LORD HOWE ISLAND

PERMANENT PARK PRESERVE

DRAFT PLAN OF MANAGEMENT

Lord Howe Island Board

January 2009

Acknowledgments

This plan of management was prepared by the Northern Branch of the National Parks and Wildlife Service, part of the Department of Environment and Climate Change. It is based largely on the plan drafted by Adrian Davey and adopted by the Premier of NSW in 1986. Updates and other valuable information were provided by current and former staff of the Lord Howe Island Board, Board members, other Island residents, and specialists employed by the Department of Environment and Climate Change.

Disclaimer

This publication is for discussion and comment only. Publication indicates the proposals are under consideration and are open for public discussion. Provisions in the final management plan might not be the same as those in this draft management plan.

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For additional information or inquiries about this plan, contact the Lord Howe Island Board by phone on 02 6563 2066.

INVITATION TO COMMENT

The *Lord Howe Island Act 1953* (LHI Act) requires that a plan of management for the Permanent Park Preserve be prepared outlining how the preserve will be managed by the Lord Howe Island Board. According to the LHI Act, this plan is to be prepared under the same provisions of the *National Parks and Wildlife Act 1974* (NPW Act) which apply to national parks in New South Wales.

A plan of management was adopted for the Permanent Park Preserve in 1986. This current draft document has been prepared as a replacement to the adopted plan, and includes updated information and management strategies. While there are significant differences in the structure of the two documents, the proposed management philosophy has not significantly changed.

Due to the provisions of the NPW Act, preparation of a plan of management for the Permanent Park Preserve must include procedures for public consultation. For the preserve, these procedures will involve the following stages:

- The draft plan is placed on public exhibition for at least 90 days and any person may comment on it;
- The plan and submissions received on the plan are referred to the Lord Howe Island Board for consideration;
- The plan, submissions and any advice from the Lord Howe Island Board are referred to the National Parks and Wildlife Advisory Council for consideration;
- The plan, submissions and the recommendations of the Advisory Council are referred to the Minister administering the LHI Act (currently the Minister for the Environment) and a copy referred to the Lord Howe Island Board;
- After considering the submissions, the recommendations of the National Parks and Wildlife Advisory Council and any advice from the Lord Howe Island Board, the Minister may adopt the plan or may refer the plan back to the Lord Howe Island Board, and National Parks and Wildlife Advisory Council for further consideration.

Members of the public, whether as individuals or as members of community interest groups, are invited to comment on this draft plan of management. Submissions should be in writing, and as detailed and specific as possible; however any comments, no matter how brief, are welcome.

Comments should be forwarded to:

The Planner, Lord Howe Island Board
PO Box 5
Lord Howe Island NSW 2898

The closing date for comments on the plan is Monday 29th June 2009.

All submissions will be a matter of public record and will be made available for public inspection upon request. Your comments on this draft plan of management may contain information that is defined as ‘personal information’ under the NSW *Privacy and Personal Information Protection Act 1998*. The submission of personal information with your comments is voluntary.

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1. INTRODUCTION

The Lord Howe Island Permanent Park Preserve (referred to as 'the preserve' in this plan) covers a major part of the Lord Howe Island Group (LHIG), which consists of the main island of Lord Howe Island itself, plus the Admiralty Islands, Balls Pyramid and surrounding islets. The preserve is located in the south-west Pacific Ocean, approximately 570 km east of Port Macquarie (see figure 1).

The preserve was created on 1 January 1982 when the 1981 amendments to the *Lord Howe Island Act 1953* (LHI Act) came into force. This was the culmination of more than one hundred years of scientific interest in the geology, plants and animals of the Island, and concern for conservation of its outstanding natural scenery and biota.

With recent additions, the preserve currently comprises about 1300 hectares, made up of the following areas (figures 1 and 2):

- the southern mountains of the main island;
- the forest surrounding Transit Hill and The Clear Place on the main island;
- the northern hills of the main island;
- the Admiralty group of offshore islands, plus Blackburn Island, Mutton Bird Island, Sail Rock and Gower Island; and
- Balls Pyramid and surrounding rocks and islets, located about 25km to the south east of the main island.

The preserve does not include any part of the settlement area of Lord Howe Island, which encompasses the residential and agricultural lands in the group. All tourist accommodation and retail outlets are located in the settlement area; none is located in the preserve.

Only land above mean high water mark is included in the preserve; hence it does not include any reef or marine area or the inter-tidal zone. State and Commonwealth Marine Parks have been established in the waters of the LHIG and surround the preserve.

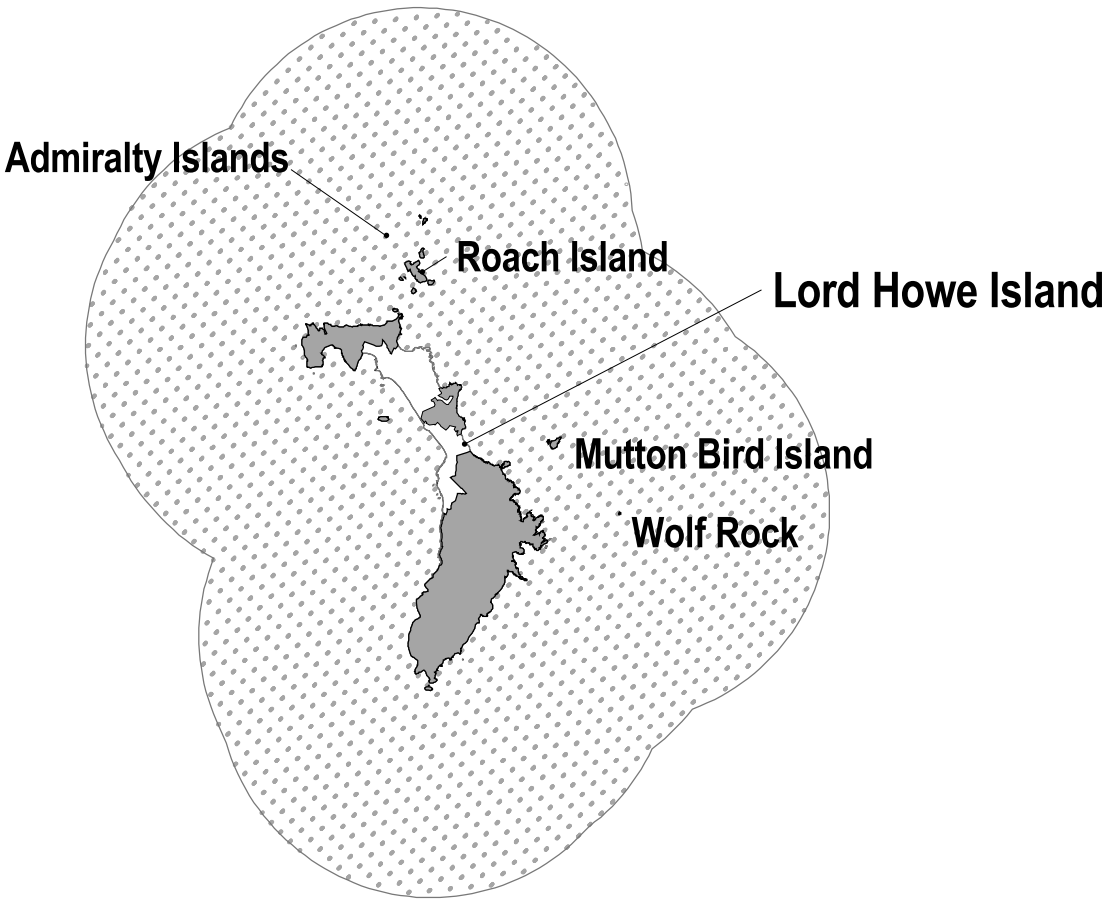
The LHIG is one of the most beautiful places in the world, a place of striking land and seascapes. It is also an outpost of diverse and interesting vegetation, and its skies, land and sea are habitat for an extremely rich diversity of fauna. This outstanding value, both for aesthetic appreciation and for nature conservation, has been given international recognition in the island group's status as a property on the World Heritage List.

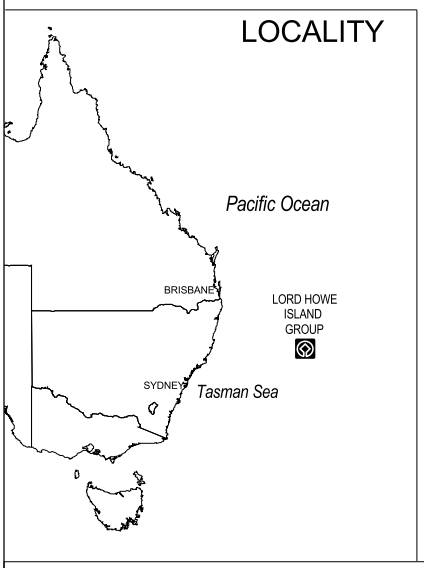
Lord Howe Island, its offshore islets and the waters to three nautical miles from land, form part of the State of New South Wales. These islands and the state waters are included within the boundary of the Northern Rivers Catchment Management Authority (NRCMA), a statutory body established under the *Catchment Management Authorities Act 2003* to coordinate natural resource management in north-east New South Wales.

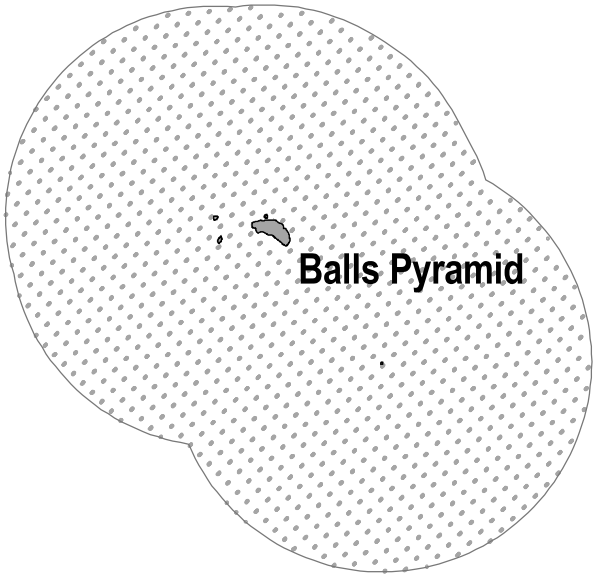
Lord Howe Island supports a resident population of approximately 330 people and a peak tourist population of up to an additional 400 people. Up to 16 000 tourists visit the Island each year.

The needs and aspirations of Island residents have had a special place in developing this management plan for the preserve. Visitors to the Island also have a direct interest in the preserve's management, and their needs have been given careful consideration in developing this plan.

The preserve is not a national park. It is however similar to a national park in that the primary management emphasis is conservation and preservation of natural values. The main difference between the preserve and national parks is that the management of the preserve allows for the sustainable harvesting of some natural resources (mainly palm seeds).







Lord Howe Island Permanent Park Preserve

Marine Park (NSW Waters only)

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2. MANAGEMENT CONTEXT

2.1 LEGISLATIVE AND POLICY FRAMEWORK

The management of the preserve is in the context of a legislative and policy framework derived from local, State and Commonwealth authorities.

The preserve forms the majority of the land area within the Lord Howe Island Group. Planning for the preserve has been influenced by several other planning documents in addition to the 1986 plan of management, including the *Strategic Plan for the Lord Howe Island Group World Heritage Property* (Manidis Roberts 2000) and the Lord Howe Island Regional Environmental Plan (REP) and Development Control Plan, both of which were updated in 2005.

2.1.1 The Lord Howe Island Board

The LHI Board is the management authority for the preserve, as well as the local government authority for the islands. The Board also has the power to control and regulate the tourist trade to and upon the islands. The Board has an established set of policies and plans that guide management of the region under its control. These include policies and strategies on vegetation rehabilitation, weed control, quarantine, environmental research, volunteers working for the Board and signage.

A key objective of the LHI Board's Corporate Plan is to protect, enhance and promote the Island's natural environment and cultural heritage (LHIB 2004). Strategies to achieve this include weed and pest control, protection and conservation of threatened species, identification of gaps in scientific knowledge, and promotion of public awareness of conservation.

2.1.2 State Legislation

State legislative requirements covering the management of the preserve are derived from the *Lord Howe Island Act 1953* (LHI Act), the *Lord Howe Island Regulation 2004* and the *National Parks and Wildlife Act 1974* (NPW Act).

Under the LHI Act, the LHI Board has the responsibility to manage, protect, restore, enhance and conserve the preserve in a manner that recognises its World Heritage values (section 5(f)). Section 15B of the LHI Act requires that a plan of management for the preserve be prepared and implemented in accordance with the provisions of Part 5 of the NPW Act as if the preserve were a national park. However, unlike the NPW Act arrangements, the plan of management for the preserve is to be approved by the Minister administering the LHI Act, and is to be carried out and given effect to by the LHI Board. Within Part 5 of the NPW Act, section 72AA lists the matters to be considered in the preparation of a plan of management, section 73B describes the process for cancelling an existing plan and substituting a new plan, and section 81 provides that all operations must be undertaken in accordance with the plan of management once adopted.

The *Lord Howe Island Regulation 2004* provides statutory backing for a number of Board policies, including restrictions on the importation of plants and animals, controls on the keeping of domestic goats and dogs, and protection of native plants and two species of stag beetles. Vertebrate fauna and some plants are also protected under the provisions of the NPW Act.

Other pieces of state legislation also apply to the management of the preserve. In particular, the *Environmental Planning and Assessment Act 1979* (EPA Act) requires the assessment and mitigation of the environmental impacts of any works proposed in this plan. The REP is a statutory environmental planning instrument under this legislation. The *Threatened Species Conservation Act 1995* (TSC Act) provides for the listing and recovery planning for species at risk of extinction, including some invertebrate species. A Biodiversity Management Plan that provides for multi-species recovery planning for at risk terrestrial species has been prepared (DECC 2007).

2.1.3 Matters of National Environmental Significance

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) defines matters of National Environmental Significance (NES). Three apply to the management of the preserve.

