



# **Lord Howe Island Rodent Eradication Project**

**EPBC Public Environment Report December 2016**

## ***Appendix A - Guidelines for the Content of the Draft Public Environment Report***

**A.1 2016/7703 Assessments Finalised PER Guidelines LHI Rat Eradication**

**GUIDELINES FOR THE CONTENT OF THE DRAFT  
PUBLIC ENVIRONMENT REPORT  
Lord Howe Island Rodent Eradication Project, NSW**

***Environment Protection and Biodiversity Conservation Act  
1999***

**(Reference: EPBC 2016/7703)**

# **GUIDELINES FOR THE DRAFT PUBLIC ENVIRONMENT REPORT FOR Lord Howe Island Rodent Eradication Project, NSW (Lord Howe Island Board)**

## **PREAMBLE**

The Lord Howe Island Board proposes to eradicate introduced rodents (rats and mice) on Lord Howe Island (LHI) and its associated islands and rocky islets (the Lord Howe Island Group) (LHIG).

The proposed action also includes the capturing and housing of Lord Howe Woodhens (*Gallirallus sylvestris*) and Lord Howe Island Currawongs (*Strepera graculina crissali*), both of which are listed as Vulnerable under the EPBC Act and are components of the World Heritage values of LHI. These species are at risk of being poisoned, the former from eating baits and poisoned rodents and invertebrates, the latter from preying on poisoned rodents during or following rodent baiting.

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. 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 200m in height.

LHIB is directly responsible to the NSW Minister for the Environment and is charged with the care, control and management of the Island's natural values and the affairs and trade of LHI. It is also responsible for the care, improvement and welfare of the island and residents.

The proposal was referred under the *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 (section 18 & section 18A);
- Listed migratory species (section 20 & section 20A) – migratory marine birds and migratory wetland species
- The heritage values of a National Heritage place (section 15B & section 15C);
- The world heritage values of a declared World Heritage property (section 12 & section 15A).

The Minister's delegate determined on 30 June 2016 that the proposed activity be assessed by a Public Environment Report (PER).

Information about the action and its relevant impacts, as outlined below, is to be provided in the PER. This information must be sufficient to allow the Minister to make an informed decision on whether or not to approve, under Part 9 of the EPBC Act, the taking of the action for the purposes of each controlling provision.

## GENERAL ADVICE ON GUIDELINES

### 1 GENERAL CONTENT

The PER must be a stand-alone document that primarily focuses on the matters of NES listed above. The PER may draw on or repeat relevant information from the referral documents. It must contain sufficient information to avoid the need to search out previous or supplementary reports. The PER must take into consideration all relevant EPBC Act Significant Impact Guidelines that can be downloaded from the following web site: <http://www.environment.gov.au/epbc/guidelines-policies.html>.

The PER must enable interested stakeholders and the Minister to understand the environmental consequences of the proposed development. Information provided in the PER must be objective, clear, and succinct and, where appropriate, be supported by maps, plans, diagrams or other descriptive detail. The body of the PER is to be written in a clear and concise style that is easily understood by the general reader. Technical jargon must be avoided wherever possible. Cross-referencing must be used to avoid unnecessary duplication of text.

Detailed technical information, studies or investigations necessary to support the main text must be included as appendices to the PER. It is recommended that any additional supporting documentation and studies, reports or literature not normally available to the public from which information has been extracted be made available at appropriate locations during the PER public comments period.

After receiving the Minister's approval to publish the report, the proponent is required to make the draft PER available for a period of public comment. Specific instructions regarding publication requirements will be provided as part of the Minister's direction to publish.

If it is necessary to make use of material that is considered to be of a confidential nature, the proponent must consult with the Department on the preferred presentation of that material, before submitting it to the Minister for approval for publication.

The level of analysis and detail in the PER must reflect the level of significance of the expected impacts on the environment. Any and all unknown variables or assumptions made in the assessment must be clearly stated and discussed. The extent to which the limitations, if any, of available information may influence the conclusions of the environmental assessment must be discussed.

The proponent must ensure that the PER assesses compliance of the action with principles of Ecologically Sustainable Development as set out in the EPBC Act, and the objects of the Act at [Attachment 1](#). A copy of Schedule 4 of the EPBC Regulations, - *Matters to be addressed by draft public environment report and environmental impact statement* is at [Attachment 2](#).

## 2 FORMAT AND STYLE

The PER must comprise three elements, namely:

- the executive summary;
- the main text of the document, and
- appendices containing detailed technical information and other information that can be made publicly available.

The guidelines have been set out in a manner that may be adopted as the format for the PER. This format need not be followed where the required information can be more effectively presented in an alternative way. However, each of the elements must be addressed to meet the requirements of the EPBC Act and Regulations. The Department can provide guidance regarding the proposed table of contents/structure of the PER at an early stage.

