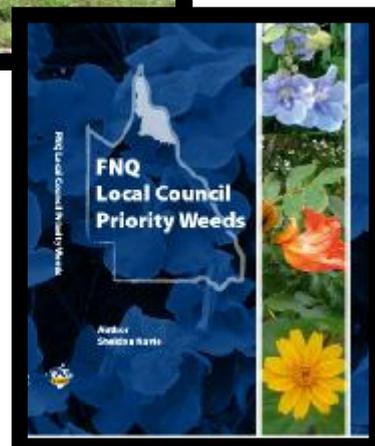




# FAR NORTH QUEENSLAND REGIONAL ORGANISATION OF COUNCILS

## REGIONAL WEED SPREAD PREVENTION STRATEGY

(2008 - 2010)



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## Contributors to the Strategy

Agencies, industry and community members were invited to contribute to a draft report which was delivered to the Far North Queensland Local Government Pest Plan Advisory Committee (FNQLGPPAC) members in April 2007 and the FNQ Weed Spread Prevention Group in March and April 2007. Much of this initial report is included within the Strategy. Therefore, the Strategy represents the collective knowledge from community, agency and industry representatives across the Far North Queensland Regional Organisation of Councils (FNQROC) member region.

The following individuals represented their local government, agency or industry as attendees of the FNQ Weed Spread Prevention Group, which met on the 12<sup>th</sup> December 2006 and 22<sup>nd</sup> March 2007.

<b>Name</b>	<b>Organisation</b>
Paul Davis	Biosecurity
Daniela Gambotto	FNQ NRM Ltd
Simon O'Donnell	Main Roads
Tim O'Brian	Atherton Shire Council
Vic Little	Biosecurity
Kylie Galway	Biosecurity
Paul Devine	Cardwell Shire Council
Natalie Dearden	Contractor
Ellen Weber	WTMA
Kirby Doak	FNQROC
Graham Warren	Q Rail
Darryl Evans	Biosecurity
John Clarkson	QPWS
Geoff Meadows	QPWS
Roger Debels	Sunwater
Karen Rose	Sunwater
Kath Dryden	Terrain NRM
Peter Logan	Douglas Shire
Troy Orchard	Eacham Shire
Matthew Hyde	Eacham Shire Council
Paul Devine	Cardwell Shire Council

The following FNQ Local Government Officers: Peter Logan, Bart Dryden, Albert Holder and Robert Tucker, provided extensive information towards the final development of the strategy. David Wood (Power Link) and Barbara Waterhouse (AQIS) also contributed advice. Liz Otto (Queensland Murray Darling Committee) provided comments on the early stages of the Strategy.

Acknowledging all contributors is not possible; however it must be noted that the range of stakeholders that have contributed to the development of the Strategy has encouraged a coordinated and integrated approach to weed spread prevention across the FNQROC member region.

The strategy was compiled by Kirby Doak.



## Executive Summary

The Far North Queensland Regional Organisation of Councils (FNQROC) Regional Weed Spread Prevention Strategy directs the principle management of priority weeds across the region through actions that minimise further spread of these weed species. The Strategy is an action outcome of the Far North Queensland Local Government Pest Plan Advisory Committee (FNQLGPPAC) Regional Pest Management Plan to “adopt and put in place elements of pest spread protocol”.

The Strategy maintains strong links with the National Weeds Strategy 1999, Queensland Weeds Strategy 2002-2006 and the Queensland Weed Spread Prevention Strategy 2006.

The actions in the Strategy have been developed through considerable consultation processes and contain the effective principles for the management of weed prevention.

Minimising the spread of pest weeds does save considerable cost from increased impacts and subsequent cost of control. Communication, education and awareness play vital roles in providing a changing culture towards the holistic approach to weed spread prevention. Weed spread prevention must be included as an integral component in the development of future local government, agency and industry pest management plans. There must also be available tools such as clean down facilities to ensure the region can be kept free of unwanted weeds.

## 1. Introduction

The Far North Queensland Local Government Pest Plan Advisory Committee (FNQLGPPAC) Pest Management Plan 2006 states “Pest plants pose some of the most significant threats to FNQ regional assets”. Weed spread prevention activities are essential to protect these assets.

Apart from our natural environmental assets, weeds have significant impacts on our health, social activities, and personal incomes and have an economic impact to both industry groups and the communities that support these industries.

The physical characteristics of weeds enable them to be easily transported via a broad range of vectors / mechanisms, which include contaminated grain, soil and gravel, garden products, stock movement, machinery movement, feral animals, climatic conditions and human activities. The majority of spread is a direct result of human activities. With this considered, coupled with the increasing costs of control it is necessary to change community attitude and practices towards preventing weed spread.

There requires an understanding among communities and industries that weed spread prevention activities must be imbedded as part of a working culture to ensure further impacts are not experienced. Weed spread prevention must be included as an integral component in the development of future local government, agency and industry pest management plans.

## 2. The Objectives of the Strategy

The objective of the Strategy is to manage weed spread in the FNQROC’s area by:

- Identifying, recording and preventing further establishment of weeds within and into the FNQROC member council area;
- Ensuring all FNQROC member local government and all land managers including, Department of natural Resources and Water, Department of Primary Industries and Environmental Protection Agency meet their legislative requirements.
- Identifying high risk areas for future weed incursions

The Strategy focuses on regionally identified pest priorities and the commitment of all stakeholders to work in a strategic, collaborative and cooperative manner to ensure real outcomes.

## 3. The Rationale for the Strategy

The Strategy has been developed because of the regionally agreed directive to “adopt and put in place elements of pest spread protocol”. This is identified in the FNQLGPPAC Regional Pest Management Plan 2006. Subsequently, the Strategies rationale is:



- Strengthen linkages and direction across local governments, industry and agencies in FNQ in the prevention of weed spread.
- Provide a clear regional priority of weeds and associated actions for FNQROC member councils.
- A planned approach to minimising and preventing the spread of weeds in the FNQROC area.

The following diagram illustrates a planned approach to minimising further spread of weeds into and within the FNQROC member council area:

