

**Department of State Development, Tourism, and Innovation**  
**Wangetti Trail South Section (Wangetti to Palm Cove)**  
**Preliminary Weed Pest and Disease Management Plan**

**February 2021**





# Abbreviation and acronyms

Abbreviation/acronym	Definition
AS	Australian Standards
AWTGS	Australian Walking Track Grading System
Biosecurity Act	<i>Biosecurity Act 2014</i>
DAF	Department of Agriculture and Fisheries
DAWE	Department of Agriculture, Water and the Environment
DES	Department of Environment and Science
DSDTI	Department of State Development, Tourism and Innovation
EMP	Environmental Management Plan
EP Act	<i>Environmental Protection Act 1994</i>
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
GBO	General Biosecurity Obligation
GED	General Environmental Duty
IPAC	Invasive Plants and Animals Committee
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
MTBA TDRS	Mountain Bike Trail Guidelines Trail Difficulty Rating System
PMST	Protected Matters Search Tool
PSTR	Pre-Start Trail Review
QLD IPAS	Queensland Invasive Plants and Animals Strategy 2019-2024
QPWS	Queensland Parks and Wildlife Service
TDPD	Tourism Development Projects Division
Wet Tropics	Wet Tropics of Queensland
WHD	Weed Hygiene Declarations
WoNS	Weeds of National Significance
WPDMP	Weed, Pest and Disease Management Plan
WTMA	Wet Tropics Management Authority
WTWHA	Wet Tropics World Heritage Area

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# 1. Introduction

## 1.1 Project background

The Department of State Development, Tourism and Innovation (DSDTI) – Tourism Development Projects Division (TDPD) is proposing to establish the Wangetti Trail – Wangetti South (Project) Section, a 29.7 kilometre (km) shared use trail to accommodate both mountain bike users and hikers from the southern boundary Lot 2 SP309094 in the township of Wangetti, to Palm Cove (refer to Figure 1-1).

The Wangetti South Section will comprise of the following components:

- 29.7 km shared use trail to accommodate both mountain bike users and hikers, consisting of natural ground and surface treatments, which will be a maximum of 1.5 m wide. The 1.5 m wide trail will be located within a 40 m survey corridor, referred to as the construction allowance corridor, to allow flexibility for the placement of infrastructure during the construction phase. The trail has been designed to be a 'Mountain Biking – intermediate (blue square with blue outline) as defined in the Australian Mountain Bike Trail Guidelines Trail Difficulty Rating System (MTBA TDRS) and grade 3 for hikers, as defined in the Australian Walking Track Grading System (AWTGS), which also equates to Class 3 in the Australian Standard for Walking Tracks, Part 1: Classification and Signage (AS 2156.1-2001). The trail will have an average gradient of <10% and a maximum gradient no greater than 15% (for short distances only). Built structures proposed as part of the trail include gully crossings, bridges, staircases, platforms, rock armouring and signage, where appropriate and required.
- A number of waterway crossings along the shared use trail that will comprise of the following: rock armouring, boulder crossings and low-level bridge (minor water crossing).
- Dark Jungle (public camping node and amenities block).
- The formalisation of existing access tracks into service tracks to provide restricted access to the shared use trail and Dark Jungle for construction purposes, operational purposes, maintenance purpose and for emergency purposes.

The Wangetti South Section is being proposed over four properties located within the Douglas Shire Council and Cairns Regional Council local government areas. The project area intersects both the Macalister Range National Park and the Wet Tropics World Heritage Area (WTWHA).

The project is being delivered by TDPD as part of an adventure-based ecotourism development in north Queensland. The shared use trail will provide walkers and mountain bike riders with a unique experience to traverse through natural areas of north Queensland covering bushland and coastal areas, including the Wet Tropics of Queensland (Wet Tropics), and national parks.

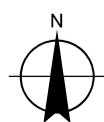
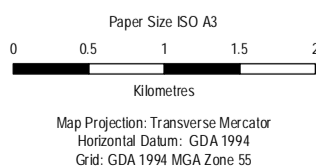
Development of a Weed, Pest and Disease Management Plan (WPDMP) is required to demonstrate the management of weeds, pest and disease during the construction and operational phases of the Wangetti South section. This report is based on desktop information available at the time of preparation. A detailed weed survey was not carried out during previous ecological surveys of the project area, however general observations were made of weed and pest species within the project area.

It forms part of a sub-plan in the Environmental Management Plan (EMP) for the Wangetti South Section. This document, and focuses on the management of weeds, pests and diseases throughout the Project.





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DITID  
Environment Assessment Stage 2 Wangetti Trail

Project No. 41-32458  
Revision No. 5  
Date 1/12/2020

Wangetti South Section  
Project Locality Plan

FIGURE 1-1



## 1.2 Purpose, objectives, and structure of this report

TDPD and the operator of the Wangetti South Section Project have both a legal and social reasonability to manage existing weeds, pests and disease within the Wangetti South Section and to prevent the further spread of biosecurity matters as a result of project activities during the construction phase and operational phase. This WPDMP has been prepared to satisfy the obligations and complements the overarching Wangetti South Section Environmental Management Plan.

The objectives of the WPDMP is to:

- Protect the biodiversity of the surrounding landscape of the adverse impacts from weeds.
- Reduce weed infestations by integrating control methods and cost-effective management.
- Manage weeds in disturbed areas and to protect rehabilitated areas.
- Manage the weed species that are currently present on the site as well as off-site work areas.
- Prevent introduction of new weed infestations to the Project area and adjoining areas.
- Increase on-site awareness about the major weed species and manage pest species through strategic management, where possible.
- Avoid and effectively manage impacts associated with weeds, pests and diseases.

The WPDMP provides an overview of the strategy, methods and controls implemented as part of the Wangetti South Section Project to manage the issue of weeds, pests and diseases.

Specifically, this WPDMP:

- Identifies weeds, pests and potential diseases within the Wangetti South Section project area; and
- Describes the weeds, pests, and disease management strategy, to identify, avoid and, prevent/minimise and control the introduction of and spread of weeds, pests and diseases within the Wangetti South Section and to neighbouring areas.

The WPDMP is to be implemented at the project area and is applicable to all activities that have the potential to introduce and/or spread of weeds, pests or disease throughout the construction and operational phases of the Project.

## 1.3 Limitations

This report has been prepared by GHD for Department of State Development, Tourism and Innovation and may only be used and relied on by Department of Innovation & Tourism Industry for the purpose agreed between GHD and the Department of Innovation & Tourism Industry as set out in Section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other Department of State Development, Tourism and Innovation arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

## 1.4 Acronyms, Terms and Definitions

This section provides definition of terminology used throughout this report.

**Clean** means free from any pest plant and pathogen reproductive material.

For vehicles, plant and equipment, 'clean' means that no soil and/or, organic matter that may contain pest plant and pathogen reproductive material, is on or in areas that are accessible during cleaning and maintenance work. A vehicle is considered to remain clean if it leaves its point of origin clean and only travels on sealed roads or well-maintained unsealed roads.

**Contractor** is any person undertaking work for or on behalf of the Project.

**Pathogen** includes any disease-causing organism such as bacteria, parasites, viruses or fungi.

**Pest** means any animal, plant, parasite or disease causing organism (such as bacteria, virus or fungus) capable of causing adverse impacts to environmental, economic or social values, whether or not it is declared and listed in the *Biosecurity Act 2014* (Biosecurity Act) and *Biosecurity Regulation 2016* (Biosecurity Regulation).

**Pest management** includes all activities involved in the planning, detection, control, monitoring or eradication of pests in QPWS managed areas.

**Pest plant** means any plant capable of causing adverse impacts to environmental, economic or social values whether or not it is a declared plant listed in the Biosecurity Act and Biosecurity Regulation.

**QPWS managed areas** include protected areas (State land) managed under the *Nature Conservation Act 1992* and other areas managed by QPWS including a range of freehold lands, *Land Act 1994* reserves and other tenures.

**QPWS Pest Management System** refers to a system to facilitate pest management planning and reporting which guides operational implementation, including monitoring, on all QPWS managed areas.

**Reproductive material** is any part of a pest plant or pathogen that is capable of sexual or asexual reproduction. Examples include, but are not limited to:

- Seed;
- Spores;
- Roots, bulbs, rhizomes, stolons, tubers, or parts thereof;
- Stem or leaf pieces; and
- Whole plants or fungi.

**Surrounding area or surrounding environment** area adjoining the 40 m construction corridor

**Transport or utility corridor** includes any formed or unformed road or track (gazetted or not), power line or pipeline (regardless of whether an easement exists) and associated access tracks.

**Vehicle, plant and equipment** includes, but is not restricted to, any car, motorcycle, truck, tractor, grader, tracked earthmoving equipment, boat, vessel, airplane or helicopter.

**Visitor** is any person who is not an employee that visits QPWS managed areas, for recreational or scientific purposes.



**Weed and Seed Hygiene Declaration** is the written declaration that may be required before supplying anything that is, or could be, contaminated with weeds and/or organic matter.

**WoNS** Weeds of National Significance

## **1.5 Site specific background documents**

WPDMP has been prepared for both the construction phase and the operational phase of the Project and outlines measures to prevent the introduction of new weed species, pest species and diseases into the project area and minimise the spread of declared weeds, pests and disease within the surrounding area of the project area.

The Wet Tropics bioregion has diverse and complex flora and fauna protected within the Wet Tropics World Heritage Area and surrounding regions. Invasive species and diseases can have significant impacts on the bioregion. According to the Wet Tropics Management Authority – Invasive Pests - A threat to the WTWHA brochure dated 2016, the tropical climate of the WTWHA offers favourable growing conditions for exotic tropical plants and animals. There are a broad range of habitats offering varied temperatures and rainfall. The Wet Tropics has frequent cyclones, floods and droughts which can disrupt ecosystems and help spread weeds, diseases and, occasionally, feral animals such as tramp ants. For instance, cyclones can move weed seeds great distances via wind and water and destroy the rainforest canopy, allowing weeds to flourish.

This WPDMP has been developed in consultation with TDPD and the Department of Environment and Science (DES) and has considered QPWS operational policies, procedural guides, guidelines, information sheets, technical manuals, procedures and checklists associate with pest, weed and disease management and has also considered the information in the Wangetti South Section Baseline Ecology and Impact Assessment Report 2020 prepared by GHD.

## 2. Roles and responsibilities

This section outlines parties associated with the Wangetti South Section and the responsibilities regarding weeds, pests and disease management. All personnel are responsible for ensuring they comply with the EMP, their General Environmental Duty (GED) and Duty to Notify in accordance with the EP Act. Table 2-1 outlines the responsible parties for managing weeds, pests and pathogens.

**Table 2-1 Environmental roles**

Responsible parties	Responsibilities
<b>TDPD</b>	<p>TDPD is responsible for taking all reasonable and practical steps to minimise the risks associated with invasive plants under control within the project area. This is known as the General Biosecurity Obligation (GBO).</p> <p>The Project Manager shall support all project personnel in the implementation of the WPDMP. The Project Manager may delegate responsibilities to appropriately qualified personnel where appropriate.</p> <p>The Project Manager's responsibilities are to:</p> <ul style="list-style-type: none"> <li>• Ensure that all personnel are familiar with the WPDMP and are aware of their environmental responsibilities.</li> <li>• Ensure that all personnel operate in accordance with the WPDMP, statutory approvals and legislative requirements.</li> <li>• Ensure necessary guidance and advice is provided to all personnel with regard to biosecurity management requirements.</li> <li>• Ensure that all relevant licenses/permits/approvals are in place prior to any works being undertaken (if required).</li> <li>• Undertake audits of the WPDMP and review environmental performance once a construction segment has been completed during the construction phase. Undertake audits of the WPDMP on a monthly basis during the operational phase of the project.</li> <li>• Where necessary, coordinate and/or assist in the response to environmental incidents through implementation of corrective actions.</li> <li>• Report environmental incidents to relevant Administering Authority.</li> </ul>
<p><b>Contractor's Project Manager</b></p> <p><b>Contractor's Trail Designer/Builder</b></p>	<p>Implementation of the provisions relating to construction phase of this WPDMP during the construction phase including:</p> <ul style="list-style-type: none"> <li>• Complying with the EMP, statutory approvals, legislative requirements, Australian Standards and any relevant Code of Practice and/or Industry Standard.</li> <li>• Provide the resources and training systems to develop, schedule and deliver induction to all staff and contractors including site induction and any relevant site-specific biosecurity training.</li> <li>• Record training events and maintain personnel records.</li> </ul>



Responsible parties	Responsibilities
	<ul style="list-style-type: none"> <li>• Provide portable toilets onsite if required and ensure that maintenance and disposal of waste is conducted by a licensed contractor as required.</li> <li>• Ensure all vehicles arriving onsite utilise the designated entry/exit points and parking area. Ensure that all equipment is fuelled, maintained and 'fit for purpose' for the required task prior to arriving at the site.</li> <li>• Notify the Project Manager of environmental incidents and corrective actions taken (if any).</li> <li>• Record and maintain a database detailing environmental incidents and non-conformances including corrective actions taken.</li> </ul>
<b>Operator in Partnership with DES/ QPWS</b>	<ul style="list-style-type: none"> <li>• Develop, implement, monitor, and maintain effectiveness of the WPDMP.</li> <li>• Liaise with relevant organisations in relation to biosecurity approvals. Identify, record, report (as required) and rectify non-compliances. Investigate and report biosecurity related incidents to TPDP/DES. Report biosecurity related incidents to regulatory agencies.</li> <li>• Complying with the EMP, statutory approvals, legislative requirements, Australian Standards and any relevant Code of Practice and/or Industry Standard.</li> <li>• Provide the resources and training systems to develop, schedule and deliver induction to all staff and trail users including site induction and any relevant site-specific biosecurity training.</li> <li>• Record training events and maintain personnel records.</li> </ul>
<b>All Personnel</b>	<p>Adhere to the general biosecurity obligation as specified under the Biosecurity Acts. Implement the provisions of this plan where they apply to their day to day activities. Report any biosecurity non-compliances to operational management. Raise non-compliances with this WPDMP. Participate in biosecurity training as relevant.</p>

# 3. Legal and other requirements

## 3.1 Legislative framework

Applicable legislation, regulations, guidelines and strategies enacted by the Commonwealth, State of Queensland and local governments for weed, pest and disease management in the Wangetti South Section are described in the following sections.

## 3.2 Commonwealth, State and Local Government Legislation and Strategies

An overview of Commonwealth, State Government and local government legislation and strategies considered in the development of the WPDMP is presented in Table 3-1.

**Table 3-1 Summary of applicable Commonwealth legislation and strategies**

Act or Strategy	Summary of Act of Strategy
Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The purpose of the EPBC Act is to provide a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places.
Australian Weeds Strategy 2017-2027 (AWS)	The purpose of the AWS is to provide a national guideline, outlining the principles that underpin weed management in Australia. The AWS aims to guide a coordinated effort for all jurisdictions and affected stakeholders, informing plans and actions by state and local governments, industry, landholders and communities (DAWE, 2017). The Invasive Plants and Animals Committee (IPAC) is responsible for reviewing the list of Weeds of National Significance (WoNS), all of which have individual national strategic management plans.
Biosecurity Act 2014 (Biosecurity Act)	<p>The purpose of the Biosecurity Act is to provide a framework for an effective biosecurity system and manage risks associated with emerging, endemic and exotic species. All individuals and organisations have a GBO under Biosecurity Act, which means that they are responsible for managing biosecurity risks that are under their control and that they know about, or should reasonably be expected to know about. Under the GBO, individuals and organisation whose activities pose a biosecurity risk must:</p> <ul style="list-style-type: none"> <li>• Take all reasonable and practical steps to prevent or minimise each biosecurity risk</li> <li>• Minimise the likelihood of causing a biosecurity event, and limit the consequences if such an event is caused</li> <li>• Prevent or minimise the harmful effects a risk could have, and not do anything that might make any harmful effects worse.</li> </ul> <p>The Biosecurity Act takes a risk-based approach to biosecurity threats which allows greater flexibility and more responsive approaches to manage each specific circumstance focussing on biosecurity risks that are, or are</p>

Act or Strategy	Summary of Act of Strategy
	<p>likely to become, a significant problem for human health, social amenity, the economy or the environment. For example, a biosecurity risk exists where a person or organisation is moving soil, vegetation, machinery and/or equipment that could carry a weed or contaminant. Terms used under the Biosecurity Act are defined under legislation and can also be viewed on the Department of Agriculture and Fisheries (DAF) website. For the purpose of this CWMP, key terminology includes prohibited matter and restricted matter as defined within the Biosecurity Act 2014, as follows:</p> <ul style="list-style-type: none"> <li>• Prohibited Matter is biosecurity matter not currently present or known to be present in Queensland. It is prohibited because it may have a significant adverse effect on a biosecurity consideration if it did enter Queensland.</li> <li>• Restricted Matter is biosecurity matter found in Queensland that may have adverse effects on a biosecurity consideration if conditions or restrictions under the Act were not imposed. Restricted invasive plants may fall into 1, a combination or all of Categories 2 to 5 (listed below).</li> <li>• Invasive plants are not prohibited or restricted invasive plants. Everyone is obligated to take all reasonable and practical steps to minimise the risks associated with invasive plants under their control.</li> </ul>
<p>Department of Environmental and Science, 2013. Operational policy Pest plant and pathogen spread prevention QPW/2013/746 v1.03</p>	<p>The policy provides guidance for staff of the DES, QPWS on minimising pest plant and pathogen spread into, within and from QPWS managed areas.</p>
<p>Vehicle and machinery cleandown procedures 2019</p>	<p>The purpose of this procedure is to provide consistent approaches across Queensland to vehicle and machinery cleandown procedures and reduce risk of invasive species spread via transportation of vehicle and machinery across Queensland (DAF 2019a). Suitable Weed Hygiene Declarations (WHD) should be developed by the Contractor as appropriate to reflect Project activities and risks (e.g. vehicle inspections, vehicle wash/brush down, etc.).</p>
<p>Environmental Protection Act 1994 (EP Act)</p>	<p>The purpose of the EP Act is to protect Queensland environment while allowing for ecologically sustainable development. Under the EP Act, a person has a GED to not undertake activities that cause or are likely to cause environmental harm unless the person takes all reasonable and practicable measures to prevent and minimise the harm.</p>

Act or Strategy	Summary of Act of Strategy
	<p><b>General Environmental Duty</b></p> <p>Section 319 of the EP Act states that every person has a GED. This GED requires that a person must not carry out an activity that causes or is likely to cause environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm. In deciding measures to be undertaken to fulfil the GED the following must be considered:</p> <ul style="list-style-type: none"> <li>• The nature of the harm or potential harm.</li> <li>• The sensitivity of the receiving environment.</li> <li>• The current state of technical knowledge for the activity.</li> <li>• The likelihood of successful application of the different measures that might be taken.</li> <li>• The financial implications of the different measures as they would relate to the type of activity.</li> </ul>
<p>Invasive pests - a threat to the Wet Tropics World Heritage Area prepared by Wet Tropics Management Authority</p>	<p>The Wet Tropics Management Authority has produced a brochure which highlights the importance of biosecurity and management of invasive pests in the Wet Tropics. The brochure also stresses the need for education, research and community participation to help control a range of weeds, feral animals and diseases in the Wet Tropics</p>
<p>Queensland Invasive Plants and Animals Strategy 2019-2024 (QLD IPAS)</p>	<p>The QLD IPAS is a state-wide strategic planning framework that addresses the impacts caused by invasive plants and animals. The QLD IPAS aims to direct and facilitate strategic and targeted actions to reduce the impacts of invasive species and identifies the shared responsibility of state and local government, landholders, industry and community (DAF 2019b).</p> <p>This can be accessed from the DAF at:</p> <p><a href="https://www.daf.qld.gov.au/business-priorities/biosecurity/policy-legislation-regulation/queensland-invasive-plants-animals-strategy">https://www.daf.qld.gov.au/business-priorities/biosecurity/policy-legislation-regulation/queensland-invasive-plants-animals-strategy</a></p>
<p>Wet Tropics Management Plan 2020</p>	<p>The Wet Tropics Management Plan 2020 lists undesirable plants and regulates bringing them into the World Heritage Area</p>
<p>Wet Tropics Conservation Strategy 2004</p>	<p>The Wet Tropics Conservation Strategy was developed by Wet Tropics Management Authority and the Queensland Parks and Wildlife Services. Conservation Strategy outlines actions to achieve the conservation, rehabilitation and transmission to future generations of the Wet Tropics World Heritage Area.</p> <p>The strategy identifies the need to address the many direct and underlying threats to the integrity of the Area. Integrated regional planning and cooperation with industry and the community will be necessary to minimise underlying threats to</p>



Act or Strategy	Summary of Act of Strategy
	<p>World Heritage such as population growth, agriculture and other farming, urban development, community infrastructure, water use, tourism and recreation. The strategy also addresses direct threats to the Area such as habitat loss and fragmentation through vegetation clearing, altered water flows and drainage, changed fire regimes and the spread of weeds, feral animals or pathogens.</p>
<p>Local Council Biosecurity Plans</p> <p>Cairns Region Biosecurity Plan 2019-2024</p> <p>Douglas Shire Biosecurity Plan 2017-2021.</p>	<p>Two local government areas are traversed by the trail. Each of these areas employ's its own biosecurity plan based on the Biosecurity Act. These plans prioritise Council's management of weeds based on the level of national and local significance of the impact (environmentally, economically and socially) and the capacity to manage. Scores are determined through a combination of scored risk assessments and consultations. Depending on the council, the plans may use differing labels for 'high', 'medium' and 'low' priorities. Higher priority species are primarily targeted with intense and on the ground control strategies, while low priority species will generally have education/awareness programs or no control. Proposed management techniques and control strategies are assessed for each species and include prevention, eradication, reduction, containment, education and impact/asset protection.</p> <p>The Cairns Region Biosecurity Plan 2019-2024 and the Douglas Shire Biosecurity Plan 2017-2021 noted the following priority weeds in the region:</p> <ul style="list-style-type: none"> <li>• Gamba grass (<i>Andropogon gayanus</i>)</li> <li>• Hiptage (<i>Hiptage benghalensis</i>)</li> <li>• Miconia tree (<i>Miconia calvescens</i>)</li> <li>• Senegalia spp.</li> <li>• Parthenium weed (<i>Parthenium hysterophorus</i>)</li> <li>• Salvinia/Water fern (<i>Salvinia molesta</i>)</li> <li>• Olive hymenachne (<i>Hymenachne amplexicaulis and hybrids</i>)</li> <li>• Glush weed (<i>Hygrophila costata</i>)</li> <li>• Thunbergia (<i>Thunbergia grandiflora syn. T. laurifolia</i>)</li> <li>• Pond apple (<i>Annona glabra</i>)</li> <li>• Water lettuce (<i>Pistia stratiotes</i>)</li> <li>• Mexican bean tree (<i>Cecropia pachystachya, C. palmata and C. peltata</i>)</li> <li>• Siam weed (<i>Chromolaena odorata</i>)</li> <li>• Opuntoid cacti</li> <li>• Water hyacinth (<i>Eichhornia crassipes</i>)</li> <li>• Brilliantaisia (<i>Brillantaisia lamium</i>)</li> <li>• Water Mimosa (<i>Neptunia oleracea and N. plena</i>)</li> <li>• Lantana (<i>Lantana camara and L. montevidensis</i>)</li> </ul>

Act or Strategy	Summary of Act of Strategy
	<ul style="list-style-type: none"> <li>• Giant rat's tail grass (<i>Sporobolus pyramidalis</i> and <i>S.natalensis</i>)</li> <li>• Cabomba (<i>Cabomba caroliniana</i>)</li> <li>• Amazon frogbit (<i>Limnobium laevigatum</i>)</li> <li>• Kudzu (<i>Pueraria montana</i> var. <i>lobata</i> syn. <i>P. lobata</i>, <i>P. triloba</i>)</li> <li>• Sicklepods (<i>Senna obtusifolia</i>, <i>S. hirsute</i> and <i>S. tora</i>)</li> <li>• Panama Rubber tree (<i>Castilla elastica</i>)</li> <li>• Venezuelan Pokeweed (<i>Phytolacca rivinoides</i>)</li> <li>• Tobacco Weed (<i>Solanum mauritianum</i>)</li> </ul> <p>Priority pest animals in the region includes:</p> <ul style="list-style-type: none"> <li>• Electric Ants (<i>Wasmannia auropunctata</i>)</li> <li>• Feral Deer (all species)</li> <li>• Yellow Crazy Ants (<i>Anoplolepis gracilipes</i>)</li> <li>• Feral Pig (<i>Sus Scrofa</i>)</li> <li>• Wild Dog (<i>Canis familiaris</i>)</li> </ul> <p>In addition, the plan identified a number of weeds that are considered to be high risk for the region:</p> <ul style="list-style-type: none"> <li>• Red-eared slider turtle (<i>Trachemys scripta elegans</i>)</li> <li>• Alligator weed (<i>Alternanthera philoxeroides</i>)</li> <li>• Fire weed (<i>Senecio madagascariensis</i>)</li> <li>• Mikania vine (<i>Mikania micrantha</i>)</li> <li>• Koster's curse (<i>Clidemia hirta</i>)</li> <li>• Bog moss (<i>Mayaca fluviatilis</i> Aubl.)</li> <li>• Sagittaria (<i>Sagittaria platyphylla</i>)</li> <li>• Limnocharis, yellow burrhead (<i>Limnocharis flava</i>)</li> <li>• Candyleaf (<i>Stevia ovata</i>)</li> <li>• Aleman grass (<i>Echinochloa polystachya</i>)</li> <li>• Madras thorn (<i>Pithecellobium dulce</i>)</li> <li>• High biomass grasses (such as thatch grass, Guinea grass, molasses grass and giant rat's tail grass)</li> </ul>

## 4. Existing environment

### 4.1 Overview

The Wangetti South Section is to be located within an area of high natural and cultural value. The area is visually appealing due to the location between the reef and the rainforest. High biodiversity is present in the local area and therefore the introduction of pathogens, weed and pest species has the potential to cause significant impacts such as disrupting the ecological integrity of the ecosystems within the Wangetti South Section area. MNES and MSES values including habitat and vegetation types are discussed within the document and appropriate mitigation measures have been prioritised to prevent and reduce impact on this area.

Weeds, pests, and pathogens can be introduced/transported to new areas via a range of methods. Key vectors for weeds and pest translocation within the Wangetti South Section project area include:

- Transportation into and across the project area – via vehicles, equipment, construction material, maintenance equipment, construction and operational personal and trail users (parts attached to footwear, bikes, clothing etc).
- Contaminated materials and produce – from raw materials such as gravel, sand and mulch may contain or carry weed seed or other biosecurity risks like invasive ants, pathogens or diseases.
- Natural methods of dispersion – via wind, waters (including flood water) and wildlife.

Recognising and managing potential vectors within the Wangetti South Section is an important step for minimising the spread of weeds, pests, diseases. Translocation by vehicles and construction equipment presents the highest risk for assisting the spread of weed species across the Wangetti South Section project area. Factsheets regarding the identification and treatment of high-risk weeds, pests and pathogens are provided in Appendix B. If treatment is required, methods used are to be approved by WTMA, DES, TDPD and QPW, as applicable.

### 4.2 Weed species

Table 4-1 summarises the declared weeds considered to be known or potentially present within the Wangetti South Section Project area. This information has been sourced from the EPBC Act Protected Matters Search Tool (PMST), the DES WildNet database search, Wet Tropics Management Authority (WTMA) website, discussions with WTMA, Cairns Region Biosecurity Plan 2019-2024 and Douglas Shire Biosecurity Plan 2017-2021. The species presented in Table 4-1 are found to be on the priority list of each Biosecurity Plan and has a specific Biosecurity Action Plan.

A detailed weed survey was not carried out during previous survey events, however general observations were made of weed and pest species within the project area. Weeds were noted in areas previously disturbed by storm events where tree canopy had been disturbed. In addition, information was sourced from the Wet Tropics Management authority website. The aim of this WPDMP is to prioritise management and control efforts in relation to statutory status of weeds in Table 4-1. Even though many weeds are mapped as occurring in the area based on MNES databases, using local Biosecurity information (Cairns Regional and Douglas Shire Council Biosecurity documents) and the online weed map distributed by the Department of Agriculture and Fisheries, weeds that are of local significance can be identified.

In the fourth column of Table 4-1, a ranking has been assigned to those weed species that are considered to have a greater impact on the existing environment based from the information

contained with the Douglas Shire Biosecurity Plan 2017 – 2021 and the Cairns Region Biosecurity Plan 2019 – 2024. The ranking has considered the following:

- potential to impact on native plants, animals, waterways, and ecosystem
- potential to impact on human health
- potential impact to community values and cultural values

The weed species that are considered to have major or significant impact to native plants, animals, waterways, and ecosystem, community values, cultural values and/or on human health have been flagged as **high risk** (Cairns Regional Council, 2019 and Douglas Shire Council, 2017).

The weed species that are considered to have a moderate impact to native plants, animals, waterways, and ecosystem, community values, cultural values and/or on human health have been flagged as **medium risk** (Cairns Regional Council, 2019 and Douglas Shire Council, 2017).

The weed species that are considered to have a minor or insignificant impact to native plants, animals, waterways, and ecosystem, community values, cultural values and/or on human health have been flagged as **low risk** (Cairns Regional Council, 2019 and Douglas Shire Council, 2017).

In the fifth column of Table 4-1 weed species have been identified as either likely or unlikely to occur (but is present in surrounding areas) or unlikely to occur (due to a lack of suitable habitat and / or environmental conditions). The criteria used to determine this is outlined in Table 4-2. Some of these weeds are notifiable, meaning Biosecurity must be contacted within 24 hours of sighting on 13 25 23.

In the last column of Table 4-1 a ranking has been assigned to those weed species that require priority management (including monitoring, management and intervention).

**Table 4-1 Invasive Plants identified in Wangetti South Section**

Common Name	Scientific Name	Notifiable weed	Potential impact/ consequences of invasion	Likelihood to occur on site	Overall priority for management (monitoring, management, intervention)
Miconia	<i>Miconia calvescens</i>	✓	High	Medium	<b>Medium</b>
Limnocharis	<i>Limnocharis flava</i>	✓	High	Medium	<b>Medium</b>
Pond Apple	<i>Annona glabra</i>	×	Medium	Low	<b>Low</b>
Kudzu vine	<i>Pueraria montana var lobata</i>	×	Low	Low	<b>Low</b>
Parthenium Weed	<i>Parthenium hysterophorus</i>	×	Medium	Low	<b>Low</b>
Salvinia	<i>Salvinia molesta</i>	×	High	Low	<b>Low</b>



Common Name	Scientific Name	Notifiable weed	Potential impact/ consequences of invasion	Likelihood to occur on site	Overall priority for management (monitoring, management, intervention)
Senegalia spp,	<i>Senegalia</i>	×	Low	Low	<b>Low</b>
Hymenachne	<i>Hymenachne amplexicaulis</i>	×	High	Low	<b>Low</b>
Glush weed	<i>Hygrophila costata</i>	×	High	Low	<b>Low</b>
Blue thunbergia	<i>Thunbergia grandiflora</i> syn. <i>T. laurifolia</i>	×	High	High	<b>High</b>
Water lettuce	<i>Pistia stratiotes</i>	×	Low	Low	<b>Low</b>
Mexican bean tree	<i>Cecropia pachystachya</i> , <i>C. palmata</i> and <i>C. peltata</i>	✓	Medium	Medium	<b>Medium</b>
Siam weed	<i>Chromolaena odorata</i>	×	High	Medium	<b>Medium</b>
Water hyacinth	<i>Eichhornia crassipes</i>	×	Medium	Medium	<b>Medium</b>
Brillantaisia	<i>Brillantaisia lamium</i>	×	High	Low	<b>Low</b>
Water mimosa	<i>Neptunia oleracea</i> and <i>N. plena</i>	✓	Medium	Medium	<b>Medium</b>
Lantana	<i>Lantana camara</i> and <i>L. montevidensis</i>	×	Medium	High	<b>High</b>
Giant rat's tail grass	<i>Sporobolus pyramidalis</i> and <i>S. natalensis</i>	×	Medium	High	<b>High</b>
Cabomba	<i>Cabomba caroliniana</i>	×	Medium	Low	<b>Low</b>
Amazon frogbit	<i>Limnobium laevigatum</i>	×	Medium	Low	<b>Low</b>

Common Name	Scientific Name	Notifiable weed	Potential impact/ consequences of invasion	Likelihood to occur on site	Overall priority for management (monitoring, management, intervention)
Sickepods	<i>Senna obtusifolia</i>	×	High	High	<b>High</b>
Rubber Vine	<i>Cryptostegia grandiflora</i>	×	High	Low	<b>Low</b>
Cat's Claw Vine	<i>Dolichandra unguis-cati</i>	×	High	High	<b>High</b>
Prickly Pears	<i>Opuntia spp.</i>	×	Low	Low	<b>Low</b>
Hiptage	<i>Hiptage benhalensis</i>	×	Medium	Low	<b>Low</b>
Gamba grass	<i>Andropogon gayanus</i>	×	High	Low	<b>Low</b>
Invasive grasses such as thatch grass, guinea grass and molasses grass	<i>Megathyrsus maximus var maximus, Hyparrhenia rufa and Melinis minutiflora</i>	×	High	Medium	<b>Medium</b>
Venezuelan pokeweed	<i>Phytolacca rivinoides</i>	×	Low	High	<b>Low</b>
Delta Arrowhead	<i>Sagittaria platyphylla</i>	×	Low	Low	<b>Low</b>
Ivy Gourd	<i>Coccinia grandis</i>	×	Low	Medium	<b>Low</b>
Tobacco weed	<i>Solanum mauritianum</i>	×	Low	High	<b>Medium</b>

Key to table: High = highest priority, Medium = medium priority, Low = lowest priority

**Table 4-2 Risk category for onsite occurrence**

Classification	Description
<b>High risk</b>	<p><b>Priority ONE treatment</b></p> <p>The weed is known to be distributed in the project area or has been assessed as present on desktop mapping. It has been identified as a priority weed species by Cairns Reginal Council and Douglas Shire Council and listed as an undesirable plant in the Wet Tropics World Heritage.</p>
<b>Medium risk</b>	<p><b>Priority TWO treatment</b></p> <p>Unlikely to currently occur within the project area, but localised distribution is known to occur in surrounding areas. Increased surveillance and prevention methods would be required to prevent further infestation of these weeds. It has been identified as weed species by Cairns Reginal Council, Douglas Shire Council and Wet Tropics Management Authority.</p> <p>Increased on site vigilance is required.</p>
<b>Low risk</b>	<p><b>Priority THREE treatment</b></p> <p>Unlikely to occur due to a lack of suitable habitat and / or environmental conditions.</p>

According to Table 4-1, the weed species that have a medium to high risk of occurring within Wangetti South Section and have a moderate to significant impact on the existing environment within Wangetti South Section include:

- Miconia
- Limnocharis
- Blue thunbergia
- Mexican bean tree
- Siam weed
- Water hyacinth
- Water mimosa
- Lantana
- Giant rat's tail grass
- Sickepods
- Cat's Claw Vine
- Invasive grasses such as thatch grass, guinea grass and molasses grass.
- Tobacco weed

To eliminate the risk of any of the weeds outlined in the Cairns Regional Council and the Douglas Shire Council's biosecurity information, site surveys in the project area would be

required. If treatment is required, methods used are to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information regarding the identification and treatment of high-risk weeds are provided in Section 5 and Appendix B.

### 4.3 Pest species

Table 4-3 summaries the pest species considered to be present or have the potential to occur within the Wangetti South Section project area. This information has been sourced from the EPBC Act PMST, WTMA website, discussions with WTMA and the DES WildNet database search that were completed for Wangetti South as part of the Wangetti South Section Baseline Ecology and Impact Assessment Report 2020 prepared by GHD.

