

Pest Management Plan 2015-2018



Cairns
Regional
COUNCIL

Cairns Regional Council Pest Management Plan

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EXECUTIVE SUMMARY

The Cairns Regional Council (CRC) Pest Management Plan (PMP) aims to benefit the community through:

- (i) Better use of resources available within the community and Council.
- (ii) Better involvement of the community in pest management.
- (iii) Addressing local government responsibilities under the Land Protection (Pest and Stock Route Management) Act 2002.
- (iv) Providing guidance to Council staff involved in pest management.
- (v) Better coordination between all stakeholders, including integrated catchment management approaches, state-wide land protection strategies and management of conservation areas.
- (vi) Increased Council effectiveness in meeting community needs.
- (vii) Ensuring local government accountability.

The plan identifies the Goal for pest management in the Cairns Regional Council as:

“All stakeholders working together to implement ongoing, coordinated and effective pest management for Cairns Regional Council.”

The following 10 strategic objectives have been developed to assist in achieving the goal:

1. To ensure all stakeholders are strongly committed to implementing effective pest management.
Key Strategies:
 - Seek endorsement of the PMP by the community, industry organisations and agencies.
 - Provide regular opportunities for input, monitoring and review by key stakeholders of pest management in the region (through Pest Management Working Groups and other forums as required).
 - Undertake eradication and control projects in conjunction with other stakeholders.
 - Publicise Council’s commitment to pest management.
 - Ensure stakeholders are aware of their responsibilities.
2. To increase community awareness and understanding of pests, their impact and how to manage them.
Key Strategies:
 - Publicly launch the Pest Management Plan when finalised.
 - Develop a communication plan for the CRC PMP.
 - Educate about the impact of pest plants and animals - e.g. loss of recreational fishing opportunities, especially targeting Landcare and school groups to network with the wider community.
3. To establish a system to identify, map, report and monitor pests.
Key Strategies:
 - Nominate a responsible officer position for pest plant and animal data collection, collation, updating and entry onto Council’s Geographic Information System (GIS).
 - Develop a consistent and reliable GIS-based system of reporting, mapping and updating pests and their distribution in the region.
 - Share GIS data with State government regarding the spread of weeds.
4. To encourage the development of effective pest management plans for both individual properties and the area within Council boundaries.
Key Strategies:
 - Encourage the development of property pest plans.
 - Ensure that priority weed control is included within Environmental Management Plans (EMPs) for CRC- approved developments (conditions of allotment reconfiguration and other like developments).
 - Establish Management Plans that specifically target priority weeds on Council managed land.

5. To gain the financial and human resources necessary for effective pest management.

Key Strategies:

- Submit joint funding applications with Landcare groups / other agencies / industries.
- Cooperate in regional pest management planning initiatives.
- Undertake jointly funded revegetation/weed control projects (system repair).
- Explore Council sought funding opportunities and natural asset management and maintenance within annual budget cycle.
- Encourage participation from all stakeholders and landholders to increase the net effort expended on priority weeds. *“Council helps people help themselves”.*

6. To prevent the introduction of new pests and respond to new incursions.

Key Strategies:

- Promote awareness at all levels of the potential impact of new pests should they be introduced.
- Coordinate pest identification programs with relevant CRC staff.
- Continue to exchange information with stakeholders via the Far North Queensland Regional Organisation of Councils (FNQROC) forum.
- Implement a local “weed watch” list on the Council web site for sleeper weeds, new incursions and regional threats and concerns.
- Implement a local “undesirable plants list” on the Council web site.

7. To manage critical pests, isolated outbreaks of pests and to reduce or contain the extent and impact of other pests.

Key Strategies:

- A range of strategies for each of the priority pest plants and animals is detailed in this document, refer to action plans appendices.

8. To enforce the provisions of the Land Protection (Pest and Stock Route Management) Act 2002 and the Cairns Regional Council Pest Management Plan.

Key Strategies:

- Ensure appropriate officers are issued with delegation of powers.
- Ensure appropriate training is provided to authorised Officers.
- Ensure compliance objectives are aligned with the State and with reasonable objectives.

9. To encourage and support research into more effective control of pests.

Key Strategies:

- Support research into effective control methods for all pest plants and animals. Support other agencies with scientific trials and sampling.
- Investigate the feasibility of non-chemical weed control methods, including revegetation to shade out weeds, steam, flame weeders and other nontoxic control methods.
- Encourage research into biological controls for some of the priority weeds.

10. To provide for the development and training of staff and other stakeholders involved in Pest Management, particularly best practice techniques.

Key Strategies:

- Develop training sessions to improve knowledge and skills of officers and other stakeholders in:
 - Awareness.
 - Identification.
 - Management techniques and base line tickets/qualifications.
 - Legislation.
 - Education.

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1.0 INTRODUCTION

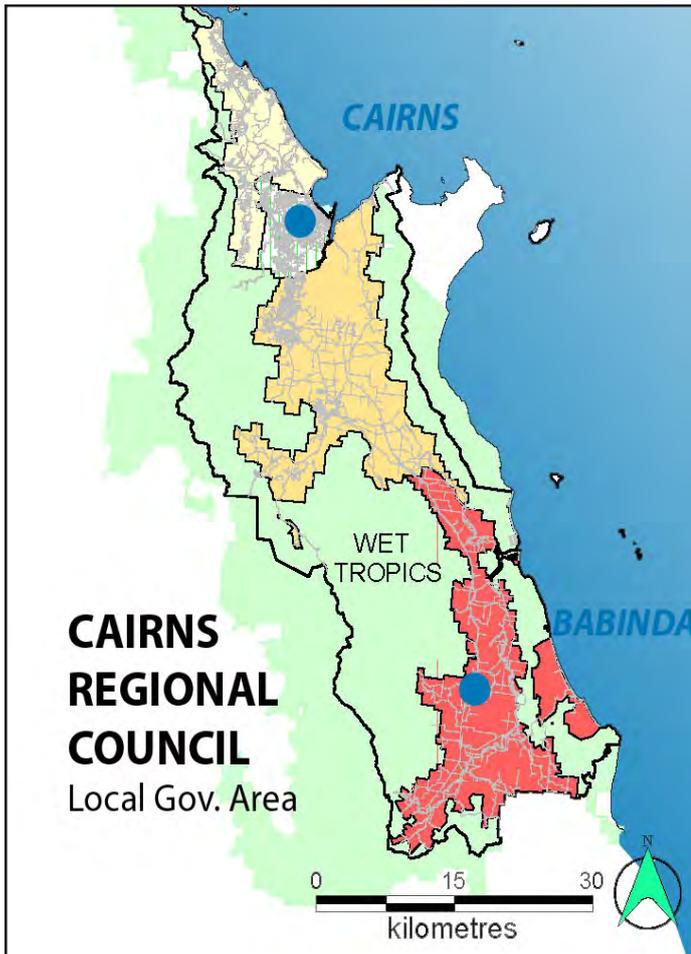


Figure 1: Cairns Regional Council local government area.

The Cairns Regional Council, covers the area from Degarra in the north, to Waugh's Pocket in the south. The area is fringed by Wet Tropics Area to the west and the Great Barrier Reef Marine Park to the East. These iconic resources combined with a strong agricultural sector make the entire region important both nationally and globally.

Given that pests directly threaten biodiversity on a very large scale, there is a great responsibility to understand and mitigate the impacts of pests plants and animals in a context that encompasses a wide range of land uses and expectations.

Rural landholders in the area, have long been acutely aware of the potentially devastating effects of introduced pests on their environment, industries and lifestyle. However, urban residents may not be so personally affected by or aware of pests. Increasingly, the natural environment in and around Cairns is being invaded by exotic plants, many originating from agriculture or escaping from urban gardens. These plants are outcompeting native vegetation, choking waterways and displacing native animals. Both urban and rural residents see the impact of pest animals such as wild pigs and dogs. Pest outbreaks such as the numerous weed incursions, exotic bees and tramp ants highlight the vulnerability of our region to the introduction of pests and the strategic importance of preventing the spread of pests into Australia.

Given the favourable conditions in the Wet Tropics

Bioregion, Cairns Regional Council is faced with a vast pest problem. There exists the ability to grow a huge variety of weedy plants and to harbour large populations of pest animals with its rich habitat, all year round water and cover.

To help our community effectively manage pests and to comply with requirements from the State land protection agency, Cairns City Council recognised the need for a Pest Management Plan (PMP) in October 1997. A Pest Working Group (PWG) was established to fulfil the following role:

- Develop and review a Pest Management Plan for Cairns City Council.
- Identify the roles and responsibilities of all stakeholders.
- Ensure all stakeholders formally accept and acknowledge their roles and responsibilities in relation to the Pest Management Plan.
- Ensure key stakeholders are involved in monitoring, reviewing, and coordinating the implementation of the Pest Management Plan.

At the time of the Plan's development, the PWG comprised of numerous local and State government representatives. The original draft, which was the subject of extensive public consultation was eventually endorsed by Council in February 1999. The Pest Management Plan has been subject to ongoing review every three years. The amalgamation of Cairns City Council and Douglas Shire Council has highlighted the need to update and combine strategies for the future direction of Cairns Regional Council. The current Pest Management Working Group consists of representatives from the following groups:

- Cairns Regional Council (staff and delegated Councillor).
- Department of Agriculture, Fisheries and Forestry (DAFF).
- Department of Environment and Resource Management - (DERM-QPWS).
- Other State agencies such as Queensland Rail, Ergon Energy Queensland Health, Traffic and Main Roads.
- Industry and Agricultural organisations.
- Indigenous organisations.

Refer also to Appendix B (page 37) for extended list of stakeholders.

In accordance with the Land Protection (Pest and Stock Route Management) Act 2002 (LP Act), the following changes have occurred:

- Representatives from government departments are required to attend if requested;
- the PMP can be revised every four years with a review annually at least three months before the start of each financial year; and
- the Minister will consider the draft plan and if satisfied, will advise Council that it may, by resolution, adopt the plan. Prior to the commencement of this process, the Act requires that a statutory period of public consultation must occur for 28 days, whereby Council is to consider written submissions.

2.0 BACKGROUND

2.1 LAND MANAGEMENT IN CAIRNS REGIONAL COUNCIL AREA

Land in the Cairns Regional Council area is primarily managed for one or more of the following range of values:

- Residential / industrial
- Tourism and recreation
- Grazing
- Cropping and horticulture
- Nature Conservation
- Cultural Heritage
- Mining

The pest plants and animals that are present in the region are seen to be more or less of a threat depending on the primary values for which a landholder is managing the land. For example, *Hymenachne* may be a useful pasture plant for the cattle industry but is a serious threat to nature conservation and sugar-growing areas. Blue trumpet vine is an attractive vine, but easily gets out of control in a home garden, spreads rapidly and chokes out native vegetation.

The PWG considered all pests in relation to the range of land management priorities in the Cairns Regional Council area. The challenge in the development of the PMP is to balance the needs of rural land uses with those expectations from other residents and the growing concern for natural resources within the community. When conflicting needs were evident, recommendations were made based on knowledge of the pest's ecology, invasion potential, control methods available and other factors, while keeping in mind the need for long-term sustainability of the range of land uses in the Cairns Regional Council. Some weeds are not yet present in the area but are considered important for their huge potential impact on the natural or productive values in our region. The cost of keeping these pests out of the region must be taken into account. This redraft of the PMP has seen the introduction of a more intensive prioritisation process. The pest prioritisation process is described further in *Objective 7 (page 21)*.

2.2 LEGISLATIVE REQUIREMENTS REGARDING PESTS

At the time of reviewing and updating Council's PMP, the State government was undergoing a rework of its legislation and it is expected that the "Draft Biosecurity Bill" will be in effect by 2015. The Bill will replace a range of existing Acts relevant to pest plants and animals. For the purposes of this Pest Management Plan, the legislation is the Land Protection (Pest and Stock Route Management) Act 2002 (LP Act).

2.2.1 The Land Protection (Pest and Stock Route Management) Act 2002

The Land Protection (Pest and Stock Route Management) Act 2002 provides for the control of declared pest plants and animals and the management of stock routes throughout Queensland. In it, landholders, local governments and the State departments have clearly defined responsibilities.

The functions of the Cairns Regional Council are:

- (a) to ensure that declared pests (Section 36 and 37) are managed within its area in accordance with the LP Act and the principles of pest management;
- (b) to manage the part of the stock route network in the Council area in accordance with the LP Act and the principles of stock route network management; and
- (c) to control the movement of travelling stock on the part of the stock route network in the Council area.

It is noted that the latter two points which are an extract from the Land Protection (Pest and Stock Route Management) Act 2002 (Section 183) do not apply to Cairns Regional Council, as there are no designated stock routes located in this Local Government Area (LGA).

To fulfil these responsibilities, Council is expected to:

- (a) Control declared plants and animals on land under its control.
- (b) Inspect private property to determine the presence of declared plants and animals.
- (c) Provide advice to landholders on appropriate pest control options.
- (d) Carry out procedures to ensure control of declared pests on private property.

The State government (DAFF) is responsible for:

- (a) Providing technical and management information and staff training to Council personnel.
- (b) Controlling pests on unallocated State land.
- (c) Ensuring that declared pest plants and animals are controlled on land under the control of other Government Departments; and ensure that Pest Management Plans, as required under the LP Act before Parliament, are developed for these departments.

Landholders must take reasonable steps to keep the following land free from Class 1 and Class 2 pests, unless the owner holds a declared pest permit allowing the pest to be kept on the land.

- (a) The owner's land.
- (b) Unfenced land comprising part of a road or stock route that adjoins or is within the owner's land.
- (c) Other land that is fenced in with the owner's land.
- (d) The bed, banks and water of a watercourse on the owner's land.
- (e) The bed, banks and water to the centre line of a watercourse forming a boundary, or part of a boundary, of the owner's land.

2.2.2 The Queensland Local Government Act 1993

The Queensland Local Government Act 1993 enables Council to make Local Laws. Under this Act, Council can declare pests in addition to those declared under the LP Act. This declaration only applies to the local government area of the declaring Council. A declaration under this Act brings with it the same responsibilities for Council and Landholders in respect to the declared pest as under the LP Act.

2.3 DECLARED PESTS

2.3.1 Declared Plants

A declared pest plant (formerly termed “noxious plant” or “noxious weed”) describes a plant that has been declared a pest. Under the LP Act, a declared pest means a live animal or plant stated as a declared pest under section 37 and 37 (2) and includes reproductive material of the animal or plant. Declaration is used as a preventative measure and it is somewhat irrelevant to declare a plant which has already spread to the limit of its habitat.

Declaration imposes legal responsibilities for control. Under the LP Act, all landholders, local governments and State government agencies are required to control declared plants on land under their control.

A list of Queensland’s Class 1, Class 2 and Class 3 declared pests is contained in *Appendix C-E (pages 38-40)*.

The following table briefly describes pest “classes” as defined in the LP Act. “Environmental weed” is a generic term used to describe other, non-declared, exotic species. Environmental weeds are separate from the LP Act and some may be locally declared under Local Laws.