The PER must be written so that any conclusions reached can be independently assessed. To this end all sources must be appropriately referenced using the Harvard standard. The reference list must include the address of any Internet “web” pages used as data sources and when they were accessed.

The main text of the PER must include a list of abbreviations, a glossary of terms and appendices containing:

- a copy of these guidelines, including cross referencing to all locations where the information relevant to addressing each item can be found in the PER;
- a list of persons and agencies consulted during preparation of the PER;
- contact details for the proponent; and
- the names and qualifications of the persons involved in preparing the PER and work done by each of these persons.

Maps, diagrams and other illustrative material must be included in the PER. The PER must be produced on A4 size paper capable of being photocopied, with maps and diagrams on A4 or A3 size and in colour where possible. All relevant details such as names and legends must be clear and legible for screen and print.

The proponent must consider the format and style of the document appropriate for publication on the Internet. The capacity of the website to store data and display the material may have some bearing on how the document is constructed.

## **PER GUIDELINES SPECIFIC CONTENT REQUIREMENTS**

### **2.1 GENERAL INFORMATION**

This must provide the background and context of the action including:

- (a) the title of the action;
- (b) the full name and postal address of the designated proponent;
- (c) a clear outline of the objective of the action;
- (d) the location of the action;
- (e) the background to the development of the action;
- (f) how the action relates to any other actions (of which the proponent must reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action;
- (g) the current status of the action; and
- (h) the consequences of not proceeding with the action.

### **2.2 DESCRIPTION OF THE ACTION**

All planning, operational and post operational monitoring components of the action must be described in detail. This must include all works to be undertaken, structures to be built or elements of the action that may have impacts on matters of National Environmental Significance.

The description of the action must include details on how aerial and hand baiting operations are to be undertaken (including timing) and the proposed captive management arrangements for the Lord Howe Woodhen (*Gallirallus sylvestris*) and Lord Howe Island Currawong (*Strepera graculina crissalis*).

In addition, the chemical properties of Brodifacoum must be described, including known risks and benefits and a summary of its use in similar island environments.

Reasons justifying undertaking the proposal in the manner proposed must also be outlined.

### **2.3 FEASIBLE ALTERNATIVES**

Any feasible alternatives to the action to the extent reasonably practicable, including:

- (a) the alternative of taking no action;
- (b) a comparative description of the impacts of each alternative on the matters protected by controlling provisions of Part 3 of the EPBC Act for the action; and

- (c) sufficient detail to make clear why any alternative is preferred to another (including discussion about the suitability of other poisons and bait distribution methods other than aerial distribution using helicopters).
- (d) the alternative of using of bait stations with no aerial broadcasting of pellets must be discussed.
- (e) detailed justification for the proposed baiting of associated islands and rocky islets must be provided, given that rats do not occur at these locations and the possibility exists for adverse outcomes without any environmental benefits.

Short, medium and long-term advantages and disadvantages of the options must be discussed.

## **2.4 DESCRIPTION OF THE ENVIRONMENT**

A description of the environment of the proposal site and the surrounding areas that may be affected by the action. It is recommended that this include the following information:

- (a) Listed threatened and migratory species and ecological communities that are likely to be present in the vicinity of the site, including the following details:
  - Details of the scope, timing (survey season/s) and methodology for studies or surveys used to provide information on the listed species/community/habitat at the site (and in areas that may be impacted by the project).
  - Other details required for site-specific species must be included here (refer to Attachment 3)
- (b) A description of the World Heritage/National Heritage values of the World Heritage property/National Heritage Place relevant to the action.

## **2.5 RELEVANT IMPACTS**

- (a) The PER must include a description of all of the relevant impacts of the action. Relevant impacts are impacts that the action will have or is likely to have on a matter protected by a controlling provision (as listed in the preamble of this document). Direct, indirect, facilitated and cumulative impacts during both the baiting and monitoring stages of the project must be addressed, and the following information provided:
  - a detailed assessment of the nature and extent of the likely short-term and long-term relevant impacts;
  - a statement of whether any relevant impacts are likely to be unknown, unpredictable or irreversible;

- analysis of the significance of the relevant impacts; and
  - any technical data and other information used or needed to make a detailed assessment of the relevant impacts.
- (b) The PER must identify and address cumulative impacts, where potential project impacts are in addition to existing impacts of other activities.

The PER must also address the potential cumulative impact of the proposal on ecosystem resilience. The cumulative effects of climate change impacts on the environment must also be considered in the assessment of ecosystem resilience. Where relevant to the potential impact, a risk assessment must be conducted and documented.

- (c) The PER must also provide a detailed assessment of any likely impact that this proposed action may facilitate on the following (at the local, regional, state, national and international scale):
- The World Heritage values of the Lord Howe Island Group;
  - The National Heritage values of the Lord Howe Island Group;
  - Listed threatened species and ecological communities; and
  - Listed migratory species.
- (d) The PER must provide further information (in addition to the above requirements) as detailed at Attachment 3.

