

Biosecurity Planning

Risk assessment and planning framework

Version 2.0 (June 2019)



Far North Queensland Regional Organisation of Councils

First prepared by:

Far North Queensland Regional Organisation of Councils

January 2011

PO Box 359

Cairns

QLD, 4870

www.fnqroc.qld.gov.au

Information appearing in this document may be reproduced without permission providing the source is acknowledged and there is no commercial use or sale.

© Far North Queensland Regional Organisation of Councils, (FNQROC) 2010.

Version details: Version 2.0 (June 2019) includes revision of planning and supporting materials in line with requirements of the Biosecurity Act 2014

Cite this document as:

FNQROC (2019), Biosecurity planning – risk assessment and planning framework. *Version 2.0, (June 2019. Appendix to Our natural assets – regional strategic framework (2018).*

Acknowledgements:

FNQROC acknowledges Matt Birch (Cairns Regional Council) as the principal author of the prioritisation framework and scoring system. Additional contributions from Melanie Fazackerley and Damon Sydes (Cassowary Coast Regional Council) assisted in development. This revision of the guideline for the Cape York edition compiled by Travis Sydes (FNQROC) with assistance from Chris Roberts (Balkanu Aboriginal Corporation), Mike Bradby (on behalf of Cape York NRM) and Cook Shire Council.

Disclaimer

Whilst every care is taken to ensure the accuracy of the information in this publication the Far North Queensland Regional Organisation of Councils, or any other Local Government department, agency or organisation involved in the publication of this document, takes no responsibility for its contents, nor for any loss, damage or consequence for any person or body relying on the information, or any error or omission in this publication.



Introduction

This guide is designed to assist in the development of biosecurity plans for local government and their communities of the Far North Queensland region. It is presented in two parts:

Part one: An overview of the *Biosecurity risk assessment and planning framework and the process for developing local area biosecurity plans*.

Part two is an inventory (list) of plants within the FNQ region.

Contents

Introduction	iii
Biosecurity	4
Part one: Biosecurity risk assessment and planning framework	5
Step one: mapping	6
Step two: risk assessment	7
Step 3: identifying management objectives in a biosecurity action plan	9
Biosecurity action plans	10
Risk assessment	11
Planning criteria	11
Impacts and threats criteria	12
Capacity to manage criteria	16
References.....	18

Biosecurity

What is biosecurity? Risks to our natural assets are posed in many different forms and guises from the familiar such as pest animals and weeds, to increasingly broad impacts from new risks ranging from pathogens (e.g.-Panama disease) to invertebrates (e.g.-tramps ants). An increasingly connected world and changing climatic conditions are global trends beyond our immediate control but will continue to increase our exposure to risk and place pressure on our capacity to respond. Many of these pressures are likely to be in addition to those we are currently managing. Biosecurity is the steps and measures we take to respond to and protect us from these risks.

Why is biosecurity important? Biosecurity risks have a direct impact on our natural assets, economy and lifestyle. In addition to the immediate damage they do they can also significantly increase routine management costs, draw continuing complaints from community and pressure councils to direct management resources to reactive rather than proactive investment. It is important to address biosecurity risks in a balanced investment which acknowledges the often significant and established issues we already have; while responding quickly to new and emerging issue before they become established.

[Our natural assets. Regional strategic framework. version 1.6, FNQROC, \(2018\).](#)

Part one: Biosecurity risk assessment and planning framework

Part one provides a framework for developing a biosecurity plan in line with the requirements of the *Biosecurity Act 2014*. It makes use of catchment-based management objectives to coordinate action and guide how people can meet their *general biosecurity obligation*.

It guides the decision making process of local advisory groups developing biosecurity plans by asking key questions like; what weeds and pests do we have? Where are they? How abundant are they? What sort of risk do they present to the things we value and what impacts might they have? Do we have the tools to manage or control them? and; What should we do and where with the resources we have available to us?

The framework is divided into three key steps:

Step one – mapping A one kilometre grid mapping method is used to create an overview of where we know the weeds/pest are right now.

