Approval

Lord Howe Island Rodent Eradication Project, NSW (EPBC 2016/7703)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted	Lord Howe Island Board
proponent's ABN (if applicable)	33 280 968 043
proposed action	To eradicate introduced rodents on Lord Howe Island and its associated islands and rocky islets and to capture and house Lord Howe Woodhens (*Hypotaenidia sylvestris*) and Lord Howe Island Currawongs (*Strepera graculina crissali*) (see EPBC Act referral 2016/7703).

Approval decision

Controlling Provision	Decision
World Heritage properties (sections 12 & 15A)	Approved
National Heritage places (sections 15B & 15C)	Approved
Listed threatened species and communities (sections 18 & 18A)	Approved
Listed migratory species (sections 20 & 20A)	Approved

conditions of approval

This approval is subject to the conditions specified below.

expiry date of approval

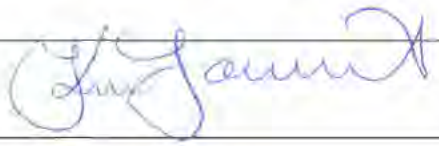
This approval has effect until 31 December 2022.

Decision-maker

name and position

Kim Farrant
Assistant Secretary
Assessments (NSW, ACT) and Fuel Branch

Signature



date of decision 18-8-17

Conditions attached to the approval

1. To avoid and minimise impacts on the **Lord Howe Island World Heritage Area and National Heritage place** (as identified at Schedule 1) and listed threatened species and communities and listed migratory species, the action must be undertaken in accordance with the final Lord Howe *Island Rodent Eradication Public Environment Report* dated 10 February 2017.

   The person taking the action must capture and manage in captivity Lord Howe Woodhens and Lord Howe Island Currawongs in accordance with Taronga Zoo's revised Lord Howe Island Rodent Eradication Project Captive Management Plan (July 2017).

2. To avoid, minimise and mitigate impacts from the aerial baiting on **non-target species** and the environment of the **Lord Howe Island Group**:

(a) aerial baiting can only be undertaken between 1 June and 30 August;

(b) during aerial baiting, **observers** must be at a location with clear line of sight to the Providence Petrel (*Pterodroma solandri*) and Masked Booby (*Sula dactylatra*) breeding grounds (as identified at Schedule 2). Trained **observers** must also be located within the boat observation zone (as identified at Schedule 2) and provide commentary to the helicopter pilot via radio regarding the behaviour of Providence Petrels and Masked Boobies, to supplement the pilot's observations and minimise impacts on Providence Petrels and Masked Boobies;

(c) where it is safe to do so, aerial baiting in the vicinity of the Providence Petrel and Masked Booby breeding grounds must be undertaken at a bait dispersal altitude and times that minimises impacts on Providence Petrels and Masked Boobies;

(d) handling, transport, clean-up and disposal of the pesticide **Brodifacoum** must be undertaken in accordance with the Australian Pesticides and Veterinary Medicines Authority minor use permit.

3. Within one month of the date of this approval, the person taking the action must submit to the **Department** draft terms of reference for the **Minister's** approval for the establishment of a **Technical Advisory Group (TAG).**

Baiting must not commence until the membership of the **TAG** is approved by the **Department.** The members must include, but not be limited to, an environmental toxicologist, a pelagic bird expert and an island ecologist each with relevant tertiary qualifications and suitable experience in their field of expertise.

The TAG will provide technical advice to the **Rodent Eradication Steering Committee** and be responsible for providing advice and recommendations for the development and implementation of the Monitoring and Mitigation Plan required at Condition 4.

4. To minimise impacts from aerial baiting on **non-target species** and the environment of the **Lord Howe Island Group**, the person taking the action must establish a **Monitoring and Mitigation Plan** based on advice from the **TAG**. The **Monitoring and Mitigation Plan** must be approved by the **Minister** prior to **commencement** of aerial baiting on the **Lord Howe Island Group**. The **Monitoring and Mitigation Plan** must:

   (a) provide for the monitoring of mortality and cause of death of **non-target species**, for a period of at least 4 months after the **commencement** of aerial baiting;

   (b) establish a **Mitigation Team** Manager responsible for collection of qualitative and quantitative information on **non-target species** mortality, documenting and reporting this information and using this information to coordinate and adapt carcass search and removal operations. The **Mitigation Team** Manager must provide weekly reports to the **Department** and the **TAG** regarding **non-target species** mortality and efficacy of carcass search and removal operations. More regular reports must be provided if requested by the **TAG**. The **Mitigation Team** Manager must continuously undertake these tasks for a period of at least 4 months after the **commencement** of aerial baiting;

   (c) include protocols and impact thresholds, where the **TAG** determines that unacceptable impacts on **non-target species** are observed between the first and second aerial baiting events;

   (d) include protocols to ensure systematic, targeted and effective carcass search, collection and disposal in the vicinity of the **Settlement** and other accessible areas (to avoid secondary poisoning of **non-target species**, but recognising that Masked Owl (*Tyto novaehollandiae castanops*) eradication depends on sufficient carcasses remaining uncollected) and specify appropriate resourcing;

   (e) include clear contingency planning and adaptive management measures where mortality of **non-target species** is recorded, with the aim of reducing further mortalities;

   (f) provide for a whole-of-island census, and breeding success monitoring of Lord Howe Woodhen and Lord Howe Island Currawong populations, twice a year, for a period of at least 2 years, following the release of captive birds.

   A report summarising the monitoring results collected on **non-target species** mortality in accordance with Condition 4(a&b) must be provided to the **Department** within 5 months following the completion of the final aerial baiting event.

   The results of the whole-of-island census and breeding success monitoring conducted in accordance with Condition 4(f) must be provided to the **Department** within two months of completing each census.

5. To ensure the success of the rodent eradication program, the person taking the action must establish a rodent detection team. Following the decay or removal of rodent carcasses, the rodent detection team must initiate intensive rodent detection activities across the **Lord Howe Island Group** to identify and kill remaining **target species,** as detailed in section 2.6 *Rodent Detection Monitoring* in the **PER**.

To avoid and mitigate impacts from rodent detection operations on **non-target species** and the environment of **Lord Howe Island Group**:

(a) all detecting team members must be trained in the location of the colonies of EPBC Act listed bird species and methods for minimising impacts on these colonies, vegetation and soils;

(b) all dogs used to aid detection of rodent species on the **Lord Howe Island Group** must have previously undergone project-specific training and be currently accredited by the Canine Detection Certification Council after passing the Council's practical accreditation test, prior to detection operations starting;

(c) each handler must have a Statement of Attainment in Dog Training from the Certificate IV, Companion Animal Care and Management Course (ACM40310) from TAFE NSW or equivalent as approved in advance by the **Department**;

(d) when rodents are detected appropriate action must be taken to eradicate rodents at that location;

(e) rodent detection using dogs must occur across the island until no rodents are detected.

6. The person taking the action must submit an **integrated quarantine/biosecurity management plan** (**the plan**) for the airport and shipping port to prevent the reintroduction of rodents to the **Lord Howe Island Group** for the **Minister's** approval prior to **commencement** of the action.

   The plan must prescribe quarantine/biosecurity management protocols regarding visiting yachts, cruise ships, other vessels and shipwrecks and maintaining rodent free status on islets including the long-term use of rodent detection dogs.

   In developing and implementing **the plan** the person taking the action must seek and address advice and recommendations from an independent biosecurity expert.

7. To maximise the likelihood of eradicating rodents on the **Lord Howe Island Group**, the person taking the action must use their best endeavours to ensure that rodent baiting is conducted on all properties and leases on the **Lord Howe Island Group**.

8. Within 30 days after the **commencement** of the action, the person taking the action must advise the **Department** in writing of the actual date of **commencement**.

9. The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement plans required by this approval, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **Department's** website. The results of audits may also be publicised through the general media.

10. Upon the direction of the **Minister**, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the **Minister**. The independent auditor must be approved by the **Minister** prior to the commencement of the audit. Audit criteria must be agreed to by the **Minister** and the audit report must address the criteria to the satisfaction of the **Minister**.

11. If, any time after 5 years from the date of this approval, the person taking the action has not substantially commenced the action, then the person taking the action must not substantially commence the action without the written agreement of the **Minister.**

Definitions

Brodifacoum baits means either 5.5 mm or 10 mm cereal-based bait pellets of Pestoff 20R containing 0.02g/kg (20 parts per million) of the toxin Brodifacoum.

Commencement (where bolded in the text) means the commencement of the aerial distribution of Brodifacoum baits across the **Lord Howe Island Group** using helicopters.

Department means the Australian Government Department responsible for administering the *Environment Protection and Biodiversity Conservation Act 1999*.

Lord Howe Island World Heritage Area and National Heritage place means the area identified at Schedule 1 of the approval.

Integrated quarantine/biosecurity management plan means a quarantine/biosecurity management plan for the airport and wharf to prevent the reintroduction of rodents should the rodent eradication be successful.

Lord Howe Island Group means Lord Howe Island and its associated islands and **rocky islets** (excluding Balls Pyramid).

Minister means the Australian Government Minister responsible for administering the *Environment Protection and Biodiversity Conservation Act 1999*.

Mitigation Team means the team, including the **Mitigation Team** Manager, responsible for implementing relevant mitigation and monitoring activities on Lord Howe Island under the **Monitoring and Mitigation Plan.**

Monitoring and Mitigation Plan means the plan to be prepared by the proponent that will guide mitigation and monitoring activities on the **Lord Howe Island Group** with the aim of minimising **non-target species** mortality from the aerial baiting as well as monitoring **non-target species** mortality, impacts on populations and population responses.

Non-target species means endemic flora and fauna species on the **Lord Howe Island Group**.

Observers means bird experts approved by the Lord Howe Island Board as being suitably qualified and/or experienced to observe and interpret the response of birds to the helicopter baiting flights.

PER means the final Public Environment Report dated 10 February 2017.

Rocky islets means any body of land of the **Lord Howe Island Group** excluding Lord Howe Island and Balls Pyramid that has permanent land above the mean high water mark and that can be safely accessed by a suitably trained person (boat or helicopter) for the purpose of setting and retrieving presence and absence monitoring equipment for **target species**.

Rodent Eradication Steering Committee means the Rodent Eradication Steering Committee established in October 2012, consisting of one representative from each of the following organisations, the Commonwealth Department of the Environment and Energy, the NSW Office of Environment and Heritage, the CEO of the Lord Howe Island Board, an elected Lord Howe Island Board member and a rodent eradication expert.

Settlement means the area identified at Schedule 1 as the Settlement.

Target species means *Rattus rattus*, *Mus musculus* and *Tyto novaehollandiae castanops* (the Masked Owl Tasmanian population).

Technical Advisory Group means a group of experts with operational and ecological experience, independent of the person taking the action to provide advice and recommendations on the mitigation and monitoring of **non-target species** mortality and recovery.

Schedule 1

Lord Howe Island Group World Heritage Area and National Heritage Place

N

Scale 1:130,000

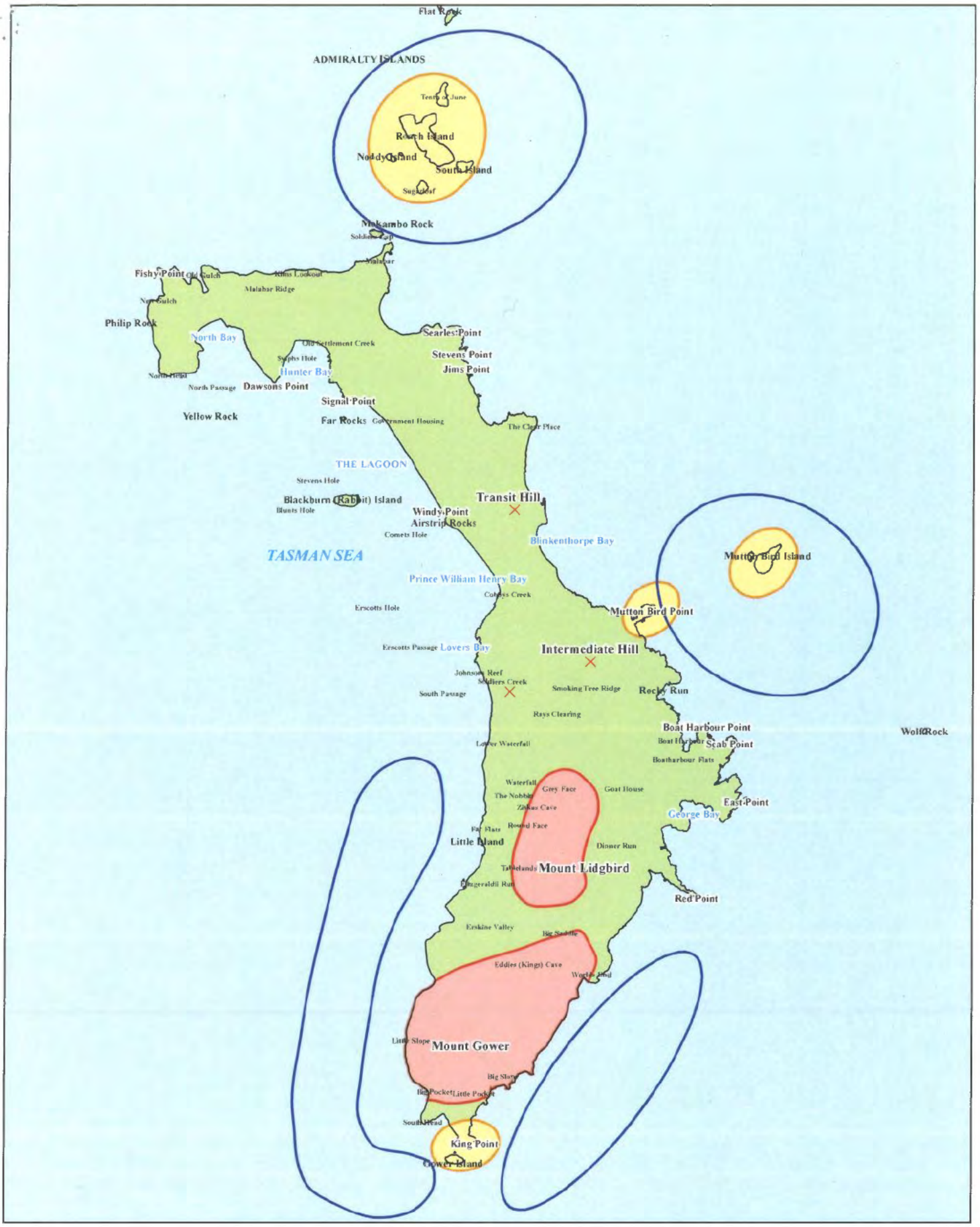
0 500 1,000 2,000 3,000 4,000 5,000

Meters

Geocentric Datum of Australia 1994 (GDA94)

Map Grid of Australia 1994 (MGA94) : Zone 57

Lord Howe



N

Scale 1:55,000

0 250 500 1,000 1,500

Meters

Geocentric Datum of Australia 1994 (GDA94)
Map Grid of Australia 1994 (MGA94) - Zone 57
(MGA94 is a Universal Transverse Mercator Projection)

- Observation Points
- Boat Observation Zone
- Masked Booby Breeding Site
- Providence Petrel Breeding Grounds

Lord Howe Island

Schedule 2
Location of Providence Petrel and Masked Booby breeding grounds

Lord Howe

Date Created 23/06/2017

Australian Government
Department of the Environment and Energy

EPBC Ref: 2016/7703

Ms Penny Holloway
Chief Executive Officer
Lord Howe Island Board
PO Box 5
LORD HOWE ISLAND NSW 2898

Dear Ms Holloway

Decision on approval
Lord Howe Island Rodent Eradication Project, NSW

I am writing to you in relation to a proposal to eradicate introduced rodents on Lord Howe Island and its associated islands and rocky islets and to capture and house Lord Howe Woodhens *(Hypotaenidia sylvestris)* and Lord Howe Island Currawongs *(Strepera graculina crissali)*.

I have considered the proposal in accordance with Part 9 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and have decided to grant an approval to the Lord Howe Island Board. The details of my decision are attached. The proposal must be undertaken in accordance with the conditions specified in the approval.

I would appreciate your assistance by informing me when you start the action and/or provide the information specified in the conditions. I would also appreciate your confirmation about who will be the contact person responsible for the administration of the approval decision.

Please note, any plans required as conditions of approval will be regarded as public documents unless you provide sufficient justification to warrant commercial-in-confidence status.

You should also note that this EPBC Act approval does not affect obligations to comply with any other laws of the Commonwealth, state or territory that are applicable to the action. Neither does this approval confer any right, title or interest that may be required to access land or waters to take the action.

The department has an active audit program for proposals that have been referred or approved under the EPBC Act. The audit program aims to ensure that proposals are implemented as planned and that there is a high degree of compliance with any associated conditions. Please note that your project may be selected for audit by the department at any time and all related records and documents may be subject to scrutiny. Information about the department's compliance monitoring and auditing program is enclosed.

If you have any questions about this decision, please contact the project manager, s22 , by email to s22 @environment.gov.au, or telephone s22 and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

Kim Farrant
Assistant Secretary
Assessments (NSW, ACT) and Fuel Branch
18 August 2017

s22

From: Species Policy
Sent: Friday, 11 August 2017 4:51 PM
To: s22
Cc: s22 Species Policy; Environment Protection; s22
Subject: RE: Final approval decision for 2016/7703 LHI Rodent Eradication WHAM advice sort [SEC=UNOFFICIAL]

Hi s22,

On behalf of the Protected Species and Communities Branch, I confirm that we are not anticipating any changes to the documents relating to the threatened species and ecological communities identified by ESD in the email below in the coming six weeks, except the Lord Howe Woodhen which is in the process of being uplisted. The legislative instrument which upgrades the listing of this species has been lodged today with OPC who will register the instrument in the next two days. The uplisting comes into effect the day after the instrument is registered. A new Conservation Advice will come into effect at the same time.

Please note that PSCB has not re-checked whether the correct documents are present or that the citation information is correct.

Regards, s22

s22 | Assistant Director | Species Information and Policy Section | Department of the Environment and Energy
PO Box 787 | CANBERRA ACT 2600
s22
Ph: s22

From: s22
Sent: Friday, 11 August 2017 1:49 PM
To: s22
Cc: s22; Species Policy <SpeciesPolicy@environment.gov.au>; Environment Protection <Environment.Protection@environment.gov.au>
Subject: FW: Final approval decision for 2016/7703 LHI Rodent Eradication WHAM advice sort [SEC=UNOFFICIAL]

Hi s22,

I have reviewed the below information and the assessment officer has identified the relevant documents. s22 has notes that the Lord How Woodhen (*Hypotaenidia sylvestris*) is currently being upgraded from vulnerable to endangered, and has requested for a copy of the up listing document and dated Conservation Advice when the process is completed.

Are you able to advise whether there will be any changes to the documents as soon as possible please? The final decision is likely to be signed off by the delegate on Monday, 14 August or Tuesday, 15 August.

Thanks
s22

s22
Southern NSW and ACT Assessment Section
Assessments (NSW, ACT) and Fuel Branch
Australian Government Department of the Environment and Energy | GPO Box 787, Canberra | www.environment.gov.au
Ph: (s22

From: s22
Sent: Friday, 11 August 2017 11:54 AM

To: s22
Cc: s22

Subject: Final approval decision for 2016/7703 LHI Rodent Eradication WHAM advice sort [SEC=UNOFFICIAL]

Hi s22

We are seeking WHAM advice re the Final approval decision for EPBC 2016/7703 LHI Rodent Eradication Project. I am aware that the Lord Howe Woodhen (*Hypotaenidia sylvestris*) is currently being upgraded from vulnerable to endangered and would appreciate it if you could provide me with a dated copy of the uplisting document and dated Conservation Advice when the process is completed.

Regards

s22

Listed threatened species and communities (s18 & s18A)

The Department considers that the action will have, or is likely to have, a significant impact on the following listed threatened species and endangered communities:

- Lord Howe Woodhen (*Hypotaenidia sylvestris*) (Vulnerable)
- Lord Howe Island Currawongs (*Strepera graculina crissali*) (Vulnerable)
- Magnificent Helicarionid Land Snail (*Gudeoconcha sophiae magnifica)* (Critically endangered)
- Masters' Charopid Land Snail (*Mystivagor mastersi)* (Critically endangered)
- Mount Lidgbird Charopid Land Snail (*Pseudocharopa ledgbirdi)* (Critically endangered)
- Whitelegge's Land Snail *(Pseudocharopa whiteleggei)* (Critically endangered)
- Lord Howe Flax Snail (Lord Howe Placostylus) *(Placostylus bivaricosus)* (Endangered).

Conservation advice

The approved conservation advices relevant to this proposed action are:

- Threatened Species Scientific Committee (2008). *Approved Conservation Advice for Gudeoconcha sophiae magnifica ms (a snail)*. Department of the Environment, Water, Heritage and the Arts, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/82015-conservation-advice.pdf.

- Threatened Species Scientific Committee (2008). *Approved Conservation Advice for Mystivagor mastersi (Masters' Charopid Land Snail).* Department of the Environment, Water, Heritage and the Arts, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/81247-conservation-advice.pdf.

- Threatened Species Scientific Committee (2008). *Approved Conservation Advice for Pseudocharopa lidgbirdi (Mount Lidgbird Charopid Snail).* Department of the Environment, Water, Heritage and the Arts, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/85279-conservation-advice.pdf.

- Threatened Species Scientific Committee (2008). *Approved Conservation Advice for Pseudocharopa whiteleggei.* Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity /threatened/species/pubs/81249-conservation-advice.pdf.

There are no approved conservation advice for the LHI Woodhen, LHI Currawong or LH Flax Snail.

Recovery Plans

The Recovery Plans identified as relevant to this action are:

- Department of Environment and Climate Change, NSW (2007). *Lord Howe Island Biodiversity Management Plan*. NSW Department of Environment and Climate Change, Sydney. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/recovery/lord-howe/index.html.

- NSW National Parks & Wildlife Service (2002). *Approved Recovery Plan for the Lord Howe Woodhen* (Gallirallus sylvestris), NSW National Parks & Wildlife Service, NSW. Available from: http://www.environment.gov.au/resource/national-recovery-plan-lord-howe-woodhen-gallirallus-sylvestris.

Threat Abatement Plans

The Threat Abatement Plans identified as relevant to this action are:

- Department of the Environment (2014). *Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomi.* Commonwealth of Australia, Canberra. http://www.environment.gov.au/biodiversity/threatened/publications/threat-abatement-plan-disease-natural-ecosystems-caused-phytophthora-cinnamomi

- Department of the Environment (2015). *Threat abatement plan for predation by feral cats*. Commonwealth of Australia, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats.

- Department of the Environment, Water, Heritage and the Arts (2008). *Threat Abatement Plan for competition and land degradation by unmanaged goats*. Commonwealth of Australia, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/competition-and-land-degradation-unmanaged-goats.

- Department of the Environment, Water, Heritage and the Arts (2009). *Threat abatement plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100 000 hectares,* Commonwealth of Australia, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/reduce-impacts-exotic-rodents-biodiversity-australian-offshore.

- Department of the Environment and Energy (2017). *Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (Sus scrofa)* Commonwealth of Australia, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/feral-pig-2017.

  The Northern NSW Assessment Section notes that whilst the *Phytophthora cinnamomi* TAP is not mentioned in SPIRE as relevant to any of the EPBC listed species of concern in this assessment, it has been recorded from one lease in the southern part of the settlement area and could potentially spread to the remainder of LHI on footwear or vehicles. This root-rot pathogen is known to affect a range of plant species on mainland Australia and it is listed as a key threatening process under the EPBC Act.

  The Northern NSW Assessment Section also notes that feral cats and goats have been eliminated on LHI.

The Minister approved this Conservation Advice and transferred this species from the Vulnerable to Endangered category, effective from 15/08/2017

Conservation Advice

Hypotaenidia sylvestris

Lord Howe woodhen

Taxonomy

Conventionally accepted as *Hypotaenidia sylvestris* (Sclater 1869).

Hypotaenidia sylvestris was previously placed in the genus *Gallirallus* (del Hoyo & Collar 2014).

Summary of assessment

Conservation status

Endangered: Criterion 4.

The highest category for which *Hypotaenidia sylvestris* is eligible to be listed is Endangered.

Hypotaenidia sylvestris has been found to be eligible for listing under the following categories:

Criterion 4: Endangered

Criterion 5: Vulnerable

The Lord Howe woodhen is listed as Endangered under New South Wales legislation (*Threatened Species Conservation Act 1995*). For information on the listing status of this species under relevant state legislation, see http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

Reason for conservation assessment by the Threatened Species Scientific Committee

The Lord Howe woodhen was listed as Vulnerable under the predecessor to the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), the *Endangered Species Protection Act 1992* and transferred to the EPBC Act in July 2000.

