

A MANAGEMENT STRATEGY

for

LORD HOWE ISLAND

for the Australian voluntary conservation movement

A Paradise in Peril

John Sinclair

May, 2002



GO BUSH Safaris

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Lord Howe Island Management Strategy — 2002

Executive Summary

Superficially most people looking at Lord Howe Island would assume that it is in good shape. It is a most attractive place. A huge effort has been put into providing good management. There appears to be a cap on visitor numbers. There are many success stories and positive developments which have been described in the introduction to this Report.

Although the positive developments outnumber the negative developments cited, the gravity of some of the negative developments more than offset those gains made thus far in protecting the World Heritage values.

There are some very worrying trends as a result of people pressure on this small and finite island. Ever increasing numbers of residents and visitors are creating greater demand on the island's natural resources. In 14 years from 1988 to 2001 (inclusive) the population increased from 286 by 37 while in the same period an additional 49 new dwellings were approved. Over 80 other dwellings were extended as well as other commercial buildings, garages and sheds. This growing demand for more services and infrastructure is placing increasing stress on the island's World Heritage values.

There are limits to growth on Lord Howe Island which need to be recognized. The rate of growth of population and visitor numbers combined with the ever increasing infrastructure to cater for the increasing demand is clearly unsustainable into the future.

The number of motor vehicles demonstrates the pressures. There are now estimated to be about 250 cars, utilities, motor bicycles and trucks on the island and the volume of traffic has resulted in an incremental widening of the roads and loss of habitat.

The increasing impact of human activity on the island is detracting from one of the two values for which the island was originally inscribed on the World Heritage List, namely aesthetics.

Because the Lord Howe Island Board has allowed people pressure to increase over the past 14 years while under the administrative oversight of the National Parks and Wildlife Service, this strategy focusses on the structure of the Board. This is the most contentious part of this Management Strategy.

The Lord Howe Island Act was passed in 1952, 30 years before the island group was inscribed on

the World Heritage List. Therefore the Act doesn't take account of the need to give precedence to the protection of those World Heritage values. The Act which is now 50 years old needs to be revised to recognize that the protection of the Island's World Heritage values is a major priority.

Another problem is that the structure of the Board. The current Act provides a majority of Lord Howe Island Board seats to the representatives of just 325 residents to the exclusion of other stakeholders including the Commonwealth Government. Two alternatives are proposed for the restructure of the Board.

The minimal change model would leave the present composition of the Board intact but add just one more member to represent the Commonwealth Government which makes a significant contribution to the island infrastructure and has an international obligation to ensure protection of World Heritage values.

The more radical model provides for a Board of three people with just one representative of the Island Community.

Both options to revise the Board include the creation of a Community Advisory Committee to allow for all stakeholders (including up to 13,000 visitors) to have some representation in this advisory forum.

The greatest threat to World Heritage values identified is from the changes to habitat which are occurring through the invasion of weeds, and from the loss of forest habitat through both the building activity and through the retreat of the forest through dessication. While these issues now need to be addressed as a matter of a high priority, strategies to address them are taking a long time to implement. A Draft Strategic Plan for Weed Management was released in April 2002, but a Draft Strategic Plan to address the progressive dieback adjacent to major clearings had not been developed at the time that this Strategy was being finalized.

The problem of feral animals as well as plants highlights the need for the island to implement an effective quarantine systems. The fact that an alien frog was recently introduced emphasizes the urgency of establishing a system of quarantine inspections of all freight and personal luggage coming onto the island.

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If the World Heritage values of Lord Howe Island can't be adequately protected there is little hope for anywhere else.

Lord Howe Island Management Strategy — 2002

The 325 Lord Howe Islanders and residents have a vested interest in how Lord Howe Island is managed;
The New South Wales government has a responsibility to manage the island in the interest of all of its citizens and the 13,000 people who annually visit it;
The Commonwealth Government has an obligation under the World Heritage Convention to ensure Lord Howe Island is managed for present and future citizens of the World.

Preface

Lord Howe Island has been regularly described as a "Paradise". This was one of the criteria which justified its inclusion on the World Heritage List. It certainly is an idyllic gem of the South Pacific. However if the management of such a small and isolated island with a population of only 325 people is not sustainable then there is little hope of preserving the natural environments of much larger parts of the globe under infinitely more pressure.