Step two – risk assessment A risk assessment process is facilitated by advisory groups which guide local government in the development and delivery of their statutory biosecurity plan. The risk assessment process has 9 criteria which the group consider.

Step three – management objectives The risk assessment process is used to identify priority management priorities specific to the local area. For each of these priorities a biosecurity action plan is developed. The action plans detail specific requirements and strategies for management in addition to what is required of all people under the general biosecurity obligation. They outline management objectives based on established principles of pest management and are designed to assist all stakeholders to:

- Understand the biology and distribution of priority pest plant and animals.
- Implement appropriate strategic actions at the most appropriate time to have the greatest impact on the targeted pest (best management practice) and ensure they meet their general biosecurity obligation.
- Plan and coordinate pest management activities with neighbouring properties by targeting common management objectives and goals within relevant geographic areas.

Step one: mapping - existing information on where pests and weeds is compiled into a regional one kilometre grid map. People with local knowledge of where pests and weeds are in the local area the join in a participatory mapping process and any additional records, alterations or omissions to the distribution are made¹. The end product is a map which shows where the pest or weed occurs at the moment.

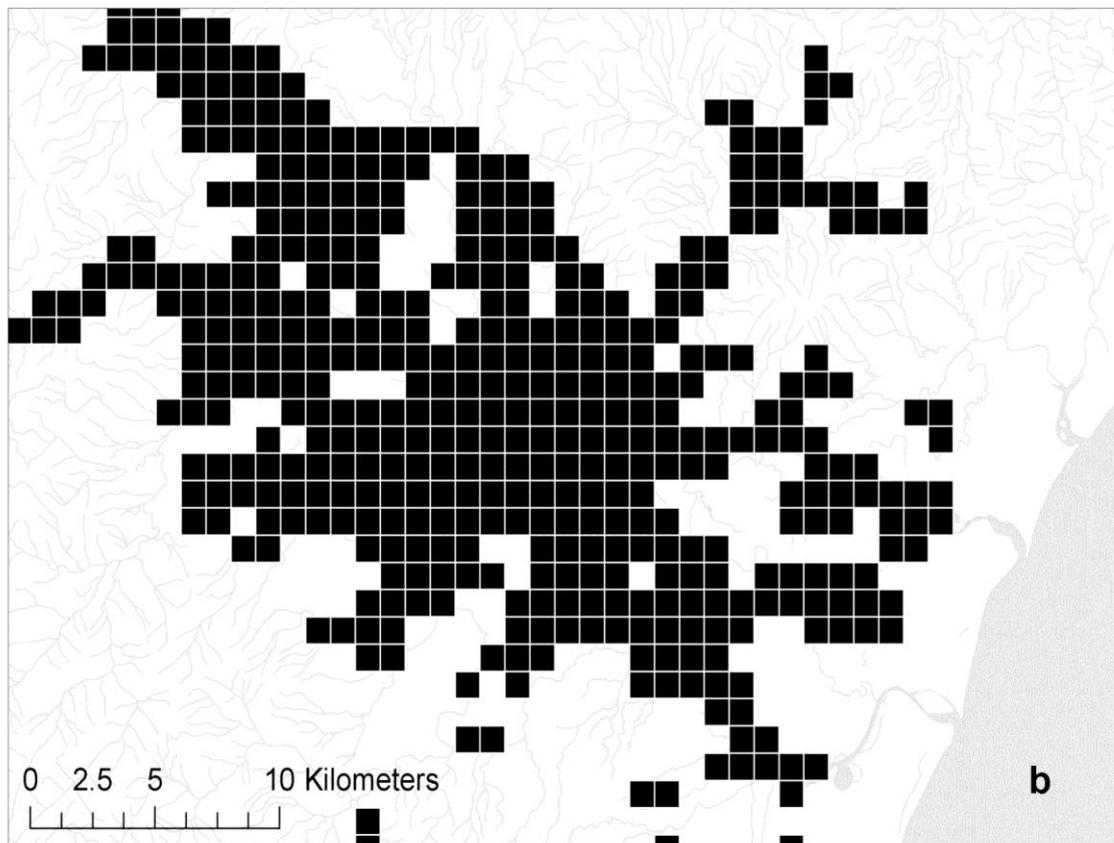


Figure 1 An example of a 1 km distribution map for Hymenachne in the Wet Tropics for the Tully River area

