

WEED MANAGEMENT STRATEGY

**NORTHERN NATURAL RESOURCE MANAGEMENT REGION
TASMANIA**

WEED MANAGEMENT STRATEGY NORTHERN NATURAL RESOURCE MANAGEMENT REGION

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2004

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Cover photograph: Rice grass *Spartina anglica* on the Tamar River at Native Point.
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(I) FOREWORD

Weeds have an enormous impact on agriculture and the environment of our region. The cost to Australian agriculture nationally is over 4 billion dollars per year, far greater than the 200 million estimated for salinity. The costs associated with the degradation of our natural resources by weeds are much harder to quantify but are considered to be at least as much as the costs to agriculture.

In the last 200 years of European settlement there has been a slow but gradual increase in the number of introduced plants naturalised in the northern region. Nationally 28 000 plant species have been introduced since early settlement in Australia with 765 exotic plant species naturalised in Tasmania. Of the feral plant species 'gone bush' 65% came from urban gardens and parks. Five of Australia's top twenty weeds of national significance are present in the Northern Region with many others increasing in distribution and density, having the ability to impact significantly on our region over time.

We have limited resources to tackle the increasing threats across our region and we must take action now and collectively.

The development of the Northern Regional Weed Strategy has been undertaken and financed by a wide range of committed organisations in the Northern Natural Resource Management Region. It is with the sharing of resources between community, Government and industry at all levels that will allow the effective management of feral plant species in our region over time.

Jamie Cooper
Regional Weed Management Officer
Dept of Primary Industries, Water and Environment

(II) EXECUTIVE SUMMARY

This Weed Management Strategy for the Northern NRM region is based on the latest information available. The overall goal is to protect the Northern NRM region's economy, environment and community by reducing the adverse impacts of weeds.

The development of this document has utilised past community consultation by the Councils in the region and land management bodies such as the Parks and Wildlife Service, Nature Conservation Branch of DPIWE and advisory groups such as the Rice Grass Advisory Group. All of these organisations have produced sub-regional weed management strategies and plans and natural resource management strategies in consultation with the community and some state wide strategies have been produced for weeds that occur in the Northern region.

The objectives that have been recommended in this strategy are summarised in this section as an overall précis of the whole document.

PREVENT THE DEVELOPMENT OF NEW WEED PROBLEMS

There are three recognised methods for preventing the development of new weed problems: prevention; preparedness and a rapid response. This section has four main objectives dealing with new weed issues, as follows:

Minimise the spread of weeds

The development of regional policies and codes of practice to prevent or minimise the spread of weeds through unnatural vectors is seen as a key strategic action in prevention. The use of hygiene practices such as washing machinery and equipment at washing stations and the safe disposal of weeds and contaminated wastes all are important strategies for reducing weed spread. The dissemination of information on weed management is essential in preventing the introduction and/or spread of weeds.

Support National and State quarantine measures

Quarantine measures taken by the National and State authorities provides protection from the introduction of weeds. The National quarantine measures include terrestrial and aquatic weed inspection and action, the regulation of ballast water which has been recognised as a vector for marine weeds and the assessment of plant species considered 'sleeper weeds'. The appropriate personnel to complete quarantine protection and assessment, coupled with the support of the community is vital in protecting the region from new weed introductions and the spread of existing weeds.

New and emerging weeds detected and controlled

One of the first strategic actions in this area is the reporting of new weeds to a central body that the community is aware of, for referral and action at the regional level. The development of a system of immediate response to new weed reports coupled with an action plan outlining the available resources and expertise available will provide an immediate and appropriate response to new weed introductions.

Control the trade and sale of weedy species

The National and State quarantine measures in place provide an important first line in the prevention of the introduction of weedy species. At a regional level the promotion of codes of practice and policies to reduce the trade and sale of weedy plants, by industries dealing with plants that may become weeds, provides an important local minimisation method.

REDUCE THE IMPACT OF EXISTING WEED PROBLEMS

Once weed species are established in the region the reduction of their impacts on the community is desirable for reasons such as preventing or minimising economic loss, environmental degradation and community enjoyment of their land and water areas. There are four objectives dealing with reducing the impact of weeds in the region.

Improve mapping of weed distribution and density

Mapping of weed distribution and density allows a coordinated and informed approach to weed control and management and allows a quantitative assessment of the effectiveness of weed management practices in the region. Knowledge of what weeds are in the region and their area of occurrence is a vital first step in managing and reducing the impact of weeds.

Develop and implement multiple on ground support services

The first action is the provision of information on best practice weed management to the community from a central source where the latest and best information on weeds is available. This allows an informed community with the best weed management advice available at the time. The sharing of resources amongst the community will allow a coordinated approach with the best available equipment and expertise.

Enact weed management legislation

The need for the community and land and water managers to comply with existing weed management legislation is an integral part of long term effective weed control in the region. Weed management plans for priority weed species are developed under State weed legislation and provide a number of actions that can be taken to reduce the impact of weeds on land and in water areas, with the final option of prosecution, if necessary. The provision of an adequate number of weed Officers in the region to engage the community in weed management is essential. The review of existing legislation and its effectiveness in weed management is necessary for long term reduction of weed impact.

Integrated control methods

The investigation of new control methods and technology to reduce the impact of weeds is important for future best management practice. Integrating existing methods of weed control provides the best weed management results, from methods such as biocontrol agents to non-chemical control methods such as smothering and grazing regimes. Supporting the research and development of ecologically sustainable alternative weed control methods provides the possibility of a future where control methods are ecologically sustainable.

PROVIDE THE FRAMEWORK AND CAPACITY FOR ONGOING MANAGEMENT OF WEED PROBLEMS

Weed management in a regional context requires the cooperation and coordination of weed management efforts from landholders, the general community, industry and government. This section has six objectives dealing with providing the framework and capacity for effective weed management.

Promote and implement best practice weed management

The strategic management of weeds is best achieved by the integration of planning, implementation and monitoring with a system of cooperation between landholders, community, industry and government. Any effective weed management must be a part of overall natural resource management and land management practices and techniques. Codes of practice and policies from a variety of land and water management activities provide an awareness avenue for the promotion of best practice weed management. The utilisation of bioregional areas provides a natural resource classification process that will enable planning and action to be as effective as possible.

Using best practice weed management is the best approach and coupled with a long term approach will lead to success in weed management.

Establish a network of gazetted weed officers

The establishment of locally based weed officers in the region is important for coordinating weed management activities in the region as a whole as also for supporting sub-regional programs.

The network of gazetted weed officers in conjunction with other organisations involved in weed management will form a regional support network to provide up to date advice and information on best practice weed management.

Prioritise weeds in the region

The prioritisation of weed species assists in the effective allocation of resources for weed management. Given the high number of weed species a prioritisation for the region based on regional and sub-regional priorities will be necessary to concentrate efforts and resources on the weeds that are most important to the regional community.

The identification of high value areas for protection against weeds and for the management of existing weed infestations will allow community priority areas to be protected.

Develop and implement Weed Management Strategies for sub-regions

The development and upgrading of municipal weed management strategies taking into consideration regional priorities and improved resource sharing opportunities will allow sub-regional priority setting. The establishment and support for sub-regional weed management groups will ensure an effective and coordinated approach to sub-regional weed management.

Promote and implement resource sharing

Regional community resources, knowledge and expertise can be combined to realise more effective weed management; cooperative weed management planning and on ground control can lead to greater effectiveness.

Potential funding sources can be accessed more successfully by joint sub-regional and regional applications, with an underlying Weed Management Strategy providing direction for priority setting. The identification of the weed management resources in the region into a central inventory will enable quick and effective access to weed control infrastructure, expertise and experience when required.

INCREASE PUBLIC AWARENESS AND EDUCATION ON WEED MANAGEMENT

The awareness of the weed problem is a major issue in effective and cooperative weed management. The public need to be aware of which plant is a weed, how important a weed species can be to the community in the social, environmental and economic sense and the individual in terms of productivity loss, aesthetic value depreciation, human health and loss of biodiversity. There are two objectives to increase public awareness and education on weed management.

Raise awareness

Increasing awareness of the detrimental effects of weeds and the regional and sub-regional priorities for weed management will amalgamate and concentrate efforts across the region. There are a variety of awareness raising avenues available and a wide variety of media types will be utilised in awareness campaigns.

Conduct training campaigns

Training and awareness of weed identification, management and prevention is an integral part of weed management. A well trained and aware community will assist in regional weed management success. Specific training on integrated weed management techniques and group-specific training sessions which target specific weed areas (for example, coastal areas) and weed species will result in more effective weed management.

MONITOR AND EVALUATE PROGRESS IN WEED CONTROL AND PREVENTION

The monitoring and evaluation of the effectiveness of the regional strategy and the objectives and strategic actions outlined to manage weeds will enable an analysis of future needs and past successes and failures. This section has three objectives dealing with the monitoring and evaluation of progress in weed control and prevention in the region.

Review the four active objectives

The four main active objectives will be reviewed when the Northern Region NRM Strategy is reviewed to determine areas where more resources can be directed and which areas require further attention, adjustment and action.

Develop monitoring procedures

Developing criteria to ensure that comprehensive and effective monitoring of weed management activities is carried out at the regional and sub-regional level will ensure the evaluation of the success of the Regional Weed Management Strategy by a rigorous monitoring and evaluation process. Information on monitoring and evaluation trend analysis will be disseminated to the regional community.

Evaluate the allocation of resources and identify further funding opportunities

Evaluating and identifying potential sources of financial and in-kind support for weed management activities will ensure the continuation of strategic actions that have proven to be successful. The support of community group activities in weed management from regional resources, experience and expertise is essential in ensuring that strategic actions are carried out in the most effective manner.

A quantification of resource allocation and an evaluation of the effectiveness of weed management over the evaluation period will allow a redirection of resource allocation as deemed necessary. A regional representative will be appointed for pursuing funding, sponsorship and assistance in weed management.

(III) INTRODUCTION

The Weed Management Strategy for the Northern Natural Resource Management (NRM) Region brings together existing sub-regional strategies to develop an overall plan for weed management in the region by:

- Identifying the weed problem in the context of assets under threat;
- Improving coordination and management of weeds in the region;
- Providing a framework for an investment plan from which efficient and coordinated on-ground action can occur;
- Taking into account the weed risk of plants, the natural assets they threaten and the impact of weed control techniques;
- Providing a link between National, State, local government, community and individual priorities and goals and
- The Weed Management Strategy will be a part of a region NRM Strategy and will therefore have wide community, government and industry stakeholder representation, funds for implementation and close linkages with other natural resource management activities and priorities within the region.

The principles of weed management that support this Strategy are as follows:

1. Weed management is an essential and integral part of the sustainable management of natural resources and the environment, and requires an integrated, multidisciplinary approach¹.
2. Successful weed management requires a co-operative approach which involves industry, resource managers and the community working in partnership with all levels of Government in establishing appropriate legislative, educational and co-ordination frameworks.
3. The primary responsibility for weed management rests with individual land and water managers but collective action is necessary where the problem transcends the capacity of the individual manager to address it adequately.
4. Prevention and early intervention are the most cost-effective techniques which can be deployed against weeds.
5. In weed management, both natural and artificial ecosystems are equally important and must be addressed in a consistent manner².
6. A continuous and long term commitment is a necessary approach in successful weed management.
7. Consideration of changing land use practices and climatic conditions is essential for predicting future weed management requirements.

The production of this Strategy has been overseen by and initiated by the Northern Regional Weed Strategy Steering Group; the composition of the group is given in the Table below.

Table 1: Northern Regional Weed Strategy Steering Group

NAME	ORGANISATION
Jamie Cooper	DPIWE
David Elliott	NRM North
Greg Stewart	East Coast Community Representative
Jay Wilson	Dorset Council/NRM North
David Armstrong	Tamar Valley Weed Strategy Working Group
Shane Lethborg	Forestry Tasmania-Bass District
Carol Cox	Furneaux NRM
Stuart Brownlea	Meander Valley Council/NRM North

The contributions made to the Draft Northern Regional Weed Management Strategy by Cindy Hanson and the DPIWE Weed Section is gratefully acknowledged.