A detailed pest survey was not carried out during the three survey events in 2019, however general observations were made of weed and pest species within the project area. In addition, information was sourced from the Wet Tropics Management authority website.

Feral animals are known to have a negative impact on native flora and fauna, through competition for resources, killing of native fauna, or degradation and damage to fauna habitats. Yellow crazy ants, electric ants and Asian honey bees have all been discovered in the Wet Tropics since 2000 (WTMA, 2020) (refer to Appendix A). Yellow crazy ants can have severe impacts on native animals and plants and human health and quality of life. Checking for the presence of yellow crazy ants can help prevent further spread of this pest. Check the project area and any materials that could harbour yellow crazy ants. This includes soil, timber, timber products and other construction materials, and other potential vectors of spread.

In the third column of Table 4-3, a ranking has been assigned to those pest species that are considered to have a greater impact on the existing environment based from the information contained with the Douglas Shire Biosecurity Plan 2017 – 2021 and the Cairns Region Biosecurity Plan 2019 – 2024. The ranking has considered the following:

- potential to impact on native plants, animals, waterways, and ecosystem
- potential to impact on human health
- potential impact to community values and cultural values

The pest species that are considered to have major or significant impact to native plants, animals, waterways, and ecosystem, community values, cultural values and/or on human health have been flagged as **high risk** (Cairns Regional Council, 2019 and Douglas Shire Council, 2017).

The pest species that are considered to have a moderate impact to native plants, animals, waterways, and ecosystem, community values, cultural values and/or on human health have been flagged as **medium risk** (Cairns Regional Council, 2019 and Douglas Shire Council, 2017).

The pest species that are considered to have a minor or insignificant impact to native plants, animals, waterways, and ecosystem, community values, cultural values and/or on human health have been flagged as **low risk** (Cairns Regional Council, 2019 and Douglas Shire Council, 2017).

In the fourth column of Table 4-3 pest species have been identified as either likely or unlikely to occur (but is present in surrounding areas) or unlikely to occur (due to a lack of suitable habitat and / or environmental conditions). The criteria used to determine this is outlined in Table 4-4.

In the last column of Table 4-3 a ranking has been assigned to those pest species that require priority management (including monitoring, management and intervention).



**Table 4-3 Pest Species associated with the project area**

Common Name	Scientific Name	Potential impact/ consequences of invasion	Likelihood to occur on site	Overall priority for management (monitoring, management, intervention)
Common Myna	<i>Acridotheres tristis</i>	Low	High	<b>Low</b>
Mallard	<i>Anas platyrhynchos</i>	Low	Medium	<b>Low</b>
Domestic Cattle	<i>Bos taurus</i>	High	Low	<b>Low</b>
Domestic Dog	<i>Canis lupus familiaris</i>	Medium	High – known to occur within the WTWHA	<b>High</b>
Rock Pigeon	<i>Columba livia</i>	Low	High	<b>Low</b>
Horse	<i>Equus caballus</i>	Medium	Low	<b>Low</b>
Cat	<i>Felis catus</i>	Medium	High – known to occur within the WTWHA	<b>Medium</b>
Feral Deer species in Australia	<i>Feral deer</i>	High	Low – known to occur within the WTWHA	<b>Low</b>
Asian House Gecko	<i>Hemidactylus frenatus</i>	Low	High	<b>Low</b>
Mourning Gecko	<i>Lepidodactylus lugubris</i>	Low	High	<b>Low</b>
Nutmeg Mannikin	<i>Lonchura punctulata</i>	Low	High	<b>Low</b>
House Mouse	<i>Mus musculus</i>	Medium	High	<b>Medium</b>
Mozambique mouthbrooder	<i>Oreochromis mossambica</i>	Medium	Medium	<b>Medium</b>
Rabbit	<i>Oryctolagus cuniculus</i>	Medium	Low	<b>Low</b>
House Sparrow	<i>Passer domesticus</i>	Low	High	<b>Low</b>
Flowerpot Blind Snake	<i>Ramphotyphlops braminus</i>	Low	Low	<b>Low</b>

Common Name	Scientific Name	Potential impact/ consequences of invasion	Likelihood to occur on site	Overall priority for management (monitoring, management, intervention)
Brown Rat	<i>Rattus norvegicus</i>	Medium	High - known to occur within the WTWHA	<b>Medium</b>
Black Rat	<i>Rattus rattus</i>	Medium	High - known to occur within the WTWHA	<b>Medium</b>
Cane Toad	<i>Rhinella marina</i>	Medium	High	<b>Medium</b>
Spotted Turtle- Dove	<i>Streptopelia chinensis</i>	Low	High	<b>Low</b>
Common Starling	<i>Sturnus vulgaris</i>	Low	Low	<b>Low</b>
Pig	<i>Sus scrofa</i>	High	High – known to occur within the WTWHA	<b>High</b>
Spotted tilapia	<i>Tilapia mariae</i>	High	High – known to occur within the WTWHA	<b>High</b>
Yellow crazy ants	<i>Anoplolepis gracilipes</i>	High	Medium – known to occur within the WTWHA	<b>High</b>
Electric ants	<i>Wasmannia aeropunctata</i>	High	Medium – known to occur within the WTWHA	<b>High</b>
Asian honey bees	<i>Apis cerana</i>	High	High – known to occur within the WTWHA	<b>High</b>

Key to table: High = highest priority, Medium = medium priority, Low = lowest priority

**Table 4-4 Risk category for onsite occurrence**

Classification	Description
<b>High risk</b>	<b>Priority ONE treatment</b> The pest is known to be distributed in the project area or has been assessed as present on desktop mapping.  Or,  The pest is of high priority for eradication in the WTWHA and prevention and removal (if found) is paramount in keeping these invasive species controlled.
<b>Medium risk</b>	<b>Priority TWO treatment</b> Unlikely to currently occur within the project area, but localised distribution is known to occur in surrounding areas. Increased surveillance and prevention methods would be required to prevent further increase to the pest population.  Increased on site vigilance is required.
<b>Low risk</b>	<b>Priority THREE treatment</b> Unlikely to occur due to a lack of suitable habitat and / or environmental conditions.

According to Table 4-3, the pest species that have a medium to high risk of occurring within Wangetti South Section and have a greater impact on the existing environment within Wangetti South Section include:

- Common Myna
- Domestic Dog
- Cat
- House Mouse
- Mozambique mouthbrooder
- Rabbit
- Brown Rat
- Black Rat
- Cane Toad
- Pig
- Spotted tilapia
- Yellow crazy ants
- Electric ants
- Asian honey bees

If treatment is required methods used are to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information regarding the identification and treatment of pest species are provided in Section 5 and in Appendix B.

#### 4.4 Diseases (pathogens)

There are three environmental diseases (pathogens) that pose a high risk to the Wangetti South project area from the information collected during the desktop environmental assessment for Wangetti South as part of the Wangetti South Section Baseline Ecology and Impact Assessment Report 2020 prepared by GHD. In addition, information was sourced from the Wet Tropics Management authority website, QPWS and from the DAF biosecurity website.

- Myrtle rust (*Puccinia psidii*) – fungal disease affecting plants in the Myrtaceae family. This pathogen is known to be threat to WTWHA (WTMA, 2020). There are over 200 individual Myrtaceae species in the WTWHA. Some myrtaceous plant genera are represented in great abundance, for example, eucalypts, melaleucas and lillypillies (*syzygiums*) (WTMA, 2020). Some species are valued for being rare, endemic or endangered. Myrtle rust particularly affects new growth such as seedlings, leaf flushes and fruiting bodies. It may cause plant death (WTMA, 2020).
- Root rot fungus (*Phytophthora* fungus) – kills all plant species rooted in soil. Commonwealth listed 'key threatening process'. This pathogen is known to be threat to WTWHA (WTMA, 2020). This pathogen has generally been associated with wet notophyll vine forests on acid volcanic soils above 700m (WTMA, 2020). If treatment of is required methods used are to be approved by WTMA, DES, TDPD and QPW, as applicable. Information regarding the identification and management of this species is provided in Appendix B.
- *Chytridiomycosis* disease – frog disease caused by the chytrid fungus. Commonwealth listed 'key threatening process'. This pathogen is known to be threat to WTWHA (WTMA, 2020) Frog chytrid fungus has been identified as a primary cause of massive mortality of stream-dwelling frogs in the Wet Tropics bioregion (WTMA, 2020).

#### 4.5 Biosecurity zones

There are several Queensland Biosecurity Zones which are mapped over the Wangetti South Section according to the Queensland Government -Business Queensland Maps of Queensland biosecurity zones (2020). Biosecurity zones have legal movement restrictions placed on them to limit the spread of pests and diseases within the state. Queensland has several biosecurity zones for different pests and disease:

- Electric ant biosecurity zone
- Asian honey bee infested area
- Northern banana biosecurity zone

The biosecurity zones for these pests are identified in Appendix A. This information has been sourced from the EPBC Act PMST and the DES WildNet database search that were completed for Wangetti South as part of the Wangetti South Section Baseline Ecology and Impact Assessment Report 2020 prepared by GHD. In addition, information was sourced from the Wet Tropics Management authority website and from the DAF biosecurity website.

#### 4.6 Local Government Priorities

Review of local government biosecurity plans identified the management priority for each of the 11 weeds species likely or known to occur within the study area. Higher priority species are generally targeted with intensive management techniques compared with lower priority species. However, final control strategies are species specific. Management includes using one or more of the following strategies: prevention, eradication, reduction, containment, education and/or impact/asset protection.



# 5. Impact assessment and mitigation

## 5.1 Overview

This section provides a summary of potential impacts associated with biosecurity matters that could be generated by activities undertaken during the construction and operational phases of the project and could impact on the ecological values of the receiving environment.

This section also outlines the management strategy and the mitigation measures to prevent, reduce or control adverse environmental effects on MSES, MNES and the surrounding environment during the construction phase and operational phase.

## 5.2 Impact assessment

### 5.2.1 Construction phase

Construction activities have the potential to introduce and/or spread invasive pest and weed species, through the increased movement of people and machinery. This can cause substantial disruption to natural ecosystems by altering the balance of inter-species competition and predation.

#### *Introduction and spread of weeds*

The Wangetti South Section Baseline Ecology and Impact Assessment Report (2020) noted that earthworks and vehicle movements have the potential to facilitate the spread of weeds within the project area and export weeds to areas within the surrounding landscape. This can cause significant damage to Queensland's primary industries and undermine the ecological integrity of bushland remnants by competitively excluding native plant species that provide food, shelter and nesting resources for native wildlife. Southern cassowary habitat is likely to be particularly susceptible to impact from weed transmission, as this can reduce the quality and extent of available habitat (Commonwealth of Australia 2010c). Appropriate weed hygiene protocols will be required to control the introduction and spread of weeds during the construction period.

The spread of weeds, and specifically invasive grasses to the project area increases the biomass present. This will increase the fire hazard risk to the area if mitigation and control measures are not implemented. These measures are discussed in Table 5-1. If treatment of pest species is required methods used are to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information on the identification and treatment of high risk weeds are also provided in Appendix B.

Section 5.3 identifies several construction activities that could result in adverse impacts to the project area by introducing or spreading of weeds. It also identifies the MSES and MNES within the project area that could be impacted by the introduction or spreading of weeds. It assesses the risk of no control in place and when the mitigation measure is implemented and discusses the parties responsible for implementing the mitigation measure, how it is measured and any corrective actions.

#### *Introduction and spread of pest fauna species*

The Wangetti South Section Baseline Ecology and Impact Assessment Report (2020) noted that three pest fauna species are known to occur within the project area, including the cane toad (*Rhinella marina*), pig (*Sus scrofa*), and dog (*Canis lupus*).

The Wangetti South Section Baseline Ecology and Impact Assessment Report (2020) noted that construction activities can exacerbate the effects feral predators have on local wildlife communities. Inappropriate waste disposal has the capacity to attract higher local

concentrations of feral predators, increasing the predation pressures on local wildlife. Dog attacks on the southern cassowary are known to cause injury and mortality, and their presence can affect the cassowaries' feeding and movements. Feral pigs are supposedly known to destroy nests and eat the southern cassowary eggs, as well as degrade habitat and water quality by wallowing and rooting around watercourses (Latch 2007).

Construction activities also have the potential to increase local pest fauna densities through inappropriate waste disposal. This can increase food availability for opportunistic pests such as wild dogs and pigs and increase their ability to move by opening up corridors. Smaller pest fauna species particularly can be introduced via movement of construction vehicles and contaminated fill. As the receiving environment has a high availability of water and food resources, and the movement of vehicles will be limited by terrain, the risks will be relatively low. Nevertheless, measures should be taken to reduce the risk of introducing or spreading pest fauna species.

Section 5.3 identifies construction activities that could result in adverse impacts to the project area by assist in the movement of pest species within the WTWHA. It also identifies the MSES and MNES within the project area that could be impacted by the movement of pest species. It assesses the risk of no control in place and when the mitigation measure is implemented and discusses the parties responsible for implementing the mitigation measure, how it is measured and any corrective actions. If treatment of pest species is required, methods are to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information, regarding the identification and treatment of high risk fauna species are provided in Appendix B.

### ***Introduction and spread of noxious diseases***

The Wangetti South Section Baseline Ecology and Impact Assessment Report (2020) noted that the movement of machinery and plant has the potential to introduce or spread noxious diseases that can have adverse impacts on native flora and fauna or agricultural crops. Many Australian frog species have experienced significant declines and population crashes in recent decades due to the introduction and spread of the infectious disease Chytridiomycosis (Berger et al. 1998). This is spread via transmission of the Chytrid fungus (*Batrachochytridium dendrobatidis*), whose spores can be carried in infected water and soil (Berger et al. 1998; Longcore et al. 1999). Chytridiomycosis mostly affects amphibian species that breed in permanent waterbodies such as streams, moist bogs or soaks and ponds.

Myrtle rust (*Puccinia psidii*) is a fungal disease that attacks young, actively growing leaves, shoot tips and young stems, as well as fruits and flowers of plants of the Myrtaceae family (WTMA 2019). Myrtle rust produces a large number of spores that can be spread by the movement of contaminated plants and soils, and by wind, human activity and animals (Business Queensland, 2020). The long-term impact of myrtle rust is not well understood; however, it is known that some plant species are highly susceptible and are killed by the disease (Business Queensland, 2020).

*Phytophthora cinnamomi* is a soil borne disease causing death in susceptible plants and loss of habitat for animals (WTMA, 2020). The disease is known as a root-rot fungus, which can cause dieback amongst species of vegetation in rainforests and sclerophyll forests (WTMA ,2020) (refer to Appendix B). *Phytophthora cinnamomi* can be spread by the movement of soil and water, this includes the construction of roads and walking tracks as well as vehicles, bushwalkers and pigs (WTMA 2020).

Movement of soil during construction has the potential to introduce or spread noxious diseases throughout the project area. As a result, appropriate hygiene protocols and limiting movement of soil will be important to mitigate the spread of noxious diseases.

Section 5.3 below identifies construction activities that could result in adverse impacts to the project area by introducing or spreading of diseases. It also identifies the MSES and MNES within the project area that could be impacted by the introduction or spreading of diseases. It assesses the risk of no control in place and when the mitigation measure is implemented and discusses the parties responsible for implementing the mitigation measure, how it is measured and any corrective actions.

### **5.2.2 Operational phase**

During the operation phase, the project impact is expected to be relatively low for most environmental matters. Nevertheless, the project will pose a risk to the introduction and spread of invasive species and disease within the project area. Project operation has the potential for introduction and spread of invasive species through the ongoing movement of hikers and mountain bike riders. If treatment is required, methods are to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information, regarding the identification and treatment of high risk weed, fauna and pest species are provided in Appendix B.

#### ***Introduction and spread of weed species***

The Wangetti South Section Baseline Ecology and Impact Assessment Report (2020) noted that weed species have the potential to cause damage to the ecological integrity of bushland remnants by excluding native plant species that provide food, shelter and nesting resources for native wildlife. Hikers and mountain bike riders have the potential to spread weeds along the shared use trail and within Dark Jungle. Implementation of specific operational protocols can help limit the unintentional spread of weeds into and/or throughout the project area.

#### ***Introduction and spread of pest fauna species***

Pest species that are likely to be relatively common and ubiquitous within the region include the cane toad, pig and dog. The proposed shared use trail has the potential to facilitate movement of feral predators, thereby increasing predation pressures on local wildlife. Although the receiving environment is already exposed to pest infestation, mitigation measures will be required to limit any spread of pest animals that could result from operational activities.

Section 5.3.5 below identifies a number of operational activities that could result in adverse impacts to the project area by assist in the movement of pest species within the project area. It also identifies the MSES and MNES within the project area that could be impacted by the moment of pest species. It assesses the risk of no control in place and when the mitigation measure is implemented and discusses the parties responsible for implementing the mitigation measure, how it is measured and any corrective actions.

#### ***Introduction and spread of noxious diseases***

The introduction and spread of noxious diseases can displace resident species and alter the local ecology. Soil from boots and mountain bike tyres can contain foreign diseases, such as Chytrid fungus, myrtle rust and Phytophthora. Movement of hikers and mountain bike riders have the potential to introduce or spread noxious diseases along the shared use trail and within Dark Jungle. As a result, appropriate hygiene protocols will be important to mitigate the spread of noxious diseases.

Section 5.3 below identifies a number of activities that could result in adverse impacts to the project area by introducing or spreading of diseases during the operational phase. It also identifies the MSES and MNES within the project area that could be impacted by the introduction or spreading of diseases. It assesses the risk of no control in place and when the mitigation measure is implemented and discusses the parties responsible for implementing the mitigation measure, how it is measured and any corrective actions.

### 5.3 Management strategy for construction and operational phases

An overarching weed, pest and diseases management strategy applicable to the Wangetti South Project area has been developed based on the following principles:

1. **Identify** – weeds and pest species and diseases
2. **Avoid** – traversing and placing infrastructure in areas of know infestation
3. **Prevent/Minimise** – the translocation/spread of pest and weed species by implementing sound work practices and promotion of risk awareness.
4. **Control** – Identified pest and weeds to contain, reduce or eradicate population as required.

Each of these four principles are discussed in further detail in the following sections:

#### 5.3.1 Identify

The proper identification of pest and weed species/infestation provides a basis to actively minimise, control and manage pests and weeds and outbreaks in the project area. Identification occurs at the following levels:

- Regional scale – identifying species that have the potential to/are known to occur within the project area by reviewing weed and pest distribution maps and plan created by DAF, WTMA, DES and local government.
- Local/ work area location – Identifying pests and weeds present within a work zone by conducting desktop assessments and reviewing information and photos collected during environmental surveys of the project area.

Pest, weed and disease identification will occur at the following phases of the project:

- During the Pre-Start Trail Review (PSTR) (World Trail Pty Ltd, 2020). The purpose of the PSTR is to review and inspect the proposed alignment of the trail with the TDPD Project Manager, prior to construction starting, to confirm the exact alignment within the groundtruthed corridor, identify any specific environmental values to be protected and to discuss and agree on specific construction treatments (World Trail Pty Ltd, 2020). Pre-clearance on-ground weed, and pest surveys will be undertaken by an appropriately skilled person to confirm biosecurity matters within the project area and this will assist with determining the appropriate treatments to be used to treat weeds and pests.
- At all other time of the project – this will be part of coordinated pest, weed and disease surveys, surveys in response to sightings and/or any identification by personnel during the everyday conduct of activities.

#### 5.3.2 Avoid

Where pest and weed populations are identified as present in a proposed location for the project infrastructure or work zone, the infrastructure/work zone these areas will be recorded for treatment. Where the weed population covers a small area within the project area this area will be treated and vegetation clearing to occur. .

Other avoidance measures to be carried out for the project are outlined in Section 5.3.5.

#### 5.3.3 Prevent/Minimise

The prevention and/or minimisation of potential weeds, pests and diseases becoming established in the project area as a result of construction and operational activities, is most critical form of management. Land transportation currently present the highest risk of introducing



and spreading weeds, pests and diseases within the project area and therefore vehicle, equipment and machinery inspection and washdown is the primary prevention/minimisation measure.

All project vehicles must carry and be able to present a current Weed Hygiene Declaration at all times. Other prevention and minimisation measures to be carried out for the project are outlined in Section 5.3.5.

### **5.3.4 Control**

#### ***Eradication***

After prevention, eradication is the most preferable management strategy for pests, weeds and diseases. Eradication is the goal through all phase of the development in the Wangetti South project area, however this may only be feasible where there is a recent pest, weed or disease incursion, or there is only a small population of limited distribution. Eradication is highly dependent on early detection and requires cooperation between the following parties: TDPD, Construction Contractors, the Operator, DES/ QPWS, WTMA and landowners. The feasibility of an eradication program will be determined on a case-by base basis.

#### ***Contain, reduce and manage***

Where eradication is not a feasible option for pest, weed and disease outbreaks, containment and treatment are the most appropriate measures to management and/or reduce a population. These will typically be ongoing measures to reduce the risk of further spreading the weed, pest and/or disease.

Site-based weed, pest and disease management programs will be developed for the project to ensure compliance with legal obligations and in consultation with TDPD, Construction Contractors, the Operator, DES/ QPWS, WTMA and landowners.

### **5.3.5 Mitigation measures**

Mitigation measures have been developed for Wangetti South Section to prevent, reduce, or control adverse environmental effects on MSES and MNES and the surrounding environment during the construction phase. The mitigation measures are outlined in Table 5-1 and have considered the following principals: identify, avoid, prevent/minimise and control. The mitigation measures have also considered the Commonwealth, State and Local government legislation and strategies applicable to the project area.

Table 5-1 to Table 5-6 are broken down into the following sections:

- identifies activities that can facilitate the introduction and/or spread of weeds, pest and diseases in the project area
- identifies the MSES and MNES impacted by the introduction and/or spread of weeds, pest and diseases in the project area
- identifies the initial risk to the project with no control in place and identifies residual risk within controls in place
- identifies the mitigation measures to be implement, their timing and the parties responsible for implementation the measures
- identifies performance indicators, corrective actions, and monitoring to measure the success the of implementing the mitigation measure.

Personnel involved in the construction and operational phases will need to incorporate these measures into the environmental management documents and systems developed for the project:

### Construction phase

**Table 5-1 Mitigation measures to be implemented for Wangetti South Section during construction phase for weeds**

Factor – weeds
Construction activities resulting in adverse impacts to the project area
Introduction or spread of weeds from construction activities and/or introduction of construction material and equipment within the project area. High risk vectors for weeds, pests and diseases include building materials, soils, packing material, field gear and clothing.
Applicable MNES & MSES
<ul style="list-style-type: none"> <li>• Wet Tropics World Heritage Area and National Heritage Site</li> </ul> <p>MNES and MSES bird species that are known likely or may occur:</p> <ul style="list-style-type: none"> <li>• <i>Casuarius casuaris</i> (Southern cassowary)</li> <li>• Migratory birds (e.g. eastern curlew, great sand plover)</li> <li>• Non-migratory species (e.g. masked owl)</li> </ul> <p>MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <li>• <i>Litoria dayi</i> (Australian lace lid)</li> <li>• <i>Litoria nannotis</i> (Waterfall frog)</li> <li>• <i>Litoria nyakalensis</i> (Mountain mistfrog)</li> <li>• <i>Litoria rheocola</i> (Common mistfrog)</li> <li>• <i>Litoria serrata</i> (Tapping green eyed frog)</li> </ul> <p>MNES and MSES mammal species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <li>• <i>Dasyurus maculatus gracilis</i> (Spotted-tailed quoll)</li> <li>• <i>Dasyurus hallucatus</i> (Northern quoll)</li> <li>• <i>Dendrolagus lumholtzi</i> (Lumholtz’s tree-kangaroo)</li> <li>• <i>Hipposideros semoni</i> (Semon’s leaf-nosed bat)</li> <li>• <i>Phascolarctos cinereus</i> (Koala)</li> <li>• <i>Pteropus conspicillatus</i> (Spectacled flying-fox)</li> <li>• <i>Rhinolophus robertsi</i> (Large-eared horseshoe bat)</li> <li>• <i>Saccolaimus saccolaimus nudicluniatus</i> (Bare-rumped sheath-tailed bat)</li> <li>• <i>Xeromys myoides</i> (Water mouse)</li> </ul> <p>MNES and MSES aquatic species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <li>• <i>Stiphodon semoni</i> (Opal cling goby)</li> </ul>

## Factor – weeds

- *Stiphodon rutilarueus* (Orange cling goby)
- *Stiphodon pelewensis* (Emerald cling goby)
- *Stiphodon surrufus* (Birdsong cling goby)

MNES and MSES flora species that are known, likely or may occur in the Wangetti South Section:

- *Archontophoenix myolensis* (Myola palm)
- *Anoectochilus yatesiae* (Marbled jewel orchid)
- *Canarium acutifolium*
- *Dendrobium fellowsii*
- *Dendrobium mirbelianum* (Dark-stemmed antler orchid)
- *Diplazium cordifolium*
- *Diplazium pallidum*
- *Myrmecodia beccarii* (Ant plant)
- *Phaius pictus*
- *Phalaenopsis amabilis* subsp. *rosenstromii* (Native moth orchid)
- *Polyscias bellendenkerensis*
- *Randia audasii*
- *Rhomboda polygonoides*
- *Toechima pterocarpum* (Orange tamarind)
- *Vappodes lithocola* (Dwarf butterfly orchid) (also known as *Dendrobium lithocola*, and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Vappodes phalaenopsis* (Cooktown orchid) (Also known as *Dendrobium phalaenopsis* and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Zeuxine polygonoides* (Velvet jewel orchid) (also known as *Rhomboda polygonoides*)

Initial risk with no control

In the absence of project-specific mitigation measures, major but recoverable impacts to a factor of significance are likely.

Mitigation measure	Targeted weeds	Timing	Party responsible
Undertake a pre-clearing weed survey treatment and management and report areas of existing weed infestation. Pre-clearance on-ground weed, and pest surveys will be undertaken by an appropriately skilled person to confirm biosecurity matters within the project area	Priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site	Prior to construction commencing	Contractor's Project Manager Site Supervisor

Factor – weeds			
and this will assist with determining the appropriate treatments to be used to treat weeds and pests. Treatment methods to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information regarding the treatment of high risk pest species is provided in Appendix B.	as outlined in Table 4-1.		
Equipment and shoe wash down areas will be in place prior entering the site (serves as a single entry point) to avoid the spread of weeds and pathogens. Construction crews required to disinfect clothing, footwear, equipment and other personal items through wash down areas. Signage will also be in place as a form of information dissemination to encourage the use of wash down areas.  Wash down and disinfecting procedures will be included in the site induction training.	All weed species	At all times	All personnel
All machinery and vehicle hygiene protocols to be followed at all times to prevent the introduction of weeds and pathogens. Vehicles, plant and equipment to be used for the project would be required to be clean. Vehicles, plant and equipment to be inspected prior to being used to ensure they are clean.  Disinfecting vehicles and machinery. This will be undertaken during the construction phase of the project and maintained throughout.	All weed species	Prior to construction commencing  At all times during the construction phase	All personnel
Weed identification to be included in the site induction training and conducted by a suitably trained person.	All weed species, particularly priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site as outlined in Table 4-1.	Prior to construction commencing	Contractor's Project Manager  Site Supervisor



Factor – weeds			
Any significant weed populations identified during construction are to be marked on site and the location recorded for reporting	All weed species	Prior to construction commencing During pre-start	All personnel
Trail construction will minimise disruption of forest canopy wherever possible to avoid additional sunlight that can promote weed growth on forest floor.	All weed species	At all times	Contractor's Project Manager Site Supervisor
Toolbox talks with the construction crew will occur prior construction to educate them about the weeds, pests and diseases likely to be present in the area.	All weed species, particularly priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site as outlined in Table 4-1.	Prior to Construction	TDPD Contractor's Project Manager Site Supervisor
Any weed infestation shall be treated at earliest stage while small and manageable. Treatment methods to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information regarding the treatment of high risk weed species is provided in Appendix B.	All weed species, particularly priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site as outlined in Table 4-1.	At all times	Contractor's Project Manager Site Supervisor
Vehicle access will be restricted to existing roads and tracks.	All weed species.	At all times	Contractor's Project Manager Site Supervisor
Weed material that is cleared within the project area must be disposed of appropriately. Any weed removal as part of the construction phase will be cleared and disposed of at an approved waste disposal facility. Any infestations that subsequently establish during the	All weed species.	At all times	Contractor's Project Manager Site Supervisor

Factor – weeds			
construction period will be treated, and post-construction weed management of rehabilitated areas will be undertaken.			
Movement of vegetation and soils between the impacted areas and areas of significantly lower weed infestation will be avoided, where possible.	All weed species.	At all times	Contractor's Project Manager Site Supervisor
At the outset of the construction phase, works should be undertaken to identify suitable surfacing materials that are locally available and that can be certified to weed/pathogen free status for land manager approval.  Imported materials will only be used where absolutely required and materials cannot be found within the construction corridor. Imported materials are to be procured from a suitable supplier and check for weeds prior to importing to site.  All material brought onto site must be accompanied by a certificate indicating that it is pathogen and weed free.	All weed species.	At all times	Contractor's Project Manager Site Supervisor
No waste will be stockpiled during the construction phase and trail builders will be responsible for removing all of their own personal waste daily.	All weed species.	At all times	All personnel
Limit vegetation clearing, where practical to protect/improve habitat in the area and limit/avoid spread of weeds and pests.	All weed species.	At all times	Contractor's Project Manager Site Supervisor
<b>Residual risk with control in place</b>			
Implementation of recommended mitigation measures will not introduce and/or spread weeds within the project area, therefore have negligible impact on MNES and MSES species and their habitats.			
<b>Performance indicator</b>			
Existing weed species are identified and controlled onsite. No new weed outbreak on site.			
<b>Corrective actions</b>			
Weed outbreaks within the project area to be documented and reported to regulatory authority including WTMA, DES and QPWS and rectified immediately.			

## Factor – weeds

### Monitoring

All plant/machinery washdown checklists to be recorded. Records demonstrating that personnel associated with the construction and operational phases have undertaken weed, pest and pathogen induction training.

Daily visual weed and pest inspections within the works area under active construction.  
Monthly visual weed and pest inspections within the works area where works are completed.

Liaison with WTMA regarding existing monitoring strategies for weed species within the WTWHA

Completed construction segments to be monitored for weeds.

Maintaining a register for weeds, pests and pathogens recorded within the project area.

**Table 5-2 Mitigation measures to be implemented for Wangetti South Section during construction phase for pests**

Factor – pests
Construction activities resulting in adverse impacts to the project area
<ul style="list-style-type: none"> <li>• Introduction or spread of pests from construction activities and/or introduction of construction material and equipment within the project area.</li> <li>• The spread of pest Interference of local wildlife by domestic animals</li> <li>• Waste generation by construction crew within the project area providing food to pest species</li> <li>• Spread of pest species such as electric ants and yellow crazy ants within the project area from the movement of equipment, vehicle and material from affected areas outside of the project area leading to increase pest activities</li> <li>• When moving electric ant carriers (soil, gravel, mulch, etc.) from a property within the restricted zone to a property within the restricted zone to a property outside the restricted zone, Biosecurity Queensland dictates that operators must hold a biosecurity instrument permit.</li> </ul>
Applicable MNES & MSES
<ul style="list-style-type: none"> <li>• Wet Tropics World Heritage Area and National Heritage Site</li> </ul> <p>MNES and MSES bird species that are known likely or may occur:</p> <ul style="list-style-type: none"> <li>• <i>Casuarus casuaris</i> (Southern cassowary)</li> <li>• Migratory birds (e.g. eastern curlew, great sand plover)</li> <li>• Non-migratory species (e.g. masked owl)</li> </ul> <p>MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <li>• <i>Litoria dayi</i> (Australian lace lid)</li> <li>• <i>Litoria nannotis</i> (Waterfall frog)</li> <li>• <i>Litoria nyakalensis</i> (Mountain mistfrog)</li> <li>• <i>Litoria rheocola</i> (Common mistfrog)</li> <li>• <i>Litoria serrata</i> (Tapping green eyed frog)</li> </ul> <p>MNES and MSES mammal species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <li>• <i>Dasyurus maculatus gracilis</i> (Spotted-tailed quoll)</li> <li>• <i>Dasyurus hallucatus</i> (Northern quoll)</li> <li>• <i>Dendrolagus lumholtzi</i> (Lumholtz's tree-kangaroo)</li> <li>• <i>Hipposideros semoni</i> (Semon's leaf-nosed bat)</li> <li>• <i>Phascolarctos cinereus</i> (Koala)</li> <li>• <i>Pteropus conspicillatus</i> (Spectacled flying-fox)</li> <li>• <i>Rhinolophus robertsi</i> (Large-eared horseshoe bat)</li> <li>• <i>Saccolaimus saccolaimus nudicluniatus</i> (Bare-rumped sheath-tailed bat)</li> <li>• <i>Xeromys myoides</i> (Water mouse)</li> </ul>



## Factor – pests

MNES and MSES aquatic species that are known, likely or may occur in the Wangetti South Section

- *Stiphodon semoni* (Opal cling goby)
- *Stiphodon rutilarueus* (Orange cling goby)
- *Stiphodon pelewensis* (Emerald cling goby)
- *Stiphodon surrufus* (Birdsong cling goby)

MNES and MSES flora species that are known, likely or may occur in the Wangetti South Section:

- *Archontophoenix myolensis* (Myola palm)
- *Anoectochilus yatesiae* (Marbled jewel orchid)
- *Canarium acutifolium*
- *Dendrobium fellowsii*
- *Dendrobium mirbelianum* (Dark-stemmed antler orchid)
- *Diplazium cordifolium*
- *Diplazium pallidum*
- *Myrmecodia beccarii* (Ant plant)
- *Phaius pictus*
- *Phalaenopsis amabilis* subsp. *rosenstromii* (Native moth orchid)
- *Polyscias bellendenkerensis*
- *Randia audasii*
- *Rhomboda polygonoides*
- *Toechima pterocarpum* (Orange tamarind)
- *Vappodes lithocola* (Dwarf butterfly orchid) (also known as *Dendrobium lithocola*, and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Vappodes phalaenopsis* (Cooktown orchid) (Also known as *Dendrobium phalaenopsis* and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Zeuxine polygonoides* (Velvet jewel orchid) (also known as *Rhomboda polygonoides*)

Initial risk with no control

In the absence of project-specific mitigation measures, major but recoverable impacts to a factor of significance are likely.