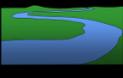
¹ further information on the method are available in Sydes et al. 2009

Step two: risk assessment

The risk assessment process is conducted by local advisory groups whose role is to guide local governments in the development and delivery of their biosecurity plan. The advisory group is made up of people who have a working knowledge of managing weeds and pests and represent the range of relevant land uses and groups from the local area. Information on the current extent and management effort for each species are provided as part of the process to make sure everyone involved has an understanding of work being done or impacts caused by pests and weeds.

The risk assessment process which is used to identify the issues requiring a response in this plan considers the likelihood and extent of the impact/s a biosecurity issue might present on four broad categories of value. It also considers any existing priorities or legislative obligations at a National, State or Local Level and what capacity there is to respond to the issues based on its' current extent and the feasibility of control/management success.

Existing priorities		National priorities and obligations represent the obligations and commitments required at a national scale; these include targets of National Cost-Shared Eradication Programs and Weeds of National Significance
		State priorities represent the legislative obligations outlined in the regulations of the Biosecurity Act 2014 and state policy.
		Local priorities represent existing investment and obligations in previous biosecurity and pest management plans in the local area.

Impacts and threats		Conservation and biodiversity assets and values represent the natural environment, plants animals and forests. These assets can range from landscapes and features like our national parks and reserves through to remnant or restored patches of forest to individual trees. These assets might contain or support unique or rare plants, animals and communities or they may simply provide important places for natural processes to take place.
		Water resources and assets represent both natural and artificial waterways. These may include modified waterways and storage systems such as lakes, dams and impoundments through to natural waterways and wetlands. Water resources and assets may be valuable in their own right as natural environments or they may have value for water supply, recreation or provide economic benefit such as fisheries.
		Agriculture and industry assets represent primary production and the economy. These may include highly modified or intensive production systems right through to the relatively natural systems utilised in the rangelands. An industry like honey production might make use of both native forests and intensive agricultural systems. Other industries might be based in urban or industrial systems.
		Community and residential assets are places important to people, where they live, work or play on a daily basis. These may include densely settled areas and environments such as urban communities through to the areas around homesteads and houses in rural areas. Most community and residential assets also include areas of natural or semi natural areas and habitats by way of gardens, urban bushland or waterway reserves.
		Culture and country are places and assets important to first nations. These might include cultural sites, story places, resources and places which provide access to maintain country.

Capacity to manage		Current extent refers to how much of the weed or pests potential range is occupied. Does it occur in isolated outbreaks in very few places or is it widespread across most suitable habitat?
		Feasibility of control/management success considers the complexity and achievability of successful control/management. Considerations include whether there are there effective tools and strategies available to manage the issues or its impacts; and the specific challenges that might be faced in management such as long-lived seeds and rapid reproduction rates which might influence the ability to manage an issue.

Step 3: identifying management objectives in a biosecurity action plan

The action plans use catchment based management zones to identify the location-specific management actions required for each priority pest plant and animal. The management zones are based on the pest management concept of the 'invasion curve'. The invasion curve describes how as a biosecurity issue becomes more abundant over time the management options and strategies available to manage it or its impacts also change. At each stage of the curve, as the area occupied by the pest or weed increases, the implied impact and required resources to respond also increase.

