A Biosecurity Framework for Queensland Parks and Wildlife Service (QPWS) managed islands

Prepared by: Ecological Assessment Unit, Operational Support, Department of National Parks, Sport and Racing

Disclaimer

This document has been prepared with all due diligence and care, based on the best available information at the time of publication. The department holds no responsibility for any errors or omissions within this document. Any decisions made by other parties based on this document are solely the responsibility of those parties. Information contained in this document is from a number of sources and, as such, does not necessarily represent government or departmental policy.

If you need to access this document in a language other than English, please call the Translating and Interpreting Service (TIS National) on 131 450 and ask them to telephone Library Services on +61 7 3170 5470.

This publication can be made available in an alternative format (e.g. large print or audiotape) on request for people with vision impairment; phone +61 7 3170 5470 or email <library@nprsr.qld.gov.au>.

Citation

QPWS 2015 *A Biosecurity Framework for Queensland Parks and Wildlife Service (QPWS) managed islands.* Ecological Assessment Unit, Operational Support, Technical Services, Queensland Parks and Wildlife Service, Department of National Parks, Sport and Racing, Queensland Government.

Acknowledgements

Thanks to: John Olds, Rhonda Melzer, Chris Maple, Bruce Lawson, Graham Hemson, Mark Read and Stephanie Lemm for helping with drafting and reviewing the document; and Kym Thomson for assisting with formatting.

Cover Photo: North Reef Islet during 2010 lighthouse refurbishment, Bruce Knuckey QPWS.

Month date of publication

CCI job number

Contents

1 Introduction

Queensland has approximately 1300 islands from the Gulf of Carpentaria to off-shore Gold Coast. About 1000 of these are in the Great Barrier Reef World Heritage Area (GBRWHA) including 330 National Parks and 70 Commonwealth islands. Most islands in Queensland are 'high continental' islands. There are also vegetated coral cays, and the large silica sand islands of southern Queensland including Fraser Island - the world's largest sand island.

Many of the islands are significant components of the State's World Heritage Areas, high profile tourism destinations, recreational playgrounds and/or global strongholds for taxa such as seabirds and marine turtles. These values are threatened by pest animals and plants. Threats to island biota from pest species have been extensively documented and remain among the most powerful drivers of extinction of native species (Nias et al., 2010).

The purpose of this document is to provide a framework for the Queensland Parks and Wildlife Service (QPWS) that informs the development and implementation of comprehensive pest management strategies whose foundation is biosecurity. The term biosecurity, as used in this document, encompasses:

- quarantine – the containment, removal or destruction of a pest before it reaches an island;
- surveillance – early detection; and
- emergency response – early intervention.

The document provides information about biosecurity and includes guidelines on quarantine, surveillance and emergency response to prevent pest establishment, recognising that QPWS currently already has extensive pest control programs established on many islands. It provides general guidance for prioritising pests and biosecurity measures including Levels of Service but does not provide park-specific priorities or protocols for biosecurity.

QPWS islands vary markedly with respect to their values, the level of threat to those values from pests, administrative settings and operational capacity. Biosecurity strategies and action plans must be tailored to the particular circumstances that prevail on an island or group of islands if they are to be effective and will be developed through respective Park Pest Strategies (refer section 2.2).

> For the purposes of this document, 'pest' means an invasive alien animal, plant, parasite or disease-causing organism (such as bacteria, virus or fungus) capable of causing adverse impacts to environmental, economic or social values in a location where it does not naturally occur.

2 Basis for implementing biosecurity

The highest priority for QPWS is the conservation of Queensland's natural and cultural resources for current and future generations. Effective pest management is critical to achieving this goal as is recognised by actions identified in the QPWS Master Plan under the core QPWS service area – *Managing parks and forests for conservation and for people*. These actions include: prioritised and collaborative pest management to control or eradicate invasive plants and pathogens; preventing the establishment of new pests and pathogens; and controlling the impact of pests.