Despite the mistakes of the past with goodwill and effort there is still time and opportunity to put things right on Lord Howe Island so that at least one small part of the globe may be said to retain the increasingly rare quality of being "pristine". It is this challenge to identify and address those issues which most threaten the pristineness of Lord Howe Island which has attracted the author to prepare this Strategy.

The author has taken a keen interest in the management of all Australian World Heritage sites and potential World Heritage sites since 1974, and particularly in Lord Howe Island since 1988. It was this interest which led him to undertake a review of its management then to develop a strategy to more adequately protect this unique island group's World Heritage values.

Following his wider experience with other World Heritage sites since 1988, and with the encouragement of friends from within the voluntary conservation movement, he began to review his recommendations for the management of Lord Howe Island in 2000 as a labour of love.

This is a Management Strategy not a Management Plan. The idea of a Management Strategy is to identify key issues which should be addressed by managers to protect the critical values.

This document therefore has no official status in determining the actual management policies. It is intended only to serve as a guide to the relevant government agencies and as a basis for future advocacy and as a guide for Australia's voluntary conservation movement on issues needing to be addressed.

It is based on a deep and abiding commitment to protect Australia's World Heritage sites and to see them better managed. It is also based on continuing research and monitoring of changes to Lord Howe Island since 1988. It attempts to focus on issues which are affecting the World Heritage values of this unique site and which are not being adequately addressed.

The author is indebted to the contributions and comments by many individuals and for the cooperation of the Board in provided vital data and background to

assist in the preparation this report. A Draft Strategy was printed and circulated to many in January 2002. The comments submitted have enabled the final Strategy to be revised and refined and despite a preference for brevity to be enlarged to help clarify some of the more contentious issues raised.

This Management Strategy hasn't been subsidised or sponsored by any organization. All costs associated with it have been met from the author's own resources but he was assisted by a generous donation by Mr Eddie Smith, A.C., to cover the cost of printing and distributing a limited number of the final Strategy. It is necessary to charge a fee to cover the cost of printing and distribution of further copies. The cost will be \$20.00 per copy.

Copies can also be accessed on the Internet at: <http://www.sinclair.org.au>.

The Author would like to express his thanks to the Lord Howe Island Board for their cooperation and assistance in providing data and background. He also thanks all who assisted in any way with the development and production of this Strategy including assistance with comments, criticisms and proofreading.

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25 May 2002*

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Opposite Page: Section of an aerial photograph of Lord Howe Island taken on 4th August 2001. It focuses on the central part of the main island, which contains the settlement. Although it represents only 0.25% of the World Heritage area, it represents the source of most of the threats to the integrity of the 1463 square kilometre site. The impact of the building development in this sector is increasingly apparent. The path of the ships from North Passage to the wharf can also be detected. How this area is managed is most critical to the protection of World Heritage values.

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Lord Howe Island Management Strategy — 2002

1. Introduction

The Lord Howe Island group and surrounding waters were inscribed on the World Heritage List in 1982. The island was one of the first four Australian sites to be included on that elite roll. It was deemed to have met two of the four World Heritage natural criteria.

Most of the 1463 square kilometre site inscribed on the World Heritage List is marine. The land area encompassing many rocky outcrops and small islands (including Ball's Pyramid) represents just over 1% of the inscribed site but has most of the values. The inscribed World Heritage site includes the settlement in the central portion of Lord Howe Island.

The aggregate terrestrial area comprises only about 1650 ha. with the smaller islands constituting about 50 ha. compared with the main Lord Howe Island which has an area of 1596 ha.. Of this 1131 ha. is Permanent Park Preserve, 954 ha being in the Southern Mountains and 1777 ha in the Northern Hills. An additional area of about 100 ha is afforded Environmental Protection under the Regional Environmental Plan, mainly in the Transit Hill, Stevens reserve and foreshore areas.

While many of the World Heritage values are found outside the main island, almost all of the threats to World Heritage values actually occur on, or arise from the activities on the main Lord Howe Island. Therefore this Strategy is focused almost exclusively on the management of that island and its immediately surrounding waters.