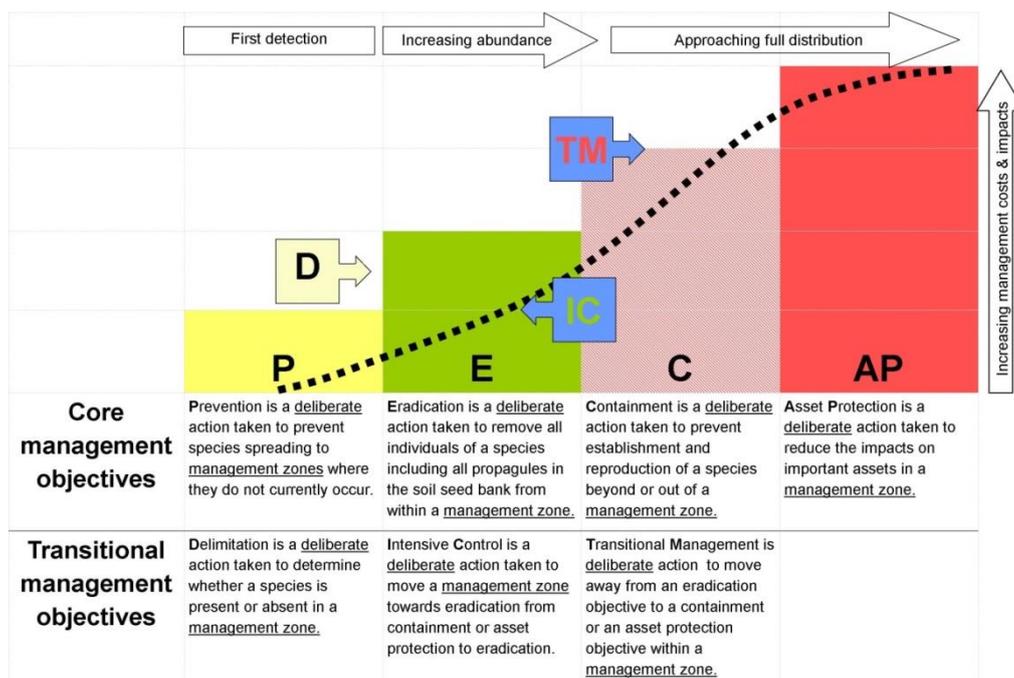


Figure 2 The invasion curve concept describes the management objectives in each of the management zones in the biosecurity action plan.

The key message is that prevention and early intervention are the most cost-effective (proactive) actions we can take. When these actions are not successful we need to carefully consider the most strategic (reactive) management approaches to ensure local impacts and potential spread to new areas is reduced.

Biosecurity action plans

Once priorities are established through the risk assessment process action plans are developed for each investment target. The action plans detail specific requirements and strategies for management in addition to what is required of all people under the general biosecurity obligation. The action plans outline management objectives based on established principles of pest management and are designed to assist all stakeholders to:

Understand the biology and distribution of priority pest plant and animals.

Implement appropriate strategic actions at the most appropriate time to have the greatest impact on the targeted pest (best management practice) and ensure they meet their general biosecurity obligation.

Plan and coordinate pest management activities with neighbouring properties by targeting common management objectives and goals within relevant geographic areas