¹ Principles 1 to 4 are adapted from the National Weeds Strategy and the first four underlying principles in WeedPlan- A Tasmanian Weed Management Strategy.

² WeedPlan-A Tasmanian Weed Management Strategy.

(IV) BACKGROUND

LOCATION AND DESCRIPTION

The Northern Natural Resource Management region is one of three regions that make up the State of Tasmania. The Northern region covers an area of 25,226 square kilometres and is made up of eight municipalities. The marine area which is included as a part of this strategy and extends 5.5 kilometres (three nautical miles) from the coast and includes the Boags, Freycinet, Flinders and Twofold shelf marine bioregions—refer to Map 1 and 2.

The region covers a large variety of land and water habitats and ecosystems ranging from high elevation areas with the highest mountain in Tasmania Mount Ossa at 1617 metres to the hinterland area of lower elevation and high agricultural and biodiversity value to the coastlines and the immediate marine environment.

The Commonwealth, States and Territories in Australia, as a first step in the development of a common conservation-planning framework for establishing an agreed classification of the major ecosystems in Australia, have developed IBRA (An Interim Bioregionalisation of Australia—Conclusions, 1997). IBRA has a valuable contribution to make in relation to providing an ecologically sound framework to assess sub-regional ecosystems which have similar characteristics which can be important in the planning of weed management in the region. For example a species of weed may be a problem in the Flinders bioregion due to altitude, land form, soils, temperature range and a number of other factors which in the Central Highlands bioregion the same species either would not occur or have a limited range due to limiting factors of altitude, temperature etc.

The division of the Northern region by IBRA regions will assist in the planning and prioritisation of weed species in each bioregion. The region is composed of six bioregions of nine bioregions in the State, as shown in Map 2. The bioregions form a division according to natural resource criteria and form an important environmental zoning for weed management.

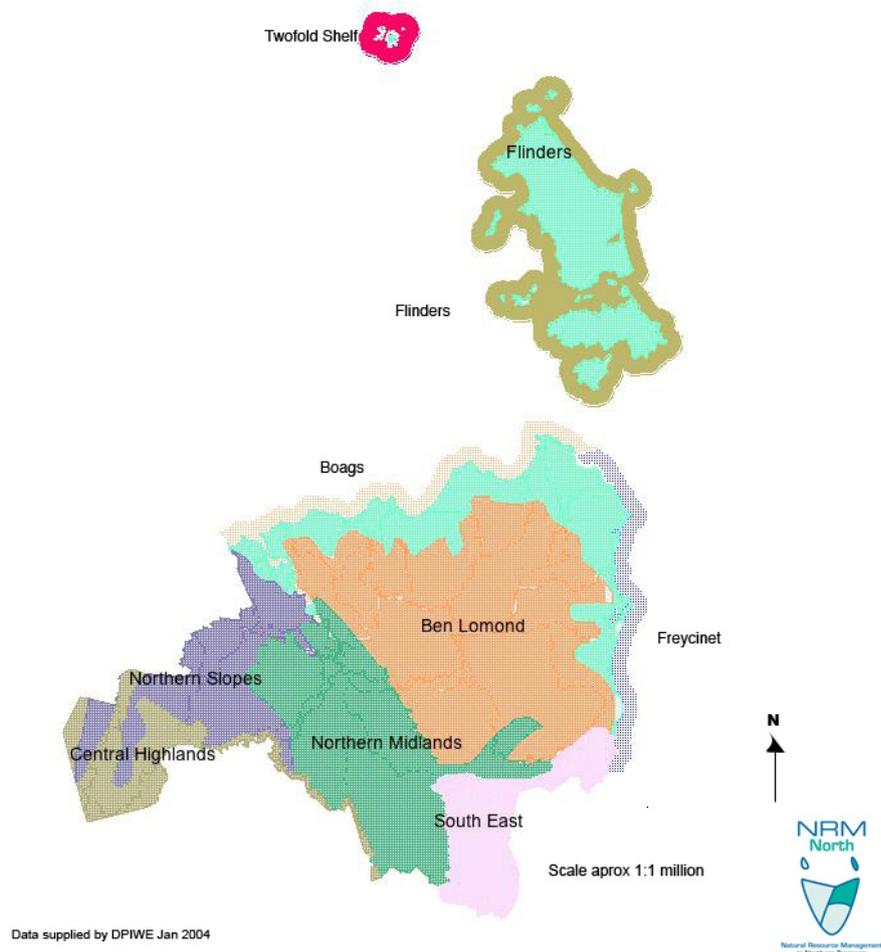


POPULATION AND LAND USE

The Northern region has a population of 134,000 which is concentrated in the Tamar valley. Major towns apart from Launceston city are George Town, St. Helens, Scottsdale, Westbury, Deloraine, Legana, Beaconsfield, Beauty Point, Bridport, Hadspen, Longford and Perth with many smaller townships in rural areas. The economy of the region is primarily based on agriculture, forestry and fishing with manufacturing, retail trade, education, tourism and government other important employers and economic areas.

Land use varies considerably with the majority of land in the region privately owned and sixteen percent of the area in formal and informal reserves. The Twofold shelf bioregion has recently had the area around the Kent Group National Park declared a marine reserve.

Landbased Bioregions & Marine Bioregions within the Northern Region



Map 2: Bioregions in the Northern NRM region

Source: Cadman and Norwood Environmental Consultancy

THE WEED PROBLEM

The Northern Region has five of the twenty Weeds of National Significance (WONS) and thirty of Tasmania's declared weeds. The number of weed species occurring in Tasmania is about 760.

Seven of the eight Councils in the region have either Weed Management Strategies or Natural Resource Management Strategies which have formulated weed management aims, objectives and actions-please refer to Appendix 4. The Northern Midlands municipality has not yet developed a weed strategy or NRM strategy. The development of a weed management strategy for that area is seen as a high priority for weed management.

• **Benefits of a Regional Strategy**

This Weed Management Strategy for the Northern NRM Region will facilitate an integrated, coordinated and cooperative approach to weed management within the region.

• **Linkages**

A regional strategy will provide a link between National-State priorities and goals and those at a local government, community and individual level. A Regional Weed Management Strategy (RWMS) will sit under a Regional NRM Strategy and its development and implementation will be coordinated by a sub committee representing major stakeholders, including all levels of government, industry and the wider community.

A regional approach will link the current network of municipal and community based strategies within each region and through the Regional NRM Committees, weed management planning will link in with other broader NRM planning, addressing a number of natural resource management issues (Crane et al 2003). The weed strategy is linked to the Northern NRM Strategy with weed threats to critical assets identified by community consultation linked with this strategy and the whole weed strategy designed as an integral part of the Northern NRM Strategy.

• **Identifying priority weeds and weed management issues**

The process of developing a RWMS, in consultation with all stakeholders, will identify priorities for weed management within the region based on the threat posed, allowing more effective allocation of limited resources. A RWMS will facilitate the control of weeds identified as a priority at a national and state level (i.e. WONS, declared weeds, new weed incursions). The distribution of priority weeds across the state is varied and the development of Regional Weed Action Plans for specific species is desirable. This will involve coordination between various groups within the region and collation of information available such as weed mapping data.

A number of weed management issues need to be addressed at a regional level. For example, weed hygiene and the prevention of spread from existing infestations to new areas. The movement of contaminants with stock, produce and machinery and the spread of weeds along corridors such as roads and railway lines can not be dealt with effectively at a local government or community level (adapted from Crane et al 2003).

Assessments of weed potential of proposed plant imports are currently carried out by BA staff using a system endorsed by the Australian Weeds Committee. Following public consultation BA adopted the Weed Risk Assessment (WRA) system (Pheloung 1996 *in* Market Access and Biosecurity 2003 d). To facilitate the use of this system, a client questionnaire has been developed which increases the information provided by potential plant importers to BA, as well as raising their awareness to the issue of potential risks of plant importation (Market Access and Biosecurity

2003 d). The WRA system is a question-based scoring method. Using the WRA involves answering up to 49 questions on the new species to be imported. The questions include information of the plants; climatic preferences, biological attributes, reproductive and dispersal method. The WRA uses the responses to the questions to generate a numerical score. The score is used to determine an outcome: *accept*, *reject* or *further evaluate* for the species. The WRA also makes a prediction as to whether a species may be a weed of agriculture or the environment (Market Access and Biosecurity 2003 d).

• **Facilitation of existing programs and development of new ones**

Strategies and action programs, such as education and awareness campaigns can be developed and implemented on a regional basis, thus reducing time and costs to Councils and community groups. A number of projects have already been developed at a regional level and this RWMS will build on these projects.

The Weed Alert Network is a state program that has been in place for a number of years to encourage the community to report new weed incursions. A RWMS will facilitate the promotion and implementation of such programs (adapted from Crane et al 2003)

• **On ground action**

A regional approach will develop the necessary framework to coordinate on ground works within each of the regions. Resources can be shared between councils and community groups to reduce costs and enable the appropriate resources to be utilised for new weed introduction eradication and priority weed control or eradication. A good example in the region is given in Section 3.7.

• **Funding opportunities**

A RWMS for the Northern region with clear actions that address priorities will put the region in a favourable position to access any future funding opportunities. The regional strategy will also enable negotiations for funding with Commonwealth and State Governments and other funding bodies to be carried out by a single organisation with a clear direction and priorities (i.e. The Northern Regional Weed Strategy Working Group).

SCOPE

The Northern NRM region Weed Management Strategy covers all terrestrial, freshwater and estuarine weeds in the region. All jurisdictions of land use and tenure in the region are included in the Strategy with no emphasis on any particular land use, tenure or social, economic or environmental purpose.

The regional weed strategy and regional investment strategy will identify areas of investment and priorities to protect critical assets at risk as identified through regional NRM Strategy consultation. Critical assets identified during the key stakeholder round of consultation are:

NOTE: Critical assets list not available at this stage.

Investment priorities will be identified in relation to these assets.

The sub-regional Weed Management Strategies, Tasmanian Vegetation Management Strategy (TVMS), Crane et al 2003, Rudman 2000 and the Tasmania Together process have all identified priority weed species and issues. These are linked to the critical assets in the regional weed investment strategy.