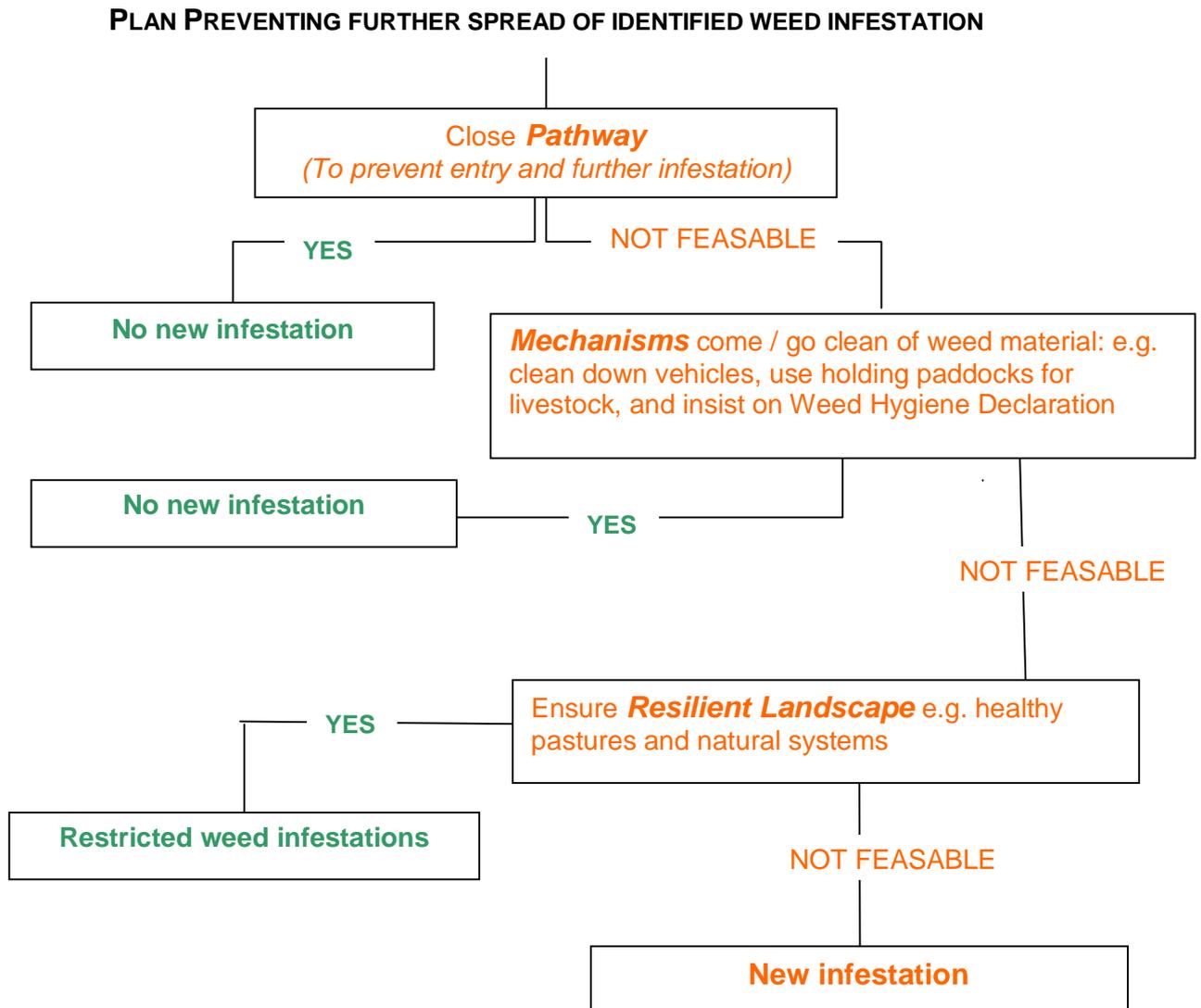


Figure 1: A planned approach to minimising further spread of weeds into and within the FNQROC member council area.

#### 4. Requirements of the Strategy

The Strategy continues to build on regional pest management actions already implemented through the FNQLGPPAC Pest Management Plan and considers directives from the Queensland Weed Prevention Strategy 2006, such as placement of clean down facilities, awareness of priority weeds and Best Practise Clean down procedure.

The Strategy requires stakeholders to:

- Prevent the spread of priority weeds within the region.
- Prevent new pest weed incursions.
- Increase education and awareness.
- Promote early identification and intervention.
- Promote machinery and vehicle hygiene best practice activities.
- Provide a clearly defined approach to minimising pest weed spread.
- Promote individual landholder responsibilities.
- Assist with the development of a range of practical tools that can be implemented to assist in minimising or preventing the spread of weeds in Far North Queensland whilst addressing current legislative requirements.
- Establish and manage resilient landscapes to minimise the spread of weeds.

#### 5. What the Strategy will target

The Strategy targets the FNQ local government priority weeds as identified in the Regional Pest Management Plan and all additional class 1, 2 and 3 plants as identified by the *Land Protection (Pest and Stock Route Management) Act 2002*, that are currently outside the region.

The Strategy targets the role of stakeholders in the implementation of preventative actions. Additionally, the Strategy identifies tools that are associated with actions such as use of Weed Hygiene Declarations and Codes of Practice.

The Strategy prioritises pathways such as main roads and mechanisms, such as council works equipment, that are known to spread weeds.

#### 6. The goals of the Strategy

The 7 goals of the Queensland Weed Spread Prevention Strategy (QWSPS) have been incorporated into the 6 goals of the regional Strategy. They are:

##### I. Support and adhere to legislation and Policies (Goals 1 and 6 – QWSPS)

Incorporated within this goal is the policy on managing natural disasters (includes disaster response activities). Natural disasters such as cyclones and floods contribute significantly to the initial spread of weeds. However it is the clean up operations post disaster that lead to the greatest risk of weed spread. Contractors,



agencies and community members must take a proactive step to reduce the risk of weed spread post disaster.

Two major areas of legal responsibility can be identified as follows:

**Legal Responsibility 1** - Compliance with relevant legislation is mandatory, such as;

***The Land Protection (Pest and Stock Routes Management) Act 2002***

Sections 44, 45 and 46 state as follows:

**Section 44:** Supplying declared pest

(1) A person must not supply a declared pest other than under a declared pest permit:

- (a) for a class 1 pest;
- (b) for a class 2 pest;
- (c) for a class 3 pest.

**Section 45:** Supplying things containing reproductive material of particular declared pest plants

(1) A person (a supplier) must not supply any thing containing reproductive material of a plant that is—

- (a) a class 1 pest; or
- (b) a class 2 pest prescribed under a regulation for this section. Examples of thing— fodder, grain, gravel, machinery, mulch, packing material, sand, soil, stock, vehicles or water

(2) A supplier does not commit an offence against subsection (1)(b) if, before supplying the thing, the supplier gives the person to whom it is supplied a written notice stating the following—

- (a) the supplier's name and address;
- (b) the thing may contain the reproductive material of a class 2 pest;
- (c) the name of the class 2 pest.

(3) Both the supplier and the person to whom the thing is supplied must keep a copy of the written notice given under subsection (2) for 5 years after the notice is given.

(4) In this section— thing does not include a declared pest.

**Section 46:** Moving or transporting vehicles and other things on roads

(1) This section applies to a person who moves or transports a vehicle or other thing on a road if the person knows, or ought reasonably to know, soil or other organic material in or on the vehicle or thing is likely to contain the reproductive material of a declared pest plant.

(2) The person must not, without reasonable excuse, move or transport the vehicle or thing unless the person has taken reasonable steps—

- (a) to restrict the release of the reproductive material when the vehicle or thing is moved or transported; or
- (b) to ensure the vehicle or thing is free of the reproductive material.

***Environmental Protection Act 1994***

This Act governs Environmentally Relevant Activity.

An Environmentally Relevant Activity (ERA) is an activity that has been identified as one that will, or has the potential to release contaminants into the environment causing environmental harm.



There are two levels of ERA:

**Level 1:** ERA are considered to be a higher risk to the environment and require the operator to have a registration certificate under the Environmental Protection Act (licence with development approval), as well as under the Integrated Development Assessment System (IDAS).

**Level 2:** ERAs only require a development approval under IDAS and are issued a 3-year registration certificate.

A full list of ERAs can be found in Schedule 1 of the Environmental Protection Regulation 1998. The administering authority for the administration and enforcement of the *Environmental Protection Act 1994* for certain ERAs is local government.

The administering authority for non-devolved ERAs is the EPA and DPI&F (for farming type applications). The Department of Local Government and Planning should also be able to provide information that will assist people in determining if an application is required to be assessed under the Environmental Protection Act 1994.

## **Legal Responsibility 2 - Duty of Care**

This may involve maintenance of a duty of care with regard to:

- (a) Public health (e.g. allergic reactions can be affected by certain Declared plants or water quality can suffer due to Declared aquatic weed infestations);
- (b) Public amenity (e.g. loss or reduction of access to recreation locations/facilities due to weed infestations);
- (c) The environment (although the legal basis for environmental responsibility is less tangible despite it underlying State environmental protection legislation) is required; and

Note: Avoidance of the threat of civil action/litigation with regard to negligence surrounding pest animal or weed outbreaks is necessary.

Two major planning documents that influence the Strategy include:

1. Sustaining the Wet Tropics: A Regional Plan for Natural Resource Management 2004 – 2008. FNQ NRM Ltd, Innisfail; and
2. Wet Tropics Conservation Strategy: the conservation, rehabilitation and transmission to future generations of the Wet Tropics World Heritage Area, WTMA, Cairns

## **II. Raise Awareness, Motivate and Educate (Goal 2 of QWSPS<sup>i</sup>)**

This goal arguably has the most influence in achieving weed spread prevention through the shifting of a culture that has greater consideration of the impacts and associated cost to control spreading weed infestations.