This advice follows assessment of new information provided to the Committee to change the listing status of the Lord Howe woodhen to Endangered. The change in status reflects a change in the listing criteria from that originally used to list the species under the *Endangered Species Protection Act 1992*, and does not reflect a decline in the species conservation status.

Public consultation

Notice of the proposed amendment and a consultation document was made available for public comment for 36 business days between 15 July 2016 and 2 September 2016. Any comments received that were relevant to the survival of the species were considered by the Committee as part of the assessment process.

Species information

Description

The Lord Howe woodhen is a medium-sized flightless rail with an olive-brown body and bright chestnut wings with narrow dark brown bars on the primary and primary covert feathers. It has grey-brown legs and a long downward-curved bill that is brown at the tip and pink at the base. Males and females are similar in appearance, but females are smaller than males (length: male 34–42 cm; female 32–37 cm). Adults weigh approximately 500 g. Adults have red irides and juveniles have dark irides (Marchant & Higgins 1993).

Distribution

The Lord Howe woodhen is endemic to Lord Howe Island (Marchant & Higgins 1993). When discovered in 1788, the Lord Howe woodhen was described as common and distributed from sea-level to the tops of the two mountains on the Island. From the mid-19th century, the species was confined to summit regions of Mt Gower and Mt Lidgbird (Hutton 1991). Following control of pigs (*Sus scrofa*) and cats (*Felis catus*), captive-bred birds were reintroduced to lowland sites in the 1980s (Miller & Mullette 1985).

The Lord Howe woodhen currently occurs on the summit of Mt Gower, Big Slope, Little Slope, Erskine Valley, the Boat Harbour-Grey Face region and Far Flats, with about half the population in the settlement area (NSW NPWS 2002).

Relevant biology/ecology

The Lord Howe woodhen is sedentary and highly territorial (Marchant & Higgins 1993). On Mt Gower, the Lord Howe woodhen occurs in gnarled mossy forest (Marchant & Higgins 1993). At mid and low altitude, the species occurs in a wide range of oceanic rainforest communities as identified by Sheringham et al. (2016). The Lord Howe woodhen also occurs in vegetation associated with residences where supplementary food is available (NSW NPWS 2002).

The Lord Howe woodhen forages amongst leaf litter, rotten logs, moss and lichens, feeding on invertebrates, including earthworms, grubs, molluscs (snails), crustaceans and insects and their larvae (Marchant & Higgins 1993; NSW NPWS 2002). The species is also known to feed on various plants and fungi, scavenge on residential waste, and prey upon *Pterodroma solandri* (providence petrel) chicks and eggs, and rodents (Marchant & Higgins 1993; NSW NPWS 2002).

The Lord Howe woodhen is monogamous and usually occurs in pairs (Miller & Kingston 1980). The breeding season for the Lord Howe woodhen varies between years but females generally lay between August and January and continue raising young until April. However, breeding can occur at any time of year when conditions are suitable (Miller & Mullette 1985). Females lay 1-4 eggs in a shallow depression nest lined with grass and leaves (Miller & Kingston 1980). Eggs are incubated by both parents for 20-23 days, with chicks moving from the nest within two days of hatching (Miller & Kingston 1980). Pairs build 3-4 nursery nests on the ground within their territory to brood chicks at night (Miller & Kingston 1980). Nests are built under thick vegetation, in unused petrel burrows (Miller & Kingston 1980), in and under tree root cavities and under domestic debris (H Bower, pers. comm. 2016). Chicks fledge at 28 days and are expelled from the parent's territory at about four months old (Marchant & Higgins 1993). Females can have multiple clutches in a year (Marchant & Higgins 1993).

Juveniles start pairing and breeding at nine months (Marchant & Higgins 1993). Maximum longevity of the Lord Howe woodhen is approximately 13 years (DJ Portelli, pers. comm. 2017, based on Lord Howe Island Board unpublished data). Generation length has been estimated to be 3.4 years (BirdLife International 2013).

Threats

The Lord Howe woodhen is threatened by the use of rodenticides for rodent control and vehicle collision. A proposed rat eradication program poses a future threat to the species. The Lord Howe woodhen is potentially threatened by competition with introduced species for resources. Given the species' single population, novel avian diseases and stochastic events also pose a potential threat to the Lord Howe woodhen.

These threats and their effects on the Lord Howe woodhen are described in the table below. The threats outlined have corresponding conservation management priorities.

Table 1 – Threats impacting the Lord Howe woodhen in approximate order of risk, based on available evidence.

Threat factor	Threat type	Threat status	Evidence base
Invasive species			
Primary and secondary poisoning from rodenticides	known	current	Rodent control poses a substantial threat to Lord Howe woodhens. The widespread use of rodenticides for rodent control has been ongoing on Lord Howe Island since the 1950's (H Bower, pers. comm. 2016). Rodenticides are used by residents in the settlement area and by the Lord Howe Island Board in selected areas of forest (H Bower, pers. comm. 2016). Lord Howe woodhens are at high risk of primary poisoning from consuming rodent baits, and secondary poisoning from consuming poisoned rodents (Lord Howe Island Board 2009, 2016). In 2011, the liver samples of eight deceased Lord Howe woodhens tested positive to brodifacoum residues (H Bower, pers. comm. 2016) demonstrating that rodenticides are a cause of mortality in Lord Howe woodhens. A number of woodhens exhibiting symptoms of anticoagulant toxicosis have also been reported (H Bower, pers. comm. 2016).
Rodent eradication program	known	future	A proposed rodent eradication program on Lord Howe Island poses a significant threat to the Lord Howe woodhen. If undertaken, the program will distribute brodifacoum based pellets across the entire island for a one-off eradication of all rodents. Lord Howe woodhens are at risk of primary and secondary poisoning from the proposed action, with a potential for a high rate of mortality, should sufficient mitigation measures not be implemented. A large proportion of the Lord Howe woodhen population is proposed to be placed into captivity during the eradication, which will carry a range of risks that will need to be managed, including overcrowding and disease transmission.

Competition with black rats (*Rattus rattus*) and house mice (*Mus musculus*).	suspected	current	Black rats and house mice are considered to compete with the Lord Howe woodhen for food resources (DJ Portelli, pers. comm. 2016; H Bower, pers. comm. 2016). Black rats in particular are considered to have reduced the availability of key native terrestrial invertebrates, including *Placostylus bivaricosus* (Lord Howe Placostylus) and caused the extirpation of *Panesthia lata* (Lord Howe Island wood-feeding cockroach) and *Dryococelus Australis* (Lord Howe Island phasmid) from Lord Howe Island (H Bower, pers. comm. 2016; NSW Scientific Committee 2011a, 2011b, 2012). It is considered that dietary competition between the Lord Howe woodhen and rodents is likely to be a contributing factor in limiting the carrying capacity of the island for the Lord Howe woodhen (DJ Portelli, pers. comm. 2016; H Bower, pers. comm. 2016).
Competition with African big-headed ant (*Pheidole megacephala*)	suspected	current	The African big-headed ant is an aggressive predator that is known to significantly reduce diversity and abundance of native terrestrial invertebrates (Lord Howe Island Board 2012). The African big-headed ant was widely established on Lord Howe Island, particularly in the settlement area, prior to the implementation of an eradication program (H Bower, pers. comm. 2016). It is considered likely that the African big-headed ant has contributed to declines in food resources required by the Lord Howe woodhen (H Bower, pers. comm. 2016). The eradication of African big-headed ants from Lord Howe Island is well progressed with only one infestation remaining (H Bower, pers. comm. 2016). The African big-headed ant may no longer pose a threat to the Lord Howe woodhen. However, the threat of competition with African big-headed ants will remain until the invasive species has been successfully eradicated from the island.
Predation by black rats (*Rattus rattus*)	potential	current	Black rats may predate on Lord Howe woodhen eggs and small chicks (NSW NPWS 2002). However, the Lord Howe woodhen is known to attack and prey on black rats. The threat of rat predation on the Lord Howe woodhen has not been demonstrated and may be minor.

Habitat degradation and predation by pigs (*Sus scrofa*)	known	past	Pigs have been identified as the limiting factor for the Lord Howe woodhen's distribution. Historically, the Lord Howe woodhen was restricted to the humid cloud forests of Mt. Gower and Mt. Lidgbird. Pigs caused substantial habitat degradation making areas of the island unsuitable for foraging and breeding by Lord Howe woodhens (Garnett et al. 2011; Miller & Mullette 1985). Pigs on Lord Howe Island preyed upon providence petrels, and it has been inferred that pigs may have also preyed upon Lord Howe woodhens (Miller & Mullette 1985). The threat of pig predation on Lord Howe woodhens has not been verified. Pigs were eradicated from Lord Howe Island in the early 1980s and no longer threaten the Lord Howe woodhen (Department of Environment and Climate Change (NSW) 2007).
Predation by cats (*Felis catus*)	known	past	Feral and domestic cats preyed on Lord Howe woodhens, particularly in the northern and central parts of the island following settlement (NSW NPWS 2002). Feral cats were eradicated from the island in 1979. Cats have been banned from the island and no longer threaten the Lord Howe woodhen (Department of Environment and Climate Change (NSW) 2007).
Habitat degradation by goats (*Capra hircus*)	known	past	Goats caused habitat degradation making areas of the island unsuitable for foraging and breeding by Lord Howe woodhens (NSW NPWS 2002). As a result, goats have contributed to the Lord Howe woodhen's loss of range and population decline (NSW NPWS 2002). The feral goat population was reduced to a few sterile individuals in 2002 as a result of a control program (Department of Environment and Climate Change (NSW) 2007). Goats no longer threaten the Lord Howe woodhen.
Human settlement			
Vehicle Collision	known	current	Mortality of Lord Howe woodhens attributed to roadkill have been observed. An average of ten individuals are reported to have died as a result of vehicle collisions annually (H Bower, pers. comm. 2016).
Hunting	known	past	Lord Howe woodhens were the principal food for early settlers and hunting is likely to have caused a severe decline in the Lord Howe woodhen population in the early years following settlement (Garnett et al. 2011).

Population and distribution			
Stochastic events	potential	current	Lord Howe woodhens comprise a single population found only on Lord Howe Island, making the species vulnerable to one-off impacts from random events, such as a disease outbreak or the release of a novel predator or parasite.

How judged by the Committee in relation to the EPBC Act criteria and regulations

Criterion 1. Population size reduction (reduction in total numbers)
Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4

	Critically Endangered Very severe reduction	Endangered Severe reduction	Vulnerable Substantial reduction
A1	**≥ 90%**	**≥ 70%**	**≥ 50%**
A2, A3, A4	**≥ 80%**	**≥ 50%**	**≥ 30%**

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.

A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [*(a) cannot be used for A3*]

A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

based on any of the following:

(a) direct observation [*except A3*]

(b) an index of abundance appropriate to the taxon

(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

(d) actual or potential levels of exploitation

(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites

Evidence:

Not eligible.

The Lord Howe woodhen population is considered to be steadily increasing at a rate of 4.5 birds per year since 2004 (DJ Portelli, pers. comm. 2016, based on Lord Howe Island Board unpublished data). Historically, the species underwent a significant decline following settlement of Lord Howe Island, with fewer than ten breeding pairs in the 1970s. However, the population increased through the 1980s and 1990s following the eradication of feral pigs and cats, and a successful captive breeding program (Brook et al. 1997).

Following assessment of the data the Committee has determined that the species is not eligible for listing in any category under this criterion as the past, current or future population declines are thought unlikely to exceed 30 percent in any 3-generation period.

Criterion 2.	Geographic distribution as indicators for either extent of occurrence AND/OR area of occupancy			
		Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1.	Extent of occurrence (EOO)	< 100 km²	< 5,000 km²	< 20,000 km²
B2.	Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
AND at least 2 of the following 3 conditions:				
(a)	Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b)	Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c)	Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			

Evidence:

Not eligible.

The extent of occurrence is estimated at 34 km^2, and the area of occupancy is estimated at 28 km^2. These figures are based on the mapping of point records from 1996 to 2016, obtained from state governments, museums, Birdlife Australia and CSIRO. The extent of occurrence was calculated using a minimum convex hull, and the area of occupancy calculated using a 2x2 km grid cell method[1], based on the IUCN Red List Guidelines 2014 (DotE 2016).

Garnett et al. (2011) estimate the extent of occurrence and area of occupancy to be 15 km^2. These figures are based on data obtained from Birds Australia databases and Atlas of Australian Birds data. The extent of occurrence was calculated using a minimum convex polygon. The area of occupancy was calculated using 1 km^2 grid squares. Areas of sea were excluded if they fell within the polygon.

The Lord Howe woodhen is considered to occur in one location, making the geographic distribution of the species very restricted. However, the population is considered to be increasing (DJ Portelli, pers. comm. 2016). The distribution of the species is not fragmented and there is no information to suggest that there have been extreme fluctuations in the species' distribution or abundance (Garnett et al. 2011).

Following assessment of the data the Committee has determined that the geographic distribution is very restricted, however there are no data available to suggest there are threats operating that would make the species' geographic distribution precarious for its survival. Therefore, the species has not been demonstrated to have met this required element of this criterion.

[1] AOO is calculated using a 2×2 km grid cell method, according to the IUCN Red List Guidelines 2014, to enable consistent evaluation of extinction risk against the thresholds in the criteria across different taxa and locations.

Criterion 3. Population size and decline				
		Critically Endangered Very low	Endangered Low	Vulnerable Limited
Estimated number of mature individuals		< 250	< 2,500	< 10,000
AND either (C1) or (C2) is true				
C1	An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future)	Very high rate 25% in 3 years or 1 generation (whichever is longer)	High rate 20% in 5 years or 2 generation (whichever is longer)	Substantial rate 10% in 10 years or 3 generations (whichever is longer)
C2	An observed, estimated, projected or inferred continuing decline AND its geographic distribution is precarious for its survival based on at least 1 of the following 3 conditions:			
(a)	(i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
	(ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b)	Extreme fluctuations in the number of mature individuals			

Evidence:

Not eligible.

It is estimated that the Lord Howe woodhen population contains 197 mature individuals within the monitored areas of Lord Howe Island (DJ Portelli, pers. comm. 2016, based on Lord Howe Island Board unpublished data). The population is considered to be increasing (DJ Portelli, pers. comm. 2016) with no projected continuing decline (Garnett et al. 2011). There is no information to suggest there have been extreme fluctuations in the number of mature individuals.

The total number of mature individuals is very low, however there are no data available to suggest whether the number will decline at a very high, high, substantial, or not substantial rate, or is likely to decline and the species' distribution is precarious for its survival. Therefore, the species has not been demonstrated to have met this required element of this criterion.

Criterion 4. Number of mature individuals			
	Critically Endangered Extremely low	Endangered Very Low	Vulnerable Low
Number of mature individuals	< 50	< 250	< 1,000

Evidence:

Eligible under Criterion 4 for listing as Endangered

It is estimated that the Lord Howe woodhen population contains 197 mature individuals within the monitored areas of Lord Howe Island (DJ Portelli, pers. comm. 2016, based on Lord Howe Island Board unpublished data). The total population is estimated to be 240-300 individuals (DJ Portelli, pers. comm. 2016).

The Committee considers that the total number of mature individuals is 197 which is very low. Therefore, the species has met the relevant elements of Criterion 4 to make it eligible for listing as Endangered.

Criterion 5. Quantitative Analysis			
	Critically Endangered Immediate future	Endangered Near future	Vulnerable Medium-term future
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

Evidence:

Eligible under Criterion 5 for listing as Vulnerable.

Population viability analysis using VORTEX suggests a ten percent probability of the species' extinction in the wild within 100 years (Brook et al. 1997). The model is considered to have used appropriate assumptions and parameters for estimating risk of extinction in the wild.

Conservation actions

Recovery plan

The *Recovery Plan for the Lord Howe Woodhen (Gallirallus sylvestris)* (NSW National Parks and Wildlife Service 2002) includes the following objectives:

- maintain and where possible, increase the population of Lord Howe woodhens on Lord Howe Island;
- establish a Lord Howe Island recovery team to co-ordinate the implementation and ongoing review of the recovery plan;
- involve the Lord Howe Island community in monitoring, management, habitat rehabilitation and threat abatement;
- develop a plan for establishing and resourcing an on-island captive breeding facility in the event of a substantial reduction in Woodhen numbers; and
- establish captive populations at sites other than Lord Howe Island as insurance against catastrophe affecting the wild population.

The recovery plan should be retained until it sunsets on 1 April 2022.

It is considered that a conservation advice is sufficient to direct priority conservation actions for the Lord Howe woodhen. The development of a new recovery plan is not required and decision to have a recovery plan could be reversed.

Primary conservation actions

- Ensure there is no decrease in population size or area of occupancy.

Conservation and management priorities

Invasive species

- Undertake programs to eradicate the black rat and house mouse from Lord Howe Island, using tested methods combined with mitigation measures to reduce impacts to the Lord Howe woodhen.

Breeding, propagation and other ex situ recovery action

- Finalise a detailed risk management plan prior to the implementation of the rodent eradication program to adequately manage all risks posed by the program to the long-term survival of the Lord Howe woodhen. This management plan should contain sufficient detail to ensure that the rodent eradication program poses a negligible risk to the woodhen population and should address issues around safe capture of Lord Howe woodhens; adequate housing during the eradication program (including addressing issues such as disease risk and ensuring adequate space to minimise the impacts from overcrowding); and safe release protocols after the baits are deemed to no longer pose a risk to the species. Ensure learnings from previous captive breeding operation are incorporated into the proposed program.

- Develop a plan for establishing and resourcing an on-island captive breeding program in the event of a decline in the Lord Howe woodhen population.

Stakeholder Engagement

- Engage with the local community to provide information about the species and the importance of conservation actions. Ensure the local community is aware of the risks to the Lord Howe woodhen associated with rodent bait and vehicle collisions. Promote the importance of speed limits to minimise roadkill.

- Undertake education programs with island residents and visitors to reduce the risk of Lord Howe woodhen mortality on the roads.

Survey and monitoring priorities

- Continue annual surveys of the Lord Howe woodhen population, including areas outside the regular survey area, to more precisely assess the total population size, population trends, breeding success and distribution of the species assess the island. Additional survey areas include Little and Big Slopes, Little and Big Pockets, Thatch Pocket, Transit Hill, Muttonbird Point, North Bay, Red Point, Rocky Run and Mt Lidgebird. These areas may be surveyed on a rotational basis.

- Undertake monitoring prior to, and after eradication programs are implemented to assess the impact of black rats, house mice and African big-headed ant on the Lord Howe woodhen population and native invertebrate prey abundance.

- Maintain high quarantine standards to mitigate the introduction of novel diseases. Ensure management response measures are in place in the event disease is identified in the Lord Howe woodhen population.

- Undertake monitoring of wild and captive Lord Howe woodhen populations for the presence of avian disease, to inform the implementation of appropriate management actions.

Information and research priorities

- Investigate the conservation benefit of establishing an insurance population of wild or captive Lord Howe woodhens outside of Lord Howe Island. Assess feasibility, resourcing requirements and cost-benefit associated with establishing such a population.

Recommendations

(i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **transferring** from the Vulnerable category to the Endangered category:

Hypotaenidia sylvestris

(ii) The Committee recommends that there not be a recovery plan for this species and the current recovery plan reversed.

Threatened Species Scientific Committee

07 March 2017

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Australian Government
Department of the Environment and Energy

Approval

Lord Howe Island Rodent Eradication Project, NSW (EPBC 2016/7703)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted	Lord Howe Island Board
proponent's ABN (if applicable)	33 280 968 043
proposed action	To eradicate introduced rodents on Lord Howe Island and its associated islands and rocky islets and to capture and house Lord Howe Woodhens (*Hypotaenidia sylvestris*) and Lord Howe Island Currawongs (*Strepera graculina crissali*) (see EPBC Act referral 2016/7703).

Approval decision

Controlling Provision	Decision
World Heritage properties (sections 12 & 15A)	Approved
National Heritage places (sections 15B & 15C)	Approved
Listed threatened species and communities (sections 18 & 18A)	Approved
Listed migratory species (sections 20 & 20A)	Approved

conditions of approval

This approval is subject to the conditions specified below.

expiry date of approval

This approval has effect until 31 December 2022.

Decision-maker	
name and position	Kim Farrant Assistant Secretary Assessments (NSW, ACT) and Fuel Branch
Signature	**DO NOT SIGN**
date of decision	**DO NOT DATE**

Conditions attached to the approval

1. To avoid and minimise impacts on the **Lord Howe Island World Heritage Area and National Heritage place** (as identified at Schedule 1) and listed threatened species and communities and listed migratory species, the action must be undertaken in accordance with the final Lord Howe *Island Rodent Eradication Public Environment Report* dated 10 February 2017.

   The person taking the action must capture and manage in captivity Lord Howe Woodhens and Lord Howe Island Currawongs in accordance with Taronga Zoo's revised Lord Howe Island Rodent Eradication Project Captive Management Plan (July 2017).

2. To avoid, minimise and mitigate impacts from the aerial baiting on **non-target species** and the environment of the **Lord Howe Island Group**:

(a) aerial baiting can only be undertaken between 1 June ~~2018~~ and 30 August, ~~2018 or 1 June 2019 and 30 August 2019~~;

~~(b) aerial baiting in the southern mountains must not occur after midday each baiting day to minimise the risk of helicopters colliding with Providence Petrels and Masked Boobies;~~

~~(c)~~ during aerial baiting, **observers** must be at a location with clear line of sight to the Providence Petrel (*Pterodroma solandri*) and Masked Booby (*Sula dactylatra*) breeding grounds (as identified at Schedule 2). Trained **observers** must also be located within the boat observation zone (as identified at Schedule 2) and provide commentary to the helicopter pilot via radio regarding ~~unusual~~ the behaviour of Providence Petrels and Masked Boobies, to supplement the pilot's observations and ~~;~~ minimise impacts on Providence Petrels and Masked Boobies.

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~~(d)~~(b) ~~should either species display **unusual behaviour** or become agitated during baiting flights, the pilot must take action to minimise impacts on Providence Petrels and Masked Boobies;~~

~~(e)~~(c) where it is safe to do so, aerial baiting in the vicinity of the Providence Petrel and Masked Booby breeding grounds must be undertaken at a bait dispersal altitude and times that minimises ~~**unusual behaviour** by~~ impacts on Providence Petrels and Masked Boobies.~~;~~

~~(f)~~(d) handling, transport, clean-up and disposal of the pesticide **Brodifacoum** must be undertaken in accordance with the Pestoff 20R label requirements and the Australian Pesticides and Veterinary Medicines Authority minor use permit.

3. Within one month of the date of this approval, the person taking the action must submit to the **Department** draft terms of reference for the **Minister's** approval for the establishment of a **Technical Advisory Group (TAG).**

   Baiting must not commence until the membership of the **TAG** is approved by the **Department.** The **TAG** must consist of at least ~~five~~ four members. The members must include, but not be limited to, an environmental toxicologist, ~~human toxicologist,~~ a pelagic bird expert and an island ecologist each with relevant tertiary qualifications and suitable experience in their field of expertise.

   The TAG will provide technical advice to the **Rodent Eradication Steering Committee** and be responsible for providing advice and recommendations for the development and implementation of the Monitoring and Mitigation Plan required at Condition 4.

4. To minimise impacts from aerial baiting on **non-target species** and the environment of the **Lord Howe Island Group**, the person taking the action must establish a **Monitoring and Mitigation Plan** based on advice from the **TAG**. The **Monitoring and Mitigation Plan** must be approved by the ~~Department~~ Minister prior to **commencement** of aerial baiting on the **Lord Howe Island Group**. The **Monitoring and Mitigation Plan** must:

   ~~(a) describe a strategy to monitor for the presence of target species on rocky islets prior to commencing aerial baiting (detailed at Condition 7);~~

   (a) provide for the monitoring of mortality and cause of death of **non-target species**, for a period of at least 4 months after the **commencement** of aerial baiting;

   (b) establish a **Mitigation Team** Manager responsible for collection of qualitative and quantitative information on **non-target species** mortality, documenting and reporting this information and using this information to coordinate and adapt carcass search and removal operations. The **Mitigation Team** Manager must provide weekly reports to the **Department** and the **TAG** regarding **non-target species** mortality and efficacy of carcass search and removal operations. More regular reports must be provided if requested by the **TAG**. The **Mitigation Team** Manager must continuously undertake these tasks for a period of at least 4 months after the **commencement** of aerial baiting;

   (c) include protocols and impact thresholds, ~~to stop any further baiting~~ where the **TAG** **TAG** determines that unacceptable impacts on **non-target species** are observed between the first and second aerial baiting events;

   (d) include protocols to ensure systematic, targeted and effective carcass search, collection collection and disposal in the vicinity of the **Settlement** and other accessible areas; (to avoid secondary poisoning of **non-target species**, but recognising that Masked Owl (*Tyto novaehollandiae castanops*) eradication depends on sufficient carcasses remaining uncollected) and specify appropriate resourcing;

   (e) include clear contingency planning and adaptive management measures where mortality of **non-target species** is recorded, with the aim of reducing further mortalities;

   (f) provide for ~~a ongoing~~ whole-of-island census, and breeding success monitoring of Lord of Lord Howe Woodhens ~~,~~ and Lord Howe Island Currawongs~~, Providence Petrel and Masked Booby~~ populations, twice a year, for a period of at least 25 years, following

Commented [PM1]: I'm not sure we need to specify the number of members, however I have reduced the number by one to reflect the removal of the human toxicologist.