• Method

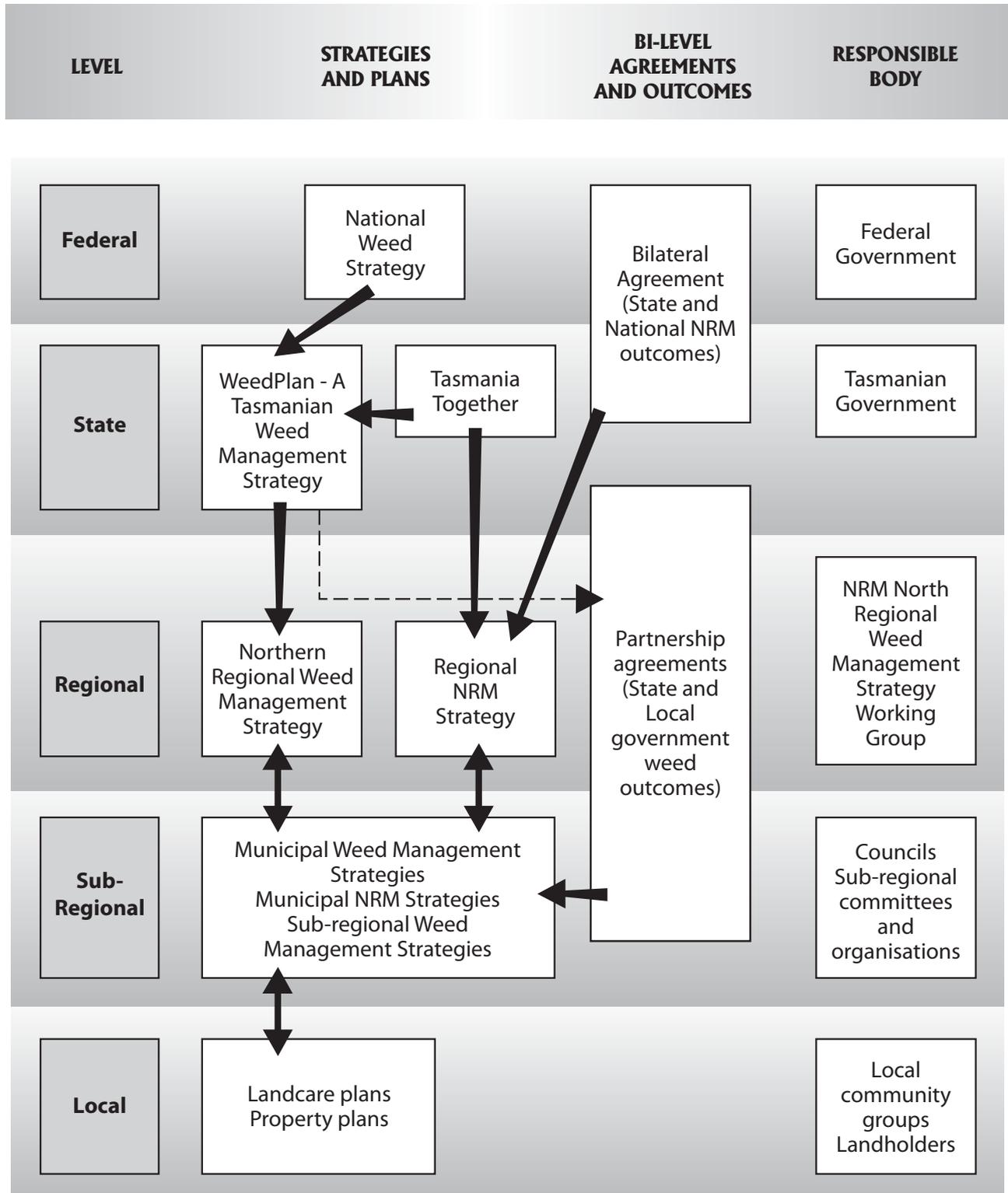
This Weed Management Strategy for the Northern NRM Region has been compiled under the direction of the Northern Regional Weed Strategy Working Group and has been developed with the following key considerations:

- Incorporates existing policies, plans and legislation relevant to weed management;
- Complies with National and State NRM accreditation criteria;
- Incorporates existing sub-regional plans, strategies and weed species priorities from the eight Councils in the region;
- Utilises research from across Australia to obtain the best available information on weed management;
- Designed to be a part of the Northern Region NRM Strategy;
- Forms a precursor to an investment plan for weed management in the Northern Region.

POLICY FRAMEWORK

There are five levels from National to local with a number of strategies and plans which lead to this strategy and ultimately strategic on ground actions at a local level. Responsibilities for weed management range from Federal, State and local governments, industry, community groups and landholders. Please refer to Figure 1.

Figure 1: Framework of Northern Region Weed Strategy and roles and responsibilities



• Roles and responsibilities

Overall roles and responsibilities for weed management have been divided into the responsible body groups as an indication of the roles and responsibilities of each section of the community in the region.

Table 2: Roles and responsibilities

GROUP	ROLES AND RESPONSIBILITIES ³
INDIVIDUAL LAND AND WATER MANAGERS	<ol style="list-style-type: none"> 1. Manage weeds on their own land in cooperation with other land managers and authorities. 2. Detect and report new weed occurrences. 3. Understand the cause/effect relationships which apply to weed problems. 4. Integrate weed management with other land management activities. 5. Cooperate with neighbours and jointly plan weed management activities where necessary. 6. Support and promote sustainable production practices to minimise the development of weed problems.
COMMUNITIES	<ol style="list-style-type: none"> 1. Coordinate local group development and action on weed problems. 2. Encourage local involvement in the management of public land. 3. Participate in local and regional weed management programs. 4. Raise awareness and improve education on weed management issues.
NORTHERN REGIONAL WEED STRATEGY WORKING GROUP AND NON-GOVERNMENT ORGANISATIONS	<ol style="list-style-type: none"> 1. Represent regional community on weed issues. 2. Provide information on weed management issues and actions. 3. Participate in the development of strategies, codes, policies and programs to reduce the impact of weeds. 4. Coordinate the implementation of the Northern Region Weed Management Strategy.
LOCAL GOVERNMENTS	<ol style="list-style-type: none"> 1. Manage weed problems on their land in cooperation with other land holders. 2. Assist in information exchange on weed management. 3. Assist with the coordination of community weed management programs. 4. Act as a community advocate on weed issues. 5. Develop and implement local weed management strategies. 6. Resource share with others in the region. 7. Exercise statutory responsibilities to encourage responsible weed management.
TASMANIAN GOVERNMENT	<ol style="list-style-type: none"> 1. Encourage the development of effective weed management strategies at local, regional, State and national levels. 2. Assist in information exchange on weed management. 3. Assist with the coordination of community weed management programs. 4. Provide leadership, coordination and resources for research, assessment, education and public awareness programs on weeds. 5. Enhance cooperation and coordination with other States and Territories and the Commonwealth government to provide mechanisms and procedures to minimise the risk of introduction of new weeds into Tasmania. 6. Manage weed problems on its own land responsibly in cooperation with other land holders. 7. Exercise statutory responsibilities to encourage responsible weed management. 8. Encourage responsible weed management by the following: <ul style="list-style-type: none"> • Providing a suitable institutional and legislative framework; • Developing and implementing effective policies and programs; • Providing positive support through financial incentives, assistance schemes and appropriate standards and regulations.
COMMONWEALTH GOVERNMENT	<ol style="list-style-type: none"> 1. Manage weed problems on their land in cooperation with other land holders. 2. Provide research funding in partnership with industry and other stakeholders. 3. In cooperation with the State of Tasmania: <ul style="list-style-type: none"> • Facilitate the development of an economic, social and cultural framework which encourages weed management as an integral part of sustainable land management and • Provide the appropriate legislative framework necessary to reduce the introduction of new weeds into Australia.

³ Adapted from WeedPlan-A Tasmanian Weed Management Strategy.

(V) OVERVIEW

The Weed Management Strategy for the Northern NRM Region has a goal and six objectives.

GOAL

To protect the Northern NRM Region's economy, environment and community by reducing the adverse impacts of weeds.

OBJECTIVES

1. Prevent the development of new weed problems.

Sub objectives

- 1.1 Minimise the spread of weeds.
- 1.2 Support National and State quarantine measures.
- 1.3 New and emerging weeds detected and controlled.
- 1.4 Control the trade and sale of weedy species.

2. Reduce the impact of existing weed problems.

Sub objectives

- 2.1 Improve mapping of weed distribution and density.
- 2.2 Develop and implement multiple on ground support services.
- 2.3 Enact weed management legislation.
- 2.4 Integrated control methods.

3. Provide the framework and capacity for ongoing management of weed problems.

Sub objectives

- 3.1 Promote and implement best practice weed management.
- 3.2 Establish a network of Gazetted Weed Officers.
- 3.3 Prioritise weeds in the region.
- 3.4 Develop and implement Weed Management Strategies for sub-regions.
- 3.5 Promote and implement resource sharing.

4. Increase public awareness and education on weed management.

Sub objectives

- 4.1 Raise awareness.
- 4.2 Conduct training campaigns.

5. Monitor and evaluate progress in weed control and prevention.

Sub objectives

- 5.1 Review the four active objectives.
- 5.2 Develop monitoring procedures.

6. Implementation and Review

Sub objectives

- 6.1 Identify the resources being made available over the review period and identify further opportunities for funding.

1 PREVENT THE DEVELOPMENT OF NEW WEED PROBLEMS

Sub objectives

- 1.1 Minimise the spread of weeds.
- 1.2 Support National and State quarantine measures.
- 1.3 New and emerging weeds detected and controlled.
- 1.4 Control the trade and sale of weedy species.

The issue of new weeds includes those new to Tasmania and also those new to the Northern region. There are three recognised methods of dealing with new weeds: prevention; preparedness and a rapid response. The following four Sub objectives deal with those three areas.

1.1 Minimise the spread of weeds

The key strategy in controlling the spread of new weeds is to prevent the accidental spread through transport networks including vehicles, stock animals and stock feed. Machinery and stock feed are major vectors. A good example of machinery spread is the dispersal of Spanish heath *Erica lusitanica* along the road sides in the Northern region by roadside slashing.

Weeds spread naturally by wind, water and animals (especially birds) and unnaturally by the dumping of garden and/or aquatic plants and clippings in areas where spread to native forest, non-forest, freshwater and marine environments can then occur. Where appropriate an immediate response to these invasions using available resources in the region, is required for effective control.

Developing and implementing number of Codes of Best Practice to prevent or minimise the spread of weeds by unnatural means is a key strategy in weed spread minimisation. The Tamar Valley Weed Strategy (Tamar Valley Weed Strategy Group 1996) has recommended the following areas where Codes of Best Practice and policies would be beneficial:

- Roadside management;
- Extractive industries-Quarry operations;
- Livestock and transport;
- Washing stations;
- Contractors and machinery;
- Waterways and floodplains;
- Land management, planning and practices;
- Recreation and tourism;
- Weed control options;
- Weed transport and disposal;
- Supplementary feeding of stock;
- Nursery and storage of bulk soils and aggregates and
- Farm hygiene policy.

STRATEGIC ACTIONS

1. Develop and implement regional policies and Codes of Practice to prevent or minimise the spread of weeds through unnatural vectors.

2. Incorporate weed management information in existing Codes of Practice.
3. Install strategically placed washing stations in the region for vehicle washing to prevent the spread of new weed species, and maximise the utilisation of existing wash-down stations.
4. Develop and implement disposal procedures for weeds.

1.2 Support National and State quarantine measures

The importation of plants into Australia is controlled by the Commonwealth Quarantine and Wildlife Protection Acts and the importation of plants into Tasmania is controlled by the Plant Quarantine Act 1997.

The importation of new plant species for a variety of uses poses the threat of new species which can adapt, spread and become weeds in the environment. The National Weed Management Strategy has provision for a national screening system to prevent new plant species with weed potential from being released into the Australian environment.

STRATEGIC ACTION

1. Encourage and support compliance with National and State legislation and policies to prevent new weed spread.

1.3 New and emerging weeds detected and controlled

The early detection of weeds is not unlike the early detection of fires; both can lead to extinguishment of the threat with appropriate immediate action. The role of the general public in this weed management action is important and achieved by the education of the public in weed identification and the knowledge of how to report new infestations.

Tasmania's Weed Alert Network was established to increase the chances of finding newly introduced or recently established pest plant species. Early detection is vital because it reduces the likelihood of small, isolated populations of weeds expanding to degrade Tasmania's precious natural resources. The Weed Alert Network is vital in the prevention of future weed problems in the state (DPIWE 2003 j).

The Weed Alert Network consists of some 70 members. Some are professional land managers with agricultural and/or conservation agencies or businesses, others are members of community groups with an environmental focus. Others belong to horticultural and gardening clubs.

The Weed Alert Network is coordinated by the Weed Alert Taskforce, a working group of the Tasmanian Weed Management Committee. The Taskforce offers an initial induction session for members and the function of the Network is explained, target plants are discussed and a field kit is disseminated. Communication within the network is via Weed Alert Bulletins and a newsletter. Weed Alert Bulletins are short descriptions of plants that the taskforce has identified as posing significant weed risks to Tasmania. Scientific risk assessment procedures are used to make these assessments. The newsletter, produced twice yearly, highlights any issues related to preventative weed management in Tasmania, so far as new weed threats are concerned (DPIWE 2003 j).

Supporting the State Weed Alert Network will assist in regional weed management. The raising of awareness of this service could be achieved by local media advertising, which would serve to raise awareness on the issue of reporting new weed infestations and also allow an immediate response from regional Weed Management Officers, Weed officers, Local Government personnel, State Government organisations, industry and community groups.

• Sleeper weeds

Recent work on agricultural weeds has highlighted the fact that many of the exotic weed species already naturalised in Australia could have major impacts in the future if they are not eradicated. Groves *et al.* (2002) (*in* Cunningham *et al* 2003) undertook preliminary screening of all known exotic plants that have become naturalised (around 3000 species) and identified nine potential weeds for eradication. Brinkley and Bomford (2002) (*in* Cunningham *et al* 2003) then quantified the value of agricultural production potentially at risk from these species, confirming the benefit of eradication as a strategy.

