

Northern Territory Weed Risk Management System

Weed risk management systems are recognised nationally as the best way to identify priority weed species. The Northern Territory Government uses the NT Weed Risk Management System (WRM System) to identify and prioritise plants to be declared as weeds under the *Weeds Management Act 2001* (“the Act”).

The WRM System compiles evidence related to species characteristics, current and potential impacts and the degree to which a management response is likely to succeed. This information is then used to determine the most appropriate management action for the species in question.

Why do we need a WRM system in the NT?

There are many weeds present in the NT, some of which are already dramatically affecting our environment, economy, lifestyles and culture. Weed control can be difficult and very expensive. The Northern Territory Government and land managers in the NT spend in excess \$5,000,000 on weed control annually.

Weed control is, unfortunately, not as simple as “let’s just get rid of it”. Any progress we make against weeds is dependent on channelling our efforts and resources very strategically and in the right direction. In order to determine ‘the right direction’ we need to systematically assess the level and type of impact different introduced plant species are causing now and what kind of impacts they may cause in the future. We also need to identify weeds which could pose a significant threat to us if they were to arrive in the NT.

The WRM system provides a rigorous, transparent, and evidence based assessment of both current and potential weed species which can be used to identify priority species for weed control. The system also takes into account how difficult, expensive or likely to succeed the management of a given species will be. The WRM model provides a process to determine:

- which plants should be declared a weed or a potential weed;
- what level of management should occur; and
- where management should occur.

In the NT the WRM system is being used to:

- review the status of declared weeds on NT Declared Weeds List;
- determine the appropriate status for undeclared naturalised plants;
- decide which plants should be approved for release in the NT and which plants require further research prior to release; and
- prioritise weeds for weed management.

What if the plant is valued by a certain industry?

The WRM System considers the risks a plant may pose to environmental, economic or social values, while taking into account the benefits the plant may provide to the agriculture, horticulture and/or nursery sector.

Who makes the decisions?

Effective weed management requires the involvement of and communication with a range of stakeholders including landholders, industry, conservation groups, researchers and government agencies. All key stakeholders were consulted in the development of the WRM system. Assessments are made by NT Weed Risk Management Technical Working Group; a group made up of weed ecologists, weed managers, weed researchers and natural resource management experts from key stakeholder groups.

How does the WRM System and process work?

The WRM process is made up of six stages (Figure 1). Two major decision support tools are embedded within the WRM system: a *weed risk assessment* (step 3) and a *feasibility of control assessment* (step 4). The main elements of the WRM process are:

1. Establish the context

Establish the context in which the rest of the process will take place, including the overall goal/s, geographic and land use scope, stakeholders, existing policies/legislation and resources available to undertake the WRM System and implement its outcomes.

2. Identify candidate plants

Candidate plant species for weed risk analysis are determined. This involves collating existing weed lists, reviewing likely incursions.

3. Analyse and evaluate risks (weed risk assessments)

Comparative weed risks are scored and categorised against three key criteria of Invasiveness, Impacts and Potential Distribution.

4. Analyse and evaluate feasibility of control (feasibility of control assessments)

Feasibility of control is determined through consideration of current distribution, expected control costs and duration of management required.

5. Determine management objectives

Management objectives are determined by considering the risk posed by the species and how feasible it is to control. These management objectives include preventing entry, eradication, containment and improving targeted control techniques.

6. Implement weed management actions

This is the transition from the strategic planning stage of WRM to operational, on-ground programs.

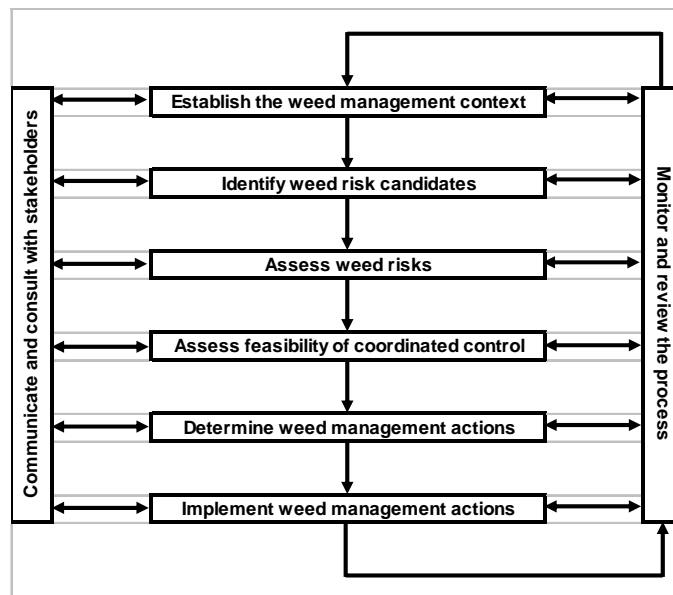


Figure 1: Overview of the Weed Risk Management (WRM) process (after Virtue 2005 and Standards Australia/Standards New Zealand/CRC Australian Weed Management 2006).

Identifying an appropriate management response

To identify and prioritise the type of management response required, both weed risk and feasibility of control are assessed.

Weed risk assessments

The level of risk posed by a weed is determined by assessing invasiveness, potential distribution and impacts (environmental, economic and social/cultural). A range of questions have been developed for consideration by the WRM Technical Working Group (see Table 1 – page 5) which are used to determine an objective score for each plant being assessed. The answers to the specified questions should provide information on the plant's **invasiveness, impacts** and **potential distribution**.