The Lord Howe Island group is regularly referred to as a "Paradise". Its attractiveness is eulogized and lauded in almost every report. Its great aesthetic appeal is based on its beauty and tranquillity. It also has a generally balmy climate and an amazingly rich and unique terrestrial and marine biodiversity.

The Lord Howe Island World Heritage site was inscribed for two values — its aesthetic values and its terrestrial and marine biological values. It is not just the Permanent Park Preserve which has World Heritage values. The whole of the main island and the marine environment have identified values which the Australian Government has an obligation to see protected.

Because some people hold the idea that the central (settlement) part of Lord Howe Island should not be constrained by efforts to protect the World Heritage values, the threats to Lord Howe Island's World Heritage values on the land are much greater than to its values in the marine environment.

The Lord Howe Island group is governed by a Board constituted under the Lord Howe Island Act, an act of the New South Wales Parliament. The statutory Board has wide ranging powers to administer to the needs of a resident population of 325 and up to 13,000 visitors annually. Its 2001-02 budget includes \$6.5 million expenditure.

As well as managing the Lord Howe Island Permanent Park Preserve which is the equivalent of National Park status and several other land titles including recreation reserves etc, the Board is responsible for all of the normal functions of local government and more.

The Lord Howe Island Marine Park is the responsibility of the NSW Marine Park Authority within State Waters and Environment Australia within Commonwealth Waters.

Some of the natural values of Lord Howe Island have been intensively studied, others remain poorly known.

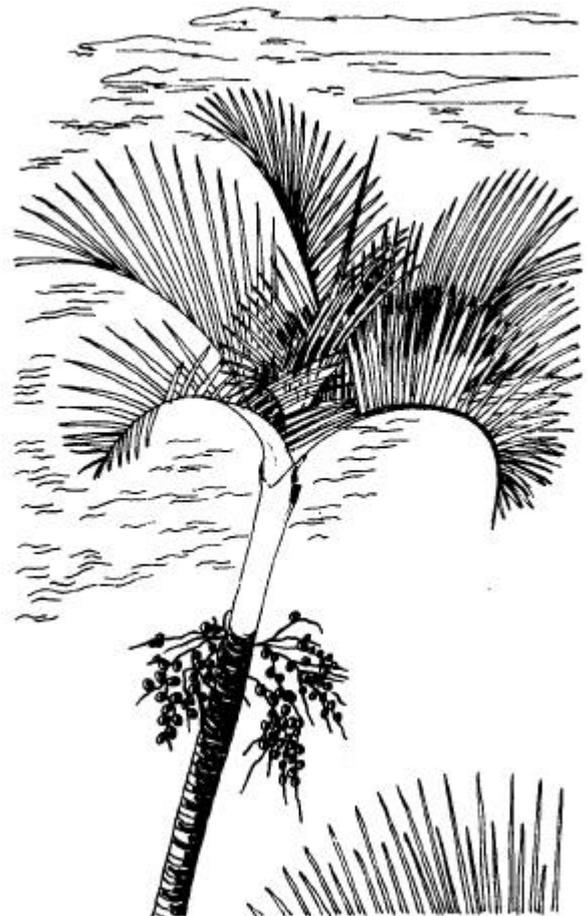
Many reports have been compiled recommending how the island and its natural resources should be managed. The Board has produced Management Plans and Strategic Plans of its own.

This Strategy attempts to define objectives and principles which should be observed in recognizing that the *whole* of Lord Howe Island is of World Heritage quality. It also acknowledges the right of the existing community to coexist within that World Heritage area, provided that it does not degrade, depreciate nor compromise its values.

In 1988 the Lord Howe Island Preservation Movement commissioned a Management Strategy for the island and the group. It was to be a basis of the advocacy of the Lord Howe Island Preservation Movement Inc. That strategy's stated aim was "*to preserve the integrity of the environment and heritage of Lord Howe Island, particularly its World Heritage values*".

In 2000, Dr. J.G. Mosley, who had prepared a similar strategy for Norfolk Island in 1989 and who was then revising that strategy, suggested that the 1988 Lord Howe Island Management Strategy should also be reviewed.

Because the Lord Howe Island Preservation Movement Inc. became defunct in about 1990, it was felt that the voluntary conservation movement in Australia generally needed a better basis by which to examine the effectiveness of the management regime on this World Heritage site in protecting its World Heritage values.