These earlier reports raised some questions about the ability of existing methods to identify weeds where eradication is the most desirable and feasible management strategy. Among the recommendations were that more potential sleeper weeds be assessed and that criteria for assessing the feasibility of eradication be developed. In January 2003, AFFA commissioned the Bureau of Rural Sciences (BRS) to undertake further work to develop a practical, repeatable methodology for use in the assessment of sleeper weeds that is transparent and scientifically objective without being too costly or complex (Cunningham *et al* 2003).

In Australia, the cost of weeds to agricultural systems has been estimated at \$3.3 billion per annum (Combella 1987; Jones *et al.* 2000; Groves 2002 *in* Cunningham *et al* 2003) compared to the \$2.4 billion estimated for salinity, sodicity and soil acidity combined (CRAWM 2002 *in* Cunningham *et al* 2003). Australian farmers consider weed control to be the highest priority land degradation issue (Mues *et al.* 1998 *in* Cunningham *et al* 2003).

Examples of sleeper weeds in Australia include mimosa bush, a sleeper weed for 70 years before becoming a major weed (Miller and Lonsdale 1987; Lonsdale *et al.* 1989 *in* Cunningham *et al* 2003) and pampas grass, a sleeper for decades before becoming a weed in the 1970s (Rawling 1994 *in* Cunningham *et al* 2003).

Grice and Ainsworth (2003) (*in* Cunningham *et al* 2003) discuss six classes or situations that characterise sleeper weeds. These occur when introduced plants are:

1. Restricted by a narrow genetic base poorly adapted to the local environment;
2. Restricted by limited suitable habitat;
3. Restricted by limited opportunities for recruitment;
4. Restricted by a low intrinsic population growth rate;
5. Restricted by the absence of mutualists and
6. Species that are wrongly perceived to be not invasive.

This is not a comprehensive list of criteria and opinion is divided on what defines the sleeper weed phenomenon. Regardless of definitional issues, the National Weeds Strategy notes '... a need to recognise and eliminate sleepers during their benign phase or at least identify the events that could turn them into major weeds.'

(Cunningham *et al.* 2003).

STRATEGIC ACTIONS

1. Raise awareness on Weed Alert Network.
2. Develop a system of referral from the State Weed Alert Network for regional action.
3. Develop and implement a system of immediate response from reports of new weeds in the region.
4. Develop for immediate implementation a new weed introduction action plan that outlines the resources and expertise available from all aspects of government, industry and private individuals and groups to enable an immediate and appropriate response to new weed introduction.
5. Support assessment of sleeper weeds nationally and identify potential sleeper weeds in the region.
6. Support and encourage the enforcement of the provisions of the State legislation for detection and control of new weeds.

1.4 Control the trade and sale of weedy species

Plants introduced into Australia and Tasmania for human use in agricultural production, erosion control, changing hydrodynamics to benefit human infrastructure and transport⁴, landform stabilisation and manipulation (for example marram grass), air flow manipulation (windbreaks), ornamentals, wood products, wastewater treatment and many other uses can become weeds if they are suited to the climatic conditions in an area and lack the normal predators in the form of animals and diseases that control their spread in their natural environment.

The control in trade and sale of our own native species is also necessary as some native plants can become weeds in areas with different edaphic and climatic conditions that result in spread. A good local example is the native *Leptospermum laevigatum* which is native to Tasmania on Bass Strait islands and the north and northeast coast, but can become a nuisance plant in other close areas, including other areas within the Northern region.

The interbreeding of introduced plants⁵ or native plants introduced from outside their natural habitat with local native plants can also produce new varieties which can become weeds. An example is the interbreeding of our native Silver wattle *Acacia dealbata* with the Cootamundra wattle *Acacia baileyana*.

The crossing of genetically modified plants with native plants or weed species could result in species that are resistant to herbicide and/or a species which grows well in certain conditions and these may prove to be difficult to control.

Attempts are being made to identify the potential of introduced plants to become weeds and restrict their trade and/or sale by AQIS and BA.

Prevention is better than cure and the arrangements under the National Weeds Strategy to assess new plant species on their weed potential is a key strategy in the control of the introduction of a potential weed species.

The *Weed Management Act 1999* controls the trade and sale of declared weeds. A Weed Management Plan made under the Act includes restrictions on the import, distribution and sale of the weed species.

The continued enforcement and implementation of provisions in the National and State legislation is vital in controlling the introduction of further weedy species in an international, interstate and intrastate context. The AQIS and BA provide the coal face control of plant introductions in Australia.

STRATEGIC ACTIONS

1. Encourage and support awareness of and compliance with National and State legislation to prevent the introduction of weedy species.
2. Support and encourage the enforcement of the provisions of the State legislation for detection and control of new weeds.
3. Promote and encourage a voluntary Code of Practice in the nursery industry.

⁴ For example, the introduction of Rice grass to direct water flows to main channels to assist in shipping access.

⁵ An introduced plant is defined as a species occurring in an area outside its historically known natural range as a result of intentional or accidental dispersal by human activities (including exotic organisms, genetically modified organisms and translocated species).

2 REDUCE THE IMPACT OF EXISTING WEED PROBLEMS

Sub objectives

- 2.1 Improve mapping of weed distribution and density.
- 2.2 Develop and implement multiple on ground support services.
- 2.3 Enact weed management legislation.
- 2.4 Integrated control methods.

2.1 Improve mapping of weed distribution and density

There is limited mapping of the distribution and density of weed species in the Northern region. The Department of Primary Industries, Water and Environment (DPIWE) are trialling a new weed mapping system called RETICLE that will enhance the existing GIS system by capturing more relevant weed control information and enable external users to input weed distribution data to the system thus increasing the distribution and density information available (DPIWE 2003 k).

Good mapping of weed distribution and density is essential for coordinated effective weed control and these new developments will improve the mapping system and consequently the effectiveness of weed management in the Northern region. Good mapping data also enables an analysis of weed distribution and density change over time for monitoring the effectiveness of weed management in the region.

STRATEGIC ACTIONS

1. Continue to improve the mapping of weeds in the region by supporting RETICLE including training and community capacity building.
2. Map priority weed species in the region by distribution and density.

2.2 Develop and implement multiple on ground support services

Weed management needs to be a long term activity with a broad view in combination with other land management practices and other land managers and community organisations. The support of landholders and community groups to assist with weed management on their properties and public land and in a broader region is vital if long term success is to be achieved. Local, State and Federal Governments have a major role in this area and this regional strategy is a step towards an integrated approach to weed management in the Northern region.

The type of support services that can be made available to landholders and land managers are as follows:

• Weed Alert Network

A reporting system to detect and act upon new weed introductions and spread. The system allows the early detection and control of new weed species and therefore prevents new weed problems on surrounding land areas.

• **Control information**

Make freely available on a variety of information sources including the internet, brochures and especially regional Weed Management Action Plans for high priority species control information for these species. The control information should also give information on various weed control options including physical, biological or chemical as appropriate. The introduction of biological control agents for priority species in priority areas can add another control method to an integrated approach.

Information on how weed problems are often a symptom of other land management practices and issues and specific information on weed species and how to ameliorate the impact of the species by integrated weed control can be disseminated in the region to outline the best methods of weed management.

An example of priority areas is where the risk of spread within or from the region is high. The certification, import and research into biological control agents is primarily a National responsibility and the prioritisation of weed species in the region can act as a basis for lobbying the Federal government in research and development of biological control agents for priority species.

• **Codes of Practice and Policies for weed management**

Information on weed control by using hygiene and other Best Management Practices to prevent the further spread of existing weeds and to prevent the introduction of new weeds can be made available to land managers in the region. The control of weeds through access corridors is a major area where the implementation of Codes of Practice and policies can minimise the future effects of weeds in the region.

• **Sharing resources between all organisations**

This is one of the main areas where on ground support services for land managers can be coordinated for the benefit of the individual or organisation and the region generally. Section 3.7 discusses the methods of resource sharing in the region and the benefits.

• **Joint funding applications for priority weed management**

The submission of funding applications for weed management between the community, community organisations and local and State governments provides a better opportunity for securing funds in the region. Where a sub-region or community organisation may not receive funding individually, the combination of a variety of organisations showing shared resources and shared priorities demonstrates a commitment and common purpose which can result in improved submission for funding success.

• **Weed identification**

The dissemination of information on weed identification assists land managers in identifying weed species in their areas, adds to weed mapping data through the Weed Alert Network and provides the basis for informed weed management.

• Awareness and training in weed management techniques

The provision of training on weed management can assist land managers in new techniques, weed identification and information on the availability of resources in the region and incentive schemes operating in the region.

STRATEGIC ACTION

1. Develop information on Best Practice weed management for all land managers.

2.3 Enact weed management legislation

The need for the community and land managers to comply with current weed management legislation, designed to prevent the spread or introduction of weeds, is essential for the long term management of weeds in the Northern region.

• State legislation

The *Weed Management Act 1999* is the principal legislation concerned with the management of declared weeds in Tasmania (DPIWE 2003 I).

The *Weed Management Regulations 2000* are the statutory rules for the Act. They detail requirements and measures referred to in the Act (DPIWE 2003 I). The Act and Regulations provide a range of incentives for compliance for weed management with enforcement as the ultimate penalty.

The listing of currently declared weed species (please refer to Appendix 2) is derived from the schedule of declared plants under the repealed *Noxious Weeds Act 1964*. For further information on the State and National legislation please refer to Appendix 6.

• Weed Management Plans

Once a weed species is declared the legislation requires that a WMP be prepared for the weed. A WMP includes the reasons for declaring the weed and restrictions and measures required to control, eradicate or restrict the spread of the weed. Restrictions on import, distribution and sale are also included which again is a key strategy in preventing weed spread. There is a statutory requirement that WMP's are reviewed at least every five years (DPIWE 2003 I).

• Enforcement of legislation, Codes of Practice and Policies to prevent weed spread and the introduction of new weeds

The enforcement of legislation and Codes of Practice and Policies is important in preventing the spread of existing weeds and the introduction of new weeds. If one land manager is engaged in weed management techniques the enforcement of measures to prevent weed spread assists them in controlling weed problems emanating from neighbouring land.

STRATEGIC ACTIONS

1. Support legislation by employing an appropriate number of Officers to enforce the provisions of the Acts and Regulations.
2. Contribute to legislative reviews to improve weed management.
3. Contribute to the process of nomination of priority weeds for declaration under the *Weed Management Act 1999*.

2.4 Integrated control methods

Effective weed control methods can consist of specific control methods or a combination of methods to form an integrated approach to weed management. Effective weed management will only be successful with a long term approach. The viability of seed banks in some species will often determine the length of follow up required, for example gorse-40 years + and broom-80 years +. Although weed management is long term, resources required for follow up in a weed control program will reduce over time.

The most widely used individual control method for weeds is the use of herbicides. The use of herbicides provides a cost effective method of minimising the effect of weeds, a consistent approach and long term follow up is required for success.

There are many weed control methods that are non-chemical, for example; the covering of rice grass with matting to eliminate growth by excluding light.

The control of weeds through properly researched and tested biological control provides another tool in weed management; using a suit of control measures supports effective weed management in the long term. The Tasmanian Institute of Agricultural Research (TIAR) delivers the National biocontrol program in Tasmania. It has released various biological agents to aid in the control of some widespread weed species such as ragwort and gorse. Further information on biocontrol is shown in Appendix 5.

STRATEGIC ACTIONS

1. Implement existing effective control methods for high priority weed species.
2. Promote long term effective weed management programs and practices.
3. Support the research and development of ecologically sustainable alternative weed control methods.

3 PROVIDE THE FRAMEWORK AND CAPACITY FOR ONGOING MANAGEMENT OF WEED PROBLEMS

Sub objectives

- 3.1 Promote and implement best practice weed management.
- 3.2 Establish a network of Gazetted Weed Officers.
- 3.3 Prioritise weeds in the region.
- 3.4 Develop and implement Weed Management Strategies for sub-regions.
- 3.5 Promote and implement resource sharing.