Feasibility of control assessments

Determining whether weed control is feasible forms an important component of any WRM system. Considerations including **control costs, current distribution** and **level of persistence** can be used to work out if a plant species will be easy or hard to control. For example if a plant is highly susceptible to a readily available and well priced herbicide, exists only in limited, accessible areas and is unlikely to re-establish after treatment it would be considered to have a high feasibility of control. Alternatively if a plant requires herbicide to be aerially applied on an annual basis because it persists in large, inaccessible areas, it would be considered to have a low feasibility of control.

Questions used to determine feasibility of control scores can also be viewed in Table 1.

How are scores used to make a decision?

A score for each question is reached by consensus by the Technical Working Group. A final overall score for weed risk and feasibility of control is then calculated for each species. Weed risk and feasibility of control both have a maximum score of 1000 and a minimum of 0. Splitting up the scores into bands of 25% gives cut-offs for categories of weed risk and feasibility of control.

Comparative weed risk and feasibility of control scores are used to assign a species to a weed risk and feasibility of control category (e.g. Low, Medium High, Very High – Figure 2). Based on the categories assigned to each species, a management action matrix can be used to recommend management responses based on both the risk posed and likelihood of management success. Because the levels of risk and the feasibility of control for a certain weed species will vary in different places across the NT, calculations have been undertaken for three different regions, these being Darwin, Katherine and Tennant Creek/Alice Springs.

Weed risk and feasibility of control category		Feasibility of Control		
		low -medium	high	Very high
Weed Risk	low	Low priority / negligible response	Low priority / negligible response	Low priority / weak response
	medium	Low priority / weak response	Low priority / moderate response	Low priority / moderate response
	high	Moderate priority / moderate response	Moderate priority / strong response	High priority / strong response
	very high	High priority / moderate response	High priority / strong response	Highest priority / strongest response

Recommend management responses		Feasibility of Control		
		low - medium	high	very high
Weed Risk	low	1. Provide advice	1. Provide advice	2. Monitor / Provide advice
	medium	3. Promote best practice management	4. Targeted control Improve general weed management	5. Targeted control Monitor Protect priority sites
	high	6. Targeted control	7. Protect priority sites	8. Prevent entry Contain regional spread
	very high	9. Targeted control (incl. biocontrol)	10. Prevent entry Contain regional spread protect priority sites	11. Prevent entry Regional eradication protect priority sites

Figure 2 – WRM system matrices. These show how determinations for weed risk and feasibility of control can be used to determine management responses for plant species which have been assessed.

Example: If scores for a plant species indicated that it was ‘very high’ weed risk and ‘very high’ feasibility of control it would be considered ‘highest priority/strongest response’ (see red cell). The management response for a weed with this categorisation would be 11. Prevent entry, regional eradication and protect priority sites.

Can I see the results?

Emphasis has been placed on making the WRM process evidence based, transparent and defensible. An NT Weed Risk Assessment Report will be published for each assessed species. These reports will contain all the information used to assess weed risk and feasibility of control, citing the sources of information, from literature or expert personal observation, that were used to answer each question and determine scores. Additionally a summary document about the weed species will describe the plant's biology and ecology, environmental, economic and social/cultural impacts within the NT and how feasibility of control may be approached. All documents are available at www.nt.gov.au/weeds.

Weed Management Plans

If a plant is declared a weed in accordance with the Act, then a plan of management will be drafted. The draft Weed Management Plans will be developed and placed on public exhibition for a period of four weeks. Any public comments received will be considered by the Minister prior to the development of a final plan which will be endorsed under the Act.

Once endorsed Weed Management Plans will facilitate and inform a strategic approach to weed management in the NT, with the overall aim being to mitigate the damage caused by weed species in relation to the natural environment, property, infrastructure and public health.

Weed Management Plans will advise all land managers and land users of their legal obligations with respect to managing declared weeds on their property and monitoring progress. Non-compliance with an endorsed Weed Management Plan may result in prosecution.



Figure 3 – The range of documents which have been prepared for *Andropogon gayanus* (gamba grass) based on the WRM System in the NT.

Table 1: Questions considered by the WMP Technical Working Group

	Species Attribute	Questions
Weed Risk Assessment	Invasiveness	What is the ability of the plant to establish amongst intact native environments?
		What is the reproductive ability of the plant?
		Do the propagules of the plant have properties that allow them to be dispersed long-distance by natural means?
		How likely is long distance dispersal by human means?
	Impacts	What is the plants competitive potential?
		What is the plant's potential to modify the existing fire behaviour and alter a fire regime?
		What is the plant's potential to reduce products or services obtained from land use?
		What is the plant's potential to restrict the physical movement of people, animals, vehicles, machinery and/or water?
		What is the plant's potential to negatively affect the health of animals and/people?
		Does the plant potentially have negative effects on biodiversity?
		Does the plant potentially have negative effects on environmental health?
	Potential distribution	What proportion of the broad environment is suitable for the plant?
	Feasibility of Control	Control costs
What is the general accessibility of infestations at the optimum treatment time?		
How expensive is the control of the weed in the first year of targeted control, for an infestation that has reached maximum weed density?		
What is the general community motivation to control this plant?		
Current distribution		What is the current pattern of the plant's distribution across the potential range?
Persistence		How long will it take to reach the maintenance period?
		What is the minimum time period for reproduction of sexual or vegetative propagules?
		What is the maximum longevity of sexual or vegetative propagules?
		What is the threat of reinfestation from outside the region?