Lord Howe Island Management Strategy — 2002

2. Changes 1988 to 2000

Since the first Lord Howe Island Management Strategy was prepared in 1988 there have been a number of developments which affected the World Heritage values or else have the potential to impact on them. Some of these have not been sufficiently recognized. While some existed in 1988 they were not then as apparent nor had their potential to threaten the island's World Heritage values been recognized.

Positive Developments:

At first impression there were some very positive developments.

Visitor Cap:

- * The cap on the number of 400 "tourist beds which had been fixed in the 1986 REP remained in place. However, as at December 2000, only 393 had been allocated. After a tendering process the remaining seven tourist beds were allocated in 2001.

Federal Participation

- * Almost 20 years after it was inscribed on the World Heritage List the Commonwealth Government began funding projects to protect and present the World Heritage values of the island.

Values

- * The World Heritage values were reviewed in 1997.

Presentation

- * Perhaps though the most encouraging sign was in the area of "presentation" of Lord Howe Island through the building of a new museum to serve as the main interpretation centre of the island. When the Visitor Centre is incorporated into the new Museum this will probably be the best presented World Heritage site in Australia.

Infrastructure

- * Progress has been made in improving the walking tracks, particularly the track to North Bay. This is both minimizing the impact of walkers on the natural environment as well as improving safety and amenity. Still more upgrading the walking tracks is needed to minimize the impacts of their continued use.
- * There has been a commendable effort to improve the landscaping and visual amenity of the island particularly in previously cleared areas. Plantations of palms serve to assist in the rehabilitation of former forest areas as well as providing a source of seed and an improvement of the visual amenity.

Exotic Pests

- * There has been significant progress in tackling weeds. In 2000 a group, Friends of Lord Howe Island, was formed during visits of volunteers who were addressing the problems of exotic species, particularly asparagus in the area of Transit Hill and along the Lagoon foreshores under the direction of the Board's Environmental Section. In 2001, 149 people were involved and there has been some significant progress.
- * Feral goats that were having a significant impact on the vegetation have been (almost) eliminated.

- * Rats, which have had the most devastating impact leading to the extinction of more endemic species of birds than any other small oceanic island, are being well controlled and may soon be eliminated also.

Waste management

- * The introduction of a model waste management treatment during the three years it has taken to prepare this strategy is also a very positive sign of progress although this needs some more equipment.

Alternative Energy

- * Lord Howe Island has become a pioneer in moving towards solar energy. It has covered the roof of the airport terminal with solar cells which feed power into the island electricity grid and soon a wind generator power supply will also be added to the system. Given the vulnerability of Lord Howe Island's cloud forests and coral reefs to the impact of climate change, this is a precedent which other Australian administrations should be following.

Marine Protection

- * The State has a Marine Park extending around the islands to a distance of three nautical miles and appointed a Manager for the Marine Park.
- * In June 2000, the Commonwealth Government created a further Marine Park extending beyond the State Marine Park limit of three nautical miles to 12 nautical miles. (Most Islanders want the Commonwealth Marine Park extended still further).
- * The island's coral reefs have evaded Crown of Thorns invasions which devastated the two coral reef systems closest to it, Middleton and Elizabeth Reefs. The island corals have also seemed to avoid any serious incidence of coral bleaching, although in 1998 there was a small incident from which the coral recovered relatively well. The most devastating impact on the reef was the levelling of the lagoon floor to facilitate the landing of flying boats by dragging it. Slowly the coral is recovering.

With all of these positive developments, most people would assume that Lord Howe Island is extremely well managed. However closer scrutiny and comparisons of the state of the environment over a 14 year period reveal a different picture. Examination of the data available over a longer term present a more disturbing position. These combine to indicate that Lord Howe Island is really a Paradise in some significant peril of being over exploited.

It is critical to recognize that effective management of the Lord Howe Island World Heritage site is most dependent on the management and use of the settlement area. The settlement area constitutes only about 350 ha. That is less than 25% of the terrestrial area of Lord Howe Island and only about 0.25% of the entire World Heritage site. However the impacts from developments here ripple out to the environmentally protected areas including the Permanent Park Preserve, the adjacent islands and the inshore marine environment significantly affecting the identified World Heritage values.