## **2.6 PROPOSED SAFEGUARDS AND MITIGATION MEASURES**

The PER must propose specific mitigation measures to deal with the relevant impacts of the action. Specific and detailed descriptions of proposed measures must be provided and substantiated, based on best available practices and must include the following elements.

- (a) A consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including:
- a description of the environmental outcomes the measures are expected to achieve including details of any baseline data or proposed monitoring to demonstrate progress towards achieving these outcomes;
  - a description of proposed safeguards and mitigation measures to deal with relevant impacts of the action, including mitigation measures proposed to be taken by State governments, local governments or the proponent;
  - assessment of the expected or predicted effectiveness of the mitigation measures;
  - any statutory or policy basis for the mitigation measures; and

- the cost of the mitigation measures.
- (b) The name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.

The PER must propose specific mitigation measures or offsets to compensate for residual impacts (in addition to the above requirements) to avoid, minimise or compensate for the impacts arising from an assessment of the items detailed at Attachment 3.

## **2.7 OTHER APPROVALS AND CONDITIONS**

The PER must include information on any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action. This must include:

- (a) details of any local or State Government planning scheme, or plan or policy under any local or State Government planning system that deals with the proposed action, including:
- what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy; and
  - how the scheme provides for the prevention, minimisation and management of any relevant impacts;
- (b) a description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the Act), including any conditions that apply to the action;
- (c) a statement identifying any additional approval that is required; and
- (d) a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.

## **2.8 CONSULTATION**

Any consultation about the action, including:

- (a) any consultation that has already taken place;
- (b) proposed consultation about relevant impacts of the action;
- (c) if there has been consultation about the proposed action, any documented response to, or result of, the consultation; and
- (d) identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.

## **2.9 ENVIRONMENTAL RECORD OF PERSON(S) PROPOSING TO TAKE THE ACTION**

The information provided must include details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

- (a) the person proposing to take the action; and
- (b) for an action for which a person has applied for a permit, the person making the application.

If the person proposing to take the action is a corporation, details of the corporation's environmental policy and planning framework must also be included.

## **2.10 ECONOMIC AND SOCIAL MATTERS**

The economic and social impacts of the action, both positive and negative, must be analysed. Matters of interest must include:

- details of any public consultation activities undertaken, and their outcomes;
- projected economic costs and benefits of the project, including the basis for their estimation through cost/benefit analysis or similar studies;
- employment opportunities expected to be generated by the project (including construction and operational phases);
- the potential impacts of the proposed action on human health and safety, in particular the risk of accidental poisoning of children and contamination of rainwater and ground water supplies.

Economic and social impacts must be considered at the local, regional and national levels. Details of the relevant cost and benefits of alternative options to the proposed action, as identified in section 2.3 above, must also be included.

The PER must provide further information on economic and social matters (in addition to the above requirements) as detailed at [Attachment 3](#).

## **2.11 INFORMATION SOURCES PROVIDED IN THE PER**

For information given in a draft Public Environment Report, including proposed mitigation measures, the draft must state:

- (a) the source of the information;
- (b) how recent the information is;

- (c) how the reliability of the information was tested;
- (d) what uncertainties (if any) are in the information; and
- (e) the relevant peer reviewed scientific papers or studies and/or identify the qualifications of the authors of non-peer reviewed material used to support statements made.

## **2.12 CONCLUSION**

With reference to applicable EPBC Act species, recovery plans, listing advice and heritage value statements an overall conclusion as to the environmental acceptability of the proposal must be provided, including discussion on compliance with principles of ESD and the objects and requirements of the EPBC Act.

Measures proposed or required by way of offset for any unavoidable impacts on NES matters, and the relative degree of compensation, must be restated here.

## **ATTACHMENT 1**

### **THE OBJECTS AND PRINCIPLES OF THE *ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999* SECTIONS 3 AND 3A**

#### **3 Objects of the Act**

- (a) to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance;
- (b) to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources;
- (c) to promote the conservation of biodiversity;
- (d) to promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous peoples;
- (e) to assist in the co-operative implementation of Australia's international environmental responsibilities;
- (f) to recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and
- (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.

#### **3A Principles of Ecologically Sustainable Development**

The following principles are principles of ecologically sustainable development.

- (a) Decision-making processes must effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.
- (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 environmental degradation.
- (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.

(d) The conservation of biological diversity and ecological integrity must be a fundamental consideration in decision-making.

(e) Improved valuation, pricing and incentive mechanisms must be promoted.

## **ATTACHMENT 2**

### **MATTERS THAT MUST BE ADDRESSED IN A PER AND EIS (SCHEDULE 4 OF THE EPBC REGULATIONS 2000)**

#### **1 General information**

1.01 The background of the action including:

- (a) the title of the action;
- (b) the full name and postal address of the designated proponent;
- (c) a clear outline of the objective of the action;
- (d) the location of the action;
- (e) the background to the development of the action;
- (f) how the action relates to any other actions (of which the proponent must reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action;
- (g) the current status of the action; and
- (h) the consequences of not proceeding with the action.