Commented [PM2]: As discussed, please get back to us with advice regarding how this requirement will be met through other approval/governance mechanisms.

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Commented [PM3]: We think specifying the Masked Owl makes clear the intention of this sub-condition.

Commented [PM4]: I had in my notes we discussed this level of frequency – please confirm.
If this is correct, I have deleted the word 'ongoing' earlier in this sub-condition, to avoid any misunderstanding you need to be undertaking an ongoing (continual) census of these species.

~~completion of aerial baiting with particular focus on Lord Howe Woodhens and Lord Howe Island Currawongs following~~ the release of captive birds ~~from captivity~~.

A report summarising the monitoring results collected on **non-target species** mortality in accordance with Condition 4(a~~&~~b~~&~~c) must be provided to the **Department** within 5 months following the completion of the final aerial baiting event.

The results of the whole-of-island census and breeding success monitoring conducted in accordance with Condition 4(fg) must be provided to the **Department** ~~annually~~within two months of completing each census ~~until otherwise advised.~~.

Commented [PM5]: Upon reading the revised sub-condition 4(f) I thought it was appropriate to specify a due date for submission of these results - that way it is clear to you and us when to submit these results (see the above paragraph, where we similarly define a due date (5 months)).

5. To ensure the success of the rodent eradication program, ~~.~~ ~~T~~the person taking the action must establish a rodent detection team. Following the decay or removal of rodent carcasses, and no more than 30 days after the second baiting event, the rodent detection team must initiate intensive rodent detection activities across the ~~entire~~ **Lord Howe Island Group** to identify and kill remaining **target species**, as detailed in section 2.6 Rodent Detection Monitoring in the **PER**.

   To avoid and mitigate impacts from rodent detection operations on **non-target species** and the environment of **Lord Howe Island Group**:
   (a) all detecting team members must be trained in the location of the colonies of EPBC Act listed bird species and methods for minimising impacts on these colonies, vegetation and soils;
   (b) all dogs used to aid detection of rodent species on the **Lord Howe Island Group** must have previously undergone project-specific training and be currently accredited by the Canine Detection Certification Council after passing the Council's practical accreditation test, prior to detection operations starting;
   (c) each handler must have a Statement of Attainment in Dog Training from the Certificate IV, Companion Animal Care and Management Course (ACM40310) from TAFE NSW or equivalent as approved in advance by the **Department**;
   (d) when rodents are detected appropriate action must be taken to ~~ensure~~ eradicate rodents ~~are eradicated~~ at that location;
   (e) rodent detection using dogs must begin 30 days after the last aerial baiting event and occur ~~continuously~~ across the island until no rodents are detected.

6. The person taking the action must submit an **integrated quarantine/biosecurity management plan** (**the plan**) for the airport and shipping port to prevent the reintroduction of rodents to the **Lord Howe Island Group** for the **Minister's** approval prior to **commencement** of the action.

   The plan must prescribe quarantine/biosecurity management protocols regarding visiting yachts, cruise ships, other vessels and shipwrecks and maintaining rodent free status on islets including the long-term use of rodent detection dogs.

   In developing and implementing **the plan** the person taking the action must seek and ~~act on~~ address advice and recommendations from an independent biosecurity expert.

~~7. The person taking the action must ascertain if rodents are present on the **rocky islets** and small islands in the **Lord Howe Island Group** prior to **commencement** of the action.~~

~~The results of these surveys are to be provided to the **Department** prior to commencement of the action.~~

~~Aerial baiting must only take place on those rocky islets and small islands where these surveys identify the presence of rodents.~~

~~10.~~7. To maximise the likelihood of eradicating rodents on the **Lord Howe Island Group**, the person taking the action must use their best endeavours to ensure that rodent baiting is conducted on all properties and leases on the **Lord Howe Island Group**.

~~11.~~8. Within 30 days after the **commencement** of the action, the person taking the action must advise the **Department** in writing of the actual date of **commencement**.

~~12.~~9. The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement plans required by this approval, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **Department's** website. The results of audits may also be publicised through the general media.

~~13.~~10. Upon the direction of the **Minister**, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the **Minister**. The independent auditor must be approved by the **Minister** prior to the commencement of the audit. Audit criteria must be agreed to by the **Minister** and the audit report must address the criteria to the satisfaction of the **Minister**.

~~14.~~11. If, any time after 5 years from the date of this approval, the person taking the action has not substantially commenced the action, then the person taking the action must not substantially commence the action without the written agreement of the **Minister**.

Definitions

Brodifacoum baits means either 5.5 mm or 10 mm cereal-based bait pellets of Pestoff 20R containing 0.02g/kg (20 parts per million) of the toxin Brodifacoum.

Commencement (where bolded in the text) means the commencement of the aerial distribution of Brodifacoum baits across the LHIG using helicopters.

Department means the Australian Government Department responsible for administering the *Environment Protection and Biodiversity Conservation Act 1999*.

Lord Howe Island World Heritage Area and National Heritage place means the area identified at Schedule 1 of the approval.

Integrated quarantine/biosecurity management plan means a quarantine/biosecurity management plan for the airport and wharf to prevent the reintroduction of rodents should the rodent eradication be successful.

Lord Howe Island Group means Lord Howe Island and its associated islands and **rocky islets** (excluding Balls Pyramid).

Minister means the Australian Government Minister responsible for administering the *Environment Protection and Biodiversity Conservation Act 1999*.

Mitigation Team means the team, including the **Mitigation Team** Manager, responsible for implementing relevant mitigation and monitoring activities on LHI under the **Monitoring and Mitigation Plan.**

Monitoring and Mitigation Plan means the plan to be prepared by the proponent that will guide mitigation and monitoring activities on the **Lord Howe Island Group** with the aim of minimising **non-target species** mortality from the aerial baiting as well as monitoring **non-target species** mortality, impacts on populations and population responses.

Non-target species means endemic~~native~~ flora and fauna species on the **Lord Howe Island Group**.

Observers means bird experts approved by the Lord Howe Island Board (LHIB) as being suitably qualified and/or experienced to observe and interpret the response of birds to the helicopter baiting flights.

PER means the final Public Environment Report dated 10 February 2017.

Rocky islets means any body of land of the **Lord Howe Island Group** excluding Lord Howe Island and Balls Pyramid that has permanent land above the mean high water mark and that can be safely accessed by a suitably trained person (boat or helicopter) for the purpose of setting and retrieving presence and absence monitoring equipment for **target species**.

Rodent Eradication Steering Committee means the Rodent Eradication Steering Committee established in October 2012, consisting of one representative from each of the following organisations, the Commonwealth Department of the Environment and Energy and the NSW Office of Environment and Heritage. The CEO of the LHIB, an elected LHIB member and a rodent eradication expert.

Settlement means the area identified at Schedule 1 as the Settlement.

Target species means *Rattus rattus*, *Mus musculus* and *Tyto novaehollandiae castanops* (the Masked Owl Tasmanian population).

Technical Advisory Group means a group of experts with operational and ecological experience, independent of the person taking the action to provide advice and recommendations on the mitigation and monitoring of **non-target species** mortality and recovery.

~~**Unusual behaviour** in relation to Providence Petrels and Masked Boobies means abnormal behaviour relative to an agreed baseline as defined by the pelagic seabird expert on the **Technical Advisory Group**.~~

DEPARTMENT OF THE ENVIRONMENT AND ENERGY

To: Kim Farrant, Assistant Secretary, Assessments (NSW, ACT) and Fuel Branch (for decision)

Proposed Approval Decision Brief (recommendation report) – Lord Howe Island Rodent Eradication Project, NSW (EPBC 2016/7703)

Timing: Final decision due 17 August 2017 - Statutory timeframe.

Recommendation/s:

1. Consider the recommendation report at Attachment A and all other attachments to this brief.

Considered / ~~please discuss~~

2. Consider the PER at Attachment C.

Considered / ~~please discuss~~

3. Have regard to the approved conservation advices, and consider the recovery plans and threat abatement plans relevant to the proposed action at Attachments J, F and G.

Confirmed / ~~please discuss~~

4. Have regard to the Temperate East Marine Bioregional Plan (TEMBP) at Attachment O.

Confirmed / ~~please discuss~~

5. Consider and take into account the Strategic Plan for the Lord Howe Island Group World Heritage Property, the Lord Howe Island Group: Statement of Outstanding Universal Value, and the Lord Howe Island Group National Heritage listing gazettal notice at Attachments P, M and N.

Considered / ~~please discuss~~

6. Agree that the recommended decision on page 1 of the recommendation report (Attachment A), and summarised in the table below, reflects your proposed decision.

Agreed / ~~Not agreed~~

7. Sign the letter at Attachment D to consult the Lord Howe Island Board on your proposed decision.

Signed / Not signed

8. Agree to not publish the proposed decision at Attachment B on the internet for public comment.

Agreed / Not agreed

Summary of recommendations on each controlling provision:		
Controlling Provisions for the action	**Recommendation**	
	Approve	**Refuse to Approve**
World heritage properties (ss 12, 15A)	Approve	
National heritage places (ss 15B, 15C)	Approve	
Listed threatened species and communities (ss 18, 18A)	Approve	
Listed migratory species (ss 20, 20A)	Approve	

Kim Farrant
Assistant Secretary
Assessments (NSW, ACT) and Fuel Branch
Comments:

Date: 3-5-17

Key Points:

Background:

1. The purpose of this submission is to seek your consideration on a proposed approval decision under Part 9 of the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act).

2. The proposed action is to eradicate introduced rodents on Lord Howe Island (LHI) and its associated islands and rocky islets, and the capture and housing of Lord Howe Woodhens (*Hypotaenidia sylvestris* formerly known as *Gallirallus sylvestris*) (LH Woodhen) and Lord Howe Island Currawongs (*Strepera graculina crissali*) (LHI Currawong). The proposal was referred on 11 May 2016, by the Lord Howe Island Board (LHIB) (Attachment K).

3. At the time the controlled action decision was made the scientific name of the LH Woodhen was *Gallirallus sylvestris*. On 28 November 2016, the delegate for the Minister for the Environment and Energy, under section 184(1)(d) of the EPBC Act, amended the list referred to in section 178 of the Act by updating the names of a number of listed threatened species, including updating *Gallirallus sylvestris* to *Hypotaenidia sylvestris*.

4. Cereal-based bait pellets containing the rodent anti-coagulant Brodifacoum (registered name Pestoff 20R) will be used to eradicate rodents. Up to 85% of the LH Woodhen population and 50-60% of the LHI Currawong population will be taken into captivity, commencing two months before LHI is baited. It is likely that after 90 days baits and poisoned rodent carcasses will have decomposed to the extent that any remaining Brodifacoum will not pose a threat to these species. Captive birds will then be progressively released near to their capture locations.

5. The proponent has sought EPBC approval for the period June 2017 to December 2019 to conduct the proposed action. The recommended period of approval expires on

31 December 2022. This is to accommodate the five year grace period for commencement of the action.

6. The LHIB is a statutory authority established under the provisions of the *Lord Howe Island Act 1953 (NSW)*. The LHIB is responsible to the NSW Minister for the Environment and is charged with the care, control and management of the Island including its heritage values.

7. LHI is located 780 kilometres north-east of Sydney. It covers 1455 ha, is 12 km long, 1.0–2.8 km wide and formed in the shape of a crescent, with a coral reef enclosing a lagoon on the western side. A settlement of approximately 350 inhabitants is located in the northern section of LHI and covers about 15% of the island. Approximately 75% of LHI plus all outlying islands, islets and rocks are protected under the Permanent Park Preserve (PPP), which has similar status to that of a NSW national park.

8. The Minister's delegate determined on 30 June 2016 that the proposed activity was a controlled action under the EPBC Act to be assessed by a Public Environment Report (PER).

9. The controlling provisions for the proposed action are World Heritage (s12 & s15A), National Heritage (s15B & s15C), Listed Threatened Species and Communities (s18 & s18A) and Listed Migratory Species (s20 & s20A).

10. The LHIB placed the draft PER on public exhibition for a period of 23 business days from 2 November 2016 to 2 December 2016. The final PER was provided to the Department on 10 February 2017. The statutory timeframe for the decision was extended on 6 April 2017 to 17 August 2017.

11. The Recommendation Report (Attachment A), prepared in accordance with section 100 of the EPBC Act, concludes that the Proposed Action should be approved under sections 130 and 133 of the EPBC Act subject to the Proposed Conditions recommended by the Department (see proposed approval notice at Attachment B). This conclusion was reached by having regard to the likely impact of the Proposed Action for the purposes of each controlling provision and the relevant social and economic considerations under section 136 of the EPBC Act.

Other approvals required

12. A number of other regulatory processes are relevant to the proposed action:

- LHIB applied to the Australian Pesticides and Veterinary Medicines Authority (APVMA) for a Minor Use Permit under the *Agricultural and Veterinary Chemicals Code Act 1994* to use Brodifacoum in Pestoff 20R cereal bait pellets to eradicate rodents on LHI. APVMA are conducting a Limited Level Environmental Assessment to consider the fate of Brodifacoum in the environment (soil, air and water) environmental toxicology, bioaccumulation and potential impacts to all species. The APVMA are yet to make a decision in regard to this application.
- The NSW EPA's role is to ensure that the LHIB complies with the APVMA approval conditions. The EPA also issues a chemical distribution licence to the helicopter contractors and a pesticide use license to individual ground baiting staff. The EPA does not have a role in approving the bait application methods.
- Whilst there was no legislative requirement under NSW legislation for an Environmental Impact Statement (EIS) under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), the NSW Office of Environment and Heritage (OEH) is required to

assess the proposal prior to issuing a licence under section 91 of the NSW *Threatened Species Conservation Act 1995*, to capture and house LH Woodhens and LHI Currawongs in a captive management facility on LHI. OEH are yet to make a decision in regard to this application.

- Approval for helicopter operation as part of the rodent eradication program is also required from the Commonwealth Civil Aviation Safety Authority.

Listed threatened species and ecological communities

13. The proposed action was found to have a likely significant impact on the following EPBC Act listed threatened species and ecological communities:

    - Lord Howe Woodhen (*Gallirallus sylvestris)* (taxonomic classification updated to *Hypotaenidia sylvestris* subsequently) (Vulnerable)
    - Lord Howe Island Currawongs (*Strepera graculina crissali*) (Vulnerable)
    - Magnificent Helicarionid Land Snail (*Gudeoconcha sophiae magnifica ms)* (Critically endangered)
    - Masters' Charopid Land Snail (*Mystivagor mastersi)* (Critically endangered)
    - Mount Lidgbird Charopid Land Snail (*Pseudocharopa ledgbirdi)* (Critically endangered)
    - Whitelegge's Land Snail *(Pseudocharopa whiteleggei)* (Critically endangered)
    - Lord Howe Flax Snail (Lord Howe Placostylus) *(Placostylus bivaricosus)* (Endangered).

14. The Department notes that the proposed action has the potential to impact listed threatened species through:

    a) mortality due to primary and/or secondary poisoning

    b) bird strikes and disturbance from helicopters

    c) long term changes to ecological relationships affecting threatened species following the eradication of rats and mice.

15. Of these impacts, primary and/or secondary poisoning is likely to be of most concern as it has the potential to result in mortality of threatened species. Brodifacoum is highly toxic to mammals, birds and aquatic species when ingested. The poison acts by inhibiting the synthesis of vitamin-K dependent clotting factors synthesised in the liver, thereby disrupting normal blood clotting processes. Brodifacoum has been shown to bio-accumulate in the organs of mammals and birds following sub-lethal exposure and has the potential to accumulate in aquatic species.

16. LH Woodhens and LHI Currawongs are both listed as Vulnerable under the EPBC Act and are at risk of being poisoned, the former from eating baits and poisoned rodents, and the latter from preying on poisoned rodents during the rodent eradication.

17. The LH Woodhen is currently being considered for up listing to endangered, however in accordance with s158A of the EPBC Act the decision maker is to disregard listing events (except delistings or downlistings) that have occurred after the controlled action decision.

18. Predation by exotic rats on Australian offshore islands is listed as a Key Threatening Process under the EPBC Act. The proponent claims that the eradication of rodents will

assist in the recovery of EPBC listed threatened species on LHI and allow the re-introduction of species that previously inhabited the Island.

19. The Department compared the ERT reports for the proposed action area, dated 20 June 2016 and 13 July 2017, to ascertain if any listed species or ecological communities or listed migratory species required further consideration in the assessment (Attachment H). Additional discussion about these matters is also available at Appendix 2 to the recommendation report.

Recommended conditions

20. The Department has recommended conditions to manage the potential impacts on EPBC Act protected species. Proposed condition one requires the person taking the action to capture and manage in captivity LH Woodhens and LHI Currawongs in accordance with Taronga Zoo's revised LHI Rodent Eradication Project Captive Management Plan (July 2017) (Attachment L).

21. Proposed condition three requires the LHIB to establish a technical advisory group (TAG) to provide technical advice to the Rodent Eradication Steering Committee and be responsible for providing advice and recommendations for the development and implementation of the Monitoring and Mitigation Plan required at condition four.

22. The membership of the TAG must be approved by the Department and must consist of at least five members. The members must include, but not be limited to, an environmental toxicologist, human toxicologist, a pelagic bird expert and an island ecologist each with relevant tertiary qualifications and suitable experience in their field of expertise.

23. The objective of condition four is to minimise impacts from aerial baiting on non-target species such as the LH Woodhen and LHI Currawong. This condition requires the LHIB to establish a Monitoring and Mitigation Plan based on advice from the TAG.

24. Condition five requires establishment of a rodent detection team. Following the decay or removal of rodent carcasses, the rodent detection team must initiate intensive rodent detection activities using detection dogs across the entire Lord Howe Island Group (LHIG) to identify and kill remaining target species.

25. Proposed condition six requires the LHIB to submit for the Minister's approval an integrated quarantine/biosecurity management plan for the airport and shipping port to prevent the reintroduction of rodents should the rodent eradication be successful. It also requires the plan to prescribe quarantine and biosecurity management protocols regarding visiting yachts, cruise ships, other vessels and shipwrecks including the long term use of rodent detection dogs.

26. Proposed condition seven requires the person taking the action to ascertain if rodents are present on the rocky islets and small islands in the LHIG prior to commencement of the action. Aerial baiting must only take place on those rocky islets and small islands where these surveys identify the presence of rodents.

27. Proposed condition eight requires the LHIB to maximise the likelihood of eradicating rodents on the LHIG, by using their best endeavours to ensure that rodent baiting is conducted on all properties and leases on the LHIG.

28. The remaining conditions in the proposed approval are standard administrative conditions.

Conclusion

29. The recommendation report concludes that if the proponent complies with the proposed approval conditions and implements the mitigation measures detailed in the PER, the action is unlikely to interfere with the recovery of the LH Woodhen and the LHI Currawong and will therefore have an acceptable impact on these species.

30. It also concludes that if the proposed approval conditions are applied, the proposed action will not result in an unacceptable impact to Matters of National Environmental Significance such as the snails found on LHI. The report notes that the proposed approval conditions for this project give the Department a large amount of post-approval oversight and confidence that any negative impacts of the action can be minimised to the greatest extent that is reasonably practical.

Migratory species

31. The ERT identified 38 listed migratory species that may occur within 2 km of the proposed action. These species include albatross, petrels, tropicbirds, shearwaters, three migratory wetland bird species and migratory marine species including whales, turtles, dolphins, sharks and rays.

32. In the assessment documentation the LHIB indicated that any potential impacts on listed migratory species are likely to be localised and temporary in nature. The LHIB also stated that only a few individuals of most of these species are likely to be on, or in the vicinity of, LHI during and immediately after baiting is carried out (i.e. before Brodifacoum in the bait pellets is immobilized and no longer available for biological uptake). In addition the diets and food consumption patterns of all but a few of these species are such that the likelihood that they will be exposed to Brodifacoum is very low.

Recommended conditions

33. The Department has recommended a range of conditions to manage the potential impacts on EPBC Act protected species as set out in the recommendation report (Attachment A). Specifically, proposed condition two requires the LHIB to locate observers at a location with clear line of sight to Masked Booby breeding grounds. Another observation team must be located in a boat viewing the southern face of Mount Gower. The observers must provide commentary to the baiting helicopter pilot via radio regarding the Masked Booby's behaviour, to supplement the pilot's observations. If species display unusual behaviour or become agitated during baiting flights, the pilot must take action to minimise impacts on Masked Boobies.

34. Proposed condition 2(e) requires aerial baiting in the vicinity of the Masked Booby breeding grounds to be undertaken at a bait dispersal altitude that minimises unusual behaviour.

Conclusion

35. The Department concluded that whilst a few individuals of a small number of listed migratory species may be at risk there will be no impact at the population level on any listed migratory species (birds, whales, turtles, dolphins, sharks, rays or migratory wetland species) likely to be on, or in the vicinity of, LHI during and immediately after rodent baiting is carried out, if the proposed approval conditions are implemented.

World Heritage

36. The LHIG was inscribed on the World Heritage List in 1982 and is an outstanding example of oceanic islands of volcanic origin containing a unique biota of plants and animals, as well as the world's most southerly true coral reef. It is an area of spectacular and scenic landscapes encapsulated within a small land area, and provides important breeding grounds for colonies of seabirds as well as significant natural habitat for the conservation of threatened species. The property meets two World Heritage natural criteria:

    (vii) - to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance,

    (x) - to contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

37. The proposed action has potential to cause one or both of these World Heritage values of the property to be lost, notably altered or diminished. The Statement of Outstanding Universal Value for the LHIG is at Attachment M for your consideration.

38. Line advice from the Heritage Division identified that there is potential for adverse impacts to world heritage values of the property from:

    - LH Woodhens - at risk of dying from primary poisoning (direct consumption of bait pellets) and secondary poisoning (consumption of poisoned rodents and birds).
    - LHI Currawongs - are unlikely to eat bait pellets but are at risking of dying as a result of secondary poisoning by eating poisoned rodents.

Recommended conditions

39. As outlined in the paragraphs above and the recommendation report (Attachment A), the Department has recommended conditions to manage the potential impacts on the LH Woodhen, LHI Currawong, listed migratory species and the general biodiversity of the LHIG. The Department considers the entire suite of recommended conditions will contribute to the preservation and ultimate enhancement of the World Heritage values of the LHIG.

Conclusion

40. The Department concludes that if the proposed action is undertaken in accordance with the proposed approval conditions, impacts on World Heritage values will be acceptable.

National Heritage

41. LHIG is a National Heritage Place, gazetted on 21 May 2007 in recognition of its natural heritage significance in that it met four of the possible nine criteria as listed in the Commonwealth of Australia Gazette No. S 99, 21 May 2007 (Attachment N).

42. For the purpose of this assessment World Heritage values are used as a surrogate for the property's National Heritage Values. Potential impacts are therefore discussed in terms of the property's Outstanding Universal Value rather than its National Heritage Values.

Recommended conditions

43. As outlined above regarding World Heritage, the Department has recommended conditions to manage the potential impacts on the LH Woodhen, LHI Currawong, listed migratory species and the general biodiversity of the LHIG. The Department considers the entire suite

of recommended conditions will contribute to the preservation and ultimate enhancement of the property's National Heritage Values.

Conclusion

44. The Department concludes, that if the proposed action is undertaken in accordance with the proposed approval conditions, impacts on the LHIG National Heritage Values will be acceptable.

Legal considerations

45. In making the proposed decision on whether or not to approve the proposal, and what conditions to attach, you are required to consider a range of mandatory considerations under the EPBC Act. To guide you in making this decision, the Department has prepared the recommendation report at Attachment A which identifies:

- The matters which you must and may consider in making your proposed decision on whether or not to approve the proposed action, including the likely impacts of the proposed action for the purpose of each controlling provision, principles of ecologically sustainable development, and economic and social matters; and
- The Department's analysis and conclusions in respect of these matters and recommended proposed decision.