CLASS	DESCRIPTION	EXAMPLE
Class 1 (C1)	A pest that is not commonly present or established in the State; and Has the potential to cause an adverse economic, environmental or social impact in the State, another State or part of the State or another State.	Those animals not listed in Schedule One or Two of the Regulations, and Those plants as listed in Schedule Two - part 1 of the Regulation e.g. Alligator weed (<i>Alternanthera philoxeroides</i>).
Class 2 (C2)	A pest that is established in the State; and Is causing, or has the potential to cause, an adverse economic environmental or social impact in the State, another State or part of the State or another State.	Those animals listed in Schedule Two - part 2 of the Regulation, & Those plants listed in Schedule Two - part 2, e.g. <i>Hymenachne amplexicaulis</i> in the Cairns local government area.
Class 3 (C3)	A pest that is established in the State; and Is causing, or has the potential to cause, an adverse economic environmental or social impact in the State, another State or part of the State or another State.	Those plants listed in Schedule Two - part 3 of the Regulation, e.g. <i>Harungana madagascariensis</i> .
Environmental weed (ENV)	A pest plant not scheduled in the LP Act. They are either declared under Local Law, or considered by the PWG in the PMP as a local pest. These introduced plants are noted to be established or escaped into natural and agricultural settings.	Plants listed in Cairns Regional Council Subordinate Local Law No. 3 (Community and Environmental Management) 2011, e.g. <i>Brillantaisia Lamium</i> . Plants not recommended for planting in the CRC local government area vegetation guidelines. e.g. <i>tripolaris</i> .

Figure 2: Definitions of pest classes.

2.3.2 Declared Animals

Under the Land Protection (Pest and Stock Route Management) Act 2002, several animals have been declared as pests. Such animals represent a threat to agriculture, the environment and/or the land itself. Species are categorised according to the degree of control required, and may be assigned to more than one category. Restrictions are placed on the introduction, keeping and sale of non-native reptiles and mammals.

A list of Class 1 and 2 declared animals and responsible agencies is tabled on page 13. Also refer to extended declared animal list, *Appendix F (page 41)*.

According to the Land Protection (Pest and Stock Route Management) Act 2002, the Governor in Council or the Chief Executive is able to declare animal and plants as follows:

When deciding to declare a pest a class 2 or 3, the governor must have regard to:

- The significance of the animal or plant’s impact or potential impact; and
- The area affected, or likely to be affected, by the impact; and
- The extent to which the animal or plant has spread or is likely to spread.

2.4 EXEMPTIONS

In accordance with the LP Act and the associated regulations (Part 2 (7)(1-8)):

1. Exemptions apply to those declared pests as listed in:
 - a) Schedule 3 - part 1, as they may be kept:
 - i) For performing in a circus
 - ii) By an entity for public education
 - b) Schedule 3 - part 3 may be kept for public display in a magicians magic act.
 - c) Schedule 3 - part 4 may be kept by a government entity, local government or tertiary institution for scientific research
 - d) Schedule 3 - part 5 may be kept:
 - i) For display in a theme park, wildlife park or zoo; or
 - ii) filming the pest for a film or television production
 - e) Schedule 3 - part 6 may be kept for commercial use;
2. Any declared pest may be kept by a government entity or local government for maintaining populations of biological control organisms for declared pests.

2.5 PEST MANAGEMENT PLANNING

A program to stop land degradation by pest invasion is a major undertaking. It cannot be achieved simply by allocating finance in the annual budget. Without setting goals and defining the means of achieving them, any gains will be due to good luck rather than good management.

When clear guidelines are not established, progress on pest management is continually set back by staff having to refer back to Council for decisions or instructions. This Pest Management Plan forms a policy document which in effect is a reference tool for field and administrative staff, as well as a guide for the complementary involvement of ratepayers in a coordinated approach to pest management across the region.

This Pest Management Plan provides the following benefits:

- Better use of resources available within the community and Council.
- Improved community appreciation of Council's efforts.
- Better basis for making resource allocations.
- Addresses local government responsibilities under the Land Protection (Pest and Stock Route Management) Act 2002.
- Evidence of local government accountability.
- Increased Council effectiveness in meeting community needs.
- Better coordination between all stakeholders, including integrated catchment management approaches, state-wide land protection strategies and management of conservation areas.

2.6 ROLE OF THE PEST WORKING GROUP

The composition of the PWG is described in the introduction to this Plan. Its role is:

- To be involved in regular monitoring, review, and coordination of the Pest Management Plan and its implementation - meetings as outlined in Section 33 of the Act.
- To acknowledge the roles and responsibilities of all stakeholders.
- To ensure all stakeholders formally accept and acknowledge their roles and responsibilities in relation to the Pest Management Plan.

2.7 ISSUING OF NOTICES

Under Section 78 of the Land Protection (Pest and Stock Route Management) Act 2002, the Cairns Regional Council may serve a 'Pest Control Notice' in writing to an owner and/or occupier of land to comply with the owner's obligations relating to declared plants and declared animals on, or on any specified part of, the land (see Section 77), and specify a 'Compliance Period' for the person to carry out the required control.

In implementing its Pest Management Plan, the intention of Cairns Regional Council is to work with the landholder in a cooperative and supportive way, to consider the particular situation of each landholder and to rectify the pest problem. Notices under the LP Act will be issued on defaulting landholders after proper consultation, in accordance with management targets, only if all options for control have been discussed and considered.

Property inspections will be the responsibility of Council and DAFF. Several Council Officers have been appointed as Authorised Persons under Chapter 7, Part 2 of the LP Act. The powers of an Authorised Person and Inspectors (including entry and seizure) are detailed in Sections 251 - 289 of the LP Act.

Prior to the issuing of a Section 78 Pest Control Notice, Council Officers are to consider the correct time for the Notice to be served on the Landholder, the area of land and density of the infestation that the notice is to cover, and the expected operation and financial resources required to undertake the work designated within the Notice.

A Council authorised person is to accompany the Landholder on an inspection of the designated Notice area to ascertain control levels immediately after the notice expires. If the Landholder's activity does not comply with the Notice requirements, the authorised person is to prepare a report to the Chief Executive Officer (CEO) or delegated officer detailing their findings, the Landholders comments and their recommendation for further action. The CEO or delegated officer is to implement further action under Section 80 of the LP Act.

Extensions of time (Section 79) can be given when a Landholder has made a genuine attempt to control the situation. The 'extension of time' will be granted by the CEO or delegated Officer only on advice from the Council's authorised person and after consultation with the Landholder.

A cover letter and map of the property showing infestations and area to be controlled should be attached to the Section 78 Notice. The DAFF Land Protection department uses a standard letter format for this purpose. This standard letter has been used to model Council's notification letter.

Council's letter describes exactly where, what and how to control the relevant declared pest. Copies of Section 78 Notice and the Council's standard letter to accompany it are provided in Appendix 1 and 2. Notices can also be issued by CRC under the Local Government Act (1993) for locally declared pests. The public is also able to notify the Council of declared species by filling out a 'Pest Notification Form' or by utilising Councils "Customer Request Management" system via phone, letter or web site.

If the infested land is owned or managed by a State government agency, Council will refer the matter to the DAFF who are authorised to take action.

3.0 CURRENT SITUATION WITH PESTS

3.1 PEST PLANTS

Over 500 exotic plant species occur in the region, with a trend for exponential increase of those being introduced (WTMA, 2001). 80 introduced plant species were identified by the original Pest Management Working Group as current or potential pests to one or more of the various land uses in the region. During each year it is expected that the focus of pest management may vary. Through the process of this redraft the following updates were noted:

- 108 species were tabled for prioritisation.
- 28 new species were included since the previous plan.
- 4 new Class 1 Species were included.
- 7 new Class 2 Species were included.
- 156 lower level species were included with the prioritisation list and will be considered undesirable species.

Resulting from the large and expanding list of pest plants in the region, species-based prioritisation is an important tool in setting informed and achievable management goals. Cairns Regional Council has prioritised a total of 264 weeds and established a priority list. Due to geographical considerations, this process was conducted separately for areas north and south of Ellis Beach

For extended species list, refer to *Appendix G (page 42)*.

See the following tables for each priority list and refer to *Appendix Action Plans* for detailed action plans relating to these pests.

3.1.1 Cairns Area Priority Weed List

Cairns Area: Ellis Beach to Waugh's Pocket. Stratford Depot and Gordonvale Depot.

#	Species	Common	*New	Class	Wons	Score	Appendix
1	<i>Limnocharis flava</i>	Yellow Sawah Lettuce		C1	4TW	39	S3-4
2	<i>Alternanthera philoxeroides</i>	Alligator Weed		C1	Wons	38	S5-6
3	<i>Hymenachne amplexicaulis</i>	Hymenachne		C2	Wons	36	S7-8
4	<i>Parthenium hysterophorus</i>	Parthenium		C2	Wons	36	S9-10
5	<i>Salvinia molesta</i>	Salvinia/Water Fern		C2	Wons	35	S11-12
6	<i>Chromolaena odorata</i>	Siam weed	*	C1	Siam	33	S13-14
7	<i>Thunbergia grandiflora</i>	Blue Thunbergia		C2	No	33	S15-16
8	<i>Annona glabra</i>	Pond Apple		C2	Wons	32	S17-18
9	<i>Miconia</i> spp.	Miconia		C1	4TW	32	S19-20
10	<i>Pistia stratiotes</i>	Water Lettuce		C2	No	31	S21-22
11	<i>Senna obtusifolia</i> , <i>S. hirsuta</i> and <i>S. tora</i>	Sicklepod		C2	No	29	S23-24
12	<i>Thunbergia laurifolia</i>	Laurel Clock Vine		C1	No	29	S25-26
13	<i>Cabomba caroliniana</i>	Cabomba		C2	Wons	28	S27-28
14	<i>Pueraria montana</i> , var <i>lobata</i>	Kudzu vine	*	C2	No	28	S29-30
15	<i>Mimosa invisa</i>	Giant Sensitive Plant		C2	No	27	S31-32
16	<i>Eichhornia crassipes</i>	Water Hyacinth		C2	No	26	S33-34
17	<i>Neptunia oleracea</i> and <i>N. plena</i>	Water mimosa	*	C1	No	26	S35-36
18	<i>Brillantaisia lamium</i>	Brillantaisia	*	ENV	No	25	S37-38
19	<i>Castilla elastica</i>	Panama Rubber Tree		ENV	No	25	S39-40
20	<i>Cecropia</i> spp.	Mexican bean tree	*	C1	No	25	S41-42
21	<i>Manihot glaziovii</i>	Manihot rubber tree	*	ENV	No	24	NA
22	<i>Rottboellia cochinchinensis</i>	Itch Grass		ENV	No	24	NA
23	<i>Spathodea campanulata</i>	African Tulip Tree		C3	No	24	NA
24	<i>Sphagneticola trilobata</i>	Singapore Daisy		C3	No	23	NA
25	<i>Epipremnum Aureum</i>	Golden Pothos	*	ENV	No	22	NA
26	<i>Hygrophila costata</i>	Hygrophila	*	C1	No	22	NA
27	<i>Leucaena leucocephala</i>	Leucaena		ENV	No	22	NA
28	<i>Senna Alata</i>	Candle bush	*	ENV	No	22	NA
29	<i>Themeda quadrivulus</i>	Grader Grass	*	C2	No	22	NA
30	<i>Momordica charantia</i>	Balsam Pear	*	ENV	No	21	NA
31	<i>Harungana madagascariensis</i>	Harungana		C3	No	21	NA
32	<i>Lantana camara</i>	Lantana		C3	Wons	21	NA
33	<i>Odontonema stricta</i>	Fire spike		ENV	No	21	NA
34	<i>Pennisetum purpureum</i>	Elephant Grass		ENV	No	21	NA
35	<i>Sanchezia parvibracteata</i>	Sanchezia		ENV	No	21	NA
36	<i>Sansevieria trifasciata</i>	Mother-in-laws tongue		ENV	No	21	NA
37	<i>Parmentiera aculeata</i>	Cucumber Tree		ENV	No	20	NA
38	<i>Sporobolus africanus</i>	Parramatta grass	*	C2	No	20	NA
39	<i>Sporobolus fertilis</i>	Giant Parramatta grass	*	C2	No	20	NA
40	<i>Sporobolus jacquemontii</i>	American rat's tail grass	*	C2	No	20	NA

Figure 3: Cairns area priority weed list.

3.2 PEST ANIMALS

It is noted that the ability to control some of the vertebrate pest species is beyond the scope of Cairns Regional Council. Considering limitations or absence of control methods and harbourage in various tenures, the following pest animals receive a level of response from Council:

- Feral pigs.
- Feral cats .
- Feral and wild dogs.
- Feral Deer.

State government agencies manage the following pests under various programs, including:

- Class 1 species.
- Noxious fish.
- Asian honey bees.
- Myrtle Rust.

Other pest animal species may be targeted for control by community groups or private landholders and where applicable, Council will provide assistance where outcomes are considered beneficial. Council will also support research into pest animal species with regards to more effective trapping and control methods. Introduced rats and mice; and mosquitos are subject to Health legislation and will not be dealt with in this pest management planning process.

The following animals are considered to be pests in Queensland and the CRC local government area:

3.2.1 Pest Animal, Pathogens and Fungi List

Common Name	Species	Declared	Legislation
Asian green mussel	<i>Perna viridis</i>	Class 1	<i>Land Protection (Pest & Stock Route Management) Act 2002</i>
Asian honey bee	<i>Apis cerana</i>	Declared	<i>Exotic Diseases in Animals Act 1981</i>
Asian house gecko	<i>Hemidactylus frenatus</i>	No	NA
Cane toad	<i>Bufo marinus</i>	No	NA
Cat (feral)	<i>Felis catus</i>	Class 2	<i>Land Protection (Pest & Stock Route Management) Act 2002</i>
Crazy ant (yellow)	<i>Anoplolepis gracilipes</i>	Class 1	<i>Land Protection (Pest & Stock Route Management) Act 2002</i>
Deer (rusa) (feral)	<i>Cervus timorensis</i>	Class 2	<i>Land Protection (Pest & Stock Route Management) Act 2002</i>
Dingo	<i>Canis familiaris dingo</i>	Class 2	<i>Land Protection (Pest & Stock Route Management) Act 2002</i>
Dog (wild/feral)	<i>Canis familiaris</i>	Class 2	<i>Land Protection (Pest & Stock Route Management) Act 2002</i>
Electric ants	<i>Wasmannia auropunctata</i>	Listed	<i>Plant Protection Act 1989</i>
Exotic pest fish	Various	Noxious	<i>Fisheries Act 1994</i>
Goat (feral)	<i>Capra hircus</i>	Class 2	<i>Land Protection (Pest & Stock Route Management) Act 2002</i>
Pig (feral)	<i>Sus scrofa</i>	Class 2	<i>Land Protection (Pest & Stock Route Management) Act 2002</i>
Fire ants	<i>Solenopsis invicta</i>	Class 1	<i>Land Protection (Pest & Stock Route Management) Act 2002</i>
Horse (feral)	<i>Equus caballus</i>	No	<i>Local Laws</i>
House mouse	<i>Mus domesticus</i>	No	NA
Indian myna	<i>Acridotheres tristis</i>	No	NA
Rabbit	<i>Oryctolagus cuniculus</i>	Class 2	<i>Land Protection (Pest & Stock Route Management) Act 2002</i>
Also:			
Myrtle rust	<i>Puccinia psidii s. l.</i>	Listed	<i>Plant Protection Act 1989</i>

Figure 4: Pest animal list.