Mitigation measure	Pest species targeted	Timing	Party responsible
<p>The contractor will be required to complete a pre-clearing pest survey and report documenting areas of existing electric ant infestation and identifying treatment and management requirements.</p> <p>Pre-clearance on-ground pest surveys will be undertaken by an appropriately skilled person.</p>	<p>Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat</p>	<p>Prior to construction commencing</p> <p>During the construction phase</p>	<p>Contractor's Project Manager</p> <p>Site Supervisor</p>

Factor – pests			
<p>Before starting construction, discussions with Wet Tropics Management Authority, Douglas Shire Council and Cairns Regional Council to be undertaken during the pre-start trail review to discuss and agree on specific treatments regarding pest species including but not limited to yellow crazy ants, electric ants, pigs and dogs. Information about treatments for pest species is included in Appendix B.</p>	<p>Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees</p>		
<p>Plant/machinery to be washed down at a commercial washdown facility or washdown facility at QPWS works depot prior to construction and if they used again for the different areas of the project area.</p>	<p>House Mouse Brown Rat Black Rat Cane Toad Yellow crazy ants Electric ants Asian honey bees.</p>	<p>Prior to construction commencing</p> <p>During the construction phase</p>	<p>Contractor's Project Manager</p> <p>Site Supervisor</p>
<p>At the outset of the construction phase, works will be undertaken to identify suitable surfacing materials that are locally available and that can be certified to pest free status. Imported materials will only be used where absolutely required and materials cannot be found within the construction corridor. Imported materials are to be procured from a suitable supplier and check for weeds prior to importing to site. All material brought onto site must be accompanied by a certificate indicating that it is free of pest species.</p>	<p>Yellow crazy ants and electric ants.</p>	<p>Prior to construction</p> <p>Construction phase</p>	<p>Contractor's Project Manager</p> <p>Site Supervisor</p>
<p>Site inductions and toolbox talks with the construction crew will occur prior construction to educate them about the weeds, pests and pathogens likely to be present in the area, the process of reporting infestations and the type of measures to prevent the introduction and spread within the project area.</p>	<p>All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants</p>	<p>Prior to Construction</p>	<p>Contractor's Project Manager</p> <p>Site Supervisor</p>

Factor – pests			
	Asian honey bees		
Feeding of wildlife is prohibited and food scraps to be disposed of into bins with closed/secured lids and removed from site daily to minimise vermin infestations.	Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees	At all times	All personnel
Vehicle access will be restricted to existing roads and tracks, where possible.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees	At all times	Site supervisor
Where trail builders are required to camp overnight along the trail due to the remoteness of the area they will be required to carry all rubbish out; bury human waste at least 100 m from streams and at least 15 cm deep, or carry it out.  During construction phase the contractor to consider having a trailer mounted portable toilet or something similar to be able to service the construction crew. The setup of temporary amenities to be located in disturbed areas and outside of areas of high ecological significance.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig	At all times	All personnel Contractor's Project Manager  Site Supervisor

Factor – pests			
	Spotted tilapia Yellow crazy ants Electric ants Asian honey bees		
Sightings or evidence of pest animals will be recorded. If increased densities of pest animals are observed, or new pest animals are identified, humane pest animal control will be used. Further information regarding the identification of pest species is provided in Appendix B.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees	At all times	Contractor's Project Manager  Site Supervisor
Limit vegetation clearing, where practical to protect/improve habitat in the area and limit/avoid spread of pests.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees	At all times	Contractor's Project Manager  Site Supervisor
No waste will be stockpiled during the construction phase and trail builders will be responsible for removing all of their own personal waste daily.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder	At all times	All personnel

Factor – pests			
	Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees		
Regular inspection of the trail and nodes to check for pest species.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees	At all times	Contractor's Project Manager  Site Supervisor
Minimise water ponding or build up on-site to reduce the likelihood of providing suitable environments for mosquito breeding.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees	At all times	Contractor's Project Manager  Site Supervisor



## Factor – pests

### Residual risk with control in place

Implementation of recommended mitigation measures will not introduce and/or spread pests within the project area, therefore have negligible impact on MNES and MSES species and their habitats.

### Performance indicator

Existing pest species are identified and controlled onsite.

### Corrective actions

Evidence of pests within the project area to be documented and reported to regulatory authority including and rectified immediately.

### Monitoring

All excavator and other plant/machinery washdown checklists to be recorded.

Weekly inspection to include pests onsite

Maintaining a register for weeds, pests and pathogens recorded within the project area. Liaison with WTMA regarding existing monitoring strategies for pest species within the WTWHA.

**Table 5-3 Mitigation measures to be implemented for Wangetti South Section during construction phase for pathogens**

Factor – pathogens (disease)
Construction activities resulting in adverse impacts to the project area
Introduction or spread of pathogens from construction activities and/or introduction of construction material and equipment within the project area.
Applicable MNES & MSES impacted
<ul style="list-style-type: none"> <li>• Wet Tropics World Heritage Area and National Heritage Site</li> </ul> <p>MNES and MSES flora species that are known, likely or may occur in the Wangetti South Section:</p> <ul style="list-style-type: none"> <li>• <i>Archontophoenix myolensis</i> (Myola palm)</li> <li>• <i>Anoetochilus yatesiae</i> (Marbled jewel orchid)</li> <li>• <i>Canarium acutifolium</i></li> <li>• <i>Dendrobium fellowsii</i></li> <li>• <i>Dendrobium mirbelianum</i> (Dark-stemmed antler orchid)</li> <li>• <i>Diplazium cordifolium</i></li> <li>• <i>Diplazium pallidum</i></li> <li>• <i>Myrmecodia beccarii</i> (Ant plant)</li> <li>• <i>Phaius pictus</i></li> <li>• <i>Phalaenopsis amabilis</i> subsp. <i>rosenstromii</i> (Native moth orchid)</li> <li>• <i>Polyscias bellendenkerensis</i></li> <li>• <i>Randia audasii</i></li> <li>• <i>Rhomboda polygonoides</i></li> <li>• <i>Toechima pterocarpum</i> (Orange tamarind)</li> <li>• <i>Vappodes lithocola</i> (Dwarf butterfly orchid) (Also known as <i>Dendrobium lithocola</i>, and the Queensland Flora Census 2019 groups this species into <i>Dendrobium biggibum</i>)</li> <li>• <i>Zeuxine polygonoides</i> (Velvet jewel orchid) (Also known as <i>Rhomboda polygonoides</i>)</li> </ul> <p>MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <li>• <i>Litoria dayi</i> (Australian lace lid)</li> <li>• <i>Litoria nannotis</i> (Waterfall frog)</li> <li>• <i>Litoria nyakalensis</i> (Mountain mistfrog)</li> <li>• <i>Litoria rheocola</i> (Common mistfrog)</li> <li>• <i>Litoria serrata</i> (Tapping green eyed frog)</li> </ul>
Initial risk with no control
In the absence of project-specific mitigation measures, major but recoverable impacts to a factor of significance are likely.

Factor – pathogens (disease)			
Mitigation measure	Pest species targeted	Timing	Party responsible
<p>All machinery and vehicle hygiene protocols to be followed at all times to prevent the introduction of weeds and pathogens. Vehicles, plant and equipment to be used for the project would be required to be clean with Weed and Seed Hygiene Declaration certificates. Vehicles, plant and equipment to be inspected prior to being used to ensure they are clean.</p> <p>Disinfecting vehicles and machinery. This will be undertaken during the construction phase of the project and maintained throughout.</p> <p><b>Chytrid fungus</b> Spores of the chytrid fungus are transported in water and wet soil. The fungus appears to be more virulent at lower temperatures.</p> <p><b>Phytophthora</b> Phytophthora is a soil-borne organism which is spread by the movement of soil and water. Information regarding the management of dieback as a result of this pest is provided in Appendix B.</p> <p><b>Myrtle rust</b> Myrtle rust spreads easily through windblown spores</p>	<p>Myrtle rust (<i>Puccinia psidii</i>), root rot fungus (<i>Phytophthora fungus</i>) and Chytridiomycosis disease</p>	<p>Prior to construction commencing</p> <p>During the construction phase</p>	<p>Contractor's Project Manager</p> <p>Site Supervisor</p>
<p>Plant/machinery to be washed down at a commercial washdown facility or washdown facility at QPWS works depot prior to construction and if they used again for the different areas of the project area.</p>	<p>Myrtle rust, root rot fungus and Chytridiomycosis disease</p>	<p>Prior to construction commencing</p> <p>During the construction phase</p>	<p>Contractor's Project Manager</p> <p>Site Supervisor</p>
<p>At the outset of the construction phase, works should be undertaken to identify suitable surfacing materials that are locally available and that can be certified to pathogen free status for land manager approval.</p>	<p>Myrtle rust, root rot fungus and Chytridiomycosis disease</p>	<p>Prior to construction</p> <p>Construction phase</p>	<p>Contractor's Project Manager</p> <p>Site Supervisor</p>
<p>Imported materials will only be used where absolutely required and materials cannot be found within the construction</p>	<p>Myrtle rust, root rot fungus and</p>	<p>Prior to construction</p>	<p>Contractor's Project Manager</p> <p>Site Supervisor</p>

Factor – pathogens (disease)			
corridor. Imported materials are to be procured from a suitable supplier and check for pathogens prior to importing to site.	Chytridiomycosis disease	Construction phase	
All material brought onto site must be accompanied by a certificate indicating that it is free of pathogens, unless the source has been agreed to by the TDPD Project Manager.	Myrtle rust, root rot fungus and Chytridiomycosis disease	Prior to construction Construction phase	Contractor's Project Manager Site Supervisor
Equipment and shoe wash down areas will be in place prior entering the site to avoid the spread pathogens.	Myrtle rust, root rot fungus and Chytridiomycosis disease	At all times	All personnel
Vehicle access will be restricted to existing roads and tracks, where possible.	Myrtle rust (, root rot fungus and Chytridiomycosis disease	At all times	Site supervisor
Undertaking site inductions and toolbox talks with the construction crew prior and during construction to educate them about pathogens including the <i>chytrid</i> fungus, myrtle rust and root rot fungus.	Myrtle rust (, root rot fungus and Chytridiomycosis disease	At all times	All personnel
Residual risk with control in place			
Implementation of recommended mitigation measures will not introduce and/or spread pathogens within the project area, therefore have negligible impact on MNES and MSES species and their habitats.			
Performance indicator			
Existing pathogens are identified and controlled onsite.			
Corrective actions			
Disease outbreaks within the project area to be documented and reported to regulatory authority including and rectified immediately.			
Monitoring			
All excavator and other plant/machinery washdown checklists to be recorded.			
Weekly inspection on site			
Maintaining a register for weeds, pests and pathogens recorded within the project area.			
Liaison with WTMA regarding existing monitoring strategies for pathogens within the WTWH			

## Operational phase

**Table 5-4 Mitigation measures to be implemented for Wangetti South Section during operational phase for weeds**

Factor – weeds
Operational activities resulting in adverse impacts to the project area
Introduction or spread of weeds from operational activities. High risk vectors for weeds, include soils, vehicles (including bicycles) and clothing.
Applicable MNES & MSES impacted
<ul style="list-style-type: none"><li>• Wet Tropics World Heritage Area and National Heritage Site</li></ul> MNES and MSES bird species that are known likely or may occur: <ul style="list-style-type: none"><li>• <i>Casuaris casuaris</i> (Southern cassowary)</li><li>• Migratory birds (e.g. eastern curlew, great sand plover)</li><li>• Non-migratory species (e.g. masked owl)</li></ul> MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section <ul style="list-style-type: none"><li>• <i>Litoria dayi</i> (Australian lace lid)</li><li>• <i>Litoria nannotis</i> (Waterfall frog)</li><li>• <i>Litoria nyakalensis</i> (Mountain mistfrog)</li><li>• <i>Litoria rheocola</i> (Common mistfrog)</li><li>• <i>Litoria serrata</i> (Tapping green eyed frog)</li></ul> MNES and MSES mammal species that are known, likely or may occur in the Wangetti South Section <ul style="list-style-type: none"><li>• <i>Dasyurus maculatus gracilis</i> (Spotted-tailed quoll)</li><li>• <i>Dasyurus hallucatus</i> (Northern quoll)</li><li>• <i>Dendrolagus lumholtzi</i> (Lumholtz's tree-kangaroo)</li><li>• <i>Hipposideros semoni</i> (Semon's leaf-nosed bat)</li><li>• <i>Phascolarctos cinereus</i> (Koala)</li><li>• <i>Pteropus conspicillatus</i> (Spectacled flying-fox)</li><li>• <i>Rhinolophus robertsi</i> (Large-eared horseshoe bat)</li><li>• <i>Saccolaimus saccolaimus nudicluniatus</i> (Bare-rumped sheath-tailed bat)</li><li>• <i>Xeromys myoides</i> (Water mouse)</li></ul> MNES and MSES aquatic species that are known, likely or may occur in the Wangetti South Section <ul style="list-style-type: none"><li>• <i>Stiphodon semoni</i> (Opal cling goby)</li><li>• <i>Stiphodon rutilarueus</i> (Orange cling goby)</li><li>• <i>Stiphodon pelewensis</i> (Emerald cling goby)</li><li>• <i>Stiphodon surrufus</i> (Birdsong cling goby)</li></ul>



## Factor – weeds

MNES and MSES flora species that are known, likely or may occur in the Wangetti South Section:

- *Archontophoenix myolensis* (Myola palm)
- *Anoectochilus yatesiae* (Marbled jewel orchid)
- *Canarium acutifolium*
- *Dendrobium fellowsii*
- *Dendrobium mirbelianum* (Dark-stemmed antler orchid)
- *Diplazium cordifolium*
- *Diplazium pallidum*
- *Myrmecodia beccarii* (Ant plant)
- *Phaius pictus*
- *Phalaenopsis amabilis* subsp. *rosenstromii* (Native moth orchid)
- *Polyscias bellendenkerensis*
- *Randia audasii*
- *Rhomboda polygonoides*
- *Toechima pterocarpum* (Orange tamarind)
- *Vappodes lithocola* (Dwarf butterfly orchid) (also known as *Dendrobium lithocola*, and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Vappodes phalaenopsis* (Cooktown orchid) (Also known as *Dendrobium phalaenopsis* and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Zeuxine polygonoides* (Velvet jewel orchid) (also known as *Rhomboda polygonoides*)

Initial risk with no control

In the absence of project-specific mitigation measures, major but recoverable impacts to a factor of significance are likely.

Mitigation measure	Weed species targeted	Timing	Party responsible
All machinery and vehicle hygiene protocols to be followed at all times to prevent the introduction of weeds and pathogens. Operational staff and maintenance staff disinfecting clothing, footwear, equipment and other personal items. Disinfecting vehicles during the operational phase of the project and maintained throughout.	All weed species.	At all times	Operator in Partnership with DES/ QPWS

Factor – weeds			
Vehicle access will be restricted to existing roads and tracks, where possible.	All weed species.	During operational phase	Operator in Partnership with DES/ QPWS
Providing boot wash facility at both ends of the trail to ensure users do not track pest weeds onto the trail.	All weed species.	During operational phase	Operator in Partnership with DES/ QPWS
Regular inspection of the trail and nodes, as per existing QPWS procedures (Operational policy QPW/2013/746 v1.03 - Pest plant and pathogen spread prevention) during operation.	All weed species, particularly priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site as outlined in Table 4-1.	During operational phase	Operator in Partnership with DES/ QPWS
Recreational users of the trail will be educated on the sensitive nature of the local landscape and the importance of avoiding introduction and spread of weeds through the use of appropriate signage.	All weed species, particularly priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site as outlined in Table 4-1.	During operational phase	Operator in Partnership with DES/ QPWS
Signage to encourage trail users to clean clothing, shoes and equipment before entering trail.	All weed species, particularly priority invasive plant species rated medium to high and that have a	During operational phase	Operator in Partnership with DES/ QPWS

Factor – weeds			
	medium to high risk of occurring on site as outlined in Table 4-1.		
Signage to discourage trail users from picking or carrying flowers or plants from one area to another.	All weed species	During operational phase	Operator in Partnership with DES/ QPWS
Providing pamphlets and information on the booking website as part of booking paperwork to hikers and mountain bikers using the trail and operation staff to educate them about pathogens, weeds and pests within Wangetti Trail.	All weed species, particularly priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site as outlined in Table 4-1.	During operational phase	Operator in Partnership with DES/ QPWS
<b>Residual risk with control in place</b>			
Implementation of recommended mitigation measures will not introduce and/or spread weeds within the project area, therefore have negligible impact on MNES and MSES species and their habitats.			
<b>Performance indicator</b>			
Existing weed species are identified and controlled onsite.			
No new weed outbreak on site.			
<b>Corrective actions</b>			
Weed outbreaks within the project area to be documented and reported to regulatory authority including and rectified immediately.			
<b>Monitoring</b>			
Regular inspections to include weeds onsite and to target high risk areas.			
All maintenance vehicle washdown checklists to be recorded. Records demonstrating that personnel associated with the operational phases have undertaken weed, pest and pathogen induction training.			

## Factor – weeds

Liaison with WTMA regarding existing monitoring strategies for weed species within the WTWHA

Maintaining a register for weeds, pests and pathogens recorded within the project area.

**Table 5-5 Mitigation measures to be implemented for Wangetti South Section during operation phase for pests**

Factor – pests
Operational activities resulting in adverse impacts to the project area
<ul style="list-style-type: none"> <li>• Introduction or spread of pests from operational activities within the project area.</li> <li>• Interference of local wildlife by domestic animals</li> <li>• Waste generation by users of the trail within the project area providing food to pest species</li> <li>• Spread of pest species within the project area from the movement of equipment, vehicle and material from affected areas outside of the project area leading to increase pest activities</li> </ul>
Applicable MNES & MSES impacted
<ul style="list-style-type: none"> <li>• Wet Tropics World Heritage Area and National Heritage Site</li> </ul> <p>MNES and MSES bird species that are known likely or may occur:</p> <ul style="list-style-type: none"> <li>• <i>Casuarus casuarius</i> (Southern cassowary)</li> <li>• Migratory birds (e.g. eastern curlew, great sand plover)</li> <li>• Non-migratory species (e.g. masked owl)</li> </ul> <p>MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <li>• <i>Litoria dayi</i> (Australian lace lid)</li> <li>• <i>Litoria nannotis</i> (Waterfall frog)</li> <li>• <i>Litoria nyakalensis</i> (Mountain mistfrog)</li> <li>• <i>Litoria rheocola</i> (Common mistfrog)</li> <li>• <i>Litoria serrata</i> (Tapping green eyed frog)</li> </ul> <p>MNES and MSES mammal species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <li>• <i>Dasyurus maculatus gracilis</i> (Spotted-tailed quoll)</li> <li>• <i>Dasyurus hallucatus</i> (Northern quoll)</li> <li>• <i>Dendrolagus lumholtzi</i> (Lumholtz’s tree-kangaroo)</li> <li>• <i>Hipposideros semoni</i> (Semon’s leaf-nosed bat)</li> <li>• <i>Phascolarctos cinereus</i> (Koala)</li> <li>• <i>Pteropus conspicillatus</i> (Spectacled flying-fox)</li> <li>• <i>Rhinolophus robertsi</i> (Large-eared horseshoe bat)</li> <li>• <i>Saccolaimus saccolaimus nudicluniatus</i> (Bare-rumped sheath-tailed bat)</li> <li>• <i>Xeromys myoides</i> (Water mouse)</li> </ul> <p>MNES and MSES aquatic species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <li>• <i>Stiphodon semoni</i> (Opal cling goby)</li> <li>• <i>Stiphodon rutilarueus</i> (Orange cling goby)</li> </ul>



## Factor – pests

- *Stiphodon pelewensis* (Emerald cling goby)
- *Stiphodon sarrufus* (Birdsong cling goby)

MNES and MSES flora species that are known, likely or may occur in the Wangetti South Section:

- *Archontophoenix myolensis* (Myola palm)
- *Anoectochilus yatesiae* (Marbled jewel orchid)
- *Canarium acutifolium*
- *Dendrobium fellowsii*
- *Dendrobium mirbelianum* (Dark-stemmed antler orchid)
- *Diplazium cordifolium*
- *Diplazium pallidum*
- *Myrmecodia beccarii* (Ant plant)
- *Phaius pictus*
- *Phalaenopsis amabilis* subsp. *rosenstromii* (Native moth orchid)
- *Polyscias bellendenkerensis*
- *Randia audasii*
- *Rhomboda polygonoides*
- *Toechima pterocarpum* (Orange tamarind)
- *Vappodes lithocola* (Dwarf butterfly orchid) (also known as *Dendrobium lithocola*, and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Vappodes phalaenopsis* (Cooktown orchid) (Also known as *Dendrobium phalaenopsis* and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Zeuxine polygonoides* (Velvet jewel orchid) (also known as *Rhomboda polygonoides*)

### Initial risk with no control

In the absence of project-specific mitigation measures, major but recoverable impacts to a factor of significance are likely.

Mitigation measure	Pest species targeted	Timing	Party responsible
Feeding of wildlife is prohibited and food scraps to be disposed on into bins at the camp area with closed/secured lids and removed from site regularly to minimise vermin infestations.	All pest species in particular yellow crazy ants, electric ants, cats, pigs, and dogs	At all times	Operator in Partnership with DES/QPWS
General waste will be removed from the project camp area.	All pest species in particular yellow crazy ants, electric	During operational phase	Operator in Partnership with DES/QPWS

Factor – pests			
	ants, cats, pigs, and dogs		
Users of the trail will be educated about not feeding the wildlife through 'no feeding wildlife' signage.	All pest species in particular yellow crazy ants, electric ants, cats, pigs, and dogs	During operational phase	Operator in Partnership with DES/ QPWS
Recreational users of the trail will be educated on the sensitive nature of the local landscape and the importance of avoiding introduction and spread of pests through the use of appropriate signage.	All pest species in particular yellow crazy ants, electric ants, cats, pigs, and dogs	During operational phase	Operator in Partnership with DES/ QPWS
Regular inspection of the trail and nodes, to check for pests.	All pest species in particular yellow crazy ants, electric ants, cats, pigs, and dogs	During operational phase	Operator in Partnership with DES/ QPWS
Providing pamphlets and information on the booking website as part of booking paperwork to hikers and mountain bikers using the trail and operation staff to educate them about pathogens, weeds and pests within Wangetti Trail.	All pest species in particular yellow crazy ants, electric ants, cats, pigs, and dogs	At all times	Operator in Partnership with DES/ QPWS
<b>Residual risk with control in place</b>			
Implementation of recommended mitigation measures will not introduce and/or spread pests within the project area, therefore have negligible impact on MNES and MSES species and their habitats.			
<b>Performance indicator</b>			
Existing pest species are identified and controlled onsite.			
No new pests species recorded on site.			
<b>Corrective actions</b>			
Pest outbreaks within the project area to be documented and reported to regulatory authority including and rectified immediately.			
<b>Monitoring</b>			
Weekly inspection to include pests onsite			
Maintaining a register for weeds, pests and pathogens recorded within the project area. Liaison with WTMA regarding existing monitoring strategies for pest species within the WTWHA.			

**Table 5-6 Mitigation measures to be implemented for Wangetti South Section during operation phase for pathogens**

Factor – pathogens
Operational activities resulting in adverse impacts to the project area
<ul style="list-style-type: none"> <li>• Introduction or spread of pathogens from operational activities within the project area.</li> <li>• Spread of pathogens within the project area from the movement of equipment, vehicle and material from affected areas outside of the project area.</li> </ul>
Applicable MNES & MSES impacted
<ul style="list-style-type: none"> <li>• Wet Tropics World Heritage Area and National Heritage Site</li> </ul> <p>MNES and MSES flora species that are known, likely or may occur in the Wangetti South Section:</p> <ul style="list-style-type: none"> <li>• <i>Archontophoenix myolensis</i> (Myola palm)</li> <li>• <i>Anoectochilus yatesiae</i> (Marbled jewel orchid)</li> <li>• <i>Canarium acutifolium</i></li> <li>• <i>Dendrobium fellowsii</i></li> <li>• <i>Dendrobium mirbelianum</i> (Dark-stemmed antler orchid)</li> <li>• <i>Diplazium cordifolium</i></li> <li>• <i>Diplazium pallidum</i></li> <li>• <i>Myrmecodia beccarii</i> (Ant plant)</li> <li>• <i>Phaius pictus</i></li> <li>• <i>Phalaenopsis amabilis</i> subsp. <i>rosenstromii</i> (Native moth orchid)</li> <li>• <i>Polyscias bellendenkerensis</i></li> <li>• <i>Randia audasii</i></li> <li>• <i>Rhomboda polygonoides</i></li> <li>• <i>Toechima pterocarpum</i> (Orange tamarind)</li> <li>• <i>Vappodes lithocola</i> (Dwarf butterfly orchid) (also known as <i>Dendrobium lithocola</i>, and the Queensland Flora Census 2019 groups this species into <i>Dendrobium biggibum</i>)</li> <li>• <i>Vappodes phalaenopsis</i> (Cooktown orchid) (Also known as <i>Dendrobium phalaenopsis</i> and the Queensland Flora Census 2019 groups this species into <i>Dendrobium biggibum</i>)</li> <li>• <i>Zeuxine polygonoides</i> (Velvet jewel orchid) (also known as <i>Rhomboda polygonoides</i>))</li> </ul> <p>MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <li>• <i>Litoria dayi</i> (Australian lace lid)</li> <li>• <i>Litoria nannotis</i> (Waterfall frog)</li> <li>• <i>Litoria nyakalensis</i> (Mountain mistfrog)</li> <li>• <i>Litoria rheocola</i> (Common mistfrog)</li> </ul>

Factor – pathogens

- *Litoria serrata* (Tapping green eyed frog)

Initial risk with no control

In the absence of project-specific mitigation measures, major but recoverable impacts to a factor of significance are likely.

Mitigation measure	Targeted pathogens	Timing	Party responsible
Providing boot/ bike wash facilities at both ends of the trail to ensure users do not track pest weeds onto the trail.	Myrtle rust, root rot fungus and Chytridiomycosis disease	At all times	Operator in Partnership with DES/ QPWS
Signage to be placed at entrances to national parks informing users of the chytrid fungus.	Myrtle rust, root rot fungus and Chytridiomycosis disease	At all times	Operator in Partnership with DES/ QPWS
<p>Educating trail users about Phytophthora Dieback Management Procedures through:</p> <ul style="list-style-type: none"> <li>• appropriate signage;</li> <li>• installing signposted clean-down points at appropriate points on the track (including the start of the track)</li> <li>• encouraging trail users to carry a hard brush and bottle of methylated spirits to use in cleaning and disinfecting boots.</li> </ul> <p>Treatment methods are to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information regarding the treatment and management of dieback is provided in Appendix B.</p>	Root rot fungus	At all times	Operator in Partnership with DES/ QPWS
Providing pamphlets and information on the booking website as part of booking paperwork to hikers and mountain bikers using the trail and operation staff to educate them about pathogens, weeds and pests within Wangetti Trail.	Myrtle rust, root rot fungus and Chytridiomycosis disease	At all times	Operator in Partnership with DES/ QPWS
Recreational users of the trail will be educated on the sensitive nature of the local landscape and the importance of avoiding introduction	Myrtle rust, root rot fungus and Chytridiomycosis disease	At all times	Operator in Partnership with DES/ QPWS

Factor – pathogens			
and spread of disease through the use of appropriate signage.			
Regular inspection of the trail and nodes, as per existing QPWS procedures during operation.	Myrtle rust, root rot fungus and Chytridiomycosis disease	At all times	Operator in Partnership with DES/ QPWS
<b>Residual risk with control in place</b>			
Implementation of recommended mitigation measures will not introduce and/or spread pathogens within the project area, therefore have negligible impact on MNES and MSES species and their habitats.			
<b>Performance indicator</b>			
Existing pathogens are identified and controlled onsite.			
No new pathogens are introduced to the project area.			
<b>Corrective actions</b>			
Disease outbreaks within the project area to be documented and reported to regulatory authority including and rectified immediately.			
<b>Monitoring</b>			
Maintaining a register for weeds, pests and pathogens recorded within the project area.			
Liaison with WTMA regarding existing monitoring strategies for pathogens within the WTWHA			



## **5.4 Induction training**

All personnel working during the construction and operational phases of the Wangetti South Project will be required to undergo site specific induction which includes an outline of pest and weed prevention, minimisation and management requirements (other environmental sites) on site. Appropriate training as part of inductions suiting the different roles and responsibilities is to be undertaken in accordance with appropriate standards and conditions of approvals as advised by DES, QPWS, WTMA and TDPD, and other regulatory authorities.

Regulator toolbox meetings and pest and weed awareness sessions are also conducted. Topics addressed by these sessions include key weed, pest and disease management principles to maintain compliance with regulatory requirements and to reinforce solutions or increase awareness or any pest and weed-related issues that arise during the course of construction and operations.

Identification material provided by DES, QPWS, WTMA relating to weeds, pests and disease that may be present within the project area will be made available to all personnel working during the construction and operational phases of the Wangetti South Project including trail users.

## **5.5 Monitoring**

Monitoring is an essential component of any WPDMP as it provides a means of identifying the following:

- Changes in the extent of weed population and pest population
- Changes in the cover density of weed populations
- Any new weed, pests and disease that may become established
- Documentation of any unexpected impacts of weeds, pests and disease control activities (i.e. unplanned damage to native vegetation)
- Changes in the extent and condition of native vegetation
- Changes in any conditions that have the potential to impact on site restoration works
- How well control methods are working

Personnel will be nominated during the construction phase and the operational phases of the project to undertake visual inspections and to identify any weeds, pests or disease in accordance with an established schedule for the project.

## **5.6 Corrective actions**

The Project Manager during each phase (construction and operational) is responsible for ensuring that on receipt of a weed/pest/pathogen notification form or trail inspections relating to weeds or pests, an investigation should be undertaken promptly, and appropriate actions undertaken. Additionally, following identification of restricted/declared weeds and pests, a revision to this management plan should be undertaken, and further controls implemented as necessary. Corrective action controls may include the use of contracted licensed weed eradicator or pest exterminator. All corrective actions will be implemented to meet the required outcomes of the Administering Authorities.

## 6. Reporting, auditing and review

### 6.1 Reporting and auditing

Reporting incidents relating to weed, pests and diseases are the responsibility of all personnel onsite at all times and are to be recorded and managed in a complaints register with the corrective actions undertaken. The contractor in the construction phase and operational phase will be required to develop a complaints management system and register and seek approval from TDPD, DES and QPWS.

As part of an onsite environmental workplace inspection program, an environmental workplace inspection is to be carried out to assess environment performance and weed management. Records and related documents will be audited periodically to ensure that work that has been laid out in this plan has been undertaken and captured. Management documentation, for example plans and procedures, will be reviewed periodically to ensure that they remain applicable to current operations and compliant with requirements set by regulatory authorities.

### 6.2 Review

WPDMP is a living document and shall be reviewed against the following performance criteria to determine the effectiveness of this procedure:

- No introduction or spread of new (declared) weeds and pests.
- No complaints are received from regulatory authorities or the community.
- Works undertaken in accordance with the Biosecurity Act
- All machinery to have a certified weed hygiene certificate issued by an authorised person/department.
- No new pest/weed species introduced and no increase to existing pest/weed species abundance and distribution
- Site rehabilitated after construction
- No unapproved clearing to occur beyond the required limits for construction
- Identified sensitive areas are demarcated and managed appropriately with minimal impacts
- No incidents of death or injury to native fauna

It should also be reviewed if any of the following occur:

- The WPDMP is not adequately managing the issue
- Legislative requirement changes
- A previously unidentified declared or weed species if found within the area of activity
- New procedures relating to weed, pest and disease management are developed.

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# Appendices

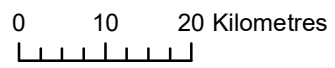
## **Appendix A** – Map showing distribution of weeds, pests and pathogen



## Asian Honey Bee Known Infested Area



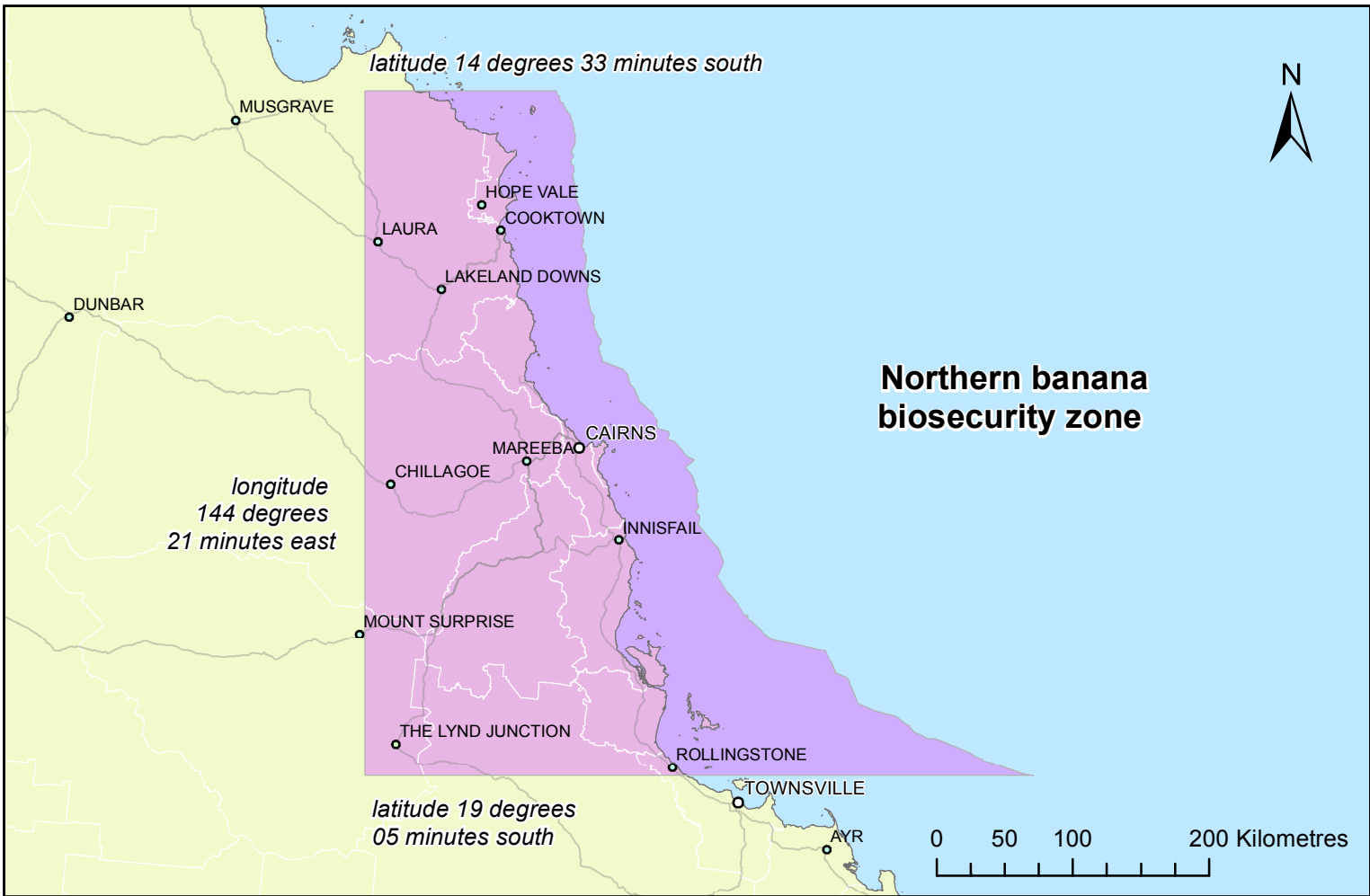
- Extension confirmed 06/01/2020
- Known infested area



Disclaimer: This map is for reference purposes only and the features depicted on it are approximate. Neither the Department, its officers or employees warrant or make any representations about the accuracy, completeness or reliability of this map. The Department, its officers and employees will not be held liable for any loss or damage suffered as a result of any use of, or reliance on, the map. This map must not be copied or reproduced in any form without the written consent of the Department.