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Negative Developments:

People Pressure

- * There has been a very significant growth in people pressure. Visitor numbers have increased significantly as has the available accommodation which isn't considered to include "tourist beds".
- * Over the 12 years between 1988 and 2000 while the population grew by 37 from 286 to 323 (13%) the number of dwelling units increased by 66 from 120 to 186 (55%) Visitor numbers grew in the same period from about 7,000 to 13,000 annually.

Infrastructure

- * The demand for infrastructure and resources continues to grow at a much greater pace than the population. These demands have resulted in a dramatic growth in shipping movements and electricity generation.

Traffic

- * The number of motor vehicles plying the small road network continues to progressively increase. The Board estimates that there are 291 vehicles travelling the 11 kilometres of island roads. About 15% of these are trailers and implements. That represents almost 250 motor vehicles for 323 residents.

Loss of Forest

- * All the forest areas adjacent to clearings continue to suffer from progressive dieback. The Permanent Park Preserve and Transit Hill are withering at the edges where rainforest trees which need to be buffered are exposed to strong winds.

Weeds

- * Despite the great efforts by the Board and volunteers, the "War against Weeds" is being slowly lost. The significant gains on Transit Hill and along the Lagoon foreshores are being more than offset by new invasions of other exotic species elsewhere in areas far less accessible.
- * There is no quarantine system in force to avoid any unwanted introductions to the island. Applications by the Board for National Heritage Trust money to implement a quarantine system have been rejected on more than one occasion.

Threats which were perceived in 1988 (see Loss of Biodiversity) remain threats in 2002. In some cases though the situation has deteriorated significantly.

- * Due to two natural disasters, landslips, which it once needed a "trained eyes" to detect, have become immediately apparent to most visitors.
- * Kikuyu grass continues to invade the forest aggressively out-competing the natural vegetation. Other introduced grasses are also slowly displacing native species despite liberal use of "Roundup".
- * The continuing retreat of the forest has raised little alarm among island residents. This loss of vegetation, while appearing slow, is now clearly demonstrable when comparing the present situation with older photographs.
- * Due to the lack of quarantine controls a frog has been introduced and become a feral with unknown but potentially adverse environmental impact.

- * Most worrying is the increasing demand for resources and services on the island and the threats that this is now posing to the island's World Heritage values.

In some cases the environmental changes to be addressed are outside the scope of the Managers without global cooperation. For example it has been forecast that global climate change will result in a significant loss of the world's cloud forests. There is some superficial evidence that this may already be occurring on Mt Gower. The reduction in the shearwater population may be attributable to long line fishing occurring thousands of kilometres away. A very significant decline in the populations of most sea birds has already been noted and commented on by zoologists.

The most obvious change is the much greater level of human activity on the island. It is manifest in the appearance of more buildings, more people, more traffic, and more impacts. The greater level of human activity though is not illusory and it is documented in the chapter on "Threats".

The greater level of human activity is leading to a loss of tranquility, and in turn it is degrading one of the island's main World Heritage values — its aesthetic quality.

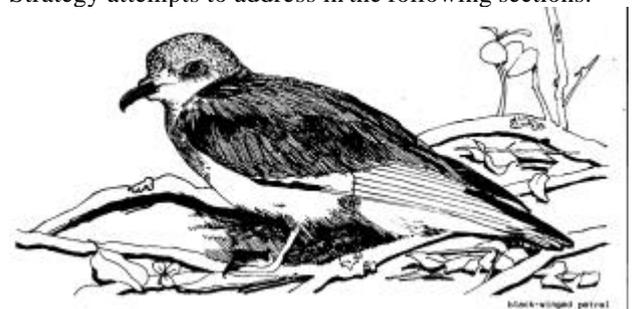
People Pressure: The cause of the loss of tranquility on Lord Howe Island is most easily identified as the result of people pressure.

The 1988 Management Strategy identified the impacts of people pressure:

A large part of the central area of Lord Howe Island is subject to settlement, with consequent development and modification of the natural environment. The island supports a permanent resident population of about 300 persons, and the economic mainstay of this population is the tourist industry, which is supposed to be limited to supporting a maximum tourist population of 400 persons. It is the pressure for development in this environmentally critical central area which has a significant impact on the natural values of the whole island, the marine environment and the values which caused the island to be inscribed on the World Heritage List in 1982.