QPWS has pest management obligations under Commonwealth and State legislation, including the:

- *Land Protection (Pest and Stock Route Management) Act 2002*
- *Nature Conservation Act 1992*
- *Forestry Act 1959*
- *Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)*
- *Health Act 1937*
- *Animal Care and Protection Act 2001.*
- *Agricultural Chemicals Distribution Control Act 1966*

2.1 Land Protection & Biosecurity Legislation

The *Land Protection (Pest and Stock Route Management) Act 2002*, (LPA) provides a framework and powers for pest management in Queensland and places a responsibility on government agencies to develop, adopt and implement strategies to manage pests on land and water bodies for which they have direct management responsibility. Certain species of animals and plants are listed as declared pests to which restrictions including the sale, introduction, possession or transport of the species apply. Only top priority species are declared, and then only if declaration and enforced control have the potential to help manage the species and reduce its impact.

The *Queensland Biosecurity Act 2014* (BA) will commence by 1 July 2016. It will repeal six current acts (including the LPA) and significant parts of three other acts. The BA introduces a General Biosecurity Obligation (GBO) concept, under which a person, undertaking activities that are likely to pose a biosecurity risk, must take all reasonable and practical steps to prevent or minimise that risk. For example, rural landholders will be expected to be aware that pests on their land could impact on their neighbour's property. Similarly operators transporting goods will be expected to check whether the transportation could spread pests or diseases. This is particularly the case where a person has been made aware of the biosecurity risks their activities pose.

While QPWS pest management priority will be directed toward threats to park values, it will also be cognisant of expectations and obligations to manage declared pests and other biosecurity risks on its estate.

The BA and associated legislation will provide a significant opportunity for QPWS to improve the biosecurity of our estate. Under the GBO, we will be able to notify visitors (including commercial operators) of pests that are not 'declared' but nevertheless pose a threat to values on estate. Making visitors aware of the risks their activities may pose with respect to introducing the pest will place an obligation on them to take reasonable steps to minimise the risks. For further information see Online Resource 7.2

2.2 QPWS Pest Management System

QPWS has a Pest Management System to guide pest management planning and actions. The system encourages an integrated and long-term approach to managing pests. The QPWS Pest Management System provides the planning and strategic direction for pest management at different geographical scales and guidance for specific on-ground activities and reporting.

Pest management priorities for QPWS are to:

- Protect the natural and cultural values of all QPWS managed areas, including threatened species and ecosystems;
- Meet the legislative requirements regarding declared pests;
- Undertake cooperative pest management activities with neighbouring land managers, other government agencies and local government

The QPWS Pest Management System underpins pest management planning and other legislative requirements that relate to pests on QPWS estate.

Pest Strategies provide objectives and strategic directions for pest management for individual parks or an aggregation of parks. Pest Strategies describe and prioritise pests for management (based on values, threats, adjacent land use and feasibility of control); and provide guidelines for actions. Pest Strategies include pests that:

- will be managed and/or controlled;
- QPWS is obliged to manage;
- will be managed by lessees, permittees or other authority holders; and
- may pose a threat in the future.

The QPWS Operational Policies: *Management of Pests on QPWS Managed Areas* and *Pest Plant and Pathogen Spread Prevention*, provide further guidance for QPWS staff on: how to manage pests; the interpretation of legislation; management of non-legislative matters; and how to minimise pest plant and pathogen spread into, within, and from QPWS managed areas.

Operational Policies and Pest Strategies make reference to risks and management of pest

threats/incursions; however QPWS pest management currently focuses on pest control. A more holistic approach that emphasises general biosecurity is required.

Pest Strategies act at the most appropriate geographic scale for implementing effective biosecurity. There are many issues unique/specific to islands or island aggregations that need to be captured in a 'local strategy'.

2.3 QPWS Levels of Service

Levels of Service (LOS) have been developed by QPWS to define management standards for its estate. The standards are designed to align management effort with agreed priorities and deliver more consistent, transparent and effective management.

Five standard classifications of LOS—ranging from base, medium, high, very high to exceptional—have been developed for nine park management elements, one of which is Pest Management.