Published date: 6/01/2020





## Banana Biosecurity Zone Map

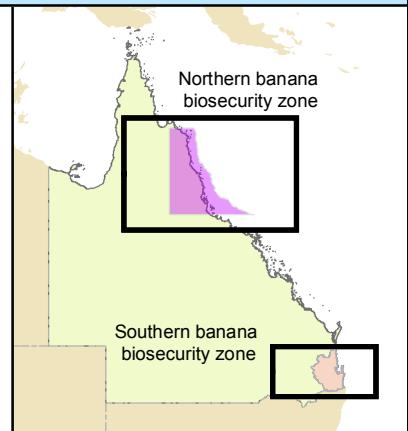


### Legend

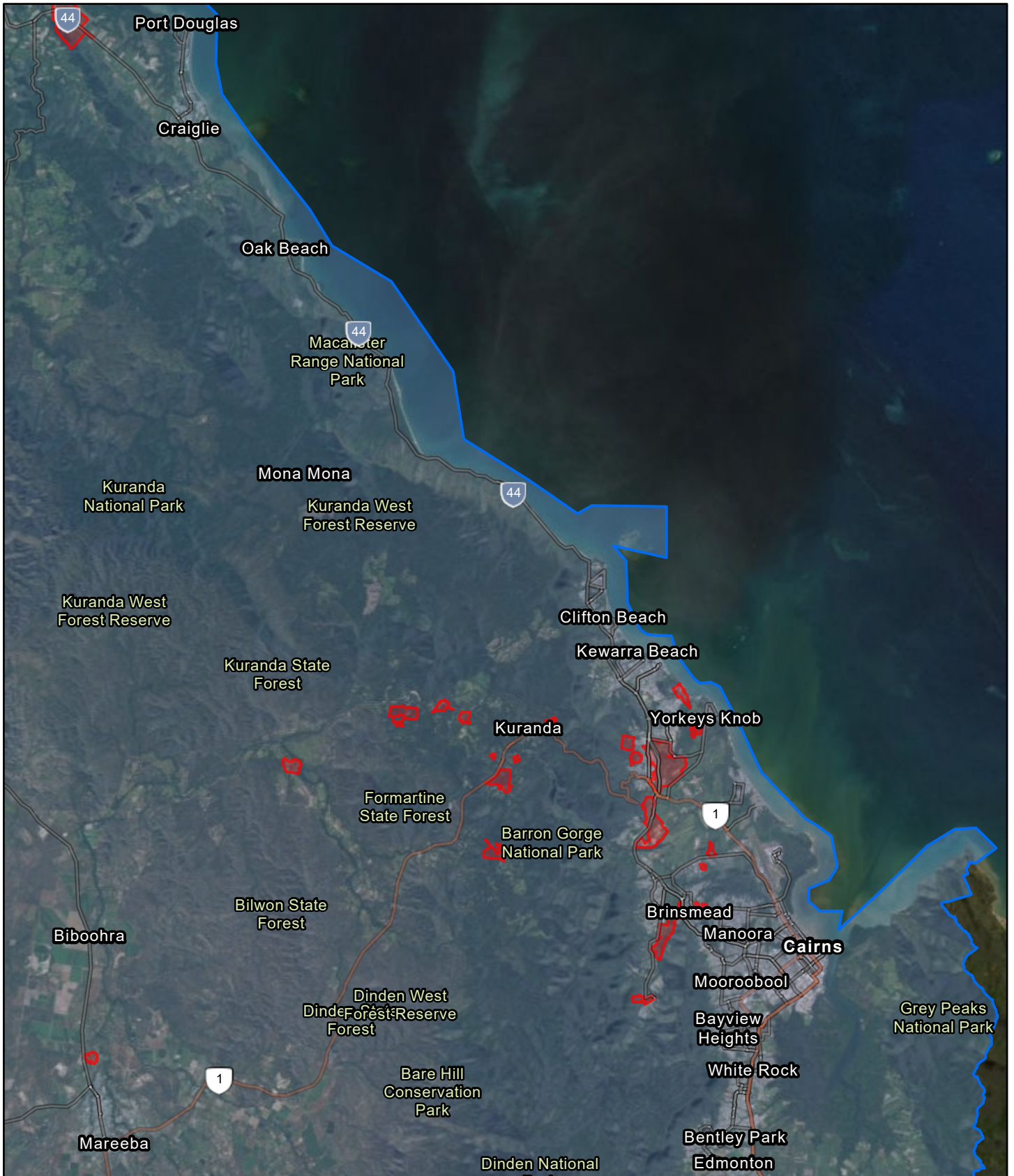
- Northern banana biosecurity zone
- Southern banana biosecurity zone

Disclaimer: This map is for reference purposes only and the features depicted on it are approximate. Neither the Department, its officers or employees warrant or make any representations about the accuracy, completeness or reliability of this map. The Department, its officers and employees will not be held liable for any loss or damage suffered as a result of any use of, or reliance on, the map. This map must not be copied or reproduced in any form without the written consent of the Department

Published date: 6/06/2016

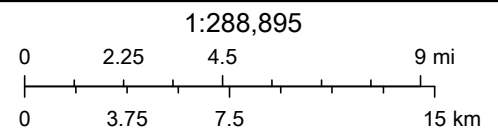


# Electric Ant Biosecurity Zone Map EA02 – 15 June 2018



11/16/2020, 11:22:21 AM

- Electric ant restricted zone
- Electric ant biosecurity zone EA02



© State of Queensland (Department of Natural Resources, Mines and Energy) 2020, QPWS, Esri, HERE, Garmin, METI/NASA, USGS, Earthstar Geographics

Electric Ant Biosecurity Zone Map EA02 – 15 June 2018  
© State of Queensland (Department of Agriculture and Fisheries) 2020.

## **Appendix B** – Factsheets about the identification and treatment of high risk weeds, pests and pathogens

# Miconia (*Miconia calvescens*)

Human Health   Social Amenity   Economy   Environment   Achievability   Local Impact/ Values   Declaration Status   National priority

Priority



Details

**Description** Small tree (up to 15 m) with large leaves up to 70 cm long. The underside of the leaves is a distinct, deep iridescent purple. Produces clusters of small white flowers followed by red/purple berries.

**Distribution** Current incursions and infestations occur in Babinda, Deeral, Frenchman’s Creek, Harvey Creek, Russell River and Whitfield. Miconia was typically introduced as a garden plant and then spread into neighbouring rainforest and creek lines by birds.

**Impacts** Miconia produces hundreds of small berries every year which are attractive to birds and are spread long distances. It forms dense thickets in rainforest understoreys, potentially replacing native plants and affecting wildlife populations.

**Key projects** Target of the National cost-shared Tropical Weeds Eradication Program led by Biosecurity Queensland. All plants should be reported to Biosecurity Queensland immediately on 13 25 23.

Background

Miconia is a serious weed in Tahiti and Hawaii, where it forms dense thickets in rainforests and displaces native flora and fauna. Miconia was initially brought into Australia via botanic gardens, and was sold in some nurseries and markets between 1978 and the mid-1990s. Dispersal to new locations has been mainly via cultivation – gardeners and plant collectors. Fruit eating birds are then the primary mechanism of dispersal into surrounding forests and gardens.

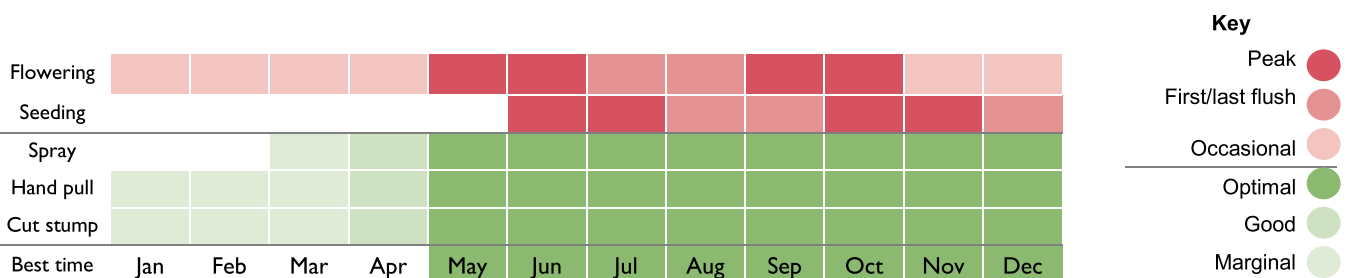
A community education and awareness program is an important part of the eradication program. Managing the risk of spread to new areas through hygiene protocols for impacted nurseries and growers play an important role in preventing new infestations establishing. Hygiene protocols are also in place for survey and control operations.

*Miconia calvescens* was first discovered in Cairns Regional Council in 1997 at the Flecker Botanical Gardens. Miconia has been detected at 14 locations in the CRC area since 1997.

A National eradication program is underway and is targeting survey, control and monitoring of all known infestations. Bi-annual surveys are conducted to monitor all known infestations and to ensure no new outbreaks have gone undetected; and that plants do not produce seed.

Birds can disperse the small seeds out to many hundreds of metres. The seed of Miconia can remain viable for at least 16 years so it is important to not disturb areas where mature plants have occurred in the past.

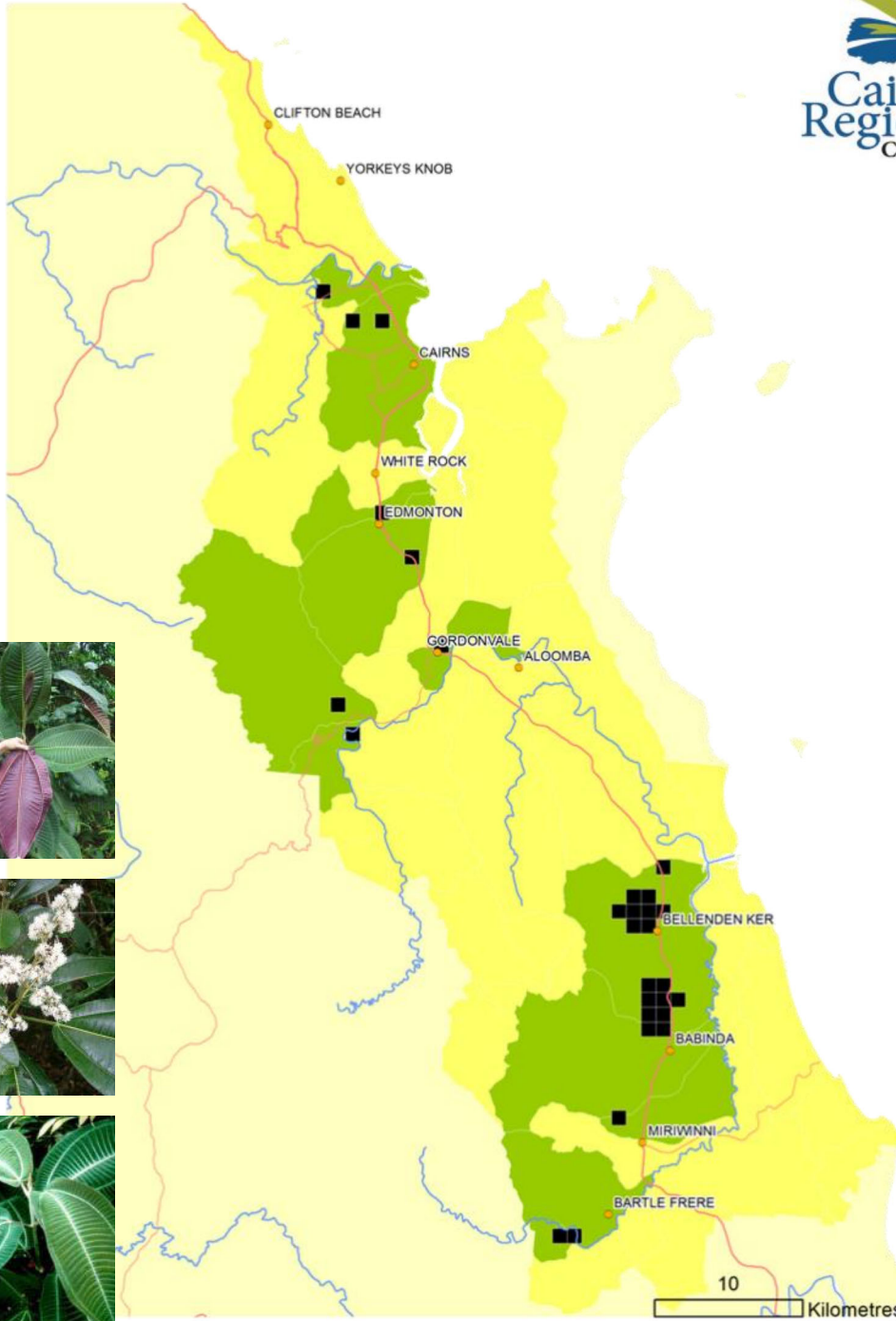
Control calendar



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Cairns Biosecurity Plan available at [cairns.qld.gov.au](http://cairns.qld.gov.au) and customer service centres.



# Miconia (*Miconia calvescens*)



Woody

Terrestrial

Perennial

Biosecurity Act Restricted matter category

2 Must be reported

3 Do not distribute

4 Do not move

5 Do not keep

6 Do not feed

Control



Spread



## What is my biosecurity obligation?

**In the prevention zone**

Currently the target of the National cost-shared Tropical Weeds Eradication Program. Landholders are required to report suspected infestations immediately to Biosecurity Queensland on 13 25 23. For more information refer to the biosecurity programs of the Tropical Weed Eradication Program.

**In the eradication zone**

If you have an active infestation on your property you can assist the survey and control team by maintaining property access points and tracks, and ensuring you do not move soil or plant material from the infestation area.

Landholders are required to report suspected infestations immediately to Biosecurity Queensland on 13 25 23. For more information refer to the biosecurity programs of the Tropical Weed Eradication Program.

# Limnocharis (*Limnocharis flava*)

Human Health   Social Amenity   Economy   Environment   Achievability   Local Impact/ Values   Declaration Status   National priority

Priority



Details

**Description** Limnocharis is a perennial aquatic weed which can grow to a height of 1 metre. It has pale green leaves and small yellow cup-shaped flowers. Stems of leaves are triangular in cross-section.

**Distribution** Limnocharis can occur in natural or artificial water features and wetlands. There are active infestations in Centenary Lakes, Cairns CBD, Mirriwinni, White Rock, Smithfield and Redlynch. Historical infestations have also occurred in Manunda, Clifton Beach, Woree, East Russell and Trinity Beach.

**Impacts** A major weed in many countries. Limnocharis is a perennial aquatic plant which will colonise shallow wetlands and margins of deeper waterways. It competes with native plants, blocks drains and displaces native flora and fauna.

**Key projects** All known infestations within the Cairns Region are currently the target of the National cost-shared Tropical Weeds Eradication Program. Landholders are required to report suspected infestations immediately to Biosecurity Queensland on 13 25 23.

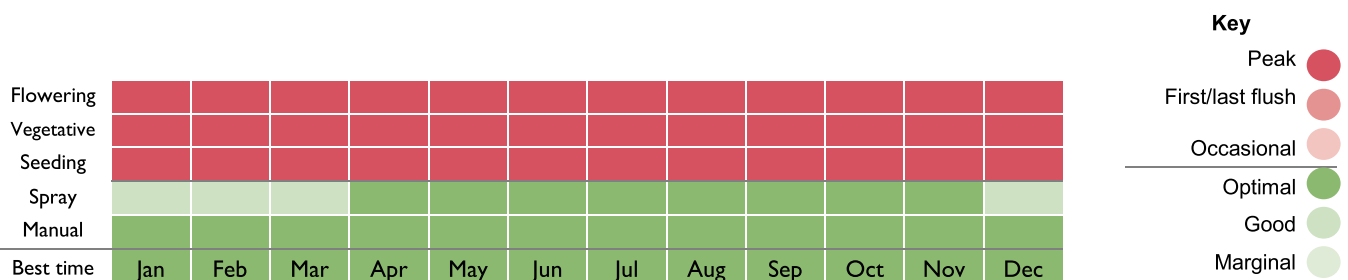
Background

Due to its scattered occurrence across the Cairns region it is important to be on the lookout for Limnocharis in natural and artificial water features and wetlands. Regular media campaigns and community displays can assist to identify new infestations. Limnocharis was first discovered in Cairns Regional Council area in 2001. Anecdotal information from the Cairns botanical gardens suggests that it may have been present there since the 1980s. Limnocharis was introduced as an ornamental wetland plant and has escaped from cultivation into drains, creeks and wetlands. Ensuring that aquatic plants are sourced from a weed free source is essential to prevent further spread of invasive aquarium plants. The seed is long-lived and can re-emerge many years after being buried in mud or soil in waterways.

The distinctive yellow flowers help distinguish it from native or introduced water hyacinth which have purple flowers. The leaf stems are also triangular on cross section. The seed longevity is at least fourteen years with plants reaching reproductive maturity in 58 days. Thus infestations must be monitored every 3 -4 weeks to stop all seeding events. Dispersal to new locations has been mainly via cultivation – gardeners and plant collectors. Local movement is via water dispersal of seed or vegetative plantlets.

The seed can remain viable buried in mud and soil for many years so any works in the vicinity of known sites require strict hygiene protocols, contact the eradication team on 13 25 23 for more information or if unsure of the risk.

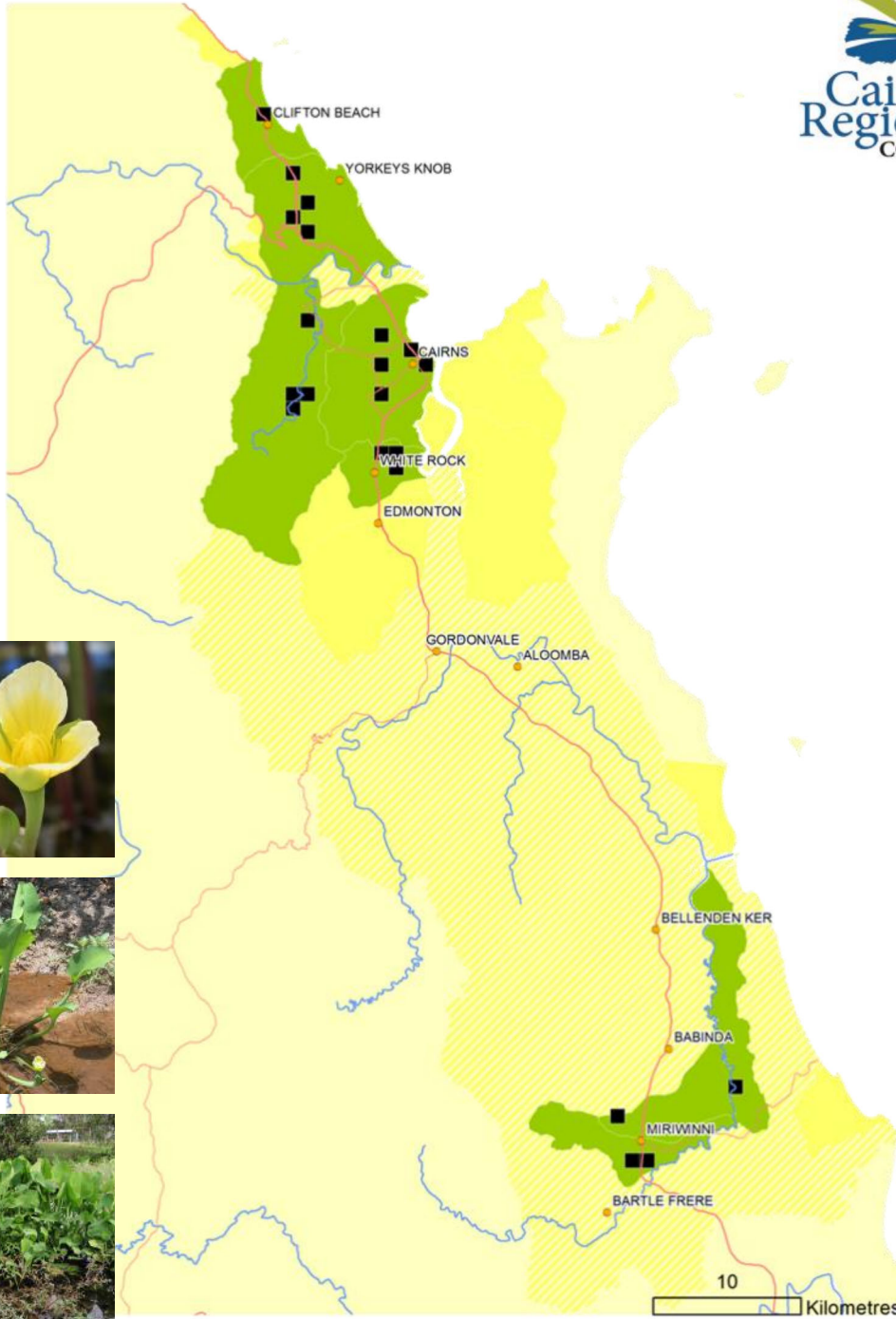
Control calendar



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Cairns Biosecurity Plan available at [cairns.qld.gov.au](http://cairns.qld.gov.au) and customer service centres.



# Limnocharis (*Limnocharis flava*)



Herb

Aquatic

Perennial

Biosecurity Act Restricted matter category

2 Must be reported

3 Do not distribute

4 Do not move

5 Do not keep

6 Do not feed

Control



Spread



## What is my biosecurity obligation?

**In the delimitation zone**

Ensure wetland and pond plants are sourced from a weed free area. Do not dump wetland, aquarium plants or fish into waterways. Landholders are required to report suspected infestations immediately to Biosecurity Queensland on 13 25 23. For more information refer to the biosecurity programs of the Tropical Weed Eradication Program.

**In the prevention zone**

Do not move soils and plants from infested sites. Ensure machinery and other plant operating in vicinity of the known infestation is operating under strict weed hygiene protocols.

**In the eradication zone**

If you have an active infestation on your property you can assist the survey and control team by maintaining property access points and tracks, and ensuring you do not move soil or plant material from the infestation area. Landholders are required to report suspected infestations immediately to Biosecurity Queensland on 13 25 23. For more information refer to the biosecurity programs of the Tropical Weed Eradication Program.

# Mexican bean tree (*Cecropia peltata*, *C. pachystachya* *C. palmata*)

Human Health    Social Amenity    Economy    Environment    Achievability    Local Impact/ Values    Declaration Status    National priority

Priority



Details

**Description** A rapidly growing tree to 20m with hollow stems and large deeply lobed leaves with flocked white undersides. The tree has distinctive leaf scars on trunk which are similar to a paw paw. *Cecropia* has separate male and female plants with the female plant producing long finger-like fruiting spikes.

**Distribution** There are three known infestations in the Cairns Regional Council area located at Clifton Beach, Cairns City and Garradunga which extends into Cassowary Coast Regional Council.

**Impacts** *Cecropia* spp. are rapid growing rainforest pioneers which can invade and dominate rainforests, urban gardens, agricultural land and riparian areas. *Cecropia* seed profusely and are spread by birds and bats and subsequently can be dispersed long distances into adjoining landscapes and forests.

**Key projects** All known locations are the target of a regional eradication program led by Biosecurity Queensland. *C. pachystachya*, *C. palmata* are under monitoring towards eradication as they have not been detected since early 2017.

Background

Seed longevity in *Cecropia* is short at less than 2 years. This gives great confidence in eradication programs as sites can be considered free quickly. Properties need to be free of *Cecropia* for a minimum of three years following the removal of last mature female plant to be considered clear.

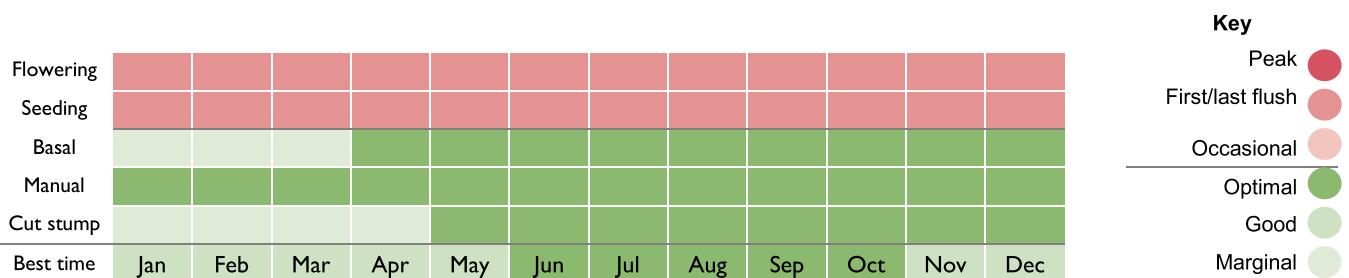
All infestations are believed to have originated from plant collections and subsequently spread and naturalised in the surrounding environment via vectors including birds, bats and water. Dispersal by birds or bats of up to 2km has been observed in Far North Queensland, however data suggests a management area which buffers 1.5km from female plants is suitable.

Due to dispersal by birds and flying fox it is important to be on the lookout for *Cecropia* in gardens, forests and riparian areas.

A community education and awareness program is an important part of the eradication program. Managing risk of spread to new areas through hygiene protocols for impacted nurseries and growers play an important role in prevention. Hygiene protocols are also in place for survey and control operations.

When searching for *Cecropia* in the field, programs have learnt to adopt three techniques to maximise detection success, namely; 1) look up into the canopy, searching for the unique leaf shape and the leaves' silvery/white underside; 2) look ahead for the distinctive leaf scars on the stems; and 3) look down for the large, dry, silvery grey leaves on the ground.

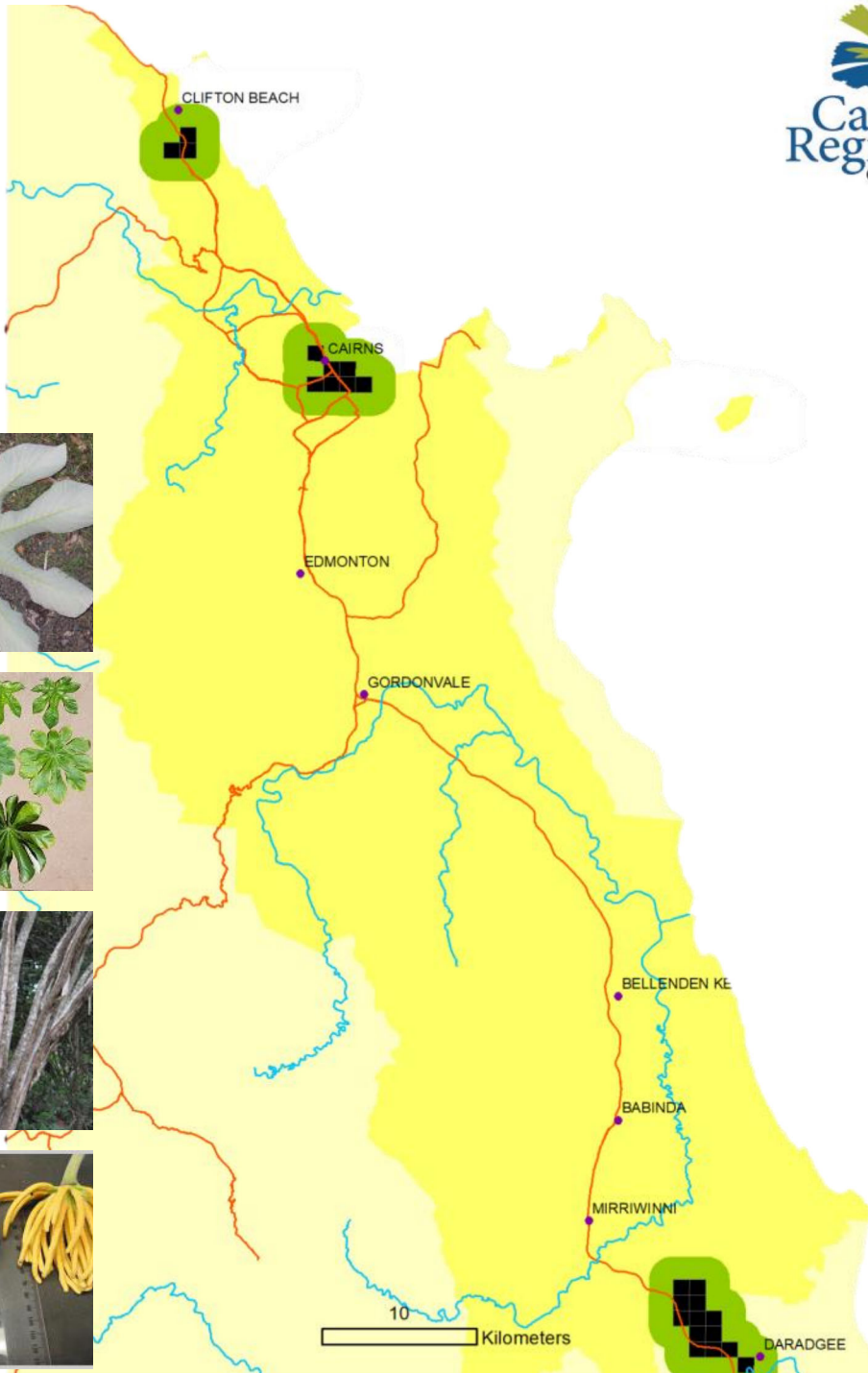
Control calendar



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Cairns Biosecurity Plan available at [cairns.qld.gov.au](http://cairns.qld.gov.au) and customer service centres.

# Mexican bean tree (*Cecropia peltata*, *C. pachystachya* *C. palmata*)

Cairns Biosecurity Plan 2019–2024



Woody

Terrestrial

Perennial

Biosecurity Act Restricted matter category

2 Must be reported

3 Do not distribute

4 Do not move

5 Do not keep

6 Do not feed

Control



Spread



## What is my biosecurity obligation?

**In the prevention zone**

All suspected sightings of this plant must be reported to Biosecurity Queensland on 13 25 23 within 24 hours. It is an offence under the Biosecurity Act 2014 to sell, distribute or give away *Cecropia* plants or seeds. If moving to a new property with a history of nursery or fruit tree production, be on the lookout for *Cecropia* plants.

**In the eradication zone**

All suspected sightings of this plant must be reported to Biosecurity Queensland on 13 25 23 within 24 hours. If you have an active infestation on your property you can assist the survey and control team by maintaining property access points and tracks, and ensuring you do not move soil or plant material from the infestation area. Land managers are required to control all known infestations on their land. As plants take 3 years to reach sexual maturity land managers are required to survey their part of the management area twice in the first three years following detection and once every 2 years after until deemed eradicated by an Authorised Officer under the Biosecurity Act 2014.



# Siam weed (*Chromolaena odorata*)

Human Health    Social Amenity    Economy    Environment    Achievability    Local Impact/ Values    Declaration Status    National priority

Priority



Details

**Description** A scrambling woody shrub to 3 metres, (higher as a scrambling climber), with distinctive forked leaf venation and purple flush on new leaves. Clusters of white to lilac flowers in May-June and October. Distinguish from the weeds Bluetop and Praxelis, which have short-tasselled mauve to purple flowers and different leaves.

**Distribution** There are occasional infestations of Siam weed in Goldsborough Valley and Little Mulgrave. Larger infestations are throughout the Russell Catchment in Woopen Creek and Bartle Frere areas. A large infestation has recently been detected in Waugh's pocket.

**Impacts** Siam weed forms dense thickets and outcompetes native species and pasture in both disturbed and undisturbed sites. It prefers richer soils in alluvial and riparian zones but will grow in woodlands and coastal zones.

**Key projects** The target of a National Eradication Program up until 2012, Siam weed was devolved to local governments for further management. Contact Cairns Regional Council to report any suspect plants on 1300 692 247. As of publication, Council has implemented a Biosecurity Prevention and Control Program for this pest.

Areas marked for delimitation require on ground surveys to determine extent of distribution. No infestations are currently known in these areas.

Siam weed is likely to arrive with contaminated stock, produce, vehicles or machinery from adjoining infested areas. Ensuring weed hygiene measures are in place and materials/produce are sourced from a clean site will assist to protect your property.

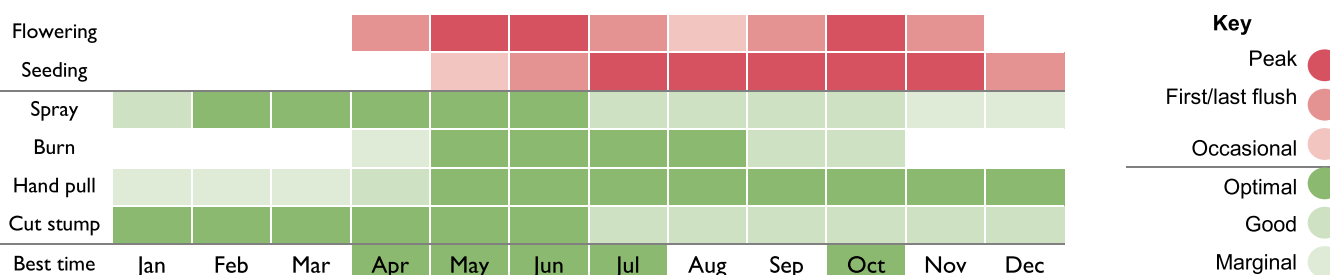
Background

Siam weed has a peak flowering period in May-June with another, less vigorous flowering in October. It is most visible at these times and this feature is used to detect plants prior to seeding. Siam weed is able to be spread by wind and water as well as machinery and vehicles.

The seeds of Siam weed have been confirmed to remain viable in the soil for at least 7 years. Maintaining records of historical infestations and restricting disturbance and movement of soil is essential to prevent spread to new locations.

Conducting surveys during the peak flowering time in May-June is the best way to detect any new outbreaks or to monitor previously controlled areas. Monitoring along forest edges, degraded pastures and riparian areas is a useful strategy to detect new infestations or single plants. Maintaining healthy native vegetation along watercourses and vigorous pastures will assist to reduce opportunities for Siam weed to establish in new locations.

Control calendar



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Cairns Biosecurity Plan available at [cairns.qld.gov.au](http://cairns.qld.gov.au) and customer service centres.

# Siam weed (*Chromolaena odorata*)



Woody

Terrestrial

Perennial

Biosecurity Act Restricted matter category

2 Must be reported

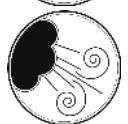
3 Do not distribute

4 Do not move

5 Do not keep

6 Do not feed

Control



Spread

## What is my biosecurity obligation?

**In the delimitation zone**

Report any suspected outbreaks or detections to Cairns Regional Council on 1300 692 247. Conduct surveys during peak flowering period of May-June.

**In the prevention zone**

Report any suspected outbreaks or detections to Cairns Regional Council on 1300 692 247. Ensure weed hygiene measures are in place and materials/produce are sourced from a clean site.

**In the containment zone**

Ensure best practice weed hygiene measures are in place to reduce risk of spread to new locations. Maintain weed free areas. Identify high value assets and protect them from impacts where possible. Treat isolated infestations with high risk of spread. Conduct annual surveys during peak flowering time to detect any new outbreaks or recruitment of new plants from dormant seeds in known locations.

# Water hyacinth (*Eichhornia crassipes*)

Human Health    Social Amenity    Economy    Environment    Achievability    Local Impact/ Values    Declaration Status    National priority

Priority



Details

**Description** A free-floating, aquatic herb with glossy, spoon shaped leaves and distinctive purple/lilac flowers. Water Hyacinth forms dense blankets over waterways and wetlands. A similar native species occurs but can be distinguished by its yellow flowers and spear-shaped leaves

**Distribution** Occasional and localised in the lower Mulgrave River catchment and Caravonica suburb, within waterways.

**Impacts** Water Hyacinth floats on still or slow-moving water and can rapidly spread to cover the entire water surface with a thick mat of vegetation. This shades out any submerged plant life and impedes oxygen exchange, making the water unsuitable for fish and other animals.

**Key projects** As of publication, Council has implemented a Biosecurity Prevention and Control Program for this pest in riparian areas.

Background

Water Hyacinth is most likely to be introduced in water features and ponds or as an aquarium plant. Ensure water features and ornamental gardens do not contain Water Hyacinth. Water Hyacinth grows from seed and by division of mature plants and may be spread in contaminated soil from water features containing the weed in other areas.