The importance of raising staff and/or contractor's awareness of facilitating weed spread associated with particular activities must be a priority. Individual Local Government Authorities must lead by example in the way they conduct their day-

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<sup>i</sup> Queensland Weed Spread Prevention Strategy

to-day operations. Many agencies already consider weed control as a priority but do little to minimise weed spread.

There is considerable scope for increasing motivation of council staff, particularly those associated with parks and gardens. This can be achieved by creating awareness of the importance of invasive species issues and of statutory requirements under the *Land Protection (Pest and Stock Route Management) Act 2002*. Issues include the maintenance of declared plants in botanical gardens and their subsequent escape or transport further a field, along with the cultivation of weedy species as ornamentals (and, by implication, the promotion of cultivating such species to the wider community) in council parks and gardens and in urban amenity plantings, such in median strips and on footpaths.

Staff training is considered a necessity associated with the awareness and education goal.

### **III. Improve Mapping of Weed Infestations, Pathways and Resilient Landscapes** (Goal 3 – QWSPS)

Integral to weed spread prevention planning activities is the collection of data throughout the region.

With a precise knowledge of the location and extent of weed infestations, containment lines can be drawn allowing real planning and measurement for the success of weed spread prevention activities.

Such data also allows for accurate assessment of cost of prevention activities and subsequent reporting to regional funding sources.

It is paramount to the success of this goal that all stakeholders provide the relevant information to a central database to enable the development of more defined pest weed spread pathways and source infestation.

Mapping of resilient landscapes provides a clearer picture of where improved land management activities can be concentrated to decrease risk of weed spread and increase further resilience to incursions. For example, strips of healthy road side corridors may assist in preventing, or at least slowing the spread of weeds.

### **IV. Develop Practical Applications** (Goal 4 – QWSPS)

When proper on ground applications are developed weed spread prevention is possible. This means the development of tools for both professional staff and the community at large. These tools must be affordable and be operated within the bounds of reasonable timeframes.

This goal focuses the Strategy on practical infrastructure development. That is the cost of establishing and maintaining infrastructure associated with weed-

spread management and monitoring are considered within the Strategy. Currently each Local Government Authority (LGA) supports a Pest Management Unit (PMU) with access only to clean down facilities at works depots. New portable facilities are being placed strategically throughout the region through the Blue Print for the Bush initiative - Weed Spread Prevention project.

Infrastructures such as vehicle clean-down facilities are maintained for council use, but associated costs and public liability issues usually preclude use beyond the washing-down of council vehicles and machinery.

Local Government, State agencies and industry will need to work collaboratively and support more strategically located facilities if this goal is to be met.

**V. Integrate the approach towards pest spread prevention from all Government Agencies, Landholders, Community Groups, Industry Groups and the general public**

(Goal 5 – QWSPS)

Consultation and partnership arrangements between land managers, communities, industries and governments lead to sharing of responsibilities. This is a rationale for the Strategy and increasingly a principle that is being required in planning instruments by Commonwealth Government funding policy. It is also recognised that it is the basic principle that has seen formation of the FNQROC and the Far North Queensland Local Government Pest Plan Advisory Committee (FNQLGPPAC) that has commissioned the current exercise, and most recently the formation of the Regional Weed Spread Prevention Working group.

**VI. Review and Monitoring Activities**

(Goal 7 – QWSPS)

Processes developed to assess and evaluate on ground activities and spread of pest weeds is essential. This provides up-dated information to allow for continued improvement of current preventative activities and enable the continuation of effective on-ground activities. It will also assist with the development and implementation of best practice methods where currently not practiced.

**7. Identifying Weed Seed Spread Pathways and Mechanisms through human activity**

Understanding the pathways and mechanisms that allow weeds to spread is paramount. Regional pathways and mechanisms are identified below (The Queensland Weed Spread Prevention Strategy identifies all major pathways for weed spread into and within Queensland).

The following pathways and the mechanisms weeds use to move along them is only a broad snapshot of the FNQROC region. Further detail is required at the individual local government level to determine what mechanisms are carrying weeds along which pathway. This additional information is subsequently used to identify where clean down facilities are placed and other activities such as the use of Weed Hygiene Declarations is encouraged.



## I. Transport over land - by road pathways

The FNQROC area has many road pathways enable vehicles to transport weeds into the region. Four major road corridors include the **Bruce Highway (1)** that brings vehicle traffic from the South into Ingham in the Hinchinbrook Shire. The **Peninsula Development Road (2)** that enters the region from the North through Lakeland (Cook and Mareeba Shires). The **Kennedy Highway (3)** that allows vehicles access into the region from the South. The **Burke Development Road (4)** that brings traffic from the West into the region through Mareeba (Mareeba Shire). All pathways allow vehicles to move into and within the FNQROC member council area and require priority actions to ensure weed spread is prevented.

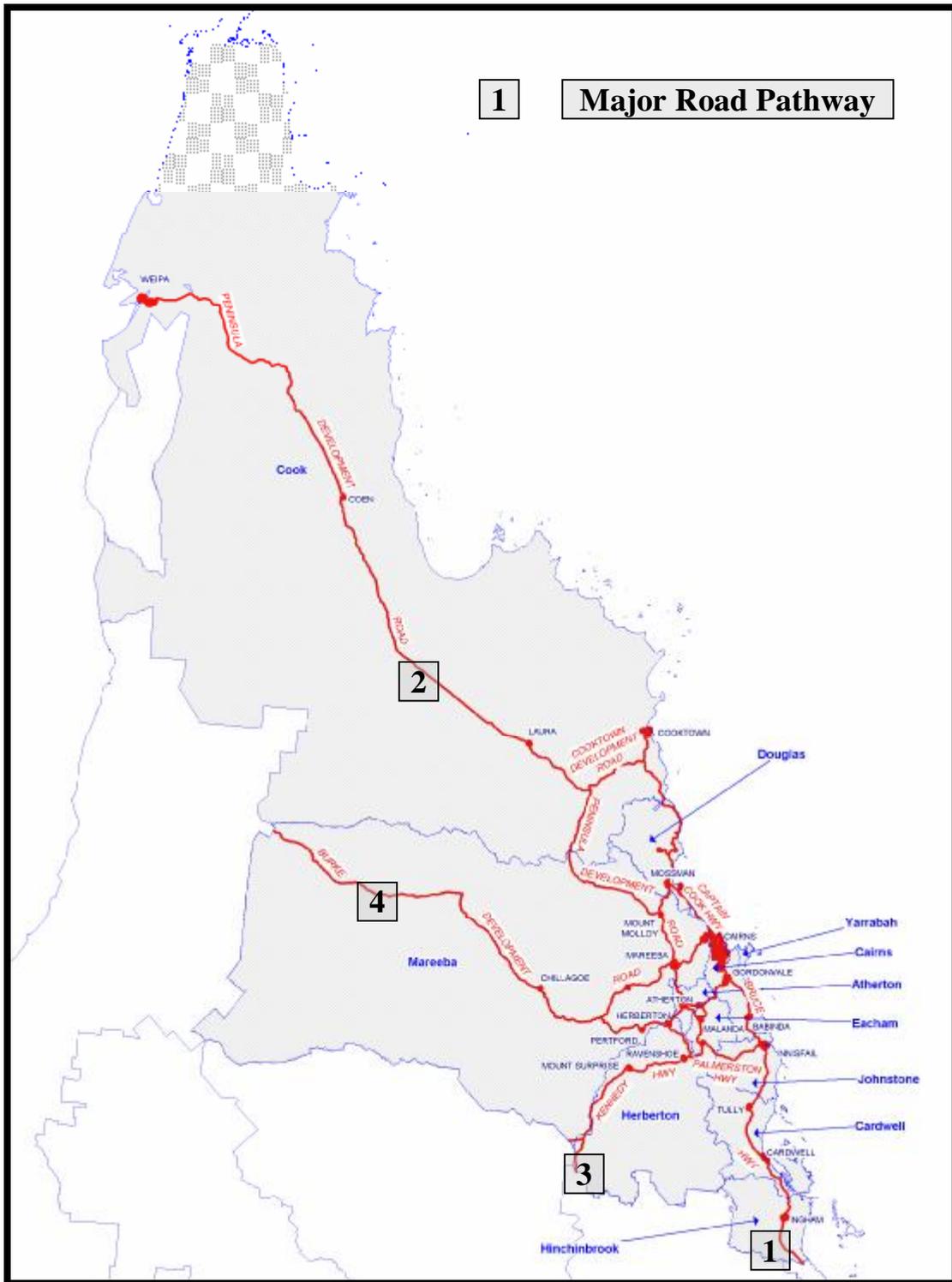


Figure 2: Major road Pathways into and within the FNQROC member council area.

