a weed burner, with such work undertaken early in the morning when wet with dew or after rain;
- any works involving spraying of herbicide (e.g. spot-spraying) should only be undertaken by skilled bushland contractors to avoid the risk of off-target damage;
- with regards to the disposal of cut plant material derived from weed control works:
 - any material removed from areas that contain fruit-bearing material, should be removed off-site;
 - material from woody weeds (without seed) that is removed from other areas of the Site should be left on-site to decompose naturally. This material however should be hung off retained vegetation in a manner that does not allow for re-sprouting and still facilitates access for follow-up weed control;
 - material from grassy and herbaceous weeds that are removed by hand-weeding and slashing, should be taken off-site;
- control woody vegetation and leave in situ until understorey revegetation replaces habitat.

As there may be different contractors working within different zones across the site, liaison with other land managers should be undertaken to ensure no duplication of works.