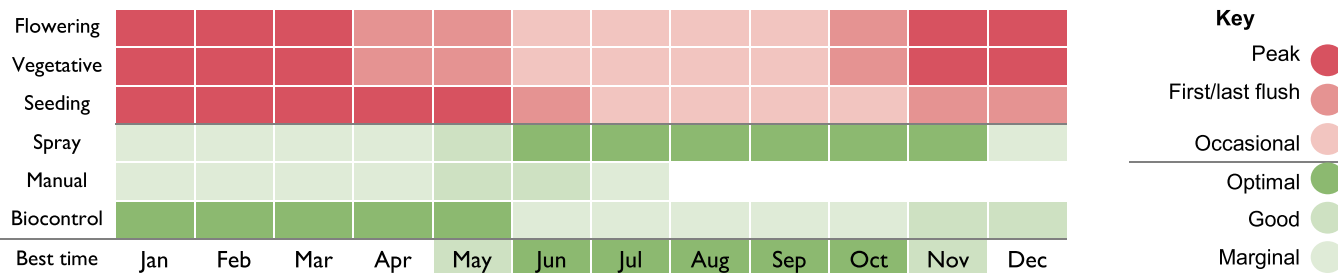
Infestations are currently controlled with herbicide and follow-up surveys to ensure all plant fragments have been treated. Treat new incursions as they are reported or found.

Water hyacinth can be moved on floodwaters, checking wetlands and water features after flooding events. Define assets to protect. As they become impacted, take reasonable measures to reduce impact on asset. Targeted maintenance of drainage and waterway systems.

Water Hyacinth is most likely to be introduced in water features and ponds or as an aquarium plant. Ensure water features and ornamental gardens do not contain Water Hyacinth. Water Hyacinth grows from seed and by division of mature plants and may be spread in contaminated soil from water features containing the weed in other areas.



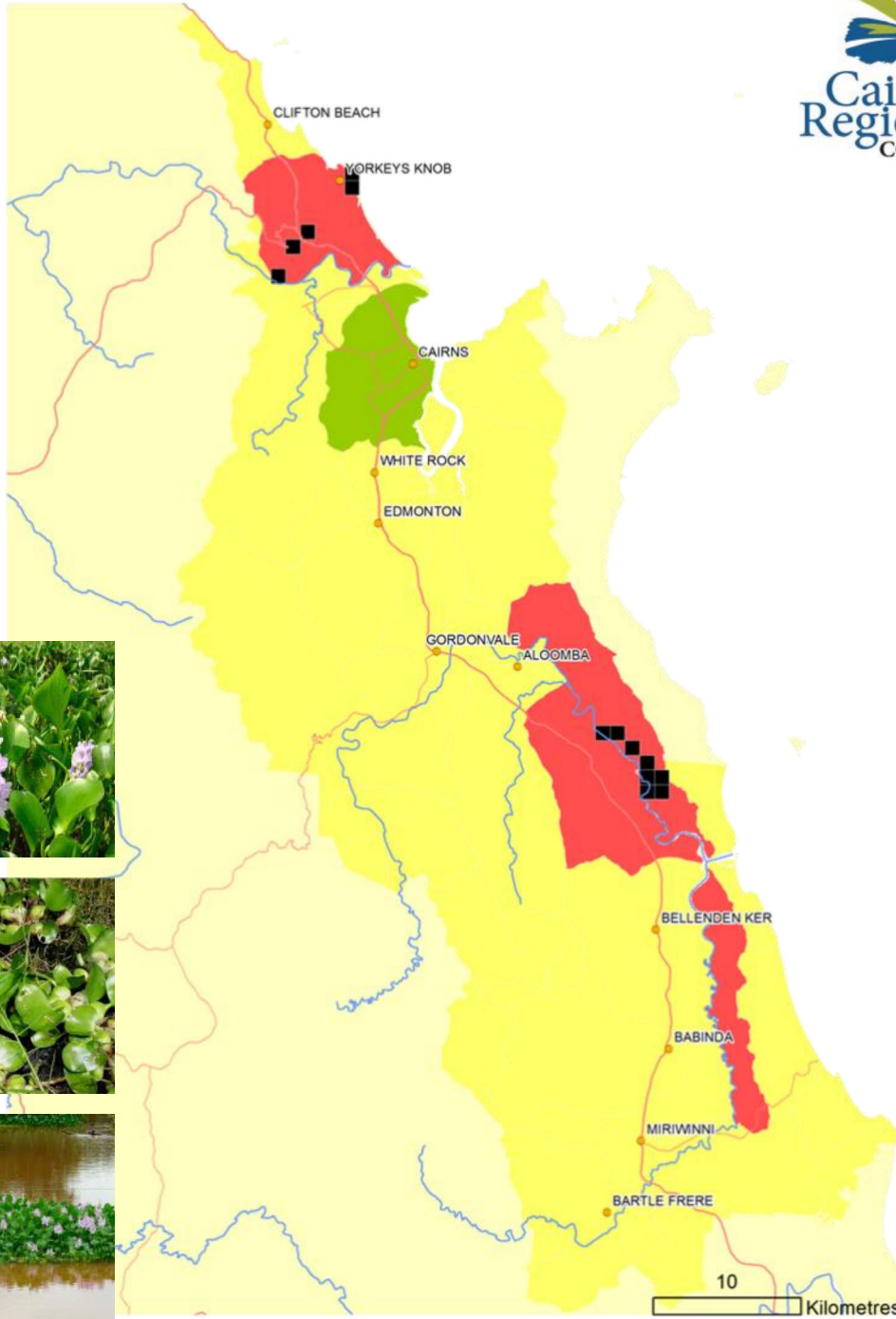
Control calendar



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Cairns Biosecurity Plan available at [cairns.qld.gov.au](http://cairns.qld.gov.au) and customer service centres.



# Water hyacinth (*Eichhornia crassipes*)



Floating

Aquatic

Perennial

Biosecurity Act Restricted matter category

2 Must be reported

3 Do not distribute

4 Do not move

5 Do not keep

6 Do not feed

Control



Spread



## What is my biosecurity obligation?

**In the prevention zone**

It is an offence under the Biosecurity Act to move, share, give away or sell this plant. Ensure wetland and pond plants are sourced from a reliable supplier and are from a weed free area. Do not dump aquarium plants or fish into waterways. Ensure any machinery or vehicles moving from infested areas are free from plant material and soil. Contact Cairns Regional Council on 1300 692 247 to report any suspect plants.

**In the eradication zone**

Ensure control measures are performed prior to flooding events where spread has a higher risk of occurring. Contact Cairns Regional Council to report any suspect plants on 1300 692 247.

**In the asset protection zone**

Identify high value assets and protect them from impacts where possible. Maintain best practice weed hygiene measures to reduce risk of spread.

# Brillantaisia (*Brillantaisia lamium*)

Human Health    Social Amenity    Economy    Environment    Achievability    Local Impact/ Values    Declaration Status    National priority

Priority



Details

**Description** A small shrubby herb from 20cm to 2m in height. Brillantaisia has hairy square stems with heart shaped leaves. Purple (sometimes white) pea-like flowers are held on thin stems prior to forming cigar shaped seed pods. Brillantaisia can grow in to a dense, thick ground cover right down to the waters edge.

**Distribution** Localised in Freshwater Creek and becoming widespread and common from Babinda south concentrating into the Woopen Creek sub-catchment. There is also an isolated infestation in the East Russell.

**Impacts** Brillantaisia forms a dense mat and outcompetes native plants in riparian zones. It can take over domestic gardens and roadsides. The small seeds spread easily on machinery, vehicles and waterways. It grows well in both full shade and/or full sunlight.

**Key projects** Brillantaisia is locally declared under Cairns Regional Council local laws.

Areas marked for delimitation require on ground surveys to determine extent of distribution. No infestations are currently known in these areas.

Brillantaisia spreads readily on machinery and within contaminated soils. It was introduced into the Wet Tropics via a nursery in the Mossman area from where it has been spread in garden plants. Because the plant has rapid growth and seed production it can quickly establish and become infestations which are difficult to manage. It causes impact to ground storey vegetation along riparian zones, roadsides and in pastures.

Brillantaisia grows rapidly and can flower and seed all year round requiring survey and treatment on a continual basis. Isolated outbreaks are treated every six weeks to prevent plants from seeding. Survey in and around the known infestations are conducted to ensure all locations are detected.

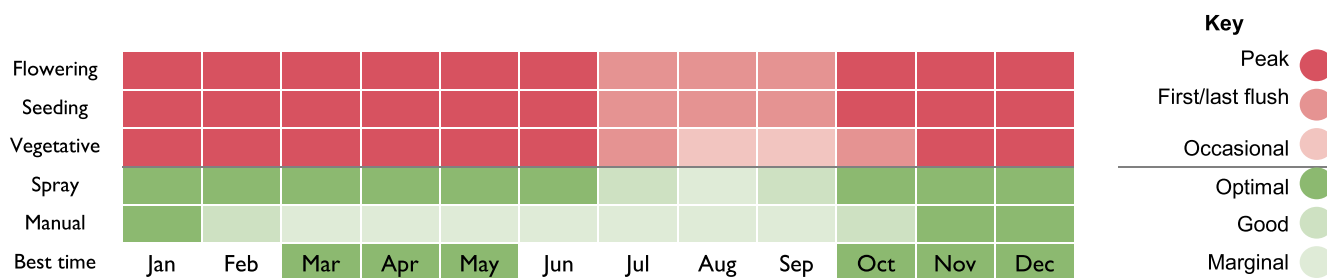
Small infestations can be hand pulled, however all roots and stem fragments must be removed. Plant fragments should either be double bagged and taken to the dump or preferably hung up to prevent contact with the ground and reshooting.

Larger infestations should be herbicide treated.

For any treatment to be considered effective, follow-up monitoring must occur to identify any new seedlings. Areas marked for delimitation require on ground surveys to determine extent of distribution. No infestations are currently known in these areas.

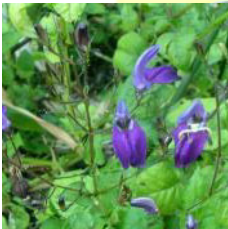
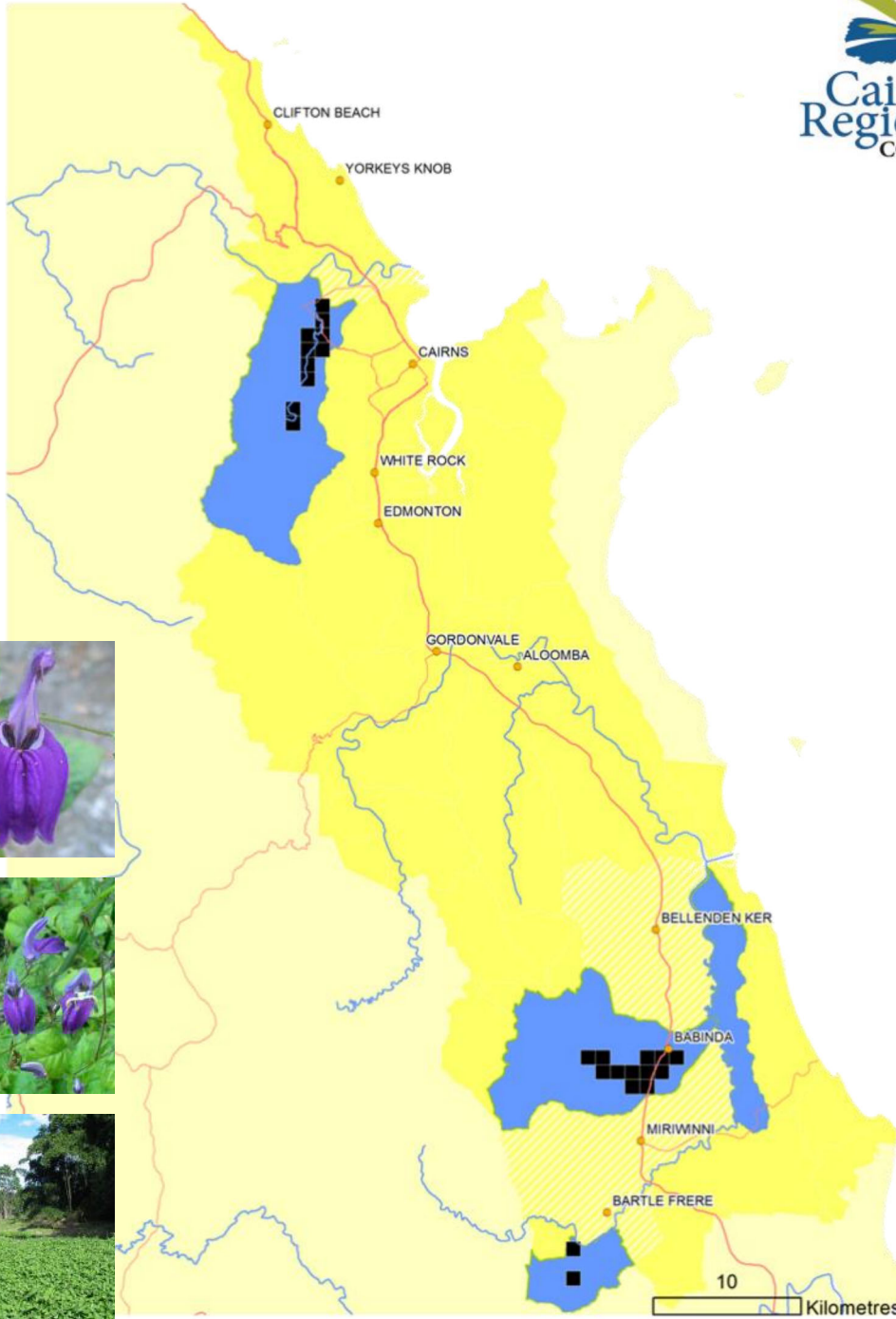
Background

Control calendar



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Cairns Biosecurity Plan available at [cairns.qld.gov.au](http://cairns.qld.gov.au) and customer service centres.

# Brillantaisia (*Brillantaisia lamium*)



Herb

Terrestrial

Perennial

Local laws apply

Must not breed

Must not propagate

Must not introduce

Must not sell or supply

Must not provide harbour

Control



Spread



## What is my biosecurity obligation?

**In the delimitation zone**

Keep an eye out for the distinctive purple flowers, allowing timely detection and treatment of new infestations. Contact Cairns Regional Council on 1300 692 247 to report any suspect plants.

**In the prevention zone**

Brillantaisia is a locally declared plant and under local laws cannot be distributed, given away or sold. Ensure sources of garden plants are weed free. Contact Cairns Regional Council on 1300 692 247 to report any suspect plants.

**In the intensive control zone**

Maintaining healthy pastures and keeping an eye out for the distinctive purple flowers will assist in the timely detection and treatment of new infestations. Do not move soils and plants from infested sites. Restrict stock and machinery movements unless adequate weed hygiene measures are implemented.



# Water mimosa (*Neptunia oleracea* & *N. plena*)

Human Health   Social Amenity   Economy   Environment   Achievability   Local Impact/ Values   Declaration Status   National priority

Priority



Details

**Description** Water mimosa is an aquatic floating perennial herb that anchors at the waters edge and sends stems out over the water where they form a spongy, fibrous covering between the nodes. Leaves are olive green and are arranged in opposite pairs along the stem. When disturbed or touched the leaflets close up. Water mimosa flowers are yellow, ball-shaped and grow from the base of the leaves.

**Distribution** Several isolated infestations have been detected and removed. Records occur from Lake Placid, Smithfield, Brinsmead and Babinda areas. Water mimosa is associated with South East Asian cuisine where it used as a green vegetable and so may have been introduced as a food plant.

**Impacts** Water mimosa forms dense, floating rafts which can impede flows, reduce light penetration and oxygen levels in the water. The physical barriers can disrupt native fish and wildlife, restrict access for recreation and provide favourable habitat for mosquito.

**Key projects** All known locations the target of a regional eradication program led by Biosecurity Queensland. All suspected sightings of this plant should be reported to Biosecurity Queensland on 13 25 23.

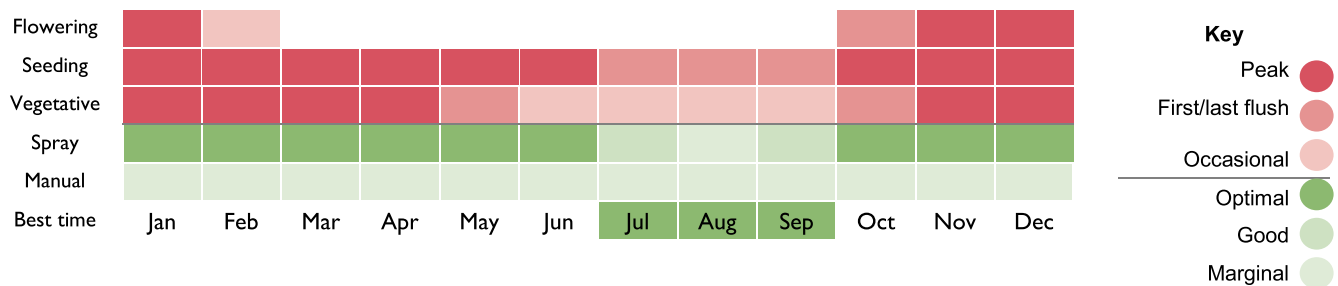
Background

Water mimosa is often used as a culinary plant in South East Asia and so is most likely to be introduced as food plant in the tropics.

The rooted land form has smaller leaves and flowers, and has no spongy floating tissue. It establishes from small plant pieces in water and from seed. Under favourable conditions, water mimosa grows out from the banks to form floating rafts of dense interwoven stems. These can be dislodged by water movement, (especially during floods), and are soon replaced by more water mimosa. These floating rafts can restrict water flow in creeks, channels and drains. It can impede recreational water sports and boating access. The rafts are so dense they can reduce water quality by preventing light penetration and reducing oxygenation of water. This creates favourable habitat for mosquitoes, reduces fish activity, and causes the death of native, submerged water plants and fish.

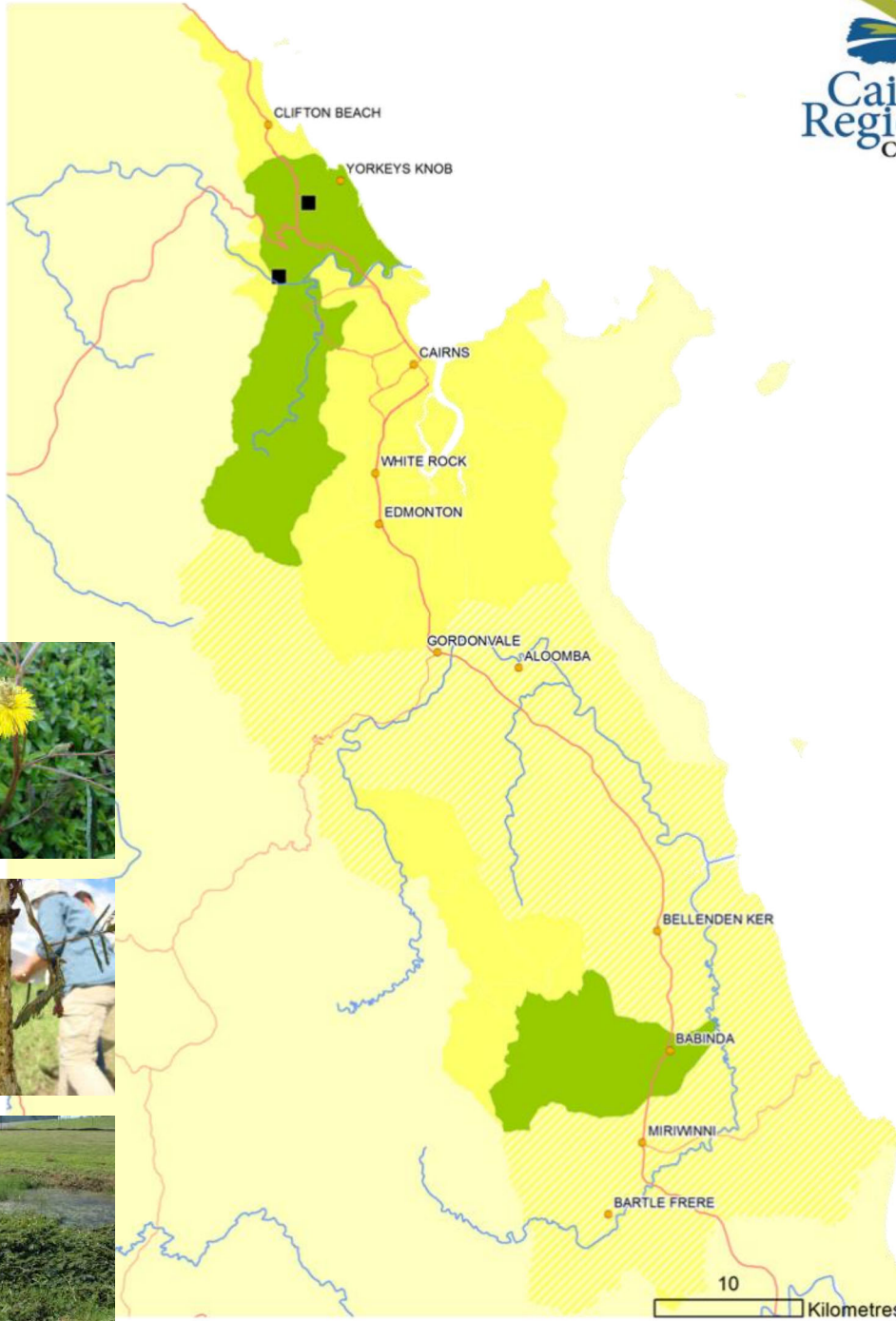
Management is targeting destruction of all known infestations and complete removal of all infestations in these areas. Infestations are currently controlled with herbicide and follow-up surveys to ensure all plant fragments have been treated.

Control calendar



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Cairns Biosecurity Plan available at [cairns.qld.gov.au](http://cairns.qld.gov.au) and customer service centres.

# Water mimosa (*Neptunia oleracea* & *N. plena*)



- Floating
- Aquatic
- Perennial

Biosecurity Act Restricted matter category

- 2 Must be reported
- 3 Do not distribute
- 4 Do not move
- 5 Do not keep
- 6 Do not feed

Control



Spread



## What is my biosecurity obligation?

**In the delimitation zone**

Keep an eye out for Water Mimosa in any natural or man-made freshwater ponds or features. All suspected sightings of Water Mimosa must be reported to Biosecurity Queensland on 13 25 23.

**In the prevention zone**

Keep an eye out for Water Mimosa in any natural or man-made freshwater ponds or features.

All suspected sightings of Water Mimosa must be reported to Biosecurity Queensland on 13 25 23. For more information refer to Biosecurity Queensland's Invasive Plants and Animals Biosecurity Program.

**In the eradication zone**

All suspected sightings of Water Mimosa must be reported to Biosecurity Queensland on 13 25 23. For more information refer to Biosecurity Queensland's Invasive Plants and Animals Biosecurity Program.

# Lantana (*Lantana camara*)

Human Health   Social Amenity   Economy   Environment   Achievability   Local Impact/ Values   Declaration Status   National priority

Priority



Details

**Description** Lantana is a heavily branched shrub that can grow in compact clumps, dense thickets or as a climbing vine. The stems of lantana are square with small, re-curved prickles. The small leaves (6cm) are covered in fine hairs, bright green above, paler underneath and have round-toothed edges.

**Distribution** Common and widespread across most land types. Lantana fruit is spread by birds so it is a common coloniser of disturbed ground, forest edges and riparian areas across the Wet Tropics.

**Impacts** A significant weed of natural systems and grazing areas. Lantana displaces understorey species and alters fire regimes in tropical woodlands. Lantana can cause poisoning in stock not familiar with it.

**Key projects** Given the spread and level of infestation across the region, no significant projects are currently primarily targeting Lantana. Lantana is one of a suite of widespread weeds managed in key environmental areas.

Background

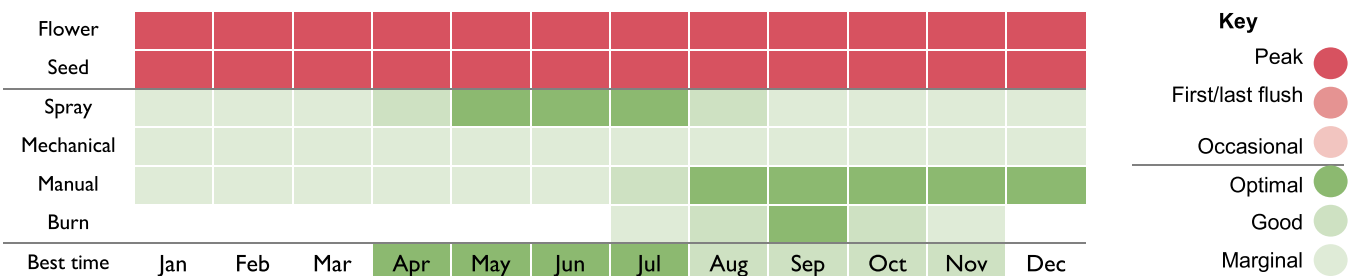
Lantana is widespread and is considered to occur in all areas where the habitat is suitable across the Cairns region.

Integrated management to reduce impacts including strategic herbicide control and fire management are essential in key environmental areas.

Because it is bird dispersed it can quickly re-infest areas which have been cleared of the weed if no ongoing management is in place. The use of appropriate fire regimes, mechanical control and grazing practices can assist to protect both environmental and grazing assets in woodland areas.

There are a wide range of biocontrol agents present in wild populations which may assist to reduce the vigour or reproduction of lantana. Most are seasonal and will respond when conditions are suitable so they should not be relied upon as the sole management tool.

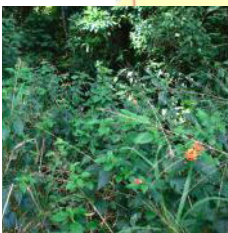
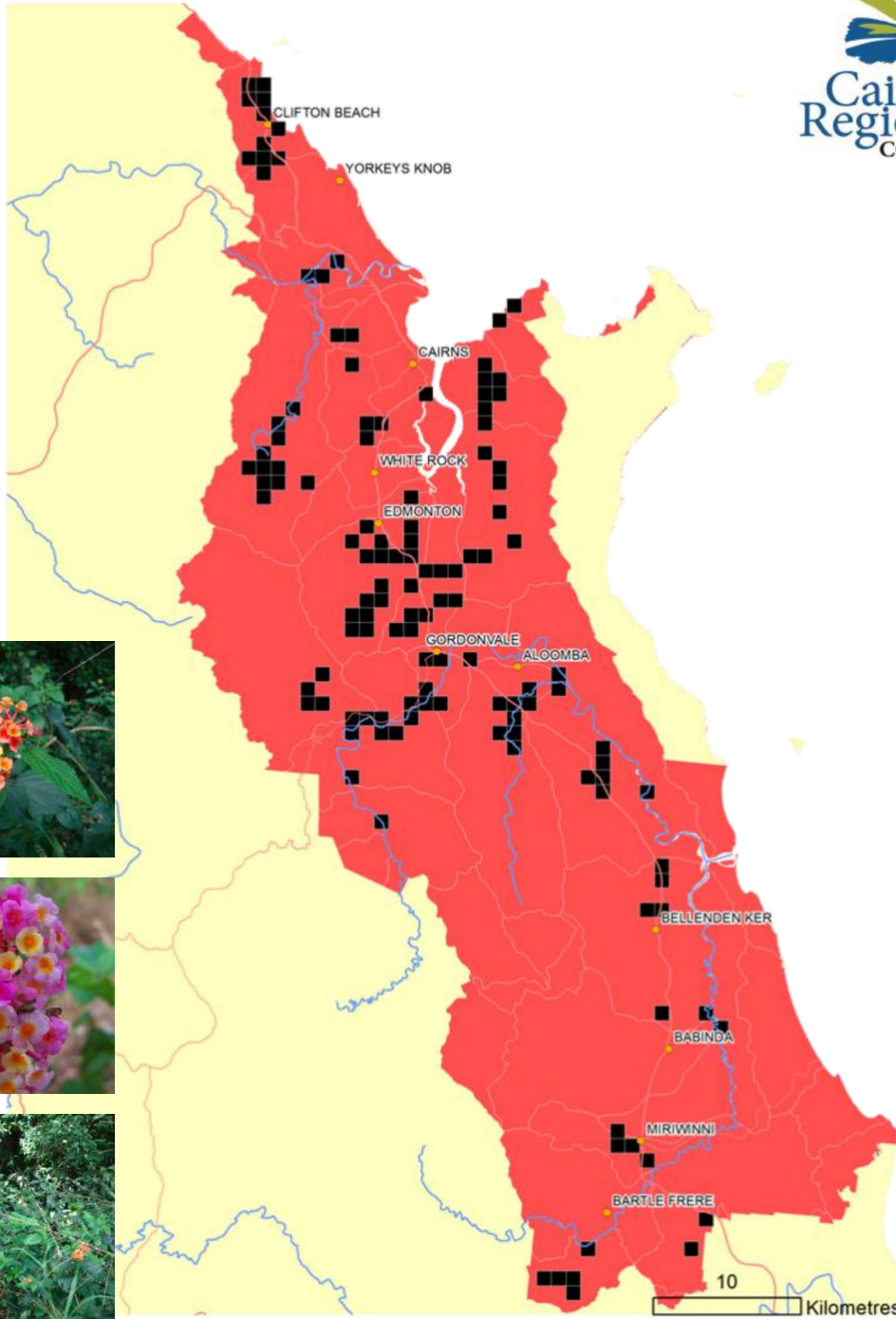
Control calendar



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Cairns Biosecurity Plan available at [cairns.qld.gov.au](http://cairns.qld.gov.au) and customer service centres.



# Lantana (*Lantana camara*)



Woody

Terrestrial

Perennial

Biosecurity Act Restricted matter category

2 Must be reported

3 Do not distribute

4 Do not move

5 Do not keep

6 Do not feed

Control



Spread



## What is my biosecurity obligation?

**In the asset protection zone**

Ensure best practice weed hygiene measures are in place to reduce risk of spread to new locations.

Maintain weed free areas. Identify high value assets and protect them from impacts where possible. A wide range of biocontrol agents are established in the wild to assist with management. For more information on best management tools and approaches refer to the Lantana best practice control guide produced by Weeds of National Significance.

# Yellow crazy ant (*Anoplolepis gracilipes*)

Human Health

Social Amenity

Economy

Environment

Achievability

Local Impact/  
Values

Declaration  
Status

National priority

Priority



Details

**Description** Yellow crazy ants (YCA) are slender ants, about 4mm long, with long legs, large eyes and very long antennae. Coloured yellow to orange, they have a brown abdomen which may be faintly striped. They move in a distinctly erratic or 'crazy' manner when disturbed.

**Distribution** Yellow crazy ants were first introduced to Cairns in 2001. They are now found over about 1500ha in numerous infestations south of Cairns between Bayview Heights and Gordonvale. The ants have now invaded about 90ha of the adjacent World Heritage Area. They thrive in a wide range of natural and man-made environments.

**Impacts** Yellow crazy ants are one of the world's worst invasive species. They are a significant threat to the biodiversity of the Wet Tropics. They can inhibit the photosynthesis and pollination of plants, causing environmental and agricultural impacts. They are also a significant hazard to human health and enjoyment of the outdoors.

**Key projects** The Wet Tropics Management Authority operates the Yellow Crazy Ant Eradication Program which started in 2013. It is currently funded to June 2019 through the National Landcare Program and the Queensland Government.

Background

While the exact origin of Yellow crazy ants remains unclear, their current distribution extends through the tropical islands of the Indian and Pacific Oceans, where they are a major pest. This broad distribution is closely linked to human movement activities such as cargo ships and trade which has ultimately assisted them to reach Australian shorelines. In Australia, yellow crazy ants are now present in a number of sites throughout Queensland and Arnhem Land. In the Wet Tropics infestations YCA are found in a variety of habitats including residential areas, sugarcane fields and rainforest.

Delimitation surveys have defined the main infestations. However, several new infestations were found in 2017. Community and industry are being educated to identify Yellow crazy ants and asked to report any additional sightings. Yellow crazy ant queens are not known to disperse by flying; instead they move by 'budding' where a queen and accompanying workers walk to a new location, sometimes rafting on waterways to move downstream. The other key mode of dispersal is human assisted, moving as stowaways in soil, machinery, building materials, pot plants, and dry or green waste. It is crucial that high risk waste is treated on site and that any waste is disposed of at your local landfill so it can be monitored and treated if any outbreaks occur.

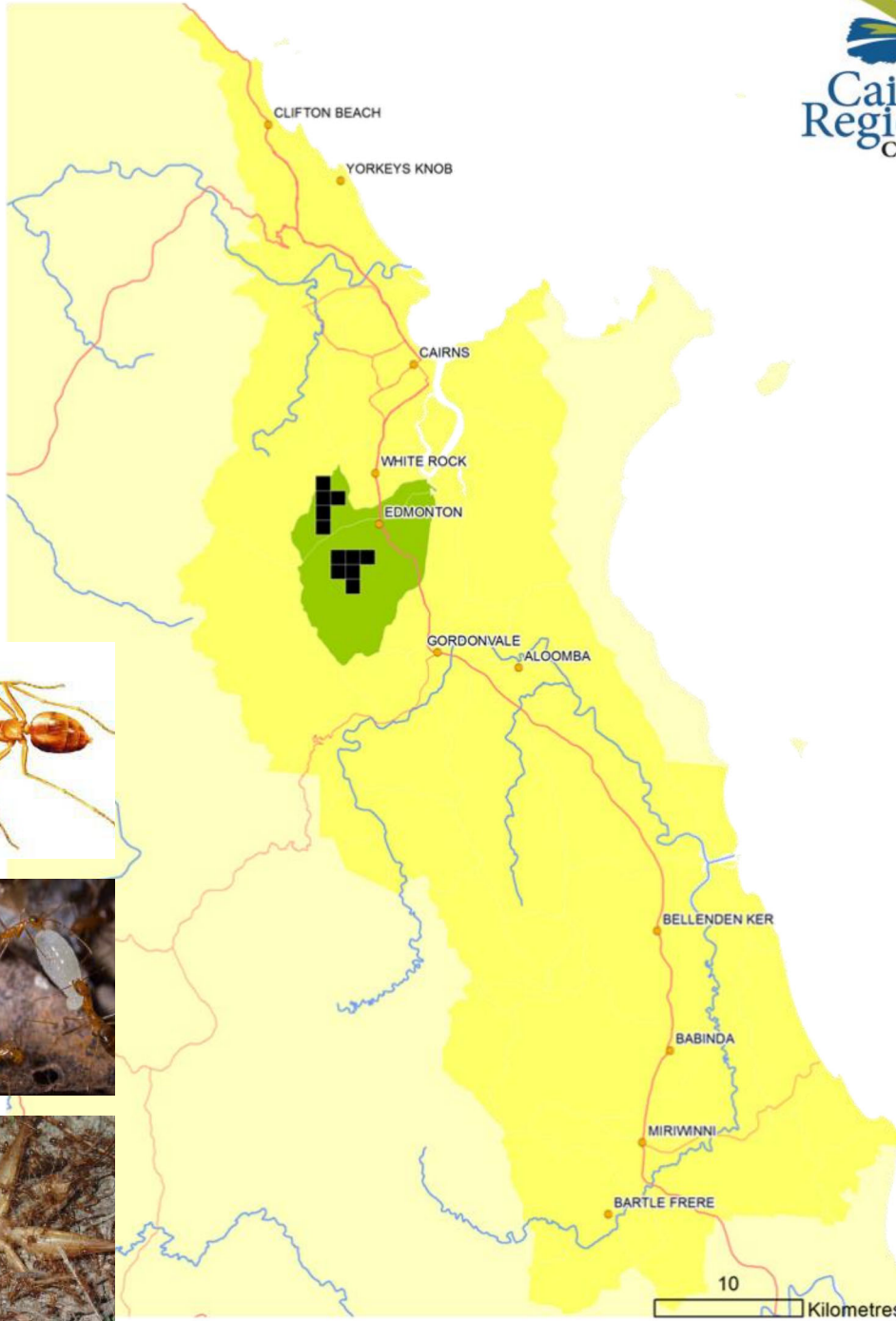
Regular treatments, about three times a year using ant specific granular baits have drastically reduced yellow crazy ant numbers in most areas. Eradication has been achieved in some small areas.