#### **2 Description**

2.01 A description of the action, including:

- (a) all the components of the action;
- (b) the precise location of any works to be undertaken, structures to be built or elements of the action that may have relevant impacts;
- (c) how the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts;
- (d) relevant impacts of the action;
- (e) proposed safeguards and mitigation measures to deal with relevant impacts of the action;
- (f) any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action;

(g) to the extent reasonably practicable, any feasible alternatives to the action, including:

- (i) the alternative of taking no action;
- (ii) a comparative description of the impacts of each alternative on the matters protected by the controlling provisions for the action; and
- (iii) sufficient detail to make clear why any alternative is preferred to another;

(h) any consultation about the action, including:

- (i) any consultation that has already taken place;
- (ii) proposed consultation about relevant impacts of the action; and
- (iii) if there has been consultation about the proposed action — any documented response to, or result of, the consultation; and

(i) identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.

### **3 Relevant impacts**

3.01 Information given under paragraph 2.01(d) must include

- (a) a description of the relevant impacts of the action;
- (b) a detailed assessment of the nature and extent of the likely short term and long term relevant impacts;
- (c) a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;
- (d) analysis of the significance of the relevant impacts; and
- (e) any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

### **4 Proposed safeguards and mitigation measures**

4.01 Information given under paragraph 2.01(e) must include:

- (a) a description, and an assessment of the expected or predicted effectiveness of, the mitigation measures;
- (b) any statutory or policy basis for the mitigation measures;
- (c) the cost of the mitigation measures;

- (d) an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing;
- (e) the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program; and
- (f) a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including mitigation measures proposed to be taken by State governments, local governments or the proponent.

## **5 Other Approvals and Conditions**

5.01 Information given under paragraph 2.01(f) must include:

- (a) details of any local or State government planning scheme, or plan or policy under any local or State government planning system that deals with the proposed action, including:
  - (i) what environmental assessment of the proposed action has been, or is being carried out under the scheme, plan or policy; and
  - (ii) how the scheme provides for the prevention, minimisation and management of any relevant impacts;
- (b) a description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the Act), including any conditions that apply to the action;
- (c) a statement identifying any additional approval that is required; and
- (d) a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.

## **6 Environmental record of person proposing to take the action**

6.01 Details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

- (a) the person proposing to take the action; and
- (b) for an action for which a person has applied for a permit, the person making the application.

6.02 If the person proposing to take the action is a corporation — details of the corporation's environmental policy and planning framework.

## **7 Information sources**

7.01 For information given the PER must state:

- (a) the source of the information; and
- (b) how recent the information is; and
- (c) how the reliability of the information was tested; and
- (d) what uncertainties (if any) are in the information.

## Attachment 3

### 1. Relevant impacts that must be addressed in the PER (refer to section 2.5 of PER Guidelines)

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

- mortality due to primary and/or secondary poisoning;
- bird strikes and disturbance from helicopters; and
- long term changes to ecological relationships affecting threatened species following the eradication of rats and mice.

#### Mortality due to primary and/or secondary poisoning

The risk to various species from primary or secondary poisoning will be a function of the species' behaviour; their size and feeding habits; their susceptibility to the toxin; the composition and delivery method of the bait; and the probability of exposure to the toxin either directly or indirectly.

On other islands (Rat Island in the Aleutians and Macquarie Island south of Tasmania) Brodifacoum pellets were distributed by helicopters resulting in a substantial number of bird deaths due to secondary poisoning after the carcasses of rats, rabbits or other birds which had consumed baited pellets were scavenged.

The Department notes the high rainfall on the island and the importance of fresh water for a range of island inhabitants. The PER must address the impact of Brodifacoum in fresh water including, but not limited to, transportation, residence and runoff to marine waters.

The Department notes that the incidence of secondary poisoning following baiting operations can be significantly reduced by mitigation measures including systematically searching for and removing the poisoned carcasses of rats and non-target species.

The PER must describe in detail the proposed carcass collection and disposal arrangements.

#### Bird strikes, disturbance from helicopters

The operation of baiting helicopters in the vicinity of seabirds that are nesting, roosting or leaving or returning from foraging trips poses a risk in terms of bird strike and repeated disturbance to seabirds.

The PER must consider the likely impacts of helicopter baiting on seabirds including the risk of bird strike and nests being deserted or abandoned for long periods of time, with detrimental impacts on chicks.

The PER must discuss whether or not monitoring the impact of helicopter movements on breeding or roosting seabird colonies using on-ground observers is necessary or feasible.