3.3 MAPPING OF PRIORITY PESTS

In previous years Councils and State departments have used the 'PestInfo' database which is a State recognised mapping tool. Cairns Regional Council considers the collation of data for this and the development of a CRC database as an important priority in relation to the control and eradication of pest species. Information is being recorded and updated in the following ways:

- MapInfo GIS system as provided by Council;
 - Web-hosted database for control activities and reporting;
 - Grid mapping at 17 km scale provided to DAFF; and
 - Grid mapping at 1 km scale maintained internally.
- Examples are provided in *Appendix (Action plans)*.

Council values its historical and annual updates of GIS point and polygon data. However, recent technological changes have seen a vast improvement in modern data capture and reporting. This information proves valuable in reporting, assessing and researching effort and formulating strategic approaches to various incursions. Multiple visits and evaluation of data is a great advance from previously GIS dominated record keeping. With the web server based software, Council can provide valuable data across all levels:

- Depot level- site visits and work programs are automated and improved for on ground staff;
- Council level- management and monthly reporting are fully automated and comprehensive;
- Data can be presented to PWG to gauge strategic performance;
- Regionally- regional effort and data sharing agreements can be met;
- State- effort by species can be provided on request for Pest Management Planning and reporting and to contribute to research; and
- Chemical tracking and auditing.

4.0 GOALS AND OBJECTIVES

The goal statement for Pest Management in Cairns Regional Council is:

“All stakeholders are working together to implement an ongoing, coordinated and effective pest management plan for the Cairns Regional Council”.

The Objectives are:

1. To ensure all stakeholders are strongly committed to implementing effective pest management.
2. To increase community awareness and understanding of pests, their impact and how to manage them.
3. To establish a system to identify, map, report and monitor pests.
4. To encourage the development of effective pest management plans for both individual properties and the area within Council boundaries.
5. To gain the financial and human resources necessary for effective pest management.
6. To prevent the introduction of new pests.
7. To manage critical pests and isolated outbreaks of pests, and to reduce or contain the extent and impact of other pests.
8. To enforce the provisions of the Land Protection (Pest and Stock Route Management) Act 2002 and the Cairns Regional Council Pest Management Plan as appropriate.
9. To encourage and support research into more effective controls on pests.
10. To provide for the development and training of staff and other stakeholders involved in pest management, particularly best practice techniques.

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5.0 STRATEGIES

Objective 1

“To ensure all stakeholders are strongly committed to implementing effective pest management”.

	Action	Agency	When	Performance Indicator
1	Educate the wider community about the threat and costs of weeds and pest animals (as per Objective 2)	CRC DAFF	On Going	As per Objective 2. This plan and action plans widely distributed and available.
2	Gain State and local government endorsement of this plan.	CRC DAFF	2014	Plan fully endorsed and ratified.
3	On endorsement, printed copies of the PMP are distributed to *stakeholders. PDF copies on Council's Web site	CRC	2015	Hard copies distributed. PDFs available on the CRC Web site.
4	Extension material available to *stakeholders.	CRC DAFF	On going	Extension material available on Web site. Printed extension available at Depots.
5	Provide assistance with pest management planning, surveys and access to extension to *stakeholders on request.	CRC	As required	Planning assistance extended on request: Private land, agriculture, developments and earthworks projects.
6	Provide draft PMP for consultation and invite *stakeholders to attend meetings as required by LP Act.	CRC	2015	Meetings held and consultation process followed.
7	Support State and Commonwealth pest management projects.	CRC DAFF DERM	On going	State/Commonwealth projects supported.
8	Support other *stakeholder projects where they align with the PMP.	CRC Landcare Terrain	On going	Stakeholders, community groups supported.
9	Utilise compliance where necessary in line with principals in the Action Plans.	CRC	As required	Compliance exercised when necessary to achieve actions within the PMP.
10	Maintain interaction with *stakeholders by PWG, FNQROC and community group meetings.	CRC	Quarterly	Quarterly FNQROC meetings attended. Additional PWG group established on request. Community group meetings attended on request.
11	Share GIS data as per data share agreements and objective 3.	CRC	On request	Data shared freely as per data share agreements and privacy legislation.
12	Conduct task forces, cross boundary projects and training.	CRC FNQROC	As required	FNQROC field days and task forces supported. Aligned projects carried out as necessary.
13	Maintain and use register of stakeholders and their contacts.	CRC	2015	Register created and utilise with bulk emails.
14	Conduct regular PWG updates.	*Stakeholders	Annually	Meetings held and updates provided.

Figure 5: Action table- stakeholder involvement

* Refer to stakeholder list- *Appendix B (page 37)*

Objective 2

“To increase community awareness and understanding of pests, their impact and how to manage them”.

	Action	Agency	When	Performance Indicator
1	Provide draft PMP for PWG and public consultation/submissions.	CRC	2015	Draft posted on CRC web site. Submissions received.
2	Submit PMP for State Interest checks and consideration by Minister.	CRC	2015	Draft submitted.
3	Submit PMP for adoption by Council.	CRC	2015	Draft Submitted. Grid maps and action plans completed and appended.
4	Publish PMP and action plans on CRC Web site. Create linkages to FNQROC web site and DAFF fact sheets.	CRC	2015	Web page updated.
5	Engage CRC media department to promote and launch the latest PMP.	CRC	2015	Launch undertaken. Promotion of web site improvements and fact sheets.
6	Promote PMP amongst stakeholders as per objective 1.	CRC	2015	Formal launch undertaken. Promotion of web site improvements and fact sheets.
7	Educate other CRC departments. Continue weed awareness and identification training sessions.	CRC	On going. As needed	Training and resources provided to; Works and services, Cairns Water, Botanical and Parks and Gardens.
8	Educate schools, community and industry groups. Conduct weed awareness and identification training sessions and other engagement.	CRC	On going	Presentations, talks and training sessions provided. Reef guardian program supported.
9	Educate the public by way of local meetings as needed, field days and shows/festivals.	CRC DAFF	On going	Meetings, field days, shows and festivals are attended. DAFF supported as needed.
10	Continue to support FNQROC public forum. (PAF). Conduct local PWG meetings as local needs/issues arise.	CRC FNQROC DAFF	Quarterly	Meetings attended regularly. Local promotion extended to stakeholders.
11	Support CRC Development Assessment Environmental Officers. Promote pest issues and undesirable species to planning staff.	CRC	On going	Vegetation plans are reviewed by informed staff. Undesirable species are not used. Developments meet legislative requirements with regards to pests.
12	Extension material available at Mossman, Stratford & Gordonvale Depots. Extension available on Web site. Public access to LMOs via customer request service.	CRC DAFF	On going	Extension material stocked and provided as necessary. Customer request management system maintained as per corporate policy and deadlines.
13	Create new fact sheets relevant to Cairns Regional Council area. Publish these on the web site.	CRC	2015-2018	Local Fact sheet series completed: Aquatics Class 1 Pests Class 2 Pests Class 3 Pests Environmental Weeds Weed Hygiene and disposal.
14	Publicise new pest infestations via stakeholder list and internal departments.	CRC	On going	New infestations are promptly notified across CRC and stakeholders. Email circulars are utilised.
15	Maintain and use register of stakeholders as per Objective 1. See Appendix B, page 37.	CRC	Annual	Register maintained and utilised.

Figure 6: Action table- increasing community awareness.

Objective 3

“To establish a system to identify, map, report and monitor pests”.

	Action	Agency	When	Performance Indicator
1	Maintain consistent and reliable *GIS system of mapping pests. Point, polygon and Grid mapping.	CRC	On going	Maps are up to date. Annual surveys are uploaded and accessible where necessary. GIS layers are maintained and shared with key stakeholders using MapInfo and *Arcview
2	GIS data is shared freely between stakeholders- respecting data share agreements and privacy implications.		On going	Signatories of data share agreement are sharing GIS data freely. All stakeholders and public have access to 1km grid maps for priority Pests.
3	Contribute feedback to regional reporting hub via Landman Server.	CRC	On going	PMP priorities and effort data available to regional bodies and funding groups.
4	Landman Server reports produced and reviewed monthly.	CRC	Monthly	Submitted to applicable recipients i.e. WTMA, DAFF, CRC environmental scorecard and managers.
5	1km Grid maps are reviewed constantly. New sightings are updated and **published annually.	CRC DAFF	Annually	Grid maps are up to date and latest versions published on the CRC web site.
6	DAFF Annual Pest Distribution Survey (APDS) supported.	CRC DAFF	Annually	Grid maps are up to date and latest versions published on the DAFF web site.
7	Pest data is received from the public, other agencies and stakeholders. Where necessary, this information is uploaded to GIS server or distributed to stakeholders.	CRC	As required	Pests are recorded via: Council's customer request service. Landman Server data collected by staff. Stakeholder reports/shared GIS data. PWG and FNQROC meetings.
8	Produce annual reports as needed. Report by: effort, species and hectares, and animal captures	CRC	Annually	State of the Environment, Reef Guard, Env. Score card, CRC Corporate Plan, WTMA reports etc.
9	Maintain access to grid maps contained within PMP action plans	CRC	Annually	Maps available on CRC web site
10	Accurate data provided to State Land Protection Officers on request. Chemical use, effort hectares species.	CRC	On request	Data provided on request.
11	GIS layer table attributes aligned with State Pest Attribute Standard (SPAS) minimum requirement.	CRC DAFF	On going	MapInfo Table structure aligned with SPAS.

Figure 7: Action table- map, report and monitor pests.

*CRC uses MapInfo GIS. When requested, stakeholders may be provided compatible converted files.

** Grid maps are provided in a static format such as pdf or jpg.

Objective 4

“To encourage the development of effective pest management plans for both individual properties and the area within Council boundaries”.

	Action	Agency	When	Performance Indicator
1	Promote the continued input of the PWG and FNQROC.	CRC	Quarterly	Input provided.
2	Work with adjoining Councils and FNQROC members to achieve strategic regional and State targets.	CRC FNQROC DAFF	As required	Joint projects undertaken. Task forces undertaken where priorities align with PMP. Task forces carried out where greater resources are needed on priority weeds.
3	Encourage the development of property pest management plans on private land as best practice tool, also as compliance specified action when needed.	CRC	On going As required	Property pest management plans are developed on private land. Plans are required with compliance notifications.
4	Seek property pest management plans where private landholders benefit from external funding.	CRC	As required	All externally funded projects have property pest management plans where priority pests are identified.
5	Ensure development assessments address pest management issues. Property pest management plans are developed during the early stages of development as per Objective 2/11.	CRC	On going	Property plans are adopted where new developments are impacted by priority pests. Wash down facilities are required when weed spread is an identified concern. Planners have access to weed mapping layers.
6	Progressively and proactively develop property pest management plans on Council controlled land and leases. Pest Management Plans are developed on Council land where class 1 and 2 weeds are present.	CRC DAFF	On going	Plans are developed for water assets, parks and gardens etc. Control strategies are in place and funded by Council departments. i.e. Infrastructure Management, Cairns Water and Waste.
7	Provide input and synergy with Infrastructure Management-maintenance and projects. Inspect riparian/significant areas before earthworks projects.	CRC	As required	Develop plans as requested by internal departments. Regular meeting with key Officers including Environmental Officers. Control strategies are in place and funded by Council departments. i.e. Infrastructure Management, Cairns Water.
8	Provide priority resources to Council controlled land for pest management projects and core business.	CRC	On going	Council controlled land is surveyed. Council controlled land is treated for Class 1 and Class 2 weeds in line the priorities in the PMP.
9	Proactively issue industry groups and agricultural landholders with information letters regarding emerging weeds.	CRC	As required	Letters, extension material and assistance provided.

Figure 8: Action table- encouraging pest management planning.

Objective 5

“To gain the financial and human resources necessary for effective pest management”.

	Action	Agency	When	Performance Indicator
1	Aim to increase core operational budget to effectively implement action plans within this PMP.	CRC	Annually	Core activities are suitably resourced. Objectives within Action plans are carried out.
2	Projects are identified and presented with annual budget cycle. Pest inspections and responses to priority weeds is a part of capital works project planning and funding.	CRC	Annually	Internal funding increased. Asset management principals applied to Council's natural assets.
3	Demonstrate the cost benefits of early repair and protection of natural assets. Create case studies from Landman Server data, and publicise.	CRC	2015-2016	Understanding of Natural Asset management concept by Managers and Councillors. Preventative works funded by Council on Council land.
4	Support externally funded projects that align with CRC Pest Management Plan.	CRC	On going	Strategic projects are undertaken. Weed priorities aligned with the PMP.
5	Ensure that priority weed projects are funded. Ensure that system repair projects align with pest management outcomes where applicable and do not adversely affect Pest Management resources.	CRC Terrain DAFF	On going	Adequate funding is available, funding applications made by Council if necessary. Only strategic projects are undertaken. Weed priorities aligned with the PMP.
6	NAM Staff are provided with training, resources and access to databases, books, herbarium and internet.	CRC	On going	Access and material provided.
7	Casual and temporary staff are recruited quickly to carry out new externally funded projects.	CRC	As required	Casuals recruited. External projects do not adversely affect core business commitments.
8	Utilise internal on ground staff from Botanical Gardens, Parks and Gardens to report and control priority weeds on land under their own maintenance.	CRC	As required	Staff training provided and best practice information and technical assistance extended to all CRC field staff. Collaborative projects undertaken.
9	Ensure adequate staffing to carry out actions in externally funded projects.	CRC	As required	Casuals recruited. External projects do not have an adverse effect on core business commitments.
10	Encourage system repair projects within Council and external funded projects	CRC Terrain DAFF	On going	Rock work reveg. and landholder input. Linkage to NRM/Biodiversity Strategies. Aligned with RIT projects.

Figure 9: Action table- gaining the resources for effective pest management.



Figure 10: Training Council staff in weed awareness 2008.

Objective 6

“To prevent the introduction of new pests”.

	Action	Agency	When	Performance Indicator
1	Support DAFF Biosecurity (Formerly AQIS) with their prevention strategy.	CRC	On going	Prevention strategy supported.
2	Encourage communication between agencies regarding the promotion of pasture plants/environmental weeds and sleeper weeds.	CRC FNQROC	On going	Impacts of new plants and sleeper weeds is widely promoted.
3	Coordinate weed awareness training throughout relevant internal departments.	CRC	Annual As required	Training conducted: Cairns Regional Council Field staff including Infrastructure Management, Water and Waste, Parks and Gardens and Botanical Gardens.
4	Undertake and encourage research into ornamentals that have weed potential. Publicise and liaise with nurseries.	DAFF FNQROC	As required	Ornamentals are mapped and noted to be escaped or invading natural areas.
5	Implement local sleeper weeds program to raise awareness. Hosted on the CRC web site. Incorporate responsible plant disposal program.	CRC	2015 On going	Awareness created on particular weed threats i.e. Glow vine, allamanda. Fact sheets produced and published on the web site i.e. Sleeper weeds, undesirables, and responsible disposal of plants.
6	Publicise new incursions on web site and encourage public to report sightings.	CRC	2015 As required	Web site updated with new weed incursions. Stakeholders notified by way of email list.
7	Activate FNQ weed spread prevention strategy upon new priority incursions and after natural disasters	CRC DAFF	As required	Strategy supplied, promoted and enacted as needed.
8	Develop a best practice guide for garden mulch particularly post cyclone	CRC FNQROC	2015-2016	Strategy developed and widely available.