Biosecurity LOS broadly are as follows:

Base	Reasonable biosecurity measures to prevent the introduction or spread of critical risk biosecurity matters. Highly reliant on generic guidelines, raised awareness and self-monitoring.
Medium	Practical biosecurity measures to prevent the introduction or spread of critical and very high risk biosecurity matters. May involve approved permit conditions and contractor certification of compliance with biosecurity measures.
High	Strong biosecurity measures to prevent the introduction or spread of critical, very high and high risk biosecurity matters. May include audits of compliance with biosecurity measures.
Very high	Thorough biosecurity measures to prevent the introduction or spread of critical, very high and high risk biosecurity matters. May include restrictions on certain activities and items and certification of compliance with quarantine measures.
Exceptional	Comprehensive measures to prevent the introduction and spread of most biosecurity matters. Highly reliant on strict quarantine measures (including significantly restricted access) and direct QPWS supervision of third party actions.

A simple tool has been developed to assign a biosecurity LOS to individual QPWS Islands and rankings were moderated through expert elicitation.

Diagram 1: Levels of Service concept

2.4 Pests priorities on islands

Priority for QPWS are pests impacting on park values, however relative priority is also awarded to declared pests and Weeds of National Significance. There are also many undeclared pests that, because of their invasiveness and threat to park values, are considered a priority for management on QPWS estate.

2.5 Other Departments

2.5.1 Biosecurity Queensland

Biosecurity Queensland (BQ) is the lead agency for biosecurity in the State and has primary responsibility for protecting Queensland's primary industries, environment and way of life from biosecurity matters.

The Queensland Biosecurity Strategy: 2009–14 states "Biosecurity is important to Queensland as pests and diseases can have a long-term impact on the profitability of our primary industries, our unique biodiversity and our way of life". While BQ's main role is to coordinate the government's efforts to prevent, respond to, and recover from pests and diseases that threaten the economy and environment the management of biosecurity risks associated with the natural environment is largely left to land managers.

The Queensland Weed Spread Prevention Strategy (QWSPS) was developed in 2008. Associated guidelines, policies and procedures were developed to facilitate a consistent approach to weed hygiene and cleaning vehicles and machinery Although they generally apply only to declared pests and so are limited to some extent with respect to the needs of QPWS, these guidelines should be utilised where applicable. For example, QPWS can require suppliers of gravel, mulch, sand, soil and machinery to provide Weed Hygiene Declarations and in doing so will greatly minimise the biosecurity risks associated with weeds and other pests including soil-borne pathogens. For further information see Online Resources 7.3 and 7.4.

BQ's work with three species of invasive tramp ants that have arrived in Queensland is also relevant to island biosecurity. These species get their name from their ability to spread via cargo. They have the potential to impact on our outdoor lifestyle, environment and agriculture. BQ's efforts to deal with these species will enhance quarantine and surveillance in relation to other similar species with potential biosecurity risks. For further information see Online Resource 7.5.

2.5.2 Commonwealth Department of Agriculture

The Commonwealth Department of Agriculture provides biosecurity inspection and quarantine services for passengers and cargo arriving in Australia. Quarantine controls at Australia's borders minimise the risk of exotic pests and diseases entering the country, helping to protect Australia's agriculture industries and environment.

The Intergovernmental Agreement on Biosecurity (IGAB), which came into effect in January 2012, is an agreement between the Commonwealth, State and Territory governments, with the exception of Tasmania. This Agreement was developed to improve the national biosecurity system by identifying the roles and responsibilities of governments. It outlines the priority areas for collaboration to minimise the impact of pests and diseases on Australia's economy, environment and the community.

The National Environmental Biosecurity Response Agreement is the first deliverable of the IGAB and sets out emergency response arrangements, for responding to biosecurity incidents that primarily impact the environment and/or social amenity. For further information see Online Resource 7.6.

3 Raising awareness of biosecurity risks

Critical to the effectiveness of biosecurity is awareness and a sense of shared responsibility with industry and community. Programs and materials, such as fact sheets, advising staff, island visitors, residents and commercial operators of the pests of concern for 'their' island and ways they can help to minimise the risk of entry and establishment, are required. These will help to support and promote the General Biosecurity Obligation under the *Queensland Biosecurity Act 2014* (BA) and where possible should be developed and provided in collaboration with Biosecurity Queensland.