### **Mechanisms along road pathways**

- Supply and movement of machinery and equipment;
- Tourism and recreational activities and includes general travel;
- Military activities;
- Roadside vegetation maintenance activities;
- Foot traffic;
- On-ground activities such as road and rail maintenance and construction activities;
- Construction and development projects such as mining, seismic and pipeline construction;
- Energy and telecommunications infrastructure construction activities;
- Property development which involves the disturbance and removal of soil materials;
- Quarry activities which involves the supply and sale of quarry type materials such as soil, sand, gravel and rock;
- Fencing construction and maintenance;
- Audit, survey and research activities and includes mapping;
- Resource recovery and removal and planting activities associated with forestry;
- Weed prevention activities such as chemical applications, slashing and mowing and manual removal; and
- Waste disposal – both discriminate and indiscriminate.

Weed spread is not limited to vehicle movement along pathways.

### **Mechanisms along other overland pathways include:**

- Fencing construction and maintenance activities;
- Domestic stock between paddocks;
- Native and non-native animal movements;
- Property development; and
- Indiscriminant dumping (such as green waste)

## **II. Transport by Water - Freshwater and Marine Pathways**

The FNQROC member council area has no major river flowing into it. However, many rivers and streams flow out of the region and many more flow within, through local government boundaries from the tablelands to the coast.

The **Mitchell River**, **Staaten River** and **Red River** flow west from Mareeba Shire into the Gulf. The **Endeavour River** and other streams start within the Cook Shire and drain to the ocean boundaries of the Shire on both the west and east coast of Cape York Peninsula.

Within the FNQROC member council area the **Herbert River** running south east across the southern end of the region is a significant pathway for weed spread within the region together with the **Tully River**, **North** and **South Johnstone Rivers** and **Barron River** which flow from the Tablelands to the east coast in the central part of the region. The **Daintree River** is also a major water corridor for





### **Mechanism along water pathways**

- All types of recreational and commercial craft.
- Recreational activities such as fishing and camping.
- Recreational boating activities and includes fishing, skiing and swimming.
- Commercial fishing activities.

### **III. Transport by air pathway**

There is significant air traffic movement both in and out of the area and within the area. As air traffic can carry people significant distance in a short period of time so too can weed material be transported.

Due to the remoteness of many communities within the FNQ member council region there is considerable light aircraft traffic that has the potential to contribute to weed spread.

### **Mechanism along air pathways**

- Private light Aircraft;
- Commercial Charter;
- Supply and movement of machinery, equipment and produce;
- Tourism and recreational activities including general air travel and aerial sporting activities;
- Military activities.

## 8. Resilient Landscapes

A resilient landscape should maintain diverse and healthy ecosystems and agricultural sustainability both in economic and environmental terms. It requires minimal input in terms of maintenance and resources. Poorly managed landscapes on the other hand are more susceptible to weed and pest animal invasions that will ultimately diminish the integrity of the ecosystem and its long term sustainability and increase management costs.

Landscapes that are maintained in good health should keep significant weed infestation to a minimum. This leads to more efficient management of land and subsequent economic returns for land managers. Therefore facilitating the establishment of resilient landscapes is a particularly practical tool in weed spread prevention practices, and this is particularly the case in areas prone to weed incursions along heavily used pathways.

Fundamental to this is ongoing monitoring of the benefits of rehabilitated landscapes. Regular checks for problem areas and adjusting practices to prevent future infestations is critical.

## 9. Regionally Identified Pest Priority for Weed Spread Prevention Activities

Considerable effort and rigor was applied in the development of the FNQLGPPAC Regional Priority Weed list, in which all FNQROC Local Governments had input and agreement.

This list is utilised as the weeds of priority list for the FNQROC Regional Weed Spread Prevention Strategy.

The priority weed list ensures:

- Targeted, coordinated and cooperative management;
- Coordination and focus of resources;
- Commitment of resources over time; and
- Elimination of emotive activities.

The Strategy targets those priority weeds, as assessed by Warren in the FNQROC Regional Pest Management Plan Integration (2003a)<sup>ii</sup> and are categorized as follows:

**Category 1:** Can feasibly be eradicated and spread prevented.

**Category 2:** Can be contained and reduced with a long-term view of eventual eradication from the region if possible. Spread can be prevented.

**Category 3:** Isolated outbreaks can be eradicated, population reduced and spread suppressed

**Category 4:** Control can be effective as consistent with level of Declaration and / or locals adverse impacts. Spread can be suppressed.

The Strategy provides a priority approach to what species are targeted for minimising the spread and subsequent impact of pest plants in the FNQROC area.

The following diagram illustrates the approach to priorities preventative activities to reduce weed spread in the FNQROC member council area. To answer '**No**', **activities must be in place to prevent weed spread, or the weed is not within, or at risk of spreading into the area.**

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Werren, G.L. (2003a) FNQROC Regional Pest Management Plan Integration: Stage 2 Report – Establishing Priorities. Report to the Far North Queensland Pest Plan Advisory Committee, ACTFR/School of Tropical Biology, James Cook University, Cairns:62pp.