EPBC Act Relevant Documents

Conservation advices

46. In accordance with section 139(2) you must have regard to any approved conservation advice for a relevant (significantly impacted) listed threatened species or ecological community.

47. The approved conservation advices relevant to this proposed action at Attachment J are for the species: *Gudeoconcha sophiae magnifica ms* (a snail), *Mystivagor mastersi*, *Pseudocharopa lidgbirdi*, and *Pseudocharopa whiteleggei*. There is not an approved conservation advice for the LH Woodhen, LHI Currawong or LH Flax Snail.

Recovery Plans and Threat Abatement Plans

48. In accordance with section 139(1)(b) in deciding whether or not to approve for the purposes of a subsection of section 18 or section 18A the taking of an action, and what conditions to attach to such an approval, you must not act inconsistently with a recovery plan or threat abatement plan. Recovery plans and threat abatement plans for listed threatened species likely to be significantly impacted by the proposed action are at Attachments F and G for your consideration.

49. In deciding whether or not to approve for the purposes of a subsection of section 18 or section 18A the taking of an action, and what conditions to attach to such an approval, you must not act inconsistently with a recovery plan or threat abatement plan (TAP). The Department has considered all relevant Recovery Plans and TAPs and is of the view that approval of this action would not be inconsistent with the above obligations.

Wildlife Conservation Plan for Migratory Shorebirds

50. Section 286 of the EPBC Act states a Commonwealth Agency must take all reasonable steps to act in accordance with a wildlife conservation plan. The Wildlife Conservation Plan

for Migratory Shorebirds August 2015 (Attachment Q), is currently in place under the EPBC Act. The Wildlife Conservation Plan includes 35 species of migratory shorebird that regularly visit Australia. The Plan is relevant to the majority of the migratory shorebirds potentially impacted by the proposed action.

51. The Department considers that the proposed action is unlikely to be inconsistent with the Wildlife Conservation Plan for Migratory Shorebirds provided that LHIB complies with the proposed approval conditions.

Heritage Management Plans

52. In deciding whether or not to approve, for the purposes of section 12 or 15A, the taking of an action and what conditions to attach to such an approval, you must not act inconsistently with plan that has been prepared for the management of a declared World Heritage property. In deciding whether or not to approve for the purposes of section 15B or 15C the taking of an action, and what conditions to attach to such an approval, you must not act inconsistently with a plan that has been prepared for the management of a National Heritage place.

    The Department considers that approval of the proposed action with the proposed conditions attached is not inconsistent with the World Heritage management principles nor the Strategic Plan for the LHIG World Heritage Property (a management plan that was prepared under section 321 of the EPBC Act) Attachment P to this brief and also available at http://www.lhib.nsw.gov.au/sites/lordhowe/files/public/images/documents/lhib/Tourism/lhi%20whp%20draft%20strategic%20plan%20-%20final%20draft%2014%20october%202010.pdf

53. The Strategic Plan for the LHIG World Heritage Property provides a ten year framework for consistent and coordinated management of the LHIG World Heritage Property by the LHIB and the various NSW and Commonwealth government agencies with responsibilities in the area. It is intended to ensure that day-to-day management of the Property complies with Australia's obligations under the World Heritage Convention to protect, conserve, rehabilitate, present and transmit World Heritage values. The Plan is also based on the Australian World Heritage Management Principles that were agreed to by the Commonwealth, State and Territory Governments.

54. The Department considers that likely impacts on the values of the World Heritage Property will be avoided and mitigated by the person taking the action to a reasonable degree under the proposed conditions. Approving the proposed action subject to the proposed conditions would therefore not be inconsistent with the management plan.

Bioregional Plans

55. In accordance with section 176(5), you must have regard to a bioregional plan in making any decision under the Act to which the plan is relevant. The Department has had regard to the Temperate East Marine Bioregional Plan (TEMBP) (which includes waters surrounding LHI) in conducting the environmental assessment of the proposed rodent eradication project and in drafting the recommendation report and the proposed approval conditions. The Temperate East Marine Bioregional Plan is provided at Attachment O for your consideration.

56. The proposed action is unlikely to be inconsistent with the TEMBP provided that LHIB complies with the proposed approval conditions.

Public submissions on assessment documents

Number	128	For	118	Against	10	Not specified	0

57. 128 public submissions were received from individuals, community groups, research institutions, universities, government agencies, non-government authorities, local businesses, and other organisations. The LHIB collated, analysed and responded to the issues in a submissions report that was provided to the Department.

58. The issues raised in the submissions are discussed on pages 9-12 in the recommendation report.

Social and economic considerations

59. The NSW Chief Scientist and Engineer conducted a review of the potential impacts of the proposal on human health. The *Review on the Human Health Risk Assessment (HRAA) for the Lord Howe Island's proposed Rodent Eradication Program* is Appendix 4 to the recommendation report. The assessment looked at potential exposure pathways of Brodifacoum to humans, including through soil, air (dust), sediment, surface water, tank water and food sources such as seafood and locally grown fruits and vegetables. Potential risks from these pathways were then considered for those most sensitive which included toddlers, school children, pregnant women and adults spending large amounts of time outside.

60. A quantitative risk assessment of these exposure pathways and population groups concluded that exposure to Brodifacoum from all potential sources is below those likely to result in adverse health effects. The HRAA also assessed potential exposure due to ingestion of pellets and found that ingestion of one or two pellets by a child is unlikely to result in observable anti-coagulant effects.

61. The Department's assessment of human health concerns is at Appendix 5 to the recommendation report. This assessment was undertaken prior to the release of the review at Appendix 4.

62. In 2012, the Australian Commonwealth and NSW State Governments announced a total of $9 million in funding for the planning and implementation of the proposed action. $4.5 million from the former Caring for Our Country Program (now National Landcare program) and $4,542,442 from the NSW Environment Trust.

63. According to the proponent, these ecological benefits will be in the public interest, benefitting the tourism industry through protection and enhancement of World Heritage values and improved visitor experience, increasing productivity for the Kentia Palm export industry (as rats predate on Kentia Palm seeds and seedlings) and eliminating rodent impacts on human health and public amenity (hygiene issues and spoiling of food stuffs).

64. Further information on economic and social matters is discussed at pages 29-30 of the recommendation report.

Proposed conditions

65. In accordance with the *Outcomes-based Conditions Policy (2016)*, the Department consulted the Proponent about imposing outcomes-based conditions.

66. There is limited scope to draft outcomes based conditions for a project that involves the eradication of rodents on a small island with a permanent human population. In this case,

the best environmental outcomes are likely to be achieved by imposing both outcomes based and prescriptive conditions that minimise the chance of serious environmental impacts.

67. The environmental record of the person taking the action gives confidence that they will fully implement all the conditions. The proponent has some experience in EPBC Act assessment processes and works with environmental approval processes on a regular basis. Therefore the Department is confident the required outcomes for protected matters will be achieved.

68. The Department considers that the proponent will be able to implement the draft conditions of approval. The environmental history of the proponent is discussed at Attachment A.

69. Compliance and Enforcement Branch provided comments on the proposed conditions (Attachment E). Their comments have been considered and the proposed approval conditions have been amended accordingly.

Inviting comments on the proposed decision

70. Before you make the decision on whether or not to approve the proposed action, and what conditions (if any) to attach to an approval, you are required to:

    - Inform the proponent and any other Commonwealth Minister or Ministers whom you believe have administrative responsibilities relating to the proposed action, of the decision which you propose to make.

    - Invite the proponent and the Commonwealth Minister(s) to comment on your proposed decision within 10 business days (subsections 131(1) and 131AA(1) of the EPBC Act).

71. A draft letter to the proponent inviting comment on your proposed decision is at Attachment D for signature. No Commonwealth Ministers have been identified as having administrative responsibilities relating to the proposed action.

Inviting comments from the public on your proposed decision

72. Under section 131A of the EPBC Act, you may invite public comment on your proposed decision and any conditions that you are proposing to attach to the approval.

73. Consultation has been carried out through the PER assessment process. As such, the Department does not recommend that you publish your proposed decision and any conditions you are proposing to attach to the approval, for a further public comment period, as it is unlikely to elicit views or information that has not already been thoroughly considered in the assessment.

Consultation

74. Chemicals and Biotechnology Assessments Section provided advice to the APVMA to assist APVMA's consideration of LHIB's application for a Minor Use Permit. This advice and analysis of this advice against matters of NES is provided at Attachment R.

75. This brief and the proposed conditions were developed in consultation with the Department's Compliance and Enforcement Branch. The Wildlife, Heritage and Marine Division have also been consulted on relevant recovery plans, threat abatement plans and approved conservation advices (Attachment I).

76. In June 2017, the Department engaged Associate Professor David Phalen from the University of Sydney to review Taronga Zoo's Captive Management Plan (CMP). The review

and revised CMP are at Attachment L, the Department's assessment of the review is at Appendix 3 to the recommendation report. Amongst other matters, the review recommended that LH Woodhens and LHI Currawongs should not be housed offshore because the opportunities for insect borne infectious (particularly parasitic) diseases are too high and animals from offshore facilities could not safely be returned to LHI.

Conclusion

77. The Department considers that impacts to matters of national environmental significance will not be unacceptable provided the action is undertaken in accordance with the recommended approval conditions at Attachment B.

78. Once the time period for the submission of comments on your proposed decision has ended, the Department will provide you with a further brief for a final decision. The brief will include any comments received on your proposed decision.

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Director
Northern NSW Assessments Section
s22
3 August 2017

s22
Northern NSW Assessments Section
Ph: s22

ATTACHMENTS

A: Recommendation report

B: Proposed approval decision

C: Finalised PER

D: Letter to LHIB

E: Post Approvals and Monitoring and Assurance Sections comments

F: Recovery plans

G: Threat abatement plans

H: Proposed Approval Decision ERT Review

I: WHAM advice

J: Conservation advices

K: The referral

L: Phalen Review and revised Captive Management Plan

M: LHIG: Statement of Outstanding Universal Value

N: National Heritage listing gazettal notice

O: Marine Bioregional Plan for the Temperate East Marine Region

P: Strategic Plan for the LHIG World Heritage Property

Q: Wildlife Conservation Plan for Migratory Shorebirds

R: Analysis of advice to APVMA from Chemicals Section

Approval

Lord Howe Island Rodent Eradication Project, NSW (EPBC 2016/7703)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted	Lord Howe Island Board
proponent's ABN (if applicable)	33 280 968 043
proposed action	To eradicate introduced rodents on Lord Howe Island and its associated islands and rocky islets and to capture and house Lord Howe Woodhens (*Hypotaenidia sylvestris*) and Lord Howe Island Currawongs (*Strepera graculina crissali*) (see EPBC Act referral 2016/7703).

Approval decision

Controlling Provision	Decision
World Heritage properties (sections 12 & 15A)	Approved
National Heritage places (sections 15B & 15C)	Approved
Listed threatened species and communities (sections 18 & 18A)	Approved
Listed migratory species (sections 20 & 20A)	Approved

conditions of approval

This approval is subject to the conditions specified below.

expiry date of approval

This approval has effect until 31 December 2022.

Decision-maker	
name and position	Kim Farrant Assistant Secretary Assessments (NSW, ACT) and Fuel Branch
Signature	DO NOT SIGN
date of decision	DO NOT DATE

Conditions attached to the approval

1. To avoid and minimise impacts on the **Lord Howe Island World Heritage Area and National Heritage place** (as identified at Schedule 1) and listed threatened species and communities and listed migratory species, the action must be undertaken in accordance with the final Lord Howe *Island Rodent Eradication Public Environment Report* dated 10 February 2017.

   The person taking the action must capture and manage in captivity Lord Howe Woodhens and Lord Howe Island Currawongs in accordance with Taronga Zoo's revised Lord Howe Island Rodent Eradication Project Captive Management Plan (July 2017).

2. To avoid, minimise and mitigate impacts from the aerial baiting on **non-target species** and the environment of the **Lord Howe Island Group**:

(a) aerial baiting can only be undertaken between 1 June 2018 and 30 August 2018 or 1 June 2019 and 30 August 2019;

(b) aerial baiting in the southern mountains must not occur after midday each baiting day to minimise the risk of helicopters colliding with Providence Petrels and Masked Boobies;

(c) during aerial baiting, **observers** must be at a location with clear line of sight to the Providence Petrel (*Pterodroma solandri*) and Masked Booby (*Sula dactylatra*) breeding grounds (as identified at Schedule 2). Trained **observers** must also be located within the boat observation zone (as identified at Schedule 2) and provide commentary to the helicopter pilot via radio regarding **unusual behaviour** of Petrels and Boobies to supplement the pilot's observations;

(d) should either species display **unusual behaviour** or become agitated during baiting flights, the pilot must take action to minimise impacts on Providence Petrels and Masked Boobies;

(e) aerial baiting in the vicinity of the Providence Petrel and Masked Booby breeding grounds must be undertaken at a bait dispersal altitude that minimises **unusual behaviour** by Providence Petrels and Masked Boobies;

(f) handling, transport, clean-up and disposal of the pesticide **Brodifacoum** must be undertaken in accordance with the Pestoff 20R label requirements and the Australian Pesticides and Veterinary Medicines Authority minor use permit.

3. Within one month of the date of this approval, the person taking the action must submit to the **Department** draft terms of reference for the **Minister's** approval for the establishment of a **Technical Advisory Group (TAG).**

   Baiting must not commence until the membership of the **TAG** is approved by the **Department.** The **TAG** must consist of at least five members. The members must include, but not be limited to, an environmental toxicologist, human toxicologist, a pelagic bird expert and an island ecologist each with relevant tertiary qualifications and suitable experience in their field of expertise.

   The TAG will provide technical advice to the **Rodent Eradication Steering Committee** and be responsible for providing advice and recommendations for the development and implementation of the Monitoring and Mitigation Plan required at Condition 4.

4. To minimise impacts from aerial baiting on **non-target species** and the environment of the **Lord Howe Island Group**, the person taking the action must establish a **Monitoring and Mitigation Plan** based on advice from the **TAG**. The **Monitoring and Mitigation Plan** must be approved by the **Department** prior to **commencement** of aerial baiting on the **Lord Howe Island Group**. The **Monitoring and Mitigation Plan** must:

   (a) describe a strategy to monitor for the presence of **target species** on **rocky islets** prior to commencing aerial baiting (detailed at Condition 7);

   (b) provide for the monitoring of mortality and cause of death of **non-target species**, for a period of at least 4 months after the **commencement** of aerial baiting;

   (c) establish a **Mitigation Team** Manager responsible for collection of qualitative and quantitative information on **non-target species** mortality, documenting and reporting this information and using this information to coordinate and adapt carcass search and removal operations. The **Mitigation Team** Manager must provide weekly reports to the **Department** and the **TAG** regarding **non-target species** mortality and efficacy of carcass search and removal operations. More regular reports must be provided if requested by the **TAG**. The **Mitigation Team** Manager must continuously undertake these tasks for a period of at least 4 months after the **commencement** of aerial baiting;

   (d) include protocols and impact thresholds to stop any further baiting where the **TAG** determines that unacceptable impacts on **non-target species** are observed between the first and second aerial baiting events;

   (e) include protocols to ensure systematic, targeted and effective carcass search, collection and disposal in the vicinity of the **Settlement** and other accessible areas; (to avoid secondary poisoning of **non-target species**, but recognising that eradication depends on sufficient carcasses remaining uncollected) and specify appropriate resourcing;

   (f) include clear contingency planning and adaptive management measures where mortality of **non-target species** is recorded, with the aim of reducing further mortalities;

   (g) provide for ongoing whole-of-island census, and breeding success monitoring of Lord Howe Woodhens, Lord Howe Island Currawongs, Providence Petrel and Masked Booby populations for a period of at least 5 years following completion of aerial baiting with particular focus on Lord Howe Woodhens and Lord Howe Island Currawongs following release from captivity.

A report summarising the monitoring results collected on **non-target species** mortality in accordance with Condition 4(b&c) must be provided to the **Department** within 5 months following the completion of the final aerial baiting event.

The results of the whole-of-island census and breeding success monitoring conducted in accordance with Condition 4(g) must be provided to the **Department** annually until otherwise advised.

5. To ensure the success of the rodent eradication program. The person taking the action must establish a rodent detection team. Following the decay or removal of rodent carcasses, and no more than 30 days after the second baiting event, the rodent detection team must initiate intensive rodent detection activities across the entire **Lord Howe Island Group** to identify and kill remaining **target species,** as detailed in section 2.6 Rodent Detection Monitoring in the **PER**.

   To avoid and mitigate impacts from rodent detection operations on **non-target species** and the environment of **Lord Howe Island Group**:

   (a) all detecting team members must be trained in the location of the colonies of EPBC Act listed bird species and methods for minimising impacts on these colonies, vegetation and soils;

   (b) all dogs used to aid detection of rodent species on the **Lord Howe Island Group** must have previously undergone project-specific training and be currently accredited by the Canine Detection Certification Council after passing the Council's practical accreditation test, prior to detection operations starting;

   (c) each handler must have a Statement of Attainment in Dog Training from the Certificate IV, Companion Animal Care and Management Course (ACM40310) from TAFE NSW or equivalent as approved in advance by the **Department**;

   (d) when rodents are detected appropriate action must be taken to ensure rodents are eradicated at that location;

   (e) rodent detection using dogs must begin 30 days after the last aerial baiting event and occur continuously across the island until no rodents are detected.

6. The person taking the action must submit an **integrated quarantine/biosecurity management plan** (**the plan**) for the airport and shipping port to prevent the reintroduction of rodents to the **Lord Howe Island Group** for the **Minister's** approval prior to **commencement** of the action.

   The plan must prescribe quarantine/biosecurity management protocols regarding visiting yachts, cruise ships, other vessels and shipwrecks and maintaining rodent free status on islets including the long-term use of rodent detection dogs.

   In developing and implementing **the plan** the person taking the action must seek and act on advice and recommendations from an independent biosecurity expert.

7. The person taking the action must ascertain if rodents are present on the **rocky islets** and small islands in the **Lord Howe Island Group** prior to **commencement** of the action.

   The results of these surveys are to be provided to the **Department** prior to commencement of the action.

   Aerial baiting must only take place on those rocky islets and small islands where these surveys identify the presence of rodents.

8. To maximise the likelihood of eradicating rodents on the **Lord Howe Island Group**, the person taking the action must use their best endeavours to ensure that rodent baiting is conducted on all properties and leases on the **Lord Howe Island Group**.

9. Within 30 days after the **commencement** of the action, the person taking the action must advise the **Department** in writing of the actual date of **commencement**.

10. The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement plans required by this approval, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **Department's** website. The results of audits may also be publicised through the general media.

11. Upon the direction of the **Minister**, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the **Minister**. The independent auditor must be approved by the **Minister** prior to the commencement of the audit. Audit criteria must be agreed to by the **Minister** and the audit report must address the criteria to the satisfaction of the **Minister**.

12. If, any time after 5 years from the date of this approval, the person taking the action has not substantially commenced the action, then the person taking the action must not substantially commence the action without the written agreement of the **Minister.**

Definitions

Brodifacoum baits means either 5.5 mm or 10 mm cereal-based bait pellets of Pestoff 20R containing 0.02g/kg (20 parts per million) of the toxin Brodifacoum.

Commencement (where bolded in the text) means the commencement of the aerial distribution of Brodifacoum baits across the LHIG using helicopters.

Department means the Australian Government Department responsible for administering the *Environment Protection and Biodiversity Conservation Act 1999.*

Lord Howe Island World Heritage Area and National Heritage place means the area identified at Schedule 1 of the approval.

Integrated quarantine/biosecurity management plan means a quarantine/biosecurity management plan for the airport and wharf to prevent the reintroduction of rodents should the rodent eradication be successful.

Lord Howe Island Group means Lord Howe Island and its associated islands and **rocky islets** (excluding Balls Pyramid).

Minister means the Australian Government Minister responsible for administering the *Environment Protection and Biodiversity Conservation Act 1999.*

Mitigation Team means the team, including the **Mitigation Team** Manager, responsible for implementing relevant mitigation and monitoring activities on LHI under the **Monitoring and Mitigation Plan.**

Monitoring and Mitigation Plan means the plan to be prepared by the proponent that will guide mitigation and monitoring activities on the **Lord Howe Island Group** with the aim of minimising **non-target species** mortality from the aerial baiting as well as monitoring **non-target species** mortality, impacts on populations and population responses.

Non-target species means native flora and fauna species on the **Lord Howe Island Group**.

Observers means bird experts approved by the Lord Howe Island Board (LHIB) as being suitably qualified and/or experienced to observe and interpret the response of birds to the helicopter baiting flights.

PER means the final Public Environment Report dated 10 February 2017.

Rocky islets means any body of land of the **Lord Howe Island Group** excluding Lord Howe Island and Balls Pyramid that has permanent land above the mean high water mark and that can be safely accessed by a suitably trained person (boat or helicopter) for the purpose of setting and retrieving presence and absence monitoring equipment for **target species**.

Rodent Eradication Steering Committee means the Rodent Eradication Steering Committee established in October 2012, consisting of one representative from each of the following organisations, the Commonwealth Department of the Environment and Energy and the NSW Office of Environment and Heritage. The CEO of the LHIB, an elected LHIB member and a rodent eradication expert.

Settlement means the area identified at Schedule 1 as the Settlement.

Target species means *Rattus rattus*, *Mus musculus* and *Tyto novaehollandiae castanops* (the Masked Owl Tasmanian population).

Technical Advisory Group means a group of experts with operational and ecological experience, independent of the person taking the action to provide advice and recommendations on the mitigation and monitoring of **non-target species** mortality and recovery.

Unusual behaviour in relation to Providence Petrels and Masked Boobies means abnormal behaviour relative to an agreed baseline as defined by the pelagic seabird expert on the **Technical Advisory Group**.