Codes of practice can also be developed under the BA and will provide an avenue for encouraging the marine tourism and transport industries to meet their biosecurity obligations in relation to QPWS islands.

Biosecurity communication strategy for the island national parks of the GBRWHA provides direction for practical education and awareness measures for a range of stakeholders (Appendix 9.1). It includes promotion of the *Be Pest-Free Program*. The strategy will be updated to align with the BA.

Examples of awareness campaigns

Moreton Island cane toad free campaign

Moreton Island is one of the few locations in coastal Queensland where cane toads are not established. This is despite being close to the State's capital city, having freehold residential properties, high levels of recreational use, a resort and campgrounds.

Concerns were raised about the biosecurity risks (cane toads in particular) associated with the high volume of earthmoving equipment and mulch brought to the island following the Pacific Adventurer oil spill in 2009. Consequently, Brisbane City Council (BCC) and QPWS developed a cane toad surveillance program in partnership with island stakeholders. Some innovative techniques are being used including trained 'cane toad detector dogs.' Surveillance efforts, including extensive surveys by herpetologists, have resulted in the detection of only three individual cane toads – proving the pest has not yet established.

The public awareness campaign, with material such as the excellent BCC brochure *Moreton Island is cane toad free - Help keep it that way,* provides island visitors with information aimed at minimising the biosecurity risks associated with cane toads.

Great Barrier Reef Region's pilot projects

The GBR Region has recognised that implementation of biosecurity will involve a significant internal, as well as external, cultural shift. It is using pilot projects (refer Section 1) to raise awareness of island biosecurity and has assigned a coordinator for island biosecurity. The coordinator is engaging with Community and Visitor Services staff to produce fact sheets/brochures etc. The Region's annual 'Pod' workshop also provides a valuable platform for raising awareness about island biosecurity. For further information see Online Resources 7.9 and 7.10.

Chevron

In Western Australia, Chevron's commitment to protect Barrow Island's unique environment with a comprehensive quarantine regime has been recognised locally and globally as 'best practice'. Chevron developed a number of Quarantine Awareness Modules to improve understanding amongst the wider community of its quarantine requirements for the island. For further information see Online Resources 7.11 & 7.13.

4 Pest management by lessees, permittees and other authority holders

It is more straightforward to enforce biosecurity measures for programs and activities that are under direct QPWS control, than for more dispersed activities, such as tourism. Nevertheless, there are mechanisms that can be used to facilitate the implementation of biosecurity for all activities. These include detailed and practical codes of conduct, permit conditions and awareness programs (see Appendix 9.2 for an example). Raising awareness will support and promote the GBO and therefore motivate island visitors, including authority holders (e.g. campers), to minimise the biosecurity risks associated with their activities. In many cases it will be possible to engage with a large number of people through member organisations such as Association of Marine Park Tourism Operators Pty Ltd (AMPTO).

Pest control on QPWS Islands that is the responsibility of lessees, permittees or other authority holders including contractors is detailed in relevant authorities. The LOS for island biosecurity apply to them and together with this document provide guidance for staff with respect to leases, permits and other authorities.

Vessels delivering visitors to national park islands in Recreation Areas (e.g. Moreton and Fraser Islands) require a permit under the *Recreation Areas Management Act 2006* (*RAM Act*). Conditions related to biosecurity can be included in the permit. In the case of islands not covered by the *RAM Act*, the vessels are not required to hold a permit to drop off and so managing the biosecurity risk is more difficult.

5 QPWS Island Biosecurity Guidelines

This section provides guidelines to be used by QPWS staff in developing and implementing biosecurity for QPWS Islands through Pest Strategies. Some of the guidelines have been taken, with permission from the authors, from Wolfaardt (2011).

Levels of Service will guide where and to what extent these guidelines are applied.