Figure 11: Action table- preventing new pest introductions.

Objective 7

“To manage critical pests, isolated outbreaks of pests and to reduce or contain the extent and impact of other pests”.

Prioritisation

Fundamental to pest management planning is determining priorities. Given that there is strong competition for resources, the landscape is so large and the list of pest species is always growing, it is paramount to develop a clear and strategic approach.

As required by the LP Act, priorities and responses to weeds are made collectively by way of a committee working group and public consultation. Cairns Regional Council recently developed and adopted a method of scoring priorities by way of a *Weed Priority Matrix (WPM). This method has been adopted by other Councils in FNQROC which will help align priorities across the Wet Tropics Area. The WPM process allows for local considerations including densities, resources and land use factors to establish a clear rating of weeds that combine to aid the development of achievable and effective action plans. Council supervisors and field staff initiate the scores and the PWG reviews and amend the priorities following a series of public meetings.

Setting strategic management targets

Further to species-based prioritisation, this Pest Management Plan includes a newly developed process of 1km grid mapping and sub-catchment prioritisation. Mapping at this scale guides strategic responses to infestations over the broader landscape and also serves as a public educational tool for weed awareness. Appended separately are informative Action Plans for the top 20 weeds, plus vertebrate pests. Geographical and operational considerations have required a distinction between north and south areas which is delineated at Ellis Beach.

See *Appendices Action Plans*

Scoring Criteria

Staff and stakeholder consultation in each region scores each weed according to the following criteria:

- 1) Declaration status;
- 2) National programs;
- 3) Conservation/Biodiversity;
- 4) Riparian/Aquatic;
- 5) Agricultural;
- 6) Urban/Residential;
- 7) Achievability;
- 8) Extent; and
- 9) Former rating/Effort.

1) Declaration status

The LP Act schedules a list of declared pests based on State level assessments. Councils may make local declarations under Local Laws. Environmental weeds are plants that are not endemic and are known to have escaped cultivation/agriculture and have been observed impacting on natural areas.

Declaration Status	Score
Class 1	5
Class 2	4
Class 3	2
Environmental	1

Figure 12: Scoring criteria- Declaration status.

*Developed by Matt Birch 2009

2) National programs

There is a well established suite of prioritisation, strategies and programs in place. This criteria notes the importance of these existing programs at the state and national level including collaborative programs. Weeds of National Significance (WoNS) were categorised nationally on a measure of each weeds' invasiveness, impacts, potential for spread and socioeconomic and environmental aspects. Scientists and policy makers from all State and Territory Primary Industry, Natural Resource and Environment departments were involved in submitting data for analysis. Cairns Regional Council area is currently home to 7 WoNS. Four Tropical Weeds program (4TW) is a national program for the eradication of weeds that are detected in Australia that have the potential to seriously impact at the national level on the country's primary industries, trade, the economy and the environment. Cairns is home to 2 of these category weeds. Siam weed is also managed under a nationally coordinated program. There are several Siam weed infestations in the Cairns Regional Council area.

National Programs	Score
Weeds	5
Four Tropical Weeds Program (4TW)	5
Siam Weed Eradication Program (Siam)	5
Other	0

Figure 13: Scoring criteria- National programs.

3) Conservation/Biodiversity

Conservation encompasses the preservation, protection, or restoration of the natural environment, natural ecosystems, vegetation and wildlife. It involves the preservation, reparatoin and prevention of the deterioration of archaeological, historical, and cultural sites. Generally it recognises natural areas in their untouched or healthy state and rates the potential for each pest to invade or damage these areas. All who live in the Wet Tropics area have a responsibility to protect its unique natural assets.

Conservation/Biodiversity	Score
Potential to drastically outcompete native species and impact on biodiversity in a broad range of natural areas including sensitive and ecologically significant areas.	5
Potential to drastically outcompete native species and impact on biodiversity limited to the pest's suited habitat.	4
Potential to invade edges and disturbed systems and destroy established ecology that is already threatened.	3
Potential to develop a presence in natural areas without widespread outcompetition of species.	2
Unlikely to establish effectively in natural areas unless by isolated infestations, dumping or urban escapes. Unlikely to penetrate undisturbed areas.	1

Figure 14: Scoring criteria- National programs.



Figure 15: Salvinia and water lettuce dominating a conservation park in Cairns.

4) Riparian/Aquatic

Riparian areas refer to ecology situated on the banks of rivers, creeks and wetlands. Aquatic life relies primarily on fresh/brackish water for habitat. These areas represent important ecological needs, values and pressures. CRC is home to high numbers of riparian/aquatic invaders and due to high rainfall in the Wet Tropics area, riparian areas are major vectors of spread for a range of pests. Unfortunately, many, if not most riparian/aquatic systems are already severely damaged by weed invasion, tree clearing, erosion and vertebrate pests such as pigs and tilapia. Riparian areas also present difficulty in reparation work due to conflicting priorities in land use, restrictions on chemical application, seasonal pressures, OH&S concerns and high cost of reinstating bank erosion.

Riparian/Aquatic	Score
Will form monocultures, outcompete native species and impact on biodiversity. Limits access to creek banks. Chokes waterways. Affects fish ecology- promotes vertebrate pest infestations. Can lead to reduction of desirable plant and animal species, siltation and bank erosion.	5
Will drastically outcompete native species and impact on biodiversity limited to the pests suited habitat.	4
Will invade edges and disturbed systems/banks and destroy established species that are already threatened. Limits the recruitment of desirable species.	3
Will develop a presence in natural areas without widespread out-competition of species. Unlikely to result in reduction of native tree species.	2
Unlikely to establish effectively in riparian/aquatic areas unless by isolated dumping or urban escapes. Not adapted to succeed/survive annual flood events.	1

Figure 16: Scoring criteria- Riparian/aquatic.

5) Agricultural

The Australian Government estimates that weeds cost Australian farmers around \$1.5 billion per year in control activities and a further \$2.5 billion per year in lost agricultural production. The Cairns Regional Council local government area is home to predominantly sugar and cattle production. There is also smaller representation by a range of agribusiness such as forestry, horticulture i.e fruit production and cut flowers. All agricultural endeavours are threatened by pest animal and plants of different species in different ways. Cost, availability and efficacy of control are among the higher concerns with regard to controlling agricultural pests.

Agricultural	Score
Major threat to productivity by way of reduced output with increased control expenses. Control is added to existing routine pest management practices. Competes with crops, chokes drainage lines and creeks.	5
Moderate reduction in output, increased control expenses. Control is added to existing routine pest management practices.	4
Moderate threat to Agricultural endeavours. Increased maintenance including drainage lines and creeks. Pest threat to crop/pasture can be abated as part of routine pest management practices.	3
Moderate threat to farm assets and visual amenity throughout the property including farm assets, natural assets. Will lead to reduction in natural vegetation over time.	2
Not of major concern to Agricultural endeavours under good land management practices.	1

Figure 17: Scoring criteria- Agricultural.

6) Urban/Residential

Cairns Regional Council receives increasing requests from landholders in the peri-urban setting, which presents a range of difficulties with respect to Pest Management. Peoples' attitudes and lack of pest management knowledge leads to competition for resources in a reactive manner. Responses to pests such as pigs and singapore daisy interferes with Council's strategic approach where damage to a resident's garden or unfounded threat to residents' children may guide the response to a particular species. Illegal dumping of vegetation is rife in urban areas and pests are spread, harboured and even cultivated across the landscape. Housing developments encroach on natural areas and creek systems increasingly. Furthermore, expanding rural residential living puts people in the same habitat as pest plants and animals, often with little or no land management knowledge. Natural systems are steadily being replaced with corridors of weedy trees, grasses and exotic ornamentals. With dumped or escaped ornamentals becoming one of the biggest threats to urban biodiversity, it is important to identify important natural areas and try to preserve or restore their existence.

Residential	Score
Potential to form monocultures, outcompete native species and impact on biodiversity in urban natural areas particularly urban riparian areas and Forest/urban transition areas. Will lead to reduction in tree species in areas that are already threatened by urban pressures. Threatens 'significant areas' as defined in LP(SPM)Act 2002. If left untreated will lead to risk to private and public assets or high repair costs to repair or revegetate natural assets.	5
Potential to drastically outcompete remnant native species in urban areas, parks, drainage lines and esplanades . These areas have lesser conservation values due to higher population density. May affect access, amenity, or increase maintenance costs to Council. May harbour vermin and vertebrate pests. May inhibit recruitment of remnant native tree species over time, and lead to absence to tree vegetation over time.	4
Potential to invade edges and disturbed systems/banks and destroy established species that are already threatened. Including hill slopes and riparian areas. High potential for pest to be replaced with other pests or undesirable exotics after treatment.	3
Likely to affect visual amenity or bring about complaints from residents with limited land management knowledge. Can cause low-level land management response from landholder or Council maintenance crew such as extra gardening responsibilities.	2
Unlikely to affect urban areas due to limited habitat or due to routine maintenance. May exist due to isolated dumping or urban escapes, but may not be suited to conquering the urban environment.	1

Figure 18: Scoring criteria- Residential.



Figure 19: Kudzu vine invades residential Riparian areas, smothering native vegetation.

7) Achievability

Achievability is an important consideration in prioritising pests. Eradication or even an ability to control can be limited by many factors. These factors may include size and location of infestation, access, weather, hill slopes, safe working environment and the availability of permitted chemicals. Further to this, resources, resistance from landholders, agricultural groups, community groups or individuals may impose social limitations. It is widely accepted that species with lower densities are more achievable for eradication and this is reflected in the LP Act's schedule of declared pests whereby less dense incursions are generally given a higher classification. It is noted also that there are some species that have no available control method.

Achievability	Score
Infestation is small and/or contained such that eradication is highly achievable if resources and control methods permit. There may also be aligned efforts towards particular control, and appropriate funding opportunities. Eradication achievability applies to the whole local government area.	5
High achievability may apply to a particular catchment or geographic region that is agreed to be unlikely to become reinfested. This may apply to satellite infestations as per aligned efforts or existing management plans.	4
Potential for Council to satisfy basic strategic control targets with appropriate funding resources. May involve buffer spraying or satellite control.	3
Achievability is heavily reliant on action from private landholders or State agencies	2
Pest is widespread covering various tenures and eradication is not possible. There is no universal effective control available.	1

Figure 20: Scoring criteria- Achievability

8) Extent

The extent ratings below are based on protocol for measuring distribution and abundance of pests by DAFF as part of their annual pest distribution survey. Information for each pest is gathered through regional workshops, where participants include local government, Biosecurity Queensland officers and others with knowledge of local pest locations. For maps refer http://www.dpi.qld.gov.au/4790_9824.htm. DAFF publishes grid map data at the 17km grids and Cairns Regional Council focuses on grid mapping at the 1km grid square scale and these maps were reviewed by the PWG. See *Appendices* for Action plans and grid maps.

Extent	Score
Localised- Occasional	5
Localised- Common	4
Localised- Abundant	3
Widespread-Occasional	2
Widespread- Common	1
Widespread- Abundant	0

Figure 21: Scoring criteria- Extent

9) Former Rating/Effort

Ratings given to pests in previous Pest Management Plan. This is designed to reflect the previous effort that has been invested in priority pests.

Former Rating/Effort	Score
High	5
Medium	4
Low	3
None	0

Figure 22: Scoring criteria- Former Rating/Effort

Objective 8

“To enforce the provisions of the Land Protection (Pest and Stock Route Management) Act 2002 and the Cairns Regional Council Pest Management Plan as appropriate.”

	Action	Agency	When	Performance Indicator
1	Ensure that Council NRM Officers are issued the appropriate powers for State legislation an Local Laws as required by their position description and duties.	CRC	As required	All authorised persons provided with suitable instrument of delegations. All authorised persons carry the required identification card.
2	Provide appropriate training to CRC NRM authorised officers.	CRC	2015- 2016	Authorised person training provided and refreshed on adoption of Biosecurity Bill.
3	Provide appropriate pest legislation and awareness training to Local Laws Officers, Environment Officers and Animal Management Officers.	CRC	On going	All law enforcement agencies within CRC liaise effectively and refer as necessary. CRC PMP issued to Senior Local Laws and EPU staff.
4	Review Local Laws as needed. Brief staff on ratification of redraft.	CRC	2015 On going	Local Law input provided. Declared plant list updated. Local Law briefing meeting provided to all NRM staff.
5	Annual survey notification and strategic surveys undertaken in accordance with the LP Act.	CRC DAFF	On going	Surveys conducted.
6	Notification letters and extension material extended towards achieving strategic targets within PMP action plan.	CRC DAFF	On going	Notifications and extension material provided.
7	Compliance action taken where necessary to achieve targets within PMP action plan.	CRC DAFF	On going	Compliance policy followed and strategic outcomes achieved.
8	Compliance work instruction developed relating to LP Act and Local Laws compliance action.	CRC	On going	Work instructions workshopped by LMOs and implemented.

Figure 23: Action table- enforcement.

Objective 9

“To encourage and support research into more effective controls on pests”.

	Action	Agency	When	Performance Indicator
1	Support research into effective control methods for pest species when required	CRC DAFF CSIRO JCU	On going	Letters of support and requests sent to DAFF. FNQROC joint requests supported.
2	Implement non-chemical weed control methods, including revegetation to shade out weeds also, pig exclusion fencing. Investigate other non toxic control methods. Create and share case studies.	CRC	2011-2018	Projects, reparation works and revegetation works undertaken (system repair). Case studies undertaken and shared via FNQROC.
3	Support research into biological control for pest including priority species e.g. Salvinia, lantana.	CRC DAFF CSIRO DERM	On going	Assistance, labour and sites provided.
4	Continue the use of fire as a pest management tool where appropriate. Create and share case studies.	CRC	2015 On going	Fire utilised and outcomes documented. Findings shared via FNQROC.
5	Support: CSIRO, JCU, DAFF, DERM, AQIS and other stakeholders/ researchers with special projects.	CRC	On going	Projects supported.
6	Collect thorough spray records and GIS data and provide for research purposes where appropriate.	CRC	On request	Record keeping and GIS data maintained and shared on request as per data share agreements.

Figure 24: Action table- research.

Objective 10

“To provide for the development and training of staff and other stakeholders involved in pest management, particularly best practice techniques”.

	Action	Agency	When	Performance Indicator
1	Conduct training sessions to improve knowledge and skills of Officers and key stakeholders in: <ul style="list-style-type: none"> • Awareness • Identification • Management techniques • Legislation/compliance • Weed spread prevention 	CRC DAFF	Annual As needed	All CRC staff hold an improved knowledge base. New staff are provided training on commencement. Stakeholders are offered training and extension material as required. Stakeholders and staff are encouraged to participate in FNQROC pest advisory forums.
2	Ensure Position description minimum training requirements are adequate and provided across the department: <ul style="list-style-type: none"> • ACDC (chemical use) • Chainsaw ticket • First Aid • Conservation & Land Management • Firearms (as needed) • Specialised training on request. 	CRC	As required	All mandatory training requirements met and maintained up to date. Specialised training and licenses reviewed as needed by Coordinator. Staff encouraged to request training if required.
3	Corporate induction policies and procedures presented at corporate induction.	CRC	As required	All new staff attend induction. Specific policies procedures presented as needed i.e. Firearms policy workshop conducted.
4	All staff encouraged to develop Job Safe Procedures progressively.	CRC	On going	Job Safe Procedures up to date and developed on going by field staff.
5	All staff may access training and new technology directly, by networking at task forces and via FNQROC meetings.	CRC FNQROC DAFF	As required	Exposure to new techniques and technology gained by staff if necessary.