World Heritage

The International Convention for the Protection of the World Cultural and Natural Heritage (the World Heritage Convention) was ratified by Australia in 1974. The Convention provides a framework for international cooperation and the protection of cultural and natural heritage of outstanding universal value. The preserve is a major terrestrial part of the Lord Howe Island Group World Heritage Area (WHA), accepted for listing in 1982 on the basis of it containing:

- unique, rare or superlative natural phenomena, formations or features or areas of exceptional natural beauty (criterion N (iii)); and
- habitats where populations of rare or endangered species of plants and animals still survive (criterion N (iv)).

A strategic plan for the WHA has been prepared (Manidis Roberts 2000). The recommended strategies of the strategic plan have been incorporated in this plan where appropriate.

The environmental planning requirements of the EPBC Act are triggered for any actions that are likely to have a significant impact on the World Heritage values of the Lord Howe Island Group WHA, in that one or more World Heritage values are likely to be lost, degraded or damaged. The current understanding of the World Heritage values of the WHA were reviewed and summarised by Biosis (1998). Strategies related to the protection of the World Heritage values of the preserve are given in Sections 4.1 and 4.2 (relating to criterion N(iii)) and in Sections 4.3 and 4.4 (relating to criterion N(iv)) of this plan.

Migratory species

Several agreements provide protection for migratory species and their habitat in Australia; these agreements are:

- The Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (JAMBA), which came into force in 1981;
- The Agreement between the Peoples Republic of China and the Government of Australia for the Protection of Migratory Birds and their Environment (CAMBA), which came into force in 1988; and

- The 1979 Convention on the Conservation of Migratory Species of Wild Animals (the Bonn Convention), which came into force for Australia in 1991 and under which the 2004 Agreement on the Conservation of Albatrosses and Petrels (ACAP) was established.

CAMBA and JAMBA require appropriate measures be taken to preserve and enhance the environment of migratory birds.

ACAP also requires active protection of important breeding habitat of albatrosses and petrels, control of non-native species detrimental to albatrosses and petrels, implementation of measures to reduce the incidental catch of seabirds in long-line fisheries, and research into the effective conservation of albatrosses and petrels.

The environmental planning requirements of the EPBC Act would be triggered for any actions that are likely to have a significant impact on a listed migratory species, through modification of important habitat or serious disruption to the lifecycle of an ecologically significant proportion of a species' population. Strategies related to the protection of listed migratory species are provided in Section 4.4 of this plan.

Nationally-listed threatened species

Several of the animal species and one plant species found within the preserve are listed as threatened under the EPBC Act. Strategies relating to the protection of nationally-listed threatened species are included in the *Lord Howe Island Biodiversity Management Plan* (DECC 2007) and in Sections 4.3 and 4.4 of this plan.

2.2 MANAGEMENT PRINCIPLES AND OBJECTIVES

2.2.1 National Parks

While the fundamental purpose of the preserve is to preserve native flora and fauna, the LHI Act does not prescribe any specific management principles for the preserve. Section 72AA(1)(a) of the NPW Act requires that, in preparing a plan of management, consideration be given to the relevant management principles. Consequently the following principles for national parks listed in section 30E of the NPW Act have been considered in the formulation of this plan:

- the conservation of biodiversity, the maintenance of ecosystem functions, the protection of geological and geomorphological features and natural phenomena and the maintenance of natural landscapes;
- the conservation of places, objects, features and landscapes of cultural value;
- the protection of the ecological integrity of one or more ecosystems for present and future generations;
- the promotion of public appreciation and understanding of the park's natural and cultural values;
- provision for sustainable visitor use and enjoyment that is compatible with conservation of natural and cultural values;
- provision for sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to conservation of natural and cultural values; and
- provision for appropriate research and monitoring.

2.2.2 World Heritage

The Australian World Heritage Management Principles are set out in Schedule 5 of the *Environment Protection and Biodiversity Conservation Regulations* 2000. These principles state that the primary purpose of management of a World Heritage property is to identify, protect, conserve, present and, if appropriate, rehabilitate the World Heritage values of the property so they may be transmitted to future generations.

The principles also require opportunities be provided for continuing community and technical input in the management of a World Heritage property. To achieve this, special provisions can be made where appropriate for the involvement of those with a particular interest in the site or who may be affected by its management.

Provisions for planning and impact assessment are also included in the Australian World Heritage Management Principles. While these principles do not legally apply to the management of the state-managed areas within this WHA, the LHI Board has agreed that management of the preserve will be consistent with these principles.

3. KEY MANAGEMENT DIRECTIONS

The Lord Howe Island Permanent Park Preserve is of international and national significance for its biological and landscape values, and of state and regional significance for its recreation values. Locally, it has significant economic value, underpinning the Island's two major industries, namely tourism and the export of palms.

The key values of the preserve (outlined in section 4 of this plan) and the management context (discussed in section 2) have determined the direction for the preserve's management. The following specific management directions are provided:

- The management of the preserve will be coordinated as much as possible with the management of other parts of the Lord Howe Island Group WHA, in particular with regards to the protection and presentation of World Heritage values.
- Promotion of the appreciation of the preserve's outstanding natural scenery, landforms and wildlife will be undertaken as part of the presentation of the values of the WHA, primarily through guided walks and the museum, and with limited signage in the preserve.
- Threats to the preserve's natural scenic values will be minimised.
- Threats to the integrity and viability of plant and animal communities in the preserve will be controlled on a priority basis.
- Disturbed areas will be restored to as close to a natural structure and species composition as practicable except for areas identified as having historic values.
- Natural ecological and landforming processes within the preserve will be allowed to continue without human interference.
- Any development of new facilities within the preserve will be subject to strict environmental and social impact assessments and public consultation prior to consideration and approval by the Board.
- A select number of scientific reference areas will be maintained in the preserve, in which human disturbance will be excluded as much as possible.
- Opportunities for recreation will be limited to low-impact activities which are appropriate to the appreciation of the outstanding natural scenery, landforms and wildlife of the preserve, and which are consistent with the needs of the Island community and visitor safety.
- Certain exploitative activities within the preserve, which are essential to the Island economy, will be permitted under strict guidelines to minimise environmental impacts while maintaining a sustainable economy.

4. CONSERVATION OF NATURAL AND CULTURAL HERITAGE

4.1 GEOLOGY AND LANDFORM

Lord Howe Island is the eroded remnant of a large shield volcano, which erupted from the sea floor intermittently between 6.9 and 6.4 million years ago (McDougall *et al.* 1981). The island group represents the exposed peaks of a large volcanic seamount or guyot, which is about 65km long by 25km wide and rises from ocean depths of over 1800m. The Lord Howe seamount is near the southern end of a chain of such seamounts (most of them below sea level) extending for over 1000km. It is believed that this chain of seamounts results from the successive movement of the Australian tectonic plate over a hot spot of the Earth's upper mantle.

Local variations in lithology are the major determinant of the shape of the irregular rocky coastline and of the small residual islands and rock stacks. Four separate series of volcanic rocks are recognised in the island group, the oldest being exposed in the Admiralty group and on the north-east tip of Lord Howe Island. To the south these are overlain by progressively younger units. The rock types include tuffs, breccia and basalts, with widespread intrusion of basaltic dykes. Erosion-resistant basalt makes up the most spectacular landscape features on the main island: Mt Gower (875m) and Mt Lidgbird (777m) in the south, and the rugged sea cliffs in the Northern Hills. Erosion-resistant basalt also forms the offshore islands, including Balls Pyramid which, at 550m, is the tallest stack in the world. There has been insufficient study of most individual landform features in the preserve to permit proper evaluation of their significance (see Section 7).

The dominant landforming process in the Lord Howe Island group since the last of the volcanic eruptions has been erosion. The preserve includes two major talus slope deposits (Big Slope and Little Slope), which have potential significance in understanding processes of environmental change on the Island. The preserve also contains areas of landslips, which can impact on the Island's scenic amenity (see Section 4.2).

The geology of lowland parts of the main island, including the settlement area and North Bay, differs greatly from the rugged mountainous terrain. This area is mainly sedimentary calcarenite or dune limestone of Pleistocene and Holocene age, and considered the most significant anywhere on the NSW coast (Standard 1963). The calcarenite on the Island outside the preserve has produced a wealth of fossils, including evidence of the extinct horned turtle *Meiolania platyceps* plus bird bones, eggs, and marine and land snails. While discoveries have been concentrated at and near Neds Beach and Old Settlement Beach (Hutton 1998), there is the potential for some fossil remains to be found in the North Bay area.

Solution by groundwater within the calcarenites, especially where a surface catchment on the volcanics drains onto the calcarenite, has also created a number of caves. There are also several other caves within the preserve in volcanic rocks. The caves on the Island have been mapped (Wylie & Wylie 2003), and there are concerns about their stability. Some caves may be important sub-fossil sites. The underground cave system is not suitable for any form of recreational or tourism access.

Desired Outcomes

- Significant landform features and geological sites are allowed to evolve under natural processes.

Strategies

- Prohibit recreational caving access to the underground cave system in the preserve.
- Permit bona fide research into cave biodiversity and subfossils, subject to the consent of the LHI Board.
- Present and interpret natural erosion and mass movement as integral parts of the landform evolution of the island group.
- Fossil material, if found within the preserve, is not to be moved without the consent of the Board and only following thorough study and documentation.

4.2 LANDSCAPE AND SCENIC VALUES

The preserve is part of the Lord Howe Island Group WHA which is one of the most spectacular and scenic oceanic island groups in the world, and whose high diversity of landscapes is matched by few other islands (Biosis 1998). A circumnavigation of the main island reveals small bays with sand beaches, boulder beaches, sea caves, scree slopes and basalt cliffs up to hundreds of metres in height.

The walking track network in the preserve (see Section 6.1) enables visitors and residents to experience the spectacular scenery and unique environments of the Island. From high vantage-points within the preserve, much of the Island can be viewed. Due to its steepness, little of the preserve has been cleared or farmed in the past and thus views over the preserve are of predominantly natural forest. The presence of any unnecessary signs and structures in the preserve can impact upon people's perception of the attractiveness of the preserve by interfering with the naturalness of the setting. Occasional landslips in the preserve, particularly in the southern mountains, create temporary scars in the landscape. This is a natural process and assisted revegetation of the slip site is often not required, except where weed control is needed (see section 5.3).

The magnificent scenery of the LHIG is a World Heritage value as well as a major part of its appeal to tourists. The intrusion of visually inappropriate development into the landscape of Lord Howe Island is the major threat to the preserve's scenic amenity. The revised LHI Development Control Plan (DCP) provides a basis for controlling the visual impacts of development, both inside and outside the preserve, on the main island (DIPNR 2004).

Desired Outcomes

- The outstanding natural scenic values of the preserve are maintained and, where possible, enhanced.
- The natural character of the preserve's scenery is understood and conserved.

Strategies

- Ensure that any management or visitor facilities in the preserve are of a scale and form which is appropriate to the natural character of the preserve, and are designed and located to minimise their visual impact.
- Minimise signs within the preserve. Ensure any signs are designed to harmonise with their natural surrounds in form, positioning, design and finish.
- Interpretation displays and information will emphasise that landslips are a natural feature of the landscape and the landforming processes that are at work on Lord Howe Island.

4.3 NATIVE PLANTS AND VEGETATION

The plant species and vegetation of the LHIG have been the subject of relatively detailed study (Pickard 1983, Rodd & Pickard 1983 and Flora of Australia 1994).

There are currently believed to be 241 native species of vascular plants in the LHIG (DEC 2006). While the vegetation has affinities with the flora of northern New South Wales, southern Queensland, New Zealand, Norfolk Island and New Caledonia, there is a high level of endemism (Manidis Roberts 2000). The majority of the plant associations and more than 100 species only occur in the LHIG. Of particular note are the four endemic palm species in three endemic genera. These palms form the basis of one of the Island's main industries (see Section 8.1).

A number of plant species found in the preserve are considered endangered in NSW (see Table 1); one of these, Lord Howe Island morning glory (*Calystegia affinis*), is also listed as critically endangered under the EPBC Act. An ecological community, the *Lagunaria* swamp forest, which occurs immediately adjacent to parts of the preserve, is listed as endangered under the TSC Act. The *Lord Howe Island Biodiversity Management Plan* (DECC 2007) identifies the southern mountains as a high conservation priority due to their species and community diversity and uniqueness. They are a hotspot for endemic and endangered plant species, and also include significant endemic plant communities such as cloud forest, mountain palm forest and *Chionanthus* closed forest (Auld & Hutton 2004).

Table 1: List of threatened flora known from the preserve

Common Name	Scientific Name	Conservation Status*
Lord Howe Island morning glory	*Calystegia affinis*	Endangered #
small-leaved currant bush	*Coprosma inopinata*	Endangered
knicker nut	*Caesalpinia bonduc*	Endangered
Lord Howe Island broom	*Carmichaelia exsul*	Endangered
Hutton's geniostoma	*Geniostoma huttonii*	Endangered
rock shield fern	*Polystichum moorei*	Endangered
mountain xylosma	*Xylosma parvifolium*	Endangered
Lord Howe Island Wheat Grass	*Elymus multiflorus* var. *kingianus*	Endangered #

* Conservation status under TSC Act. # Also listed under the EPBC Act.

Despite 170 years of human settlement on the island, the natural vegetation in the preserve is mostly intact structurally although a significant number of weeds are present. Feral pigs and goats had significant impacts on the preserve's vegetation before their eradication, and rats continue to have an impact through seed and seedling predation (see Section 5.3). Visitors to the preserve can have localised negative impacts on vegetation through trampling, or the transfer of pathogens such as *Phytophthora cinnamomi.* Trampling is considered potentially a significant problem in the cloud forest on Mt Gower. *Phytophthora cinnamomi* has the potential to impact on a range of plants (Auld & Hutton 2004).

The few areas within the preserve that were cleared before the preserve's declaration are typically small in extent. They include Old Nichols Garden at North Bay, Dawsons Point, Rays Clearing, and Boat Harbour Clearing located east of Intermediate Hill. These areas remain important anomalies within the preserve's bushland context, and may be seed sources for some weed species (see Section 5.3).

Soil type, exposure to wind and penetration of salt spray appear to be the main determinants of the native plant communities. Scrubs, grasslands and herblands make up the natural vegetation cover in exposed parts of the preserve, including most of the offshore islands. In contrast, the majority of the preserve on the main island is covered by closed forests. In a number of places where forest adjoins cleared grazing land, dieback of forest edges has occurred. The LHI Board is working with the preserve's neighbours, particularly holders of special leases, to establish a buffer zone of salt tolerant native species (see Section 5.5).