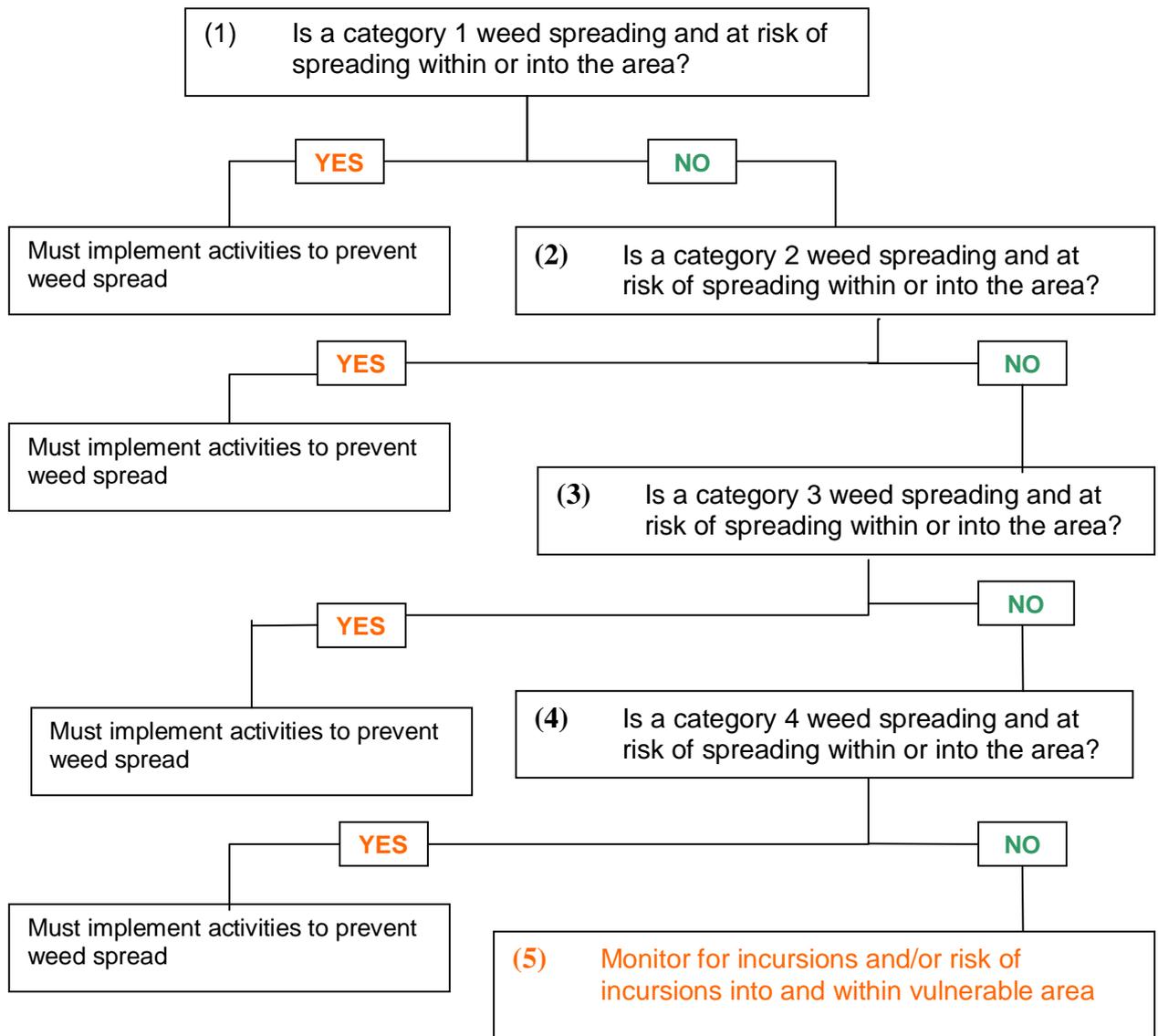


Figure 4: Weed spread priority approach

## Table 1: List of Regional Priority Weed

Botanical names in alphabetical order, common name in **bold**

### Category 1

*Acacia curassavica* **redwood**  
*Alternanthera philoxeroides* **alligator weed**  
*Castilla elastica* **panama rubber**  
*Chromolaena odorata* **siam weed**  
*Clidemia hirta* **koster's curse**  
*Flacourtia jangomas* **flacourtia**  
*Grewia asiatica* **grewia**  
*Hiptage benghalensis* **hiptage**  
*Limnocharis flava* **limnocharis**  
*Miconia* spp. **miconia**  
*Miconia calvescens* **miconia**  
*Mikania micrantha* **mikania vine**  
*Parmentiera edulis* **cucumber tree**  
*Phytolacca rivinoides* **venezualan pokeweed**  
*Thunbergia annua* **annual thunbergia**  
*Thunbergia laurifolia* **laurel clock vine**  
*Triplaris surinamensis* **triplaris**

### Category 2

*Annona glabra* **pond apple**  
*Brillantaisia lamium* **brillantaisia**  
*Cabomba caroliniana* **cabomba**  
*Cryptostegia grandiflora* **rubber vine**  
*Eichhornia crassipes* **water hyacinth**  
*Hymenachne amplexicaulis* **hymenachne**  
*Lantana camara* **lantana**  
*Mimosa diplotricha* **giant sensitive weed**  
*Parkinsonia aculeata* **parkinsonia**  
*Parthenium hysterophorus* **parthenium weed**  
*Salvinia molesta* **salvinia**  
*Thunbergia grandiflora* **blue thunbergia**  
*Ziziphus mauritiana* **chinee apple**

### Category 3

*Acacia nilotica* **prickly acacia**  
*Ambrosia artemisiifolia* **annual ragweed**  
*Andropogon gayanus* **gamba grass**  
*Bryophyllum* spp. **mother-of-millions**  
*Bryophyllum daigremontianum* x *B. delagoense* **hybrid mother-of-millions**  
*Bryophyllum delagoense* **mother-of-millions**  
*Bryophyllum pinnatum* **resurrection plant**  
*Cascabela thevetia* **yellow oleander**  
*Datura* spp. **thornapples**  
*Datura ferox* **fierce thornapple**  
*Datura inoxia* **downy thornapple**  
*Datura leichhardtii* **native thornapple**  
*Datura metel* **Hindu thornapple**  
*Datura stramonium* **common thornapple**  
*Datura wrightii* **hairy thornapple**  
*Elephantopus mollis* **tobacco weed**  
*Emex australis* **spiny emex**  
*Harungana madagascariensis* **harungana**  
*Jatropha gossypifolia* **bellyache bush**



*Leucaena leucocephala* **leucaena**  
*Macfadyena unguis-cati* **cats-claw creeper**  
*Prosopis* spp. **mesquites**  
*Prosopis pallida* **algaroba**  
*Ricinus communis* **castor oil plant**  
*Sansevieria trifasciata* **mother-in-law's tongue**  
*Senna obtusifolia* **sicklepod**  
*Senna tora* **Java bean**  
*Sporobolus jacquemontii* **American rats-tail grass**  
*Sporobolus natalensis* **giant rats-tail grass**  
*Sporobolus pyramidalis* **giant rats-tail grass**  
*Sphagneticola trilobata* **Singapore daisy**  
*Tribulus terrestris* **caltrop**  
*Turbina corymbosa* **turbine vine**

#### Category 4

*Ageratina riparia* **mistflower**  
*Allamanda cathartica* **yellow allamanda**  
*Ardisia crenata* **coral berry**  
*Ardisia solanacea* **shoebutton ardisia**  
 Non-native *Aristolochia* spp. **Dutchman's pipe vines**  
*Aristolochia elegans* **Dutchman's pipe vine**  
*Asparagus aethiopicus* 'Sprengerii' **ground asparagus fern**  
*Asparagus africanus* **climbing asparagus fern**  
*Asparagus plumosus* **feathered asparagus fern**  
*Bauhinia monandra* **bauhinia**  
*Caesalpinia decapetala* **thorny poinciana**  
*Cinnamomum camphora* **camphor laurel**  
*Cyperus aromaticus* **Navua sedge**  
*Echinochloa polystachya* **Aleman grass**  
*Euphorbia heterophylla* **milkweed**  
*Hyptis capitata* **knobweed**  
*Leonotis nepetifolia* **lion's tail**  
 Non-native *Ligustrum* spp. **privets**  
*Ligustrum lucidum* **broad-leaved privet**  
*Ligustrum sinense* **Chinese privet**  
*Macrotyloma axillare* **axillaris**  
*Opuntia* spp. other than *Opuntia ficus-indica* **prickly pears**  
*Opuntia aurantiaca* **tiger pear**  
*Opuntia dillenii* **spiny pest pear**  
*Opuntia imbricata* **rope pear**  
*Opuntia monacantha* **drooping tree pear**  
*Opuntia stricta* **common prickly pear**  
*Opuntia tomentosa* **velvety tree pear**  
*Paspalum virgatum* **Clyde grass**  
*Pennisetum purpureum* **elephant grass**  
*Phyllostachys* spp. **running bamboos**  
*Phyllostachys aurea* **golden bamboo**  
*Pistia stratiotes* **water lettuce**  
*Praxelis clematidea* **praxelis**  
*Psidium guajava* **guava**  
*Rottboellia cochinchinensis* **itch grass**  
*Rubus alceifolius* **giant bramble**  
*Schinus terebinthifolius* **broad-leaved pepper**  
*Senna hirsuta* **hairy senna**  
*Solanum maruritianum* **tobacco bush**  
*Spathodea campanulata* **African tulip**  
*Stachytarpheta* spp. **snakeweeds**  
*Stachytarpheta cayennensis* **dark blue snakeweed**  
*Stachytarpheta jamaicensis* **light blue snakeweed**



*Syngonium podophyllum* **goose's foot**  
*Themeda quadrivalvis* **grader grass**  
*Tithonia diversifolia* **Japanese sunflower**  
*Xanthium occidentale* **noogoora burr**

## 10. Management Action

Targeting the causes of weed spread is a very efficient and cost-effective method of approaching the problem, and it reduces the later effort of managing the much greater problem of an established infestation. State Government officers have recently concluded the development of a comprehensive and strategic approach to weed infestation caused by seed spread, which is represented in the Queensland Weed Spread Prevention Strategy (2006). Major components of the Queensland Weed Seed Spread Project are:

- developing best practice procedures for clean downs, inspections and clean down facility construction;
- developing and introducing a Voluntary Vendor Declaration (VVD) scheme for weed seed spread;
- coordinating construction of clean down facilities and their signage as part of WONS in particular parthenium;
- producing location maps;
- protocol development with industry groups, service utilities, government departments and private companies;
- establishing collaborative arrangements with other states;
- reviewing policies; and
- developing a consistent approach for internal policies (DNR, 2000).