Figure 25: Action table- development and training.

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6.0 PEST MANAGEMENT PRINCIPLES

6.1 BASIC MANAGEMENT CONCEPTS

Many of the pests referred to in this document are fierce adversaries to land managers. Part of what defines a successful pest is its ability to survive, reproduce and in many cases, its resistance to control. Since man first endeavoured to farm plants and animals, there have been elements working against him, particularly pests and weather. There have been great technological advancements with regards to machinery and chemical controls since the dawn of the industrial revolution. However, powerful social and biological factors still limit broad scale control over many pests. Limitations include:

- Cost/resource limitations.
- Lack of target specific chemical.
- Conflicting priorities.
- Off target impacts- biodiversity, geology hydrology.
- Tenure separation.
- Lack of knowledge- leaving it too late- best practice control.
- Some pests are kept as livestock, pets or garden specimens (plants).
- Some pest animals are valued for hunting.

This PMP aims to be a practical guiding document that:

- 1) sets priorities;
- 2) sets sub-catchment management targets; and
- 3) conveys best practice responses pertaining to the above.

6.1.1 Species prioritisation

This Pest Management Plan incorporates a process to prioritise the many pest plant and animal threats in the area. Weeds are assessed by way of the WPM (*see objective 7, page 21*) and animal priorities are assessed species by species. Priorities are set by local government field staff, reviewed by local government management staff and presented for review by the PWG.

6.1.2 Sub-catchment management targets

Operational staff provide 1km grid maps with consideration to priority species distribution and abundance. With this in mind, achievable management targets can be developed and captured in individual action plans. A colour-coded sub-catchment response is recorded and mapped to reflect the management target that is deemed achievable and appropriate for the particular pest in the known infestation areas. Refer to *Appendices Action Plans* for sub catchment maps.

Zone Description	Generalised management Principles
DELIMITATION	Target survey in these areas. Generally where a pest presence is expected, but the extent is not yet recorded or mapped. Liaise with stakeholders, share map data. Enlist landholders/community groups to report sightings.
PREVENTION	Areas that are presumed clean of particular pest. Maintain preventative measures including weed hygiene and general surveillance. Prevention areas may be largely unsurveyed and should be targeted during annual roadside surveys.
REMOVAL	Continued work following control of a pest. Maintain follow ups on seed recruitment at timely intervals, manage seed banks, exclusion fencing and signage for weed hygiene. Length of removal phase may be determined by known seed longevity.
INTENSIVE CONTROL	Intensive control or initial control works in these sub-catchments. Includes eradication programs, and species with achievable extent. Often utilised in large catchments initially in the upper extent of the infestation. Compliance considered to meet objectives.
IMPACT REDUCTION	Containment of major infestations. Buffers maintained, important natural assets protected, roadsides/paddocks slashed, grazing practices modified. Property pest management plans developed in private, State and Council controlled land. Down catchment approach utilised where possible.

Figure 26: Management zones and their generalised principles.

6.2 Control Methods

6.2.1 Frill/Stem injection



Herbicide may be directly applied to the vascular system of the plant by way of frilling or stem injection. Cuts are made in the bark of a tree or woody section of a vine so that access is opened to the cambium tissue. Operators must ensure that the cuts are made low to the ground and that the cuts are made continuously around the perimeter of the trunk/stem. It is common practice to stagger the cuts to maximise chemical application and to ensure that all of the vascular transport in the tree is disrupted. Cuts are made with an axe or machete on a downward angle leaving a “frilly” scarf on the tree when done properly. The frilled notches aid in holding chemical. In some applications, similar downward cuts can be made with a chainsaw. This technique is beneficial when trees are best left standing for follow up access, if felling is too complicated or restricted by resources. Note that dead trees and falling limbs can become a safety hazard during follow up work and during flood events. Chemical can be applied with an injection gun, low pressure spray pack or with a paint brush. Some trees that are known to sucker or coppice can be killed this way several weeks before felling, to kill the root system before felling.

There is a range of herbicides available for use with this method, including:

- 1) Gyphosate mixed with water.
- 2) Triclopyr + picloram mixed with diesel.
- 3) Imazapyr mixed with water.

Always check label for permitted herbicide use or contact your local government LMO for advice regarding chemical application, permits and best practice.

6.2.2 Basal bark



Basal Bark technique refers to the spraying of a lower trunk (basal area) of a tree or vine with herbicide which is usually suspended in diesel. This mixture is suited to many weedy trees and is often a quick way of achieving a kill while leaving the tree standing. This technique is not permitted in or close to water. Only techniques that utilise Glyphosate bioactive application, are used by Cairns Regional Council, near water. When using basal bark technique, attention must be paid to manufacturer’s recommendations with regard to chemical rates and the maximum basal diameter that the chemical can be applied to gain consistent kills. Operators commonly use low pressure “pump pack” type spray equipment to apply the chemicals.

6.2.3 Chainsaw/Cut stump



Felling trees and large woody weeds and vines is often the most thorough method to ensure consistent kills. Due to many plants’ ability to coppice, regrow or sucker, it is common practice to apply chemical to the stump. There is a range of herbicides available for use with this method, including:

- 1) Gyphosate mixed with water.
- 2) Triclopyr + picloram mixed with diesel.
- 3) Imazapyr mixed with water.

It is important to apply the chemical quickly to the stump, within seconds to ensure that the plant does not heal over and prevent penetration of the herbicide. This method is common with chainsaw felling of large trees but is equally successful when treating smaller woody weeds and vines where cutting with sharp knife or machete is followed quickly with application of a suitable herbicide. Always check label for permitted herbicide use or contact your local government LMO for advice regarding chemical application, permits and best practice.

6.2.4 Chop/Grub



Due to its labour intensiveness, chopping or grubbing is often overlooked as a viable weed management practice. However, it remains an effective way of selectively removing weeds without chemicals. Using machetes, cane knives or hoes, operators can remove seed, flowers or even kill entire woody weeds or grasses. Many vines require chopping to gain access to roots and tubers where other methods can be deployed such as stem injection.

6.2.5 Drill/Stem injection



Herbicide may be directly applied to the vascular system of the plant by way of drilling or stem injection. Holes are drilled in the bark of a tree or woody section of a vine so that access is opened to the cambium tissue. This technique is also used with tuberous vines. Operators must ensure that the holes are drilled low to the ground and there are sufficient number of holes to kill the target species. Generally holes are drilled 5-10cm apart all the way around the trunk. As with frilling, holes are drilled downwards to hold the chemical and when used with a 5ml injection gun, this technique results in less wasted chemical. Conversely, the drill and inject method is more time consuming and requires access to cordless drills and spare batteries which may not always be appropriate.

Stem injection is beneficial when trees are best left standing for follow up access, if felling is too complicated or restricted by resources. Note that dead trees and falling limbs can become a safety hazard during follow up work and during flood events. Chemical can be applied with an injection gun or low-pressure spray pack. Some trees that are known to sucker after felling can be killed this way several weeks before felling to ensure that the entire plant is killed.

There is a range of herbicides available for use with this method, including:

- 4) Gyphosate mixed with water.
- 5) Triclopyr + picloram mixed with diesel.
- 6) Imazapyr mixed with water.

Always check label for permitted herbicide use or contact your local government LMO for advice regarding chemical application, permits and best practice.

6.2.6 Improved grazing practices



Overgrazing can lead to depletion of desirable species. Where serious weeds invade pastures, often stock avoid these species leading to a dominance of woody weeds or unpalatable grasses. Continued intensive grazing or overgrazing can lead total destruction of pastures or complete domination by woody weeds i.e. Sicklepod. Careless weed hygiene practices can lead to movement of seeds with stock and trucks to other properties over long distances. Yarding stock for several days can minimise this problem when stock are exposed to major pastoral weeds. Washing down equipment is recommended prior to movement. Spelling paddocks and slashing seeding plants, spot spraying and grubbing can all be effective in controlling pastoral weeds. For property pest management planning contact your local government LMO or contact DAFF for information regarding grazing and pasture management.

6.2.7 Hand removal



Many weeds can be controlled by simple hand removal. This method can be used on a small-scale infestations and/or in places where equipment cannot access. Hand removal may be the only option where chemical use is not legal or appropriate i.e. hand removing *slavinia* in small ponds, or hand pulling pine seedlings. On removal, it is important to dispose of the living plant material appropriately. This may involve bagging the waste, composting on site, or ensuring that the roots of the plants cannot access soil/water and re-shoot.

6.2.7 Foliar spray



There are many herbicides registered for weeds and the most common method of application is spraying. Chemicals can be sprayed on the ground by hand, from a boom or from an aircraft or boat. Common methods of ground application include:

- 1) Low pressure application i.e. 20L pump up spray bottle.
- 2) 12v and petrol mechanised spray units i.e. PTO driven tractor spraying.
- 3) Controlled droplet application i.e. advanced agricultural practices.

The practice of spraying is complex and heavily regulated. Council employees must be licensed to spray herbicides on private and public lands and spray records must be kept in accordance with the Agricultural Chemical Distribution Control Act 1966 (ACDC Act). Herbicides, target species and situations for spraying is controlled by permitted uses listed on product labels. There are also off-label permits available that operators may observe under particular qualification. The Australian Pesticides and Veterinarian Medicines Authority (APVMA) administer all permits that relate to pest management related herbicides, fungicides, adjuvants and toxins. Always check label for permitted herbicide use or contact your local government LMO for advice regarding chemical application, permits and best practice.

6.2.8 Slashing



Slashing may be an effective tool in pasture management. Woody weeds, herbs and some grasses may be prevented from seeding by slashing at opportune times. For example, slashing sicklepod may be effective before setting seed to manage the potential seed bank. Using blunt blades or chains will smash stems minimising regrowth or recovery of the plant. Following up with spot spraying will minimise the use of expensive chemical and stop the annual seed cycle. It must be noted that this method can potentially spread seeds, so

always carry out weed hygiene practices when moving machinery. i.e. always wash down machinery and slasher decks.

6.2.9 Machinery removal



Large-scale infestations sometimes call for mechanised removal or control. Excavators, backhoes, mulching bobcats, aquatic harvesters or even bulldozers may be employed where funding permits. With large tree species, machinery may be required to clean up after chainsaw work. Often weeds infestations are associated with eroded creek and riverbanks so best practice repair work often requires earthworks bank reinstatement, rock works and revegetation. Note: it is important to always wash down machinery to prevent the spread of seed and stem fragments.

6.2.10 Fire

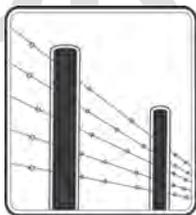


Despite being labour, risk and planning intensive, fire can be a useful pest management tool. Fire can be used to:

- 1) Remove spoils from weed treatments including felled trees. Burn heaps may require attendance by earthworks machinery and fire crews.
- 2) Stimulate seed regeneration in certain seed banks.
- 3) Kill certain species where fuel loads allow a hot fire.
- 4) Kill dormant seeds.

Agricultural landholders and State government land managers know the value of fire for broad acre weed control. Cairns Regional Council is currently trialling techniques and improving its capacity to use fire. There is generally a limited window of opportunity for use of fire. Site preparation, permits, public notification and resources may limit its widespread use.

6.2.11 Exclusion Fencing/netting



Fencing is used to exclude animal pests throughout world, particularly to mitigate pest damage to agriculture. Although often considered an expensive option, fencing is sometimes a sound investment to:

- 1) Contain livestock or exclude predators.
- 2) Protect Crops from terrestrial pests such as pigs and rabbits.
- 3) Protect fruit orchards with netting where it is not viable to control the birds/bats that may try to eat the fruit.

Increasingly urban landholders are fencing to exclude pests such as wild pigs and dogs. Residents are advised to utilise netting to exclude access to urban roosts by exotic birds. Eradication of most naturalised vertebrate pests is not viable or cost effective, so exclusion is considered a logical control option. There are many materials available, with many having been in production for over 100 years e.g. chicken/bird wire, pigwire/ringlock, barbed wire, chainwire, smooth wire, pickets, palings, colorbond and electric fences. An experienced agricultural fencer can advise and cost a suitable fence design that will exclude pests ranging from snails to horses.

6.2.12 Poison



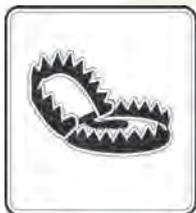
There are special circumstances where poison may be approved for use on vertebrate pests. Commercial baits and poisons are available for rodents and insects at supermarkets. However, strict regulations control the distribution of poisons and toxins that may be used on larger pest animals. Dogs, cats, pigs, rabbits and foxes may be controlled under strict conditions with a toxin known as 1080 or fluoracetate. Use of 1080 is limited to lower density and agricultural areas and is distributed in the CRC region in a controlled manner under guidance from Council's approved Land Management Officers, DAFF and Queensland

Health. A bait program must involve a community response, consultation, signage and observation of all policy direction. When done properly, 1080 baiting is a safe and very effective tool for:

- 1) removing larger populations of pigs where trapping has failed; or
- 2) removing wild dogs that have been deemed to be causing damage or a real threat to people, other domestic animals, or protected/threatened wildlife.

In the wet tropics, CRC recognises the role that dingoes/wild dogs play in the ecosystem and the risk of off-target affects of baiting. Baiting is therefore considered carefully before being integrated into a control strategy.

6.2.13 Trapping



Trapping is a widely used control method for feral pigs in the wet tropics. With a number of box traps, panel traps and silo traps available for loan to landholders, Council plays an assistive role with regard to trapping. Pig trapping is done in accordance with well established guidelines relating to off target minimisation, firearms policy, humane treatment of animals, public/workplace health and safety and efficiency with regard to Council's pest management resources. CRC encourages landholders to control their own pigs on private land, however can assist those who cannot. For more information regarding pig trapping please contact

Cairns Regional Council or visit the web site: www.cairns.qld.gov.au.

Available to download:

- 1) [*Feral Pig trapping.pdf*](#) Guidelines to Council-assisted pig trapping on private property. Information, responsibilities and agreement.
- 2) [*Pig trapping model poster.pdf*](#) Cairns Regional Council pig management model explained.

Where deemed necessary, Council may also assist landholders with wild dog trapping. Council can loan cage traps and offer advice regarding the safe and ethical use of foothold, soft jaw traps. CRC offers a cat trap loan and disposal service via its Local Laws Department.

All queries regarding management of native wildlife should be directed to Queensland Parks and Wildlife Service QPWS.

6.2.14 Shooting/hunting



Hunting is a popular sporting pursuit in the region. Despite its recreational appeal and popularity, hunting has generally proved to be an ineffective and at times, a disruptive pest management practice. Hunting either with dogs or firearms can be an effective *complement* to an integrated property pest management strategy. Some landholders use hunting as their primary animal control option to good effect, but usually when a population is very small. However, hunting is best utilised after effective trapping/baiting programs to remove any remaining individuals. More often though, uninvited hunters will target the biggest pigs and/or scatter them throughout an area making the whole population nervous and unpredictable. Urban fringe areas where inexperienced hunters/dogs often visit, pose a great challenge to landholders and Councils as these pigs are usually the hardest to trap. Aerial shooting is noted to be very effective in dry savannah to open woodland country but it is not suited to the Wet Tropics Area given the extensive cover and high residential population. Sniper style shooting can be effective when used with a feed station on dogs and occasionally pigs. Individual wild dogs can be singled out where foot trapping and baiting may be too indiscriminate. Note: Council does not condone, practice or contract any form of dog based hunting, but recognises that it is a very common practice in agricultural and rural residential areas in the region.