Vegetation on the smaller islands of the preserve is generally in a natural condition with some weed incursions. The exception is Blackburn Island. This island, situated in the lagoon, originally carried rainforest, however, a combination of fire and browsing by goats eliminated the trees except for a few palms, sallywoods and banyans. The dominant landscape feature on the island now is a planted group of introduced Norfolk Island pines (see Section 4.5). Some revegetation work has commenced and Blackburn Island is a priority area for further revegetation works (DEC 2006; Olson 2002).

Several issues for the management of flora and threatened species have been identified for sites in the preserve (Auld & Hutton 2004, DEC 2006). These include the fragmentation of the *Calystegia affinis* population by the Max Nicholls Memorial Track, and hence the potential for trampling of this species. There are also concerns that access to part of the southern mountains may have detrimental impacts on *Coprosma inopinata* (see Section 7).

In the long term, climate change may have significant consequences for a number of species and communities on the islands. There is a need to monitor 'at risk' areas including cloud forest and the high parts of the northern hills (see Section 7), and develop contingency plans for 'at risk' species (DEC 2006).

Desired Outcomes

- The full range of native plant species and communities found in the preserve is conserved.
- Vegetation structural diversity and habitat values are conserved, and high priority conservation areas are restored where subject to past clearing.

- The habitat and populations of all significant plant species and threatened ecological communities are monitored and protected.
- The preserve is maintained free of the pathogen *Phytophthora cinnamomi*.
- Planning to monitor and mitigate the impacts of climate change is commenced.

Strategies

- Implement recovery actions and threat abatement works consistent with the *Lord Howe Island Biodiversity Management Plan*.
- Establish replicated monitoring sites in vegetation communities across the island, including along an altitudinal gradient in the southern mountains.
- Protect populations of *Calystegia affinis* and *Coprosma inopinata* from trampling by restricting access to their locations in the southern mountains and by providing information in relation to visitors keeping to the defined path on the Max Nichols Memorial Track.
- Revegetate areas within the preserve, with priority given to those sites identified in the *Vegetation Rehabilitation Plan* (Olson 2002).
- Develop and implement phytosanitary guidelines to prevent the spread of *Phytophthora cinnamomi*.
- Investigate propagation and ex situ storage techniques for species at risk from climate change, including seed banking and living collections.

4.4 NATIVE ANIMALS

4.4.1 Vertebrate Fauna

The native vertebrate fauna of the LHIG is limited in diversity. There is only one native mammal, the large forest bat (*Vespadelus darlingtonii*), which also occurs in eastern Australia.

There are two native reptiles, a skink *Cyclodina lichenigera* (syn. *Pseudomoia lichenigera*; *Oligosoma lichenigera*) and a gecko *Christinus guentheri*. Both are now severely reduced in their range and abundance on the main island due to predation by rats; however both are present on Blackburn Island, the Admiralty group, Mutton Bird Island and Balls Pyramid. Both species also occur on Norfolk Island.

In common with many other oceanic islands, the most obvious element of the LHIG's terrestrial fauna is the birdlife. A recent review of records by McAllan *et al.* (2004) lists 182 native, introduced and vagrant bird species as being recorded for the LHIG, of which 75% are vagrants and migrants. Thirty-four bird species regularly breed on the islands.

The Lord Howe Island Group forms one of the major seabird breeding sites in the south-west Pacific and is thought to be home to the most diverse and largest number of seabirds in Australia (ASEC 2001). Many of the breeding seabirds found on the islands are listed migratory species under the EPBC Act (see Table 2). The Clear Place, Mutton Bird Point, Gower Island, the southern tip of the main island and much of the coastline are rich habitat for seabirds (DEC 2006). The summit and slopes of Mt Lidgbird and Mt Gower support almost the entire breeding population of the

providence petrel (*Pterodroma solandri*). The islands are the only known breeding locality in the Australasian region for the grey ternlet (*Procelsterna cerulea*) and Kermadec petrel (*Pterodroma neglecta neglecta*), and are the southernmost breeding locality in the world for the masked booby (*Sula dactylatra tasmani*), the sooty tern (*Sterna fuscata*) and common noddy (*Anous stolidus*).

There is a large breeding colony of sooty terns on Mt Eliza and the ridge towards North Head. While numbers are now abundant following the eradication of pigs (*Sus scrofa*) and cats (*Felis cattus*), its breeding success can fluctuate greatly from year to year (McAllan *et al.* 2004). The track to Mt Eliza is closed each summer to minimise human disturbance to breeding seabirds. There are also restrictions on access to the offshore islands and Mutton Bird Point to prevent disturbance to breeding seabirds (see Section 6.1).

While a large proportion of the world's population of the flesh-footed shearwater (*Puffinus carneipes*) breeds on Lord Howe Island, most of the burrows are in the kentia palm forests in the lowlands and therefore not within the boundaries of the preserve. Part of the colony, located between Middle Beach and the Clear Place, is contained within the Transit Hill area of the preserve. However, invasion by ground asparagus *Protasparagus aethiopicus* is limiting access to burrows for this species in this area.

The spread of kikuyu (*Pennisetum cladestinum*) and other introduced grasses and weeds can severely impact upon the breeding success of burrow-nesting species, particularly for wedge-tailed shearwaters at Mutton Bird Point (see Section 5.3).

Since human settlement, nine endemic landbird species and subspecies, representing 60% of the original terrestrial avifauna, have become extinct. Of the 20 extant breeding landbirds, only six were indigenous to the Island at the time of human settlement in 1834. Up to twelve are thought to be self-colonisers, most arriving since 1920 and taking advantage of new niches following previous extinctions or clearing of the vegetation. A number of these self-colonisers are considered non-native pests (see Section 5.3).

The most famous of the indigenous landbirds is the Lord Howe woodhen (*Gallirallus sylvestris)*, a flightless rail that came extremely close to extinction. As a result of a successful recovery program involving captive breeding and the eradication of feral pigs and cats, the population now comprises approximately 200 birds occupying a wide range of habitat in the preserve and settlement area. Predation by masked owls (*Tyto novaehollandiae)* remains a potential threat, although further study is required to determine their impact (see Section 5.3). There may be competition for food, nest-sites or shelter between the woodhen and the buff-banded rail (*Gallirallus philippensis*) (McAllan *et al*. 2004). Management of the woodhen is as much a conservation issue for the settlement area as it is for the preserve.

Three other endemic land birds also occur on the island. The Lord Howe silvereye (*Zosterops lateralis tephropleurus*) is reasonably abundant and the Lord Howe golden whistler (*Pachycephala pectoralis contempta*) and Lord Howe currawong (*Strepera graculina crissalis*), although uncommon, appear secure. All three subspecies are considered vulnerable to extinction.

The Lord Howe Island Group is a regular transit point for several migratory wader species, 11 of which are listed as migratory species under international agreements and hence under the EPBC Act. The visiting waders forage and roost in a range of

littoral and terrestrial habitats, most of which lie outside the boundaries of the preserve.

4.4.2 Invertebrate Fauna

The Lord Howe Island Group has a very complex and biogeographically interesting invertebrate fauna, characterised by relatively high species richness (>1600 species recorded) and high endemism (Cassis *et al.* 2003). Areas with the highest species diversity and unique communities occur in the southern mountains, Transit Hill, headlands of the northern hills and the Admiralty Islands (DEC 2006).

One notable insect is a large and conspicuous endemic flightless stick insect, the Lord Howe Island phasmid (*Dryococelus australis*), which is thought to have become extinct on the main island because of predation by rats. A small population remains on Balls Pyramid and a captive-breeding program is being undertaken at Melbourne Zoo. Captive-bred individuals may be used to establish a second wild population, possibly on Blackburn Island, once suitable habitat on the island is established.

The endangered wood-feeding cockroach (*Panesthia lata*) is currently found only on Blackburn Island and Roach Island. The survival of this species is thought to rely on the absence of rodents on these islands. The habitat values of Blackburn Island will be improved through a revegetation program (see Section 4.3). The darkling beetle (*Promethis sterrha*) is also restricted to some offshore, rat free islands.

There are more than 50 endemic species of land snails found in the island group. One large species, *Epiglypta howinsulae*, has already become extinct and another large species, the Lord Howe placostylus (*Placostylus bivaricosus*), is endangered with one of its subspecies presumed extinct (NPWS 2001). Again, predation by rats (as well as possibly blackbirds and song thrushes) are believed to be a threat to this species' survival, and there are longer term plans to establish a wild population on Blackburn Island once an area of greybark-blackbutt forest is restored.

To maintain these invertebrates it is important to ensure that rats are not introduced to any of the offshore islands, including Blackburn Island (see Section 6.1 re quarantine protocols). Over-collection, or illegal collection, of rare invertebrates may also pose a threat to some species. Associated with the direct impacts from the loss of the individuals, is damage to habitat, through the break up and moving of rotting logs. This issue is considered in Section 8.1.

4.4.3 Threatened Fauna

A number of vertebrate and invertebrate species found in the preserve are endangered or vulnerable to extinction (see Table 2). Under the provisions of the TSC Act, recovery plans may be prepared for threatened species. Recovery plans have been approved for the Lord Howe woodhen (NPWS 2002) and Lord Howe placostylus (NPWS 2001). Draft recovery plans have been prepared for the skink and gecko (Cogger 2004) and interim recovery actions have been identified for the Lord Howe Island phasmid (Priddel *et al.* 2003). These and other recovery actions for threatened species found on the islands are included in the *Lord Howe Island Biodiversity Management Plan* (DECC 2007).

Further research and understanding of threatened and significant vertebrate and invertebrate fauna of the LHIG and the threatening processes impacting on them will

assist the Board in their ability to adequately protect and manage these species (see Section 7).

Table 2: List of significant fauna, which breed in the preserve

Common name	Scientific Name	Conservation Status	
		TSC Act	EPBC Act
providence petrel	*Pterodroma solandri*	Vulnerable	Migratory
Kermadec petrel	*Pterodroma neglecta neglecta*	Vulnerable	Vulnerable
black-winged petrel	*Pterodroma nigripennis*	Vulnerable	
wedge-tailed shearwater	*Puffinus pacificus*		Migratory
flesh-footed shearwater	*Puffinus carneipes*	Vulnerable	Migratory
little shearwater	*Puffinus assimilis*	Vulnerable	
white-bellied storm-petrel	*Fregetta grallaria*	Vulnerable	Vulnerable
red-tailed tropicbird	*Phaethon rubricauda*	Vulnerable	
masked booby	*Sula dactylatra tasmani*	Vulnerable	Migratory
Lord Howe woodhen	*Gallirallus sylvestris*	Endangered	Vulnerable
sooty tern	*Sterna fuscata*	Vulnerable	
common noddy	*Anous stolidus*		Migratory
grey ternlet	*Procelsterna cerulea*	Vulnerable	
Lord Howe golden whistler	*Pachycephala pectoralis contempta*	Vulnerable	
Lord Howe currawong	*Strepera graculina crissalis*	Vulnerable	Vulnerable
Lord Howe silvereye	*Zosterops lateralis tephropleurus*	Vulnerable	
Lord Howe Island skink	*Cyclodina lichenigera*	Vulnerable	Vulnerable
Lord Howe Island gecko	*Christinus guentheri*	Vulnerable	Vulnerable
wood-eating cockroach	*Panesthia lata*	Endangered	
Lord Howe earthworm	*Pericryptodrilus nanus*	Endangered	
Lord Howe placostylus	*Placostylus bivaricosus*	Endangered	Endangered
Lord Howe Island phasmid	*Dryococelus australis*	Endangered	Critically Endangered

Desired Outcomes

- The full range of native vertebrate and invertebrate animal species found in the preserve is conserved.
- The habitat and populations of all threatened fauna species and biogeographically significant species are protected, enhanced and maintained.

Strategies

- Implement recovery actions and threat abatement works consistent with adopted recovery plans and the *Lord Howe Island Biodiversity Management Plan*.
- Encourage species-specific research into the ecology of priority species identified in the *Lord Howe Island Biodiversity Management Plan*, particularly the Lord Howe currawong, skink, gecko and wood-eating cockroach.
- Enforce quarantine restrictions detailed in Section 6.1 and routine monitoring to ensure that rats are not introduced to any of the offshore islands.
- Prohibit disturbance of rotting wood and leaf litter on Blackburn Island and Roach Island.
- Control, and if feasible eradicate, kikuyu on Mutton Bird Point and other bird nesting areas.
- Investigate the feasibility of using Blackburn Island as a release site for the Lord Howe Island phasmid.
- Continue to close the Mt Eliza walking track each summer to protect the sooty tern breeding colony.
- Encourage the reporting by residents and visitors of observations of birds and other species.
- Monitor the impact of self-colonising species and their interactions with endemic species.

4.5 CULTURAL HERITAGE

There is no evidence of human visitation or settlement on Lord Howe Island prior to 1788. It is believed that the island was first sighted in 1788 from HMS Supply, on its voyage from Sydney to establish the penal colony on Norfolk Island, and the first landing was made on the return voyage to Sydney. Following this, the Island became a calling place for food, water and timber. Birds, sea turtles and fish were harvested for food, and pigs and goats were left to go wild on the Island to provide additional sources of fresh meat for sailors.

By 1834 a trade depot for passing ships had been established at Old Settlement. The settlers made a living by hunting and fishing, and by growing vegetables, fruit and meat that they traded with passing ships, especially whaling vessels. With numerous fluctuations over the years, the settlement slowly expanded and consolidated, developing a distinctive social structure and culture with the passage of time.

With the decline of the international whaling industry in the latter part of 19th century, the Island economy turned to export of seed from endemic palms. The potential for other natural resource based industries was also explored but most failed.

Very little of the preserve area has been directly affected by the 170 years of human settlement on the Island. This is primarily because the preserve consists mostly of uninhabitable terrain, and much of the coastline is difficult to traverse or land upon. Settlement has not been attempted on any of the smaller islands in the island group. Past human use within the preserve has been limited to the commercial harvesting of

palm seeds (which continues), as well as the collection of other living natural resources for sustenance or for scientific inquiry.