North Rock

ADMIRALTY ISLANDS

Roach Island

Sugarloaf

Fishy Point

Passage

THE LAGOON

Transit Hill

Blackburn (Rabbit) Island

Mutton Bird Island

Intermediate Hill

LORD HOWE ISLAND

East Point

Mount Lidgbird

Red Point

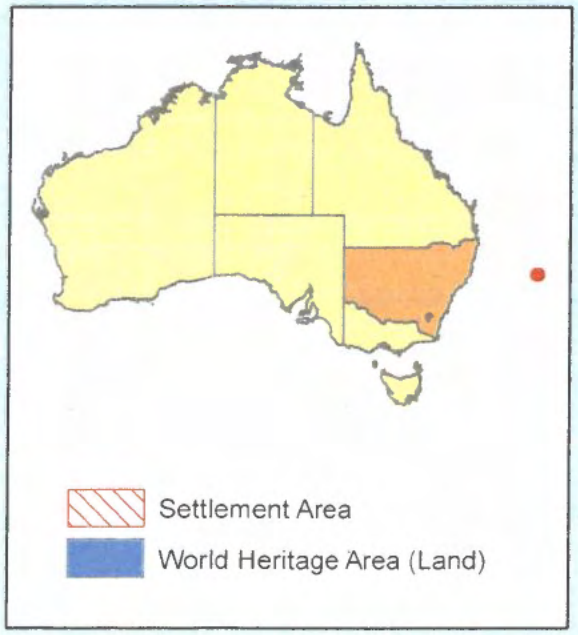
Mount Gower

King Point

Gower Island

SOUTH PACIFIC OCEAN

TASMAN SEA



Balls Pyramid

Observatory Rock

Schedule 1

Lord Howe Island Group World Heritage Area and National Heritage Place

N

Scale 1:130,000

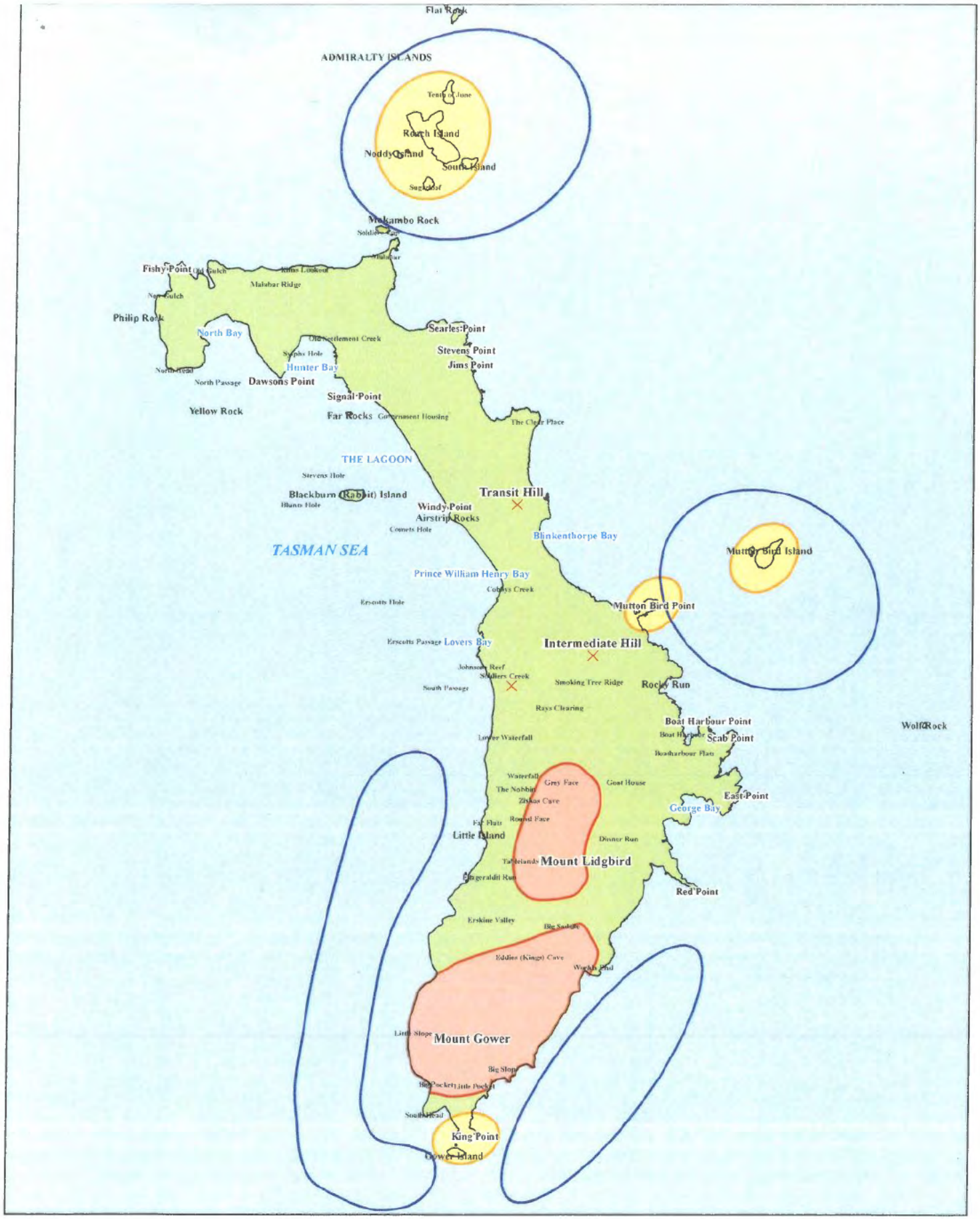
0 500 1,000 2,000 3,000 4,000 5,000

Meters

Geocentric Datum of Australia 1994 (GDA94)

Map Grid of Australia 1994 (MGA94) : Zone 57

Lord Howe



N

Scale 1:55,000

0 250 500 1,000 1,500

Meters

Geocentric Datum of Australia 1994 (GDA94)
Map Grid of Australia 1994 (MGA94) - Zone 57
(MGA94 is a Universal Transverse Mercator Projection)

- ObservationPoints
- Boat Observation Zone
- Masked Booby Breeding Site
- Providence Petrel Breeding Grounds

Lord Howe Island

Schedule 2
Location of Providence Petrel and Masked Booby breeding grounds

Lord Howe

Date Created 23/06/2017

Lord Howe Island Rodent Eradication Project

Public Environment Report

EPBC 2016/7703

"This project is jointly funded through the Lord Howe Island Board, the Australian Government's National Landcare Programme and the New South Wales Government's Environmental Trust."

Quality Information

Document	Lord Howe Island Rodent Eradication Project Public Environment Report EPBC 2016/7703
Date	21 December 2016

Revision History

Revision	Revision Date	Details	Authors	Authorised	
				Name/Position	Signature
00	7 October 2016	Draft for DOEE adequacy review			
01	19 October 2016	Final Draft for Public Comment	See Appendix C		
02	21 December 2016	Final addressing Public submissions	See Appendix C	Andrew Walsh Project Manager Rodent Eradication LHIB	

Requests for information or comments regarding this Report are best directed to:

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This Plan should be cited as follows:

Lord Howe Island Board, (2016). Lord Howe Island Rodent Eradication Project – Public Environment Report, Lord Howe Island Board, Lord Howe Island.

December 2016

Table of Contents

List of Figures

List of Tables

Executive Summary

Introduction

The Lord Howe Island Board (LHIB) is proposing to undertake the Lord Howe Island Rodent Eradication Project (LHI REP) which aims to eradicate introduced rodents: the Ship Rat (*Rattus rattus*) and the House Mouse (*Mus musculus*) from the World Heritage listed Lord Howe Island Group (LHIG).

The sub-tropical LHIG, comprised of Lord Howe Island (LHI) and its associated islands and rocky islets, is located 780 kilometres north-east of Sydney and is part of the State of New South Wales. It supports a diverse flora and fauna with a high degree of endemic species and communities and numerous threatened and migratory species.

A settlement of approximately 350 inhabitants is located in the northern section of LHI and covers about 15% of the island. The rest of the island, all outlying islands, islets and rocks are protected under the Permanent Park Preserve (PPP), which has similar status to that of a national park.

Tourism is the most significant industry and major source of income on the Island and is heavily focused around the world heritage values of both the terrestrial and marine environments. Export of the Lord Howe Kentia Palm has also been a major industry since the late 1800s.

Since their arrival on LHI, introduced rats and mice have had and continue to have a significant impact on the World Heritage, biodiversity, community and economic values of the island. Mice probably arrived on LHI by the 1860s; rats arrived in 1918 with the grounding of the SS Makabo.

Project Need and Benefits

The devastating impacts of introduced rodents on offshore islands around the world are well documented. The presence of exotic rodents on islands is one of the greatest causes of species extinction in the world. Ship rats alone are responsible for the severe decline or extinction of at least 60 vertebrate species and currently endanger more than 70 species of seabird worldwide. They suppress plants and are associated with the declines or extinctions of flightless invertebrates, ground-dwelling reptiles, land birds and burrowing seabirds. Mice have also been shown to impact on plants, invertebrates and birds.

Predation by exotic rats on Australian offshore islands of less than 1000 km2 (100,000 ha) is listed a Key Threatening Process under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

On LHI, rats are implicated in the extinction of five endemic bird species, at least 13 species of endemic invertebrates, and two plant species. Rodents are also a recognised threat to at least 13 other bird species, 2 reptiles, 51 plant species, 12 vegetation communities, and seven species of threatened invertebrates on LHI. Rodents have therefore not reached equilibrium with native species on LHI.

The LHIB currently maintain a rodent control program that aims to keep the negative effects of rodents under control, but its ongoing nature brings with it a constant financial burden and potential human health and environmental risks from ongoing presence of poison in the environment. Under the current control program, neither the rat or mouse population is being reduced to a level that reduces landscape scale ecological impacts.

Globally, eradication has become a powerful tool to prevent species extinctions and to restore damaged or degraded ecosystems. The biodiversity benefits of removing rodents from islands are well recognised and have been shown to be both significant and immediate. Benefits include:

- significant increases of seeds and seedlings of numerous plant species on islands after the eradication of various rodent species
- rapid increases in the number of ground lizards (e.g. geckos, skinks) following removal of rats – including a 30-fold increase in one case
- dramatic increases in the numbers of breeding seabirds and fledging success
- rapid increases in forest birds and invertebrates.

After completing a Feasibility Study in 2001, the LHIB has carefully considered and evaluated the eradication of rats and mice on the LHIG. Due to developments in eradication techniques during the past 20 years, particularly the refinement of aerial baiting methods, the eradication of both rats and mice on the LHIG in a single operation is now feasible and achievable. The eradication of rodents will also present an opportunity to simultaneously eradicate the introduced Masked Owl.

Eradication (rather than ongoing control) is expected to provide the following benefits:

- Removal of a key threat to many island species resulting in significant biodiversity improvement including threatened species recovery and reintroduction

- Removal of ongoing poison in the environment and associated control costs. It also removes the risk of rodent resistance to poisons
- Long term positive impacts for tourism through protection and enhancement of World Heritage values and improved visitor experience
- Increased productivity for the Kentia Palm industry
- Elimination of current health and amenity impacts from rodents.

The eradication of rodents is consistent with numerous local, state, commonwealth and international plans and obligations. Eradication of exotic rodents from high priority islands (including LHI) is the first objective in the Commonwealth *Threat Abatement Plan to Reduce the Impacts of Exotic Rodents on Biodiversity on Australian Offshore islands of Less than 100 000 Hectares*. The action is in accordance with the objects of the EPBC Act and the principles of ecologically sustainable development.

Failure to proceed with the REP will result in continuing adverse consequences to biodiversity, World Heritage and socio-economic values through:

- Ongoing impacts to biodiversity (including potential population decreases and extinctions) as a result of rodent predation and competition.
- Continuation of the current rodent control program (and the continuous presence of poison baits in the environment) essentially in perpetuity. This presents an ongoing risk of poisoning for non-target species and potential for development of rodent resistance to poison.
- Potential further degradation of World Heritage values (including endemic and threatened species) and the potential for the LHIG to be inscribed on the “World Heritage in Danger List”.
- Ongoing socio-economic impacts associated with rodents.

Project Description

The one-off eradication proposes to distribute a cereal-based bait pellet (Pestoff 20R) containing 0.02g/kg (20 parts per million) of the toxin, Brodifacoum across the LHIG (excluding Balls Pyramid). Methods of distribution will be dispersal from helicopters using an under-slung bait spreader bucket in the uninhabited parts of the island (most of the LHIG) and by a combination of hand broadcasting and the placement of bait in trays and bait stations in the settlement area. In the outdoor areas of the settlement baits will be dispersed by hand and/or placed into bait stations. In dwellings (e.g. in ceiling spaces or floor spaces) bait trays and bait stations will be used. Bait stations will also be used around pens for any remaining livestock.

The bait will be distributed at a nominal dose rate of 20 kg (12 kg + 8 kg) of bait (or 0.4 g of poison) per hectare. At this rate, a maximum of 42 tonnes of bait (containing 840 g of Brodifacoum) will be required to cover the total island group surface area of 2,100 ha. The proposal is for aerial and hand baiting to be carried out twice, the applications separated by about 14 -21 days (depending on the weather).

The baiting is planned to occur in winter (June - August) of 2017 but may extend into September if there are problems such as unfavourable weather conditions. June - August is preferred because this is the time of the year when the rodents are at their most vulnerable due to the relatively low abundance of natural food. Many of the seabird species are also absent from the island at this time of year. This is also the low season for tourists on LHI. The operation will take place in a single year, targeted for winter of 2017 (June to August) however, to allow operational flexibility and to account for unforeseen delays, approval is sought for at least a three year period, June 2017 to December 2019.

Post eradication, a rodent detection monitoring network including the use of detector dogs will be established to allow detection of any potentially surviving rodents. If the network does not detect any rodents within two years, the eradication will be declared a success.

To prevent reinvasion from rodents and to improve Biosecurity on the island more generally, the LHIB is updating the Island’s Biosecurity system concurrently with the proposed REP although upgrades will occur regardless of whether the REP goes ahead. Surveillance monitoring and rodent prevention measures will be on going post eradication as part of the island’s permanent rodent detection and prevention system.

As a result of the proposed rodent eradication, there is also an opportunity to concurrently eradicate the Masked Owl, which was introduced to LHI to controls rats in the 1920s and 1930s. Rodents currently make up the Masked Owl’s main prey base on the Island, and during the rodent eradication it is expected that most owls are likely to succumb to secondary Brodifacoum poisoning by ingestion of poisoned rodents. To avoid any remaining owls switching to a diet of solely native species in the absence of rodents, it is proposed to eradicate remaining owls via hunting or trapping before, during and after the baiting proposal.

A range of mitigation will be put in place to minimise impacts to the environment and the community. This includes captive management of at risk species (LH Woodhen and LH Pied Currawong), an extensive suite of environmental monitoring and monitoring for non-target species impact.

A Biodiversity Benefits monitoring program associated with the rodent eradication project has been established to assess and document the biodiversity benefits of removing rats and mice from the World Heritage Lord Howe Island. The program provides a measure of the return on investment. It also allows an evaluation of status of species prior to and following the eradication so any impacts of the eradication of rodents on key non-target species can be tracked during their recovery. Over time, results from the various monitoring components can be integrated to identify and explore changes to ecosystem processes

The REP is currently in the planning and approvals stage. The final decision by the LHIB to proceed with the eradication or not will be informed by the technical, social and financial feasibility. This will include the status of approvals, level of community support and recommendations from the Independent Human Health Risk Assessment.

Alternatives Considered

Systematic techniques for eradicating rodents from islands were first developed in New Zealand in the 1980s. Since then techniques have improved significantly, and eradications are now being attempted and achieved on increasingly larger and more complex islands, including those with human populations.

Aerial broadcasting of bait using helicopters has become the standard method used in eradications, particularly those on large islands. This method has proven to be a more reliable and more cost-effective option than the previous ground based techniques. The majority of successful eradications on large islands have used aerial baiting with Brodifacoum in cereal pellets. Rat eradications on islands over the period 1997- 2014 using this bait and method have been 98% successful (37 of 39 attempts). The success rate for mouse eradications on NZ islands using aerially applied Pestoff 20R with 20ppm Brodifacoum (the bait to be used on Lord Howe) from 1997 - 2014 is 100% or 11 from 11 attempts.

A range of alternatives for eradicating rodents were considered for LHI including alternate techniques and mortality agents. Many were considered to have fatal flaws and were unsuitable for use for eradication on LHI either because the technique was not suited to the terrain or size of the island, they did not ensure that all individuals would be killed or they were too experimental. The method chosen proposes to distribute highly palatable bait pellets containing Brodifacoum using a combination of aerial and hand broadcasting together with bait stations and trays. This approach will maximise chances of success whilst minimising risks to non-target species and the community and was considered the only method capable of removing every rat and mouse on LHI. Whilst Brodifacoum is the preferred toxicant because it is has been well tested and proven successful in numerous rodent eradication projects throughout the world. The eradication techniques proposed for LHI are neither novel nor experimental. They are the culmination of more than 30 years of development and implementation involving more than 380 successful rodent eradications worldwide.

Matters of National Environmental Significance

A wide range of threatened and migratory species listed under the EPBC Act either reside on LHI or are considered regular or irregular visitors to the LHIG.

Threatened species occurring or with the potential to occur in the project area include 23 birds, 5 invertebrates, 2 land reptiles, 6 plant species, 1 fish, 1 shark, 4 marine mammals and 5 marine reptiles.

Listed migratory species includes 68 bird species, nine marine mammal species, five turtle species and four shark and ray species.

Many of these species are considered irregular visitors or vagrants that are present in very low numbers or not present at all during the proposed eradication period. Many of the listed threatened or migratory seabirds have only been observed at sea in the waters of the LHIG.

The World Heritage and National Heritage values of the property are also considered matters of National Environmental Significance (NES).

Potential Impacts to Matters of National Environmental Significance

The potential impacts arising from the proposed REP were assessed. These included:

- Pollution of soil, air or water
- Bioaccumulation
- Mortality of non-target species due to primary poisoning from consumption of bait pellets
- Mortality of non-target species due to secondary poisoning from consumption of poisoned rodents, fish or invertebrates

- Bird strikes and collisions from helicopter activity
- Disturbance from helicopter activity
- Potential impacts as a result of handling and captive management during the captive management program
- Long term changes to ecological relationships affecting threatened species following the eradication of rats, mice and owls.

Potential impacts to Air, Soil or Water and Bioaccumulation

Based on evidence from similar eradications on other islands, the physical and chemical properties of the bait and toxin and the relatively small quantity used in a one-off eradication, the risk of pollution impacts to soil, air or water were considered to be very low. Similarly whilst bioaccumulation could occur, the risk of impacts was considered low. In the unlikely event that impacts occurred they would be highly localised and short term in nature

Potential Impacts to Threatened Bird Species

Risks to non-target bird species during an eradication programme are a function of the species present on the island group and their behaviour, susceptibility of those species present to the poison, composition and delivery method of the bait and the probability of exposure to the poison either directly or indirectly.

As many of the threatened birds species are either not present during the eradication period, not present in significant numbers or feed exclusively at sea where they will not be exposed to either primary or secondary poisoning or helicopters, the risk to many species was considered negligible.

The REP poses a significant risk to the LH Pied Currawong (LHPC) from secondary poisoning and the LH Woodhen (LHW) from primary and secondary poisoning. To mitigate potential impacts to these species, large numbers: up to 80% of the LHW population and 50-60% of the LHPC population will be taken into captivity during the eradication period. Both species have previously been held in captivity before with no observable ill effects.

In the absence of mitigation, a significant impact to woodhens is likely to occur from the LHI REP. However with the mitigation proposed in place, it is considered unlikely that either long term population decrease or major disruption to a breeding cycle will occur. Impacts are likely to be temporary. It is therefore considered unlikely that the REP will have a significant impact on woodhens

In the absence of mitigation, a significant impact to LHPC is likely to occur from the LHI REP. With the proposed mitigation in place, it is considered possible that the REP will still have a significant impact on LHPC through the temporary disruption of a breeding cycle, although it is unlikely that a long-term population decrease will occur. Any potential impacts will be temporary.

Potential Impacts to Threatened Marine Species

Potential impacts to EPBC Listed threatened marine species are limited to accidental bait entry into the water (either through aerial distribution or a spill) leading to pollution of water, primary or secondary poisoning.

Pollution of marine water resulting in impacts to threatened marine species is considered extremely unlikely considering the minimal amount of bait likely to enter the water, the low solubility of Brodifacoum and the huge dilution factor.

Black Cod and Great White Sharks are unlikely to have sufficient exposure to the bait to have a significant impact at a population level.

There is no realistic pathway by which threatened marine mammals can be significantly exposed to rodenticide at the LHIG as a result of the proposed aerial baiting with Pestoff® 20R. The combination of Brodifacoum being practically insoluble in water, the infinitesimal amount of Brodifacoum that may land in the sea and the huge dilution factor preclude any significant effect upon marine mammals. Marine mammal species are also rare visitors to LHI waters, passing through on the annual migration and are therefore unlikely to encounter the bait.

Marine reptiles are also very unlikely to have significant exposure to bait directly or prey items that have ingested rodenticides.

Potential Impacts to Threatened Invertebrates

The only potential to impact on EPBC listed terrestrial invertebrates (all snails) is through direct consumption of bait (primary poisoning). From other studies around the world, most snail species studied have been shown to either not consume bait or have little mortality associated with bait consumption as they have different blood clotting systems to mammals and birds.

Negligible risk posed to *Placostylus bivaricosus* by the proposed eradication operation as the probability of a significant proportion of the Placostylus bivaricosus population consuming and dying from toxic baits in the wild is extremely unlikely. Three of the critically endangered land snails, minute to small leaf litter-dwellers with small activity ranges (*Mystivagor mastersi*, *Peudocharopa ledgbirdi*, *P. whiteleggei*) were considered at moderate risk

of exposure to bait placed (i.e. some but not all individuals may get in contact with baits). Susceptibility to brodifacoum was unknown. The fourth species *Gudeconcha sophiae magnifica*, a large ground-dwelling species with large activity ranges was considered to be at high risk of exposure to bait.

The one endangered snail (*Placostylus bivaricosus)* and four species of critically endangered land snails on LHI: Masters' charopid land snail, Mount Lidgbird charopid land snail, Whitelegge's land snail and *G. sophiae magnifica* are highly threatened by rat predation and it is likely that if rats are not removed these species will become extinct; some may already be extinct. The extreme rarity of these species precludes any testing of their susceptibility to Brodifacoum, or capturing the species to safeguard them in captivity. Whilst it is possible that some individuals of these species may be at risk of poisoning, this possibility must be weighed up against the threats associated with not removing rodents including almost certainty that predation by rats will result in the extinction of these species. Therefore a significant impact to these species is not expected from the REP when compared to not proceeding with the eradication.

Potential Impact to Threatened Reptiles

There are two native species of terrestrial reptiles on LHI, the LHI Skink *Oligosoma lichenigera* and the LHI Gecko *Christinus guentheri*, both listed a Vulnerable under the EPBC Act. Both species occur on the offshore islets around LHI but were once widespread across the main island. Predation by introduced rodents is regarded as the major threat to these species. REP activities with the potential to impact on EPBC listed terrestrial reptiles include distribution of the bait through primary poisoning (direct consumption) and secondary poisoning (consumption of poisoned invertebrates). Each species is considered to be at low risk of poisoning, and both are likely to substantially increase in abundance following the removal of rodents.

Potential Impacts to Threatened Terrestrial Plants

REP activities with the potential to impact on threatened plants are: works associated with building the captive management facility and bait distribution (through potential uptake of Brodifacoum by plants).

The captive management facility construction will occur through modification of existing greenhouses structures at the nursery site. If needed, previously cleared land at the nursery within the lowland settlement area will be used. No clearing of land is proposed.

Brodifacoum is not herbicidal, is highly insoluble and binds strongly to soil particles, therefore it is not likely to be transported through soils and taken up by the roots of plants into plant tissues. There is no identified chemical process that would allow Brodifacoum to impact on plants. No evidence of Brodifacoum uptake or impact to any plants species was identified in the available literature.

Therefore no impact is expected to listed plant species. Conversely removal of rodents is expected to significantly benefit individual species (such as the Little Mountain Palm and Phillip Island Wheat Grass) and many vegetation communities through reduced predation on seeds, seedlings and stems of palm-leaf fronds.

Potential Impacts to Migratory Birds

Potential impacts to EPBC-listed Migratory birds from the proposed LHI REP include primary poisoning from consumption of bait pellets; secondary poisoning from consumption of poisoned rodents or other animals; disturbance as a result of helicopter activities and collisions with the helicopter.

Risks to non-target bird species during an eradication program are a function of the species present on LHIG at the time of baiting and during the period when baits will remain accessible within the environment (<100 days), their behaviour, and the likelihood of exposure to Brodifacoum either directly or indirectly. Migratory birds have been grouped into non-seabird migrants, irregular or vagrant non-seabird migrants, and seabirds.

Non-seabird migrants

The number of individuals of each of the 12 regular migrant shorebird species on the LHIG is insignificant at a regional, state, national and international scale as the timing of baiting operations coincides with a period when the abundance of these species on the LHIG is lowest. Therefore, the proposed REP is highly unlikely to have a significant impact on these species.

Irregular or vagrant non-seabird migrants

Fifteen of 19 listed non-seabird species occur as irregular migrants or vagrants on LHIG have been recorded on five or fewer occasions since ornithological records commenced in the early 1900s. The other 4 species have recorded dates outside of the proposed bating operation. None of the 19 species have been recorded breeding on the LHIG and the small number of individuals of each species that have been recorded indicate the LHIG population is not significant at a regional, state, national or international scale. A significant impact of the REP to these 19 listed species is therefore assessed to be highly unlikely.

Seabirds

Thirty-five listed seabird species occur on LHIG or in the surrounding waters. These are divided into species that breed on the island, species that regularly occur at sea surrounding the LHIG, and vagrant species recorded at sea around the LHIG

The sizes of the breeding populations of all six breeding seabird species on the LHIG are significant at regional, state and national scales. The breeding populations of Masked Booby and Providence Petrel are also significant at an international scale, as the LHIG is one of only three or two island groups where these taxa breed. However of the six listed breeding seabirds, only two occur regularly on or around the LHIG in winter when baiting operations will be undertaken: Masked Booby and Providence Petrel. Breeding colonies of both species will be baited using a helicopter; as such they are not at risk of disturbance from human presence within the colonies. Records of helicopter strikes or disturbance from aerial eradication operations are very rare. Nonetheless, mitigation measures will be in place to minimise disturbance and the risk of collision. Specifically, helicopter flight times over Masked Booby colonies will be restricted to periods when birds are less likely to be leaving or arriving at the colony (movements are greatest shortly after dawn and in the late afternoon) and helicopters will be restricted to flying at a height of >30 m above colonies. Providence petrels breed principally in the southern mountains, particularly the two mountain summits. From March to November annually they arrive at LHI from mid-afternoon onwards to display in the airspace above the breeding sites, find mates and visit burrows. Helicopter strike with Providence Petrels involved in courtship and incubation will be avoided by restricting helicopter flights around the southern mountains to before midday on each day of baiting. The majority of returns from foraging to provision chicks occur after early July (Marchant and Higgins 1990) avoiding any overlap with proposed helicopter movements.