6.3 Methods of Spread

6.3.1 Cuttings/Vegetative



Further to normal seed reproduction, many plants will reproduce from cuttings, stem or root fragments or even by leaf fragments. Some species reproduce only vegetatively. Many aquatics and riparian species reproduce from cuttings washed downstream with flood water.

6.3.2 Irresponsible dumping



A common way for plants and animals to escape and colonise natural areas is by accidental or at times intentional release and cultivation by people. Often people will travel long distances to dump vegetation to avoid a small tipping fee. Others will throw exotic cuttings and weeds over their back fence and into creeks.

6.3.3 Machinery



Machinery of many forms can move plant material and pest animals. Slashers and earthworks equipment are most commonly blamed, but cars, 4wds, motorcycles, boats and caravans are all capable of moving pest plants and animals great distances.

6.3.4 People/Animals



By sticking to either peoples' clothes or animals' fur, some plants have adapted seeds that can move long distances. Many of these seeds also find themselves attached to car radiators, livestock tails and can easily travel interstate and even overseas.

6.3.5 Droppings



Many seeds have evolved as a food source for animals with the advantage of being relocated and dispersed in droppings. This can lead to unpredictability when pigs, cassowaries, people, cockatoos and bats all move certain fruits in various directions.

6.3.6 Water



The Wet Tropics area is home to many aquatic species which are adapted to water based reproduction. A great range of species benefit from annual floods to spread down a catchment. Seeds may float or send vegetative material and fragments with normal river flow or during annual flood events. Aquatic plants can move catchments attached to birds or boats.

6.3.7 Wind



Many plant species use wind as a seed dispersal mechanism. Seeds are light-weight and either wing shaped or adorned with hairs to ensure that upon release they will travel away from the parent plant. This method of spread will also be influenced by flood water down a catchment. Light weight seeds often get caught on vehicles.

6.4 Weed Disposal and Spread Prevention

6.4.1 Responsible weed disposal

Disposal of weeds should always include thought as to the potential of spread. Some points to consider are as follows:

- Try to treat weeds before they flower and produce seeds.
- Undertake regular and timely treatments to reduce the seed bank.
- Most weeds can be stored on site and rotted down on site.
- Weeds can be cooked in plastic bags, burnt, composted, drowned and deep buried.
- Declared weeds must not be moved it is an offence under the LP Act.
- Selectively spraying may stop the spread of weedy broad-leaves on slashers.
- Always observe weed hygiene practices.

6.4.2 Weed Hygiene

Weed hygiene is an important responsibility that lies with everyone from residents mowing their lawn, to tourists rolling up a swag, to major developers engaging in earthworks. Everyone should be aware of the methods and implications of spreading weeds.

Some key principals include:

- Weed awareness.
- Ownership of the problems that may arise.
- Motivation to take a few extra steps.

Some steps that can be taken include:

- Wash down machinery, boots, socks, clothes, mowers, animals, boats, car radiators etc.
- Report weeds and develop property pest management plans on development sites/farms.
- Seek advice from land management authorities.
- Never dump plant material.

For more information refer to the Queensland Weed Spread Prevention Strategy.

Appendix A: Acronyms/Abbreviations

Abbreviation	Definition
ABGC	Australian Banana Growers' Council
AgForce	Cattle/sheep/grain representing body
APDS	Annual Pest Distribution Survey
ARF	Australian Rainforest Foundation
B-CPPB	Babinda- Cane protection and Productivity Board
BA	Biosecurity Australia
BQ	Biosecurity Queensland
BSES	Bureau of Sugar Experimental Stations
CRC	Cairns Regional Council
CULG	Cairns Urban Landcare Group
CPPB	Cane protection and Productivity Board
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CVCG	Cassowary Valley Catchment Group
CVA	Conservation Volunteers Australia
DAFF	Department of Agriculture, Fisheries and Forestry
DET	Department of Education and Training
DERM	Department of Environment and Resource Management
DLGP	Department of Local Government and Planning
DTMR	Department of Transport and Main Roads
EMP	Environmental Management Plan
EPU	Environmental Protection Unit (CRC)
FNQROC	Far North Queensland Region Organisation of Councils- LG representative group
FNQROCNAMAC	Far North Queensland Region Of Councils Natural Asset Management Advisory Committee
FNQROCPAF	Far North Region Organisation of Councils Pest Advisory Forum
GIS	Geographic Information System
GBRMPA	Great Barrier Reef Marine Park Authority
JCU	James Cook University
LMO	Land Management Officer
LP Act	Land Protection (Pest and Stock Route Management) Act 2002
LGA	Local Government Area (Cairns Regional Council)
MAS	Mossman Agricultural Services
MRCG	Mulgrave River Catchment Group
M-CPPB	Mulgrave- Cane Protection and Productivity Board
NAM	Natural Asset Management
NRM	Natural Resource Management
NGIA	Nursery and Garden Industry Australia
OFA	Organic Federation of Australia
PMO	Pest Management Officer
PMP	Pest Management Plan
PWG	Pest Working Group
PDF	Portable Document Format (widely compatible computer file)

Abbreviation	Definition
PPMP	Property Pest Management Plan
QHealth	Queensland Health
QR	Queensland Rail
QPIF	Queensland Primary Industries and Fisheries
RR	Rainforest Rescue
RGS	Reef Guardian Schools
RIT	River Improvement Trust
RRCG	Russell River Catchment Group
SPAS	State Pest Attribute Standard
TAFE	Technical And Further Education
Terrain	Terrain NRM
WPM	Weed prioritisation matrix
WTMA	Wet Tropic Management Authority
WAGS	Whyanbeel Action Group

Figure 27: Abbreviations table.

Appendix B: Stakeholder list

Government Agencies (NRM)	Acronym	Type of Agency/organisation
Department of Agriculture, Fisheries and Forestry	DAFF	Queensland Government
Queensland Primary Industries and Fisheries	QPIF	Queensland Government
Biosecurity Queensland	BQ	Queensland Government
Department of Environment and Resource Management	DERM	Queensland Government
Queensland Parks and Wildlife Service	QPWS	Queensland Government
Wet Tropics Management Authority	WTMA	Queensland Government
River Improvement Trust	RIT	Queensland Government
Great Barrier Reef Marine Park Authority	GBRMPA	Australian Government
Queensland Rail	QR	Queensland Government
Department of Transport and Main Roads	DTMR	Queensland Government
Queensland Health	QHealth	Queensland Government
Department of Agriculture, Fisheries and Forestry	DAFF (Aus)	Australian Government
Biosecurity Australia	BA	Australian Government
Australian Quarantine Inspection Service	AQIS	Australian Government
Department of Local Government and Planning	DLGP	Queensland Government
Ergon Energy	ERG	Queensland Government
Industry Bodies		
Bureau of Sugar Experimental Stations	BSES	Industry body
Mulgrave- Cane Protection and Productivity Board	M-CPPB	Industry body
Babinda- Cane Protection and Productivity Board	B-CPPB	Industry body
Mossman Agricultural Services	MAS	Industry body
AgForce	AgForce	Industry body
Australian Banana Growers' Council	ABGC	Industry body
Nursery and Garden Industry Australia	NGIA	Industry body
Organic Federation of Australia	OFA	Industry body
Community Groups/NGOS		
Mulgrave River Catchment Group	MRCG	Community Group
Cairns Urban Landcare Group	CULG	Community Group
Russell Landcare Catchment Group	RLCG	Community Group
Whyanbeel Action Group	WAGS	Community Group
Cassowary Valley Catchment Group	CVCG	Community Group
Conservation Volunteers Australia	CVA	Community Group
Treeforce	TF	Community Group
Rainforest Rescue	RR	Non Government Organisation
Terrain NRM	Terrain	Non Government Organisation
Australian Rainforest Foundation	ARF	Non Government Organisation
Education		
Department of Education and Training	DET	Queensland Government
JCU	JCU	Education Queensland
Reef Guardian Schools	RGS	Education Queensland
Technical And Further Education	TAFE	Education Queensland
Aboriginal communities/corporations		
Djunbunji Aboriginal Land and Sea Program		Aboriginal corporation
Jabalbina Yalangi Aboriginal Corporation		Aboriginal corporation
Burungu Aboriginal Corporation		Aboriginal corporation
Bamanga Bubu Ngadimunku Inc (Mossman Gorge Aboriginal Community)		Aboriginal corporation
Yalanjiwarra Jalunji Marrjanga Aboriginal Corporation		Aboriginal corporation
Yarrabah Aboriginal Community		Aboriginal corporation
Bunna Binda		Aboriginal corporation

Figure 28: Stakeholders table.

Appendix C: Class 1 plants of Queensland. (**as of Jan 2015)

Common Name	Species	*Present in CRC
Acacias non-indigenous to Australia	(Acaciella spp., Mariosousa spp., Senegalia spp. (other than Senegalia albizoides) and Acacia spp. (syn. Vachellia spp.) other than Acacia nilotica and Acacia farnesiana)	
Alligator weed	(Alternanthera philoxeroides)	YES
Anchored water hyacinth	(Eichhornia azurea)	YES
Badhara bush	(Gmelina elliptica)	
Bitou bush	(Chrysanthemoides monilifera sub sp. rotundata)	
Bridal creeper	(Asparagus asparagoides)	
Candleberry myrth	(Myrica faya)	
Chilean needle grass	(Nassella neesiana)	
Cholla cactus	(Cylindropuntia spp. and hybrids, other than C. spinosior, C. fulgida and C. imbricata)	
Christ's thorn	(Ziziphus spina-christi)	
Eurasian water milfoil	(Myriophyllum spicatum)	
Fanwort	(Cabomba spp. other than C. caroliniana)	
Floating water chestnuts	(Trapa spp.)	
Gorse	(Ulex europaeus)	
Harrisia cactus	(Harrisia spp. syn. Eriocereus spp. are Class 1 and H. martinii, H. tortuosa and H. pomanensis syn. Cereus pomanensis) are Class 2	
Honey locust	(Gleditsia spp. including cultivars and varieties)	
Horsetails	(Equisetum spp.)	
Hygrophila	(Hygrophila costata)	YES
Kochia	(Bassia scoparia syn. Kochia scoparia)	
Koster's curse	(Clidemia hirta)	
Lagarosiphon	(Lagarosiphon major)	
Limnocharis	(Limnocharis flava)	YES
Madras thorn	(Pithecellobium dulce)	YES
Mesquites	(all Prosopis spp. and hybrids not yet found in Queensland are Class 1) Prosopis glandulosa, Prosopis pallida and Prosopis velutina) are Class 2	
Mexican bean tree	(all Cecropia spp.)	YES
Mexican feather grass	(Nassella tenuissima)	
Miconia	(Miconia spp.)	YES
Mikania vine	(Mikania spp.)	
Mimosa pigra	(Mimosa pigra)	
Peruvian primrose	(Ludwigia peruviana)	
Prickly pear	(Opuntia spp. not yet found in Queensland are Class 1) O. ficus-indica (not declared) and O. stricta, O. aurantiaca, O. monacantha, O. tomentosa and O. streptacantha are Class 2)	
Red sesbania	(Sesbania punicea)	
Salvinia	(Salvinia spp. other than S. molesta which is a Class 2)	
Senegal tea	(Gymnocoronis spilanthoides)	
Serrated tussock	(Nassella trichotoma)	
Siam weed	(Chromolaena spp.)	YES
Spiked pepper	(Piper aduncum)	
Thunbergia (annual)	(Thunbergia annua)	
Thunbergia (fragrans)	(Thunbergia fragrans)	YES
Thunbergia (laurifolia)	(Thunbergia laurifolia)	YES
Water mimosa	(Neptunia oleracea and N. plena)	YES
Water soldiers	(Stratiotes aloides)	
Willow	(Salix spp. other than S. babylonica, S. humboldtiana, S. matsudana, S. x calodendron and S. x reichardtii)	
Witch weeds	(Striga spp. other than native species)	
Yellow ginger	(Hedychium flavescens)	YES

Figure 29: Class 1 weeds list.

*Presence entails current and historical occurrences.

**Refer to www.dpi.qld.gov.au for up to date listing.

Appendix D: Class 2 plants of Queensland. (**as of Jan 2015)

Common Name	Species	*Present in CRC
African boxthorn	(<i>Lycium ferocissimum</i>)	
Annual ragweed	(<i>Ambrosia artemisiifolia</i>)	
Bellyache bush	(<i>Jatropha gossypifolia</i> and hybrids)	
Cabomba	(<i>Cabomba caroliniana</i>)	YES
Chinee apple	(<i>Ziziphus mauritiana</i>)	
Cholla cactus- Coral cactus	(<i>Cylindropuntia fulgida</i>)	
Cholla cactus- Devil's rope pear	(<i>Cylindropuntia imbricata</i>)	
Cholla cactus- Snake cactus	(<i>Cylindropuntia spinosior</i>)	
Fireweed	(<i>Senecio madagascariensis</i>)	
Gamba grass	(<i>Andropogon gayanus</i>)	
Giant sensitive plant	(<i>Mimosa diplotricha</i> var. <i>diplotricha</i>)	YES
Groundsel bush	(<i>Baccharis halimifolia</i>)	
Harrisia cactus	(<i>Harrisia martinii</i> syn. <i>Eriocereus martinii</i> , <i>H. tortuosa</i> and <i>H. pomanensis</i> syn. <i>Cereus pomanensis</i>)	
Hymenachne or Olive hymenachne	(<i>Hymenachne amplexicaulis</i>)	YES
Kudzu	(<i>Pueraria montana</i> var. <i>lobata</i> , syn. <i>P. lobata</i> , <i>P. triloba</i>) other than in the Torres Strait Islands	YES
Mesquites	(<i>Prosopis glandulosa</i> , <i>P. pallida</i> and <i>P. velutina</i>)	
Mother of millions	(<i>Bryophyllum delagoense</i> syn. <i>B. tubiflorum</i> , <i>Kalanchoe delagoensis</i>)	YES
Mother of millions hybrid	(<i>Bryophyllum</i> x <i>houghtonii</i> (syn. <i>B. daigremontianum</i> x <i>B. delagoense</i> , <i>Kalanchoe</i> x <i>houghtonii</i>)	YES
Parkinsonia	(<i>Parkinsonia aculeata</i>)	
Parthenium	(<i>Parthenium hysterophorus</i>)	YES
Pond apple	(<i>Annona glabra</i>)	YES
Prickly acacia	(<i>Acacia nilotica</i>)	
Prickly pear	(<i>Opuntia stricta</i> ; syn. <i>O. inermis</i>)	YES
Tiger pear	(<i>Opuntia aurantiaca</i>)	
Westwood pear	(<i>Opuntia streptacantha</i>)	
Tree pear- Drooping tree	(<i>Opuntia monacantha</i> syn. <i>O. vulgaris</i>)	
Tree pear- Velvety tree pear	(<i>Opuntia tomentosa</i>)	
Rat's tail grass- American	(<i>Sporobolus jacquemontii</i>)	YES
Rat's tail grasses- Giant Parramatta	(<i>Sporobolus fertilis</i>)	YES
Rat's tail grass- Giant rat's tail grass	(<i>Sporobolus pyramidalis</i> and <i>S. natalensis</i>)	YES
Rat's tail grass- Parramatta grass	(<i>Sporobolus africanus</i>)	YES
Rubber vine	(<i>Cryptostegia grandiflora</i>)	
Salvinia	(<i>Salvinia molesta</i>)	YES
Sicklepod	(<i>Senna obtusifolia</i>)	YES
Sicklepod- Foetid cassia	(<i>Senna tora</i>)	YES
Sicklepod- Hairy cassia	(<i>Senna hirsuta</i>)	
Telegraph weed	(<i>Heterotheca grandiflora</i>)	
Thunbergia (blue)	(<i>Thunbergia grandiflora</i>)	YES
Tobacco weed	(<i>Elephantopus mollis</i>)	YES
Water hyacinth	(<i>Eichhornia crassipes</i>)	YES
Water lettuce	(<i>Pistia stratiotes</i>)	YES

Figure 30: Class 2 weeds list.