Life cycle

- Eggs hatch after 18-20 days.
- Worker larvae develop in 16-20 days
- Pupae of workers develop in 20 days, while queen pupae develop in 30-34 days.
- Total lifespan of a worker ant is approximately 76- 84 days.
- Yellow crazy ants are most active in dry weather in temperatures over 17°C.

For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Cairns Biosecurity Plan available at [cairns.qld.gov.au](http://cairns.qld.gov.au) and customer service centres.

# Yellow crazy ant (*Anoplolepis gracilipes*)



Invertebrate

Omnivore

Biosecurity Act Restricted matter category

2 Must be reported

3 Do not distribute

4 Do not move

5 Do not keep

6 Do not feed

Control



## What is my biosecurity obligation?

**In the prevention zone**

Dispose of all green waste and other rubbish at your local landfill. Taking your waste to the local landfill allows for the monitoring and treatment of any outbreaks.

If you are unsure of the risk posed on your property then contact the eradication program for advice or assistance in treating your waste before transporting it off site.

**In the eradication zone**

You can assist the eradication effort by maintaining access tracks, reducing weeds and rank grass along creek lines and providing access to your yard for any required survey or treatment operations. Yellow Crazy Ants Eradication Program - 07 4241 0525, [yca@wtma.qld.gov.au](mailto:yca@wtma.qld.gov.au)

Spread





# Electric ant (*Wasmannia auropunctata*)

Human Health

Social Amenity

Economy

Environment

Achievability

Local Impact/  
Values

Declaration  
Status

National priority

Priority



Details

**Description** Electric ants are very small, about 1-1.5mm long. They are light brown to golden brown in colour, although the abdomen is sometimes darker. They are slow moving in comparison to many native ants and form distinctive foraging lines. They have a powerful, venomous sting.

**Distribution** Electric ants were first found in the northern beach suburb of Smithfield in May 2006. They are predominantly spread by humans in pot plants, other plant material and illegal dumping of green waste and can now be found in many of the northern beach and city suburbs and one infestation in the southern suburb of Bentley Park.

**Impacts** Electric ants are one of the world's worst invasive species. They have a powerful venomous sting and present a significant threat to biodiversity, agriculture and lifestyle. They are also a hazard to human health with their venomous sting providing a significant danger to sufferers of anaphylaxis.

**Key projects** The National Electric Ant Eradication Program, managed by Biosecurity Queensland, operates an eradication program which began in 2006. It is currently funded by the Queensland Government while a decision on national funding is being considered.

Background

Electric ants are a notifiable Category 1 pest under the Biosecurity Act 2014 and residents within infestations (restricted zones) cannot move live electric ants or electric ant carriers, such as plants, plant material and soil, without getting a Biosecurity Instrument Permit (BIP) from the Program.

Known infestations are regularly treated with various granular pesticide products, depending on where the infestations are. The active ingredients can be either toxicants, or insect growth regulators (IGR). A gel bait has been developed for use in difficult, wetter areas and other new bait formulations are being trialled. Treatments are undertaken a minimum of 1 month apart until no more ants are found. All people within FNQ have a general biosecurity obligation (GBO) not to move electric ants.

The longest recorded movement of electric ants was from the relocation of pot plants from Kewarra Beach to Bingil Bay. Most dispersal events occur through the movement of pot plants and plant material.

Life cycle

- Queens live for approximately 12 months and lay up to 70 eggs a day.
- Eggs are incubated for 8-10 days.
- Larvae develop for 14-16 days.
- Nymphal stage lasts 13-14 days.
- Adult workers live for more than 40 days.
- Males live for several weeks.

For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Cairns Biosecurity Plan available at [cairns.qld.gov.au](http://cairns.qld.gov.au) and customer service centres.



[www.cairns.qld.gov.au](http://www.cairns.qld.gov.au)  
[council@cairns.qld.gov.au](mailto:council@cairns.qld.gov.au)



PO Box 359, Cairns Q 4870  
119-145 Spence St, Cairns Q 4870

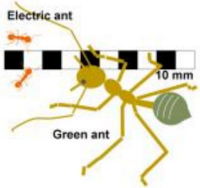
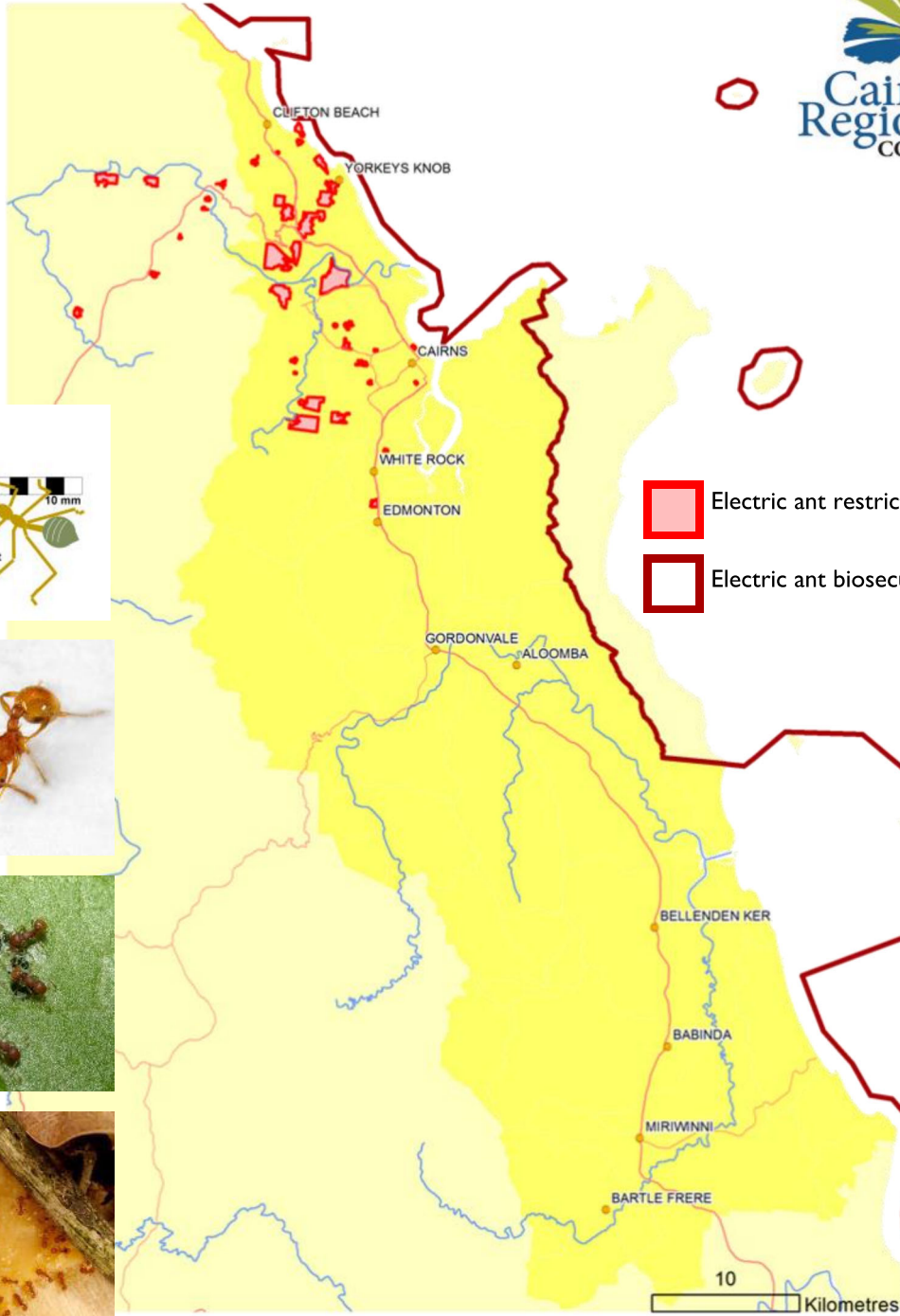




Ph: 1300 69 22 47  
24 hours / 7 days



A Great Barrier Reef Marine Park Authority initiative

# Electric ant (*Wasmannia auropunctata*)



 Electric ant restricted zone  
 Electric ant biosecurity zone

Invertebrate

Omnivore

Biosecurity Act Restricted matter category

**1**  
Must be reported

**3**  
Do not distribute

**4**  
Do not move

**5**  
Do not keep

**6**  
Do not feed

Control



## What is my biosecurity obligation?

**In the electric ant restricted zone**

Electric ants are a notifiable Category 1 pest under the Biosecurity Act 2014. New detections are required to be reported to the eradication program within 24 hours. Call Biosecurity Queensland on 13 25 23.

Residents within infestations (restricted zones) cannot move live electric ants or electric ant carriers, such as plants, plant material and soil, without getting a Biosecurity Instrument Permit (BIP) from the Program.

**In electric ant biosecurity zone**

All people within FNQ have a general biosecurity obligation (GBO) not to move electric ants.

Along with carefully adhering to movement control of potentially contaminated materials and items you can assist the eradication effort by providing clear access to your property for any required survey or treatment operations.

Spread





# Feral pig (*Sus scrofa*)

Human Health    Social Amenity    Economy    Environment    Achievability    Local Impact/ Values    Declaration Status    National priority

Priority



Details

**Description** Feral pigs are usually coarsely haired and coloured black, buff or spotted black or white. They are generally nocturnal and camp in thick cover during the day. Feral pigs are omnivorous and can range from 5 to 10 square kilometres. Feral pigs breed year-round if the conditions are suitable often producing two litters a year.

**Distribution** Feral pigs are common and widespread in the floodplains and forests of the entire Wet Tropics region. Feral pigs occupy most suitable habitat in the Cairns region including farmland, wetlands, riparian areas, forests, reserves and peri-urban areas. Distribution is often seasonal based on the availability of food and water.

**Impacts** Feral pigs damage crops, stock, property and the natural environment. They transmit disease and could spread exotic diseases such as foot and mouth if this was introduced to the country. They have been identified as a likely vector of Panama Tropical Race 4 (TR4), a disease of bananas.

**Key projects** Council offers trapping and baiting assistance for feral pigs in the region, dependent on resources, landholder capabilities and obligations. Council also operates a series of traps along the coast to reduce the numbers of pigs.

Feral pigs are thought to number around 24 million in Queensland and are one the most widespread and destructive invasive animals in the State. Their distribution and impacts are often seasonal and are heavily influenced by the availability of food, water and cover.

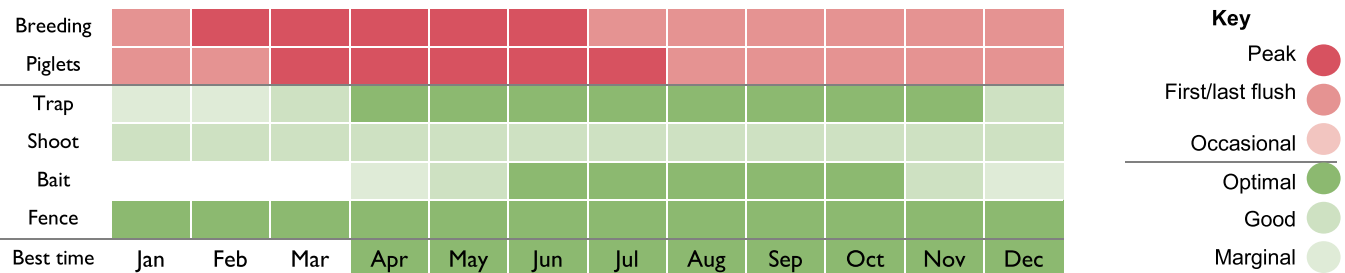
An individual animal or a small band of pigs can do a large amount of damage in a single night so it is important to be alert to any early signs of feral pig presence in your area; and to take steps to protect key assets like gardens, crops and vulnerable natural areas. Ensure best practice management actions are in place to reduce opportunities for feral pigs.

Pig proof fencing is by far the most effective means of reducing the impacts of feral pigs on domestic gardens and small crops. It is also a useful strategy for protecting vulnerable natural areas.

A range of control options from shooting, to trapping and baiting are used to control feral pigs when required. No individual solution leads to permanent management and feral pigs will be an ongoing management issue in the region. In the Cairns region, trapping is the preferred method of pest animal management ahead of poison baiting. This is due to the relatively higher potential for off-target risks to the community, (population and land use), and wildlife (cassowaries etc.). However, 1080 poison baiting as a control method is considered more efficient for large numbers of pest animals. Ground shooting is considered the least effective method for controlling pig populations but can be useful for controlling small populations in limited access areas. 1080 poison baiting is only available in rural agricultural areas. This is for both poison baiting requirements and risk management necessities. Additional requirements depending on property and identified risks can be discussed.

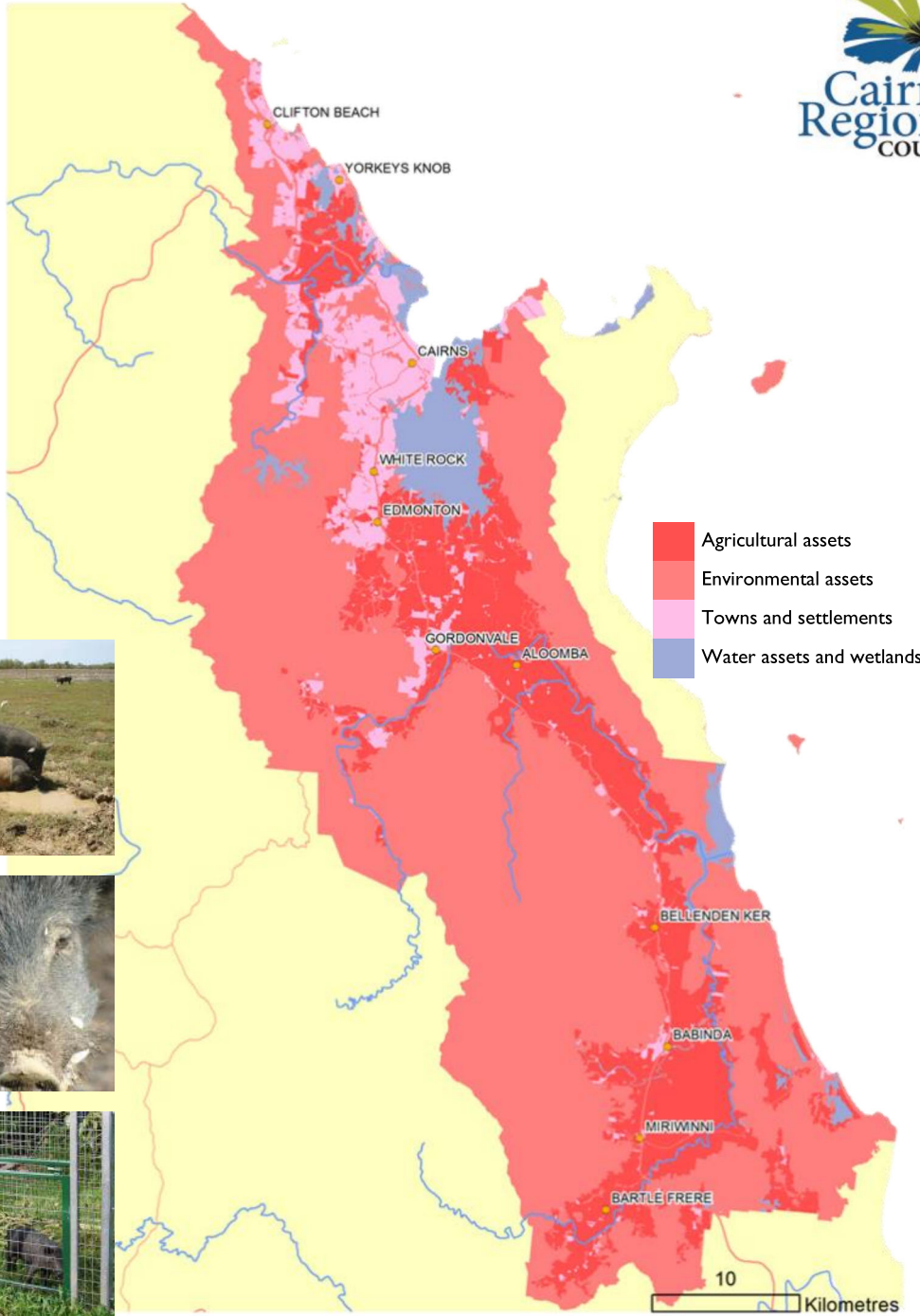
Background

Control calendar



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Cairns Biosecurity Plan available at [cairns.qld.gov.au](http://cairns.qld.gov.au) and customer service centres.

# Feral pig (*Sus scrofa*)



Vertebrate

Omnivore

Biosecurity Act Restricted matter category

2 Must be reported

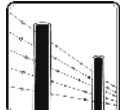
3 Do not distribute

4 Do not move

5 Do not keep

6 Do not feed

Control



## What is my biosecurity obligation?

Ensure best practice biosecurity hygiene measures are in place to prevent spread of other biosecurity matter when controlling, trapping or hunting pigs.

Residents in rural areas should consider various management solutions including fencing, shooting, baiting and trapping, dependant on their location and capability. Residents in urban areas should consider temporary fencing, alternatives to mulching or garden arrangements and trapping.

Speak to Council on 1300 69 22 47 for best practice management advice and discuss the range of assistance options available. To be eligible for assistance, residents or community groups must be able to:

- Give permissions for activity and entry consent requirements on the land on which the problem persists. Failing that, the land in question must be Council land where permissions can be arranged.
- Be able to monitor any traps placed on land for humane requirements and to monitor against off-target native wildlife capture.
- In agricultural areas, be ready and willing to destroy and/or dispose of any trapped pest animals if practical and reasonable to do so.

**In the asset protection zone**

# Wild dog (*Canis familiaris*)

Human Health    Social Amenity    Economy    Environment    Achievability    Local Impact/ Values    Declaration Status    National priority

Priority



Details

**Description** Wild dogs include dingoes, wild populations of dogs and hybrids.

**Distribution** Wild dogs are widespread in both the agricultural and natural landscape. They also frequently exist on the outskirts of towns and even within urban areas. Small populations of feral dogs are known throughout the Cairns region.

**Impacts** Wild dogs can cause stock losses in calving season and often carry parasites and pathogens. Near towns they can cause nuisance and impact on domestic animals. Wild dogs will prey on native animals and may assist maintaining healthy population of animals like wallabies; however they may also impact on more vulnerable animals like cassowary.

**Key projects** Council offers trapping and baiting assistance for wild dogs in the region. This is dependent on resources, landholder capability and obligations.

Background

Wild dogs have defined home territories but are able to cover large distances when moving to new areas either through competition for resources or by being pushed out of areas by more dominant animals.

In urban and settled areas Council will respond to individual issues as they arise on a case by case basis. Whilst wild dogs are generally not aggressive to people, they may display threatening behaviour such as attacking domestic dogs, scavenging or stalking.

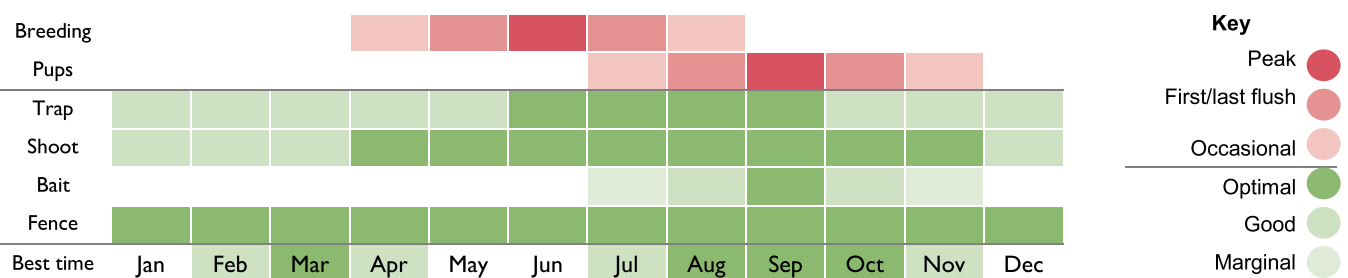
Domestic pets and poultry are best protected by dog mesh fencing. Fencing also restrains your domestic animals and may assist in preventing other animals such as wallabies or pigs entering your property. Wild dogs are opportunistic and scavenging can form a regular part of their diet. Ensuring appropriate security and disposal of domestic rubbish and food scraps will assist to reduce food sources for wild dogs.

For advice on best practice wild dog management and possible assistance, contact Council on 1300 69 22 47.

For domestic or escaped dog issues contact Council's Local Laws department on the same number.

Wild and Feral Dog trapping can be very difficult to practically achieve. As such, residents, where reasonable and practical, are encouraged to ground shoot wild dogs as the most efficient method of management. Residents are advised that this does not endorse any illegal or irresponsible actions and does not cover any advice associated with the management of stray dogs or domestic dogs.

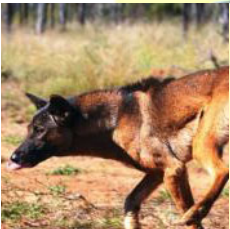
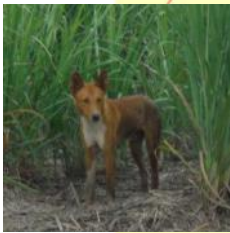
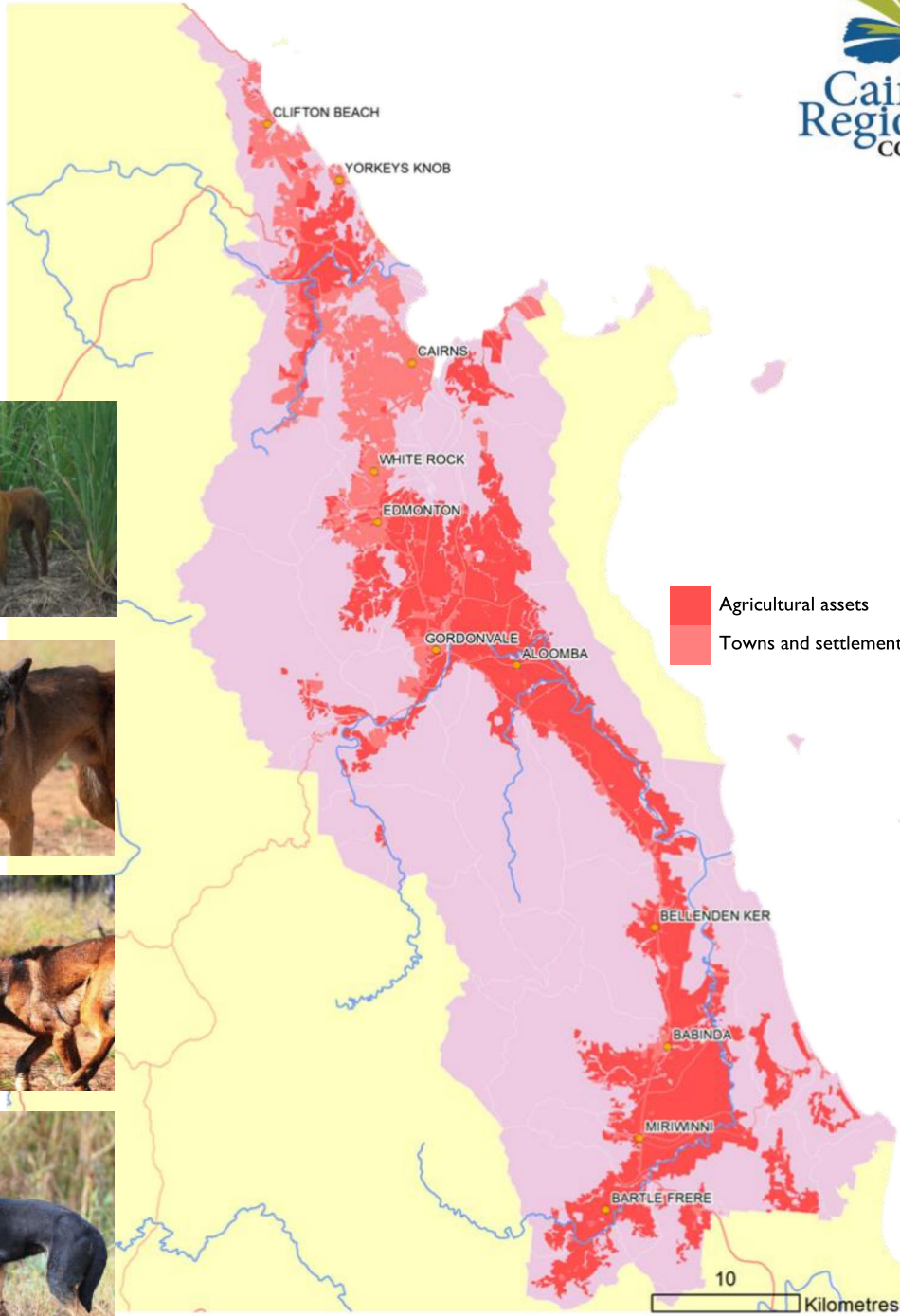
Control calendar



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Cairns Biosecurity Plan available at [cairns.qld.gov.au](http://cairns.qld.gov.au) and customer service centres.



# Wild dog (*Canis familiaris*)



Vertebrate

Carnivore

Biosecurity Act Restricted matter category

2 Must be reported

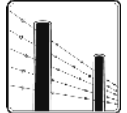
3 Do not distribute

4 Do not move

5 Do not keep

6 Do not feed

Control



## What is my biosecurity obligation?

Wild dogs are a restricted invasive animal under the Biosecurity Act 2014. It must not be moved, kept (if a dingo), fed, given away, sold, or released into the environment without a permit.

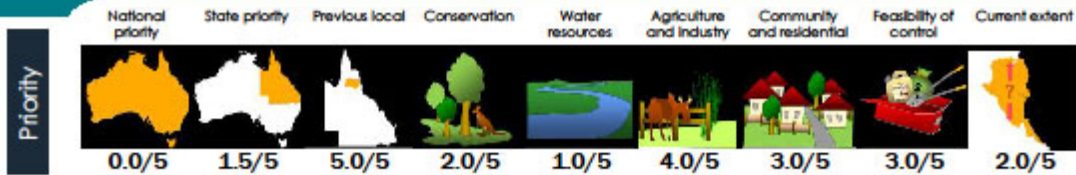
Fencing your property is the most effective means of reducing the risk of wild dog impacts on domestic pets and poultry. Participating in cluster and district control programs is the most effective means of controlling wild dogs in grazing areas.

The coordinated management of wild dogs outlined in this plan does not include management of straying or problematic domestic dogs (including hunting dogs). These animals are domestic animals and are managed in accordance with Cairns Regional Councils Local Laws. For all requests or enquiries contact Council on 1300 69 22 47.

**In the asset protection zone**

Biosecurity Action Plans

## Canis lupis familiaris (Wild dog)



**Description:** Wild dogs include dingoes, wild domestic dogs and hybrids.

**Distribution:** Wild dogs are widespread in both the agricultural and natural landscape. They also frequently exist on the outskirts of towns and even within urban areas.

**Impacts:** Wild dogs can cause stock losses in calving season. They also often carry parasites and pathogens. Near towns they can cause nuisance and impact on domestic animals.

**Key projects:** In the Douglas Shire wild dogs are managed in response to need on a case by case basis. A coordinated approach to wild dog control is essential to prevent animals from areas with no control actions underway re-colonising controlled areas.

Details

Wild dogs do have defined home territories but are able to cover large distances when moving to new areas either through competition for resources or by being pushed out of areas by more dominant animals.

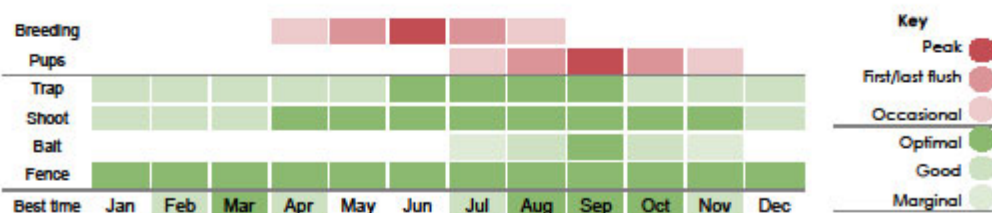
In urban and settled areas Douglas Shire Council will respond to individual issues as they arise on a case by case basis. Whilst wild dogs are generally not aggressive to people they may display threatening behaviour in urban areas such as attacking domestic dogs, scavenging or stalking. Domestic pets and poultry are best protected by dog mesh fencing. Fencing also restrains your domestic animals and may assist in preventing other animals such as wallabies or pigs entering your property.

Background

The biosecurity program does not include management of straying or problematic domestic dogs (including hunting dogs). These animals are domestic animals and are managed in accordance with Douglas Shire Councils Local Laws. For domestic dog queries contact Council on 07 4099 9444.

**1080 Policy guideline update**

Control calendar



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Douglas Shire Biosecurity Management Plan available at [douglas.qld.gov.au](http://douglas.qld.gov.au) and customer service centres.

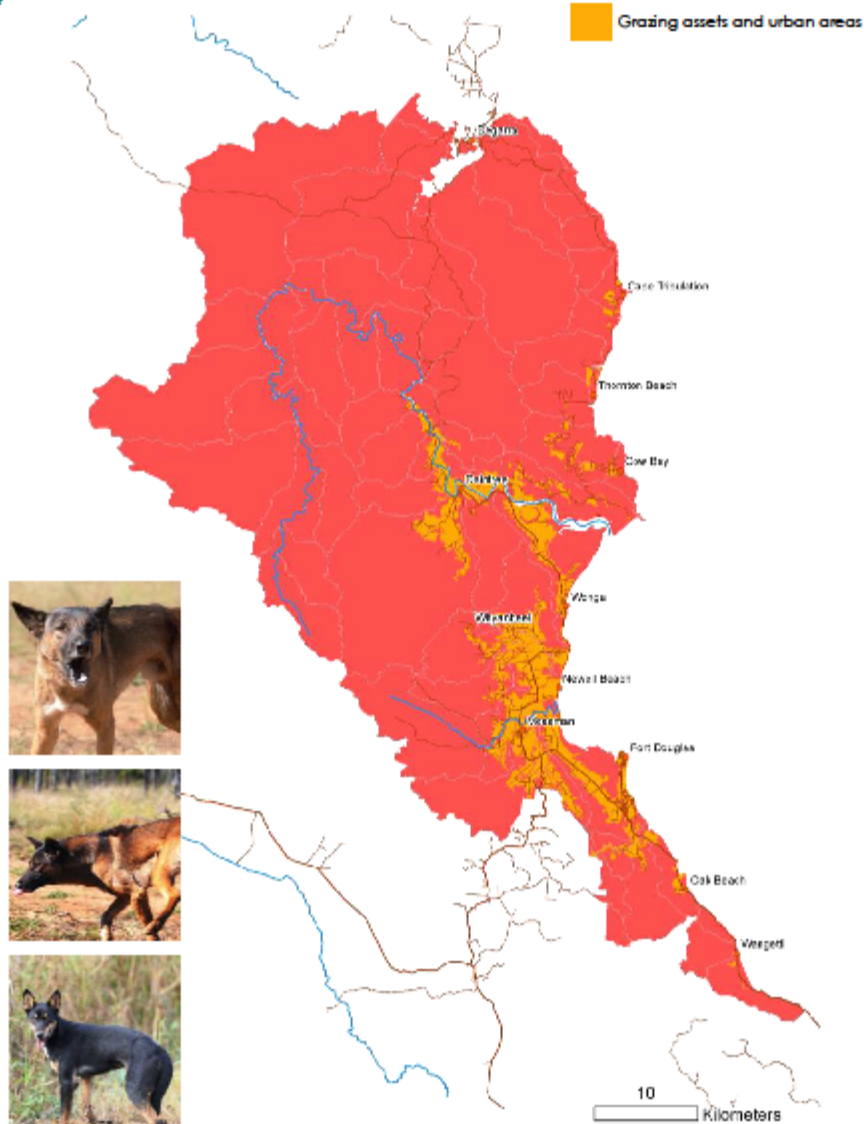




# Canis lupis familiaris (Wild dog)



Douglas Shire Biosecurity Management Plan 2017-21



Vertebrate

Carnivore

Biosecurity Act Restricted matter category

2 Must be reported

3 Do not distribute

4 Do not move

5 Do not keep

6 Do not feed

Control



## What is my biosecurity obligation?

**In the asset protection zone**

Dog proof fencing is by far the most effective method of reducing the impacts of wild dogs on domestic stock and pets. A range of control options from shooting, to trapping and baiting are used to control wild dogs when required. Targeting control activities to deliver protection prior to calving in stock is the best way to reduce impacts.

For domestic dog queries contact Council on 07 4099 9444.

# Sus scrofa (Feral Pig)

Priority	National priority	State priority	Previous local	Conservation	Water resources	Agriculture and industry	Community and residential	Feasibility of control	Current extent
	0.0/5	1.5/5	5.0/5	4.0/5	4.0/5	4.0/5	2.0/5	2.0/5	1.0/5

**Description:** Feral pigs include all pigs ranging from typical black wild pigs to buff or spotted black or white which may resemble a typical farmed pig. By definition a feral pig is any pig which is not domesticated and is living in a wild state. They are generally nocturnal, and camp in thick cover during the day. Feral pigs are omnivorous and can range from 5 to 50 square kilometres. Feral pigs breed throughout the year often producing two weaned litters per year.

**Distribution:** Common and widespread within the Douglas Shire, particularly in the lowlands.

**Impacts:** Feral pigs damage crops, stock, property and the natural environment. They transmit disease and could spread exotic diseases such as foot and mouth if this was introduced to the country.

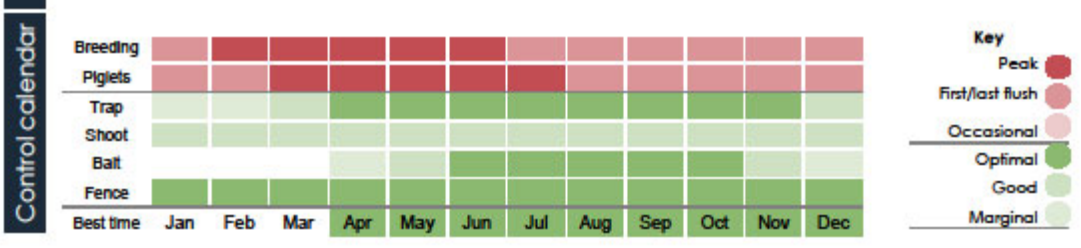
**Key projects:** A long-term shire wide program has been set up to assist the community to minimise the environmental, social and economic impacts of feral pigs.

Feral pigs are considered to number around 24 million in Queensland and are one of the most widespread and destructive invasive animals in the State.

The Douglas Shire Feral Pig Management Program is an ongoing trapping and baiting project across the lowlands of the Douglas Shire Council Area. The program targets the protection of environmental, and agricultural assets. Landholders wishing to participate in the program should contact Douglas Shire Council on 07 4099 9444.

The program also assists to reduce the impacts of feral pigs on the natural environment by targeting trapping programs.

**1080 Policy guideline update and trapping guideline/protocol**



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Douglas Shire Biosecurity Management Plan available at [douglas.qld.gov.au](http://douglas.qld.gov.au) and customer service centres.