### Long term ecological changes

Rodents have been exerting a significant influence on the ecology of LHI for close to 100 years, affecting not only the structure and integrity of threatened species habitat, but also predator/prey relationships for the island's birds. The removal of rodents is anticipated to have many positive effects on the ecology of LHI, including the recovery of vegetation communities and these changes, in turn, are expected to benefit many threatened species.

The PER must discuss the positive and negative long term ecological changes that are likely to occur following rodent baiting. The analysis must address, but not be limited to:

- an assessment as to whether any natural equilibrium has been reached between rodents and endemic species on the island;
- changes to existing species populations (size, possibility of the establishment of new breeding areas);
- recolonisation of LHI by species not recorded on LHI for many years; and
- possible negative impacts to some threatened species in the long term due to large scale changes brought about by the removal of rodents.

Discussion must include an assessment of the above where full or partial eradication is achieved.

Given that these longer-term, ecological changes are difficult to predict (and acknowledging the possibility of unforeseen changes) discuss in detail proposed post-baiting species' population and breeding success monitoring arrangements and proposed mitigation management actions.

### **Listed threatened species and communities**

#### **Land Birds**

Lord Howe Woodhen (*Gallirallus sylvestris*) – Vulnerable

Lord Howe Island Currawong (*Strepera graculina crissalis*) - Vulnerable

The PER must contain (but not be limited to) the information in the referral relating to the Lord Howe Woodhen (*Gallirallus sylvestris*) and the Lord Howe

Island Currawong (*Strepera graculina crissalis*) as well as addressing the following:

- Discuss in detail the potential catastrophes that could affect the remaining wild populations or captive populations of both species. Including any avian disease or virus likely to infect captive LH Woodhens or Currawongs.
- Brodifacoum may bioaccumulate and biomagnify in the environment, including in invertebrates. Discuss the likelihood of individuals of either species ingesting lethal quantities of Brodifacoum by feeding on invertebrates.
- The referral states it is expected that approximately 90% of the poisoned rodents will die in underground dens or amongst dense vegetation. How was this estimate determined?
- Provide details regarding the captive management facilities for the LH Woodhen and LHI Currawong that will be located on LHI, including construction details, management arrangements, husbandry protocols and the outcomes of previous captive management programs.
- The referral states that LH Woodhens will be in captivity for nine months. If eradication is unsuccessful in the first year of baiting, will LH Woodhens remain in captivity? How will long term captivity of the species be managed? For example, how will the breeding season be managed?
- LH Woodhens in group captivity are at risk of injury and stress from conspecific aggression. Have small group pens with the use of screens to reduce this issue been considered? Will breeding pairs be separated?
- Once eradication has been confirmed through extensive surveys, will toxicity testing be undertaken to inform the timing of release of captive individuals? It is noted that release of captive individuals must not occur until Brodifacoum residues are at non-detectable levels. How will the residual Brodifacoum residue levels be assessed?
- Detail how captive individuals will be released, including details of transport and release sites. Will the entire captive population be released within a short time period, or will release of individuals be staggered?
- Will captive individuals be banded for monitoring purposes?
- Will regular surveys be undertaken following release of the captive population to determine survival (recapture), breeding success and population trends of LH Woodhens?

The PER must contain the following additional information to determine adequacy of captive management on the mainland:

- Provide details about proposed captive population(s) of LH Woodhens and LHI Currawongs on the Australian mainland and how these will contribute to the conservation of the species. For example, will individuals captured prior to commencement of the eradication program be transported to the mainland to create/supplement mainland captive populations? Will there be a breeding program associated with this population?

- Provide details as to the number of birds that will be transferred to the mainland, the locations of the captive management facilities and the period of time they will remain on the mainland.
- Have attempts to breed these species away from LHI in the past been successful? Were captive reared birds released into the wild on LHI. Were they monitored and did they subsequently survive and successfully breed in the wild?

The referral states that as many individuals of the LHI Currawong population as possible (approximately 50-60%) from across LHI will be captured immediately prior to baiting commencing and will remain in captivity until 30 days after last indications of rodent survival (likely September).

- In their report to the LHIB in 2007, Carlile and Priddell (NSW Department of Environment and Conservation) note that “Adult Currawongs can be trapped in reasonable numbers only during the period June–October. Outside this period they are difficult to trap.” (page ii).
- As the aerial baiting is to take place from June to August it may be difficult to catch 50-60% of the population in the two months preceding the baiting as LHI Currawongs are difficult to trap in this period. If 50-60% of the population cannot be caught, many wild Currawongs may be subject to secondary poisoning by eating rodents. This could result in a substantial reduction in the wild population of Currawongs. If the wild population is reduced as a result of the rodent eradication project, it is likely that there will be a reduction in genetic diversity in the Currawong community, reducing viability for the ongoing survival of the species.
- Provide justification for capturing only 50-60% of the Currawong population and an estimate of the minimum number of Currawongs needed to ensure ongoing viability of the population should all non-captive Currawongs die.