There are a variety of methods for the control of weeds. The management of weeds on and in land and water areas requires a more holistic view of the situation and problem in order to maximise the resources that are used for weed control and to maximise the long term effect of control methods.

The Northern region has a variety of landforms, soil types, climate and ecosystems which make weed management techniques different for each unique area. The bioregion division of the region provides a classification for the different landforms, climate and ecosystems.

Weed management in a small area can be achieved by the use of changing stock grazing techniques, weed buffer zones, competition for weeds by pasture grasses and crops, crop rotation, restricting key "access corridors" to prevent the spread of weeds within and from the area being managed and shading weeds out by growth of native understorey and overstorey species. The inclusion of long term weed management in Whole Farm Planning techniques is an example of integration of weed management in land and water management generally. The research and monitoring of methods coupled with continual reassessment of management practices will enable managers to improve their capacity for ongoing management of weed problems.

Weed management from a regional context requires the cooperation and coordination of weed management efforts from landholders, the general community, industry and government organisations. The mapping of weeds by the whole community in the region, along with the setting of priorities in weed species for eradication, control or prevention of introduction is achieved by the regional coordination of efforts. Funding for weed management will come through the regional NRM framework and therefore needs to be regional in outlook and integrated with other natural resource management in the Northern region.

3.1 Promote and implement best practice weed management

The strategic management of weeds necessitates the integration of planning, implementation and monitoring of weed management in the Northern region by a system of cooperation between landholders, the general community, industry and government.

The Northern region falls within six environmental zones, the Flinders, Ben Lomond, South East, Northern Midlands, Central Highlands and Northern Slopes Interim Biogeographic Regionalisation of Australia (IBRA).

Weed management is a long term task and an integral part of sustainable land management by all land managers. In a regional context the cooperation of all parties involved is essential for effective weed management. The inclusion of weed management in overall natural resource management and land management practices and techniques should be encouraged; landholder groups such as Landcare, Coastcare, Rivercare, Catchment groups, Waterwatch, community groups, government and others have an opportunity to implement coordinated weed management over a range of land tenures and ecosystems. The encouragement of landholders, community groups and public land decision makers by the active weed management groups, governing bodies and on ground Weed Management Officers is the way ahead for integrating weed management in land management practices.

Weed management is a long term strategy and there is no alternative to this except preventing introductions of weeds in the first instance or eradicating sleeper weeds in the early stages.

Promoting the concept of long term weed management can be achieved by awareness and education campaigns conducted by Weed officers and Weed Management Officers.

STRATEGIC ACTIONS

1. Promote integrated weed control methods.
2. Promote weed management as a long term activity.
3. Increase the integration of weed management with overall land management practices.
4. Plan and implement weed management in the Northern region on a bioregional basis.
5. Promote and implement Codes of Practice and Policies to achieve Best Practice Weed Management.

3.2 Establish a network of Gazetted Weed Officers

The establishment of locally based Weed officers is important for coordinating regional weed management. Weed officers have a role in awareness and training, as well as enforcing legislation to prevent the spread of weeds and new introductions. Having regional officers with local knowledge and local contacts is an advantage in weed management liaison with landholders, industry and community groups.

Inspectors are appointed by the Secretary, DPIWE and can be employed in State/local government or other relevant organisations, for example community weed management groups. Appointments are made based on competency, and powers under the Act can be varied in their delegation by the Secretary. Appointed inspectors are required to undertake basic training relating to their responsibilities under the Act (DPIWE 2003 I).

It is proposed that a regional support network of personnel involved in weed management be established to provide a source of support and information to ensure best practice management across the region. This network should be coordinated by the Regional Weed Management Officer.

STRATEGIC ACTIONS

1. Appoint a sufficient number of Weed Officers across the Northern region to enable the management of priority weed species and support sub-regional programs in the region.
2. Establish a regional support network to provide advice and information on best practice to gazetted officers and organisations involved in weed management.

3.3 Prioritise weeds in the region

The prioritisation of weed species in a regional context is essential for the effective allocation of resources used in weed management. There is a variety of analytical systems that are being used nationally and locally to prioritise weed species. Any system used for the Northern region needs to take into account a number of issues, some of these are:

- Municipal priorities;
- National priorities (WONS);
- State priorities (Declared weeds);
- Risk to critical assets/values;
- Regional management feasibility and
- Regional risk of spread.

• **Municipal priorities**

Each of the eight sub-regions has their own weed species priorities which reflect the local conditions and assets *inter alia*. These priorities are a vital source of community priority setting through extensive consultation. These local priorities should be a major consideration in regional priority setting and remain in municipal Weed Management Strategies for local weed management. A weed species in one sub-region may be a priority for total eradication and in another sub-region be a low priority for control only. Sub-regional priorities are important locally and should be maintained and recognised regionally.

• **National priorities**

The National Weed Strategy has developed a list of twenty weeds of national significance (WONS)-please refer to Appendix 3. These weed species have been prioritised through a thorough analysis and the list represents an important indicator of the significance of the five species that exist in the Northern region.

• **State priorities**

The prioritisation of weeds at the State level is achieved through the *Weed Management Act 1999*. The highest priority weeds are listed as Declared weeds under the Act (refer to Appendix 2). The weed prioritisation is achieved using a Weed Risk Assessment (WRA), and information on economic, environmental, and social effects/impacts.

• **Risk to critical assets and values**

An analysis of the critical assets and values in the region by extensive consultation is the first step in this component of priority setting. Once the critical assets and values are determined then the risk to these from the weed species present *and* those occurring elsewhere in Tasmania and Australia or sleeper weeds will lead to another key category in prioritising weeds in the region.

• **Regional management feasibility**

While eradication may be desirable for many weeds, it is not always feasible (Cunningham et al 2003). The management feasibility of regional weeds needs to be considered if a practical and achievable weed management priority system is to be established. The method of determining management feasibility is a part of WRA and there are no published methods of quantifying the relative feasibility of eradication (Cunningham et al 2003), systems of quantifying the relative effort required to eradicate a weed based on limited knowledge of its current distribution and biological attributes have been used, drawing heavily on methods under development to assess feasibility of containment (Virtue 2002 *in* Cunningham et al 2003) and feasibility of eradication (Panetta and Timmins *in prep. in* Cunningham et al 2003). A determination of management feasibility should be made on each priority species in the region based on and using the best available information and the identification of priority areas for the protection against weed infestation and for priority management of existing weed infestations is an important part of prioritising weed management regionally and sub-regionally.

• Implications of Climate Change

The effect of climate change on the risk of spread of weeds is a more pressing consideration with the observed changes in the Australian climate of CSIRO showing an increase in temperatures and changes in rainfall⁶. The factoring of these projections is a vital part of the present and future WRA system. The author's research indicates that this important factor is not used in present WRA systems.

Weed species on the edge of their thermal range that are presently not considered high priorities due to limited distribution by temperature and rainfall limiting factors may become a high risk of spread and increased rigor with temperature rise and rainfall change. The integration of CSIRO climate change observations and projections will ensure the region utilises the best available information to prioritise weed species in the region.

• Weeds of Regional Significance (WORS)

The prioritisation of weeds in the Northern region through existing weed management plans and the WRA systems discussed previously will enable clear directions for the region. The prioritisation process must be inclusive and consultative and expected outcomes would be a list of species for the region where some would not occur in some municipalities and municipalities with different aims in control, for example, municipalities with a species in low numbers with a high impact on critical assets may opt for an eradication policy where another municipality with higher numbers and less effect on the critical assets may opt for control only. A list of weed threats to critical assets identified by the NRM North is supplementary to this Strategy and considers the highest priority assets in the region and the present weed issues.

The setting of the priority weed species for the region would come from a region-wide analysis of the weed species and their priority under accepted criteria. Priority weed control activities may also be undertaken at a sub-regional or local level as determined by the region.

The management action plans for the high priority weed species will give information on the species such as identification, control methods, regional support services and networks. These action plans will assist, support and determine appropriate weed control activities by land managers in controlling the high priority species.

The high priority WORS in the Northern region need to be subjected to frequent review in the light of changing social, economic and environmental circumstances and in light of possible new introductions.

STRATEGIC ACTIONS

1. Develop a system of prioritisation for weeds in the Northern region.
2. Identify priority areas for protection against weeds and for management of existing weed infestations.
3. Develop Weed Management Action Plans for the WORS.

3.4 Develop and implement Weed Management Strategies for sub-regions

Develop Weed Management Strategies for all municipalities in the Northern region.

The majority of the eight Councils in the Northern region already have Weed Management Strategies or similar documents that deal with weed management in a strategic manner (please refer to Appendix 4). The Council's that do not have Weed Management Strategies at this stage should develop a strategy in the light of their local requirements and issues, and this regional plan.

⁶ Australia's average surface temperature has increased by 0.76 of a degree Celsius over the past 91 years (as at 2001) and the number of rain days has increased by ten percent in the same period (Suppiah et al 2001).

The existing strategies should be revisited in the light of regional priorities and the opportunities of resource sharing between the municipalities or sub-regions.

STRATEGIC ACTIONS

1. Establish and support sub-regional weed management groups.
2. Develop Weed Management Strategies for all municipalities in the region.
3. Upgrade existing municipal Weed Management Strategies to reflect regional priorities and resource sharing opportunities.
4. Identify potential sources of funding for the development of Weed Management Strategies in sub-regions that do not have strategies.

3.5 Promote and implement resource sharing

Promote and implement resource sharing between National, State and local Government, industry, land managers and community groups.

The pooling of regional resources is a key part of a regional strategy. The regional community resources can be combined to realise improved weed management and the awareness of the weed problem. Establishing a regional inventory of resources that are available for weed management from government, community groups, individuals and industry would act as a first point of reference for the control of new weed introductions and allow each sub-region to be aware of what is available regionally.

The inventory could include the following:

1. Vehicles and control equipment.
2. Mechanical devices for removal.
3. Expertise in weed identification.
4. Expertise in weed control.
5. Private weed control contractors and their expertise, infrastructure and knowledge base.
6. Community groups and human resources available.
7. The type of support that can be given on a regional basis to implement weed control training and awareness of members of the community.

If rigorous regional and sub-regional priorities are established then the whole community knows the direction of weed management in the region.

Community groups can make applications for funding to control high priority weed species based on priorities based on wide community consultation. Community groups can also train their members in Best Practice Weed Management based on the region's priorities.

STRATEGIC ACTIONS

1. Develop cooperative weed management (including planning) with all aspects of the community in the region.
2. Share resources for weed control within the community.
3. Make joint funding applications where better use can be made of individual sub-regional resources.
4. Establish an inventory of weed control infrastructure held by State and Local government, industry, private individuals, weed contractors and community groups for use in resource sharing.
5. Establish an inventory of expertise and experience in weed control.

CASE STUDY

An African boxthorn (*Lycium ferocissimum*) removal program was conducted on some of the off-shore islands in the Furneaux Group in 2002 and 2003. The project was funded by the Natural Heritage Trust under a project developed by the Tasmanian Marine and Coastal Community Network with logistical, technical and infrastructure support from the Furneaux NRM and Weed Strategy Group and local Tourism, Parks, Heritage and the Arts personnel. Two programs were conducted over a two year period with volunteer labour from Flinders Island and Tasmania. This is a good example of weed impact minimisation using cooperative resource sharing between community groups, the community and National, State and Local governments.



Plate 1: African boxthorn control program on the off-shore islands of the Furneaux Group (Chalky Island, 2003)

4 INCREASE PUBLIC AWARENESS AND EDUCATION ON WEED MANAGEMENT

Sub objectives

4.1 Raise awareness.

4.2 Conduct training campaigns.

4.1 Raise awareness

The overall aim of this sub-objective is to raise the level of community awareness and understanding of weed identification, methods of spread, adverse impacts and control techniques.

Awareness of the weed problem is a major issue in effective and cooperative weed management. The public need to be aware of which plant is a weed, how important a weed species can be to the community in the social, environmental and economic sense and the individual in terms of productivity loss, aesthetic value depreciation, human health and loss of biodiversity. There are already a number of weed awareness programs conducted by the National and State governments, such as Weedbusters which have and continue to raise awareness of the weed issue.