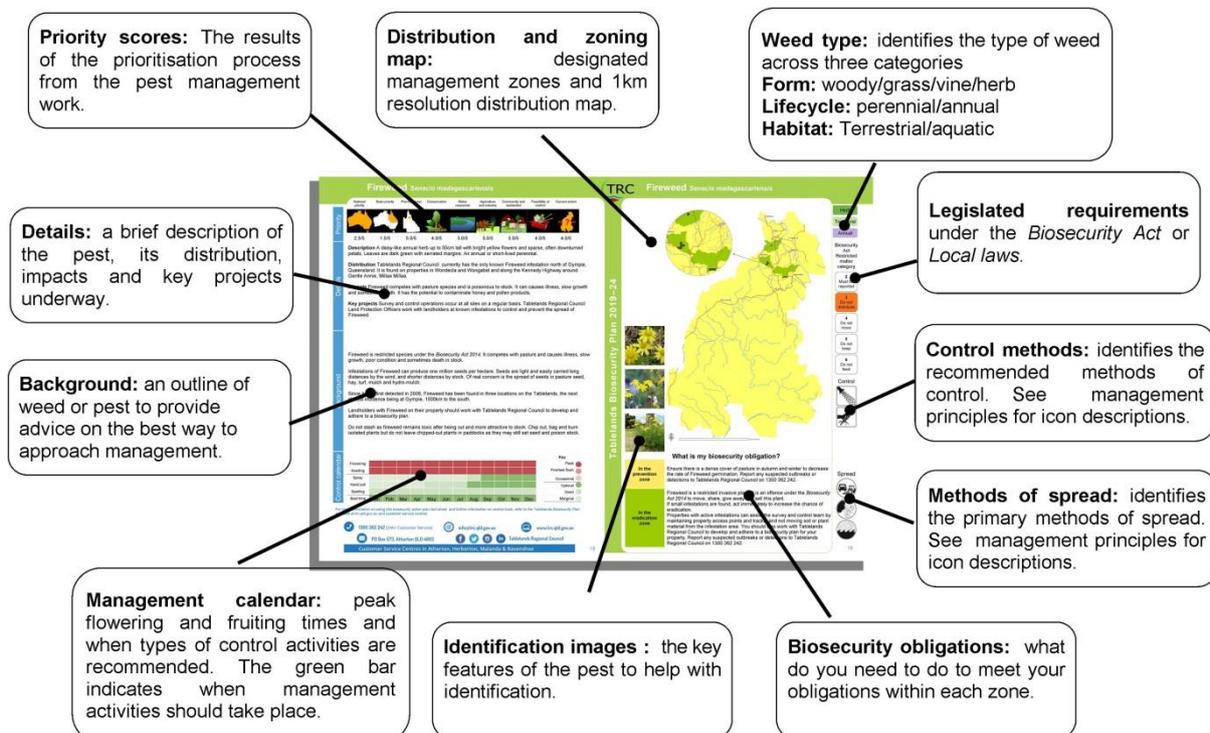


Figure 3 Outline of the material contained within biosecurity action plans for priority species.

Risk assessment

Planning criteria

(The criteria in this theme are automatically assigned a rating. Revision to these rankings are conducted by the Regional Natural Asset Management Advisory Committee).

 National priorities and obligations	score
Target species of National cost-shared eradication programs	5
Weeds of National Significance	2.5
Other	0

 State priorities and obligations	score
Biosecurity Act category 1 or 2	2.5
Biosecurity Act category 3, 4, 5, 6, 7	1.5
Environmental Weeds (Biosecurity Queensland, other invasive weeds)	1

 Local priorities	score
High - alert species and species identified in previous plan as high priority	5
Medium- identified in previous plan as a medium priority	4
Low- identified in previous plan as a low priority	3
None (Identified in previous Pest Management Plan as an environmental or other weed, but no priority allocated)	1

Impacts and threats criteria

 Conservation and biodiversity assets	score
<p>Potential to drastically out-compete native species, transform ecosystems and impact on biodiversity in a broad range of natural areas including areas of intact and high value vegetation. Pest animals may prey on a wide range of native animals and transform ecosystems.</p>	5
<p>Potential to drastically out-compete native species and impact on biodiversity with impacts limited to areas of the pests suitable habitat. Pest animals may prey on some native animals and disturb ecosystems limited to areas of suitable habitat.</p>	4
<p>Potential to invade forest edges and disturbed systems and impact on areas/ecosystems which are already disturbed or degraded. Pest animal's impact mainly limited to disturbed or modified habitats or in association with settled areas.</p>	3
<p>Potential to develop a presence in natural areas without widespread out-competition of species or alteration of ecosystems.</p>	2
<p>Unlikely to establish effectively in conservation areas unless by isolated infestations, dumping or urban escapes. Unlikely to penetrate undisturbed areas.</p>	1

 Water resources and assets	score
<p>Potential to form solid stands of weeds or dense populations of pest animals. Likely to out-compete native species and impact on water quality/ water flow and creek and river ecosystem function. May limit access to creek banks and waterholes or damage infrastructure in dams. Chokes or disturbs waterways and wetlands. May stop or change how fish and birds use the area. Can lead to reduction of desirable plant and animal species, siltation and bank erosion. Pest animals impacts may transform aquatic habitats through significant disturbance, preying on native species or altering function of aquatic ecosystems</p>	5
<p>Will out-compete native species and impact on rivers, creeks and wetlands areas limited to area of the pest's suitable habitat. Might become a management issue in dam's water storages. Pest animals may disturb or degrade aquatic ecosystems but not significantly displace all native species.</p>	4