## **Seabirds**

The PER must include (but not be limited to) information from the referral related to all listed EPBC seabirds and must address the following issues:

- The referral indicates that most seabirds will be absent from LHI during the planned baiting period. Provide details of all seabird species that will be visiting LHI during this period (within (two) 2 km of LHI during the baiting period and prior to distributed baits disintegrating and residual Brodifacoum reducing to non-toxic levels).
- The discussion must include details of daily foraging, roosting and nesting activities. In relation to foraging trips, the daily departure and return times to LHI must be provided.
- For species that are not permanent residents on LHI the annual arrival and departure times must be provided.

- For the seabirds that will be foraging, roosting, nesting or visiting LHI during the baiting period, the PER must include an estimate of population numbers on, and in the vicinity of LHI; the location of roosting and nesting sites and potential impacts of the proposed action on each of these species including disturbance impacts from helicopters and observers.
- Discuss the possible pathways by which Brodifacoum could accumulate in seabirds and the likelihood of each species consuming baits, rat and mice carcasses or other organisms containing Brodifacoum.
- Describe the risk of collision with helicopters for each seabird species likely to be present in terms of their nesting, roosting, foraging and flight path behaviours, with particular attention to daily arrival and departure times when foraging.
- How many baits are likely to fall within range of a nest such that they can be ingested by a chick? Will any chicks be of sufficient size to ingest the baits? Are they likely to consume baits?
- What is the likelihood of nests being deserted because of helicopter over-flights?
- Describe proposed avoidance and mitigation measures to minimise potential impacts of the baiting operation on seabird species including hand baiting of seabird colonies.
- The Department notes that roosting and nesting seabirds could be disturbed by repeated helicopter passes at low altitudes whilst higher altitude passes will result in inaccurate bait distribution. Justify the vertical heights above the ground at which helicopters will fly to avoid unnecessary disturbance to seabirds that are roosting or nesting during the day and the radius (horizontal distance in metres from the colony) that helicopters have to stay above this height.
- The PER must discuss whether monitoring the impact of helicopter movements on breeding or roosting bird colonies is feasible. On-ground observers could film the baiting over-flights and have radio contact with the pilot to advise if birds are exhibiting unacceptable adverse reactions. Remedial action can be undertaken, including abandoning the flight line or increasing altitude (refer to the Macquarie Island Pest Eradication Project (EPBC 2009/5079)).
- The PER must discuss whether or not removing baits from seabird colonies is necessary or feasible and the potential for hand baiting of seabird colonies.
- The referral indicates that the proposed action is unlikely to have significant impacts on EPBC listed seabird species. The PER must cite (or provide) relevant scientific papers or studies (including APVMA risk assessments or toxicology reports, if available) that support this contention.

### Threatened Marine Species (Fish, Sharks, Whales and Turtles)

The PER must include information relevant to threatened marine species and also address the following (but not be limited to) for each threatened marine species identified in the Environment Reporting Tool as occurring within two (2) km of LHI:

- Relevant information about the species including, but not limited to, the population numbers of the species likely to be in the vicinity of LHI during the baiting period, and, if vagrants details of recent records;
- Potential impacts of the proposed action on each species;
- For each species, a description of the likelihood of Brodifacoum entering the marine environment to the extent that it could be ingested by marine animals (either directly or via secondary sources) in sufficient quantities to result in mortality and if it is likely to result in a significant impact on the population (acceptability of deaths as a proportion of the population) of a particular species.
- The referral indicates that the proposed action is unlikely to have significant impacts on threatened marine species. The PER must cite (or provide) relevant scientific papers or studies (including APVMA risk assessments or toxicology reports, if available) that support this contention.

### Invertebrates

The PER must assess the impacts on invertebrates, including (but not be limited to) the following:

- The potential impact of the proposal on all native invertebrates on LHI must be considered in the PER as LHI received World Heritage and National Heritage listing for its biodiversity, therefore, all impacts on biodiversity must be considered.
- The PER must address potential impacts on the following invertebrate groups: land and freshwater snails, beetles, ants, spiders, earthworms, butterflies and moths and springtails.
- In particular, the PER must discuss potential impacts of the proposed action on the four land snails listed as critically endangered under the EPBC Act and one flax snail listed as endangered. The land snails are: Magnificent Helicarionid Land Snail (*Gudeoconcha sophiae magnifica*), Masters' Charopid Land Snail (*Mystivagor mastersi*), Mount Lidgbird Charopid Land Snail (*Pseudocharopa ledgbirdi*) and Whitelegge's Land Snail (*Pseudocharopa whiteleggei*). The flax snail is the Lord Howe Flax Snail also known as Lord Howe Placostylus (*Placostylus bivaricosus*).
- The PER must discuss potential pathways by which Brodifacoum could impact invertebrates, including details of the likely impact of Brodifacoum on invertebrate metabolic processes.