All listed breeding seabird species are carnivorous and obtain all their prey at sea; they are not known to consume any food on land and as such they are highly unlikely to consume cereal bait pellets distributed on land or poisoned rodent carcasses (unlike scavenging bird species that fell victim to secondary poisoning on Macquarie and Rat Islands). Secondary poisoning from consuming marine vertebrates and invertebrates that have consumed bait pellets is potentially a risk to the seven breeding seabird species. However, because most or all individuals of each species forage in deeper waters more than two kilometres from the LHIG, it is highly unlikely they will consume sufficient prey that have consumed bait pellets within the shallow waters surrounding the LHIG to receive a lethal dose of Brodifacoum. The risk of absorption of Brodifacoum via contact with the skin is extremely low for birds as almost all of their external body surface is covered by a thick layer of feathers particularly seabirds) or cornified keratinocytic tissue, thereby virtually eliminating contact with the skin.

Seven listed seabird species are regularly, but sometimes infrequently, observed at sea surrounding the LHIG, but do not breed on the LHIG. These seven regularly occurring pelagic seabird taxa typically forage in deeper water or are observed on migration, as such they are very rarely observed in the relatively shallow waters within two kilometres of the LHIG. No individuals of these species have been recorded on land in the LHIG. Consequently, regularly occurring pelagic seabird taxa are highly unlikely to come into contact with Brodifacoum baits or come within 2 km of helicopters during the baiting operation and prior to baits disintegrating and residual Brodifacoum reducing to non-toxic levels. The impact of the proposed rodent eradication programme is therefore assessed to be non-existent or negligible for these species.

Twenty listed seabird species have been recorded on seven or fewer occasions on the LHIG, usually as single individuals, since ornithological records commenced in the early 1900s, but do not breed on the LHIG. Most, if not all, vagrant seabird taxa were recorded only at sea. Of the records where dates were given, all occurred in spring, summer or autumn. It is therefore highly unlikely any of these vagrant seabird taxa will be present during the proposed baiting operations in winter 2017 and for the period baits and Brodifacoum residue will remain accessible within the environment. If any are present, most species are unlikely to occur in shallower water (terns are the possible exception) within 2 km of the LHIG. Therefore, the impact of the REP is assessed to be non-existent or negligible for listed vagrant seabirds.

Potential Impacts to Listed Migratory Marine Species

Potential impacts to Listed migratory marine species are limited to accidental bait entry into the water (either through aerial distribution or a spill) leading to pollution of water, primary or secondary poisoning. Any potential impacts are likely to be very localised and temporary in nature.

Pollution of marine water resulting in impacts to threatened marine species is considered extremely unlikely considering the minimal amount of bait likely to enter the water, the insolubility of Brodifacoum and the huge dilution factor.

Fish, rays and sharks are unlikely to have sufficient exposure to the bait to have a significant impact at an individual level and certainly not at a population level.

There is no realistic pathway by which threatened marine mammals can be significantly exposed to rodenticide at the LHIG as a result of the proposed aerial baiting with Pestoff® 20R. The combination of Brodifacoum being practically insoluble in water, the infinitesimal amount of Brodifacoum that may land in the sea and the huge dilution factor preclude any significant effect upon marine mammals. Marine mammal species are also rare visitors to LHI waters, passing through on the annual migration and are therefore unlikely to encounter the bait.

Marine reptiles are also very unlikely to have significant exposure to bait directly or prey items that have ingested rodenticides.

In summary, the proposed baiting of LHI does not pose a threat to listed marine life.

Potential Impacts to World Heritage and National Heritage values

The proposal is unlikely to impact on the number of endemic species, diversity of landscapes or biota described in Criterion (x) of the World Heritage listing. The proposal may have some potential impacts to individuals of endemic or threatened species (described in sections below) but this is unlikely to cause World Heritage values associated with endemism, threatened species or biota to be lost, damaged, degraded, notably altered or diminished. Any potential impacts will be localised and temporary.

It is highly likely that if the proposal proceeds and eradication of rodents is accomplished, this will contribute significantly to enhancement of World Heritage values, similar to what has occurred through the eradication of other invasive mammals and weed species on the island. The proposal may result in localised and temporary impacts to several endemic species but will remove a significant threat that if left unchecked would result in the continued degradation of the islands World Heritage values.

The National Heritage values of the LHIG are intrinsically linked to the World Heritage values. As the proposal is unlikely to cause World Heritage values to be lost, damaged, degraded, notably altered or diminished (see above section), it is also unlikely that National Heritage values will lost, damaged, degraded, notably altered or diminished. Any potential impacts will be localised and temporary. It is highly likely that if the proposal proceeds and eradication of rodents is accomplished, this will contribute significantly to enhancement of World Heritage values and therefore National Heritage values

Potential Long Term Ecological Changes

While it is difficult to predict the long term ecological changes that are expected to occur on LHI following successful rodent eradication, evidence from rodent eradication projects elsewhere has shown that a wide range of taxa benefit from the eradications of invasive mammals. Where rodent eradications have been reviewed, they have demonstrated benefits included population recoveries, re-colonisations and re-introductions, and increases to vegetation cover. It is expected that LHI populations of seabirds, land birds, invertebrates and vegetation would similarly benefit in the long-term from the eradication of rodents.

Whilst some negative impacts on native populations have also been reported following rodent eradications, most negative impacts are due to poisoning either from consumption of baits or through secondary poisoning following consumption of poisoned rodents. Such impacts are usually short term and populations recover once the baiting operations have ceased. Species at risk of being affected by bait consumption or secondary poisoning that occur in the LHIG include the Lord Howe Woodhen and the Lord Howe Pied Currawong. Risk to both species will be managed through captive management.

Potential Cumulative Impacts

Potential cumulative impacts from the REP were considered with:

- Other potential actions - the proposed wind turbines and ;
- Other key threatening processes on the island such as weeds, habitat clearing and degradation, other human related threats and anthropogenic climate change.

As the LHI currawong is the only species on which the REP will have a potential significant impact (temporary disruption to one breeding cycle) and the wind turbine is unlikely to have an impact on currawongs, no significant cumulative impacts are expected from the wind turbines and REP.

When potential impacts of the REP are considered with other threats, no significant cumulative impact is expected. This is due to the localised and short term nature of potential impacts from the REP and expected long term benefits to species and ecosystem recovery in the absence of rodents.

When considered as one action out of many related conservation and recovery actions currently being implemented or planned by the LHIB, the REP will add significant contribution to net positive cumulative impacts for species and biodiversity for the LHIG.

In contrast, not proceeding with the REP would allow continued impacts from predation and completion by rodent on a range of species, increasing cumulative impacts with other threats.

Proposed Mitigation

A range of mitigation measures are proposed to mitigate potential impacts of the REP.

Mitigation of risks has been considered through planning and development of the operation though choice of methodology, toxin and bait; through proposed timing of the operation; through the combination of bait delivery methods selected; and through the development of baseline monitoring programs and trial programs.

During the operation, mitigation will include captive management of at risks species; extensive environmental and non-target species monitoring and collection of carcasses where possible.

Post operational monitoring will track predicted species recovery (or potential impacts)

Potential Socio-Economic Impacts

Economic Impacts

Potential economic impacts from the REP have been assessed through an Economic Evaluation of the project. The evaluation assessed the proposed REP ("With") scenario) against the baseline ("Without") of continuing the current rodent control program on the island.

The REP is estimated to have net social benefits of $141M and a benefit cost ratio of 15 to 1. This indicates that the aggregate welfare of the community is significantly improved by implementing the REP i.e. the incremental benefits of the REP far exceed the incremental costs.

There are incremental biodiversity benefits, incremental tourism benefits and incremental benefits to the Kentia Palm and vegetable industry from implementation of the REP.

Distributional analysis found that there are net benefits from the REP for the residents of LHI and those who do not live on LHI, with Net Present Values (Benefit Cost Ratios) for these groups of $57,499,341 (38.1) and $83,164,998 (11.2), respectively.

Increased demand for worker accommodation as a result of the REP would more than offset any assumed reduction in accommodation demand during the REP.

Accommodation providers (and airlines), would be the main beneficiaries of any increase in peak season tourism demand. This is because benefits would mainly accrue via price effects for accommodation (and airlines) rather than any increase in visitation.

Human Health Impacts

A Human Health Risk Assessment considered the chemical and physical properties of the toxin, toxicological effects of Brodifacoum in humans, the proposed use pattern during the REP and proposed mitigation. Potential direct and indirect exposure pathways were identified. The most sensitive pathway was considered to be direct consumption of pellets by a small child. Mitigation was assessed as suitable to mitigate the potential risks.

The HHRA concluded that although Brodifacoum is an acutely toxic substance that has the potential to cause toxicity and possibly death through internal bleeding, the human health risk to those residing on LHI during the proposed eradication campaign is very low.

Conclusion

This Public Environment Report provides a demonstrated need for the REP based on documented evidence of significant impacts of rodents both globally and on LHI. It presents evidence of ongoing impacts at the species and ecosystem level on LHI even in the presence of ongoing rodent control. It demonstrates support for the REP through a range of legislative instruments, recovery plans and the like and outlines the unacceptable consequences of failing to proceed. It also provides evidence of expected benefits.

Detailed consideration of alternatives assessed is provided together with justification of why continuing with the current control program is unacceptable. It provides evidence of why other methods were considered unsuitable for an eradication on LHI and why the toxin, bait and delivery methods were selected based on over 30 years of lessons and experience globally.

It outlines the project details and mitigation and considers in detail, potential risks to matters of NES based on results from numerous similar eradications around the world.

It concludes that significant impacts are highly unlikely for most matters of NES. Species considered most at risk are the LH Woodhen and the LH Pied Currawong. In the absence of mitigation, a significant impact to woodhens is likely to occur from the LHI REP. However with the mitigation proposed in place, it is considered unlikely that either long term population decrease or major disruption to a breeding cycle will occur. Impacts are likely to be temporary. It is therefore considered unlikely that the REP will have a significant impact on woodhens

In the absence of mitigation, a significant impact to LHPC is likely to occur from the LHI REP. With the proposed mitigation in place, it is considered possible that the REP will still have a significant impact on LHPC through the temporary disruption of a breeding cycle, although it is unlikely that a long-term population decrease will occur. Any potential impacts will be temporary.

Socio–economic considerations are discussed. Economic benefits of the REP far outweigh costs indicating that the aggregate welfare of the community is significantly improved by implementing the REP. Human health impacts were assessed in light of the proposed use of the toxin and mitigation measures proposed. Human health risks are considered to be very low.

The REP is essential and beneficial. Risks have been addressed through proposed mitigation to the point where they are considered to be very low. Any potential impacts are localised and short term and far exceeded by the benefits that will be provided by implementation of the REP. Potential impacts of the REP are also considerably less than the ongoing impact of failing to proceed.

Glossary and Abbreviations

Aerial Broadcast	Distribution of the pelletised bait by helicopter with an underslung bait spreader bucket.
Anticoagulant	Having the effect of inhibiting the coagulation of the blood
APVMA	Australian Pesticides and Veterinary Medicines Authority
Bait Station	A contained
Biosecurity	Procedures or measures designed to protect Lord Howe Island against harmful biological or biochemical substances
Control	To regulate, restrain, or hold in check
Brodifacoum	A second generation rodenticide and the active ingredient present in the proposed bait
EPBC Act	*Environment Protection and Biodiversity Conservation Act* 1999
ESD	Ecologically Sustainable Development
Eradication	The intentional total extermination of a species or population
Hand Broadcast	The scattering of Pestoff20R pellets by hand or machine rather than aerial distributing via helicopter
IUCN	International Union for Conservation of Nature
LHI	Lord Howe Island
LHIB	Lord Howe Island Board
LHIG	Lord Howe Island Group
NES	Matters of National Environmental Significance
OEH	NSW Office of Environment and Heritage
PER	Public Environment Report
Pestoff 20R	The proposed cereal based bait to be used during the proposed Rodent Eradication Project. Manufactured by Animal Control Products Ltd as either a 10mm or 5mm pellet containing the active Ingredient Brodifacoum at a concentration of 20 parts per million (20 milligrams per kilogram)
ppm	Parts per million
PPP	Permanent Park Preserve
Resistance	The ability not to be affected by something, especially adversely like rodenticides
REP	Rodent Eradication Project
TSC	NSW Threatened Species Conservation Act 1995
World Heritage Area	An area recognised as being as of outstanding international importance and therefore deserving special protection.

1 General Information

1.1 Introduction

The Lord Howe Island Board (LHIB) is proposing to undertake the Lord Howe Island Rodent Eradication Project (LHI REP).

The proposal was referred under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) to the Minister for the Environment on 11 May 2016. The Minister's delegate determined on 30 June 2016 that approval is required as the action has the potential to have a significant impact on the following matters of National Environmental Significance (NES) that are protected under Part 3 of the EPBC Act:

- Listed threatened species and communities;
- Listed migratory species– migratory marine birds and migratory wetland species
- The heritage values of a National Heritage place;
- The world heritage values of a declared World Heritage property.

The Minister's delegate determined on 30 June 2016 that the proposed activity be assessed by a Public Environment Report (PER). Guidelines for the preparation of the PER were issued on 15 Aug 2016 and are attached as Appendix A – Guidelines for the Content of the Draft Public Environment Report..

The LHIB published the Draft PER, under the requirements of Section 98(1)(c) of the EPBC Act 1999. The PER was placed on public exhibition for a period of from 2 November to 2 December 2016 (a total of 23 business days). The PER and associated appendices were available, without charge, online at

http://www.lhib.nsw.gov.au/environment/environmental-programs/rodenteradication/community-information and at the following locations –

- **Lord Howe Island Board Administrative Offices**, Bowker Avenue, Lord Howe
- Island, NSW
- **Lord Howe Island Museum,** Lagoon Road, Lord Howe Island, NSW
- **Office of Local Government**, Level 9, 6-10 O'Connell St, Sydney, NSW

The LHIB invited the public to make written submissions on the Draft PER via:

- A letter sent to all LHI residents
- A notice in *The Australian* Newspaper on 2 November 2016

A total of 128 submissions were received, with 118 of these in support of the LHI REP and 10 opposed. Submissions have been logged, analysed and where relevant responses to submissions have been provided in Appendix P. The PER has also been updated based on submissions received where relevant. All submissions are included in Appendix P.

This document is the Final PER addressing the Guidelines and public submissions. Cross reference to where the Guidelines are addressed in this PER is found in Appendix B – Guidelines Cross Reference. Names, qualifications and input of authors of this PER are provided in Appendix C – Author Names and Qualifications.

1.2 Project Summary

The LHI REP aims to eradicate introduced rodents: the Ship Rat (*Rattus rattus*) and the House Mouse (*Mus musculus*) from Lord Howe Island (LHI) and its associated islands and rocky islets (excluding Balls Pyramid), hereafter referred to as the Lord Howe Island Group (LHIG). Rodents are currently having significant impacts on World Heritage values including impacts to a range of EPBC listed species. The eradication of rodents will also present an opportunity to simultaneously eradicate the introduced Masked Owl.

The one-off eradication proposes to distribute a cereal-based bait pellet (Pestoff 20R) containing 0.02g/kg (20 parts per million) of the toxin, Brodifacoum across the LHIG (excluding Balls Pyramid). Methods of distribution will be dispersal from helicopters using an under-slung bait spreader bucket in the uninhabited parts of the island (most of the LHIG) and by a combination of hand broadcasting and the placement of bait in trays and bait stations in the settlement area. In the outdoor areas of the settlement, baits will be dispersed by hand and/or placed into bait stations. In dwellings (e.g. in ceiling spaces or floor spaces) bait trays and bait stations will be used. Bait stations will also be used around pens for any remaining livestock (e.g. the remaining dairy herd, goat or horse containment areas).

Given the size and rugged terrain of the LHIG, the exclusive use of baits stations is not feasible for the eradication.

The operation is targeted for winter of 2017 (June to August) however to allow operational flexibility and to account for unforeseen delays, approval is sought for at least a three year period, June 2017 to December 2019.

The LHI REP has received significant funding ($9M) in 2012 for planning and implementation from the Federal Government's former Caring for Our Country Program (now National Landcare program) $4,500,000 and the NSW Environment Trust $4,542,442.

1.3 Proponent Details

Proponent	Lord Howe Island Board
ABN	33 280 968 043
Address	PO Box 5, Lord Howe Island, NSW 2898
Phone	02 65632066
Contact Details	Mr Andrew Walsh Project Manager – Rodent Eradication Project andrew.walsh@lhib.nsw.gov.au

1.4 Project Objectives

The primary objectives of the proposed project are to:

- Eradicate (see box below) all ship rats and house mice from the LHIG to permanently remove the impacts of rodents on biodiversity, World Heritage and socio-economic values of the LHIG.
- Ensure safety of humans and the environment.
- Provide a secure environment for populations of threatened and endemic plants and animals currently present on the LHIG
- Minimise impacts to non-target species, livestock and pets.
- Eliminate the current ongoing rodent control program and therefore eliminate the need for ongoing use of rodent poison on LHI.

> Control = to regulate, restrain or hold in check
>
> Eradicate = the intentional total extermination of a species or population

There are five principles to achieving eradication that must be met in every case, for all target species (Parkes, 1990, Bomford and O'Brian, 1995):

1. All individuals can be put at risk by the eradication technique(s);
2. They can be killed at a rate exceeding their rate of increase at all densities;
3. The probability of the pest re-establishing is manageable to near zero;
4. The project is be socially acceptable to the community involved;
5. Benefits of the project outweigh the costs.

Secondary objectives are to:

- Eradicate Masked Owls from the LHIG and permanently remove their impacts on the fauna of the island
- Establish a sustainable and robust biosecurity system to prevent the reinvasion of rodents and other biosecurity risks. Strengthened biosecurity measures for the Island will protect and enhance LHI's World Heritage status and continue to increase tourism interest for this unique pest free environment.

1.5 Project Location

Lord Howe Island (LHI) is located 780 kilometres north-east of Sydney (See Figure 1). It covers 1455 ha, is 12 km long, 1.0–2.8 km wide and formed in the shape of a crescent, with a coral reef enclosing a lagoon on the western side (see Figure 2, Figure 3 and Figure 4). Mount Gower (875 m), Mount Lidgbird (777 m) and Intermediate Hill (250 m) form the southern two-thirds of the island; the northern end of the island is fringed by

sea cliffs of about 200 m in height (See Figure 2, Figure 3 and Figure 4). A settlement of approximately 350 inhabitants is located in the northern section of LHI and covers about 15% of the island. Approximately 75% of LHI plus all outlying islands, islets and rocks are protected under the Permanent Park Preserve (PPP), which has similar status to that of a national park. The LHIG has been placed on the Register of the National Estate and was listed as a World Heritage Area in 1982. It is also located within the Lord Howe Island Marine Park (NSW) out to 3 nautical miles (under NSW jurisdiction) and the new Lord Howe Commonwealth Marine Reserve (under Commonwealth authority), a further area of 110 000 km^2). Coordinates for the project area boundary are provided below.

Table 1: Project Area Coordinates

Location point	Latitude			Longitude		
	degrees	minutes	seconds	degrees	minutes	seconds
1	-31	28	53	159	4	23
2	-31	31	31	159	0	38
3	-31	36	18	159	4	8
4	-31	33	47	159	8	3

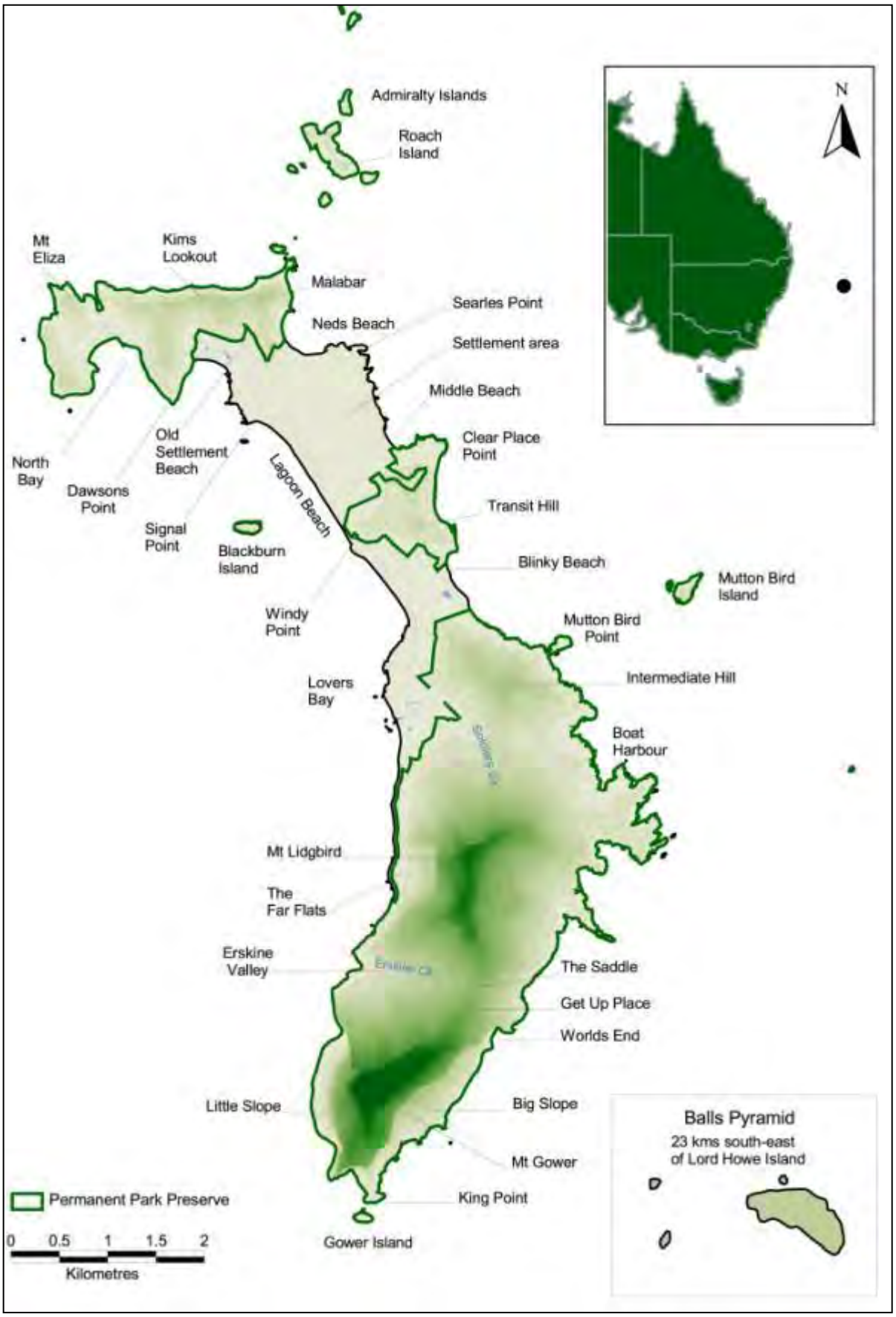

Figure 1 Lord Howe Island Locality (DECC, 2007)

Figure 2 Lord Howe Island overview (DECC, 2007).

Figure 3 Lord Howe Island as seen from the North
(Image courtesy Dave Kelly)

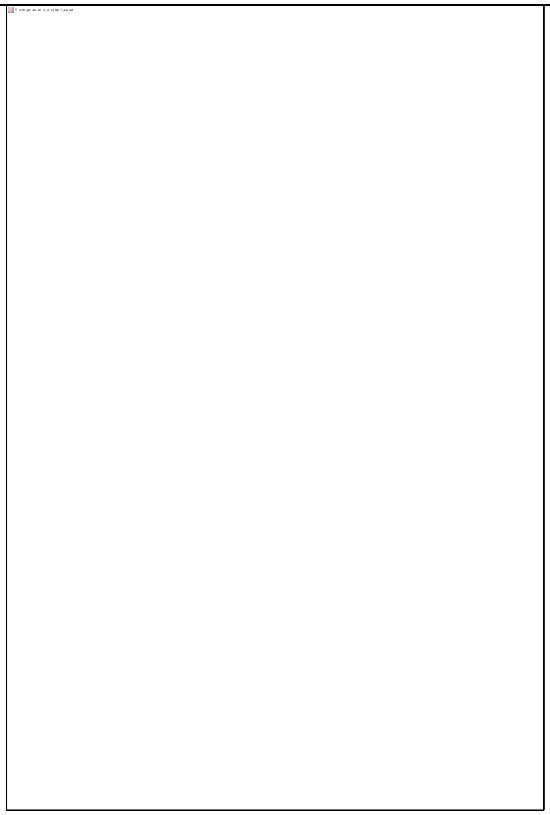

Figure 4 Lord Howe Island as seen from the South
(Image courtesy Ian Hutton)

The Proposed REP will occur over the entire LHIG, excluding Balls Pyramid. The LHIG consists of the following lease types:

- The Permanent Park Preserve
- Crown Land
- Permissive Occupancy
- Perpetual Leases
- Special Leases

Lease Boundaries are shown on Figure 5.

