

Appendix D – Weed threat matrix

Risk assessment

Determining risk is an essential component in helping to define priorities for weed prevention and control. A *risk* is the chance of something occurring that has the potential to cause loss, damage or injury, and the term is used within this strategy to describe the negative impact of weeds on the environmental, economic and social values of Cardinia Shire.

Council has adopted the 'Weed threat matrix' (based on a similar weed threat matrix developed by the Yarra Ranges Council 2005) to identify sites where risks are greatest and to set priorities for weed management. Part A of the matrix is designed to identify and rank biodiversity assets, while Part B identifies the threat weeds pose to these assets. This helps to determine which weed species should be controlled.

To what degree these species are controlled is then determined through the development of site-specific management plans, which take into account the level of resources available. Part B of the matrix, identifies weed species at the site (identified in Part A), and uses criteria to determine which weeds should be actively managed:

- The invasiveness of the species (derived from Carr et al. 1992)
- Listing under the CaLP Act 1994
- Listing on the PPWCMA Weed Action Plan
- Ease of removal and likely damage to surrounding vegetation
- Seed dispersal capabilities
- Life stage/maturity of the plants (seed bearing or immature)

The invasiveness of the species is based on the ranking system used by Carr et al. (1992) in Environmental Weed Invasions in Victoria. Carr et al. (1992) assessed weeds for invasiveness using the following criteria:

- Proven weediness for related plants
- Reproductive potential
- Dispersal and vectors of dispersal
- Ability to flourish in a given climate

Prioritising weed control

The matrix is a site-based assessment that prioritises weed control based on the ecological value of sites. This approach is different to the majority of weed control programs undertaken by government agencies, which are typically species-based, focussing on the control of noxious weeds. By setting priorities based on the ecological value of sites, a wide range of weed infestations will be identified ranging from small, localised new invasions to large infestations that completely cover an area. Management options will therefore vary for each site. As it is the ecological value of sites that is significantly threatened by weed invasions, and extremely difficult to regain if degraded, the site-based approach is considered more appropriate than the species-based.

The intention of implementing the weed threat matrix is that the highest quality sites will be treated in the first year, then require less attention in following year. This will allow the next highest quality sites to be treated in the second year and so on until the majority of sites have been treated and only maintenance is required.

This approach to weed management is based on the philosophy of 'always working from the best areas to the worst'.

While sites with the highest ecological value will be a priority using the matrix, it is important that not all resources are used in these areas, or there will be some sites that never get managed. Therefore, this problem could be addressed by including one or a combination of the following:

- visit all sites on a rolling roster (1-3 years), but vary the intensity of weed control at each site to be proportional to how they rank;
- divide up weed control resources so that a large proportion (i.e. 60%) goes to sites of 'high' value, 30 per cent to 'medium' value and 10 per cent to low value sites;
- prioritise certain works e.g. removal of mature Sweet Pittosporum, and carry out these works across all sites in order as prioritised by the matrix;
- use a combination of all three options.

The weed threat matrix is a priority-setting tool that will guide weed control efforts in Cardinia Shires bushland reserves. There is also potential for the matrix to be used for assessing roadsides conservation value, however some alterations may need to be made.

Part A: Site prioritisation

Table 1. The weed threat matrix, Part A: Site prioritisation

Criteria	Category	Rank
Sites of significance	National	10
	State	8
	Regional	6
	Local	4
Ecological Vegetation Class EVC	Endangered	10
	Vulnerable	8
	Rare	6
	Depleted	4
	Least Concern	2
Rare or Threatened Species	Rare or Threatened Species known to occur in the EVC (2 points per species)	2
Endangered species listed as Critically Endangered or Endangered on DSE 'Advisory List' found in EVC, but not necessarily at this site.	Endangered species known to occur in the EVC (2 points per species)	2
Endangered Species known to be present on the site.	EN or CR or FFG listed species	6
Roadside conservation status (include this score OR sites of significance score)	High (2 points for each adjoining roadside)	2
Is the site adjacent to a creek/waterway	High value	5
Tenure of land within 200m	State Park/Water Catchment	5

Criteria	Category	Rank
	Other crown land/reserves managed for conservation	2
	Private land, remnant vegetation	2
Size of reserve (to estimate edge effect)	Private land, agricultural	0
	>10 ha	4
	5-10 ha	2
	<5 ha	1
Friends' group or other community members assisting with weed control	Regular involvement (> twice per year)	5
	Irregular involvement (< twice per year)	2
	No involvement	0
Other reasons for selecting site	Site of heritage or cultural significance	4
	Site has high educational potential through weed removal	3
	Site of high tourism value	2
Treat sites with a score equal to or greater than 10		

Part B: Weed assessment

The second part of the Weed Threat Matrix is used once the sites have been prioritised (Part A). Part B is used to determine which weeds found on the sites will be actively managed. Weeds are selected primarily for their invasiveness - ease of removal and infestation area and also considered. For each assessment criteria a rank is assigned. These ranks are added together to provide an overall ranking. As stated by the Shire of Yarra Ranges, it is recommended that if the ranking tallies 13 points or more then the weed should be actively managed. If the ranking tallies less than 13, the particular weed species is not considered to pose a high enough threat to warrant spending resources.

Table 2. The weed threat matrix: Part B: Weed assessment¹

Criteria	Category	Rank
Risk rating	V - Very serious threat	8
	S - Serious threat	4
From Carr et al. (1992)	P - Potential threat	1
	N - Not a threat	0

¹ Additional resources required to use this threat matrix include: Cardinia Shire GIS Maps and records from Biosites, Sites of Significance, EVC's and Roadsides Conservation Status databases

Criteria	Category	Rank
Or...from Port Phillip and Westernport Invasive Plant and Animal Strategy	Very high risk environmental weed	5
Noxious weeds	State prohibited	50
	Regionally prohibited	30
	Regionally controlled	5
	Restricted	5
National environmental alert list species		8
Population size	<20 plants or < 0.01ha	5
	20-500 plants or 0.01 - 0.1ha	2
	500+ plants or >0.1 ha	1
Ease of removal: ·Number of treatments required ·Damage / disturbance to indigenous flora due to control methods ·Efficiency of removal / treatments (i.e. number of plants removed per unit of time)	Single treatment, rarely damage surrounding vegetation, rapid removal	3
	1-3 treatments, minor damage, moderately time consuming	2
	Multiple treatments, moderate damage, highly time consuming	1
	Continuous treatment, major disturbance, highly time consuming	0
Seed dispersal and time to maturity	Can readily spread > 50m, plants take >1 year to seed	8
	Can readily spread > 50m, plants take <1 year to seed	3
	Rarely spreads >50m	0
Threat to native vegetation: - Ability to invade intact native vegetation - Suppression of native vegetation once established	Able to invade and strong suppression	5
	Needs disturbance, competes once established or can invade, moderately suppresses	2
	Establishes only in disturbed areas, out competed by robust native vegetation	0
Treat weeds with score equal to or greater than 13		