Will occupy edges and disturbed areas and further degrade areas which are already under pressure or in poor condition. Limits the ability of plants and animals to establish and grow. Might require increased management in dams.	3
Will develop a presence in on rivers, creeks and wetlands areas without widespread effects on native species or significantly altering ecosystem function. Unlikely to result in reduction/modification of native vegetation. Might be present in dams but generally easy to manage if required	2
Unlikely to establish effectively in rivers, creeks and wetland areas unless by isolated dumping or escape from communities or town situations. Not adapted to succeed/survive annual flood events. Not a problem for dams. Pest animals not likely to reproduce or persist.	1

 Agricultural and industry assets	
Major threat to productivity by way of reduced output with increased control expenses with potential to lead to a de-valuation of land or forced changes in land use. Management required is a significant addition to existing routine pest management practices and impacts on economic viability of farm operations. Impacts likely to extend to adjoining rivers, creeks and native vegetation and properties	5
Moderate reduction in output with increased management expenses. Control is added to existing routine pest management practices for crop, pasture and livestock. Benefits of management outweigh costs and are able to be absorbed without significant impacts on profitability. Not likely to impact on land value. Impacts may extend to drainage lines, native vegetation and adjoining properties	4
Moderate threat to agricultural operations. Increased maintenance including drainage lines, creeks and roadways. Pest threat to crop/pasture and livestock can be reduced and or stopped as part of routine pest management practices.	3
Moderate threat to farm assets and visual appearance of the property. May impact on native vegetation in non-production areas over time	2
Not of concern to agricultural endeavours under good land management practices.	1



Community and residential assets

<p>Potential to form solid stands of weeds or dense populations of pest animals. Can out-compete or destroy gardens/pets and native plants/animals and impact on community natural areas and nearby creeks, rivers, beaches and bushland. Will lead to a decline in vegetation quality in areas which are already threatened by urban pressures. e.g. expansion of subdivisions, dump areas, storm water, sewerage outlets etc.</p> <p>If left untreated will impact on both private and public places and will require high costs to remove, repair or manage.</p>	5
<p>Potential to out-compete native or garden plants in community areas, roads, parks, gardens, creeks and beaches. May affect access, appearance, or increase management requirements. May provide shelter for vermin and pest animals or reduce recruitment of native species over time. Pest animals may increase in numbers and require a management response</p>	4
<p>Potential to move into degraded areas in and around the community including riparian areas, bushland, gardens and beach areas. High potential for pest to be replaced with other pests or weeds after treatment. Requires targeted management but threat to community areas can be responded to as part of regular management practices.</p>	3
<p>Likely to affect appearance or bring about complaints from residents or neighbours. May impact the function, use or appearance of community and residential areas or require a low-level management response.</p>	2
<p>Unlikely to affect community and residential areas due to limited habitat or, may be managed effectively in routine maintenance. May exist in isolated areas due to dumping or urban escapes, but is not able to dominate vegetation and gardens in the community.</p>	1

 Culture and country	score
<p>Potential to form solid stands of weeds or dense populations of pest animals. Will out-compete or damage native vegetation and impact on cultural sites, country, or cultural resources and/or knowledge transfer. Will lead to a decline in vegetation quality and if left untreated will require high costs to remove, repair or revegetate. Prevents easy access to country and sites or damages sites through other means like high fire fuel loads or erosion.</p>	5
<p>Potential to out-compete native plants and animals and alter country in some areas. Will affect condition and use of cultural sites and country and increase management requirements. May harbour pest animals and reduce recruitment of native plants and animals over time.</p>	4
<p>Moderate threat to condition of cultural sites and country. Requires deliberate management but threat to cultural sites and country can be dealt with successfully as part of regular land management practices.</p>	3
<p>May to affect access or condition of cultural sites and country in some areas but by and large is tolerated or not considered an issue. May impact the function, use or appearance of country or require a low-level land management response.</p>	2
<p>Unlikely to affect cultural sites and country due to limited habitat or is a low impact weed or pest. Can be managed effectively in routine maintenance. May exist in isolated areas, but does not have capacity to impact access or condition of cultural sites and country.</p>	1