Over the 14 years between (1988 to 2001) the population grew by 39 (13%), the number of residences grew by 66 (55%) and visitor numbers grew by about 85% from 7000 to 13,000. "People Pressure" is the core of the problems now threatening the World Heritage values.

These then are the issues which this Management Strategy attempts to address in the following sections.



3 Background

The Lord Howe Island group comprises Lord Howe Island, about 700 kilometres north-east of Sydney and covers an area of 146,300 hectares. It includes the Admiralty Islands, Mutton Bird Island, Ball's Pyramid, and associated coral reefs and marine environments.

The main island is crescent shaped formed around a lagoon on its leeward side. It is 11 kilometres in length with a width of 2.8 km at its widest point and covers an area of 1596 hectares.

The Lord Howe Island Group sits atop Lord Howe Rise (an underwater plateau). These islands are on the western edge of a large shield volcano which erupted about seven million years ago. Over time the sea eroded 90 per cent of the original volcano, leaving the islands that today comprise the Lord Howe Island group.

The landscape is spectacular with the volcanic mountains of Mt Gower (875 m) and Mt Lidgbird (777 m) in the south and the northern hills rising virtually sheer from the sea. These contrast with the central low-lying area.

Climate:

Lord Howe Island is an all-year round holiday destination. The summer average temperature is 26⁰C (82⁰F), while in winter the average is 16⁰C (62⁰F). Frosts are unknown on the island.

Average annual rainfall is 1676mm (67 inches). Most of this falls in winter is which also the period of highest wind velocities. February is the driest month with an average fall of 100 mm and June and July the wettest with 200 mm.

Sea temperatures are 17⁰C in winter and 25⁰C in summer. The lagoon temperature can be as high as 27.5⁰C.

Protected Area:

About 70% of the main island and all of the offshore islands are included in the Lord Howe Island Permanent Park Preserve which is a special form of tenure akin to National Park status.

The waters surrounding Lord Howe Island provide an unusual mixture of temperate and tropical organisms. The reef is the southern most coral reef in the world and provides a rare example of the transition between coral and algal reefs. A Marine Park was declared by the State of New South Wales in 1999 to increase protection of the marine environment. The Commonwealth Government has extended the marine Park area to 12 miles off shore.

The boundary of the Commonwealth Marine Park surrounding the island group, extends to Australian Territorial sea (12 nautical miles out). The total area of the Marine Park is much larger than the rectangle describing the current World Heritage area, although the north-east and south-west corners of the presently inscribed site protrude just beyond this 12 mile limit. It seems logical to redefine the World Heritage boundary to coincide with the Marine Park boundary. This would take in virtually the whole contoured ridge comprising the seamount base to the Lord Howe Island group.

Flora:

Lord Howe Island supports 241 indigenous vascular plants, of which 105 are endemic. Most of the island is dominated by rainforests and palm forest. Native tussock grasses occur on the island's more exposed areas and on the offshore islands. However a significant part of the

central area has been cleared for human settlement and for farming and many species of plants and animals have been deliberately and accidentally introduced to this area. From here some have spread throughout the island.

Fauna:

The islands support extensive colonies of nesting seabirds and at least 168 bird species have been recorded either living at, or visiting, the islands.

The endangered Woodhen is one of the world's rarest bird species. A successful captive breeding program and other conservation measures have increased the numbers of these small flightless birds from the point of extinction to around 220.

The islands are one of two known breeding areas for the providence petrel, a species that is also found nesting on Phillip Island, near Norfolk Island.

They also contain probably the largest breeding concentration in the world of the Red-tailed Tropicbird, and the most southerly breeding colony of the masked booby.

There are about 11 kilometres of road and an extensive system of well marked walking tracks.

Administration:

The island is administered by the Lord Howe Island Board which is constituted under the Lord Howe Island Act of 1953. The Board consists of five members, three elected by the 325 residents and two nominated by the New South Wales Government.

The Board has wide ranging powers to administer to the needs of a resident population of about 325 and about 13,000 visitors annually. Its 2001-02 budget includes \$6.5 million expenditure.