- The referral indicates that the proposed action is unlikely to have significant impacts on invertebrates. The PER must cite (or provide) relevant scientific papers or studies (including APVMA risk assessments or toxicology reports, if available) that support this contention.

### Terrestrial Reptiles

The PER must assess impacts on EPBC listed Vulnerable terrestrial reptile species occurring on LHI, including, the Lord Howe Island Skink (*Oligosoma lichenigera*) and the Lord Howe Island Gecko (*Christinus guentheri*). In addition, the PER must address (but not be limited to) the following:

- The potential for primary and secondary poisoning in terms of behavioural characteristics of these species (habitat, foraging, dormancy).
- Include data supporting the contention that these species will be hibernating or semi-dormant during the period before baits disintegrate to non-toxic levels.
- Assess the impacts and likelihood of these reptiles preying on invertebrates that have been exposed to Brodifacoum in the soil.
- The referral indicates that the proposed action is unlikely to have significant impacts on reptiles. The PER must cite (or provide) relevant scientific papers or studies (including APVMA risk assessments or toxicology reports, if available) that support this contention.

### Terrestrial Plants

The PER must assess impacts on the following threatened flora species: the critically endangered *Calystegia affinis*, Phillip Island Wheat Grass (*Elymus multiflorus* subsp. *kingianus*) and Little Mountain Palm (*Lepidorrhachis mooreana*) and the three listed endangered species *Geniostoma huttonii*, Rock Shield Fern (*Polystichum moorei*) and *Xylosma parvifolia*.

- The PER must discuss the likelihood of uptake of Brodifacoum by these plants.
- The PER must consider the direct and indirect impacts of the works associated with building the LH Woodhen and Currawong captive management facility on these plants.
- The referral indicates that the proposed action is unlikely to have significant impacts on plants. The PER must cite (or provide) relevant scientific papers or studies (including APVMA risk assessments or toxicology reports, if available) that support this contention.

## Listed migratory species

The PER must include an assessment of impacts on listed migratory species.

- The referral states that any potential impacts are likely to be very localised and temporary in nature. This claim must be substantiated. The risks the proposed action poses to these migratory species are a function of the species present at the time, their behaviour, susceptibility of these species to Brodifacoum, the composition and delivery method of the bait and the probability of direct and indirect exposure to the poison. These aspects must be discussed.
- The referral also states that in most cases the low overall number of individuals involved, their diet and the low chance that they will be in the vicinity of LHI during the baiting operation means that while some individuals may be at risk there will be no impact at a population level.
- The PER must analyse the likelihood that the proposed rodent eradication program will have a significant impact on each listed migratory species likely to be present on, or in the vicinity of, LHI during the baiting period in terms of the above discussion and quantify these impacts relative to known or expected populations on the island.
- According to the referral, the main potential impact of the proposed action on EPBC listed migratory bird species present during the aerial baiting operation will be the risk of collision with helicopters. The Department notes that the impact of helicopter movements on seabirds roosting during the day is uncertain and not all marine bird species leave and return to LHI prior to and after planned baiting flights. The PER must discuss in detail the foraging movements of each migratory seabird species in terms of the risk of bird strike.
- The PER must consider the likelihood of the nests of listed migratory bird species being deserted or abandoned for long periods of time, with detrimental impacts on chicks.
- The PER must discuss the likelihood of direct and indirect consumption of Brodifacoum by listed migratory bird species.

## World Heritage and National Heritage

The Lord Howe Island Group was inscribed on the World Heritage List in December 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 the following two World Heritage natural criteria<sup>1</sup>:

(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.

For the purposes of the PER only criterion (x) is considered relevant. The World Heritage values are considered as a surrogate for the Lord Howe Island Group property's National Heritage Values as the Lord Howe Island Group was one of 15 World Heritage places included in the National Heritage List on 21 May 2007 for values similar to its Outstanding Universal Value. Values, potential impacts and mitigation strategies must be discussed in terms of the property's Outstanding Universal Value.

To ensure that all of the property's World Heritage values under criterion (x) are assessed and to ensure that interested stakeholders can understand the environmental consequences and proposed mitigation measures for the Lord Howe Island Group's World Heritage values, the PER must include a table as follows:

World Heritage value	Possible impacts	Assessment of impact	Mitigation measure/s
<i>eg. Lord Howe Island woodhen</i>	<i>Eg. Risk of primary and secondary poisoning</i>		<i>Mitigation measures are addressed at section x of this report</i>
eg. Other biodiversity	Eg. Freshwater species Marine corals Bats Invertebrates		

<sup>1</sup> World Heritage criteria referencing has changed over time. At the time of listing the property was inscribed under the following two criteria:

(iii) Contain unique, rare or superlative natural phenomena, formations or features or areas of exceptional natural beauty, such as superlative examples of the most important ecosystems to man, natural features (for instance, rivers mountains, waterfalls), spectacles presented by great concentrations of animals, sweeping vistas covered by natural vegetation and exceptional combinations of natural and cultural elements.