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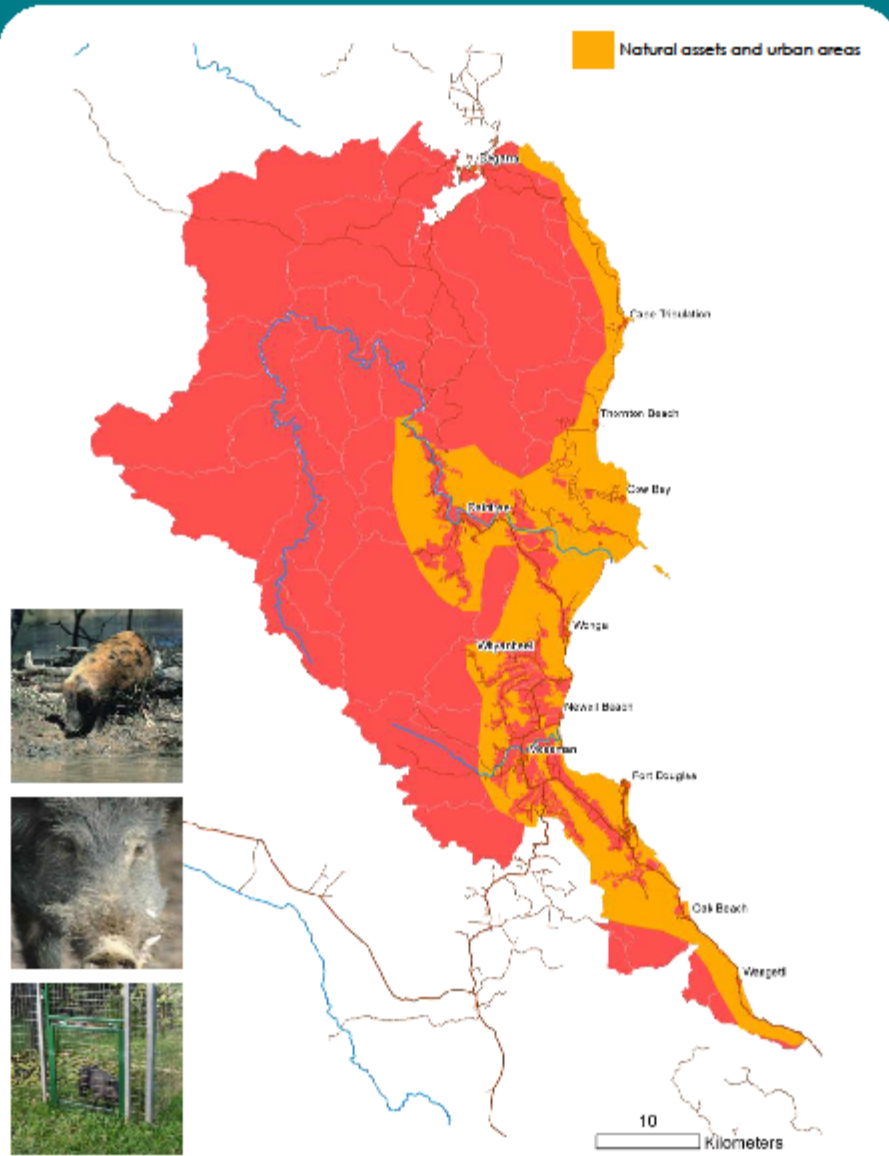
1800 026 318

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*Sus scrofa* (Feral Pig)



Douglas Shire Biosecurity Management Plan 2017-21



Vertebrate

Carnivore

Biosecurity Act Restricted matter category

2 Must be reported

3 Do not distribute

4 Do not move

5 Do not keep

6 Do not feed

Control



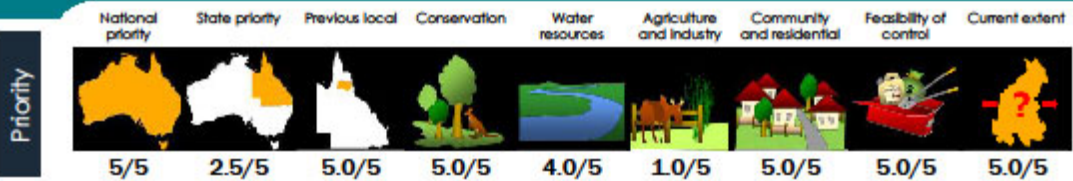
**What is my biosecurity obligation?**

**In the asset protection zone**

Pig proof fencing is by far the most effective measure of reducing the impacts of feral pigs on domestic gardens and small crops. A range of control options from shooting, to trapping and baiting are used to control feral pigs when required. Douglas Shire Council operates a series of traps along the coastal lowlands and in the Daintree to reduce the number of feral pigs. Landholders wishing to participate in the program should contact Douglas Shire Council on 07 4099 9444.



## Miconia species (Miconia)



**Description:** Small tree (up to 15 m) with large leaves up to 70 cm long. The underside of the leaves is a distinct, deep iridescent purple. Produces clusters of small white flowers followed by red/purple berries. *M. nervosa* has distinctive pointed leaves with prominent veins with a red/maroon hue.

**Distribution:** Current incursions occur in Whyanbeel Valley and Mossman.

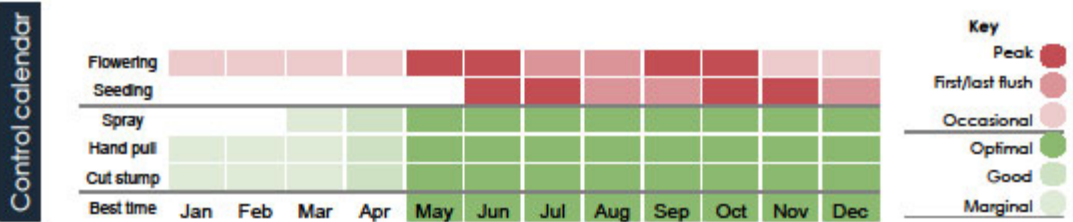
**Impacts:** *Miconia* produces hundreds of small berries every year which are attractive to birds and are spread long distances. It forms dense thickets in rainforest understoreys, potentially replacing native plants and affecting wildlife populations

**Key projects:** Target of the National cost-shared Four Tropical Weeds Eradication Program led by Biosecurity Queensland. All plants should be reported to Biosecurity Queensland immediately on 13 25 23

All *Miconia* in the Douglas Shire area have been introduced by gardeners and subsequently spread by birds. A community education and awareness program is an important part of the eradication program. Managing risk of spread to new areas through hygiene protocols for impacted nurseries and growers play an important role in prevention. Hygiene protocols are also in place for survey and control operations.

A National eradication program is underway on all known infestations. Bi-annual surveys are conducted to monitor all known infestations and to ensure no new outbreaks have gone undetected. Birds can disperse the small seeds out to many hundreds of metres .

*Miconia calvenscens* is the most widely distributed of the two *Miconia* species present in the Douglas Shire which are eradication targets of the National 4 Tropical Weeds Eradication Program. Both species were introduced as garden specimens which have spread into neighbouring rainforest and agricultural landscape by birds.



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Douglas Shire Biosecurity Management Plan available at [douglas.qld.gov.au](http://douglas.qld.gov.au) and customer service centres.

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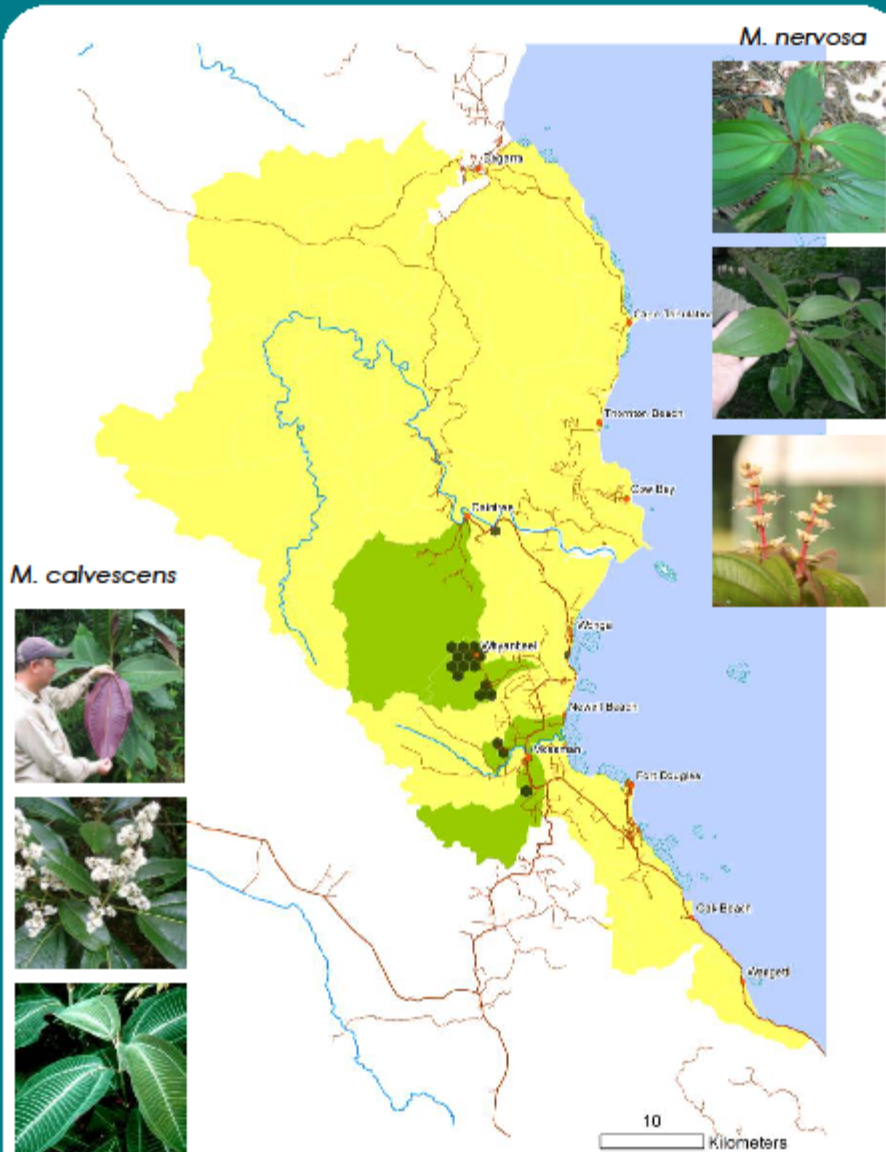
1800 026 318

@douglasshirecouncil

# Miconia species (Miconia)



Douglas Shire Biosecurity Management Plan 2017-21



- Woody**
- Terrestrial**
- Perennial**
- Biosecurity Act Restricted matter category**
- 2 Must be reported**
- 3 Do not distribute**
- 4 Do not move**
- 5 Do not keep**
- 6 Do not feed**
- Control**
- 
- 
- 



## What is my biosecurity obligation?

- In the prevention zone**
- In the eradication zone**

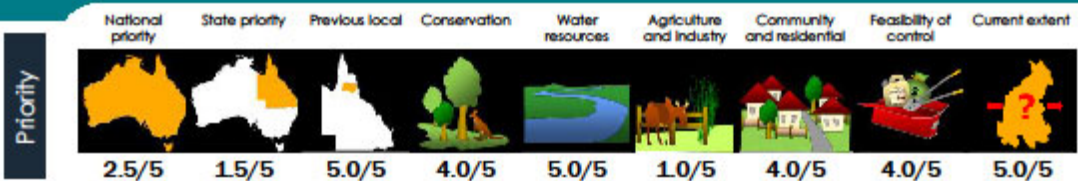
Currently the target of the National cost-shared Four Tropical Weeds Eradication Program. Landholders are required to report suspected infestations immediately to Biosecurity Queensland on 13 25 23

If you have an active infestation on your property you can assist the survey and control team by ensuring you do not move soil or plant material from the infestation area and maintaining property access points and tracks.

- Spread**
- - 
  -



## Eichhornia crassipes (Water hyacinth)



**Description:** A free floating aquatic herb with glossy, spoon shaped leaves and distinctive purple/lilac flowers. Water hyacinth forms dense blankets over waterways and wetlands. A similar native species occurs but can be distinguished by its yellow flowers and spear-shaped leaves

**Distribution:** Occurs only as isolated occurrences in drainage lines at Port Douglas and Wonga Beach

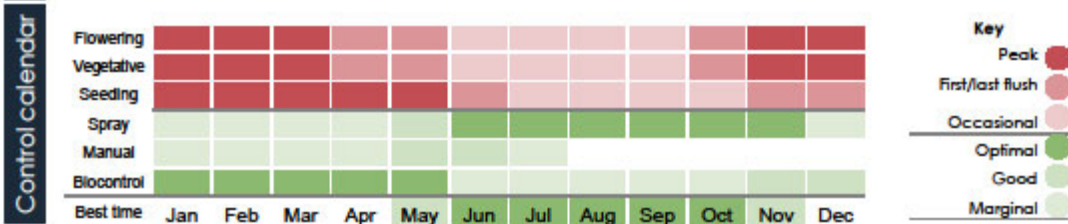
**Impacts:** It floats on still or slow-moving water and can grow rapidly to cover the entire water surface with a thick mat of vegetation. This shades out any submerged plant life and impedes oxygen exchange, making the water unsuitable for fish and other animals.

**Key projects:** Both known infestations are subject to eradication actions. Contact Douglas Shire Council to report any suspect plants on 1800 026 318

Douglas Shire is conducting a community education and awareness program to prevent water hyacinth's spread to clean catchments. Water hyacinth is most likely to be introduced in water features and ponds or as an aquarium plant. Ensure water features and ornamental gardens do not contain water hyacinth. Douglas Shire is the northern most distribution of water hyacinth in the Wet Tropics and actions here will help protect wetlands and waterways to the north. Water hyacinth grows from seed and by division of mature plants and may be spread in contaminate soil from water features containing the weed in other areas.

An eradication program is underway on the known infestations in the Port Douglas and Wonga Beach areas. Bi-annual surveys are conducted to monitor all known infestations and to ensure no new outbreaks have gone undetected.

Contact Douglas Shire Council to report any suspect plants or infestations on 1800 026 318



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Douglas Shire Biosecurity Management Plan available at [douglas.qld.gov.au](http://douglas.qld.gov.au) and customer service centres.

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Mossman, QLD, 4873

1800 026 318

@douglasshirecouncil

# Eichhornia crassipes (Water hyacinth)



Douglas Shire Biosecurity Management Plan 2017-21



Floating

Aquatic

Perennial

Biosecurity Act  
Restricted matter category

2  
Must be reported

3  
Do not distribute

4  
Do not move

5  
Do not keep

6  
Do not feed

Control



Spread



## What is my biosecurity obligation?

**In the prevention zone**

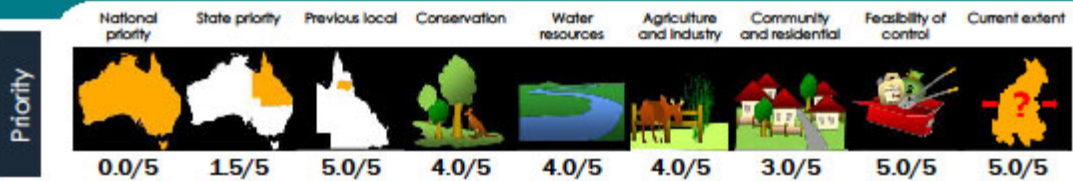
Ensure wetland and pond plants are sourced from a reliable supplier from and are from a weed free area. Contact Douglas Shire Council to report any suspect plants on 07 40999444. Do not share water plants or dump into waterways as this is the most likely means of spread.

**In the eradication zone**

Remove and bag potted specimens from water features and contact Douglas Shire Council to arrange disposal on 07 4099 9444.  
Ensure soil or vegetation from known infestations is not moved from the site or is disposed of correctly.



## Chromolaena odorata (Siam weed)



**Description:** A scrambling woody shrub to 3 metres (higher as a scrambling climber) with distinctive forked leaf venation and purple flush on new leaves. Clusters of white flowers in May-June and October.

**Distribution:** Localised and occasional in the Killaloe and Mossman area

**Impacts:** This species can form dense thickets and outcompete native species and pasture in both disturbed and undisturbed sites. Prefers richer soils in alluvial and riparian zones but will grow in rock and escarpment.

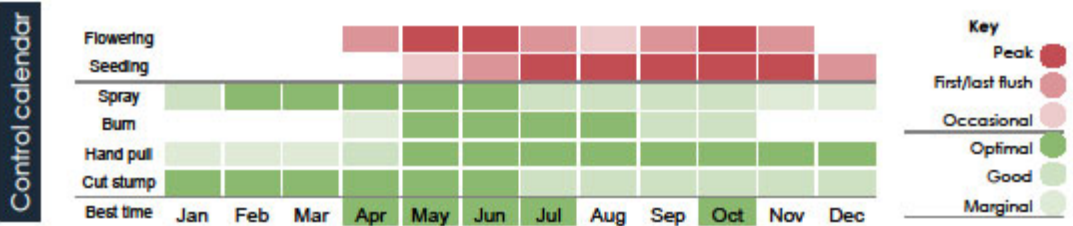
**Key projects:** The target of an National Eradication Program up until 2012, Siam weed is now in a transition to management. Siam weed remains a long term eradication target for the Douglas Shire area. Contact Douglas Shire Council to report any suspect plants on 07 40999444

Siam weed is likely to arrive with contaminated stock, produce, vehicles or machinery from adjoining infested areas. Ensure weed hygiene measures are in place and materials/produce are sourced from a clean site.

Siam weed has a peak flowering period in May-June with another, less vigorous flowering in October. It is most visible at these times and this feature is used to detect plants prior to seeding. Siam weed is able to be spread by wind and water as well as by machinery and an ongoing intensive control program is preparing all known infestations across the Douglas Shire area for eradication.

Siam seed is confirmed to remain viable in the soil for at least 7 years. Maintaining records of historical infestations and restricting disturbance and movement of soil is essential to prevent spread.

For larger infestations Douglas Shire Council will work with landholders to develop an on-farm biosecurity plan.



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Douglas Shire Biosecurity Management Plan available at [douglas.qld.gov.au](http://douglas.qld.gov.au) and customer service centres.

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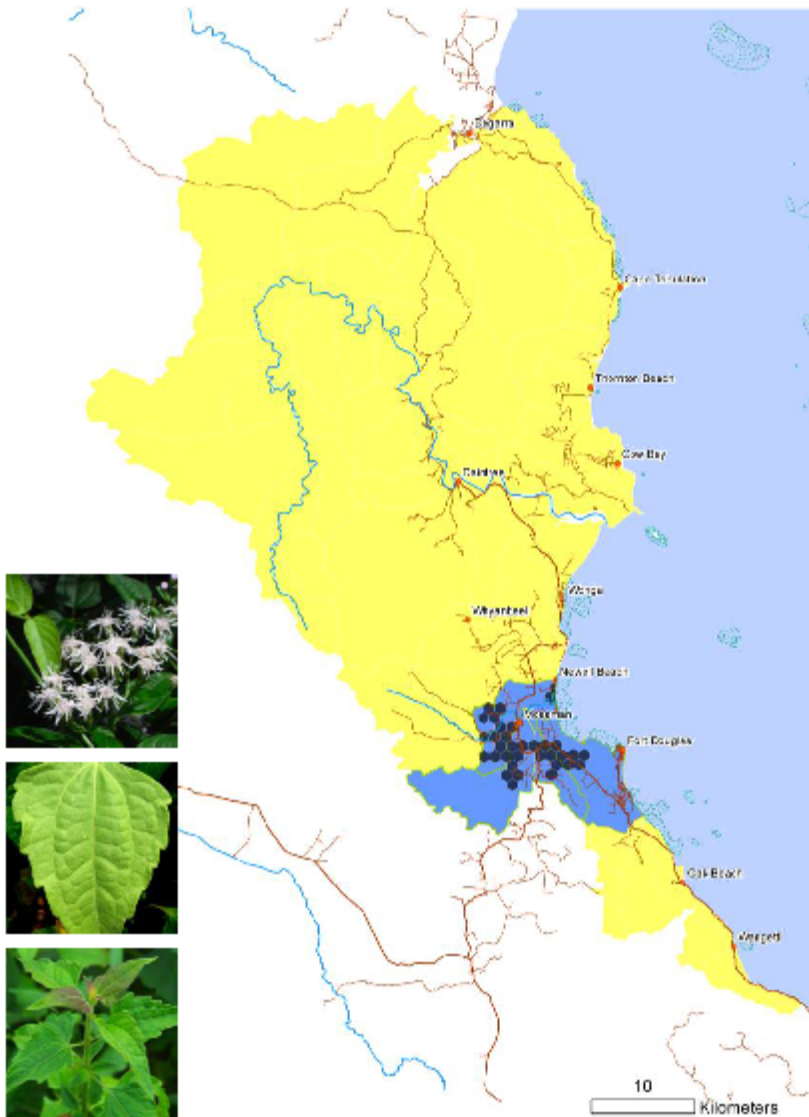
1800 026 318

@douglasshirecouncil

# Chromolaena odorata (Siam weed)



Douglas Shire Biosecurity Management Plan 2017-21



Herb

Terrestrial

Perennial

Biosecurity Act  
Restricted matter  
category

2  
Must be reported

3  
Do not distribute

4  
Do not move

5  
Do not keep

6  
Do not feed

Control



Spread



## What is my biosecurity obligation?

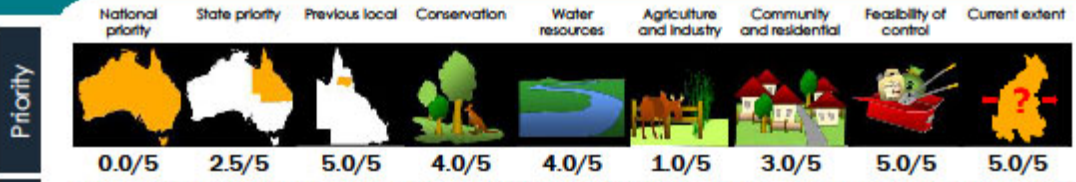
**In the prevention zone**

Ensure agricultural and raw materials are sourced from a reliable supplier and are from a weed free area. Contact Douglas Shire Council to report any suspect plants on 07 4099 9444.

**In the intensive control zone**

Do not disturb or remove soil and plant material from a known infestation location, even if no plants are visible. Undertake control works known infestations in April. Follow up control works during May-June to ensure any missed plants are controlled before the can produce seed.

# Cecropia spp. (Mexican bean tree)



**Description:** Rapidly growing tree to 20m. Hollow stems, large deeply lobed leaves with flocked white undersides. Distinctive leaf scars on trunk. Female plant produces long finger-like spikes.

**Distribution:** Restricted to isolated outbreaks in the Whyanbeel Valley where it was introduced as a garden specimen

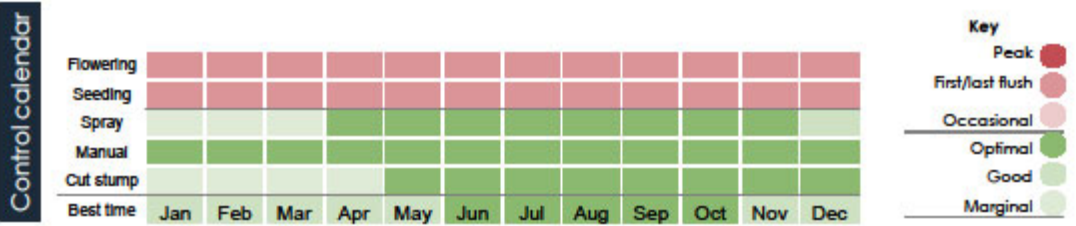
**Impacts:** A rapid growing rainforest pioneer which can invade and dominate rainforests and urban gardens. Cecropia is spread by birds and bats and so can be moved long distances into adjoining landscapes and forests.

**Key projects:** All known locations the target of a regional eradication program led by Biosecurity Queensland. All suspected sightings of this plant should be reported to Biosecurity Queensland on 13 25 23

A community education and awareness program is an important part of the eradication program. Managing risk of spread to new areas through hygiene protocols for impacted nurseries and growers play an important role in prevention. Hygiene protocols are also in place for survey and control operations.

Cecropia was most likely to be introduced as a garden specimen or experimental food plant over the past 2 decades. Keep an eye out in areas where plant collections or gardens have been or are situated as well as rainforest areas and disturbed sites across the Whyanbeel Valley.

All known locations the target of a regional eradication program led by Biosecurity Queensland. All suspected sightings of this plant must be reported to Biosecurity Queensland on 13 25 23



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Douglas Shire Biosecurity Management Plan available at [douglas.qld.gov.au](http://douglas.qld.gov.au) and customer service centres.



# Cecropia spp. (Mexican bean tree)



Douglas Shire Biosecurity Management Plan 2017-21



Woody

Terrestrial

Perennial

Biosecurity Act Restricted matter category

2 Must be reported

3 Do not distribute

4 Do not move

5 Do not keep

6 Do not feed

Control



Spread



## What is my biosecurity obligation?

<b>In the prevention zone</b>	<p>All known locations are the target of a regional eradication program led by Biosecurity Queensland.</p> <p>All suspected sightings of this plant must be reported to Biosecurity Queensland on 13 25 23 within 24 hours of sighting.</p>
<b>In the eradication zone</b>	<p>It must not be given away, sold or released into the environment without a permit.</p> <p>You are required to control all identified Cecropia plants.</p>

## Hiptage benghalensis (Hiptage)

	National priority	State priority	Previous local	Conservation	Water resources	Agriculture and industry	Community and residential	Feasibility of control	Current extent																																																																																											
<b>Priority</b>																																																																																																				
	0.0/5	0.0/5	5.0/5	5.0/5	5.0/5	2.0/5	5.0/5	4.0/5	3.0/5																																																																																											
<b>Details</b>	<p><b>Description:</b> Perennial plant that is more shrub-like in open areas, but more vine-like in rainforest, where it can grow to more than 1.5m tall. Fruit is helicopter like ('samara') which has 3 papery wings 2-5cm long that float on wind and contain 1-3 seeds.</p> <p><b>Distribution:</b> Only known to occur in the Mossman River Catchment within Far North Queensland. Core infestations occur on Butches Hill. Outlier infestations occur in the Mossman Gorge and South Mossman River areas.</p> <p><b>Impacts:</b> Forms dense vine towers which smothers native vegetation along banks of creeks and rivers in coastal areas. Invades rainforests and seasonally dry, lowland closed forests. Hiptage poses a significant threat to Mossman Gorge and the Wet Tropics Works Heritage Area.</p> <p><b>Key projects:</b> Target of a coordinated eradication program across all know sites. Any detections of this plant should be reported to Douglas Shire Council on 1800 026 318.</p>																																																																																																			
<b>Background</b>	<p>Hiptage was most likely introduced as an ornamental garden plant. The Mossman infestation is the most northerly in Queensland and Australia. It is currently restricted to a region between Mossman township and Mossman Gorge.</p> <p>An ongoing intensive control program is underway across all known infestations. The project is preparing all known infestations for an eradication goal in the future. Bi-annual surveys are conducted to monitor all known infestations and to ensure no new outbreaks have gone undetected. Aerial surveys are conducted annually to detect flowering plants in the rainforest canopy. Each site is then visited on foot to treat and the proximity is surveyed for additional plants.</p>																																																																																																			
<b>Control calendar</b>	<table border="1"> <thead> <tr> <th></th> <th>Jan</th> <th>Feb</th> <th>Mar</th> <th>Apr</th> <th>May</th> <th>Jun</th> <th>Jul</th> <th>Aug</th> <th>Sep</th> <th>Oct</th> <th>Nov</th> <th>Dec</th> </tr> </thead> <tbody> <tr> <td>Flowering</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Seeding</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Spray</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Cut</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Hand pull</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Best time</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table> <p><b>Key</b></p> <ul style="list-style-type: none"> <li>Peak (Dark Red)</li> <li>First/last flush (Red)</li> <li>Occasional (Light Red)</li> <li>Optimal (Dark Green)</li> <li>Good (Medium Green)</li> <li>Marginal (Light Green)</li> </ul>										Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Flowering													Seeding													Spray													Cut													Hand pull													Best time												
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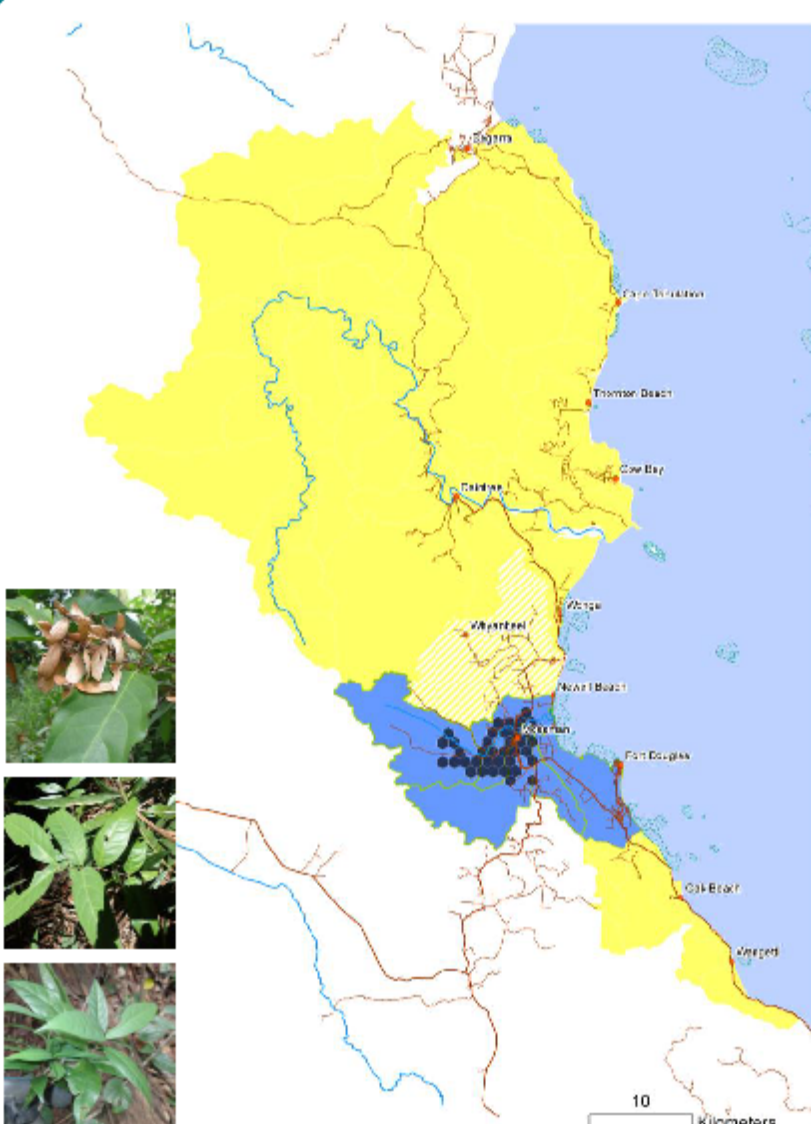
1800 026 318

@douglasshirecouncil

# Hiptage benghalensis (Hiptage)



Douglas Shire Biosecurity Management Plan 2017-21



- Vine
- Terrestrial
- Perennial
- Local laws apply
- Must not breed
- Must not propagate
- Must not introduce
- Must not sell or supply
- Must not provide harbour
- Control
- 
- 
- 
- Spread
- 
- 
- 

## What is my biosecurity obligation?

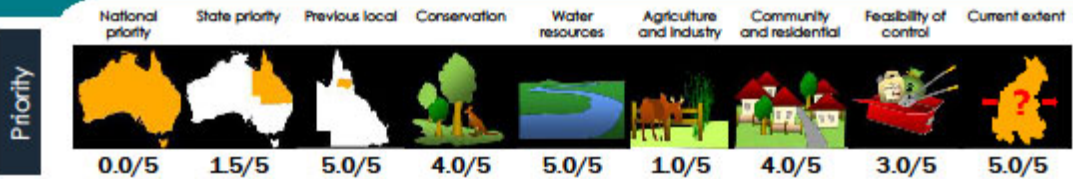
- In the delimitation zone
- In the prevention zone
- In the intensive control zone

Hiptage is most likely to have been introduced as a garden plant. Any suspected plantings, sales or other detections of this plant should be reported to Douglas Shire Council on 07 4099 9444.

Report any suspect plants to Douglas Shire Council on 07 4099 9444. Assist the control program by maintaining site access for the operations team to survey and control in forest and creek lines.



## Thunbergia grandiflora (Thunbergia vine)



**Description:** A rapidly growing vine which forms significant underground tubers. Thunbergia climbs and smothers native vegetation. The lavender-blue trumpet shaped flowers are identical but the leaves may vary leaves from a choko-like shape to an oval shape with a narrow pointed tip. Both from large underground tubers.

**Distribution:** Several isolated outbreaks within the Douglas Shire

**Impacts:** Thunbergia vine climbs and smothers native vegetation, killing and often pulling down mature trees with the weight of the vine.

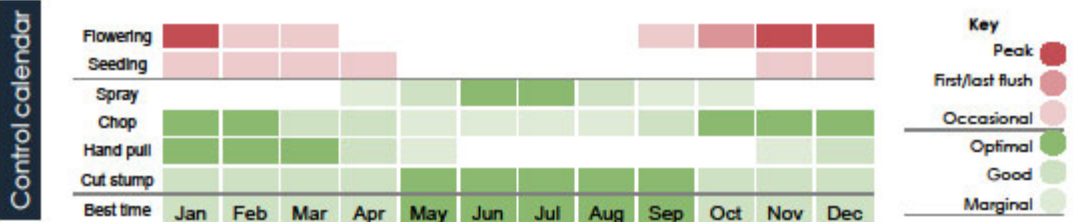
**Key projects:** All known infestations are under active programs toward eradication. Report any suspected outbreaks or detections to Douglas Shire on 07 4099 444

The main method of spread for Thunbergia vine is through the sharing plants between gardeners. The previously separate species of *T. laurifolia* and *T. grandiflora* have been reclassified and are now considered to be a single species.

Because it often grows on the banks of creeks and rivers Thunbergia may be spread during floods and cyclones, or during clean up work afterwards. You can reduce the risk of spread by reporting any suspect vines with purple or mauve flowers to council and by making sure machinery used is clean before arriving to do any work.

A council led eradication program is underway on all known infestations of Thunbergia laurifolia and grandiflora. Landholders can assist the program by maintaining easy access to treatment areas or by assisting council staff during control activities.

If your property has an active infestation make sure your green waste does not contain live plant material and is not disposed of in areas where the plant might establish like creeks and bushland.



For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Douglas Shire Biosecurity Management Plan available at [douglas.qld.gov.au](http://douglas.qld.gov.au) and customer service centres.

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Thunbergia grandiflora (Thunbergia)

DOUGLAS  
SHIRE COUNCIL

Douglas Shire Biosecurity Management Plan 2017-21

### What is my biosecurity obligation?

<b>In the prevention zone</b>	<p>It is an offence under the Biosecurity Act to move, share, give away or sell this plant.</p> <p>Report any suspected outbreaks or detections to Douglas Shire on 07 4099 9444.</p> <p>Ensure any machinery or vehicles moving from the eradication zone are free from plant material and soil</p>
<b>In the eradication zone</b>	<p>Report any suspected outbreaks or detections to Douglas Shire on 07 4099 9444.</p> <p>Control any infestations and destroy plant material on your property. Seek advice prior to works in vicinity of known locations.</p> <p>Do not move or accept plant material or soil unless you are sure it is from a clean source</p>

Vine

Terrestrial

Perennial

Biosecurity Act Restricted matter category

2  
Must be reported

3  
Do not distribute

4  
Do not move

5  
Do not keep

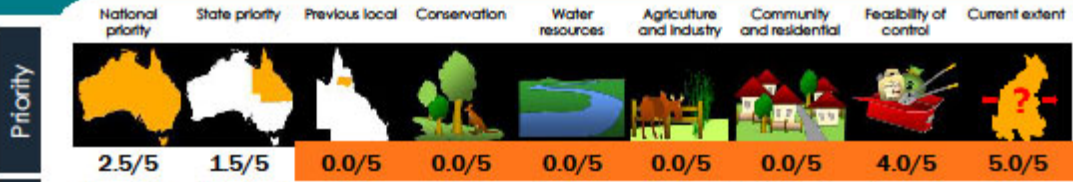
6  
Do not feed

Control

Spread



# Andropogon gayanus (Gamba grass)



**Description** A robust, upright perennial grass that grows to 4m with distinctive plumed seed heads. Gamba grass forms thick and strong tussocks that remain upright even when fully cured in the dry season.