5.1 Pathways and vectors for pests

It is far better, from both conservation and economic perspectives, to prevent introductions of pests than to deal with the consequences. The most effective way to prevent introductions is to identify the available pathways and associated vectors, for invasion and establish quarantine and surveillance measures to prevent the introduction as far back along the pathways as possible. The pathways and entry points for QPWS Islands are limited and well defined compared to mainland protected areas. Consequently, designing and implementing effective biosecurity is potentially easier for QPWS Islands than most other QPWS estate.

There are three broad categories of pathways of introduction:

1. Natural dispersal (passive – by wind or water; hitching a ride on or in another animal or raft of vegetation; active – flying or swimming) and colonisation by species;
2. Accidental introduction as a result of human activities; and
3. Deliberate introduction.

Biosecurity management focuses on the two human-mediated pathways for introduction.

Limiting access to QPWS Islands (e.g. via Marine Park Zoning or Nature Conservation Act 1992 restricted access prescriptions) and minimising the volume of ‘high risk’ cargo can be an effective way to reduce the risk of human-mediated introductions.

Pathway analyses and risk assessments will be incorporated into the development of Pest Strategies to identify and document: the pathways and vectors most likely to transfer pests; entry points; the range of people and organisations involved in the pathways; and the potential consequences of such introductions. This will enable sites and actions to be prioritised and practical biosecurity measures to be developed and implemented to reduce the identified risks. High-risk sites are those locations where there is a higher likelihood of new incursions occurring and where the consequences of incursions are severe.

There are many human-mediated pathways and associated vectors but the risk of introduction is linked to the frequency and volume of human traffic and of the transport of high risk items.

High risk vectors for pests and pathogens include:

- Building materials;
- Soils and sand;
- Stores;
- Packing material, especially paper or cardboard-based materials;
- Field gear and outdoor equipment, such as tents, tripods, hiking poles and camera cases;
- Clothing
- Wood (especially if untreated);
- Fresh produce (especially large, leafy vegetables); and
- Poultry products (most raw poultry products have some degree of contamination with disease-causing organisms)

5.2 Mitigation of Risks

The types of action that can be taken to reduce the risk of pests entering and becoming established can be divided into three broad phases:

1. **Pre-border actions** – quarantine actions undertaken away from the island/region, at the source of the pathway, and on the vectors (e.g. ship, aeroplane); require effective quarantine measures and ongoing surveillance and reporting.
2. **Border actions** – quarantine actions taken at islands to prevent the arrival of pests; require effective and ongoing surveillance.
3. **Emergency response** – actions taken to eliminate newly arrived pest species before they spread far beyond the point of arrival; require ongoing surveillance and up to date contingency plans that are sufficiently well resourced to enable rapid implementation.

Effective biosecurity needs to include all of these elements, but prevention (quarantine) at source is the most critical and cost-effective component, followed by border control actions. Emergency response is often the most expensive and least effective. Measures to prevent the introduction of all pests may however be prohibitively expensive or impossible where there are high levels of human visitation or transport of supplies. Similarly, preventing invasions where natural dispersal and colonisation of pests from the adjacent mainland or nearby islands occurs freely may also be impractical or impossible. Consequently, surveillance programs to detect incursions of priority pests as soon as they occur and emergency response plans are important.

Quarantine and surveillance protocols, based on pathway analyses and risk assessments (refer section 5.1), must be specific to the particular suite of circumstances that prevail on each island or island aggregation and so are best addressed within Pest Strategies. For example, QPWS implemented additional quarantine measures to prevent the introduction of the African big-headed ant on some islands in the Capricornia Cays due to its impacts on *Pisonia grandis* (when found in conjunction with *Pulvinaria urbicola* scale). Given strong evidence that human activities have facilitated the entry and establishment of the ant on islands, the best way to prevent invasion is to minimise human visitation. The current restricted access provisions, together with the visitor management provisions in the Capricornia Cays Management Plan, reflect these recommendations to some extent. For further information see Online Resource 7.8.

QPWS Islands, particularly in the far north, are considered useful ‘outposts’ by DAFF for the surveillance of nationally significant pests that have not yet arrived on the mainland. Opportunities may exist to leverage joint interests to undertake surveillance while protecting park values from pest invasion.