As well as managing the Lord Howe Island Permanent Park Preserve and several other land titles including recreation reserves etc, and assisting management of the Lord Howe Island Marine Park, the Board is responsible for all of the normal functions of local government and more.

The Board is responsible for the operation of the island hospital. As well it operates a nursery enterprise with a turnover of about \$1 million, which is the island's second largest industry after tourism. Another enterprise it operates is the liquor store, which turns in a profit of over \$250,000. A further enterprise involves generation and distribution of all of the island's electricity. It manages the island's airstrip, and undertakes all of the stevedoring for freight arriving on the island all on a profitable basis.

The Lord Howe Island Board is the only planning authority on the island and oversees all subdivisions, rezonings, building approvals and even approvals to import motor vehicles on to the island. It is responsible for all waste management and has developed a world class waste management system.

The board is composed of 5 members three of whom are elected by the island residents for a three year term and two of whom are appointed by the New South Wales Government including the Chair. It meets quarterly in the island and has the capacity for meeting by telephone conference. The Board is the largest employer on the island.

4 History

Lord Howe Island was first discovered by Europeans when the island was sighted on 17th February, 1788 from the British colonial naval vessel “HMS Supply”. The Supply” was sailing from Sydney to establish a sub-colony on Norfolk Island. The first landing was made two months later on the return voyage to Sydney. Lord Howe Island appears to have been untouched by humans until then. It had no indigenous population.

By the 1830s there was a small permanent settlement in the lowland area of the main island. It took less than 50 years from its discovery for the natural values to begin to seriously suffer. The settlers made a living by hunting and fishing, and by growing vegetables, fruit and meat for trade with passing ships.

Pigs and goats, which were introduced to Lord Howe Island for food, later went wild and caused extensive vegetation and habitat changes, threatening populations of native species. Rats arrived on the island in 1918 from a wrecked ship, and have since been responsible for the extinction of five bird species. Over the last decade there have been intensive efforts to control these feral animals and the wild pigs have been successfully eradicated.

The outstanding natural values of the island were identified by the first scientific expedition to the island in 1882. In the *Report on the Present State and Condition of Lord Howe Island* the expedition called for protection of the island’s natural values. Those calls have been endlessly echoed since but the values continue to be progressively degraded. Although the land area is only a little over 1,500 hectares, it has been studied comprehensively since 1882.

Lord Howe Island and its associated islands are under the care, control and management of the Lord Howe Island Board constituted under the Lord Howe Island Act of 1953. Because this Act and the only significant amendment to it occurred before 1982 when the whole island group was inscribed on the World Heritage List, the significance of the island's World Heritage status is not reflected in any legislation. Consequently, it is not well reflected in the policies and decisions of the Lord Howe Island Board.

By 1982, a large part of the central area of Lord Howe Island had been subjected to settlement, with consequent development and modification of the natural environment.

When carrying out its functions, the Board is required to have particular regard to the World Heritage status of the area and to conserve those values for which the area was listed as a World Heritage property.

Despite numerous studies and reports, the environmental integrity and World Heritage values of the island are being compromised. Strategies which apply to the whole property have been developed by the management, but these strategies seem to have been compromised in decisions made regarding new development in the settlement area.

5. Summary of World Heritage Values

Lord Howe Island was inscribed on the World Heritage List in 1982, being one of the first four Australian sites to be included on that elite roll. The 1463 square kilometre site was deemed to have met the following two of the four World Heritage natural criteria:

a (iii) contain unique, rare or superlative natural phenomena, formations or features or areas of exceptional natural beauty, such as superlative examples of the most important ecosystems to man, natural features (for instance, rivers, mountains, waterfalls), spectacles presented by great concentrations of animals, sweeping vistas covered by natural vegetation and exceptional combinations of natural and cultural elements; and a (iv) be habitats where populations of rare or endangered species of plants and animals still survive. This category would include those ecosystems in which concentrations of plants and animals of universal interest and significance are found.