*Presence entails current and historical occurrences.

**Refer to www.dpi.qld.gov.au for up to date listing.

Appendix E: Class 3 plants of Queensland. (**as of Jan 2015)

Common Name	Species	*Present in CRC
African fountain grass	(Cenchrus setaceum)	YES
African tulip tree	(Spathodea campanulata)	YES
Aristolochia or Dutchman's pipe	(Aristolochia spp. other than native species)	YES
Asparagus fern	(Asparagus aethiopicus 'Sprengeri', A. africanus and A. plumosus)	YES
Athel pine	(Tamarix aphylla)	
Balloon vine	(Cardiospermum grandiflorum)	YES
Blackberry	(Rubus anglocandicans, Rubus fruticosus agg.)	
Broadleaved pepper tree	(Schinus terebinthifolius)	
Camphor laurel	(Cinnamomum camphora)	
Captain Cook tree or yellow oleander	(Cascabela thevetia syn. Thevetia peruviana)	YES
Cat's claw creeper	(Macfadyena unguis-cati)	YES
Chinese celtis	(Celtis sinensis)	
Harungana	(Harungana madagascariensis)	YES
Kahili ginger	(Hedychium gardnerianum)	
Lantana or common lantana	(Lantana camara)	YES
Lantana- creeping	(Lantana montevidensis)	YES
Madeira vine	(Anredera cordifolia)	
Privet- Broad leaf privet or tree	(Ligustrum lucidum)	
Privet- Small leaf or Chinese privet	(Ligustrum sinense)	
Purple or ornamental rubber vine	(Cryptostegia madagascariensis)	
Singapore daisy	(Sphagneticola trilobata; syn. Wedelia trilobata)	YES
White ginger	(Hedychium coronarium)	YES
Willow- Pencil willow	(Salix humboldtiana syn. S. chilensis)	
Willow- Tortured willow	(Salix matsudana)	
Yellow bells	(Tecoma stans)	YES

Figure 31: Class 3 weeds list.

*Presence entails current and historical occurrences.

**Refer to www.dpi.qld.gov.au for up to date listing.

Appendix F: Declared Animals of Queensland. (**as of Jan 2015)

Declaration	Common Name	Species	*Present in CRC
Class 1 animals:	Crazy ants	(Anoplolepis gracilipes)	YES
	All mammals, reptiles and amphibians except:		
	Class 2 declared pest animals		
	Class 3 declared pest animals		
	Mammals, reptiles and amphibians indigenous to Australia, including marine mammals		
	28 non-declared animals.		
Class 2 animals:	Australian plague locust	(Chortoicetus terminifera)	
	cat, other than a domestic cat	(Felis catus)	YES
	dingo	(Canis familiaris dingo)	YES
	dog, other than a domestic dog	(Canis familiaris)	YES
	European fox	(Vulpes vulpes)	
	European rabbit - domestic and wild breeds	(Oryctolagus cuniculus)	
	feral pig	(Sus scrofa)	YES
	feral chital deer	(Axis axis)	
	feral rusa deer	(Cervus timorensis)	YES
	goat, other than a domestic goat	(Capra hircus)	
	migratory locust	(Locusta migratoria)	
	spur-throated locust	(Austracris guttulosa)	
	Class 3 animals:		
Class 3 animals:	feral fallow deer	(Dama dama)	
	feral red deer	(Cervus elaphus)	
List of non-declared animals	alpaca	(Lama pacos)	
	Asian house gecko	(Hemidactylus frenatus)	YES
	axolotl	(Ambystoma mexicanum)	YES
	Bali cattle	(Bos javanicus and B. sondaicus)	
	bison or American buffalo	(Bison bison)	
	black rat	(Rattus rattus)	YES
	camel	(Camelus dromedarius)	
	cane toad	(Bufo marinus)	YES
	cattle	(Bos spp.)	YES
	chital	(axis) deer (Axis axis), other than a feral chital	
	domestic cat	(Felis catus)	YES
	domestic dog	(Canis familiaris)	YES
	domestic goat	(Capra hircus)	YES
	domestic pig	(Sus scrofa)	YES
	donkey	(Equus asinus)	YES
	European hare	(Lepus capensis)	
	fallow deer	(Dama dama), other than a feral fallow deer	
	guanicoe	(Lama guanicoe)	
	guinea pig	(Cavia porcellus)	YES
	horse	(Equus caballus)	YES
	house mouse	(Mus musculus)	YES
	llama	(Lama glama)	
	mule	(Equus caballus x Equus asinus)	
	red deer	(Cervus elaphus), other than a feral red deer	
	rusa deer	(Cervus timorensis), other than a feral rusa deer	YES
	sewer rat	(Rattus norvegicus)	YES
	sheep	(Ovis aries)	YES
	water buffalo	(Bubalus bubalis)	

Figure 32: Declared animals list.

*Presence entails current and historical occurrences.

**Refer to www.dpi.qld.gov.au for up to date listing.

Appendix G: CRC Extended Plant Species List

Species	Common name	Declared	National Program	Score	Rating
Abelmoschus manihot	Sunset Hibiscus	ENV	No	<10	Low Level
Acalypha hispida	Red Cats tails	ENV	No	<10	Low Level
Acalypha wilkesiana	Acalypha	ENV	No	<10	Low Level
Aechynome americana	American Jointvetch	ENV	No	<10	Low Level
Aeschynome indica	Budda Pea	ENV	No	<10	Low Level
Aeschynome villosa	Villos joint vetch	ENV	No	<10	Low Level
Agave vivipara	Agave	ENV	No	<10	Low Level
Ageratum conyzoides	Blue Top Billygoat Weed	ENV	No	<10	Low Level
Aglaonema commutatum	Chinese evergreen	ENV	No	<10	Low Level
Allamanda cathartica	Allamanda	ENV	No	17	MEDIUM
Alocasia macrorrhizos	Elephant Ear	ENV	No	<10	Low Level
Alpinia zerumbet	Shell Ginger	ENV	No	<10	Low Level
Alpinia zerumbet var. variegata	Variegated Shell Ginger	ENV	No	<10	Low Level
Alternanthera brasiliana	Brasilian Joyweed	ENV	No	<10	Low Level
Alternanthera denticulata	Lesser Joyweed	ENV	No	<10	Low Level
Alternanthera ficoidea	Josephs coat	ENV	No	<10	Low Level
Alternanthera philoxeroides	Alligator Weed	C1	Wons	38	2-HIGH
Alternanthera pungens	Khaki Weed	ENV	No	<10	Low Level
Alternanthera sessilis	Sessile Joyweed	ENV	No	<10	Low Level
Alysicarpus ovalifolius	False moneywort	ENV	No	<10	Low Level
Alysicarpus vaginalis	Alyce clover	ENV	No	<10	Low Level
Annona glabra	Pond Apple	C2	Wons	32	8-HIGH
Antigonon leptopus	Coral Vine	ENV	No	<10	Low Level
Arachis pintoi	Pinto Peanut	ENV	No	<10	Low Level
Ardisia crenata	Coral Bush	ENV	No	<10	Low Level
Ardisia elliptica	Shoe-button Ardisia	ENV	No	<10	Low Level
Argemone ochroleuca var. ochroleuca	Mexican Poppy	ENV	No	<10	Low Level
Argyreia nervosa	Elephant ear vine	ENV	No	18	MEDIUM
Aristolochia spp.	Aristolochia	C3	No	<10	Low Level
Arundo donax	Giant Reed Grass	ENV	No	<10	Low Level
Asparagus plumosus	Asparagus Fern	ENV	No	<10	Low Level
Azadirachta indica	Neem tree	ENV	No	11	MEDIUM
Bambusa balcooa	Balcooa Bamboo	ENV	No	<10	Low Level
Bambusa spp	Bamboo Creeping and clumping	ENV	No	16	MEDIUM
Bambusa vulgaris	Yellow Bamboo	ENV	No	<10	Low Level
Bauhinia monandra	Orchid Tree	ENV	No	<10	Low Level
Begonia spp.	Begonia	ENV	No	<10	Low Level
Bixa orellana	Lipstick Plant	ENV	No	<10	Low Level
Bothriochloa bladhii	Forest Blue Grass	ENV	No	<10	Low Level
Brillantaisia lamium	Brillantaisia	*ENV	No	25	18-HIGH
Bryophyllum pinnatum	Resurrection Plant	ENV	No	<10	Low Level
Bryophyllum spp	Mother of millions	C2	No	19	MEDIUM
Cabomba caroliniana	Cabomba	C2	Wons	28	13-HIGH
Cajanus cajan	Pigeon Pea	ENV	No	<10	Low Level
Caladium bicolor	Caladium	ENV	No	<10	Low Level
Calopogonium mucunoides	Calopo	ENV	No	14	MEDIUM
Canna indica	Red Canna Lily	ENV	No	12	MEDIUM
Capsicum annuum var. glabriusculum	Bird's Eye Chilli	ENV	No	<10	Low Level

* Local Law declaration.

Continued.....

<i>Cardiospermum grandiflorum</i>	Balloon vine	C3	No	18	MEDIUM
<i>Carpentaria acuminata</i>	Carpentaria Palm	ENV	No	<10	Low Level
<i>Caryota mitis</i>	Clustered Fishtail Palm	ENV	No	<10	Low Level
<i>Cassia fistula</i>	Golden Shower Tree	ENV	No	<10	Low Level
<i>Cassia javanica</i>	Pink Cassia	ENV	No	<10	Low Level
<i>Castilla elastica</i>	Panama Rubber Tree	*ENV	No	25	19-HIGH
<i>Cecropia spp.</i>	Mexican bean tree	C1	No	25	20-HIGH
<i>Cenchrus americanus</i>	Pearl Millet	ENV	No	<10	Low Level
<i>Cenchrus echinatus</i>	Mossman River Grass	ENV	No	<10	Low Level
<i>Cenchrus purpureum</i>	Elephant Grass	ENV	No	21	MEDIUM
<i>Cenchrus setaceum</i>	African fountain grass	C3	No	18	MEDIUM
<i>Centrosema molle</i>	Centro	ENV	No	<10	Low Level
<i>Centrosema pubescens</i>	Centro pubescens	ENV	No	13	MEDIUM
<i>Cestrum nocturnum</i>	Lady of the night	ENV	No	<10	Low Level
<i>Chamaesyce hirta</i>	Asthma Weed	ENV	No	<10	Low Level
<i>Chromolaena odorata</i>	Siam weed	C1	Siam	33	6-HIGH
<i>Cleome aculeata</i>	Spider Flower	ENV	No	<10	Low Level
<i>Clitoria ternatea</i>	Butterfly Pea	ENV	No	<10	Low Level
<i>Clitoria laurifolia</i>	Clitoria	ENV	No	13	MEDIUM
<i>Cocos nucifera</i>	Coconut	ENV	No	<10	Low Level
<i>Coffea arabica</i>	Coffee arabica	ENV	No	12	MEDIUM
<i>Coffea liberica</i>	Liberian Coffee	ENV	No	<10	Low Level
<i>Colocasia esculenta</i>	Taro	ENV	No	<10	Low Level
<i>Costus speciosa</i>	Costus	ENV	No	<10	Low Level
<i>Crotalaria goreensis</i>	Gambia Pea	ENV	No	<10	Low Level
<i>Crotalaria lanceolata</i>	Rattlebox Lance leaf	ENV	No	<10	Low Level
<i>Crotalaria pallida var. obovata</i>	Rattle Pod Streaked	ENV	No	<10	Low Level
<i>Crotalaria retusa</i>	Rattlepod	ENV	No	<10	Low Level
<i>Crotalaria spectabilis</i>	Rattlepod Showy	ENV	No	<10	Low Level
<i>Crotalaria zanzibarica</i>	Rattlepod zanzibar	ENV	No	<10	Low Level
<i>Cucumis anguria var. anguria</i>	Spiny Cucumber	ENV	No	<10	Low Level
<i>Curcuma longa</i>	Turmeric	ENV	No	<10	Low Level
<i>Cyperus aromaticus</i>	Navua Sedge	ENV	No	16	MEDIUM
<i>Cyperus esculentus</i>	Yellow Nutgrass	ENV	No	<10	Low Level
<i>Cyperus involucratus</i>	Umbrella Sedge	ENV	No	<10	Low Level
<i>Datura ferox</i>	Fierce Thornapple	ENV	No	<10	Low Level
<i>Delonix regia</i>	Poinciana Tree	ENV	No	<10	Low Level
<i>Desmodium heterophyllum</i>	Hetero	ENV	No	<10	Low Level
<i>Desmodium tortuosum</i>	Beggar Weed	ENV	No	<10	Low Level
<i>Dieffenbachia seguine</i>	Dumb Cane	ENV	No	<10	Low Level
<i>Duranta erecta</i>	Golden Dewdrops Sky Flower	ENV	No	18	MEDIUM
<i>Dypsis lutescens</i>	Golden Cane Palm	ENV	No	<10	Low Level
<i>Echinochloa polystachya</i>	Aleman grass	ENV	No	<10	Low Level
<i>Eichhornia crassipes</i>	Water Hyacinth	C2	No	26	16-HIGH
<i>Elaeis guineensis</i>	African Oil Palm	ENV	No	<10	Low Level
<i>Elephantopus mollis</i>	Tobacco weed	C2	No	18	MEDIUM
<i>Epipremnum aureum</i>	Golden Pothos	ENV	No	22	MEDIUM
<i>Epipremnum pinnatum cv. aureum</i>	Golden Pothos	ENV	No	<10	Low Level
<i>Eranthemum pulchellum</i>	Blue Sage	ENV	No	<10	Low Level
<i>Etlingera elatior</i>	Torch Ginger	ENV	No	<10	Low Level
<i>Eugenia uniflora</i>	Brazilian Cherry	ENV	No	<10	Low Level

* Local Law declaration.

Continued.....