The only listed heritage item in the vicinity of the preserve is in the Old Settlement Beach area. While it is believed that some of the original huts at Old Settlement Beach were built on the hillside inside what is now the preserve, no investigations of this area have been carried out (Owens 2004). A few foundations and concrete structures remain on Blackburn Island from a shark processing plant that operated there in the early 20th century. A drainage ditch, wild banana trees and a patch of dense Rhodes grass remain at the abandoned settlement of Old Nichols Garden at North Bay (Owens 2004).

Transit Hill has been subject to more impacts than the rest of the preserve. Its name refers to its use as a site to observe the transit of Venus in 1882. A plaque commemorating this event is located on the summit of Transit Hill. A time capsule was buried at Transit Hill in 1982, which will be disinterred in 2082.

One of the few other historical places within the preserve is the 1948 crash site of a RAAF Catalina on the ridge leading up to Malabar. There is likely to be some wreckage remaining in the preserve and a plaque commemorating this event is located on the Malabar Ridge walking track.

Several other plaques commemorating deceased people who have been closely associated with Lord Howe Island are located in the preserve, including at Kims Lookout and on Mt Gower. The Max Nicholls Memorial Track is named after a former schoolteacher, and a memorial is located at the start of the track on the edge of the preserve.

Introduced Norfolk Island pines (*Araucaria heterophylla*), now a feature of the settlement area, have also been planted in two locations now within the preserve, namely North Bay and Blackburn Island. This species can spread rapidly to the detriment of native species and can change the soil chemistry making soil conditions unsuitable for germination of many native species (DEC 2006). At North Bay, pine seedlings are spreading and the common noddy has started using large pines as roosting sites.

The existence of the Permanent Park Preserve itself is part of the cultural heritage of the Island. A Botanic Reserve was established on the main island in 1882. The Permanent Park Preserve came about in its current form as a result of land use planning studies undertaken for the LHI Board in 1975, following a century of scientific collection and expeditions to the region.

Desired Outcomes

- Cultural features are conserved, with decisions based on their significance and impact on the natural values of the preserve.
- The cultural values of the local community are recognised in the management of the preserve.

Strategies

- Require the approval of the Board before any plaques or other commemorative items are placed in the preserve. Where possible, such items will be located

outside the preserve; if in the preserve, they should only take the form of useful and necessary infrastructure, such as track-side seating or interpretative signs.

- Archaeological investigations within the preserve will be subject to approval of the Board and, as appropriate, authorisation under the Heritage Act and/ or NPW Act. Any such investigation will only be approved if it is undertaken and/or supervised by persons with appropriate professional qualifications.
- Progressively remove exotic Norfolk Island pines at North Bay and Blackburn Island. During the life of this plan, the priority will be to remove all pine seedlings and juvenile pines from these areas. As the old trees die, they will not be replaced.
- Allow Old Nichols Garden at North Bay to remain undisturbed with no restoration works of the disturbed vegetation.
- The ruins of the former shark processing plant on Blackburn Island will be left undisturbed.
- Ensure that any objects or sites of apparent historical significance discovered within the preserve are protected from disturbance and made the subject of professional evaluation before they are disturbed.
- Assess the impacts of management decisions within the preserve on the cultural values of the Island community.

5. PROTECTION OF THE PRESERVE

5.1 SOIL EROSION

Landslips, which are a feature of the landforming processes operating on the island, represent a large-scale disturbance in the landscape. Although these detract from the aesthetics of the island, they are a natural process and little could be done to prevent their occurrence in the preserve. An issue with the management of landslips is that weeds, particularly Crofton weed (*Ageratina adenophora*) and tiger lily (*Lilium formosanum*), are often the primary colonisers of these areas (see Section 5.3).

Landslips can cut walking tracks, particularly in the southern mountains. There have been two recent landslips affecting the track to Mt Gower just south of Little Island. While minor slips over walking tracks are easily repaired, large-scale track stabilisation following major landslips may be difficult to achieve without major engineering works and disturbance. Alternative route options to Mt Gower may need to be investigated should the current access route be made impassable by further landslips occurring in this area (see Section 6.1).

The impacts of visitation to the preserve are generally limited to erosion, and trampling in and beside tracks and lookouts. In steep areas, erosion of tracks to bare soil can be significant, leading to exposure of tree roots and hence impacts on vegetation as well as channelling of water and further erosion. Major repairs to the Max Nicholls Memorial Track to reduce erosion involved the installation of steps and some boardwalk sections.

Desired Outcomes

- Human induced soil erosion in the park is minimised and stabilised.

Strategies

- Design and undertake all works in a manner that minimises soil erosion.
- Natural erosion of stream banks and slope deposits will not be interfered with.
- Stabilise any areas where unnatural or accelerated erosion is occurring or is liable to occur, utilising natural materials such as untreated dead timber, brush or stones. Revegetation will utilise indigenous species suited to the site and environment.
- Monitor the process of erosion and wear on the walking tracks in the preserve, and repair and rehabilitate as necessary.
- Construct and maintain walking tracks to minimise erosion. Appropriate techniques to achieve this may include cross-drainage, re-alignment of short sections of track, and the use of boardwalks or steps.
- Promote the importance of staying on marked walking tracks.

5.2 POLLUTION AND WASTE CONTROL

The LHI Board has implemented a waste minimisation strategy, which reduces the impact of waste disposal on the Island’s ecosystems. Banks of bins are provided at

picnic areas and other points in the settlement area, which allow for sorting of rubbish into recyclable and compostable waste consistent with the strategy. No rubbish bins are provided in the preserve.

Within the preserve, toilet facilities are currently only provided at North Bay. This composting unit was installed to replace two pit toilets. Picnickers are the principal users of this facility, and residents use these facilities when camping in the North Bay area. Impacts from camping at North Bay need to be monitored, and there may be a need to impose restrictions on numbers if impacts become unacceptable.

With the absence of other toilet facilities in the preserve, there is a potential risk to water quality in the preserve's semi-permanent flowing streams, as well as a risk to visitor amenity, from inappropriate disposal of human waste by bushwalkers or seeders. There has been a suggestion that a public toilet should be installed in the southern half of the main island, possibly at the start of Little Island Track.

Desired Outcomes

- The preserve will be maintained free of all pollution and rubbish.

Strategies

- Rubbish or other items not natural to the preserve will not be disposed of within the preserve, by any method including burning or burial.
- Rubbish bins will not be provided within the preserve. All visitors to the preserve (including seeders) will be required to carry their rubbish out for sorting and proper disposal in the settlement area.
- Any additional toilet facilities will be appropriately designed and located to avoid impact on water quality, vegetation and residents.
- Interpretation information and displays will emphasise minimum impact practices such as:
    - the need to minimise impacts when disposing of human waste (e.g. burial to a depth of 15cm at least 50m from streams); and
    - the need for all people to carry all other rubbish out of the preserve.

5.3 NON-NATIVE SPECIES

A non-native species is defined in this plan as any plant or animal species introduced by humans directly to the island group or any non-indigenous plant or animal which poses a threat to the island group's native biodiversity. This definition does not include native Australian birds that have arrived on Lord Howe Island without human assistance in the past 170 years. Non-native species on Lord Howe Island are of concern because they have the potential to have detrimental effects on the ecological values of the Lord Howe Island Group WHA.

5.3.1 Environmental Weeds and Noxious Plants

There are at least 400 introduced plant species found on the main Lord Howe Island, of which around 250 species have become naturalised, mostly but by no means exclusively in the settlement area. There are 17 declared noxious weeds. The weeds of most concern found in the preserve are:

- cherry guava (*Psidium cattleianum*) – widespread, with major infestations on Transit Hill, Intermediate Hill and the north-west slopes of Mt Lidgbird;
- African boxthorn (*Lycium ferocissimum*) – eastern side of Malabar, Middle Beach and Transit Hill;
- ground asparagus (*Asparagus aethiopicus*) – particularly on Transit Hill but also spreading to other areas of the preserve;
- bridal creeper (*Asparagus asparagoides*) – a serious problem in the Northern Hills and Middle Beach area but also spreading to other areas of the preserve;
- climbing asparagus (*Asparagus plumosus*) – which affects parts of the settlement and Transit Hill;
- ochna (*Ochna serrulata*) – on the north-west slopes of Mt Lidgbird, Intermediate Hill and Transit Hill;
- bitou bush (*Chrysanthemoides monilifera*) – on cliffs in the Malabar area, Intermediate Hill, Transit Hill and Mt Lidgbird; and
- exotic grasses, such as kikuyu (*Pennisetum clandestinum*), buffalo grass (*Stenotaphrum secundatum*) and Rhodes grass (*Chloris gayana*) – which inhibit regeneration along forest edges and impede burrowing of seabirds in several rookery areas.

Invasion of native plant communities by bitou bush, invasion and establishment of exotic vines and scramblers and invasion of native plant communities by exotic perennial grasses are listed as key threatening processes under the TSC Act.

Crofton weed and tiger lily are often the primary colonisers of landslips and can prevent recruitment of native species on these sites. In the southern mountains, native ferns, herbs and mosses that would have naturally recolonised landslip areas are being replaced by these weeds (DEC 2006).

The weed species currently found in the preserve are dispersed either by wind or birds. In addition, the walking track network may be an important transport vector for some weed species, such as tiger lily and plants which produce seed which sticks to passers-by such as farmer's friend (*Bidens pilosa*). Cherry guava also tends to disperse along tracks as people consume the fruit and spit the seeds out further along the track (Smith 2002). The distribution of cherry guava today has likely been influenced by its former dispersal by pigs, which were removed from the Island in the 1980s and by dispersal by the LHI silvereye and currawong.

The *Strategic Plan for Weed Management* (Smith 2002) identified Transit Hill, Intermediate Hill and Grey Face as high priority areas for on-ground weed control activities in the preserve. Kikuyu control on the edges of Old Settlement, at Dawsons Point and on Mutton Bird Point is also a priority. The eradication of coastal morning glory (*Ipomoea cairica*) from Balls Pyramid is a high priority under the interim recovery actions for the Lord Howe Island phasmid (Priddel *et al.* 2003).

Weed distributions and densities have been mapped in three areas of the preserve: on Transit Hill, the north-west slopes of Malabar Range, Intermediate Hill and Mt Lidgbird (Le Cussan 2002a, 2002b, 2003). This mapping has been used to develop a systematic on-ground approach to weed control, focusing on blocks of manageable control units over the Island, where treatment will occur every two years. The aim is to remove all mature fruiting plants first, followed by non-reproducing juveniles,

seedlings and eventually only those plants emerging from the soil seedbed. With commitment and continuous weed suppression, eradication of the most threatening noxious and environmental weeds is the longer term objective. It is anticipated that a failure to pursue this approach over the next decade will result in a never-ending cycle of *ad hoc* treatment, higher rates of weed invasion, and ongoing and escalating costs.

The current large-scale control works in the preserve are largely dependent on funding from external bodies, and are carried out by temporary employees, contractors and volunteers. The Board manages its own volunteer program while the 'Friends of Lord Howe Island' volunteers focus primarily on *Asparagus* spp. on Transit Hill. Their work is supported by Board staff and is integrated into the Board's broader weed control objectives.

Almost all weed species on Lord Howe Island can be traced back to their introduction as garden or pasture plants. Hence the settlement area has been, and remains, the major source of both new weed species as well as a seed source for existing weed species. The protection of the preserve from weeds requires some action outside the preserve. Some particularly serious weeds will need to be eradicated from the Island if ongoing destructive infestations of natural areas are to be prevented. The risk of deliberate introduction of new potential weed species to the island has been reduced due to the restrictions applied by the Board's Plant Importation Policy and the LHI Regulation. This requires the specific approval of the Board for any plants brought to the Island, following a weed risk assessment.

The 2002 *Strategic Plan for Weed Management* is currently being revised with two principal changes that affect weed control in the preserve: the targeted outcome is now eradication of 15 of the 17 declared noxious weeds; and weed management on the main island is based on a whole of Island approach, not just priority areas in the preserve.

5.3.2 Pathogens

Phytophthora cinnamomi has been recorded from one lease in the southern part of the settlement area and could potentially spread to the preserve on footwear or vehicles (DEC 2006). 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 both the EPBC Act and TSC Act. A national threat abatement plan has been prepared (Environment Australia 2001).

5.3.3 Pest and Other Non-Native Animals

Since settlement, a number of animal species have been introduced, either intentionally or inadvertently, to Lord Howe Island. A number of animals are permitted to be kept in the settlement area as domestic populations of farm stock or companion animals. Under the LHI Regulation, the *Companion Animals Act 1998* and other legislation, residents are required to ensure these animals (including poultry) do not stray.

Within the preserve, five mammals established feral populations, either after being deliberately set free before settlement (as food supplies for travelling ships) or after escaping from the settlement area. Two of these, the feral cat and feral pig have now been eradicated, while a third, the feral goat (*Capra hircus*), has been reduced to a few non-breeding individuals. Clause 83(1) of the LHI Regulation prohibits any new

goats and cats being brought onto the island but goats may still be kept in the settlement area. It is a high priority for the Board to ensure that the remaining domestic goats do not establish new feral populations in the preserve. The Board has the power under Clause 86 to prevent goats from straying and to ensure all male goats are desexed.

Feral mice (*Mus domesticus*) and ship rats (*Rattus rattus*) remain extant on the main island but have not been recorded on any of the smaller islands in the group. Rats infest every part of the preserve on the main island and have had substantial impact on the flora and fauna, probably causing the extinction of some species and eliminating several invertebrates such as the Lord Howe Island phasmid from the major part of their former range. Predation by the ship rat on Lord Howe Island has been declared as a key threatening process under the TSC Act. Rats also eat palm seeds, reducing the number of seeds available for harvest (see Section 8.1) and forest regeneration. Current efforts to control rat impacts rely on bait stations located mainly in palm forests, including on the summit plateau of Mt Gower.

Effective control measures for rats are essential to secure the long-term stability of bird, lizard and invertebrate populations in the preserve. The Board is investigating a proposal to eradicate rodents from the island. Studies commissioned by the Board indicate that eradication would be cost-effective and operationally feasible.

Quarantine restrictions and ongoing education programs are required to ensure that rodents are not introduced to the smaller islands in the LHIG. This ensures that the offshore islands, including Blackburn Island, will continue to provide habitat for fauna threatened by rats.