During the development of the Queensland Weed Spread Prevention Strategy (2006), guidelines and procedures were developed in consultation with representatives of utility service providers (Figure 5). The information and materials from the strategy is intended to assist industry, service utilities, and State and Local Governments to establish their own practical and effective policies and procedures that will significantly reduce the spread of weed seeds (DNR, 2000).

Therefore, it remains important that the regional Strategy accommodates such measures where and when appropriate and allows it to inform, guide and encourage Local Government and other organisations to adopt best practice with regard to pest spread.

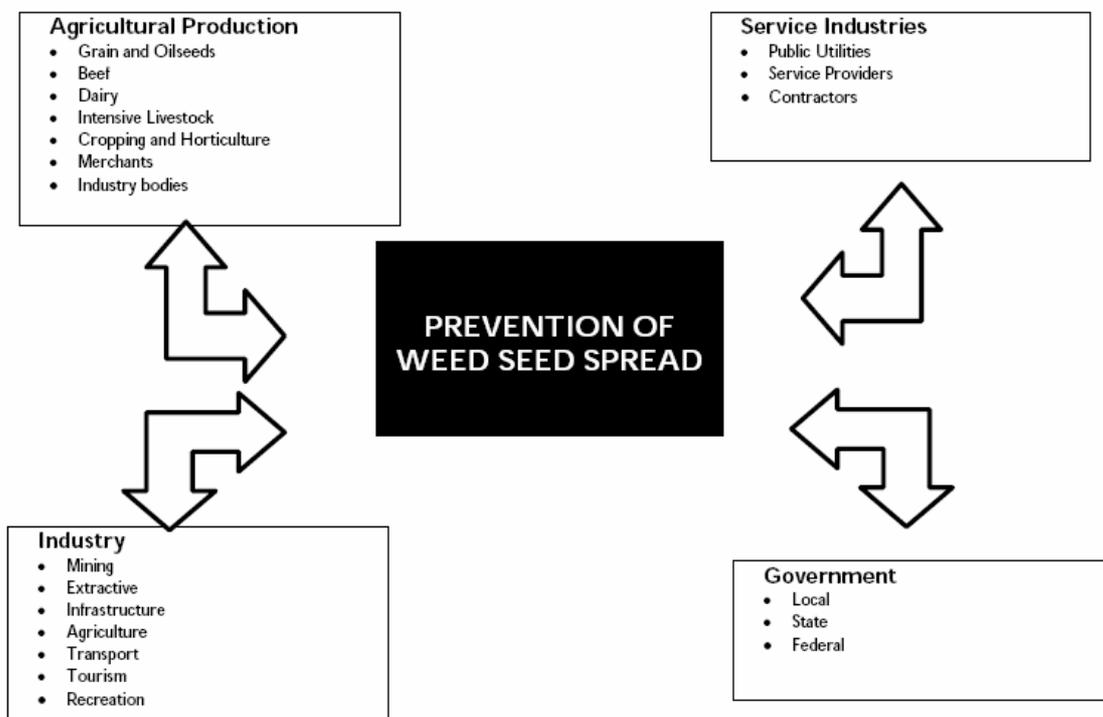
The State strategy and hence the Regional Weed Spread Prevention Strategy Management Actions endeavors to address the following:

1. To raise the awareness of personnel in relation to the problems and implications associated with declared plant infestations and outbreaks; and
2. To develop competency standards for personnel in relation to the following actions:
  - increase knowledge of declared plants present in work area/district;
  - be able to identify declared plants at various growth stages;
  - map the distribution of high priority declared plant infestations;



- report new outbreaks to works supervisor/weed officers;
- develop the capacity to record or map new outbreaks;
- increase knowledge of appropriate control methods, registered chemicals and rates of application to control declared plants;
- implement control programs to eradicate isolated outbreaks in project area;
- increase knowledge of the various ways weed seeds can spread; and
- ensure that activities that involve earth works, human movement/ activities, movement of machinery, equipment and materials (including contaminated grass seed), refuse disposal, slashing/mowing and cultivation are taken into consideration during development works, operations and site regeneration (DNR, 2000).

3. To align the efforts of all stakeholders in the FNQROC member council area (Figure 5).



**Figure 5: Industry and other organisations required for the development of FNQ Regional Weed Spread Prevention Actions to reduce the potential for weed seed spread into and across Far North Queensland (Modified from DNR, 2000:2)**

## 11. Action Plan

The Action Plan below describes the outcomes and management actions seen as necessary to help achieve each of the Strategy's six goals.

The plan suggests not only local government responsibilities but others who are regionally responsible. Also included is a time line for completion. Existing weed spread materials and / or their source to support the implementation of the actions by those responsible is provided in the far right column of the following tables (expanded as Appendix 1 - Existing weed spread materials and / or their source to support the implementation of the actions by those responsible).

**Table 2: Regional Weed Spread Prevention Action Plan**

<b>I. Support and adhere to legislation and Policies (Goals 1 and 6 – QWSPS)</b>				
<b>Outcome</b>	<b>Action</b>	<b>Responsibility</b>	<b>Completion</b>	<b>Existing materials / tools to support Actions</b>
1.1 Weed Spread provisions of the <i>Land Protection (Pest and Stock Route Management) Act 2002</i> and other relevant legislation are complied with.	1.1.1 Promote current legislation that impacts on weed seed spread at regional and local pest management forums i.e. PPAC, PAF and LG working groups	ü DPI&F Biosecurity Queensland	<b>Annually / or as required</b>	<i>Land Protection Act 2002</i>
	1.1.2 Promote legislation that impact on construction and development practices, through regional industry forums and local pest management forums	ü DPI&F Biosecurity Queensland	<b>Annually / or as required</b>	<i>Environmental Protection Act 1994</i>
	1.1.3 Promote legislation that impacts on the removal, containment and disposal of potentially contaminated materials.	ü DPI&F Biosecurity Queensland ü LG's ü Terrain NRM	<b>Annually</b>	<i>Land Protection Act 2002</i> Section 45
1.2 Audit existing and develop stronger relevant legislation	1.2.1 Engage land managers to identify weaknesses in current legislation.	ü DPI&F Biosecurity Queensland ü FNQROC	<b>Annually</b>	Other relevant state and federal legislation
	1.2.2 Promote legislative requirements that impact on infrastructure development	ü DPI&F Biosecurity Queensland ü LG's ü Terrain NRM	<b>Annually</b>	<i>Land Protection Act 2002</i> and <i>Environmental Protection Act 1994</i>
	1.2.3 Lobby to strengthen legislation	ü FNQROC ü Terrain NRM	<b>Annually</b>	Other relevant state and federal legislation
1.3 Awareness of policies and Codes of Practice in relation to weed spread prevention in FNQ	1.3.1 Identify and promote current Codes of Practices and Industry Policies and Protocols.	ü DPI&F Biosecurity Queensland ü LG's ü Terrain NRM ü All land managers	<b>As developed</b>	e.g. FNQROC Local Government Disaster Management Weed Spread Prevention code of practice