Eupatorium riparium	Mistflower	ENV	No	<10	Low Level
Euphorbia cyathophora	Dwarf Poinsettia	ENV	No	<10	Low Level
Euphorbia heterophylla	Milkweed	ENV	No	<10	Low Level
Euphorbia tirucalli	Pencil Bush	ENV	No	<10	Low Level
Gloriosa superba	Glory Lily	ENV	No	<10	Low Level
Harungana madagascariensis	Harungana	C3	No	21	MEDIUM
Hedychium coronarium	White ginger	C3	No	<10	Low Level
Heliconia bihai	Heliconia- crab claw	ENV	No	<10	Low Level
Heliconia psittacorum	Heliconia	ENV	No	<10	Low Level
Hibiscus rosa-sinensis	Hibiscus	ENV	No	<10	Low Level
Hiptage benghalensis	Hiptage	*ENV	No	<10	Low Level
Hygrophila costata	Hygrophila	C1	No	22	MEDIUM
Hygrophila polysperma	Dwarf Hygrophila	ENV	No	<10	Low Level
Hymenachne amplexicaulis	Hymenachne	C2	Wons	36	3-HIGH
Hymenocallis littoralis	Spider Lily	ENV	No	<10	Low Level
Hyptis capitata	Knobweed	ENV	No	<10	Low Level
Hyptis pectinata	Comb Bushmint	ENV	No	<10	Low Level
Hyptis suaveolens	Hyptis	ENV	No	<10	Low Level
Inga vera	Icecream Bean	ENV	No	<10	Low Level
Ipomoea cairica	Mile-a-minute	ENV	No	13	MEDIUM
Ipomoea hederifolia	Red Convolvulus	ENV	No	13	MEDIUM
Ipomoea indica	Blue Morning Glory	ENV	No	13	MEDIUM
Ipomoea obscura	Obscure morning glory	ENV	No	<10	Low Level
Ipomoea plebeia	Bell Vine	ENV	No	13	MEDIUM
Ipomoea polymorpha	Small mauve ipomea	ENV	No	<10	Low Level
Ipomoea purpureum	Common Morning Glory	ENV	No	13	MEDIUM
Ipomoea quamoclit	Star of Bethlehem	ENV	No	13	MEDIUM
Ipomoea triloba	Littlebell	ENV	No	<10	Low Level
Jatropha gossypifolia	Bellyache bush	ENV	No	<10	Low Level
Kaempferia pulchra	Asian Crocus	ENV	No	<10	Low Level
Lantana camara	Lantana	C3	Wons	21	MEDIUM
Leucaena leucocephala	Leucaena	ENV	No	22	MEDIUM
Leucaena leucocephala subsp. leucocephala	Leucaena	ENV	No	<10	Low Level
Leucas lavandulifolia	Leucas	ENV	No	<10	Low Level
Leucas zeylanica	Leucas Ceylon slitwort	ENV	No	<10	Low Level
Ligustrum sinense	Chinese Privet	ENV	No	<10	Low Level
Limnocharis flava	Yellow Sawah Lettuce	C1	4TW	39	1-HIGH
Lycopersicon esculentum	Tomato	ENV	No	<10	Low Level
Macroptilium atropurpureum	Siratro	ENV	No	13	MEDIUM
Macroptilium lathyroides	Phasey Bean	ENV	No	<10	Low Level
Malvastrum americanum	Spiked Malvastrum	ENV	No	<10	Low Level
Malvastrum coromandelianum	Prickly Malvastrum	ENV	No	<10	Low Level
Manihot esculenta	Cassava	ENV	No	<10	Low Level
Manihot glaziovii	Manihot rubber tree	*ENV	No	24	MEDIUM
Medicago sativa	Lucerne	ENV	No	<10	Low Level
Megathyrus maximum	Guinea Grass	ENV	No	13	MEDIUM
Melinis minutiflora	Molasses Grass	ENV	No	<10	Low Level
Melinis repens	Red Natal Grass	ENV	No	<10	Low Level
Merremia dissecta	Snake vine	ENV	No	<10	Low Level
Merremia peltata	Native vine	ENV	No	13	MEDIUM

* Local Law declaration.

Continued.....

<i>Merremia quinquefolia</i>	Merremia	ENV	No	<10	Low Level
<i>Merremia tuberosa</i>	Yellow morning glory	ENV	No	<10	Low Level
<i>Miconia</i> spp.	Miconia	C1	4TW	32	9-HIGH
<i>Mimosa diplotricha</i>	Giant Sensitive Weed	ENV	No	<10	Low Level
<i>Mimosa invisa</i>	Giant Sensitive Plant	C2	No	27	15-HIGH
<i>Mimosa pudica</i>	Common Sensitive Plant	ENV	No	13	MEDIUM
<i>Mimosa pudica</i> var. <i>unijuga</i>	Sensitive Plant	ENV	No	<10	Low Level
<i>Momordica charantia</i>	Balsam Pear	ENV	No	21	MEDIUM
<i>Mucuna pruriens</i>	Velvet Bean	ENV	No	<10	Low Level
<i>Murraya paniculata</i> var. "Exotica"	Mock Orange	ENV	No	<10	Low Level
<i>Neonotonia wightii</i>	Glycine	ENV	No	13	MEDIUM
<i>Neptunia oleracea</i> and <i>N. plena</i>	Water mimosa	C1	No	26	17-HIGH
<i>Ochna serrulata</i>	Mickey Mouse Plant	ENV	No	<10	Low Level
<i>Ocimum americanum</i>	Basil	ENV	No	<10	Low Level
<i>Odontonema stricta</i>	Fire spike	ENV	No	21	MEDIUM
<i>Odontonema tubaeforme</i>	Firespike Plant	ENV	No	<10	Low Level
<i>Opuntia stricta</i> ; syn. <i>O. inermis</i>	Prickly Pear	C2	No	<10	Low Level
<i>Parmentiera aculeata</i>	Cucumber Tree	ENV	No	20	MEDIUM
<i>Parthenium hysterophorus</i>	Parthenium	C2	Wons	36	4-HIGH
<i>Paspalum paniculatum</i>	Russell River Grass	ENV	No	<10	Low Level
<i>Paspalum villei</i>	Vasey Grass	ENV	No	<10	Low Level
<i>Paspalum virgatum</i>	Clyde Road Grass	ENV	No	17	MEDIUM
<i>Passiflora coccinea</i>	Scarlet Passion-flower	ENV	No	<10	Low Level
<i>Passiflora edulis</i>	Passion Fruit	ENV	No	<10	Low Level
<i>Passiflora foetida</i>	Stinking Passion Fruit	ENV	No	<10	Low Level
<i>Passiflora</i> spp.	Passionfruit/flower exotic	ENV	No	16	MEDIUM
<i>Passiflora suberosa</i>	Corky Passion Flower	ENV	No	<10	Low Level
<i>Pedilanthus tithymaloides</i> subsp. <i>smallii</i>	Slipper-flower	ENV	No	<10	Low Level
<i>Peltophorum pterocarpum</i>	Yellow Flame Tree	ENV	No	<10	Low Level
<i>Philodendron lacerum</i>	Philodendron	ENV	No	<10	Low Level
<i>Philodendron scandens</i>	Philodendron- velvet leaf	ENV	No	<10	Low Level
<i>Phyllanthus amarus</i>	Phyllanthus	ENV	No	<10	Low Level
<i>Phyllanthus debilis</i>	Niruri	ENV	No	<10	Low Level
<i>Phyllanthus tenellus</i>	Mascarene Island Leaf flower	ENV	No	<10	Low Level
<i>Phyllanthus urinaria</i>	Chamber Bitter	ENV	No	<10	Low Level
<i>Phyllostachys aurea</i>	Fishpole Bamboo	ENV	No	<10	Low Level
<i>Physalis angulata</i>	Wild Gooseberry	ENV	No	<10	Low Level
<i>Phytolacca octandra</i>	Inkweed; Dyeberry	ENV	No	<10	Low Level
<i>Phytolacca rivinoides</i>	Venezualan pokeweed	ENV	No	<10	Low Level
<i>Pilea cadierei</i>	Aluminum Plant	ENV	No	<10	Low Level
<i>Pistia stratiotes</i>	Water Lettuce	C2	No	31	10-HIGH
<i>Pithecellobium dulce</i>	Madras Thorn	ENV	No	<10	Low Level
<i>Pityrogramma calomelanos</i> var. <i>calomelanos</i>	Silver Fern	ENV	No	<10	Low Level
<i>Praxelis clematidea</i>	Praxelis	ENV	No	<10	Low Level
<i>Psidium cattleianum</i> var. <i>cattleianum</i>	Cherry Guava	ENV	No	<10	Low Level
<i>Psidium guajava</i>	Guava	ENV	No	16	MEDIUM
<i>Pueraria montana</i> , <i>P. lobata</i>	Kudzu vine	C2	No	28	14-HIGH
<i>Pueraria phaseoloides</i>	Puero, tropical kudzu	ENV	No	13	MEDIUM
<i>Ravenala madagascariensis</i>	Travellers Palm	ENV	No	<10	Low Level
<i>Ricinus communis</i>	Castor oil bush	ENV	No	15	MEDIUM

Continued.....

Rivina humilis	Coral Berry	ENV	No	<10	Low Level
Rottboellia cochinchinensis	Itch Grass	ENV	No	24	MEDIUM
Rubus alceifolius	Giant Bramble	ENV	No	15	MEDIUM
Salvia misella	Wild Sage	ENV	No	<10	Low Level
Salvinia molesta	Salvinia/Water Fern	C2	Wons	35	5-HIGH
Samanea saman	Raintree	ENV	No	15	MEDIUM
Sanchezia parvibracteata	Sanchezia	ENV	No	21	MEDIUM
Sansevieria trifasciata	Mother-in-laws tongue	ENV	No	21	MEDIUM
Sauropus androgynus	Sweet-leaf Sauropus	ENV	No	<10	Low Level
Selaginella willdenovii	Peacock Fern	C3	No	<10	Low Level
Senna alata	Candle bush	ENV	No	22	MEDIUM
Senna obtusifolia, S. hirsuta and S. tora	Sicklepod	C2	No	29	11-HIGH
Sida acuta	Spinyhead Sida	ENV	No	<10	Low Level
Sida cordifolia	Flannel Weed	ENV	No	<10	Low Level
Sida rhombifolia	Common Sida	ENV	No	<10	Low Level
Solanum americanum subsp nutans	Glossy Nightshade	ENV	No	<10	Low Level
Solanum mauritianum	Wild tobacco	ENV	No	15	MEDIUM
Solanum nigrum subsp. nigrum	Blackberry Nightshade	ENV	No	<10	Low Level
Solanum seaforthianum	Brazilian Nightshade	ENV	No	<10	Low Level
Solanum torvum	Devil's Fig	ENV	No	<10	Low Level
Spathodea campanulata	African Tulip Tree	C3	No	24	MEDIUM
Spermacoce latifolia	Square Weed	ENV	No	<10	Low Level
Sphagneticola trilobata	Singapore Daisy	C3	No	23	MEDIUM
Sporobolus africanus	Parramatta grass	C2	No	20	MEDIUM
Sporobolus fertilis	Giant Parramatta grass	C2	No	20	MEDIUM
Sporobolus jacquemontii	American Rat's tail Grass	ENV	No	<10	Low Level
Sporobolus jacquemontii	American rat's tail grass	C2	No	20	MEDIUM
Sporobolus pyramidalis and S. natalensis	Giant rat's tail grass	C2	No	20	MEDIUM
Stachytarpheta cayennensis	Snakeweed	ENV	No	<10	Low Level
Stachytarpheta jamaicensis	Blue Snakeweed	ENV	No	<10	Low Level
Stachytarpheta mutabilis	Pink Snakeweed	ENV	No	<10	Low Level
Stachytarpheta spp.	Snake Weed	ENV	No	<10	Low Level
Stephanophyllum longifolium	Red Christmas pride	ENV	No	<10	Low Level
Strobilanthes dyeriana	Persian shield	ENV	No	<10	Low Level
Syngonium podophyllum	Goosefoot	ENV	No	<10	Low Level
Syngonium spp	Syngonium	ENV	No	16	MEDIUM
Syzygium jambos	Rose Apple	ENV	No	<10	Low Level
Tabebuia pallida	Pink Trumpet Tree	ENV	No	<10	Low Level
Tarenaya hassleriana	Prickly Spider Flower	ENV	No	<10	Low Level
Tecoma stans	Yellow Bells	ENV	No	<10	Low Level
Thalia geniculata	Alligator Flag Weed	ENV	No	<10	Low Level
Themeda quadrivalvis	Grader Grass	C2	No	22	MEDIUM
Thevetia peruviana	Yellow oleander	C3	No	18	MEDIUM
Thunbergia alata	Black-eyed Susan	ENV	No	13	MEDIUM
Thunbergia fragrans	Thunbergia fragrans	C1	No	<10	Low Level
Thunbergia grandiflora	Blue Thunbergia	C2	No	33	7-HIGH
Thunbergia laurifolia	Laurel Clock Vine	C1	No	29	12-HIGH
Thysanolaena maxima	Tiger Grass	ENV	No	<10	Low Level
Tithonia diversifolia	Japanese sunflower	ENV	No	19	MEDIUM
Tradescantia spathacea	Moses-in-the-boat	ENV	No	<10	Low Level

Continued.....

Tradescantia zebrina	Wandering Jew	ENV	No	16	MEDIUM
Triplaris weigeltiana	Long Jack	ENV	No	<10	Low Level
Triumfetta pilosa	NA	ENV	No	<10	Low Level
Triumfetta rhomboidea	Chinese Burr	ENV	No	<10	Low Level
Turbina corymbosa	Turbina	ENV	No	<10	Low Level
Urena lobata	Urena Burr	ENV	No	<10	Low Level
Urochloa decumbens	Signal Grass	ENV	No	<10	Low Level
Urochloa (Brachiaria) humidicola	Humidicola	ENV	No	<10	Low Level
Urochloa mutica	Para grass	ENV	No	18	MEDIUM
Urochloa (Brachiaria) subquadripara	Green Summer Grass	ENV	No	<10	Low Level
Vernonia elaeagnifolia	Curtain Creeper	ENV	No	<10	Low Level
Xanthium pungens	Noogoora burr	ENV	No	18	MEDIUM
Zingiber officinale	Ginger	ENV	No	<10	Low Level
Zingiber spectabile	Beehive Ginger	ENV	No	<10	Low Level

Figure 33: Extended plant species priority list.

Explanatory Note

The above species list is open to annual review by the working group. The plants in this list undergo prioritisation and are allocated risk scores according to a range of factors (refer objective 7, page 20).

At the time this document was produced, the list contained all known declared plants occurring in the LG area, plus a range of other introduced, exotic species that are known to show weedy characteristics. i.e. invading natural areas, or naturalising and outcompeting natural vegetation.

The pest prioritisation process aims to interpret the many situations where weeds occur and their various impacts:

- 1. High:** Priority species, Declared or otherwise, these plants have been deemed the 20 most serious pests and are the target of control efforts.
- 2. Medium level:** Declared or otherwise, these plants have been deemed serious, but fall outside CRC's main operational focus due to limitations in resourcing. Regulation under the LP Act still applies to declared species and CRC discourages the use of any of the environmental weeds. CRC treats many medium level weeds in a less strategic fashion.
- 3. Low Level:** Declared or otherwise, these plants have been noted as being harmful and undesirable in natural areas. CRC discourages the use of the plants and promotes alternative species choices where possible. CRC treats many medium level weeds in a less strategic fashion.