Dogs are kept as companion animals in the settlement area and are currently prohibited from the preserve; however the walking track across Transit Hill is a popular track for dog walking. The addition of the Transit Hill area to the preserve was only supported by the LHI Board on the basis that dog walking along this track continued. Because the track to the Clear Place passes through a major flesh-footed shearwater nesting ground, dog walking in this area beyond the southern set of steps to Middle Beach is not appropriate.

As many as 100 individual masked owls were introduced to Lord Howe Island in the 1920s to control the ship rat. These were probably taken from both Tasmania and mainland Australia (McAllan *et al*. 2004) and so the birds present on the island are believed to be hybrids between two subspecies. While the species is considered vulnerable on mainland NSW and thought to be endangered in Tasmania (Garnett & Crowley 2000), it has been culled in the past on the Island to limit its impacts on woodhens and breeding seabirds. If evidence suggests that masked owls are adversely impacting upon other threatened species, licences may be issued under the NPW Act to carry out further culling.

A number of other birds found on the main island, including the feral pigeon (*Columba livia*), mallard (*Anas platyrhynchos*), song thrush (*Turdus philomelos*) and common blackbird (*Turdus merula*), are considered pests. These feral species, particularly the blackbird and song thrush, may be having impacts on the values of the preserve though this is not well documented or understood (DEC 2006).

The introduction of non-native animals to Lord Howe Island continues, often in materials and food shipped onto the island. In recent decades, the rainbow skink (*Lampropholis delicata*) and bleating tree frog (*Litoria dentata*) have established

populations on the main island. There are also introduced invertebrate species, including a number of land snails and slugs, beetles, ants, spiders, earthworms, butterflies and moths (Cassis *et al.* 2003). While most are restricted to the settlement area, others are now widely distributed in the preserve, including at least some of the offshore islands (Cassis *et al*. 2003). The introduced *Arsipoda* beetle is known to feed on the endangered plant *Calystegia affinis* at Old Settlement.

Desired Outcomes

- The distribution and impact of non-native species is minimised.
- No new species are introduced to the preserve.

Strategies

General

- Enforce effective quarantine provisions to prevent the deliberate importation of new potential weed species and pests animals.
- Provide education and monitoring to avert the accidental import of new plants and animals to Lord Howe Island by tourists and residents.
- Design and implement monitoring programs for introduced species, their impacts and control efforts, according to the priorities of the *Lord Howe Island Biodiversity Management Plan*.

Weeds

- Eradicate environmental weeds and noxious plant species using best-practice treatment and regeneration principles, and consolidating the current systematic 'block' approach.
- Review and update the Strategic Plan for Weed Management every 5 years.
- Seek the cooperation of residents in implementing weed and pest animal control programs.
- Ensure that intensive and thorough noxious weed eradication programs are undertaken in the settlement area to remove sources of weed infestation liable to invade the preserve.
- Support the volunteer weed control programs in accordance with the Board's volunteer policy.
- Encourage research into the control and biology of major weed species, including research into weed control techniques and biological controls.
- Include weed management as part of education programs and interpretation displays.

Pathogens

- Develop and implement a strategy for the control of the spread of *Phytophthora cinnamomi*.
- Test native species that have the potential to be susceptible to *P. cinnamomi*.
- Establish hygiene protocols for access to Mt Gower, such as the cleaning of footwear before commencing the walk.

Rodents

- Continue the present Warfarin-based rat-baiting program, and extend it to areas identified by the *Biodiversity Management Plan* to improve biodiversity protection.
- Investigate the feasibility of eradicating rodents from the main island, preferably by using rodent specific toxins, and implement eradication programs if practicable.
- Enforce quarantine protocols for boats accessing offshore islands (see Section 6.1).
- Implement rodent monitoring on Blackburn Island.

Other pests animals

- Investigate the impacts of the feral pigeon, blackbird, song thrush and masked owl on threatened species; implement eradication programs if impacts are unacceptable and if eradication is feasible.
- Investigate control methods for the *Arsipoda* beetle and implement methods that do not pose a risk to *Calystegia affinis*.

Domestic animals

- Permit residents to take their dogs (but only under leash) along the Transit Hill walking track. Unleashed dogs are not permitted on this track.
- Prohibit dogs from the walking track to the Clear Place beyond the southern set of steps down to Middle Beach.
- Prohibit domestic animals, including horses, in all other parts of the preserve, except for specifically trained dogs used as assistance animals or involved with search and rescue and other emergency and law enforcement operations.
- Enforce the provisions of the LHI Regulation as they apply to goats and poultry.

5.4 FIRE MANAGEMENT

Unlike most of Australia, fire is uncommon in the bushland areas of Lord Howe Island. Fire was almost certainly not a part of the island environment prior to human settlement, because drought sufficient to make significant fuel available to burn is uncommon and lightning extremely rare. Since human settlement, fires have occurred only during prolonged dry periods. Such fires, although uncommon, are potentially very destructive. Recovery from fire events is very slow.

The overall fire management strategy for the preserve is therefore to exclude fire as far as possible.

Open fires lit by campers and picnickers are the most common cause of uncontrolled fires in the preserve. Fireplaces are provided at North Bay. A fireplace was installed in the mid 1990s at Boat Harbour but has since been removed.

Section 11(4)(a) of the LHI Act places an obligation on the LHI Board to take all practicable measures to protect the islands from fire. The Board is the local fire authority for the region, responsible for the prevention, control and suppression of fires.

Desired Outcomes

- As far as possible, fire is excluded from the preserve.
- Fire control techniques do not conflict with nature conservation objectives.

Strategies

- Open fires are banned except in designated fireplaces at North Bay; fuel stoves may be used elsewhere.
- Fire-fighting equipment (such as a backpack and rake-hoe) will be provided at North Bay to assist with the rapid suppression of bushfires in the area. Use for any other purpose and removal of the equipment is prohibited.
- No burning off or other prescribed burning will be allowed within the preserve
- To protect the preserve from fires originating from the settlement area, the Board will require that persons burning off in rural parts of the settlement area do so only in accordance with a permit from the Board and at times when the assessed grassland and forest fire risk is low.
- Any fires in the preserve will be extinguished as quickly as possible, preferably using hand-tools.

5.5 BOUNDARY DEFINITION AND FENCING

A key management direction for the preserve is to coordinate management of the preserve as much as possible with the management of other parts of the island group, in particular with regards to the protection and presentation of World Heritage values. Because of the globally significant scenic and nature conservation values of the entire island group, it is important to foster an attitude of careful environmental management of all land, whether or not it is included within the preserve.

This approach does not imply a lesser level of protection for the preserve. The REP provides a higher level of development control within 20m of the preserve (DIPNR 2004). The *Vegetation Rehabilitation Plan* (Olson 2002) identifies sites inside or bordering the preserve as a priority for rehabilitation, with the object of preventing dieback of native vegetation.

The main case where clear boundary definition is needed is where grazing is an adjoining land use. Fencing and boundary definition in such cases is primarily intended for the control of straying cattle or horses rather than establishing a barrier at the preserve boundary. In some places, marked walking tracks cross fences (see Section 6.1).

The LHI Board has worked with the preserve's neighbours over the past decade to ensure boundary fences that are of a suitable standard to exclude stock from the preserve and, where they are located near to seabird rookeries, to ensure that they do not contain a barbed upper wire which can snag birds. Where the fence has been replaced, a new alignment of 20m outside the preserve's actual boundary has usually been used, thereby establishing a buffer zone which can be revegetated with salt tolerant native species. The establishment of such a buffer is essential to prevent further dieback of rainforest edges from salt breezes.

Desired Outcomes

- Preserve neighbours continue to support protection of the preserve's forests and any buffering native revegetation is undertaken on their properties.
- The preserve is protected from cattle and die-back.

Strategies

- Encourage maintenance of effective fencing of grazing properties to prevent domestic stock from entering the preserve.
- Provide fencing assistance where clear benefits to the preserve can be realised and where fencelines will be erected on the outside of the preserve's legal boundary.
- Establish a vegetated buffer of salt-tolerant and wind-tolerant plants between the preserve and areas of pasture.

6. VISITOR OPPORTUNITIES AND EDUCATION

6.1 ACCESS

Access to the preserve is primarily by foot, using the walking track network, or boat. The network of graded walking tracks, shown on Figure 2, is extensive and is the key development within the preserve. With the addition of Transit Hill, almost the entire walking track network on the main island is included in the preserve. There are no access tracks suitable for vehicles within the preserve.

Walks vary in the degree of difficulty, from well-graded walks to relatively steep tracks with uneven surfaces. A variety of classification schemes have been used in the past to rate the difficulty of each track. The Australian Standard 2156 (Standards Australia 2001) for walking tracks is a nationally recognised scheme that can be used to assist in determining maintenance standards and priorities, and to guide visitor expectations.

Many visitors to the preserve use the walking track system for the purposes of viewing the Island's spectacular landscape and bird watching. The viewing platform at Mutton Bird Point was replaced in 2006. Another large viewing platform is provided on Transit Hill.

Ongoing management concerns for the track system include minimising erosion and wear, repair of tracks after landslips (see Section 5.1), minimising impacts on nesting birds, particularly on Blackburn Island, Mutton Bird Point, King Point and the track to Mt Eliza (see Section 4.4), and eliminating weed and pathogen incursions (see Section 5.3).

Visitor safety is another concern. The track from Malabar Hill to Kims Lookout runs close by cliff edges, as does the track to Mt Eliza. The current walking track guide advises visitors to exercise caution on these tracks, and a number of warning signs have been installed at several points in the Northern Hills. Several parts of the track to Mt Gower and one section of the Goat House Cave track have fixed rope handlines to assist walkers in particularly steep sections.

Tourists are discouraged from remote country bushwalking and are not permitted to attempt the Mt Gower walk without a LHIB licensed guide. These restrictions on access are primarily due to the fact that the LHI Board and Island residents have limited capacity to carry out search and rescue operations. As there are no helicopters permanently stationed on the Island, transporting injured walkers from the remoter areas of the Island can involve carrying them considerable distances over rugged terrain.

A review of walking track standards and condition (Gorrell 1997) identified few opportunities for some minor extensions or re-alignments to the walking track system. Minor re-alignments of some tracks may be needed following landslips or to reduce impacts on populations of significant species.

As discussed in Section 5.1, the route to Mt Gower is particularly vulnerable to being cut by further landslips in the Lower Road area. Alternative route options to Mt Gower may need to be investigated should the current access route be made impassable by further landslips occurring in this area (see Section 6.1).

Fishing from boats regularly occurs off the various offshore islands, but unrestricted access is only permitted on Blackburn Island. Visitor access to Roach Island in the Admiralty Group is permitted only with a licensed guide and restricted to natural rocky vantage points on the island to prevent disturbance to sea birds. Landing on any other of the offshore islands is not permitted without the approval of the Board. There are no boat ramps or similar structures within the preserve.

As discussed in Sections 4.4 and 5.3, a key objective of the *Biodiversity Management Plan* is to prevent introduced species, in particular ship rats, gaining a foothold on the offshore islands. To achieve this, a quarantine system will need to be implemented. The *Biodiversity Management Plan* highlights the importance of the southern mountains as a high conservation priority (see section 4.3) and it is proposed to manage the plateau of Mt Lidgbird as a scientific reference point with restricted access.

Desired Outcomes

- Access to the preserve does not impact on the preserve's values.

Strategies

- Investigate the feasibility of cost recovery for search and rescue operations where access restrictions have not been followed.

Walking tracks

- Maintain the walking track network shown on Figure 2 in accordance with the designated standards shown on Figure 2 (Standards Australia, 2001).
- Where necessary to avoid impacts on native vegetation and populations of threatened species, or to replace tracks made impassable by landslips, divert existing tracks but only following a thorough assessment of the potential impacts of the new route.
- Each year before the breeding season, re-mark the single pathway through the rookery at Blackburn Island. The markers should be spaced close enough so visitors do not lose the path.
- Monitor the environmental impact of walking tracks, particularly in regard to erosion, endangered species, bird nesting areas, weeds and pathogens.
- Ensure that the condition of fixed ropes and rock bolts along tracks is monitored at least every three months, and replaced where necessary to maximise safety.
- Provide stiles to permit walkers to cross boundary fences.

Vehicle use

- No vehicle tracks will be constructed in the preserve. The use of vehicles within the preserve will require approval of the Board, and be granted only for management activities that cannot be undertaken without a vehicle. Phytosanitary guidelines must be adhered to in such cases.
- Bicycles will not be permitted in the preserve, including on any of the walking tracks.

Restrictions on access

- Except with the permission of the Board for management or research purposes, access (for both visitors and residents) will not be permitted to the following areas:
  - Mutton Bird Point;
  - Kings Point;
  - the track to Mt Eliza during the nesting season of the sooty tern (Sept – March);
  - any of the offshore islands, apart from Roach Island and Blackburn Island; and
  - Mount Lidgbird.
- Access to Roach Island is limited to the natural, rocky vantage-point during the bird-breeding season.
- Visitor access to Roach Island and Mt Gower is not permitted without a licensed tour guide.
- Landing on all islands, including Blackburn Island, requires adherence to the following quarantine procedures, which will be widely promoted to all boat owners:
  - boats, canoes and other vessels shall be inspected and cleaned to ensure there are no rodents, spiders or other pests on board, before leaving the main island; and
  - bait boxes or other crates and all equipment shall also be checked for rodents, spiders and pests; and
  - no fixed landing structures, ropes or other attachment devices are to be installed.
- Interpretation programs for visitors will emphasise access restrictions to Mt Gower, Mutton Bird Point and the offshore islands, and the seasonal closure of the track to Mt Eliza.

6.2 INFORMATION PROVISION

Interpretation of the environment is a widely accepted “use” of major conservation reserves. Appropriate provision of information typically involves three levels:

- promotion to increase community awareness of a park’s existence, its conservation importance and visitor opportunities;
- orientation to enable visitors to find their way around a park, introduce them to its landscape, advise them about use restrictions, and encourage minimal impact behaviour; and
- interpretation of individual components of a park’s environment in order to increase visitor understanding of its values and of the environment in general.