Weed service sheets containing up to date weed information including biology and control methods are available on the DPIWE website and should be used as point of reference for the community and land managers.

The Tamar Valley Weed Strategy Group at a sub-regional level are raising awareness by maintaining a Web site relating to weeds and they also promote and undertake the annual 'ragwort raid' in the Tamar region involving the local fire brigades and general community.

STRATEGIC ACTIONS

1. Develop an awareness campaign on regional priority weeds (WORS) and Best Practice Weed Management throughout the community, including schools across the region.
2. Increase public awareness of the detrimental effects of weeds and the strategies developed for the region including priorities for weed management.
3. Incorporate best practice weed management into land management information sources.
4. Provide various sources of weed management information for the community such as the DPIWE Web site, DPIWE service sheets, local government newsletters and utilise the media to promote current issues.

4.2 Conduct training campaigns

Conduct training and awareness campaigns on weed identification, methods of spread and integrated weed control techniques.

Training and awareness of weed identification, management and the prevention of introductions is an integral part in weed management. Regional weed management success is reliant on a well trained and aware community. To build on the awareness campaigns and training that has already been carried out regionally and in the State, the widespread awareness of the following weed management topics is essential:

- **Weed identification, especially high priority weeds**

To be able to recognise weed species is the first step in weed management. Without the knowledge of species identification a priority species or new introduction cannot be recognised and acted upon. Equally important is the mistaken identity of native species as weeds and their removal.

- **Brochures with the WORS identification and management**

There are a number of professionally produced brochures already in existence for high priority weeds on a National and State basis. There is a Weeds of National Significance Series which gives a full background, planning for control, monitoring and evaluation and roles and responsibilities *inter alia* for each of the twenty species. There are brochures on Best Practice Management guides for high priority weeds by Weeds CRC.

Once the priority species for the region are determined (WORS) then a targeting of land managers with brochures on these species will enable better management across the region.

- **Weed impact on economic, environmental and social values in the region**

The quantification of the overall impact of weeds can serve to elevate the importance of integrated weed control by land managers. The allocation of sufficient resources for weed control is essential in a region wide basis; the awareness across the region of the detrimental effects of weeds can only serve to increase integrated weed control participation.

STRATEGIC ACTIONS

1. Conduct a regional campaign through Council and community newsletters and other regional media on regional and sub-regional priorities for weed management.
2. Conduct regular training sessions across the region.
3. Conduct group-specific training on weed control for community groups involved in environmental management.
4. Investigate other land and water management courses and training bodies and incorporate Best Practice Weed Management in their course structure.
5. Support contemporary weed information dissemination by supporting conferences at State and regional level.

5 MONITOR AND EVALUATE PROGRESS IN WEED CONTROL AND PREVENTION

Sub objectives

- 5.1 Review the four active objectives.
- 5.2 Develop monitoring procedures.

5.1 Review the four active objectives

A review of the four active objectives is essential to determine areas where more resources can be directed.

STRATEGIC ACTION

1. Review the Northern NRM Regional Weed Management Strategy when the Northern NRM Strategy is reviewed.

5.2 Develop monitoring procedures

Develop criteria to ensure that comprehensive and effective monitoring of weed management activities is carried out at the regional and sub-regional level.

Monitoring components could include:

1. The development and recording of sound baseline data for all initiatives;
2. Arrangements for the collection of point-in-time and trend data required to assess progress on Strategy initiatives;
3. Auditing the quality of the data collected.

Evaluation components could include:

1. Evidence-based reviews of the effectiveness of the Regional Weed Strategy.
2. A schedule of evaluations determined by the community and regional committees.
3. Evaluation findings should be fed back into management systems in order to support continuous improvement.

STRATEGIC ACTIONS

1. Evaluate the success of the Regional Weed Management Strategy by a rigorous monitoring and evaluation process.
2. Disseminate information on monitoring and evaluation trend analysis to the regional community.

6 IMPLEMENTATION AND REVIEW

Sub objective

6.1 Identify the resources being made available over the review period and identify further opportunities for funding.

6.1 Identify the resources being made available over the review period and identify further opportunities for funding

The allocation of resources into the different aspects of the strategy enables an analysis of where funds are being spent. Coupled with the analysis of success in measurable outcomes decisions can be made on the reallocation of resources to different area where appropriate.

Funding for weed management is vital if the aim of the strategy is to be achieved. Funding can come from a variety of sources and the active submission for applications for funding is a vitally important mechanism for weed management. It is recommended that funding issues be carried out by a regional representative on behalf of the region. Basing funding applications on priorities of critical assets, high priority weed species and community engagement on the following criteria will enable good arguments and demonstrate a strategic and integrated approach:

- Municipal priorities;
- National priorities (WONS);
- State priorities (Declared weeds);
- Regional NRM Strategy;
- Risk to critical assets/values;
- Regional management feasibility and
- Regional risk of spread.

STRATEGIC ACTIONS

1. Identify potential sources of financial and in-kind support.
2. Encourage and assist community groups to apply for funding and to carry out weed management activities within identified regional priorities.
3. Support community group activities in weed management with logistical support, technical advice and resources where appropriate.
4. Quantify where resources are being directed for weed management and evaluate effectiveness by quantitative data analysis over time.
5. Re-direct resource allocation if necessary for better weed management outcomes.
6. Appoint a regional representative for pursuing funding/sponsorship for weed management and coordinate actions under this strategy.
7. Develop a regional weed management investment strategy.
8. Review the regional weed strategy concurrently with the regional NRM strategy or as determined by the weed management reference group.
9. Resource and maintain a weed management reference group (refer to Table 1, page 9).
10. Link this strategy to the regional NRM strategy through specific actions and targets.

CONCLUDING COMMENT

The implementation of a Weed Strategy for the Northern NRM region will enable a clear direction for the community on a cooperative and coordinated approach to weed management as a part of overall natural resource management.

The Weed Strategy will result in regional priorities coupled with sub-regional priority species and control expectations. An Investment Strategy will be completed from the priorities of the Weed Strategy which will outline the actions to be taken regionally and the funding required to undertake the priority actions based on critical assets threatened by weeds.

This Weed Strategy has amalgamated the existing National, State and sub-regional weed management and natural resource management documents which have been formulated from years of consultation with the community and managing authorities. The latest information has been researched to ensure the information presented is the best available at the time.

The success of weed management in the Northern region is dependent upon the cooperation of all members of the community and the coordination of efforts to maximise our available resources. Sharing information, expertise and integrating weed management with other land management activities is the most effective weed management strategy.

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GLOSSARY OF TERMS

Adaptive management	The principle of periodically reviewing the effectiveness and appropriateness of activities, processes, policies and strategies in the light of new knowledge and the findings of monitoring and evaluation, and adjusting them as required.
Aspirational targets	Aspirational statements about the desired condition of natural resources in the long term. They are more specific than a vision, relate to particular identified priorities but will take a long time, maybe 50 years, to reach.
Asset At Risk	Assets that are identified as being at risk on the basis of a risk assessment. Example: Risk to agricultural productivity as a consequence of secondary salinity.
Best Practice	Includes having due regard to: (a) strategic planning by the person carrying out or proposing to carry out the activity; (b) administration systems implemented by the person including staff training; (c) public consultation carried out by the person, product and process design and (d) waste prevention, treatment and disposal.
Best practice environmental management	The management of the activity to achieve an ongoing minimisation of the activity's environmental harm through cost-effective measures assessed against the current international and national standards applicable to the activity.
Biodiversity	The variety of life forms: the different plants, animals and microorganisms, the genes they contain, and the ecosystems they form. It is usually considered at three levels: genetic diversity, species diversity and ecosystem diversity.
Bioregion	A territory defined by a combination of biological, social and geographic criteria rather than by geopolitical considerations; generally, a system of related, interconnected ecosystems.
Biota	All the organisms at a particular locality.
Biomass	The total quantity of matter in an organism or group of organisms, usually expressed in terms of weight per unit area.
Capacity building	An activity or activities designed to enhance natural resource management planning and management. This includes providing stakeholders with access to data and information, enhanced knowledge, skills and abilities, research and development and market based approaches.

Catchment	The land area which drains into a particular watercourse (river, stream or creek) and is a natural topographic division of the landscape. Underlying geological formations may alter the perceived Dorset region suggested solely by topography (limestone caves are an example of this).
Critical Assets	Assets that are identified as a priority based upon social, economic and environmental considerations. Example: Threatened species such as the Giant Freshwater Crayfish, <i>Astacopsis gouldi</i> .
Conservation	The protection, maintenance, management, sustainable use, restoration and enhancement of the natural environment.
Ecologically sustainable use	The use of a species or ecosystem within the capacity of the species, ecosystem and bioregion for renewal or regeneration.
Ecologically Sustainable Development	<p>The principles of ESD consist of the following core objectives:</p> <ul style="list-style-type: none">• to enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;• to provide for equity within and between generations and• to protect biological diversity and maintain essential ecological processes and life-support systems; <p>and the following guiding principles:</p> <ul style="list-style-type: none">• decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equity considerations;• if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;• the global dimension of environmental impacts of actions and policy should be recognised and considered;• the need to develop a strong, growing and diversified economy that can enhance the capacity for environmental protection should be recognised;• The need to maintain and enhance international competitiveness in an environmentally sound manner should be recognised;• cost-effective and flexible measures should be adopted and• decisions and actions should provide for broad community involvement on issues, which affect the community.
Ecosystem	A dynamic complex of plant, animal, fungal, and microorganism communities and the associated non-living environment interacting as an ecological unit.

Environmental harm	Any adverse effect on the environment (of whatever degree or duration) and includes an environmental nuisance.
Environmental weeds	Non-local plants that invade and change our natural areas and threaten the survival of native plants and animals.
Existence value	The value that living organisms, earth processes and ecosystems may have beyond the social, economic or cultural values held by humans.
Feral species	A domesticated species that has become wild.
Genetic material	All or part of the DNA of a genome or all or part of an organism resulting from expression of the genome.
Genetically modified organisms	Organisms whose genetic make up has been altered by the insertion or deletion of small fragments of DNA in order to create or enhance desirable characteristics from the same or another species.
Geomorphology	The study of the shape and dynamics of the earth's surface.
Habitat	The place or type of site in which an organism naturally occurs.
Hydrology	The study of the distribution and movement of water.
Integrated weed control	Using a range of techniques to control weeds.
Intergenerational equity	The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
Introduced species	A species occurring in an area outside its historically known natural range as a result of intentional or accidental dispersal by human activities (including exotic organisms, genetically modified organisms and translocated species).
Macroinvertebrates	Invertebrate (without a backbone) animals which can be seen with the naked eye.
Management action targets	Defined as 'a significant intermediate achievement or milestone on the way to delivering a regional or national resource condition target.' Thus they are short-term targets that are likely to be achievable within 1-5 years and contribute to progress towards one or more resource condition targets. They mainly relate to management actions and capacity building.
Management actions	Applies to all actions (including on-ground actions) which are applied under a regional NRM strategy to contribute towards the achievement of a resource condition target.

Matters for targets	The National Framework for Natural Resource Management Standards and Targets identifies a nationally agreed minimum set of things (matters) for which regions must set targets. This minimum set includes ten matters for resource condition targets (e.g. land salinity, soil condition) and three matters for management action targets (e.g. improved land and water management practices adopted).
Native vegetation	Any local indigenous plant community containing throughout its growth the complement of native species and habitats normally associated with that vegetation type or having the potential to develop these characteristics. It includes vegetation with these characteristics that has been regenerated with human assistance following disturbance. It excludes plantations and vegetation that has been established for commercial purposes.
National outcomes	Eight national outcomes that investment in NRM should strive to achieve.
Precautionary principle	Where there are threats or potential threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
Principle of uncertainty	Accepts that our knowledge of natural heritage and processes affecting it is incomplete, and that the full potential significance or value of natural heritage remains unknown because of this uncertain state of knowledge.
Propagules	A plant structure used to disperse, such as a seed or rhizome fragment.
Resource condition targets	Targets relating to resource condition that are specific, time-bound, measurable and achievable with a likely timeframe of 10-20 years.
Riparian vegetation	Vegetation (trees, shrubs, ground covers and grasses) which grows on the banks and floodplains of rivers.
Sleeper weeds	Invasive plants that have naturalized in a region but not yet increased their population size exponentially.
Species	A group of organisms capable of interbreeding freely with each other but not with members of other species.
Standards and targets	The indicators will have associated measurement and reporting protocols to promote consistency across regions, allow aggregation and reporting on progress nationally, allow comparison of program achievements with national assessments of condition or trends in resource condition (e.g. State of Environment reporting) and enable regions to see how they are contributing to national outcomes.