5.3 Quarantine

5.3.1 Pre-border control at source points

Simple and pragmatic measures relating to the type of cargo and packaging materials used, and the location of the storage and packing facilities and cleaning regimes can lead to a marked reduction in the contamination of cargo and supplies, for example:

- Minimise the quantity of cargo and equipment transported to and offloaded at QPWS Islands.
- Regularly inspect storage and packing facilities used for cargo and supplies destined for QPWS Islands, especially in the period leading up to departure for the island.
- Facilities thoroughly cleaned (preferably fumigated). Recommended frequency is at least once per year, and in response to any incursions or contaminated material.
- Rodent and pest control measures implemented in storage and packing facilities, and adjacent wharf/pontoon areas, throughout the year including ongoing deployment and inspection of rodent bait stations and traps for invertebrates.
- Large cargo items thoroughly inspected and cleaned to ensure they are free of biological material.
- Importation of large machinery and landscaping material may be prohibited.
- Use reputable suppliers with Integrated Pest Management accreditation, and make permits conditional on proof of compliance.
- Prohibit imports of high-risk vectors or at least treating and properly inspecting high-risk items to reduce the risk of contamination. Soils, river sand, fresh fruit and vegetables, for example, are known to be key vectors for pests and pathogens.
- Packing of foodstuffs and other items in a manner which minimises the risk of transferring pests. As far as is practicable:
    - Items packed into firmly sealed and pest proof containers. Proper rodent proofing requires all holes >5 mm to be securely sealed.
    - Packing can take place in a secure (pest-free) environment and during daylight hours when pests are generally less active. Half-packed containers kept closed when not packing.
    - Containers packed above the floor and with building windows closed or fitted with screens.
- Avoid the use of wooden components for construction, packaging, signage and firewood because of the potential for pathogens.
- Equipment (such as bags, tents, tripods and hiking poles) and clothing (especially footwear, hiking socks, pockets, seams and Velcro closures of outer clothing) thoroughly cleaned and inspected before packing. Velcro could be banned or phased out on some islands because of the high risk of it transporting pests.
- Keeping landing areas, laydown areas/barge yards, pontoons, jetties and wharves immediately adjacent to vessels well-lit at night will help deter rodents, cats and other potential ‘stowaways’ (insects, cane toads, frogs and snakes may however, be attracted to lights). Lighting can be placed and/or shielded to reduce potential impact on marine turtles, seabirds and other light sensitive wildlife.

5.3.2 Pre-border control during transportation

- Methods to prevent rodents embarking and disembarking vessels and aircraft are well established and should be reasonably easy to implement. They include the use of rat guards.
- Rodent bait stations and traps for flying and crawling invertebrates can be deployed on vehicles, vessels and aircraft, and be regularly monitored and serviced by crews.
- It will be obligatory to inspect and clean all clothing and other personal effects known to be a high risk vectors prior to disembarking on some QPWS Islands. This includes boot-washing with a biocide such as Virkon or domestic bleach (sodium hypochlorite). Simple and practical guidelines for decontaminating boots and clothing have been developed and implemented by the International Association of Antarctica Tour Operators For further information see Online Resource 7.12.

5.3.3 At border or entry control

- Inspection of cargo and other items occur prior to offloading to ensure goods meet the conditions of entry. Ideally, purpose built quarantine facilities should be established at the key landing areas to allow further examination and storage of goods in a secure area from which pests cannot escape and in which they can be trapped/baited quickly and easily. The quarantine facilities serve as a final barrier to prevent the introduction of pests, and should be equipped to cope with the highest risk organism potentially brought to the island.
- Vessels at or adjacent to QPWS Islands can use serviceable rat guards on all mooring lines at all times when alongside pontoons, jetties and wharves. The number of mooring lines should be minimised, and crossed mooring lines avoided.
- Doors, hatches and gangways are closed and/or raised when not in use, especially during and after dusk.
- Keeping landing areas, laydown areas/barge yards, pontoons, jetties and wharves immediately adjacent to vessels well-lit at night will attract insects and may help in the detection of cane toads, frogs and snakes. Lighting can be placed and/or shielded to reduce potential impact on marine turtles, seabirds and other light sensitive wildlife.
- Waste storage containers are serviced and kept closed with tight-fitting lids when not in use.