<b>II. Raise Awareness, Motivate and Educate (Goal 2 – QWSPS)</b>				
<b>Outcome</b>	<b>Action</b>	<b>Responsibility</b>	<b>Completion</b>	<b>Existing materials / tools to support Actions</b>
2.1 A greater regional awareness and understanding of weed spread issues across the community	2.1.1 Develop weed spread industry engagement plans and industry contact lists	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü LG's</li> <li>ü Terrain NRM</li> </ul>	2008	
	2.1.2 Develop a specific weed/s communication plan or part within that coordinates education and awareness of weed spread issues at catchments / local area level	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü Terrain NRM</li> <li>ü FNQROC</li> </ul>	2008	
	2.1.3 Provide timely media support materials for regional communication activities	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü LG's</li> </ul>	Annually	
	2.1.4 Create / circulate awareness newsletters and publications that includes Priority Weeds Identification and Pest Alerts	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> </ul>	Ongoing	
	2.1.5 Incorporate weed spread principle during weed buster week	<ul style="list-style-type: none"> <li>ü LG's</li> <li>ü DPI&amp;F Biosecurity Queensland</li> </ul>	Annually	
	2.1.6 Publicise research findings which impact on weed seed spread and prevention	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> </ul>	Ongoing	
	2.1.7 Promote "Buyer Aware" programs	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü LG's</li> </ul>	Ongoing	Weed Hygiene Declaration
2.2 A greater motivation for machinery / vehicle hygiene and weed prevention in industry and government	2.2.1 Provide training for greater understanding Legislative obligations and regional priorities	<ul style="list-style-type: none"> <li>ü LGs</li> <li>ü Industry</li> <li>ü All agencies involved in weed management</li> </ul>	Ongoing with all new 'on ground' personnel	The Regional Weed Spread Prevention Strategy
	2.2.2 Include weed spread prevention measures such as hygiene best practices in industry workplace induction	<ul style="list-style-type: none"> <li>ü LGs</li> <li>ü Industry</li> <li>ü All agencies involved in weed management</li> </ul>	Ongoing with all new 'on ground' personnel	Four Tropical Weeds Eradication Program PowerPoint presentation
2.3 A greater education / capacity to identify priority weeds and prevent spread by LG, agency and industry personnel.	2.3.1 Provide weed identification training and tools	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü LG's</li> </ul>	Annually	QPWS Glove Box Preventing the spread of weed Card
	2.3.2 Attend training and utilise weed identification tools	<ul style="list-style-type: none"> <li>ü All land managers</li> </ul>	2008	FNQ Local Council WEEDeck & Priority Weeds CD
2.4 Community know location of existing clean down facilities to encourage vehicle hygiene practices	2.4.1 Current clean down facility locations promoted	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü LG's</li> </ul>	2008	Newspaper advertisements / Media Releases

<b>III. Improve Mapping of Weed Infestations, Pathways and Resilient Landscapes (Goal 3 – QWSPS)</b>				
<b>Outcome</b>	<b>Action</b>	<b>Responsibility</b>	<b>Completion</b>	<b>Existing materials / tools to support Actions</b>
3.1 Improved data collection to provide more accurate mapping	3.1.1 Adopt pest weed mapping techniques to ensure efficient and effective data capture	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü Terrain NRM</li> <li>ü LG's</li> <li>ü Industry</li> <li>ü All agencies involved in weed management</li> </ul>	2008	GBM Mobile Software and PDA / Palm Pilot hardware  Pest Info Software
3.2 Improved consistency of data collection across region	3.2.1 Develop regional data attribute templates	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü LG's</li> <li>ü All agencies involved in weed management</li> </ul>	2008	Pest Info Templates  GBM Mobile Templates
3.3 Improved centralised data collection	3.3.1 Promote sharing of resources and information	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü LG's</li> </ul>	On-going	Pest Info
	3.3.2 Develop regional survey to assist with the collection	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü Terrain NRM</li> <li>ü LG's</li> </ul>	2008	
	3.3.3 Provide appropriate training to staff on data collection, collation and retrieval	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü Terrain NRM</li> <li>ü LG's</li> </ul>	2008	
	3.3.4 Develop data Sharing agreements	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü Terrain NRM</li> <li>ü LG's</li> </ul>	2008	
	3.3.6 Collate and distribute regional maps, highlighting containment lines	<ul style="list-style-type: none"> <li>ü Terrain NRM</li> <li>ü FNQROC</li> <li>ü LG's</li> </ul>	2008	
3.4 Identify and protect resilient landscapes / Clean areas	3.4.1 Audit the regions of Far North Queensland for current resilient Landscapes free of weed infestations	<ul style="list-style-type: none"> <li>ü Terrain NRM</li> </ul>	December 2008	
3.5 Containment lines for aquatic weeds	3.5.1 Develop maps of infestations along regional waterways	<ul style="list-style-type: none"> <li>ü Terrain NRM</li> <li>ü FNQROC</li> <li>ü LG's</li> </ul>	December 2008	

<b>IV. Develop Practical Applications (Goal 4 – QWSPS)</b>				
<b>Outcome</b>	<b>Action</b>	<b>Responsibility</b>	<b>Completion</b>	<b>Existing materials / tools to support Actions</b>
4.1 Industry and agency specific codes of practice are developed to ensure uniformity	4.1.2 A regional Code of Practice developed for disaster management focusing on practical applications to minimise weed seed spread	ü FNQROC	Completed	FNQROC Local Government Disaster Management Weed Spread Prevention code of practice
	4.1.3 Encourage seed Industry Association of Australia National Code of Practice for Labeling and Marketing of Seed for Sowing	ü DPI&F Biosecurity Queensland	2008	
	4.1.4 Best practice manual for seed and stock transport	ü DPI&F Biosecurity Queensland	2008	
4.2 Infrastructure designs are developed with consideration to current industry activities within shires	4.2.1 Research portable clean down facility design	ü Terrain NRM ü FNQROC ü LG's ü DPI&F Biosecurity Queensland	Completed	
	4.2.3 Research effectiveness of current and new facilities	ü DPI&F Biosecurity Queensland ü LG's	Ongoing	
4.3 Identified regional locations for wash down facilities	4.3.1 Develop and agree to regional criteria to determine strategic location of Clean down facilities.	ü FNQROC ü LG's ü DPI&F Biosecurity Queensland	2008	FNQ priority weeds list
4.4 An improved use of alternative clean down equipment other than wash down where possible	4.4.1 Promote alternative clean down equipment other than water resourced facilities where possible	ü LG's ü DPI&F Biosecurity Queensland	2008	e.g. Vacuum and broom
	4.4.2 Vehicle modification guidelines utilised	ü All land managers	2008	
	4.4.3 Promote the use of existing washdown facilities	ü All land managers	<b>ongoing</b>	
4.5 Plans are developed and implemented	4.5.1 Prevention is included as a requirement of all property pest management plans	ü All land managers	<b>ongoing</b>	
4.6 All construction and development activities comply to a code of practice with a focus on specific targets within activity areas	4.6.1 Weed Spread Prevention is incorporated as a mandatory component of all construction and land development activities	ü LG's	<b>2008</b>	
4.7 Vendor declarations utilised	4.7.1 Vendor declarations, written notices and third party	ü LG's ü DPI&F Biosecurity	2008	

	machinery inspections are promoted and templates provided to ensure consistency with documentation	<ul style="list-style-type: none"> <li>ü Queensland</li> <li>ü All land managers</li> </ul>		
4.8 Increase infrastructure in FNQROC area	4.8.1 Trial Mobile Clean Down facilities in the north, south and west of the FNQROC area	<ul style="list-style-type: none"> <li>ü LG's</li> <li>ü All land managers</li> </ul>	2008	Portable clean down facility
4.9 Best practice models for resilient landscapes	4.9.1 Develop a best practice model for both natural and agricultural resilient landscapes	<ul style="list-style-type: none"> <li>ü Terrain NRM</li> <li>ü LG's</li> </ul>	2008	