Capacity to manage criteria

 Current extent		
Geographic distribution - refers to how much of the pests potential range is occupied.	Density - refers to how thick or sparse pest infestations are.	Score
Localised - Infestations or populations occur in less than half of the management areas. Not near or at full potential distribution across suitable habitat.	Occasional	Plants or animals occur as isolated outbreaks or individuals
	Common	Plants or animals occur scattered or clumped in small populations
	Abundant	Plants or animals form dense infestations or populations
Widespread- Infestations or populations occur in more than half of the management areas. Near or at full potential distribution across suitable habitat.	Occasional	Plants or animals occur as isolated outbreaks or individuals
	Common	Plants or animals occur scattered or clumped in small populations
	Abundant	Plants or animals form dense infestations or populations

 Feasibility of control/management success	score
<p>Infestation is small, localised and/or contained such that eradication is highly achievable if resources and control methods permit. Efforts are aligned in delivering control, spread prevention, and awareness raising activities and appropriate funding opportunities/commitments/partnerships exist. Eradication from the entire Council area is feasible in the medium to long term (5-10 years)</p>	5
<p>Eradication within a particular catchment or geographic region which is unlikely to become reinfested is feasible. Effective management tools and approaches exist and spread prevention actions can be implemented. This may apply to outlier infestations as per aligned efforts or existing management plans.</p>	4
<p>Potential for land managers to satisfy basic strategic control targets with appropriate resources and support. Effective management tools and approaches exist. May involve buffer spraying or satellite control to limit spread to new areas and raising awareness. Impacts within infested areas and spread to new areas can be reduced. Local gains in management can be maintained but eradication is not feasible.</p>	3
<p>Management is heavily reliant on coordinated action from all landholders and generally difficult to implement or requires significant external resources. Reinfestation of managed areas is likely but can be reduced in some areas. Management tools and approaches may exist, but may be highly technical or expensive.</p>	2
<p>Pest is widespread and is present in most suitable habitat across multiple tenures. There is no universal effective control available or the benefits of control do not outweigh the costs. Reinfestation of managed areas is highly likely. Resources are directed to maintaining/protecting significant production areas and natural assets.</p>	1

References

Department of the Environment and Heritage and the CRC for Australian Weed Management, (2003). *Alert List for Environmental Weeds*

Goosem, S. (2007). Naturalised Plant List - Wet Tropics Bioregion. Wet Tropics Management Authority.

Nursery and Garden Industry Australia, NGIA. (2009). *Grow Me Instead. A Guide for Gardeners in Queensland Wet Tropics.*

Sydes, T., Januchowski, S. (2009). The Cross Regional Hymenachne Management Strategy; Setting the scene for informed pest management. Proceedings of the 10th Queensland Weeds Symposium. pp. 29-3. The Weeds Society of Queensland.

Sydes, T. (2009) Cross Regional Hymenachne Management Strategy. Johnstone, Tully-Murray, Lower Herbert and Black River Catchments—2009-2014. Far North Queensland Regional Organisation of Councils.

Sydes, T. (2012) Using a local management zoning framework to foster a management continuum. Is the 'big four' a defeatist mindset and are there alternatives at a local and regional level? Proceedings of the 18th Australasian Weeds Conference. CAWS Australia

Werren, G. L. (2001) *Environmental Weeds of the Wet Tropics: Risk Assessment and Priority Ranking*. Report prepared for the Wet Tropics Management Authority, Rainforest CRC, JCU, Cairns:76pp. + apps.

Werren, G. L. (2004) *FNQROC Regional Pest Management Plan Integration: Stage 4 – Regional Pest Management Plan: the Strategy*. Report to the Far North Queensland Pest Plan Advisory Committee, ACTFR/School of Tropical Biology, James Cook University.