Sustainable development (LUPAA 1993)	<p>Managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural well-being and for their health and safety while-</p> <p>(a) sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations; (b) safeguarding the life-supporting capacity of air, water, soil and ecosystems and (c) avoiding, remedying and mitigating any adverse effects of activities on the environment.</p>
Target	<p>A desired achievement with an attainment timeframe for a matter being measured by an indicator (e.g. 30% of a given catchment revegetated by 2015 or 200km of riparian vegetation fenced and managed for biodiversity outcomes by 2005), or for the completion of a particular event (e.g. management plan in place) The Framework specifies three levels of target: aspirational, resource condition, and management action.</p>
Threatened Species	<p>A species or community that is vulnerable, endangered or presumed extinct.</p> <p>Codes applied to threatened species are as follows:</p>
Endangered	<p>Species in danger of extinction because long-term survival is unlikely while the factors causing the species to be endangered continue operating</p> <p style="text-align: center;">OR</p> <p>Species presumed extinct on the ground that no occurrence of the taxon in the wild can be confirmed during the past 50 years.</p>
Vulnerable	<p>Species that are likely to become endangered while the factors causing it to be vulnerable continue operating.</p>
Rare	<p>Species with small populations in Tasmania that is not endangered or vulnerable but is at risk.</p>
Vector	<p>A carrier or transporter of propagules.</p>
Weed	<p>A plant that has, or has the potential to have, a detrimental effect on economic, social or conservation values.</p>

ACRONYMS

AFFA	Department of Agriculture, Fisheries and Forestry
AQIS	Australian Quarantine and Inspection Service
BA	Biosecurity Australia
BOM	Bureau of Meteorology
BRS	Bureau of Rural Sciences
CRC	Cooperative Research Centre
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DPIWE	Department of Primary Industries, Water and Environment
EA	Environment Australia
EPBC	Environmental Protection and Biodiversity Conservation
ESD	Ecologically Sustainable Development
GMOs	Genetically Modified Organisms
IBRA	Interim Biogeographic Regionalisation of Australia
IMO	International Marine Organisation
NHT	Natural Heritage Trust
NRM	Natural Resource Management
PWS	Parks and Wildlife Service
RWMS	Regional Weed Management Strategy
SOI	Ministerial Statement of intent
TTB	Tasmania Together Benchmark
TVMS	Tasmanian Vegetation Management Strategy
TWMN	Tasmanian Weed Mapping Network
WMP	Weed Management Plan
WONS	Weeds of National Significance
WORS	Weeds of Regional Significance
WRA	Weed Risk Assessment

APPENDIX 1 - Tasmania Together goals, standards, benchmarks and recommendations relating to weed management

ECONOMIC GOALS			
Goal	Standard	Rationale	Recommendations
Promote our island advantages including our 'clean-green' image, natural resources, location and people.	To maintain and improve quarantine services	The state must be protected from harm caused by illegal importation of plants and animals.	This is the only current measure of the effectiveness of state quarantine regulations. Progress Board to research availability of other indicators.
ENVIRONMENTAL GOALS			
Goal	Standard	Rationale	Recommendations
Value, protect and maintain our natural diversity.	maintain or improve natural heritage including biodiversity, geodiversity and landscapes	Maintenance of biodiversity is a key component of natural heritage conservation. Targets in relation to the schedules of the Threatened Species Protection Act exclude shifts in status based on knowledge changes (e.g., if a new species is discovered).	
Ensure there is a balance between environmental protection and economic and social development.	To achieve sustainable and appropriate land use	There is a need to control pests already in the state and prevent the introduction of any new pests.	
Ensure our natural resources are managed in a sustainable way now and for future generations.	Reduce reliance on chemical use by primary, secondary and tertiary industry and the domestic sector	Community awareness of usage rates could encourage reduction in environmentally harmful chemical use.	Progress Board develop an index by 2002/3, but 1080 usage be used as an interim indicator. Index to include: <ul style="list-style-type: none"> • sectors (primary, secondary and tertiary industry and domestic); • type by potential harm and • on/off-site impact and persistence.
Ensure our natural resources are managed in a sustainable way now and for future generations.	To reduce the adverse impacts of pests, weeds and pathogens	Naturalised organisms threaten the natural heritage and incomes of Tasmanians.	Progress Board to develop benchmarks by 2002.
Ensure our natural resources are managed in a sustainable way now and for future generations.	To reduce the adverse impacts of pests, weeds and pathogens	Naturalised species threaten native plants.	
Ensure our natural resources are managed in a sustainable way now and for future generations.	To optimise public use of the natural environment consistent with maintaining environmental values	It is important to better manage public use of the environment while maintaining environmental values.	Progress Board to use Back Country Recreational Use/ Impact Index on track widths to establish targets by 2003.

APPENDIX 2-Declared weeds under the Tasmanian Weed Management Act 1999

SCIENTIFIC NAME	COMMON NAME
<i>Lycium ferocissimum</i>	African Boxthorn
<i>Pennisetum macrourum</i>	African Feathergrass
<i>Eragrostis curvula</i>	African Lovegrass
<i>Berkheya rigida</i>	African Thistle
<i>Alternanthera philoxeroides</i> -an aquatic weed	Alligator Weed
<i>Solanum sodomaeum</i>	Apple-of-Sodom
<i>Sagittaria montevidensis</i>	Arrowhead
<i>Cynara cardunculus</i>	Artichoke Thistle
<i>Tamarix aphylla</i>	Athel Pine
<i>Bifora testiculata</i>	Bifora
<i>Rubus fruticosus aggregate</i>	Blackberry
<i>Chrysanthemoides monilifera</i> (including subspecies)	Boneseed, Bitou Bush
<i>Asparagus asparagoides</i> (= <i>Myrsiphyllum asparagoides</i>)	Bridal Creeper
<i>Orobanche species</i> (except <i>O. minor</i> and <i>O. cernua</i> var. <i>australiana</i>)	Broomrape
<i>Xanthium species</i>	Burrs
<i>Cirsium arvense</i>	Californian Thistle
<i>Tribulus terrestris</i>	Caltrop
<i>Elodea canadensis</i> - an aquatic weed	Canadian Pondweed, Elodea
<i>Homeria species</i>	Cape Tulips
<i>Nassella neesiana</i>	Chilean Needle Grass
<i>Heliotropium europaeum</i>	Common Heliotrope
<i>Rorippa sylvestris</i>	Creeping Yellowcress
<i>Allium vineale</i>	Crow Garlic
<i>Datura species</i>	Datura
<i>Cuscuta species</i> (excluding <i>Cuscuta tasmanica</i>)	Dodder
<i>Egeria densa</i> (= <i>Elodea densa</i>) - an aquatic weed	Egeria, Dense Water Weed
<i>Cytisus scoparius</i>	English Broom
<i>Achnatherum caudata</i>	Espartillo
<i>Galium spurium</i>	False Cleavers
<i>Cabomba caroliniana</i> - an aquatic weed	Fanwort
<i>Pennisetum villosum</i>	Feathertop
<i>Foeniculum vulgare</i>	Fennel
<i>Trapa species</i> - an aquatic weed	Floating Water Chestnut, Water Caltrop
<i>Ulex europaeus</i>	Gorse
<i>Hieracium species</i>	Hawkweed, Orange Hawkweed, Mouse Ear Hawkweed
<i>Marrubium vulgare</i>	Horehound
<i>Ceratophyllum demersum</i> - an aquatic weed	Hornwort
<i>Equisetum species</i>	Horsetail
<i>Hydrilla verticillata</i> - an aquatic weed	Hydrilla
<i>Bassia scoparia</i> (= <i>Kochia scoparia</i>)	Kochia
<i>Lagarosiphon major</i> - an aquatic weed	Lagarosiphon
<i>Lantana camara</i>	Lantana
<i>Carex buchananii</i>	Leather Leaf Sedge
<i>Genista monspessulana</i>	Montpellier Broom
<i>Carex albula</i>	New Zealand Sedge
<i>Carex flagellifera</i>	New Zealand Sedge
<i>Carex testacea</i>	New Zealand Sedge
<i>Carduus nutans</i>	Nodding Thistle

APPENDIX 3 - Weeds of National Significance

WEED SPECIES	ORIGIN	PRESENT IN NORTHERN NRM REGION
Alligator weed	North-east Argentina	NO
Athel pine	Northern Africa, Arabian Peninsula, Iran and India	NO
Boneseed/ Bitou bush	South-western South Africa	YES
Blackberry	Europe	YES
Bridal creeper	South Africa	YES
Cabomba	United States	NO
Chilean needle grass	Southern America	NO
Gorse	Central and western Europe	YES
Hymenachne	South and central tropical America	NO
Lantana	Central America	NO
Mesquite	Northern South America, central America and southern United States	NO
Mimosa	Tropical America	NO
Parkinsonia	Southern United States, Caribbean, Mexico and northern South America	NO
Parthenium	Southern United States, Caribbean, Mexico and northern South America	NO
Pond apple	North, central and south America and west coast of tropical Africa	NO
Prickly acacia	Africa and western Asia	NO
Rubber vine	South-west Madagascar	NO
Salvinia	South-eastern Brazil	NO
Serrated tussock	Argentina, Peru, Chile and Uruguay	NO-but does occur in Tasmania.
Willow <i>Salix species except S. babylonica, S. X calodendron and S. X reichardtii</i>	Europe, America and Asia	YES

APPENDIX 4 - Sub-regional weed strategies in the Northern NRM region

MUNICIPALITY AND STRATEGY	MISSION/AIMS/GOALS/OBJECTIVES	KEY AREAS/STRATEGIES
Break O'Day Council <i>East Coast Regional Weed Strategy 2002</i>	<p style="text-align: center;">Overall aim</p> <p>To ensure a coordinated, cooperative and ecologically sound approach to weed management, in order to minimise the detrimental effects that weeds have on natural ecosystems and the productive capacity of agricultural land.</p> <p style="text-align: center;">Goals</p> <ol style="list-style-type: none"> 1. To educate land managers and the community on local weed management issues, and encourage participation in appropriate weed management activities. 2. To develop, promote and implement strategic weed management programs in partnership with land managers and the community. 3. To reduce the impact of existing weeds and the occurrence of new weeds within the East Coast Regional Weed Strategy area. 	<ol style="list-style-type: none"> 1. Coordination. 2. Education/Awareness. 3. Resources/Marketing/Funding. 4. Policy/Legislation. 5. Integrated Weed Management.
Dorset Council <i>Dorset NRM 2002</i>	<p style="text-align: center;">Objectives</p> <ol style="list-style-type: none"> 1. To minimise the impact of weeds. 2. Maintenance, enhancement and protection of native ecosystems and native biodiversity in the Dorset region. 	<ol style="list-style-type: none"> 1. Establish a Weed Management Group to develop a Weed Management Strategy. 2. Conduct a survey of weeds; priority species and locations. 3. Promote and implement integrated weed management. 4. Eradicate Ricegrass from the Dorset region. 5. Appoint a local weed officer.
Flinders Council <i>Furneaux Regional Weed Strategy 2002</i>	<p style="text-align: center;">Vision</p> <p>A weed conscious community committed to eradication and control of weeds.</p> <p style="text-align: center;">Mission</p> <p>The Furneaux Region Weed Strategy will ensure coordinated, cooperative, ecologically sound and cost effective approaches to weed management in the Furneaux Group, involving the community in partnership with government.</p> <p style="text-align: center;">Goals</p> <ol style="list-style-type: none"> 1. To educate land managers and the community on local weed management issues, and encourage participation in appropriate weed management activities, 2. To develop, promote and implement strategic weed management programs in partnership with land managers and the community, and 3. To reduce the impact of existing weeds and the occurrence of new weeds within the Furneaux region. 	<ol style="list-style-type: none"> 1. Coordination 2. Education / Awareness 3. Integrated Weed Management 4. Resources / Marketing / Funding 5. Policy / Legislation