The preserve, however, is only part of the World Heritage property. The promotion of the preserve’s World Heritage status and presentation of its World Heritage values, as required by the World Heritage Convention, is an issue for the whole island group – not just the preserve. While the preserve offers many unique examples of plants, animals and landform features which are valuable for presentation, interpretation

within the preserve itself is inseparable from that for all other parts of the island group and needs to be considered as part of island-wide programs.

The preserve offers visitors a rare opportunity for close observation of nesting seabirds, as well as a large number of other species not found anywhere else on the planet. These attributes confer on Lord Howe Island outstanding opportunities for education and interpretation. Lord Howe also provides outstanding opportunities for geological education and interpretation because of the clarity of expression of many of its landscape features and underlying geology.

The interpretation messages of key relevance to the preserve are:

- the preserve's natural features and their geomorphology;
- the ecological, biogeographical and global significance of the plants and animals found in the preserve;
- accessible features of interest, available facilities and opportunities for various activities in the preserve;
- the effect that disturbances such as litter, goats, rats and fire can have on the preserve;
- the need for quarantine protocols and the potential repercussions of introduced pest species on endangered species found on offshore islands;
- weed and pathogen management;
- access restrictions to various parts of the preserve, including offshore islands and Mt Gower; and
- management programs and priorities, and the reasons for them.

These messages can be relayed in a number of ways, including static displays and signs outside or inside the preserve, through guides, and through printed guidebooks or brochures. Currently, there are few signs within the preserve, in line with the Board's *Signage and Publication Manual* and the need to protect the scenic amenity of the preserve (see Section 4.2). Signs currently installed in the preserve include:

- discrete orientation signs at walking track junctions, which complement the ''Exploring Lord Howe Island'' walking track guide;
- track warning signs on cliff-edges in the Northern Hills;
- a regulatory sign at the start of the Mt Gower Track; and
- a temporary sign advising of the seasonal closure of the track to Mt Eliza.

Small interpretation signs within the preserve are located at the Mutton Bird Point lookout. Other sites where it is considered appropriate to install interpretative signage on existing infrastructure are the lookout platform on Transit Hill and the shelters at North Bay.

Facilities and programs based in the settlement area are the main means of promoting and describing the preserve's features. These include natural history displays and slide presentations at the Museum, the sale of books and field guides relating to the natural features of the island, the distribution of leaflets and walking track guides, and information provided on the Internet. The Board also produces a

monthly Community Bulletin to inform the Island community of Board programs relevant to the island.

Quality face-to-face interpretation provided by authoritative guides is seen as the key means by which detailed environmental information will be provided to tourists in the preserve. To achieve this, there is a need to provide improved guiding services in the preserve so tourists gain a good understanding of the range of interesting features while visiting the different areas of the preserve. This will have the added benefit of providing additional employment opportunities for Island residents and improving tourists' levels of satisfaction with guided tours (see Section 6.4).

Desired Outcomes

- There is widespread community understanding and appreciation of the preserve's World Heritage values, as part of the LHIG WHA.
- Visitors are aware of the preserve's recreation opportunities and available facilities.
- Residents and tourists support the conditions (including quarantine measures and access restrictions) necessary to conserve the preserve's biodiversity.

Strategies

- An interpretation plan for the LHIG WHA will be prepared and implemented.
- Support interpretation activities at the Museum, which focus on the significant biodiversity of the island, its scenic and scientific values, and how best to manage threats to island biodiversity.
- Regular reports will be provided to the island community on LHI Board decisions and achievements relating to the preserve, the results of research programs and explanations for management actions.
- Training programs will be provided to upgrade the standard of the guiding and interpretation services offered to tourists.
- Continue to distribute the walking track guide to tourists via the lodges, the Museum and other appropriate locations, and update and promote the guide as needed.
- Maintain discrete track marking and orientation signs at track junctions and trackheads in the preserve.
- Limit the number of interpretive signs installed within the preserve; where erected, these signs will be unobtrusive and harmonise with their surroundings, and be placed where possible on existing infrastructure.

6.3 RECREATION OPPORTUNITIES

Much of the intensive outdoor recreation on Lord Howe occurs outside the preserve: in the settlement area, on the beaches, in the lagoon and on the surrounding ocean. However, the preserve provides an important part of the range of recreation opportunities available on the island. The recreation values of the preserve rely on maintenance of its undeveloped natural character as a contrast to the settlement area.

Because the preserve is established for the purpose of preserving flora and fauna, it is not primarily a recreation area. However, the management principles for national parks (see Section 2.2) allow for the provision of sustainable visitor use and enjoyment that is compatible with conservation of natural and cultural values. Thus recreation will not be considered an appropriate use unless it is fully consistent with the conservation of the preserve's flora and fauna.

Walking, often for the purposes of bird watching or viewing the Island's spectacular landscape, is the major recreation activity that takes place within the preserve's boundaries. This primarily occurs on the graded walking track network (see Section 6.1).

Visitor facilities are provided in the picnic area at North Bay, where substantial numbers of people come by boat as well as on foot. These facilities include water tanks, shelter sheds, storage sheds (for wood and rat bait), toilets, picnic tables, and wood and gas barbecues. Part of the picnic area, including the floor of the lower shelter, floods in heavy rains. As camping for residents is permitted at North Bay, fire-fighting equipment is provided for the rapid suppression of any fires in the area.

A picnic table is also provided at Little Island, and track-side seats are provided on the Max Nicholls Memorial Track and on the track to Mutton Bird Point.

The offshore islands are rarely a major part of the recreation experience for tourist, with most visitors encountering these islands at a distance when viewed from boats or the main island. Blackburn Island, in the lagoon, is the most readily visited, however most visitors go there on guided tours to view the wedge-tailed shearwater rookery. Guided tours to Roach Island occur infrequently when seas permit (see Section 6.4).

Recreational rock climbing is prohibited on Balls Pyramid and on areas above walking tracks (e.g. on the cliff above the Lower Road). Elsewhere on the island it requires either permission from the Board or the services of a licensed guide. No applications for rock climbing have been received in recent times and it is generally believed that the geology of most cliff faces is too unstable to permit safe climbing. Climbing to access research sites (e.g. on Balls Pyramid) or for management purposes (e.g. weeding on cliffs) can occur, subject to the Board's approval.

Other hazardous adventure activities, such as hang gliding, abseiling and parachuting from cliff edges (also known as BASE-jumping), are not known to occur in the preserve. As mentioned in Section 6.1, the Board and island residents have limited capacity to rescue injured visitors in the remoter sections of the preserve, and therefore restrictions are required on these activities.

As discussed in Section 4.1, none of the underground caves in the preserve is suitable for recreational caving.

Desired Outcomes

- The range of recreation opportunities available in the preserve contributes to an appreciation and understanding of the natural features of the preserve and has limited impacts on preserve values.

Strategies

- Picnic tables, shelters, water tanks, barbecues, storage sheds and toilets will continue to be provided at North Bay.

- Monitor the condition of North Bay Picnic Area and institute temporary closures to allow for rehabilitation if required.
- Prohibit recreational caving in the preserve.
- Prohibit recreational rock climbing on Balls Pyramid.
- Hang-gliding, rock climbing and any other hazardous activities may be carried out but only with the prior written permission of the Board.
- BASE-jumping will not be permitted in the preserve.
- Encourage use of minimal impact practices through information brochures and other means.

6.4 CAMPING

The preserve is an integral part of the landscape and local recreation space of a community of people. Residents frequently use the preserve for walking, and camp within the preserve, primarily over the summer months at North Bay. Smaller numbers of people also camp occasionally at Boat Harbour, mostly for fishing. Seed collectors, Board staff and researchers also may need to camp in the more remote parts of the preserve. Under the existing plan, camping in the preserve is currently not permitted for tourists unless they use the services of a guide licensed for this activity.

This replacement plan proposes that camping not be offered as an activity for tourists in the preserve and that some additional camping restrictions apply to residents.

The rationale for this decision is that the island is relatively small (11.8 km long and 2.8km wide) and has an expansive walking track network, which reaches the northern, central and large areas of the southern sections of the island, including Mt Gower. All these areas are accessible as day walks.

Furthermore, camping equipment such as tents and tent pegs represents a quarantine risk to the island, as it can potentially transmit soil-borne pathogens such as phytophthora and exotic weed seeds. Due to these quarantine concerns, as well as the strict weight restrictions (14 kg) imposed on visitors flying into the island, it is not considered appropriate for visitors to bring camping equipment to the island. This will consolidate the island's quarantine standards and assist in safeguarding the island's unique natural values.

While Island residents currently need to obtain a permit from the Board office before they go camping, additional restrictions are proposed to ensure equitable access to North Bay for members of the island community. Camping times and group sizes also need to be limited by the permit, to minimise impacts at the few suitable sites and also to minimise conflicts between day visitors and campers at North Bay.

Desired outcomes

- There is equitable access to camping by residents.
- Impacts on the preserve's values caused by camping are minimised.

Strategies

- Camping within the preserve will only be permitted with the approval of the Board.

- Camping for recreation purposes will not be permitted within the preserve except in the existing camping area at North Bay, and only for island residents.
- Approvals for Island residents camping at North Bay area will be for a limited time for each family; this will be a maximum of 4 weeks in any 2-month period.
- Camping for management or research purposes, or for approved purposes related to the palm seed harvest, may be permitted at other specified locations within the preserve, with conditions to limit impacts.
- The condition of camping sites at North Bay will be monitored and areas may be temporarily closed if required to allow for rehabilitation. Additional restrictions may be specified to limit impacts.
- Picnic tables, shelters, water tanks, barbecues, storage sheds and toilets will continue to be provided at North Bay.
- Fire fighting equipment will be provided to assist with the rapid suppression of any fires starting in the area.

6.5 COMMERCIAL TOUR OPERATIONS AND GROUP ACTIVITIES

There are several commercial tour operators or visitor guides licensed to conduct business in the preserve. Access restrictions to Mt Gower and Roach Island (see Section 6.1) require the use of licensed guides to these areas.

As noted in Section 6.2, tour guides provide an invaluable opportunity for interpreting the preserve's values to visitors. They also improve safety for visitors, limit visitor impacts and improve visitor enjoyment of trips into the preserve. The Board believes there is scope for a wider range of guiding services to be offered to visitors in the preserve, especially on existing tracks for walks and nature study, and for improvements in the quality of interpretation.

Several commercial operators offer boat tours, including popular day trips to the North Bay picnic area, which may include guided walks to the Herring Pools or Mt Eliza.

When conditions permit, tourist parties can be landed on Roach Island. It should be noted, however, that tides and weather are such that many visitors who want to visit the island will be prevented from landing, as landings can only be attempted when conditions will guarantee both a safe landing and a safe departure. While on Roach Island, visitors need to be supervised to ensure that they comply with restrictions on access to protect eggs and immature birds during the bird-breeding season.

Desired Outcomes

- All commercial activities and services within the preserve are formally licensed and subject to consistent controls.
- Commercial operators promote an understanding of the values of the preserve and adherence to the plan of management.
- Group activities do not conflict with other users and cause limited impact on preserve values.

Strategies

- Actively promote and support provision of a wide range of commercial guided services for appropriate recreation activities within the preserve.
- Institute a scheme for training and accrediting existing and new visitor guides to ensure they understand the importance of raising awareness of the World Heritage and other features of the preserve, and have the skills and knowledge to do so.
- Licences will be required for all guided activities anywhere in the preserve, whether or not the activity is undertaken on a fee-for-service basis or on the basis of inclusion in a tour package or accommodation tariff.
- The licensing of commercial activities and services within the preserve will be based on compliance with the following conditions:
  - Provision of authoritative interpretation and explanation of the island environment to clients;
  - Regular returns to the Board of the numbers of persons, the activities undertaken, the locations visited, and the condition of the site and access tracks;
  - Adequate insurance cover and indemnification of the Board against claims; and
  - Appropriate levels of experience and training for guides, including a current senior first aid certificate.
- Persons not permanently residing on the island will be required to engage the services of a licensed guide if they wish to climb Mt Gower, or to visit any of the offshore islands, not including Blackburn Island. Otherwise, visitors to the preserve will be given as much freedom of choice as possible about using guided services or engaging in day walks independent of any guide.
- Boat operators licensed for the purpose will continue to be permitted to land guided parties of visitors on Roach Island during the bird-breeding season. To ensure appropriate supervision, one licensed guide will be required for every five visitors landed and a maximum of twelve people will be landed on the island at any one time.
- Apply appropriate limits on the number of visitors who may accompany each licensed guide for other activities and/or to other places if necessary.
- Group activities involving more than 12 people will require prior permission from the Board.

7. RESEARCH AND MONITORING

There has been considerable scientific interest in the natural history of Lord Howe ever since discovery of the island group. A succession of scientific expeditions in the 19th century quickly established the international significance of the island's biodiversity. In the early 1970s, the Australian Museum undertook a terrestrial environmental survey of the island for the LHI Board. The report of the Museum study team (Recher & Clark 1974) contained a wide range of recommendations to the Board, including the development of a continuing program of scientific research and the establishment of an extensive reserve of land for the protection of terrestrial flora and fauna.

Thus research was instrumental to the preserve's creation and remains a major activity supported by the LHI Board. The Board runs a research facility in the settlement area to provide accommodation and laboratory facilities for researchers.

Article 5 of the World Heritage Convention places an obligation on the Australian Government to ensure that effective measures are taken for the protection, conservation and presentation of the WHA's values through:

- the development of scientific and technical studies and research, necessary for management requirements (article 5c); and
- the undertaking of appropriate scientific measures necessary for the identification and conservation of these values (article 5d).

Further, Paragraph 72 of the Convention's Operational Guidelines requires that on-site monitoring arrangements are put in place as integral components of day-to-day conservation and management.

Environmental research priorities have been identified by the Board. The *Lord Howe Island Biodiversity Management Plan* (DECC 2007) identifies research on the ecology of threatened species as a high priority to improve the Board's ability to conserve these species and their habitats.

While research is necessary to understand the values of the region and how they can best be conserved and managed, research activities can have negative impacts on the values of the island. For example, access to research sites off walking tracks can lead to trampling or disturbance of threatened species. Permanent markers can be visually intrusive.

Research activities involving any disturbance of animals and protected or threatened plant species need to be licensed under the NPW Act.