5.4 Surveillance

Surveillance on a QPWS island will initially involve searching for the priority pest to determine whether it has already arrived and, if it has, to determine its' distribution. If the island is free of the priority pest the role of surveillance is to ensure early detection should it arrive in future.

- Surveillance programs will be developed as part of Pest Strategies. They can be complex to design and implement so the level of effort assigned to a program will be guided by the LOS for the island or island aggregation.
- Expert assistance to develop programs with clear objectives and priorities, robust methods and statistical design will be sought as required. In some cases it may be more effective to monitor indicators rather than search for the pest or signs of the pest.
- Appropriately trained, experienced and resourced staff will be tasked with overseeing high priority surveillance programs.
- Staff, visitors, residents and commercial operators on an island with a high priority surveillance program will be made aware of:
    - pests already present on the island;
    - what species and signs to look out for and where to focus observations; and
    - how to respond should a pest be detected.

A high general awareness of pests and signs to look out for will help to ensure that a pest is detected before it is too late to contain and eradicate it. Consideration will be given to reporting on known and suspected incursions.

In the past, pests such as the black rat *Rattus rattus* and the house mouse *Mus musculus*, have been able to invade extensively because surveillance measures were lacking. Responses to incursions have typically been reactive; often occurring too late to achieve eradication (Russell et al. 2008). One or more invasive rodents are known to occur on 74 of the 8294 islands around Australia, but have been eradicated from another 39 Australian islands. The Australian Government currently plans to eradicate non-indigenous rodents from more islands and to increase biosecurity measures to limit invasion or reinvasions and to detect and deal with any breaches.

5.5 Emergency Response

No biosecurity system is infallible. The aim of emergency response is to eliminate newly arrived pests before they spread beyond the point of entry.

There are several formal response systems in place in Australia to deal with nationally significant biosecurity emergencies (refer text box below). While a priority pest incursion on a QPWS Island will rarely be a national emergency these formal response systems provide guidance for effective response. It may also not be clear at the time the incursion is first detected whether a QPWS Island biosecurity emergency is or could become regionally or nationally significant.

In Australia, when a nationally significant pest or disease outbreak occurs (a biosecurity emergency/incident), a system is in place to allow for a rapid and nationally coordinated response. An outbreak is usually managed on the ground by the department of agriculture or primary industries in the state or territory in which it occurs. However, when a new pest or disease is found in Australia and/or a pest outbreak occurs in more than one state or territory, the Australian Government Department of Agriculture takes the lead in coordinating the national response to the outbreak. There are a number of plans, groups and processes that come together to stage an effective response, but importantly, there is just one nationally agreed system used to respond to all pest or disease outbreaks. This system is used consistently throughout the country by the Australian, state and territory governments, Plant Health Australia, Animal Health Australia, and the CSIRO's Australian Animal Health Laboratory. For further information about Australia's biosecurity incident response arrangements see Online Resource 7.15 to 7.19.

6 Review

Effective biosecurity for QPWS Islands will require ongoing review and adaptation. New incursions will highlight shortcomings that need to be remedied; improvements in the design of packaging materials will inform updates to Pest Strategies.

This document will be reviewed as often as is required to incorporate new information, or otherwise every five years from the date the document was first approved.

7 Online Resources

7.1 https://publications.qld.gov.au/storage/f/2014-10-20T00%3A23%3A59.350Z/biosecurity-act-ris-gbo-factsheet.pdf

7.2 www.daff.qld.gov.au/biosecurity/about-biosecurity/Biosecurity-Act-2014/summary-of-the-biosecurity-bill-provisions

7.3 www.daff.qld.gov.au/plants/weeds-pest-animals-ants

7.4 www.daf.qld.gov.au/plants/weeds-pest-animals-ants/weeds/preventing-weed-spread

7.5 www.daf.qld.gov.au/plants/weeds-pest-animals-ants/invasive-ants

7.6 www.agriculture.gov.au/biosecurity

7.7 www.agriculture.gov.au/biosecurity/avm/vessels/quarantine-concerns/ballast/australian-ballast-water-management-requirements