<p>George Town Council/ Launceston (City) Council/ West Tamar Council</p> <p><i>Tamar Valley Weed Management Strategy</i></p>	<p style="text-align: center;">Aim</p> <p>To have all stake holders and the community working together to reduce the weed burden in the Tamar Valley.</p> <p style="text-align: center;">Objectives</p> <ol style="list-style-type: none"> 1. Mapping the valley to identify where the weeds are. 2. Set up demonstration sites involving the whole community in weed control. 3. A system of best practice introduced for all stake holders. 4. A comprehensive education campaign, for the younger members of the community as well as the older members. 	<ol style="list-style-type: none"> 1. Weed mapping. 2. Education. 3. Community and Corporate Support. 4. Co-operative and co-ordinated weed management. 5. Communication. 6. Codes of Best Practice.
<p>Meander Valley Council</p> <p><i>Meander Valley Weed Strategy 1996</i></p>	<p style="text-align: center;">Mission Statement</p> <p>The Meander Valley Weed Strategy will ensure long term weed management within the municipality through the facilitation of a co-operative community co-ordinated approach.</p> <p style="text-align: center;">Goals</p> <ol style="list-style-type: none"> 1. Containment of the spread of weeds within the municipality. 2. Prevention of the ingress of new weed infestations into the municipality. 3. Elimination of weeds within the municipality where possible and practical. 	<ol style="list-style-type: none"> 1. Coordination. 2. Education, Awareness and Information. 3. Marketing and funding. 4. Integrated Weed Management. 5. Policy.
<p>Northern Midlands Council</p>	<p>No strategy at this stage-development of a Weed Management Strategy is seen as a high priority for this sub-region.</p>	
<p>Parks and Wildlife Service</p> <p><i>North East District Weed Management Plan 2000-2003</i></p>	<p style="text-align: center;">Objectives</p> <ol style="list-style-type: none"> 1. To establish priorities for weed control consistent with Introduced Plants Policy (1997). 2. To establish a basis for service agreements between Nature Conservation Branch and North East District for weed management. 	<ol style="list-style-type: none"> 1. Regional weed management coordination 2. Weed Mapping and Monitoring 3. Weed Alert System 4. Weed Education 5. Training 6. Weed Prevention 7. Weed Control Plans 8. Plan Review
<p>DPIWE-Nature Conservation Branch.</p> <p><i>Tasmanian Beach Weed Strategy for marram grass, sea spurge, sea wheatgrass, pyp grass and beach daisy.</i></p> <p>NOTE: This strategy is Tasmanian wide, but applies to the Flinders bioregion in the Northern NRM region.</p>	<p style="text-align: center;">Vision</p> <p>The government working in partnership with community has contained the spread of beach weeds and minimised the impact on significant sites for conservation.</p> <p style="text-align: center;">Goals</p> <ol style="list-style-type: none"> 1. Contain the Distribution of Beach Weeds in Tasmania. 2. To Minimise Adverse Impacts on Biodiversity and Geodiversity 3. To Educate, Co-ordinate and Maintain Commitment 4. To Develop Improved Control Techniques for Beach Weeds. 	<p>Establish eradication zones for each beach weed</p> <p>Establish a monitoring and control program</p> <p>Identify priority sites for protection</p> <p>Protect priority sites from invasion or adverse impact by beach weeds</p> <p>Raise public awareness of beach weeds and their impacts</p> <p>Involve the community in beach weed management</p> <p>Co-ordinate beach weed management at State and regional levels</p> <p>Develop control options for sea spurge</p>

MUNICIPALITY AND STRATEGY	MISSION/AIMS/GOALS/OBJECTIVES	KEY AREAS/STRATEGIES
<p>Rice Grass Advisory Group Strategy for the <i>Management of Rice Grass (Spartina anglica) in Tasmania, Australia.</i> NOTE: This strategy is Tasmanian wide, but applies to the Flinders bioregion in the Northern NRM region.</p>	<p style="text-align: center;">Vision</p> <p>To reduce the area of infestation of the introduced weed, rice grass, thereby eliminating and mitigating its negative impacts on the coastal zone of Tasmania.</p> <p style="text-align: center;">Objectives</p> <ol style="list-style-type: none"> 1. To integrate the management of rice grass by promoting the sharing of responsibilities between the different spheres of government, the community and industry. 2. To identify options and preferred means for controlling and eradicating rice grass in an environmentally responsible, safe, practicable and cost effective manner. 3. To monitor the extent of rice grass infestations. 4. To update and disseminate information on rice grass in Tasmania and raise public awareness. 	<ol style="list-style-type: none"> 1. Consolidate the role of the Rice Grass Advisory Group as the central integrating and advisory body for managing rice grass in Tasmania. 2. Co-ordinate a Statewide management plan for rice grass. Co-ordination will be facilitated by government agencies, industry representatives and community groups. 3. Evaluate all available techniques for controlling rice grass with the view to adopting an integrated weed management program. 4. Develop and implement training programs for people working on the management of rice grass, preparing them for the difficulty, hostility and sensitivity of the estuarine intertidal zone. 5. Standardise mapping techniques and terminology for monitoring and recording the extent of rice grass infestations. 6. Establish an ongoing monitoring program to determine the effectiveness of the management plan. 7. Encourage and support the continuation of regional initiatives to control rice grass infestations. 8. Establish a communication network, including all major stakeholders, primarily for the purpose of disseminating updated and relevant information. 9. Raise the profile of rice grass as an aquatic weed through media and general environmental education by highlighting its negative impact on estuarine ecosystems, aquaculture and fisheries industries and social amenity.
<p>Dorset Council <i>Rice Grass Area-Based Management Plan-Bridport Region</i></p>	<p style="text-align: center;">Objectives</p> <p>To eradicate the area of rice grass infestation in the Bridport region to create a rice grass free zone in the following manner: Year 2000: Treat all infestations in the Bridport region Years 2001-2002: Treat areas where regrowth occurs</p>	<ol style="list-style-type: none"> 1. Control techniques. 2. Timing of control. 3. Management responsibility. 4. Expected outcomes. 5. Review of plan.

APPENDIX 5- State and National legislation

State legislation

The *Weed Management Act 1999* is the principal legislation concerned with the management of declared weeds in Tasmania. Under the Act, the State Government may:

1. Prohibit the introduction of declared weeds into Tasmania.
2. Undertake the eradication of declared weed species.
3. Take action aimed at preventing the spread of declared weeds within Tasmania.
4. Require that action be taken against declared weed species where this is necessary to alleviate or prevent a particular problem (DPIWE 2003 I).

The Act is a key component in the delivery of the State Weed Management Strategy (Ministerial Working Group for the Development of the Tasmanian Weed Management Strategy 1996). Recommendations are made under the Act for weed management legislation that underpins community weed management efforts.

Main Components of the Act

The *Weed Management Act 1999* consists of 73 sections relating to the declaration, management, compliance requirements, and powers of inspectors appointed under the Act. The Act furthers the objectives of the Resource Management and Planning System of Tasmania and provides for the control and eradication of weeds having regard to the need to the following:

- (a) minimise negative effects of weeds on the sustainability of Tasmania's productive capacity and natural ecosystems;
- (b) promote a strategic and sustainable approach to weed management;
- (c) encourage community involvement in weed management and
- (d) promote the sharing of responsibility for weed management between government, natural resource managers, the community and industry in Tasmania (DPIWE 2003 I).

The Weed Management Regulations 2000

The *Weed Management Regulations 2000* are the statutory rules for the Act. They detail requirements and measures referred to in the Act; as follows:

Tolerance Level Requirements

This rule sets out a schedule of tolerance levels for seeds of a range of weed species in feed grains imported into the State. It enables controls on the levels of these weed species to be set if they are declared and entry via feed grain needs to be restricted. This is a key strategy for the prevention of the introduction of new weed species, especially agricultural weeds.

Infringement Notices and Penalties

This section lists the schedule of infringements and associated penalties under the Act. Penalties for offences range from \$200 to \$800.

Declaration of Weeds

A core component of the legislation is the legal process of declaring a weed species under the Act. Once declared appropriate legal actions can then be taken against the plant species. The declaration of weed species is based on the preparation of a Ministerial Statement of Intent (Sol) to declare a species. The Sol is a dossier on the plant species in question including the results of an objective WRA, and information on economic, environmental, and social effects/impacts. Based on public comment and the results of the assessments that contributed to the Sol, the Minister may then declare the weed under the Act (Adapted from DPIWE 2003 I).

An emergency declaration mechanism also exists so that a plant can be declared rapidly with an interim Sol. The Minister is then required to follow the formal process of 'intent to declare' within a set time period or the declaration lapses. It is also important to be aware that the same scientific/consultative process applies to remove a declaration (DPIWE 2003 I). This section allows for a quick response to new weed introductions. The listing of currently declared weed species (please refer to Appendix 2) is derived from the schedule of declared plants under the repealed *Noxious Weeds Act 1964*.

Weed Management Plans

Once a weed species is declared the legislation requires that a WMP be prepared for the weed. A WMP must be completed within twelve months and the development of a WMP requires a period of public consultation.

A WMP includes the reasons for declaring the weed and restrictions and measures required to control, eradicate or restrict the spread of the weed. Restrictions on import, distribution and sale are also included which again is a key strategy in preventing weed spread. There is a statutory requirement that WMP's are reviewed at least every five years.

Compliance

Inspectors appointed under the Act can issue 'on-the-spot' fines for offences. If an offence under the Act is detected an inspector can issue an infringement notice that describes the offence and its associated penalty.

In addition to an infringement notice being issued, a requirement notice can also be issued that details the measures to be undertaken by the offender to appropriately control the declared weed. Failure to comply with a requirement notice can result in prosecution in court and heavy fines up to \$10,000.

The Act also provides for the authorisation by the Secretary for 'Works-in-default' should the landowner fail to comply with a requirement notice. Once works are authorised, the inspector can have the appropriate measures undertaken with costs for such work being billed to the Landowner, similar to abatement notices issued by Councils.

The proposed restrictions or measures that may be required in respect of each of the declared weeds, which will be specified in management plans are as follows:

- (a) A person must not import, or allow to be imported, into the State any declared weed except with the written approval of the Secretary.
- (b) The tolerance level for declared weed seed in imported grain will be 0 seeds per kilogram.
- (c) Landowners and managers must take all reasonable measures to control the impact and spread of a declared weed.
- (d) A person must not propagate, trade or otherwise distribute declared weeds or anything carrying declared weeds except -
 - I. transport for purposes of disposal and
 - II. sale or transport for purposes other than disposal where authorised by the Secretary.
- (e) A declared weed must be disposed of in a manner which will not result in further infestation.
- (f) A declared weed must be eradicated from areas of the State where this is considered feasible (DPIWE 2003 I).

National legislation

AQIS is the Commonwealth agency implementing the government's quarantine policy with respect to plants. Under the *Quarantine Act 1908* AQIS is empowered to regulate the importation of all types of plant material into Australia. This act does not differentiate between plant end usages (please refer to Section 1.2 for further information).

While measures to protect the environment are not directly referred to in the Agreement on the Application of Sanitary and Phytosanitary Measures, they are canvassed in supporting texts to the agreement. The Food and Agriculture Organisation definition of a quarantine pest does not specify whether the economic impact of the pest is on agriculture, public lands or forests and so does not differentiate between weeds of agriculture or the broader environment.

Environment Australia - Biodiversity Group is the agency with administrative responsibility to restrict plant imports under the *Wildlife Protection (Regulation of Exports and Imports) Act 1982*. AQIS and Environment Australia-Biodiversity Group are involved in discussions on this area, and currently cooperate on assessments (Market Access and Biosecurity 2003 d).