Desired Outcomes

- Research and monitoring enhances the information base and assists in the management of the values of the Lord Howe Island Group WHA.
- Research and monitoring cause minimal environmental damage.

Strategies

- Liaise with research institutions to develop and implement research projects that contribute to achieving the Board's environmental research priorities.

- Researchers must liaise with Board staff and have received appropriate permits from the Board prior to commencing any work in the LHIG. Conditions attached to such permits will require researchers:
  - to submit progress reports and copies of their published findings to the Board;
  - to abide by the normal regulations which apply to island visitors, unless specifically excepted;
  - to ensure that their activities are non-destructive and result in the least possible disturbance of preserve ecosystems and landforms;
  - to ensure any research structures and long-term markers are discrete and unobtrusive, and placed in locations that will minimise their visual impact; and
  - to remove site markers upon completion of the research unless the sites are permanent monitoring points approved by the Board.
- Encourage visitors (particularly bird watchers and other natural historians) to pass on information gathered in the preserve.
- Monitor populations of native plants and animals, according to the priorities of the *Lord Howe Island Biodiversity Management Plan*.
- Encourage research into the ecology of plant and animal species, their threats and methods for controlling threats, according to the priorities of the *Lord Howe Island Biodiversity Management Plan*.
- Design and implement monitoring programs for introduced species, according to the priorities of the *Lord Howe Island Biodiversity Management Plan*.
- Maintain an adequate database about the natural resources of the preserve.
- Require all researchers working in terrestrial habitats to follow phytosanitary guidelines in relation to footwear and equipment.

8. OTHER USES

8.1 HARVESTING OF NATIVE SPECIES

From its discovery to the present day, many of the native species found on LHIG have been harvested or collected, sometimes (in the case of several endemic landbirds) to extinction. The practices of mutton-birding and collecting seabird eggs have now ceased, however over-collection of rare invertebrates or reptiles may pose a significant threat to these species' survival.

Bioprospecting (the exploration, extraction and screening of biological diversity to obtain genetic or biochemical resources that have potential commercial value) is a rapidly developing industry elsewhere in the world. Given the large proportion of endemic flora on the island, it is likely that some bioprospecting interest may be shown in Lord Howe Island in the future.

Relatively small quantities of live foliage of the endemic *Pandanus forsteri* are cut from within the preserve by island residents to make baskets and similar craft items for sale. The main areas within the preserve where Pandanus is cut are near the Far Flats and in Soldiers Creek. All pandanus species are protected under NPW Act and so this cutting requires a permit under the NPW Act.

Of much greater importance is palm seed harvesting, which has formed the basis of the island's economy since 1878 and is an activity that has traditionally been undertaken by the Lord Howe Island community. Harvesting of palm seeds in the preserve is undertaken by seeders on behalf of the LHI Board. While all four endemic palm species are harvested at various times according to demand, the key species collected is the kentia palm (*Howea forsteriana*). This species is found throughout the lowlands and on Little Slope and Big Slope, up to an altitude of 360m. Plantations in the settlement area have been established to provide future seed sources but a significant proportion of the seed currently comes from the preserve's forests.

The location of harvesting varies considerably from season to season, and according to the species being harvested. Little mountain palm (*Lepidorrhachis mooreana*) and big mountain palm (*Hedyscepe canterburyana*) can only produce seed at high altitude and thus seeds for this species are only available from the preserve's southern mountains. In practice the only significant supply of curly palm (*Howea belmoreana*) is also from the preserve.

The seeders gain access to the palm stands within the preserve on foot (sometimes landing from a boat). Existing walking tracks or routes are utilised where available, but much of the access for seeding is off track. The seeders do not require any structures or clearing of undergrowth to harvest the seed. The seeders occasionally camp out in inaccessible areas, such as the Big Slope. Restrictions on the use of fire (see section 5.4) also apply to seeders. All seed is carried out manually, either to a suitable boat landing or to vehicle tracks outside the preserve.

Because rats have a substantial impact on palm seed yields, the current rat baiting program on the island is linked to harvesting operations (see Section 5.3). The management and monitoring of bait stations, including the laying of baits, is undertaken under contract to the LHI Board.

The export of any wildlife, including palms and palm seeds, is subject to the wildlife protection provisions of the Commonwealth's EPBC Act. A monitoring program is required to ensure that palm seed harvesting operations do not impact on the regeneration of palm forests within the preserve (see section 7).

A major focus of the DCP for the Region (DIPNR 2004) is using indigenous native plants for landscaping in the settlement area. The LHI Board has also adopted a policy to promote native plants in the settlement's gardens, supported by a "Grow Native" brochure. To support this policy, the Board's nursery needs to broaden the variety of plants available for sale to residents. There may also be opportunities for commercial production of other native plant species for the mainland or export market.

Desired Outcomes

- Natural resource industries are sustainably managed and do not degrade the biodiversity values of the preserve.

Strategies

- Requests for research or collecting permits of a bioprospecting nature will be subject to LHI Board consideration and approval.
- Cutting of pandanus will be permitted within the preserve in unobtrusive areas away from tracks but may be stopped should it impact on the survival of individual plants.
- The existing practices of palm seed harvesting will be allowed to continue, subject to monitoring of impacts; approval conditions may be modified to ensure impacts are minimised.
- Investigate the feasibility of closing the preserve to the removal of kentia palm seeds once sufficient yield of palm seeds is obtained from plantations and lands outside the preserve.
- The collection of any other plant or animal material from the preserve (including beetles, orchids and ferns) is prohibited, except with the approval of the Board and with the appropriate licence under the NPW Act. Board approval will primarily be for scientific purposes, for actions aimed at recovering a species or to establish propagation stock in the Board's nursery.
- The cutting, ringbarking or poisoning of native plants in the preserve is prohibited.

8.2 MANAGEMENT AND OTHER FACILITIES

The following management facilities are located within the preserve:

- The LHI Board's radio tower at Transit Hill, and associated remote power system (solar photovoltaic panels and small shed).
- Two small sheds at North Bay (the shelters of the former pit toilets), which are used for storing fire wood and rat bait.
- Channel markers for the North Passage entry to the lagoon, located near Dawsons Point, which were installed before the creation of the preserve and are maintained by the NSW Maritime Authority.

Section 19A(4) of the LHI Act prevents the leasing of any land within the preserve, including to other government authorities. Hence there are limited opportunities for facilities not owned or managed by the LHI Board to be installed in the preserve.

The LHI Board is in the process of pursuing improved telecommunications and internet services for the Island residents (LHIB 2004). The Board's existing UHF repeater at Transit Hill may be the best site on the island to improve other telecommunications. The site currently has a stand-alone power system, utilising photovoltaic panels, and a single tower. Other users may be permitted to use the existing facilities at the site, which may require expanding the capacity of the stand-alone power system. This may be achieved without expanding the footprint of the site or increasing its visual impact.

Radio coverage via the repeater on Transit Hill does not provide adequate coverage for the Island. There remain considerable areas, particularly on the south-east areas of the Island where radio communication is not possible. The installation of additional radio beacons and/or repeaters on hills and other elevated locations in the preserve may overcome these communication blackspots.

The LHI Board is also in the process of pursuing the installation of additional renewable energy sources to meet the Island's energy requirements, reduce power generation costs and reduce reliance on energy derived from non-renewable sources (LHIB 2004). The feasibility and suitability of installing a wind turbine and/or solar panels for the island is being investigated. None of the likely sites is located in the preserve.

Desired Outcomes

- Management and other facilities adequately serve the needs of the island's community and have limited environmental impact.

Strategies

- Maintain the radio repeater tower at Transit Hill.
- If necessary, license other telecommunication providers to install aerials on this tower and upgrade the stand-alone power system at the site.
- If radio communication can be improved, consider the installation of other remote radio communication devices subject to the necessary environmental assessments.
- Permit lighting of the channel markers at Dawsons Point (including installation of a remote power system) provided it is done in a manner to limit impacts to the existing footprint of the site.
- Should any new management infrastructure be proposed for the preserve, ensure that a full environmental impact study is completed, which assesses (among other matters) potential impacts on seabirds, and the impacts on the scenery and visual amenity of the LHIG World Heritage Property. Any new structures will require an amendment to this plan.

9. PLAN IMPLEMENTATION

This plan of management establishes a scheme of operations for the preserve. It also forms the basis for controlling activities and uses in the preserve. In particular, under section 19B of the LHI Act, any person who uses the preserve in a manner that contravenes the plan of management is liable to a fine.

As discussed in Section 2, this plan is part of a system of management for the preserve, which includes legislation, management policies, regional plans and corporate plans. In the future, there may be the development of other related planning documents, such as a recreation and tourism plans and species recovery plans.

Implementation of the actions in the plan will be undertaken within the annual programs of the LHI Board. The actions identified in the plan are those to which priority will be given in the foreseeable future. Other management actions may be developed consistent with the plan's objectives and strategies. The environmental impact of proposed activities will be assessed at all stages in accordance with established environmental assessment procedures. Where impacts are found to be unacceptable, activities will be modified in accordance with the plan policies.

Relative priorities for identified activities are set out in the table below. Note that this table does not include policies included as strategies in the plan.

While the priorities given in the table are determined in the context of other planning (such as the *Lord Howe Island Biodiversity Management Plan*, the *Strategic Plan for Weed Management* and the *Vegetation Rehabilitation Plan*), the implementation of priority activities is subject to the availability of necessary staff and funds. The LHI Board's ability to implement actions is constrained by its limited resources. It will need to continue to seek grants and investments from external bodies to achieve many of the plan's actions, particularly to secure the substantial inputs of personnel and funds that will be required to control problem plant and animal species in the preserve.

A major three year funding program (2004-2007) made through the NSW Environmental Trust has facilitated a fundamental shift in the Board's approach to weed management from one of control to eradication. While follow up works over the next 10 years will be essential to curtail weed germination from the soil bank, at the time of writing, enormous progress has been achieved.

Lord Howe Island forms part of the area of the NRCMA (which incorporates the area of the former Mid North Coast Catchment Management Board (CMB)). The former CMB provided funding from the Natural Heritage Trust (NHT) for strategic weed control on the island, including in the preserve. The NRCMA has prepared a NHT investment strategy, which has provided significant funding for some essential follow up restoration and weed eradication works on LHI.

This plan of management does not have a specific term and will stay in force until amended or replaced in accordance with section 73B of the NPW Act. The plan will apply both to the land currently described by Schedule 1 of the LHI Act and to any future additions to this schedule. Where management strategies or works are proposed for additions (or the existing area) that are not consistent with the plan, an amendment to the plan will be required.

Desired Outcomes

- The plan is implemented.

Strategies

- Undertake an annual review of progress in implementing this plan of management.
- Undertake an assessment after 5 years of the effectiveness of managing the preserve in accordance with this plan and of the degree of success in achieving the plan's objectives and desired outcomes. Base the evaluation on the monitoring programs set out in this plan and any others that may be developed.

Implementation Table

High priority activities *These actions are imperative to achieving the objectives and desired outcomes of the plan. They must be undertaken in the near future to avoid significant deterioration in natural, cultural or management resources.*	**Plan section**
Prohibit recreational caving access to the underground caves in the preserve	4.1, 6.3
Fossil material, if found within the preserve, is not to be moved without the consent of the Board and only following thorough study and documentation.	4.1
Ensure that any management or visitor facilities in the preserve are of a scale and form which is appropriate to the natural character of the preserve, and are designed and located to minimise their visual impact.	4.2
Develop and implement a strategy for the control of the spread of *Phytophthora cinnamomi*, including hygiene protocols for accessing Mt Gower and other phytosanitary guidelines.	4.3, 5.3
Implement recovery actions and threat abatement works consistent with the *Lord Howe Island Biodiversity Management Plan*.	4.3, 4.4
Encouraging species-specific research into the ecology of priority species identified in the *Biodiversity Management Plan*.	4.4 , 7
Enforce quarantine restrictions detailed in Section 6.1 and routine monitoring for rodents to ensure that rodents are not introduced to any of the offshore islands.	4.4, 6.1
Prohibit disturbance of rotting wood and leaf litter on Blackburn Island and Roach Island.	4.4
Control, and if feasible eradicate, kikuyu on Mutton Bird Point and other bird nesting areas.	4.4
Assess the impacts of management decisions on the Island community's cultural values.	4.5
Archaeological investigations within the preserve will be subject to approval of the Board and, as appropriate, authorisation under the Heritage Act and/ or NPW Act.	4.5
Ensure that any objects or sites of apparent historical significance discovered within the preserve are protected from disturbance and made the subject of professional evaluation before they are disturbed.	4.5
Design and undertake all works in a manner that minimises soil erosion.	5.1
Construct and maintain walking tracks to minimise erosion using appropriate techniques.	5.1
Promote minimal impact behaviour by visitors and residents when in the preserve, including the importance of staying on marked walking tracks.	5.1, 5.2, 6.3
Rubbish or other items not natural to the preserve will not be disposed of within the preserve by any method, including burning or burial. Bins will not be provided in the preserve.	5.2
Provide education and monitoring to avert the accidental import of new plants and animals to Lord Howe Island.	5.3