7.8 www.npsr.qld.gov.au/managing/plans-strategies/pdf/capricorn-cays-management-plan-final-140820.pdf

7.9 http://qpws/great-barrier-reef-region/island-biosecurity

7.10 http://qpws/common/piweb_media/cms/74530/Conservation%20Management/POD%20Workshops/POD%20Workshop%202015/OLDS%20John%20-%20Biosecurity%20for%20QPWS%20Islands%20_POD%20%281%29.pdf

7.11 www.chevronaustralia.com/environment/protecting-the-environment/quarantine

7.12 www.scar.org/publications/24-science

7.13 http://gorgonprojectelearning.kjv.com.au/courseware/20141015_1111_QM06/gorgon/index.html?version=0.7.1.2&course=quarantine/qm06

7.14 www.agriculture.gov.au/biosecurity/partnerships/nbc/nbepeg/documents/response-planning-guide

7.15 www.outbreak.gov.au/Pages/default.aspx

7.16 www.planthealthaustralia.com.au/biosecurity/incursion-management/plantplan/

7.17 www.planthealthaustralia.com.au/biosecurity/emergency-plant-pest-response-deed/

7.18 www.animalhealthaustralia.com.au/programs/emergency-animal-disease-preparedness/ead-response-agreement/

7.19 www.animalhealthaustralia.com.au/programs/emergency-animal-disease-preparedness/ausvetplan/

8 References

Nias RC, Burbidge AA, Ball D, Pressey RL 2010, *Island arks: the need for an Australian national island biosecurity initiative*. Ecological Management and Restoration, 11 (3). 166-167.

Russell JC, Towns DR, Clout MN 2008, *Review of rat invasion biology. Implications for island biosecurity. Science for Conservation*. Report 286. Department of Conservation, Wellington, New Zealand.

Wolfaardt A 2011, *Biosecurity and quarantine guidelines for ACAP breeding sites. Agreement on the Conservation of Albatrosses and Petrels*. www.acap.aq/conservati on-guidelines/biosecurity-guidelines. Viewed on 27 September 2012.

9 Appendices

9.1 Biosecurity communication strategy for the island national parks of the Great Barrier Reef World Heritage Area

(Double click the page below for a full copy of the following pdf.)

Biosecurity communication strategy for the island national parks of the Great Barrier Reef World Heritage Area

9.2 SeaSwift Flyer re Island Biosecurity

(Double click the page below for a full copy of the following pdf.)

Attention SeaSwift Staff

GREAT BARRIER REEF ISLANDS NEED YOUR HELP

A message from QPWS (Qld Parks & Wildlife Service)

The Great Barrier Reef World Heritage Area (GBRWHA) extends from Thursday Island to just north of Bundaberg, and out past the continental shelf.

There are many islands in the GBRWHA. Most of these are National Park Islands.

National Parks belong to the people of Queensland, and are very important to the economy of the State. Green, Fitzroy and Lizard Islands are all National Parks.

Because they are islands as well as National Parks, many represent the most biologically secure (pest-free) places in the world.

It is really important to keep pest plants and animals from invading any Island, particularly National Park Islands. Quarantine is an important part of biosecurity (being pest-free).

Pests include any plant material (particularly seeds), soil, mud, insects (ants, wasps, cockroaches) and animals (e.g. cane toads, rats). Simple stuff we may not always see, unless we're looking for it.

You have an important role here, because by working at SeaSwift, you are part of our Islands front-line quarantine defence.

Because of the types and amounts of freight they can carry, barges can be a high biosecurity risk to islands.

While suppliers should always deliver clean freight to the yard, it's a fair bet that some won't.

Please help keep our Islands pest-free by having a good look at Island freight as it enters, stays and leaves the yard.

High risk freight include vehicles, machinery, building materials (particularly timber), landscaping supplies and fresh food.

If you see anything suspect, report it to your supervisor. Your work here is really important for all of us. Our Islands will thank you, as will the people of Queensland.