The 2 dimensional area of LHI is 1,455 ha. The 3 dimensional area when considering the rugged topography is approximately 2,100 ha.

1.5.1 Local Government Area

The LHIG is part of the State of New South Wales and, for legal purposes, is regarded as an unincorporated area administered by the LHIB, a statutory authority established under the provisions of the *Lord Howe Island Act, 1953* (the Act). The LHIB is directly responsible to the NSW Minister for the Environment and comprises four Islanders elected by the local community and three members appointed by the Minister. It is charged with the care, control and management of the Island's natural values and the affairs and trade of the Island. It is also responsible for the care, improvement and welfare of the Island and residents.

The LHIB carries out all local government functions on behalf of approximately 350 Island residents. It controls all land tenure on the island and administers all residential and other leases in accordance with the Act. The LHIB manages the Island PPP and the protection and conservation of the Island's fauna and flora.

The LHIB also undertakes the role of the relevant Local Government Authority and Consent Authority under the NSW *Environment Planning and Assessment Act, 1979*. Relevant Contact is Dave Kelly, Manager Environment and Community Development P.O. Box 5, LHI, 2898. Telephone 02 6563 2066.

1.5.2 Land Use

A settlement of approximately 350 inhabitants occurs in the northern section of LHI and covers about 15% of the island; approximately 400 hectares. The settlement area is used predominantly for residential, pastoral/agricultural and commercial uses.

Ocean waters from the high water mark to three nautical miles offshore are protected under the NSW Lord Howe Island Marine Park (approximately 47,000 hectares) and are the responsibility of the New South Wales Marine Park Authority.

Tourism is the most significant industry and major source of income on the Island and is heavily focused around the world heritage values of both the marine and terrestrial environments. Key tourism activities include:

- Marine activities in the Marine Parks such as beach and reef walking, swimming, snorkelling, scuba diving, fish feeding, surfing, underwater photography, windsurfing, sea-kayaking, fishing, sightseeing cruises and eco tours, and other water sports and beach activities
- Terrestrial activities such as hiking, bird watching, golf, walking, bike riding, sightseeing and eco tours, lawn bowls.

Export of the Lord Howe Kentia Palm and to a lesser extent, three other palm species endemic to LHI, has been a major industry since the late 1800s. The species is now one of the most popular decorative palms in the world. Seed is collected from natural forest and plantations and then germinated in soil-less media and sealed from the atmosphere to prevent contamination. After testing, they are picked, washed (bare-rooted), sanitised and certified then packed and sealed into insulated containers for export. The industry has suffered a decline on LHI as a result of increased global competition from foreign plantations and to a lesser extent, rodent impacts. The Kentia Palm Nursery formerly managed by the LHIB was bought by a private consortium in 2014 who are re-establishing the industry. The nursery currently exports 400,000 seedlings year.

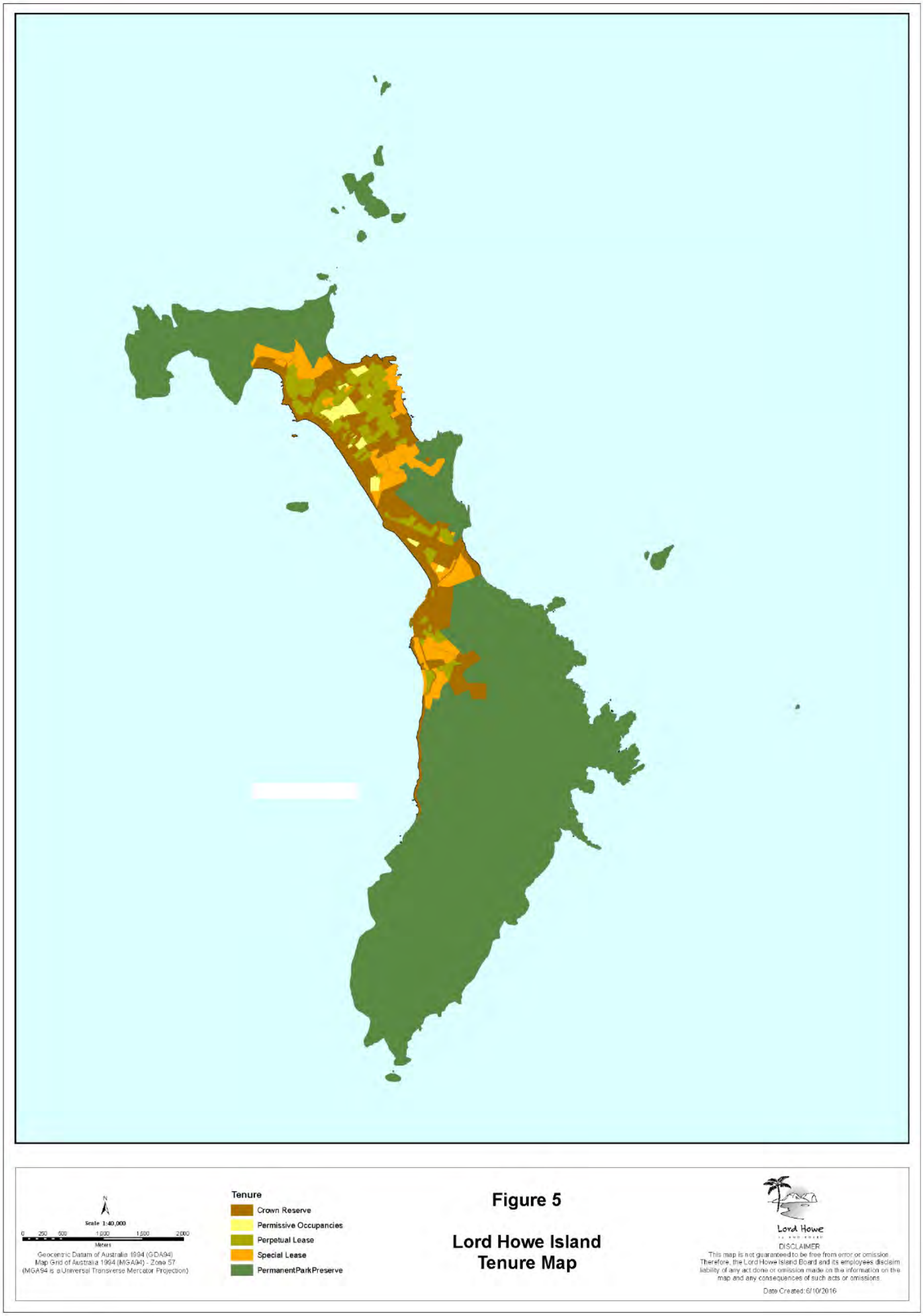

Figure 5 LHI Tenure Map

1.5.3 Climate

The LHIG is considered to have a sub-tropical climate moderated by oceanic air currents and mild sea temperatures. Winters are wet and cool whilst summers have less rainfall and are mild or warm. A summary of key climate statistics during the proposed operational period is shown below (BOM, 2016).

Table 2 Lord Howe Island Climate

Key Climate Statistics	Jun	Jul	Aug	Sep
Mean maximum temperature (°C)	19.9	18.9	19.0	20.0
Mean minimum temperature (°C)	14.9	13.9	13.5	14.5
Mean rainfall (mm)	171.2	144.0	108.8	114.0
Mean number of days of rain ≥ 1 mm	17.2	17.8	15.0	11.9
Mean 9am relative humidity (%)	66	67	65	68
Mean 9am wind speed (km/h)	21.9	21.8	21.5	21.0
Mean 3pm relative humidity (%)	66	66	64	68
Mean 3pm wind speed (km/h)	22.5	23.9	23.0	22.4

1.6 Project Background

Islanders and the LHIB have been involved in the control of rodents (rats and mice) on Lord Howe Island since about 1920, highlighting both the long recognised impacts of rodents and difficulty in achieving outcomes through ongoing control on the island. Methods included a bounty on rat tails, hunting with dogs, introduction of cats and owls and the use of various poisons including barium chloride, diphacinone, and warfarin. Further detail on previous control efforts is found in 3.1.2.

Internationally (particularly in New Zealand), eradication of rodents from islands started to gain momentum following the successful eradication of rats from Maria Island/Ruapuke Island in 1959 and the invasion by rats on Big South Cape Island in 1963 (Russell and Broome, 2016). Incremental work over many decades, starting with small islands and gradually increasing scale and building capacity led to the desire and ability to tackle larger, more complex islands (ibid). The breakthrough which allowed these advances was the development of slow acting second generation anticoagulants in the late 1970s. For the first time rodents could eat a lethal dose in a single or many small meals yet not feel the effects for several days. Poison shyness, which hampered earlier eradication attempts with toxicants, was eliminated. The first successes from deliberate attempts in the 1980s opened the minds of many to the conservation possibilities. The old adage 'success breeds success' held true for rodent eradications with a surge of projects in New Zealand in the 1990s (ibid).

This led to a chain of events, both locally on LHI and within state and federal Government in Australia that would lead to development of the idea of rodent eradication on LHI. These are summarised below.

In 2000, the NSW Scientific Committee, made a Final Determination to list *Predation by the Ship Rat* Rattus rattus *on Lord Howe Island* as a Key Threatening Process under the NSW *Threatened Species Conservation Act 1995* recognising the impact of rats to species and biodiversity on LHI. It recommended augmentation of the existing control program and to investigate long term impacts of ongoing control.

A proposal to eradicate rodents was submitted to the LHIB in 2001. The proposal called for LHIB support and funding to undertake a feasibility study and further support for the eradication, subject to findings of the feasibility study.

In 2001, the LHIB commissioned a feasibility study (Saunders and Brown, 2001) that looked at a long-term solution to the rodent problem on LHI, through a program of total eradication. The study concluded that rodents were having a significant impact on LHI particularly to biodiversity and the palm industry and that control of rodents was unsustainable. It also concluded that eradication on LHI was feasible using a combination of aerial broadcast, hand broadcast and bait stations using a Brodifacoum based product. The study identified additional further gaps that needed to be addressed and risks to be mitigated and recommended key next steps.

A Cost Benefit Analysis (Parkes *et al.* 2004) which looked at additional feasibility, risks and benefits of eradication on LHI again confirmed that eradication was feasible and highly beneficial, provided risks (non-target impacts, bait palatability and efficacy, and community support) could be appropriately managed and funding and approvals obtained.

In March 2006, the Commonwealth Minister for the Environment listed *Predation by exotic rats on Australian offshore islands of less than 1000 km^2 (100,000 ha)* as a Key Threatening Process under the EPBC Act. The listing advice (TSSC, 2006) provided examples of rodent impacts on LHI species in support of the listing. It also recommends that eradication of rodents, where feasible, was a preferred outcome to ongoing control.

In 2007 the *Lord Howe Island Biodiversity Management Plan* (BMP) (DECC, 2007) was developed as a key overarching document providing holistic management of key threats and protection of the island's biodiversity. It also constitutes the formal recovery plan for many threatened species. The eradication of rodents is one priority conservation management action listed in the BMP.

In 2007, a non-toxic bait uptake trial (DECC, 2007a) was undertaken on LHI that examined rodent and non-target species uptake of the bait pellets, bait breakdown in the environment and spread of the bait using helicopter. The study concluded that bait was highly palatable to both rats and mice and that sufficient bait would be available for both species to receive a lethal dose under eradication conditions. It found bait breakdown in the environment was approximately 100 days. It also found that four bird species (the LH woodhen, buff banded rail and two introduced species) consumed bait along with some invertebrates.

A further study in 2008 (DECC, 2008) examined bait sizes. Both small (5.5 mm) and large (10 mm) baits were shown to be palatable to rats and mice. Consequently, either baits would be appropriate for use in an eradication operation on LHI, however large baits are recommended for aerial operations, and small baits for hand broadcasting where it is critical to increase bait encounter rates for mice.

The early studies on LHI and growing government recognition of wide spread rodent impacts, led to development of a Draft LHI Rodent Eradication Plan in 2009. The Draft Plan was externally peer reviewed by the Island Eradication Advisory Group (IEAG) of the New Zealand Department of Conservation; the Invasive Species Specialist Group of the Species Survival Commission of the World Conservation Union; the Worldwide Fund for Nature (WWF), Australia; Birds Australia; Landcare Research, New Zealand; CSIRO and Professor Tim Flannery. Public comment on the Draft Lord Howe Island Rodent Eradication Plan was sought in November 2009 and 83 submissions were received.

A Human Health Risk Assessment was undertaken in 2010 (Toxikos, 2010). The study found the risks to human health from the eradication are negligible with the proposed mitigation in place.

The LHIB received significant funding to implement the REP from the New South Wales Government's Environment Trust and the Australia Government's Caring for Our Country Program in 2012.

A range of additional studies and consultation have been undertaken since then that provide the basis for the current rodent eradication proposal and this PER. These include:

- Extensive community consultation (further detail provided in Section 8).
- Baseline biodiversity benefits monitoring (see Section2.8)
- Additional studies on key species such as Currawong (Carlile and Priddel, 2006), LHI *Placostylus (*Wilkinson and Hutton, 2013), Masked Owl (Milledge, 2010 and Hogan *et al.* 2013) and Land Snails (Kohler *et al.* 2016)
- Captive management trials in 2013 (Taronga Conservation Society Australia, 2014) that showed woodhen and currawongs could be successfully held in captivity for extended periods of time (see section 2.2)
- Rat and mice bait toxicity trials in 2013 (Wheeler and Carlile, 2013) and 2016 (O'Dwyer *et al.* 2016) that showed rats and mice on LHI would be able to receive a lethal dose of poison on eradication conditions (see section 3.4.2).

1.7 Related Actions

LHI has a demonstrated history of positive environmental management and conservation actions to protect the unique values of the island. The proposed REP is essentially an extension of an integrated and much broader conservation and ecological restoration program on the LHIG. Historic related conservation actions included:

- Control of rodents from as early as the 1920s. Methods tried included a bounty on rat tails, hunting with dogs, introduction of cats and owls and the use of various poisons including barium chloride, diphacinone, and warfarin
- Eradication of feral pigs in the early 1980s
- Eradication of feral cats in the 1980s as part of the Lord Howe Woodhen recovery program
- Eradication of feral goats in 2002 (a small number of non-reproductive animals remain as pets)
- Culling of introduced masked owls.

Current environmental management and conservation programs underway include:

- The Lord Howe Woodhen recovery program implemented since the 1980s
- The Lord Howe Island *Placostylus* recovery program
- The Lord Howe Phasmid recovery program
- African Big Headed Ant eradication
- Eradication of over 60 priority weeds from the LHIG including Weeds of National Significance such as Ground Asparagus, Bridal Creeper, African Boxthorn, Tiger Lilly, Bitou Bush, Ochna and Cherry Guava
- Ongoing rodent control program using coumatetralyl
- Strict biosecurity policies and protocols to prevent incursion and establishment from a range of biosecurity risk species.

The *Lord Howe Island Biodiversity Management Plan* (BMP) (DECC, 2007) is the key overarching document related to management of key threats and protection of the island's biodiversity and it constitutes the formal recovery plan for many species. It is a holistic management document, encompassing many of the programs listed above to protect the islands biodiversity with particular focus on rare and significant species. The eradication of rodents is therefore one of many related conservation actions and is listed as a priority action in the BMP.

More directly related to the proposed REP is the *Pilot Study for captive management of LHI Woodhen and LHI Currawong* which was referred to the Commonwealth Department of the Environment under the EPBC Act in 2013 (EPBC referral 2013/6847). This action was declared "not a Controlled Action" in June 2013. The pilot study showed that woodhens and currawongs could be held in captivity in large numbers for prolonged periods with no observable impact (Taronga Conservation Society Australia, 2014). All 20 woodhens and 10 currawongs that were in the trial were successfully released at their individual capture sites after the trial and monitored.

The LHIB is also the proponent for an unrelated action: a proposed renewable energy project comprising of two small 200kW wind turbines on LHI to reduce the Island's reliance on diesel fuel for electricity generation. An EPBC referral is expected to be submitted in the coming months. If approved, the wind turbines would be installed in mid 2017 and fully commissioned and operational by late 2017. Consideration of potential cumulative impacts is with the project is considered in Section 5.2.14.

1.8 Project Status

The Project is broken into logical phases as shown in Figure 6 below. The Project is currently in Phase 2. Further detail on each phase is provided in Table 3.

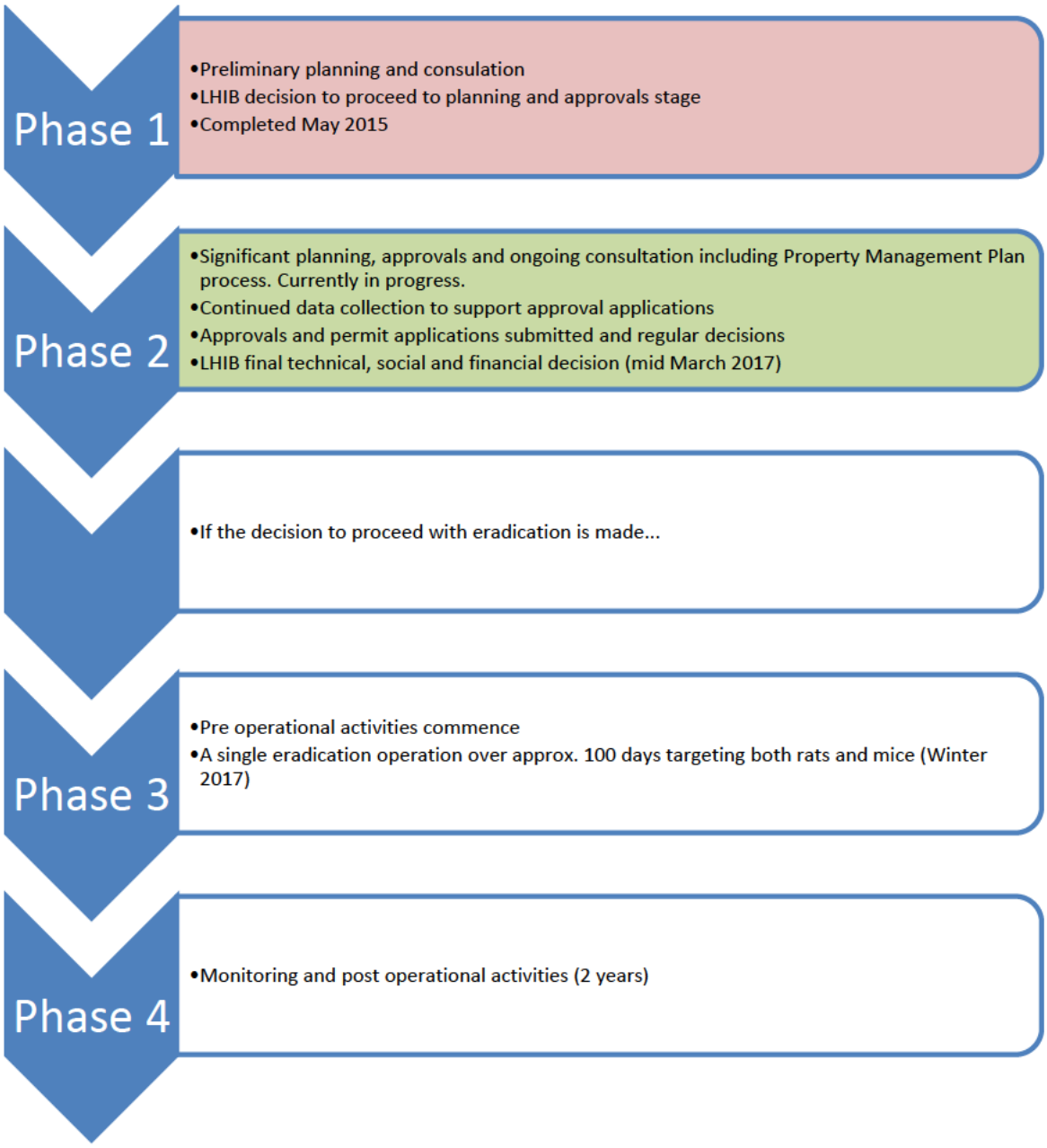

Figure 6 Project Phases Summary

Table 3 Project Phases

Project Phase	Keys Tasks	Proposed Timing
Phase 1 - Preliminary Planning and consultation	Feasibility studies in 2001 and further cost benefit and risk assessment in 2004 2006 - 2008 non-toxic trials including non-target uptake and initial community consultation 2009 Draft Eradication Plan drafted and presented to community Ongoing and divided community response Project funded in 2012 ($9M over four years) Steering Committee set up consisting of funders (State and Federal) LHIB and technical advisor Community liaison group formed in 2013 to attempt to resolve issues 2014 LHIB decision to put project on hold to further consult with community. Process for resolution developed (see below) May 2015 community referendum on expanded control vs. eradicate. Result was 48% (98 respondents) chose expanded control and 52% (106 respondents) chose to proceed with eradication. LHIB decision to proceed to Planning and Approvals Stage	Complete
Phase 2 - Planning and Approvals	Ongoing community extension process and Community Working group (CWG) consultation Development of Property Management Plans Livestock Valuations and Tenders Prepare and submit approval submissions to various regulatory bodies including APVMA, EPBC CASA, and NSW EPA. Human Health Assessment Review Mice resistance toxicity trials to be undertaken to define lethal dose rates and efficacy Update Eradication Plan Apply for Captive Holding Permits (Woodhens, Currawongs and other identified species) Recruitment and Training procedures Contractor and Supplier Early Engagement and Tendering EOI Final technical, Social and Financial Feasibility assessments to be undertaken Proceed to Final Go / No Go Decision by the LHIB (see below)	Nov 2015- March 2017 Nov 2015- March 2016 Jan 2016- Jan 2017 Apr-Sep 2016 Mar – Apr 2016 Jan-Mar 2016 May-July 2016 Sep 2016 Dec15- Feb 2016 Jan 2017- Feb 2017 Mar 2017
Phase 3 – Implementation	Finalise PMPs and ongoing community consultation Captive Management undertaken for identified species and aviary construction Finalise supply contracts order baits, shipping, customs checks and quarantine checks. Helicopter logistics, fuel delivery storage facility	Mar-May 2017 Feb-June 2017 Feb-June 2017 Feb-June2017 Aug 2016- June

	Completion of livestock removal and poultry Recruitment undertaken. Advertising selection relocation training and preparation Undertake baiting campaign Bait Drop 1 Aerial, hand broadcasting and bait stations, community notification ongoing consultation, Meteorology information, Bait station placement and monitoring. Undertake dead rodent's collection through settlement areas. Bait Drop 2 Bait station monitoring and hand broadcasting. Collection of dead rodents continuing. Monitor bait breakdown. Ongoing community consultation and media updates	2017 Feb-May 2017 Jun-Oct 2017 Jun-Oct 2017
Phase 4 – Monitoring and Evaluation	Continuing monitoring for rodent presence including detector dog arrival and implementation. Continuing community information updates. Outcome monitoring Removal of bait stations Ongoing Bio-security and Research conducted	Sep 2017- Oct 2019

The final decision by the LHIB to proceed with the eradication or not (end of Phase 2) will be informed by the technical, social and financial feasibility. This will include the status of approvals, level of community support and recommendations from the Independent Human Health Risk Assessment as per the agreed process for resolution that was an outcome of ongoing community consultation in 2015.