(iv) Be habitats where populations of rare or endangered species of plants and animals still survive. This category would include those ecosystems in which concentrations of plants and animals of universal interest and significance are found.

To establish a full list of values refer to the following documents:

- i. the nomination document (Attachment 4)
- ii. [Statement of Outstanding Universal Value](#) (Attachment 5)
- iii. IUCN Technical Review of the nomination ([http://whc.unesco.org/archive/advisory\\_body\\_evaluation/186.pdf](http://whc.unesco.org/archive/advisory_body_evaluation/186.pdf)).

It is important to note that values representing the property's Outstanding Universal Value can change over time as new information comes to light and this must be considered in the PER's investigation into World Heritage values.

Where the World Heritage value is referenced in other sections of the PER, the table must cross reference these sections rather than duplicate the information in the table.

## **2. Mitigation measures**

### **Non-target species impact mitigation plan**

#### **(Section 2.6 in PER Guidelines)**

- The Department is aware of impacts to non-target bird species from previous island baiting programs where potential impacts to non-target species are identified, the PER must include a non-target species impact mitigation plan. This may be similar to the Macquarie Island Pest Eradication Project non-target bird species mitigation plan that was drafted as part of the Macquarie Island pest eradication project.
- The plan must detail the resources, methodology and techniques to be used for the mitigation of any negative impacts of the rodent eradication project on non-target wildlife. The plan must provide details of a program for systematic and targeted collection of poisoned carcasses to mitigate secondary poisoning of non-target species, ongoing monitoring and regular reporting of non-target mortalities, cause of death of non-target species, and long term monitoring of the population recovery of threatened species. The plan must include an adaptive management framework and contingency measures to be implemented where impacts are higher than expected.
- The plan must specify contingency planning thresholds and protocols (eg helicopter protocols).
- The PER must discuss whether monitoring the impact of helicopter movements on breeding or roosting bird colonies is feasible. On-ground observers could film the baiting over-flights and have radio contact with the pilot to advise if birds are exhibiting unacceptable adverse reactions. Remedial action can be undertaken, including abandoning the flight line or increasing altitude (refer to the Macquarie Island Pest Eradication Project (EPBC 2009/5079)).

- The PER must discuss whether or not removing baits from seabird colonies is necessary or feasible and the potential for hand baiting of seabird colonies.

### **3. Eradication versus control**

#### **(Section 2.3 in PER Guidelines)**

- The PER should present a baseline of rodent abundance and distribution and methodology for monitoring the success of eradication efforts.
- The PER must comment in detail on the likelihood that rodents will be eradicated from LHI, addressing critical success factors including, but not limited to, the fact that many crevices are present (due to the island's volcanic origins) in which rodents can live and forage without feeding on baited pellets; mice have resistance to Brodifacoum; some residents will not allow baiting to take place on their properties; uncertainty regarding universal property access; the abundance of alternative food for rodents; and observations that rodents are currently not eating Brodifacoum baits.
- The PER must also comment on the fact that aerial rodent baiting using Brodifacoum has been less successful on islands at warmer latitudes than on sub-Antarctic, cool and cold temperate islands.
- The PER must discuss proposed future measures to ensure rodents do not return to LHI, should eradication be successful.
- The PER must discuss proposed future measures and strategy should eradication be unsuccessful.

### **4. Socio-economic**

#### **(Section 2.10 in PER Guidelines)**

- The PER must describe the likely impacts of the proposed action on tourism and the Kentia Palm industry (taking into account the impact of competition from foreign Kentia Palm plantations on the LHI Kentia Palm industry).
- Comment on the assertion that Brodifacoum might have adverse impacts on coral reefs in the vicinity of LHI, with consequent impacts on the tourism industry.
- Detail the potential impacts of the proposed action on human health and safety, in particular the risk of accidental poisoning of children and contamination of rainwater, ground water supplies and streams.
- Are any measures proposed to prevent the carcasses of poisoned rodents and birds accumulating on roof tops and in gutters used to collect rainwater?
- Will taste inhibiting agents be added to baits laid in the vicinity of the settlement to deter human ingestion? If so, what impact will this have on the efficiency of eradication?

- Discuss the potential for Brodifacoum to accumulate in cattle or fish that may be caught for human consumption.
- Comment on the assertion that dust from the aerial spread of Brodifacoum may extend up to a kilometre from the bait drop zone.
- Discuss the claim that swimmers, snorklers and scuba divers could be effected by Brodifacoum pellets that fall or are washed into the ocean.
- Will trickle buckets be used in any situations on LHI to control distribution of baits?
- The discussion should include a discussion of the probability of all positive and negative impacts over different time scales.