**Distribution** Gamba grass is currently restricted to isolated occurrences in the Mowbray valley and the Finlayvale/Santacatterina area.

**Impacts** Gamba grass was planted as tropical pasture but has escaped from intensively managed grazing systems. It outcompetes native pastures and fuels intense fires. Late season Gamba grass fires are very difficult to manage and pose a significant threat to life and property.

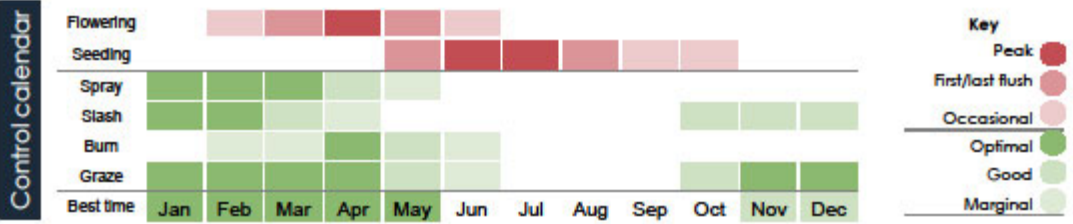
**Key projects:** An monitoring and control program is in place on to eradicate Gamba grass from all known sites within the Douglas Shire.

Up until its declaration as an invasive weed, Gamba grass was widely promoted as a tropical pasture grass. Gamba grass is a serious environmental weed in the Darwin and Bachelor regions of Northern Territory and Venezuela and is a weed of major concern and a priority for management across Cape York Peninsula and Far Northern Queensland.

Gamba grass is a highly competitive grass generating up to ten times the biomass of native species. This impacts of is two-fold; out-competing native species, and significantly increasing fuel loads and fire intensity to 3-8 times that of native savannah grasses. As a major competitor in native pasture Gamba grass can reduce available soil nutrients and significantly reduce water penetration by intercepting it the soil surface.

Gamba grass can colonize a variety of natural habitats from open savannah woodlands to margins of watercourses and wetlands. It is particularly well suited to the disturbed soils of roadsides and service corridors and this presents one of the key modes of spread

Ensuring vehicles, machinery and raw materials including hay are from a clean source will assist to reduce the risk of accidental introduction and spread of Gamba grass.

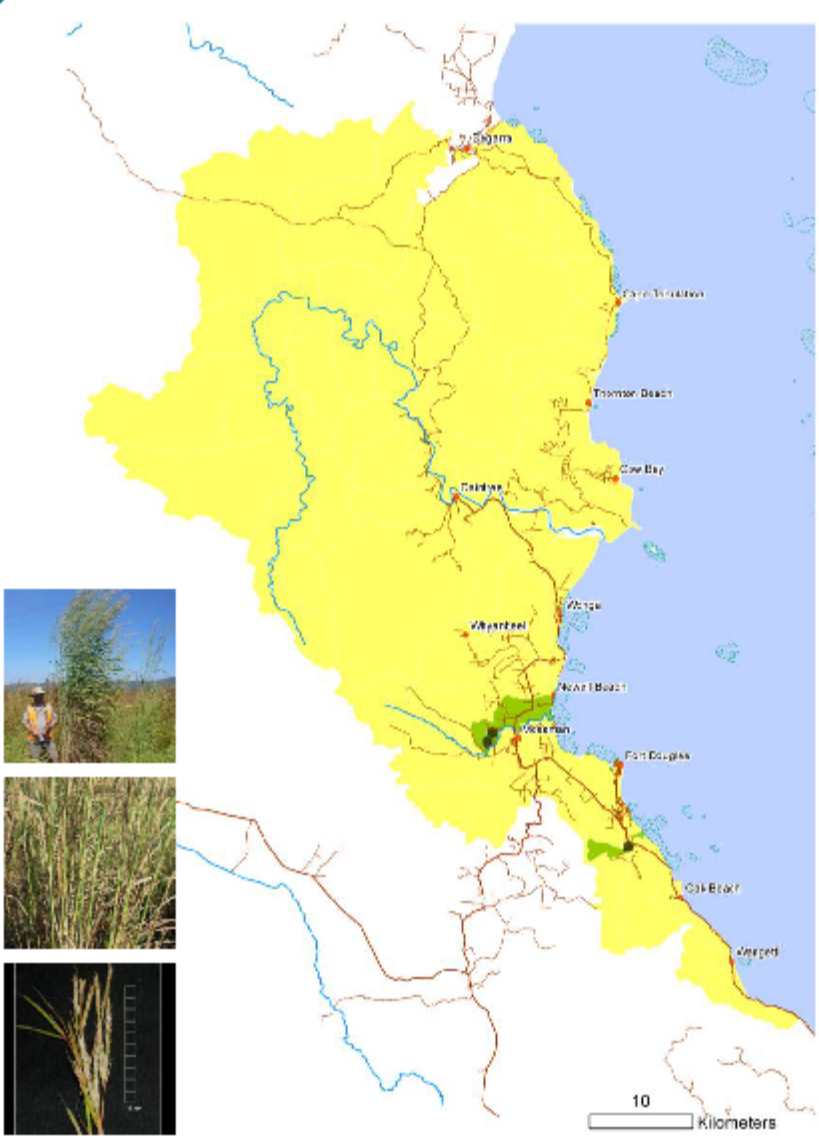


For more information on using this biosecurity action plan fact sheet, and further information on control tools, refer to the Douglas Shire Biosecurity Management Plan available at [douglas.qld.gov.au](http://douglas.qld.gov.au) and customer service centres.

# Andropogon gayanus (Gamba grass)



Douglas Shire Biosecurity Management Plan 2017-21



- Grass**
- Terrestrial**
- Perennial**
- Biosecurity Act Restricted matter category**
- 2 Must be reported**
- 3 Do not distribute**
- 4 Do not move**
- 5 Do not keep**
- 6 Do not feed**
- Control**
- 
- 
- 
- Spread**
- 
- 
- 

## What is my biosecurity obligation?

- In the prevention zone**
- In the eradication zone**

Report any suspected outbreaks or detections to Douglas Shire on 07 4099 9444 .Ensure machinery and vehicles moving from the infested areas are free from plant material and soil. Do not sell, cart, introduce or transport contaminated hay or silage.

Report any suspected outbreaks or detections to Douglas Shire on 07 40999444 . Ensure best practice weed hygiene measures are implemented to reduce risk of spread elsewhere. Assist in annual survey operations and control isolated plants before they seed. Do not sell, cart, introduce or transport contaminated hay or silage.



# Rainforest Dieback: Risks Associated with Roads and Walking Tracks

Stuart Worboys and Paul Gadek



# Rainforest CRC

Cooperative Research Centre for Tropical Rainforest Ecology and Management



# RAINFOREST DIEBACK: RISKS ASSOCIATED WITH ROADS AND WALKING TRACK ACCESS IN THE WET TROPICS WORLD HERITAGE AREA

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Rainforest CRC



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Australian Cooperative Research Centres Program



**Table 5:** *Phytophthora* Dieback Management Procedures for infrastructure construction and maintenance in *Phytophthora*-free areas.

<b>PLANNING PHASE</b>	<ul style="list-style-type: none"> <li>Map the location of the planned activities, and determine the level of <i>Phytophthora</i> Dieback Management Procedures to be implemented using the flow chart in Appendix A.</li> <li>For catchments that are <i>P. cinnamomi</i>-free, the works plan is to incorporate the following <i>Phytophthora</i> Dieback Management Procedures.</li> </ul>
<b>TIMING</b>	<ul style="list-style-type: none"> <li>Activities to be planned for the dry season, and postponed during and following rainfall.</li> </ul>
<b>MATERIALS</b>	<ul style="list-style-type: none"> <li>Gravel, soil or sand brought onto the site is to be free of <i>P. cinnamomi</i>. If the planned activities involve the supply of a significant amount of materials, it may be more cost effective to survey the site for <i>P. cinnamomi</i> first to confirm the site isn't already infested. If a site is infested, then the materials do not need to be free of <i>P. cinnamomi</i>.</li> <li>Stockpile topsoil and return it to the site in preference to importing fill.</li> <li>Imported pipes, stone pitching materials and other construction materials to be free of mud and soil.</li> </ul>
<b>PROCEDURES</b>	<ul style="list-style-type: none"> <li>Stay within the construction zone.</li> <li>If moving into forest on foot, footwear is to be free of mud and soil. If it is necessary to leave the catchment, implement the <i>Phytophthora</i> Dieback Management Procedures for bushwalking.</li> <li>Store gravel and other materials at the work site on a hard, dry, well-drained surface that drains into the impacted catchment.</li> <li>When grading: <ul style="list-style-type: none"> <li>grade from upslope to downslope (when applicable);</li> <li>grading equipment is to be clean before commencing work;</li> <li>the angle of the grader blade is to be adjusted to avoid carrying soil/gravel long distances; and</li> <li>do not grade wider than prescribed.</li> </ul> </li> </ul>
<b>VEHICLES AND MACHINERY</b>	<ul style="list-style-type: none"> <li>Vehicles, machinery and equipment to be free of mud and soil when: <ul style="list-style-type: none"> <li>transporting gravel and other construction materials;</li> <li>arriving at a site; and</li> <li>when moving to an uninfested catchment.</li> </ul> <p><i>(There will be a reduced need for cleaning if the operation is completed in dry soil conditions)</i></p> <li>If cleaning is to occur in the field: <ul style="list-style-type: none"> <li>select a hard, well drained surface (e.g. road), well away from vegetation;</li> <li>wash down in the area in which the activities have occurred;</li> <li>one side of the wash down area is assumed to be infested, the other, uninfested. Operations on either side of the boundary are to be kept separate; and</li> <li>minimise the use of water, and attempt to remove mud and soil with a brush or stick.</li> </ul> </li> <li>Park vehicles and machinery on cleared land.</li> </li></ul>
<b>SOIL MOVEMENT</b>	<ul style="list-style-type: none"> <li>Soil, gravel and plant material removed from any site should not be used in uninfested catchments.</li> </ul>
<b>WATER</b>	<ul style="list-style-type: none"> <li>Town water, bore water or sterilised water to be used.</li> </ul>

<p><b>REHABILITATION</b></p>	<ul style="list-style-type: none"> <li>• Rehabilitate site with <i>P. cinnamomi</i> resistant species appropriate to the local area. A preliminary list of resistant species is provided in Appendix B.</li> <li>• Revegetation has a high probability of introducing <i>P. cinnamomi</i>, particularly as it needs to occur during or immediately before the Wet Season, therefore:             <ul style="list-style-type: none"> <li>- consider direct seeding rather than planting seedlings;</li> <li>- obtain plants from a nursery with accredited hygiene procedures under the Australian Nursery Industry Accreditation Scheme;</li> <li>- ensure all machinery, tools and equipment are free of mud and soil when commencing works in a new catchment, and are cleaned prior to finishing or moving to another catchment; and</li> <li>- if using mulch, ensure that it has been sourced on site, or has been well composted (the heating part of the composting process kills <i>P. cinnamomi</i>).</li> </ul> </li> </ul>
<p><b>STAFF</b></p>	<ul style="list-style-type: none"> <li>• Staff and contractor involved in road and drain construction and maintenance activities to receive training in <i>Phytophthora</i> dieback management.</li> <li>• <i>Phytophthora</i> dieback information to be include in field staff induction process.</li> </ul>

**Table 6:** *Phytophthora* Dieback Management Procedures for infrastructure construction and maintenance areas where all catchments are assumed to be infested (e.g. Culpa Road, Mt Lewis Road, access track to the head of Tully Falls).

<b>PLANNING PHASE</b>	<ul style="list-style-type: none"> <li>Map the location of the planned activities, and determine the level of <i>Phytophthora</i> Dieback Management Procedures to be implemented using flow chart in Appendix A.</li> <li>For activities that are undertaken entirely within infested catchments, the works plan is to incorporate the following <i>Phytophthora</i> Dieback Management Procedures.</li> </ul>
<b>TIMING</b>	<ul style="list-style-type: none"> <li>Activities at <i>P. cinnamomi</i>-free sites should be scheduled for dry soil conditions before undertaking works in infested areas.</li> </ul>
<b>MATERIALS</b>	<ul style="list-style-type: none"> <li>The use of materials that are free of <i>P. cinnamomi</i> is encouraged, but this is not essential.</li> <li><i>P. cinnamomi</i>-free materials should be used at uninfested sites before infested sites.</li> </ul>
<b>PROCEDURES</b>	<ul style="list-style-type: none"> <li>Stay within the construction zone.</li> <li>If moving into forest on foot, footwear is to be free of mud and soil. If it is necessary to leave the catchment, implement the <i>Phytophthora</i> Dieback Management Procedures for bushwalking.</li> <li>Store gravel and other materials at the work site on a hard, dry, well-drained surface that drains into the impacted catchment.</li> </ul>
<b>VEHICLES AND MACHINERY</b>	<ul style="list-style-type: none"> <li>Vehicles, machinery and equipment to be free of mud and soil when leaving the site. <i>(There will be a reduced need for cleaning if the operation is completed in dry soil conditions)</i></li> <li>If cleaning is to occur in the field: <ul style="list-style-type: none"> <li>select a hard, well drained surface (e.g. road), well away from vegetation;</li> <li>wash down in the area in which the activities have occurred;</li> <li>one side of the wash down area is assumed to be infested, the other, uninfested. Operations on either side of the boundary are to be kept separate; and</li> <li>minimise the use of water, and attempt to remove mud and soil with a brush or stick.</li> </ul> </li> <li>Park vehicles and machinery on cleared land.</li> </ul>
<b>REHABILITATION</b>	<ul style="list-style-type: none"> <li>Rehabilitate site with <i>P. cinnamomi</i> resistant species appropriate to the local area. A preliminary list of resistant species is provided in Appendix B.</li> <li>Revegetation has a high probability of introducing <i>P. cinnamomi</i>, particularly as it needs to occur during or immediately before the Wet Season, therefore: <ul style="list-style-type: none"> <li>consider direct seeding rather than planting seedlings;</li> <li>obtain plants from a nursery with accredited hygiene procedures under the Australian Nursery Industry Accreditation Scheme;</li> <li>ensure all machinery, tools and equipment are free of mud and soil when commencing works in a new catchment, and are cleaned prior to finishing or moving to another catchment; and</li> <li>if using mulch, ensure that it has been sourced on site, or has been well composted (the heating part of the composting process kills <i>P. cinnamomi</i>).</li> </ul> </li> </ul>
<b>STAFF</b>	<ul style="list-style-type: none"> <li>Staff and contractor involved in road and drain construction and maintenance activities to receive training in <i>Phytophthora</i> dieback management.</li> <li><i>Phytophthora</i> dieback information to be include in field staff induction process.</li> </ul>

**Table 7:** *Phytophthora* Dieback Management Procedures for environmental maintenance activities in *P. cinnamomi*-free areas.

<b>TIMING</b>	<ul style="list-style-type: none"> <li>• Activities such as slashing, removal of woody weeds, etc. to occur in dry soil conditions.</li> </ul>
<b>REHABILITATION</b>	<ul style="list-style-type: none"> <li>• Rehabilitate sites with <i>P. cinnamomi</i> resistant species appropriate to the local area. A preliminary list of resistant species is provided in Appendix B.</li> <li>• Revegetation has a high probability of introducing <i>P. cinnamomi</i>, particularly as it needs to occur during or immediately before the Wet Season, therefore:             <ul style="list-style-type: none"> <li>- consider direct seeding rather than planting seedlings;</li> <li>- obtain plants from a nursery with accredited hygiene procedures under the Australian Nursery Industry Accreditation Scheme;</li> <li>- ensure all machinery, tools and equipment are free of mud and soil when commencing works in a new catchment, and are cleaned prior to finishing or moving to another catchment; and</li> <li>- if using mulch, ensure that it has been sourced on site, or has been well composted (the heating part of the composting process kills <i>P. cinnamomi</i>).</li> </ul> </li> </ul>
<b>ACCESS</b>	<ul style="list-style-type: none"> <li>• Off road vehicles, motorcycles and horses to be kept to established roads and trails, which are likely to already be infested.</li> <li>• Minimise the number of tracks in unaffected catchments, and ensure they have hard, dry, well-drained surfaces.</li> <li>• When constructing tracks:             <ul style="list-style-type: none"> <li>- construct in dry soil conditions;</li> <li>- map catchments to be impacted by the proposed track – the track should not pass from infested catchments to <i>P. cinnamomi</i>-free catchments;</li> <li>- if tracks are to be constructed in <i>P. cinnamomi</i>-free catchments, implement full hygiene procedures, as outlined in Table 5;</li> <li>- consider construction of wooden walkways over muddy areas; and</li> <li>- ensure materials that can be used to construct tracks include <i>P. cinnamomi</i>-free gravel, concrete, and limestone.</li> </ul> </li> </ul>
<b>SOIL MOVEMENT</b>	<ul style="list-style-type: none"> <li>• Minimise soils disturbance, for example, mow, slash or use herbicide to control weeds and keep open drains, rather than grade or plough.</li> <li>• If soil, gravel, sand, river stones, etc. are to be imported into bushland reserves, these materials are to be free of <i>P. cinnamomi</i>.</li> </ul>
<b>VEHICLES, MACHINERY &amp; TOOLS</b>	<ul style="list-style-type: none"> <li>• All machinery and vehicles to be free of mud and soils on tyres, mudflaps, body and underbody when entering a <i>P. cinnamomi</i>-free catchment. As a matter of routine, all machinery and vehicles to be washed down prior to leaving.</li> <li>• All tools and equipment to be free of mud and soil when entering <i>P. cinnamomi</i>-free catchment. As a matter of routine, all tools and equipment are to be washed down prior to removal.</li> </ul>
<b>WATER</b>	<ul style="list-style-type: none"> <li>• Town water, bore water or sterilised water to be used.</li> </ul>
<b>COMMUNICATION AND EDUCATION</b>	<ul style="list-style-type: none"> <li>• An ongoing commitment to visitor education is essential. <i>P. cinnamomi</i> awareness to be an integral part of signage and interpretive displays within the High Susceptibility zones of the WTWHA.</li> <li>• Provide information to stakeholder groups, such as bushwalking clubs, conservation groups, ecotourism operators, etc.</li> <li>• In High Susceptibility zones of the WTWHA, place signage to recommend avoiding access when soil is muddy (could also highlight that leech abundance is correlated with soil moisture, as an additional deterrent!) and that visitors to keep to tracks.</li> </ul>



<b>ROADSIDE MAINTENANCE</b>	<ul style="list-style-type: none"><li>• Slashers, tractors and other equipment used on roadsides to be washed down daily, as a matter of routine, when operating in the High Susceptibility zone.</li></ul>
<b>STAFF</b>	<ul style="list-style-type: none"><li>• Land Managers and contractors involved in construction and maintenance activities to receive training in <i>Phytophthora</i> Dieback Management Procedures.</li></ul>

**Table 8:** *Phytophthora* Dieback Management Procedures for bushwalking and other recreational activities within the High Susceptibility zone.

<b>TIMING</b>	<ul style="list-style-type: none"> <li>Bushwalking activities in the High Susceptibility Zone preferably to occur in dry soil conditions.</li> </ul>
<b>COMMUNICATION AND EDUCATION</b>	<ul style="list-style-type: none"> <li>An ongoing commitment to visitor education is essential. <i>P. cinnamomi</i> awareness to be an integral part of signage and interpretive displays within the High Susceptibility zones of the WTWHA.</li> <li>Provide information to stakeholder groups, such as bushwalking clubs, conservation groups, ecotourism operators, etc.</li> <li>In High Susceptibility zones of the WTWHA, place signage to recommend avoiding access when soil is muddy and recommend visitors to keep to tracks.</li> </ul>
<b>ACCESS</b>	<ul style="list-style-type: none"> <li>Consideration should be given to restricting access to walking tracks in the High Susceptibility zone during the wet season, or at least those which traverse <i>P. cinnamomi</i>-free catchments.</li> <li>If a walking track traverses both <i>P. cinnamomi</i>-free catchments and infested catchments, walkers should be directed to commence the walk (with clean boots) in the <i>P. cinnamomi</i>-free areas, before moving into infested catchments.</li> </ul>
<b>SOIL MOVEMENTS</b>	<ul style="list-style-type: none"> <li>Reduce the likelihood of transporting soil between infested and uninfested catchments by:             <ul style="list-style-type: none"> <li>educating walkers by appropriate signage;</li> <li>installing signposted clean-down points at appropriate points on the track (including the start of the track); and</li> <li>encouraging walkers to carry a hard brush and bottle of methylated spirits to use in cleaning and disinfecting boots.</li> </ul> </li> </ul>

**Table 9:** *Phytophthora* Dieback Management Procedures for fire management activities within the High Susceptibility zone.

<b>HYGIENE</b>	<ul style="list-style-type: none"> <li>• Machinery, vehicles and equipment to arrive at site free of mud and soil:             <ul style="list-style-type: none"> <li>- to clean machinery, use a brush, spade, bar or compressed air in preference to washing down with water;</li> <li>- wash down at designated wash down points or on a hard, well-drained surface that does not run off into forest.</li> <li>- clean machinery, vehicles and equipment before moving to another area.</li> </ul> </li> <li>• If you know the <i>Phytophthora</i> dieback status of the area, do not move from infested to uninfested areas unless the vehicle, machinery and equipment are free of soil and mud.</li> </ul>
<b>FIRE BREAKS</b>	<ul style="list-style-type: none"> <li>• Procedures for construction and maintenance of fire breaks to follow procedures listed for road construction and maintenance (Tables 5 and 6). The level of <i>Phytophthora</i> Dieback Management Procedures to be implemented to be determined with reference to Appendix A.</li> </ul>
<b>FIRE SUPPRESSION</b>	<ul style="list-style-type: none"> <li>• Use hand tools to suppress the fire where this method will succeed.</li> <li>• Use machinery only when necessary.</li> <li>• Use scheme or bore water for fire suppression whenever possible.</li> </ul>
<b>TRAINING</b>	<ul style="list-style-type: none"> <li>• Training and practice sessions should not occur in, or adjacent to, bushland areas or horticultural crops in wet soil conditions.</li> <li>• <i>Phytophthora</i> dieback information to be included in induction process for new crewmembers.</li> </ul>

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**STAMP OUT**



# Tramp Ants



Image courtesy of Qld Govt

Yellow crazy ant

## We need YOU to help us stamp out the tramp ants!

Two species of highly invasive ants, electric ants and yellow crazy ants, are found in Far North Queensland. These tramp ants, so-called because of their tendency to hitch a ride with people, are among the world's 100 worst invasive species. They are a serious social, economic, agricultural and environmental pest, capable of inflicting devastating impacts on our tropical outdoor lifestyle, tourism and agricultural industries, pets and livestock, and the unique native plants and animals of our World Heritage landscape.

Conservation Volunteers, with funding from the Australian Government's Caring for Our Country initiative, and supported by the Wet Tropics Management Authority and Biosecurity Queensland, is conducting surveillance along the boundary of the Wet Tropics World Heritage Area, between Palm Cove and Edmonton and around Bingil Bay and Mission Beach.

Conservation Volunteers will be laying baits, talking to local residents and organising awareness-raising events in these areas. Please help by spreading the word and allowing volunteers to inspect your property. The ants are easier to eradicate if identified early, but may severely impact on your family and pets if not treated swiftly.

### How you can help:

- Support Conservation Volunteers when they visit you
- Learn more about electric ants and yellow crazy ants:  
[http://www.daff.qld.gov.au/4790\\_6653.htm](http://www.daff.qld.gov.au/4790_6653.htm)
- Inspect all purchases of plants and soil for tramp ants
- Check your camping equipment and picnic gear too
- Spray pot plants with insecticide when moving home
- Only dispose of vegetation, plants and soil at approved council sites
- Report illegal dump sites to:  
**Cairns Regional Council on 4044 3044**  
**Cassowary Coast Regional Council on 4030 2222**  
**Biosecurity Queensland on 13 25 23**
- If you find suspected tramp ants, call:  
**Biosecurity Queensland 13 25 23.**

*Don't delay - remember, early detection of tramp ants is vital.  
The longer you wait, the harder it is to get rid of them.*

## Yellow crazy ants

### (*Anoplolepis gracilipes*)

- Long slender body – 5mm body length
- Very long legs and antennae
- Brownish-yellow or orange-yellow, with a brown abdomen, sometimes striped
- Looks like a small green ant but yellow
- Erratic, frantic, “crazy” movement
- Able to forage day and night but less active in intense heat and heavy rain

Yellow crazy ants are opportunistic feeders and consume both sugars and proteins (survey teams use a mix of tuna and jam as bait). They don't bite or sting, but spray formic acid to subdue and kill prey, and sometimes as a defensive mechanism when disturbed. This can irritate skin and eyes, blinding pets, livestock and native animals. Few small animals or insects survive in areas they colonise. Chicks and young animals are particularly at risk.

Yellow crazy ants have recently been found in Little Mulgrave National Park, part of the Wet Tropics World Heritage Area. To learn more, watch and share this YouTube video about yellow crazy ants:

<http://youtu.be/GgG-LDTRmkM>

## Electric ants

### (*Wasmannia auropunctata*)

- Tiny – about 1.5mm in length
- Light / golden brown in colour
- Active 24 hours a day in most weather conditions
- Likes moist areas, especially those close to water
- Tend to move slowly, often in distinct foraging lines
- Inflict a painful sting

Electric ants inject venom when they sting, which can result in painful, itchy pimples that take a long time to clear up, and occasionally triggering severe allergic reactions. They target the eyes and orifices of animals, repeatedly stinging and trying to blind them. They can be a serious nuisance in infected areas, stinging people around the home, the farm, and at tourist sites.

Electric ants frequently colonise people's homes, attracted to food (like peanut butter and hotdogs which are used as bait by survey teams). They have even been known to take a swim in backyard pools, and take over children's playgrounds.



Image courtesy of Qld Govt

## Behaviour

Both electric and yellow crazy ants lay their eggs in damp niches, under logs, leaf litter, stones, in boxes, plant pots, furniture and even wall cavities. They also take over the burrows and nesting holes of birds and other animals (e.g. parrots, owls and gliders). They reproduce mainly in the wet season, spreading out from the source colony by 'budding', and form super-colonies with multiple queens. Yellow crazy ants are capable of spreading up to 1km per year and both species spread into new areas through movement of timber, soil, vegetation, pot plants, picnic and camping gear, etc.

Tramp ants 'farm' honeydew (a sugary liquid) by protecting sap-sucking insects (like scale and aphids), which leads to spread of sooty mould. Sooty mould weakens plants, and can lead to dieback of plants and crops (sugar cane, fruit trees, etc). In addition to sugars tramp ants require protein to breed, and in infected areas, few other invertebrates (including native ants, insects, spiders, worms, etc.) or small vertebrates (like frogs and skinks) survive. Both species forage on the ground and high up into the canopy.

## Impact on the Wet Tropics

The Wet Tropics World Heritage Area is a truly exceptional place, which attracts tourists from all over the world who come to experience our spectacular scenery and unique plants and animals. This extraordinary ecosystem is a living museum containing the world's oldest continuous rainforest with over 700 species of plants and nearly 70 vertebrate animals found nowhere else in the world – a real hotspot for biodiversity. For those of us lucky enough to call it home, it also provides a unique sense of place and a stunning backdrop to our daily lives.

Tramp ants are a serious threat to the Wet Tropics World Heritage Area and the surrounding region. Our warm, humid climate is ideal for their spread. Electric and yellow crazy ants could have a devastating impact on our unique plants and animals, including iconic and threatened species like cassowaries and spotted-tailed quolls. The ants' ability to forage high in the canopy means that both ground and tree-dwelling animals are in danger. The region's tourism and agricultural industries could also be adversely affected.

If caught early enough, eradication of tramp ants in urban areas is fairly straightforward, but once they start to invade more remote, rugged natural areas, they will be almost impossible to stop.

Please help us stamp out tramp ants before they destroy the irreplaceable diversity of the Wet Tropics.



Queensland Government



CARING FOR OUR COUNTRY





# Yellow crazy ants

*Anoplolepis gracilipes*



Yellow crazy ants are an introduced species of tramp ant, thought to originate in Africa. The name 'crazy ant' refers to the ants' erratic walking style and frantic movements, especially when disturbed.

Yellow crazy ants can form densely populated super-colonies with more than one queen. These super-colonies can have a huge impact on natural environments, including both native plants and animals. Yellow crazy ants can damage crops, horticulture and honeybee hives, and can adversely impact on our outdoor lifestyle.





## Legal requirements

Yellow crazy ants are category 3 restricted invasive ant under the *Biosecurity Act 2014*. They must not be given away, sold, or released into the environment. The Act requires everyone to take all reasonable and practical measures to minimise the biosecurity risks associated with tramp ants. This is called a general biosecurity obligation (GBO). This fact sheet gives examples of how you can meet your GBO.

## Description

Adults have a long slender body approximately 5 mm in length and are yellow to brownish in colour. The abdomen is usually a uniform dark brown but sometimes is striped dark brown. Legs and antennae also measure approximately 5 mm in length and appear very long in comparison with the body.

Yellow crazy ants have no functional sting, but spray formic acid to subdue prey and act as a defence mechanism, especially when disturbed. In large amounts, this acid may burn or otherwise irritate the skin and eyes of animals and humans. On Christmas Island, yellow crazy ants have decimated the land crab population and radically affected the ecosystem of the island. Yellow crazy ants also protect and farm sap-sucking insects, allowing dense populations of these insects to live on native plants. The high abundance of sap-sucking insects on native plants eventually weaken them, allowing various plant diseases to take hold and decreasing plant health or resulting in premature plant death.

## Life cycle

Worker ants have a life cycle of 76–84 days. Queens survive for several years. Workers are produced throughout the year, but production fluctuates.

Sexual offspring are produced at any time in the year but generally 1–2 months prior to the rainy season.

## Methods of spread

Yellow crazy ants can be spread in soil and produce in the agricultural and horticultural industry; on contaminated military, mining and commercial road transport; and in sea and air freight on timber, goods, packaging material and pallets. Yellow crazy ants have been most commonly spread to industrial and transport businesses via timber, timber products and other construction materials.

## Habitat and distribution

Yellow crazy ants were first discovered in Cairns, Queensland in 2001. A number of infestations have been detected in residential, industrial, commercial, agricultural and forest environments in coastal areas of Queensland and in some suburbs in south east Queensland, Hervey Bay, Cairns and Townsville. Yellow crazy ants are also present elsewhere in Australia including the Northern Territory and Christmas Island.

Yellow crazy ants prefer to nest in areas with access to water or some moisture, such as along creek banks, in utility service pits or piles of timber, or under logs, debris or leaf litter. They will also nest at the base of trees, around perimeters of buildings and within retaining walls where moisture is retained.

## Control

The GBO requires a person to take reasonable and practical measures to minimise the biosecurity risks posed by yellow crazy ants. This fact sheet provides information and some control options for crazy ants.

## Prevention and early detection

Checking for the presence of yellow crazy ants can help prevent further spread of this pest. Landholders and businesses should check their properties and any materials that could harbour yellow crazy ants. This includes soil, timber, timber products and other construction materials, agricultural and horticultural produce, packaging and other potential vectors of spread.

## Baiting

Yellow crazy ant infestations can be treated by spraying or baiting. Landholders may choose to use insecticides that are registered for the control of ants or call a local pest control operator. Distance® Plus Ant Bait is an insect growth regulator, specifically a juvenile hormone mimic, similar to the naturally occurring insect growth hormones which control fertility, egg viability and pupation. Distance® Plus Ant Bait breaks the reproductive life cycle of ants, eventually causing starvation of the colony through lack of replacement of foraging workers.

Baits may be laid utilising either hand held spreaders, spreaders attached to motor vehicles or aerial application.

Yellow crazy ants could become resistant to Distance® Plus Ant Bait, therefore it is recommended to use a combined approach of different insecticides and integrated land management practices.

Insecticides should always be used in accordance with the label instructions. Further information about insecticides can be found on the Australian Pesticides and Veterinary Medicines Authority website [www.apvma.gov.au](http://www.apvma.gov.au).

## Further information

Further information is available from your local government office, or by contacting Biosecurity Queensland on 13 25 23 or visit [biosecurity.qld.gov.au](http://biosecurity.qld.gov.au).



**Table 1. Insecticide for the control of yellow crazy ants**

Situation	Insecticide	Rate	Comments
<p><b>Domestic and public service areas, commercial and industrial areas</b> (including parks, golf courses, sports grounds, paths and walkways, gardens, lawns and turf)</p> <p><b>Cropping areas</b></p> <ul style="list-style-type: none"> <li>• Plantations and orchards including olives, citrus and tropical fruits and tree nuts.</li> <li>• Other fruits and vegetables, herbs, spices</li> <li>• Pasture</li> <li>• Native and managed forests</li> </ul> <p><b>Environmental management areas</b> National parks and reserves where invasive ants are a threat to ecosystem values</p>	<p>Distance® Plus Ant Bait Pyriproxyfen Group 7C Insecticide</p>	<p>2–4 kg per ha 2–4 g per 10 m<sup>2</sup></p>	<p>Distance® Plus Ant Bait should be applied in the early spring or summer at the first sign of ant activity. Application is most effective when ants are actively foraging</p> <p>For most situations the lower rate is adequate. However, in northern Australia and where heavy infestations occur, use the higher rate. Multiple applications may also be required for heavy infestations. Multiple applications may also be required for certain species that have multiple reproductive females inhabiting the same nest, to ensure that all reproductive females are exposed to the juvenile hormone mimic. These include Argentine ant (<i>Linepithema humile</i>) and Pony ants (<i>Rhytidoponera</i>)</p> <p>DO NOT exceed three applications per year and a minimum of three months between each treatment</p> <p>Avoid exposure to terrestrial arthropods such as land crabs. Apply only in areas of high ant density with zero or low crab density</p> <p><b>Vegetables</b> DO NOT apply directly to crop plants Apply to inter-row areas only</p> <p><b>Poultry</b> DO NOT apply in pasture or other areas where poultry are or are intended to be feeding and/or grazing. Baits may only be laid in situations where direct access to the bait by poultry is not possible e.g. in situations with maintained caged poultry above the ground/areas to be baited</p>

**Directions for use**

Restrains:

- DO NOT apply direct onto water
- DO NOT apply within 20 m water when applying by aerial application  
Turn off/close the granular applicator during aerial application over or near water
- DO NOT apply as a preventative measure for ant control
- DO NOT apply more than one application per year where terrestrial arthropods such as land crabs may occur
- DO NOT water treated areas for at least 24 hours after application.
- DO NOT apply directly to crop plants (excluding pastures). Apply to inter-row areas where movement to water from irrigation or rainfall is not possible.

**Read the label carefully before use. Always use the herbicide in accordance with the directions on the label.**





Yellow crazy ant



Yellow crazy ants smothering pipe



Yellow crazy ants pupa



Yellow crazy ants can be found on meters



Yellow crazy ant



Yellow crazy ants

This fact sheet is developed with funding support from the Land Protection Fund.

Fact sheets are available from Department of Agriculture and Fisheries (DAF) service centres and our Customer Service Centre (telephone 13 25 23). Check our website at [biosecurity.qld.gov.au](http://biosecurity.qld.gov.au) to ensure you have the latest version of this fact sheet. The control methods referred to in this fact sheet should be used in accordance with the restrictions (federal and state legislation, and local government laws) directly or indirectly related to each control method. These restrictions may prevent the use of one or more of the methods referred to, depending on individual circumstances. While every care is taken to ensure the accuracy of this information, DAF does not invite reliance upon it, nor accept responsibility for any loss or damage caused by actions based on it.

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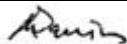
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