**V. Integrate the approach towards pest spread prevention from all Government Agencies, Landholders, Community Groups, Industry Groups and the general public (Goal 5 – QWSPS)**

<b>Outcome</b>	<b>Action</b>	<b>Responsibility</b>	<b>Completion</b>	<b>Existing materials / tools to support Actions</b>
5.1 Infrastructure sharing and maintenance	5.1.1 Develop agreements for infrastructure sharing and maintenance	<ul style="list-style-type: none"> <li>ü FNQROC</li> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü Industry and other agencies</li> </ul>		
5.2 Community and industry participate in on-ground projects	5.2.1 Establish regional weed spread working group to encourage effective communication between all stakeholders	<ul style="list-style-type: none"> <li>ü FNQROC</li> </ul>	Completed	Weed Spread Prevention Working Group formed March 2007 – RPMO facilitates meeting
5.3 Promote early detection utilizing current resources	5.3.1 Utilize Volunteer groups and Weed Spotters networks to assist with early detection programs	<ul style="list-style-type: none"> <li>ü All land managers</li> </ul>	Ongoing	
5.4 Encourage inter and intra-agency projects	5.4.1 Involve all relevant government agencies in the development and participation of on-ground prevention projects	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> </ul>	Ongoing	

<b>VI. Review and Monitoring Activities (Goal 7 – QWSPS)</b>				
<b>Outcome</b>	<b>Action</b>	<b>Responsibility</b>	<b>Completion</b>	<b>Existing materials / tools to support Actions</b>
6.1 Baseline data on weed awareness and weed locations captured	6.1.1 Regional data based established	<ul style="list-style-type: none"> <li>ü Terrain NRM</li> <li>ü FNQROC</li> </ul>	2008	
	6.1.2 Focus group surveys conducted across industry agency and the general community.	<ul style="list-style-type: none"> <li>ü Terrain NRM</li> </ul>	2008	
6.2 The effectiveness of actions in preventing weed spread is monitored and assessed	6.2.1 Develop data recording forms for clean down facilities	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> </ul>	2008	
	6.2.1 Update regional data base and survey focus groups	<ul style="list-style-type: none"> <li>ü Terrain NRM</li> </ul>	On going	
6.3 The strategy actions and responsibility updated	6.3.1 Review of strategy actions	<ul style="list-style-type: none"> <li>ü All</li> </ul>	Annually	
6.4 Effectiveness of clean down facilities known	6.4.1 Audits conducted of facilities within shires and upgrade and repositioning recommended	<ul style="list-style-type: none"> <li>ü DPI&amp;F Biosecurity Queensland</li> <li>ü LG's</li> </ul>	2008	

## References and Further Readings

- § **National Weeds Strategy (1999):** Agriculture and Resource Management Council of Australia and New Zealand, Australia and New Zealand Environment and Conservation Council and Forestry Ministers.
- § **Queensland Weeds Strategy (2002-2006):** Department of Natural Resources and Water
- § **The Queensland Weed Spread Prevention Strategy:** Department of Natural Resources and Water.
- § **The FNQLGPPAC Regional Pest Management Plan 2006**
- § ***The Land Protection (Pest and Stock Route Management) Act 2002***

## Acronyms

<b>AQIS</b>	Australian Quarantine Inspection Service
<b>CoP</b>	Code of Practice
<b>DNR</b>	Department of Natural Resources
<b>DPI&amp;F</b>	Department of Primary Industries and Fisheries
<b>NRM&amp;W</b>	Natural Resources Mines and Water
<b>EPA</b>	Environmental Protection Agency
<b>FNQLGPPAC</b>	Far North Queensland Local Government Pest Plan Advisory Committee
<b>Terrain NRM</b>	Terrain Natural Resource Management
<b>FNQPAF</b>	Far North Queensland Pest Advisory Forum
<b>FNQROC</b>	Far North Queensland Regional Organisation of Councils
<b>GIS</b>	Geographic Information System
<b>ICM</b>	Integrated Catchment Management
<b>Infrastruct</b>	Infrastructure (Clean down Equipment)
<b>LG</b>	Local Government
<b>LGA</b>	Local Government Authority
<b>NRM</b>	Natural Resource Management
<b>NRMW</b>	Natural Resources, Mines & Water
<b>PMP</b>	Pest Management Plan
<b>PMU</b>	Pest Management Unit
<b>QPWS</b>	Queensland Parks and Wildlife
<b>QWSPS</b>	Queensland Weed Spread Prevention Strategy
<b>R &amp; D</b>	Research and Development

<b>VVD</b>	Voluntary Vendor Declaration
<b>WONS</b>	Weeds of National Significance
<b>WRA</b>	Weed Risk assessment
<b>WTMA</b>	Wet Tropics Management Authority

## **Dictionary**

**Pathway** – A conduit such as roads, rivers or stream, wind currents and air by which weed seed or reproductive material parts travel along.

**Mechanism** – the vehicle such as tractor, cattle, pigs, boots by which weed seed or reproductive material travel on.

**Resilient Landscapes** – Areas of land such as rainforest, cane paddocks, road verges that has a strong ability to resist weed incursions through competition for nutrients, water and sunlight.

## Appendix

### Appendix 1: Existing weed spread materials and / or their source to support the implementation of the actions by those responsible.

Existing material / Activities	Developed by Agency / Industry	Created
Eradication Program has developed power point presentation	Four Tropical Weeds Program	April 2007
FNQROC Local Government Disaster Management Weed Spread Prevention code of practice	FNQROC	2008
DRAFT QPWS Glove Box Preventing the spread of weed Card	QPWS	February 2007
GBM Mobile Software	Examin Technology	2005
PDA / Palm Pilot hardware	Many electronic brands: Ipaq, etc	1990's
Main Roads roadside vegetation management Codes of Practice in the wet tropics world heritage area	Main Roads	2002
QPWS Disaster management Plan	QPWS	
Pest Info data attribute template	DPI&F Biosecurity Queensland	
GBM Mobile data attribute template	GBM Mobile	2006
Pest Info Mapping system	DPI&F Biosecurity Queensland	
FNQ Portable clean down facility	FNQROC, Terrain NRM and Queensland Government	2007
Weed Spread Prevention Working Group	RPMO facilitates	March 2007
Queensland Checklist for Clean down procedures	NRMW	July 2000
Queensland Checklist for Inspection Procedures	NRMW	July 2000
Queensland guideline for the construction of Vehicle and Machinery Wash down Facilities	NRMW	July 2000
Slasher Modification	Dept Main Roads and Clifton Shire Council	2006
Brochure – kill the weeds stop the	NRMW	2006



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seeds

Weed Hygiene Declaration	NRMW	2006
Draft Data Sharing Agreement	Terrain NRM and FNQROC	2008

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## Appendix 2: Distribution of the Strategy to regional stakeholders.

In Alphabetical Order

- Q **Banana Growers Association**
- Q **Cane Growers**
- Q **DMR and Roadtek**
- Q **Ergon Energy**
- Q **EPA**
- Q **Exotic fruit growers**
- Q **Terrain NRM Ltd**
- Q **FNQLGPPAC**
- Q **Fruit & Veg Growers Association**
- Q **Indigenous landholders/Managers**
- Q **Landcare & Rivertrust groups**
- Q **Livestock Transport**
- Q **Local Ag Force**
- Q **Local Nursery Industry**
- Q **Powerlink**
- Q **Queensland Rail**
- Q **Sunwater**
- Q **Timber Resource Groups**
- Q **Local Tourism Operators**
- Q **Sunwater**

The strategy is to be email or posted to the above mentioned agency, industry or community group.