Enforce effective quarantine provisions to prevent the deliberate importation of new potential weed species and pests animals.	5.3
Design and implement monitoring programs for introduced species, their impacts and control efforts, according to the priorities of the *Lord Howe Island Biodiversity Management Plan*.	5.3
Enforce the provisions of the LHI Regulation that apply to goats.	5.3
Implement a rodent eradication program if practicable.	5.3
Eradicate environmental and noxious weeds species using best-practice treatment and regeneration principles, and consolidating the current systematic 'block' approach.	5.3
Ensure that intensive and thorough noxious weed eradication programs are undertaken in the settlement area to remove sources of weed infestation liable to invade the preserve.	5.3
Support volunteer-based weed control programs.	5.3
Seek the cooperation of residents in implementing weed and pest animal control programs.	5.3
Continue the present Warfarin-based rat-baiting program, and extend it to areas identified by the *Lord Howe Island Biodiversity Management Plan* to improve biodiversity protection.	5.3
Permit residents to take their dogs (but only under leash) along the Transit Hill walking track and to the southern set of steps above Middle Beach on the Clear Place walk. Unleashed dogs are not permitted on these tracks.	5.3
Prohibit domestic animals, including horses, in all other parts of the preserve, except for specifically trained dogs used as assistance animals or involved with search and rescue and other emergency and law enforcement operations.	5.3
Open fires are banned except in designated fireplaces at North Bay; fuel stoves may be used elsewhere.	5.4
Fire-fighting equipment (such as a backpack and rake-hoe) will be provided at North Bay to assist with the rapid suppression of bushfires in the area.	5.4, 6.4
No burning off or other prescribed burning will be allowed within the preserve.	5.4
To protect the preserve from fires originating from the settlement area, the Board will require that persons burning off in rural parts of the settlement area do so only in accordance with a permit from the Board and at times when the assessed grassland and forest fire risk is low.	5.4
Any fires in the preserve will be extinguished as quickly as possible, preferably using hand-tools.	5.4
Establish a vegetated buffer of salt and wind-tolerant plants between the preserve and areas of pasture.	5.5
Promote and enforce access restrictions for offshore islands, Mutton Bird Point and Mt Gower, and the seasonal closure of the Mt Eliza track.	6.1
Maintain the walking track network shown on Figure 2, and discrete track marking and orientation signs.	6.1, 6.2
Mark the single pathway through the rookery at Blackburn Island each year.	6.1
Monitor the condition of fixed ropes and rock bolts on walking tracks every three months, and replace where necessary to maximise safety.	6.1
No vehicle tracks will be constructed in the preserve. The use of vehicles within the preserve will require approval of the Board, and be granted only for management activities that cannot be undertaken without a vehicle. Phytosanitary guidelines must be adhered to in such cases.	6.1
Bicycles will not permitted in the preserve, including on any of the walking tracks	6.1
Except with the permission of the Board for management or research purposes, restrict access to nominated ecologically sensitive sites	6.1
Provide regular reports to the Island community on decisions and achievements relating to the preserve, and results of research programs.	6.2
BASE-jumping will not be permitted in the preserve.	6.3

Hang-gliding, rock climbing and any other hazardous activities may be carried out but only with the prior written permission of the Board.	6.3
Camping within the preserve will only be permitted with the approval of the Board.	6.4
Permits for recreational camping will be issued only to island residents for use of the existing camping area at North Bay.	6.4
Approvals for residents camping at North Bay area will be for a limited time for each family.	6.4
Camping for management or research purposes or for approved purposes related to the palm seed harvest, may be permitted at other specified location(s) within the preserve, with conditions to limit impacts.	6.4
Impose a licensing system for guided activities in the preserve to ensure quality interpretation, regular returns on activities, adequate insurance cover, appropriate limits on the number of visitors, and that guides are appropriately experienced and trained.	6.5
Group activities involving more than 12 people will require prior permission from the Board.	6.5
Liaise with research institutions to develop and implement research projects that contribute to achieving the Board's environmental research priorities.	7
Maintain an adequate database about the natural resources of the preserve.	7
Researchers must liaise with Board staff and have received appropriate permits from the Board prior to commencing any work in the LHIG.	7
Require all researchers working in terrestrial habitats to follow phytosanitary guidelines in relation to footwear and equipment.	7
Requests for research or collecting permits of a bioprospecting nature will be subject to LHI Board consideration and approval.	8.1
Cutting of pandanus will be permitted within the preserve in unobtrusive areas away from tracks but may be stopped should it impact on the survival of individual plants.	8.1
Allow the existing practices of palm seed harvesting to continue, subject to monitoring of impacts.	8.1
Maintain the radio repeater tower at Transit Hill.	8.2
Subject to appropriate environmental assessments, consider the installation of additional radio communication infrastructure to enhance radio coverage and incident management over the Island and at sea.	8.2

Medium priority activities *These are necessary to achieve the objectives and desired outcomes but are not considered urgent.*	**Plan section**
Present and interpret natural erosion and mass movement as integral parts of the landform evolution of the island.	4.1/ 4.2
Minimise signs within the preserve. Ensure any signs are designed to harmonise with their natural surrounds in form, positioning, design and finish.	4.2, 6.2
Establish replicated monitoring sites in vegetation communities across the island, including along an altitudinal gradient in the southern mountains.	4.3
Protect populations of *Calystegia affinis* and *Coprosma inopinata* from trampling by restricting access to their locations in the southern mountains and by providing information in relation to visitors keeping to the defined path on the Max Nichols Memorial Track.	4.3
Monitor the impact of self-colonising species and their interactions with endemic species.	4.4
Close the Mt Eliza walking track each summer to protect the sooty tern breeding colony.	4.4 , 6.1
Require the approval of the Board before any plaques or other commemorative items are placed in the preserve.	4.5
Stabilise any areas where unnatural or accelerated erosion is occurring or is liable to occur.	5.1

Any additional toilet facilities will be appropriately designed and located to avoid impact on water quality, vegetation and residents.	5.2
Include weed management as part of education programs and interpretation displays.	5.3
Investigate the impacts of feral pigeons, blackbirds, song thrushes and masked owls on threatened species; implement eradication programs if impacts are unacceptable and if eradication is feasible.	5.3
Investigate control methods for the *Arsipoda* beetle	5.3
Implement a rodent-monitoring program on Blackburn Island.	5.3
Encourage research into the control and biology of major weed species, including research into weed control techniques and biological controls.	5.3
Review and update the *Strategic Plan for Weed Management*, as it applies to the preserve, every 5 years.	5.3
Enforce quarantine protocols for boats accessing offshore islands	5.3, 6.1
Encourage maintenance of effective fencing of grazing properties to prevent domestic stock from entering the preserve.	5.5
Provide fencing assistance where clear benefits to the preserve can be realised and where fencelines will be erected on the outside of the preserve's legal boundary.	5.5
Where necessary to avoid impacts on native vegetation and populations of threatened species, or to replace tracks made impassable by landslips, divert existing tracks but only following a thorough assessment of the potential impacts of the new route.	6.1
Provide stiles to permit walkers to cross boundary fences.	6.1
Monitor the environmental impact of walking tracks, particularly in regard to erosion, endangered species, bird nesting areas, weeds and pathogens.	6.1
Prepare and implement an interpretation plan for the LHIG World Heritage Property.	6.2
Training and accreditation programs for licensed guides will be provided.	6.2, 6.5
Continue to distribute the walking track guide to tourists via the lodges, the Museum and other appropriate locations, and update and promote the guide as needed.	6.2
Continue to provide picnic tables, shelters, water tanks, barbecues, storage sheds and toilets at North Bay.	6.3
Monitor the condition of North Bay Picnic Area and, if necessary, restrict camping numbers, install additional toilets, or institute temporary closures.	6.4
Promote and support a wide range of commercial guided services for appropriate activities within the preserve.	6.5
Monitor populations of native plants and animals, according to the priorities of the *Lord Howe Island Biodiversity Management Plan*.	7
Encourage research into the ecology of plant and animal species, their threats and methods for controlling threats, according to the priorities of the *Lord Howe Island Biodiversity Management Plan*.	7
Monitor introduced species, according to the priorities of the *Biodiversity Management Plan*.	7

Low priority activities *These are desirable to achieve management objectives and desired outcomes but can wait until resources become available.*	**Plan section**
Permit bona fide research into cave biodiversity or subfossils.	4.1
Revegetate areas within the preserve, with priority given to those sites identified in the *Vegetation Rehabilitation Plan*	4.3
Investigate propagation and ex situ storage techniques for species restricted to cloud forests, including seed banking and living collections.	4.3

Investigate the feasibility of using Blackburn Island as a release site for the Lord Howe Island phasmid.	4.4
Encourage the reporting by resident and visitors of observations of bird and other species.	4.4, 7
Progressively remove Norfolk Island pines at North Bay and Blackburn Island, focussing on the removal of all pine seedlings and juvenile pines. As old pine trees die they will not be replaced.	4.5
Allow Old Nichols Garden at North Bay to remain undisturbed with no restoration works of the disturbed vegetation.	4.5
The ruins of the former shark processing plant on Blackburn Island will be left undisturbed.	4.5
Natural erosion of stream banks and slope deposits will not be interfered with.	5.1
Monitor the erosion and wear of walking tracks.	5.1
Test native species that have the potential to be susceptible to *P. cinnamomi*.	5.3
Enforce the provisions of the LHI Regulation that apply to poultry.	5.3
Investigate the feasibility of cost recovery for search and rescue operations.	6.1
Support interpretation activities at the Museum.	6.2
Investigate the feasibility of closing the preserve to the removal of kentia palm seeds once sufficient yield of palm seeds is obtained from lands outside the preserve.	8.1
If necessary, license other telecommunication providers to install aerials on the Transit Hill tower and upgrade the stand-alone power system at the site.	8.2
Permit lighting of the channel markers at Dawsons Point (including installation of a remote power system) provided it is done in a manner to limit impacts to the existing footprint of the site.	8.2

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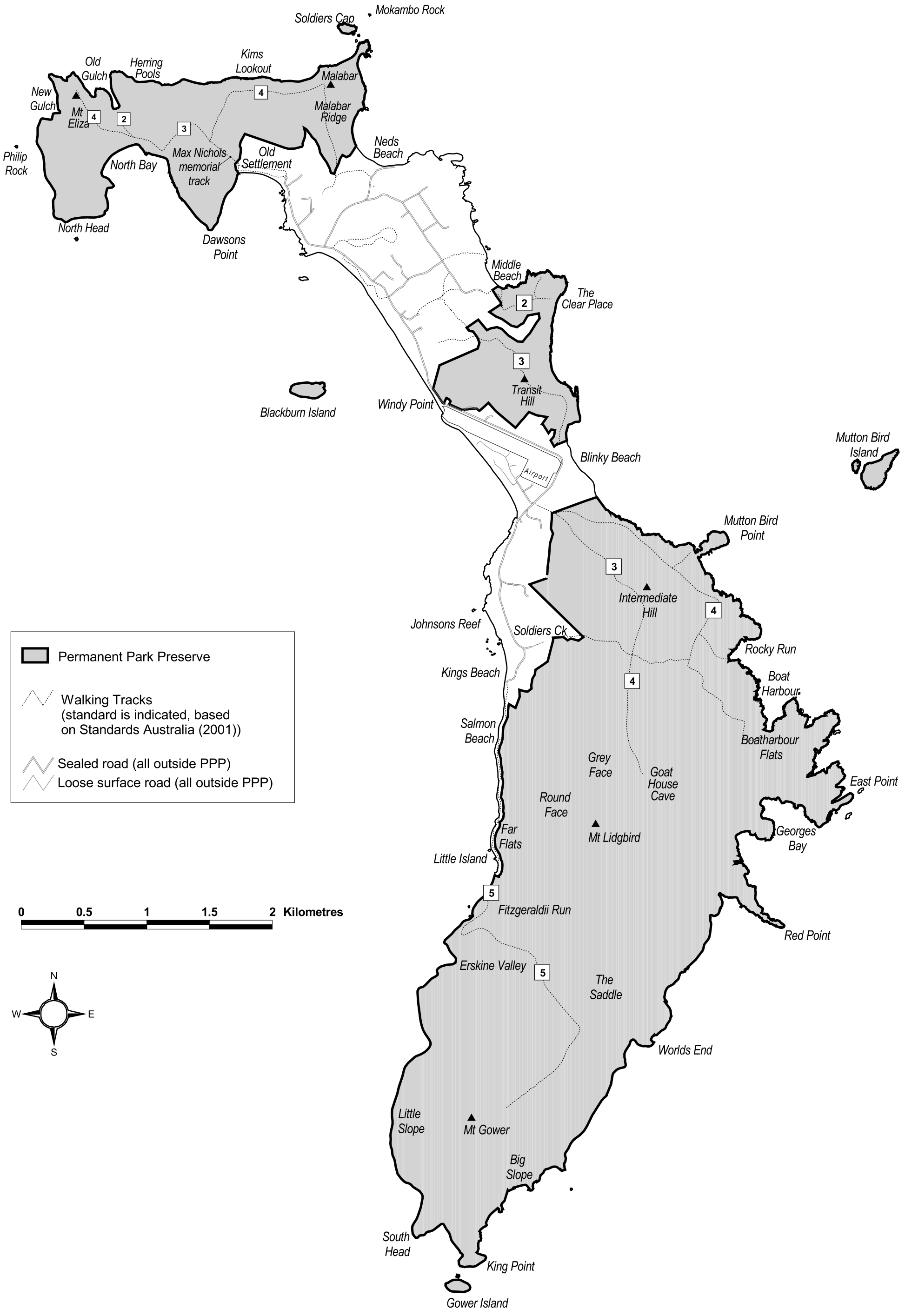
11. LIST OF ACRONYMS

CMB	Catchment Management Board
DCP	Development Control Plan
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
LHIG	Lord Howe Island Group, which includes the main island of Lord Howe and all the associated offshore islands, including Balls Pyramid, as well as the intervening Commonwealth and State waters.
LHIB	Lord Howe Island Board
NHT	Natural Heritage Trust
NPW Act	National Parks and Wildlife Act (NSW)
NRCMA	Northern Rivers Catchment Management Authority
REP	Regional Environmental Plan
TSC Act	Threatened Species Conservation Act (NSW)
WHA	World Heritage Area


Soldiers Cap
Mokambo Rock
Old Gulch
Herring Pools
Kims Lookout
Malabar
New Gulch
Mt Eliza
Malabar Ridge
Neds Beach
Philip Rock
North Bay
Max Nichols memorial track
Old Settlement
North Head
Dawsons Point
Middle Beach
The Clear Place
Transit Hill
Windy Point
Blackburn Island
Blinky Beach
Airport
Mutton Bird Island
Mutton Bird Point
Intermediate Hill
Johnsons Reef
Soldiers Ck
Rocky Run
Kings Beach
Boat Harbour
Salmon Beach
Boatharbour Flats
Grey Face
Goat House Cave
East Point
Round Face
Mt Lidgbird
Georges Bay
Far Flats
Little Island
Fitzgeraldii Run
Red Point
Erskine Valley
The Saddle
Worlds End
Little Slope
Mt Gower
Big Slope
South Head
King Point
Gower Island
Permanent Park Preserve
Walking Tracks (standard is indicated, based on Standards Australia (2001))
Sealed road (all outside PPP)
Loose surface road (all outside PPP)
0 0.5 1 1.5 2 Kilometres
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W
E
S