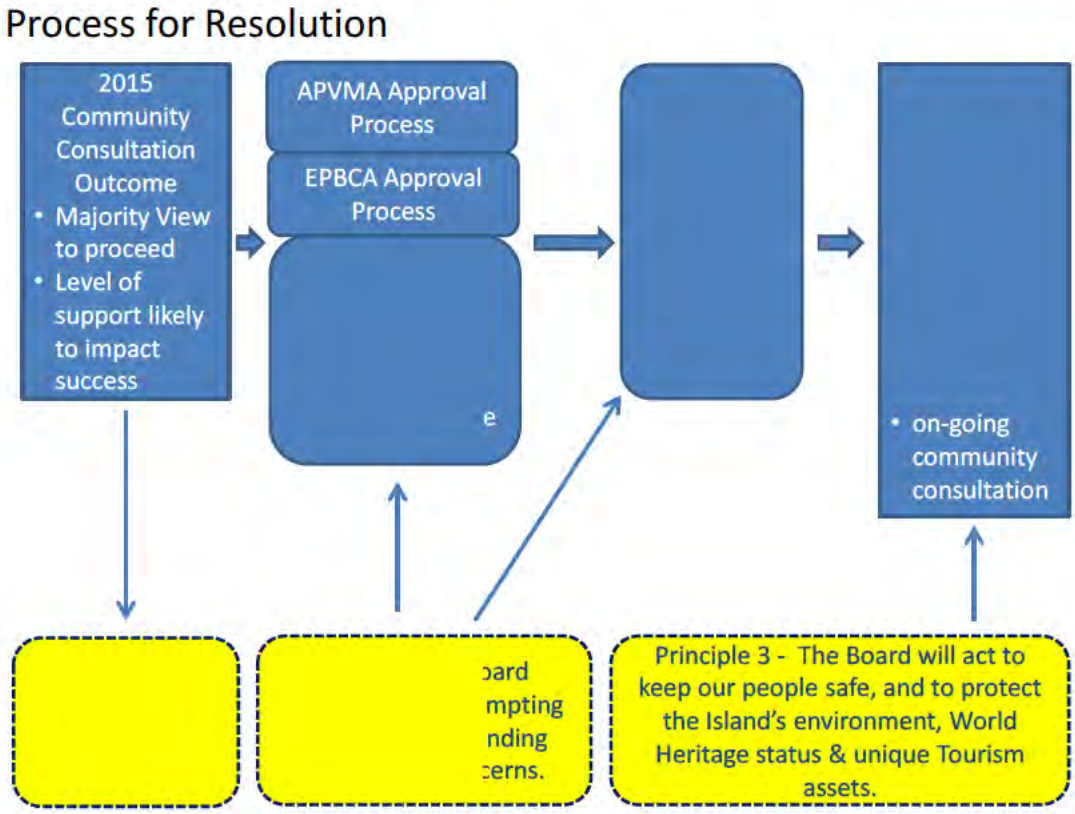

Figure 7 Process for Resolution

1.9 Consequences of Not Proceeding with the Project

Introduced rats and mice are currently having a significant impact on the biodiversity, World Heritage and socio-economic values of LHI (DECC, 2007). The LHIB currently implements a rodent control program (covering approximately 10% of the island) aimed at reducing rodent impacts but even with this in place, neither the rat or mouse population is being reduced to a level that reduces landscape scale ecological impacts. Even with the current control program in place rodent population estimates from the entire island range from 63,000 to 150,000 rats and 140, 000- 210,000 mice (30 -74 rats per hectare and 67-100 mice per hectare (DECC, 2007a and 2008)).

Failure to proceed with the REP will result in continuing adverse consequences to these values through:

- Ongoing impacts to biodiversity including population declines and potential extinctions as a result of rodent predation and competition.
- Continuation of the current (or expanded) rodent control program (and the continuous presence of poison baits in the environment) essentially in perpetuity. This presents ongoing risks of poisoning for non-target species and high probability that rodents will develop a resistance to poison.
- Potential further degradation of World Heritage values (including endemic and threatened species) and the potential for the LHIG to be inscribed on the "World Heritage in Danger List".
- Ongoing socio-economic impacts associated with rodents.

A one off, planned eradication will eliminate these risks. Further detail is provided in the following sections.

1.9.1 Failure to Mitigate Rodent Impacts to Biodiversity

Globally the introduction and spread of invasive species is a leading cause of biodiversity loss. Invasive species are particularly destructive to island species and ecosystems. Nearly two-thirds of recent extinctions (Jones *et al.* 2016) and 75% of all recorded terrestrial vertebrate extinctions occurred on islands and most were caused fully or in part by invasive species (McCreless *et al.* 2016). Currently, 40% of species threatened with global extinction are from island. Eradication of invasive mammals has recently been modelled as having the potential to prevent up to 75% of extinctions of threatened species on islands (ibid).

Exotic rodents, particularly ship rats and perhaps mice, have been a key (and often the critical) cause of extinction, extirpation (local population loss) and decline of many native species, adverse changes to island ecosystems, as well as economic damage to island peoples' livelihoods and potentially to their health (DEWHA, 2009). Ship rats alone are responsible for the severe decline or extinction of at least 60 vertebrate species (Towns *et al.* 2006), and currently endanger more than 70 species of seabird worldwide (Jones *et al.* 2008). They suppress plants and are associated with the declines or extinctions of flightless invertebrates, ground-dwelling reptiles, land birds and burrowing seabirds (Towns *et al.* 2006). Mice have also been shown to impact on plants, invertebrates and birds (Angel *et al.* 2009).

On LHI, rodents are implicated in the extinction of at least five endemic birds and at least 13 invertebrates (DEWHA, 2009). They are also recognised in the LHI Biodiversity Management Plan (DECC, 2007) as a threat to at least 13 other bird species, 2 reptiles, 51 plant species, 12 vegetation communities and numerous threatened invertebrates on the island (ibid) including EPBC listed species shown below in Table 4 . Further detail on rodent impacts on LHI is provided in Section 3.1.1.

Table 4 EPBC Listed Species Currently Impacted by Rodents on the LHIG (from DECC, 2007 and Carlile et al. 2016)

CE = Critically Endangered, E = Endangered, V = Vulnerable, Mi= Migratory, Ma = Marine

	Common name	Scientific Name	Endemic	EPBC Act
Birds	Black-winged petrel	*Pterodroma nigripennis*	-	Ma
	Flesh-footed shearwater	*Ardenna carneipes*	-	Mi, Ma
	Grey ternlet	*Procelsterna cerulea*	-	Ma
	Kermadec petrel	*Pterodroma neglecta*	-	V, Ma
	Little shearwater	*Puffinus assimilis*	-	Ma
	Lord Howe woodhen	*Hypotaenidia sylvestris*	Yes	V
	Masked booby	*Sula dactylatra*	-	Mi, Ma
	Providence petrel	*Pterodroma solandri*	-	Mi, Ma
	Wedge-tailed shearwater	*Ardenna pacificus*	-	Mi, Ma

	White-bellied storm petrel	*Fregetta grallaria*	-	V
Reptiles	Lord Howe Island gecko	*Christinus guentheri*	-	V
	Lord Howe Island skink	*Oligosoma lichenigera*	-	V
Invertebrates	Lord Howe Island phasmid	*Dryococelus australis*	Yes	CE
	Lord Howe placostylus	*Placostylus bivaricosus*	Yes	E
	Whitelegge's land snail	*Pseudocharopa whiteleggei*	Yes	CE
	Masters' charopid land snail	*Mystivagor mastersi*	Yes	CE
	Mt Lidgbird charopid land snail	*Pseudocharopa lidgbirdi*	Yes	CE
	Magnificent Helicarionid land snail	*Gudeoconcha sophiae magnifica*	Yes	CE
Plants	Little mountain palm	*Lepidorrhachis mooreana*	Yes	CE
	Phillip Island Wheat Grass	*Elymus multiflorus var. kingianus*	-	CE

Impacts of rodents on some species on LHI and subsequent consequences if the REP did not proceed are demonstrated in both *Key Threatening Process* and *Threatened Species listings* under the *EPBC* Act.

Predation by exotic rats on Australian offshore islands is listed a Key Threatening Process under the *EPBC* Act (DEWHA, 2009). The eligibility criteria for a process to be listed as a key threatening process under the EPBC Act are:

a) it could cause a native species or an ecological community to become eligible for listing in any category, other than conservation dependent; or

b) it could cause a listed threatened species or a listed threatened ecological community to become eligible to be listed in another category representing a higher degree of endangerment; or

c) it adversely affects 2 or more listed threatened species (other than conservation dependent species) or 2 or more listed threatened ecological communities.

Exotic rodents on islands were considered by the Threatened Species Scientific Committee (TSSC, 2006) in their eligibility assessment to meet all three of the above criteria. Specific examples provided by the TSSC in their assessment included the following LHI species:

- Criterion A: The LHI Wood-Feeding Cockroach (*Panesthia lata).* The TSSC concluded that predation by exotic rats could cause this species to become eligible for listing as threatened under the EPBC Act.
- Criterion B: Lord Howe Flax Snail (*Placostylus bivaricosus)*. The TSSC concluded that predation by rodents could cause the species to become eligible for listing in another category representing a higher degree of endangerment (critically endangered).
- Criterion C: Lord Howe Flax Snail (*Placostylus bivaricosus);* Lord Howe Island Gecko (*Christinus guentheri)* and Lord Howe Island Phasmid (*Dryococelus australis).* The TSSC concluded that rodents are currently or could adversely affect these species.

The EPBC Act *Guidelines for Assessing the Conservation Status of Native Species* (TSSC, 2014) provide guidance on eligibility criteria for listing of threatened species including probability of extinction. The EPBC eligibility criteria are closely aligned to the International Union for Conservation of Nature (IUCN) Red List Categories and Criteria (IUCN, 2012) which is used to maintain the Red List of Threatened Species (also known as the IUCN Red List), the world's most comprehensive inventory of the global conservation status of biological species.

Rodents are listed as a key threat too many of the EPBC threatened species on LHI. Continued predation and competition from rodents as a result of not proceeding with the REP could lead to further population declines and increased risk of extinction. Current and potential threatened species listings under various EPBC/ IUCN categories below in Table 5, highlight the risk of further population declines and potential extinctions if the REP did not proceed. Many more species that could experience population declines are listed in Appendix 3 of the LHI BMP (DECC, 2007).

Table 5 Potential Population Declines of LHI Species

EPBC/ IUCN Category	Definition and Probability of Extinction	Current and potential LHI species listings
Critically Endangered	Is considered to be facing an extremely high risk of extinction in the wild. Probability of extinction in the wild is at least 50% within 10 years or three generations, whichever is the longer (up to a maximum of 60 years).	Currently listed: • Whitelegge's land snail (*Pseudocharopa whiteleggei*) • Masters' charopid land snail (*Mystivagor mastersi)* • Mt Lidgbird charopid land snail (*Pseudocharopa lidgbirdi)* • Magnificent Helicarionid land snail (*Gudeoconcha sophiae magnifica)* • Little Mountain Palm (*Lepidorrhachis mooreana*) • Phillip Island Wheat Grass (*Elymus multiflorus var. Kingianus*) • *Calystegia affinis* Potential Listing: • Lord Howe Placostylus (*Placostylus bivaricosus*). Currently listed as Endangered • *Chionochloa howensis* (not listed) • *Passiflora herbertiana* ssp. *insulae-howe*i (not listed) • Gnarled mossy cloud forest (Threatened Ecological Community, not listed)
Endangered	Is considered to be facing a very high risk of extinction in the wild. Probability of extinction in the wild is at least 20% within 20 years or five generations, whichever is the longer (up to a maximum of 100 years).	Currently listed: • Lord Howe Placostylus (*Placostylus bivaricosus*) • *Xylosma parvifolia* • *Geniostoma huttonii* • Rock Shield Fern (*Polystichum moorei)* Potential Listing: • LHI Gecko (*Christinus guentheri*) Currently listed as Vulnerable • LHI Skink (*Oligosoma lichenigera*) Currently listed as Vulnerable • *Cosprosma inopinata* (not listed) • Wood-Feeding Cockroach (*Panesthia lata)*
Vulnerable	Is considered to be facing a high risk of extinction in the wild. Probability of extinction in the wild is at least 10% within 100 years.	Currently listed: • Kermadec petrel (*Pterodroma neglecta*) • White-bellied storm petrel (*Fregetta grallaria*) • Lord Howe woodhen (*Hypotaenidia sylvestris*) • LHI Gecko (*Christinus guentheri*) • LHI Skink (*Oligosoma lichenigera*)

In addition to biodiversity losses, failure to proceed with the REP will negate the potential for the reintroduction of extirpated species confined to offshore islands (i.e. the Wood-Feeding Cockroach, Phasmid, Kermadec petrel, and White-bellied storm petrel), reintroduction of ecological equivalent extinct species and recovery of threatened

species to enable restoration of ecological processes. None of these conservation actions would be possible with the ongoing presence of rodents on LHI. Failure to proceed with eradication will negate the restoration of these essential ecological functions.

Therefore it is highly likely that failure to proceed with the REP will allow continued negative impacts of rodents on biodiversity on LHI through:

- An increased risk that several species could experience population declines and become eligible for listing under any category under the EPBC Act.
- An increased risk that several EPBC Act listed threatened species could experience population declines and become eligible to be listed in another category representing a higher degree of endangerment
- An increased extinction probability for several species.

These impacts have a high probability of being avoided if the REP proceeds as evidenced on Macquarie Island. Since eradication of rabbits, rats and mice in 2011, eight species of birds have an improved conservation outlook (Birdlife Australia, 2016).

1.9.2 Failure to Mitigate Impacts of Ongoing use of Poison

Failure to proceed with the REP will mean continuation of the current (or an expanded) rodent control program (and the continuous presence of poison baits in the environment) essentially in perpetuity. The LHIB undertakes a rodent control program however many residents also carry out their own rodent baiting (sometimes in contravention to rodenticide label requirements). This control program only covers about 10% of the island. In order to mitigate biodiversity, world heritage and socio-economic impacts, it is likely that if the eradication did not proceed, an expanded control program would need to be implemented to protect ecological assets. Consequences of ongoing use of poison for rodent control on LHI include:

- Ongoing and continual exposure to poison for non-target species. For example in 2011, eight out of ten deceased woodhens examined for cause of death tested positive to Brodifacoum residue likely as a result of community rodent baiting. Numerous other woodhens have been observed exhibiting symptoms of Brodifacoum poisoning and many have recovered after being administered vitamin K antidote (Bower, H. *pers comms*, 2016). Ongoing exposure also increases the risk to non target species of bioaccumulation through consumption of poisoned invertebrates.
- Significant potential for rodents on LHI to develop bait shyness or resistance to poison. Mice have already developed a resistance to warfarin on Lord Howe Island (Billings, 2000). The suite of second-generation anticoagulants, which includes Brodifacoum, is the only tool currently available for effectively eradicating rodents from islands. Resistance to these poisons, if it develops, will make eradication impossible and will greatly restrict control, meaning impacts to biodiversity will be greatly magnified.
- Ongoing potential exposure to poison for humans particularly small children and pets.

A one off, planned eradication will eliminate these risks.

1.9.3 Failure to Mitigate Rodent Impacts to World Heritage Values

As a signatory to the “Convention Concerning the Protection of the World Cultural and Natural Heritage”, Australia has agreed to:

- “identify, protect, conserve, and present World Heritage properties”; and to
- “undertake 'appropriate legal, scientific, technical, administrative and financial measures necessary for the identification, protection, conservation, presentation and rehabilitation of this heritage”

A 2014 World Heritage property outlook assessment undertaken by the IUCN considered the threat to the LHIG World Heritage values from rodents as a “High Threat” and recommended implementation of the rodent REP to address the threat (IUCN, 2016).

Failure to mitigate the threat of rodents on the LHIG could potentially result in the further degradation of World Heritage values (including endemic and threatened species) and the potential for the LHIG to be inscribed on the “World Heritage in Danger List”. The World Heritage Committee has previously inscribed other World Heritage properties to the “In Danger List” as a result of invasive species impacts (UNESCO, 2009). Examples include Djoudj National Bird Sanctuary (Senegal) listed in 2000, Galápagos Islands (Ecuador) in 2007 and Río Plátano National Park (Honduras) 1996.

Inscription to the “World Heritage in Danger List” would have severe reputational consequences for Australia. As the World Heritage values contribute immensely to the island’s economy and the wellbeing of its residents any degradation of the World Heritage values would also have a severe impact on the Island’s economy.

1.9.4 Failure to Mitigate Socio-Economic Impacts of Rodents

Rodents on LHI have the following socio-economic impacts:

- Impacts on community amenity though hygiene issues and spoiling of food stuffs including locally grown fruit and vegetables.
- Impacts to the tourism industry through negative interactions with rodents or rodent control program
- Impacts to the Kentia Palm industry through predation of seeds and seedlings
- Ongoing costs of rodent control. The LHIB currently spends $85,000 per annum on its rodent control program. Many residents also implement their own rodent control at their own cost (estimated to be $4,800 per annum).
- Ongoing potential for rodent borne diseases.

Failure to proceed with the REP will ensure the continuation of socio economic impacts from rodents on LHI and failure to reap the $141M in biodiversity and tourism benefits expected from the REP. Further detail on socio economic impacts can be found in Section 10.

1.10 Compliance with the EPBC Act

1.10.1 Compliance with the Objects of the EPBC Act

The proposed LHI REP is in compliance with the objects of the EPBC Act as shown in below table.

Table 6 Compliance with EPBC Act Objectives

Objects of the Act	Demonstrated Compliance
(a) to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance;	The proposed REP will provide for protection of the environment through the eradication of introduced rodents (rats and mice) from the LHIG. The eradication will permanently remove impacts from rodents to the environment and matters of NES including threatened and migratory species and World Heritage values.
(b) to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources;	The proposed REP will promote ecologically sustainable development through the conservation of natural resources in particular threatened species and therefore World Heritage values of the LHIG.
(c) to promote the conservation of biodiversity;	The proposed REP will promote conservation of biodiversity on the LHIG through the eradication of introduced rodents (rats and mice) from the LHIG. The eradication will permanently remove impacts from rodents to the environment and matters of NES including threatened and migratory species and World Heritage values.
(d) to promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous peoples;	The proposed REP has been developed and funded in a cooperative approach. The LHI community and other stakeholders have been extensively consulted over many years on the project (see Section 8). Funding (both direct and in-kind) has been received from all levels of Government.
(e) to assist in the co-operative implementation of Australia's international environmental responsibilities;	The proposed REP will contribute significantly to Australia's international environmental responsibilities including: The Convention Concerning the Protection of the World Cultural and Natural Heritage. As a signatory to this convention, Australia has agreed to: • "identify, protect, conserve, and present World Heritage properties"; and to • "undertake 'appropriate legal, scientific, technical, administrative and financial measures necessary for the identification, protection, conservation,

	presentation and rehabilitation of this heritage". The *Convention on Biological Diversity*, which requires countries to develop and implement strategies for the sustainable use and protection of biodiversity; Migratory Bird Agreements established for the protection and conservation of migratory birds and their important habitats, such as: • Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) • China-Australia Migratory Bird Agreement (CAMBA) • Japan-Australia Migratory Bird Agreement (JAMBA) • Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA) • Convention on Wetlands of International Importance (Ramsar Convention) • Agreement on the Conservation of Albatrosses and Petrels (ACAP) Implementation of the REP would clearly satisfy international obligations by removing impacts from rodents to threatened or migratory species and therefore World Heritage values of the LHIG.
(f) to recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and	Not Applicable. There are no indigenous stakeholders on LHI.
(g) to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge.	Not Applicable. There are no indigenous stakeholders on LHI.

1.10.2 Compliance with the Principles of ESD

The proposed LHI REP is in compliance with the Principles of Ecologically Sustainable Development (ESD)

Table 7 Compliance with ESD Principles

Principles of ESD	Demonstrated Compliance
(a) Decision-making processes must effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.	The proposed REP considers both positive and negative short and long term environmental and socio-economic impacts of proceeding with the eradication compared to not proceeding. The REP will provide a range of environmental and socio-economic benefits that significantly outweigh potential negative impacts or risks. The final decision to proceed or not will be made considering whether environmental and human health risks have been appropriately mitigated and considering the technical, financial and social feasibility and acceptability of the project. Stakeholders including the local community have been extensively consulted and their concerns have been considered and addressed to the extent possible.
(b) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty must not be used as a reason for postponing measures to prevent	The proposed REP meets this principle. Rodents have previously been responsible or implicated in a number of extinctions on the LHIG (and around the world) and are a recognised threat to at least 13 other bird species, 2 reptiles, 51 plant species, 12 vegetation communities and

environmental degradation.	numerous threatened invertebrates on the island. Failure to address the threat from rodents may lead to further serious or irreversible environmental damage. Significant effort has been made to ascertain potential impacts posed by the eradication based on global scientific evidence and local studies. However, full lack of scientific certainty on some aspects should not be used as a reason to postpone the eradication.
(c) The principle of inter-generational equity – that the present generation must ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	The LHIB is directly responsible to the NSW Minister for the Environment and comprises four Islanders elected by the local community and three members appointed by the Minister. It is charged with the care, control and management of the Island's natural values and the affairs and trade of the Island. It is also responsible for the care, improvement and welfare of the Island and residents. Inter- generational equity has been a major consideration for the LHIB in its progression of the proposed REP. The LHIB recognises that long term protection of biodiversity and World Heritage values is intrinsic to the long term environmental and economic welfare of current and future generations of islanders. The implementation of the proposed REP will help to ensure the health, diversity and productivity of the LHI environment is enhanced for future generations through removal of rodent impacts on those values.
(d) The conservation of biological diversity and ecological integrity must be a fundamental consideration in decision-making.	The proposed REP will provide for conservation of biodiversity through the eradication of introduced rodents (rats and mice) from the LHIG. The eradication will permanently remove impacts from rodents to biodiversity and matters of NES including threatened and migratory species and World Heritage values.
(e) Improved valuation, pricing and incentive mechanisms must be promoted.	The REP will have significant economic benefits to LHI.

2 Description of the Action

The following operational elements of the proposed REP are described below.

- Removal of livestock
- Captive management of at risk species
- Bait application methods, product storage and disposal and spill response
- Environmental monitoring
- Masked owl eradication
- Rodent detection monitoring
- Improved Biosecurity
- Ongoing biodiversity benefits monitoring

2.1 Removal of Livestock

Having livestock present during the eradication poses a substantial risk to the success of the operation. Consequently, the proposal is to as far as possible de-stock the island prior to the eradication. Stock feed provides an ideal harbour and food source for rodents. If rodents have access to this feed or any spillage they may not take baits. There is also a risk that livestock may consume baits reducing coverage of bait and availability to rodents.

De-stocking of beef cattle in the 12 months prior to the eradication will be done largely through orderly culling and butchering. Cost of replacement stock and associated costs of returning stock to the island will be met by the LHIB through agreement with livestock owners. Replacement breeding stock will then be brought to the island when the breakdown of bait in paddocks is complete. Most stock-owners on the island have indicated their willingness to cooperate in this process, subject to satisfactory compensatory arrangements being put in place. Breeding stock will be gradually replaced, beginning 100 days after the eradication.

With the proposed mitigation measures in place there is little likelihood of Brodifacoum entering the human food chain via milk from the dairy herd. As such, it will be safe for the dairy herd (approximately 14 animals) to remain on the island throughout the operation, if requested by the owners. Animals will be confined to a small paddock and will receive supplementary feed during the period that bait is present (approximately 100 days). Baiting within the holding paddock will use cattle-proof bait stations

Similar arrangements will be made for remaining goats (approximately three) and horses (approximately three) confined during the risk period. All confined livestock will be fed with fresh-cut grass from unused paddocks, alleviating the need to store food which may provide an alternative food source for rodents. If required, grass will be raked before being cut to remove any bait pellets.

Poultry will be exposed to the risk of primary poisoning from baits spread around the settlement area. More significantly, the presence of poultry poses a major risk to the success of the operation as the presence of large amounts of feed grain has the potential to distract rodents from consuming the bait. All poultry will be removed from the island or culled at least one month prior to the eradication. Once all bait has disintegrated and no longer poses a threat, disease-free day-old chicks will be brought to the island to replace those birds removed. Residents will be compensated for lost poultry and egg production resulting from the eradication programme.

2.2 Captive Management

The LHI Woodhen (*Hypotaenidia sylvestris*) and LHI Currawong (*Strepera graculina crissalis*), both of which are listed as Vulnerable under the EPBC Act, are at risk of being poisoned, the former from eating baits and poisoned rodents, the latter from preying on poisoned rodents during the rodent eradication.

In order to protect these two bird species, it is proposed that concurrently with the rodent baiting, a large proportion of the population of the woodhens and currawongs will be taken into captivity on LHI.

The period of captivity will start from approximately two months before baiting commences until baits and rodent carcasses have broken down (or for a total period of up to nine months). The time that baits are available is estimated to be 100 days although the rate of bait breakdown will be monitored to ensure birds are not released at a time which may put them at risk. Up to approximately 85% of the island's woodhen population will be taken into captivity. For the currawong, the proportion will be about 50-60%. This will also ensure genetic diversity is maintained.

Significant experience has been gained in managing woodhen populations in captivity on LHI. During a recovery program for the species (1981-1983), protocols for capturing and housing woodhens were established (Gillespie,