At the time of inscription many of the values were identified. The citation at the time read:

In terms of natural heritage Lord Howe Island, its adjacent islands and marine environment are of outstanding universal value because:

- * they are an outstanding example of an oceanic island group with a diverse range of ecosystems that have been subject to human influences for a relatively limited period;
- * they are an outstanding example of the development of a characteristic insular biota that has evolved a considerable number of endemic species or sub-species of animals, plants and invertebrates in a very limited area'.
- * the islands support extensive colonies of nesting seabirds and as such are of considerable significance over a wide oceanic region;
- * the islands are the only known breeding locality for the Providence Petrel *Pterodroma solandri*. They also contain probably the largest concentration in the world of the Red-tailed Tropic-bird *Phaethon rubricauda*. They include the most southerly breeding colony of Masked Booby *Sula dactylatra* in the world and among the most southern breeding stations known for the Sooty Tern *Sterna fuscata* and the Noddy Tern *Anous stolidus*;
- * the reef is the only known example where there is a transition between algal and coral reefs;
- * the island group is secure from outside environmental influences and legislative provisions exist to ensure that development, mainly the small tourist industry, does not jeopardize the island's natural values;
- * the nomination includes the most southerly coral reef in the world;
- * the islands are the only known occurrence of a remarkable volcanic exposure, there being some 1000 metres of unweathered volcanics with a great variety of upper mantle and oceanic type basalts;
- * Lord Howe Island supports populations of endangered endemic species or subspecies of

birds in particular the Lord Howe Island Woodhen *Tricholimnas sylvestris* and the Lord Howe Island Pied Currawong *Strepera graculina crissalis*;

* the islands contain features, formations and areas of exceptional natural beauty;

* the islands are an outstanding example of significant ongoing geological and biological processes and man's inter-relationship with those processes.

The 1982 World Heritage criteria have since been modified although they cover the same range of values. The two criteria relevant to Lord Howe Island now read:

(a) (iii) - the sites should be of outstanding aesthetic value and include areas that are essential for maintaining the beauty of the site;

(a) (iv) - the sites should contain habitats for maintaining the most diverse fauna and flora characteristics of the biographic province and ecosystems under consideration.

The 1998 study done by Biosis Consulting into the World Heritage values of the Lord Howe Island group reviewed the specific values which met the World Heritage criteria. It provides this statement to cover Lord Howe Island's values as far as **Criterion (a) (iii) (Aesthetic)**

The Lord Howe Island group is one of the most spectacular and scenic oceanic island groups in the world. Such a diversity of landscapes within a tiny land area is found in very few other islands. The massive and almost sheer-sided Mounts Gower and Lidgbird provide a spectacular backdrop to the lowlands and the clear, gentle lagoon behind its fringing reef. The hills at the other end of the island and on the offshore islets of the Admiralty Group are small in comparison to Gower and Lidgbird, but, on closer inspection, surprise with their steepness and unexpectedly rugged coastline of tall cliffs and stacks. The flat isthmus at the island's centre is an area of rural aspect that cuts through the otherwise heavily vegetated island. A circumnavigation of the coast of Lord Howe Island reflects this variety of landscapes, presenting a constantly changing vista of reef and lagoon, small bays with sand beaches, boulder beaches, sea caves, scree slopes, and basalt and sandstone cliffs ranging from hundreds of feet to hundreds of metres in height.

In the distance lies the impossibly narrow and tall rock stack of Balls Pyramid, rising almost vertically out of the Pacific Ocean to a height of 551 m.

The reefs of Lord Howe are considered to be among the most beautiful and outstanding anywhere in the World and they make a major contribution to the world Heritage values. The relatively cool water is extremely clear and the underwater vistas of both the reef area and in the oceanic areas elsewhere around the coast are spectacular. In the southern part of the reef, the juxtaposition of the underwater scenes against the backdrop of the cliffs of Lord Howe Island is a view unparalleled in coral reef viewing anywhere.

There was a similar statement from Biosis on the significance of Lord Howe Island against World Heritage **Criterion (a) (iv) (Biodiversity)**:

The site is of outstanding universal value for the in situ conservation of biological diversity due to the large number of endangered and vulnerable species it supports, including a large number of endemic

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terrestrial plants, terrestrial and freshwater invertebrates, marine algae, inshore fish and marine invertebrates, and smaller numbers of endemic terrestrial vertebrates. It is also one of Australia's and the south Pacific's major seabird breeding islands.

(A) Terrestrial Flora

The Lord Howe Island Group supports 240 species of indigenous vascular plants; 103 of which are endemic (Green 1993). Seventeen species are regarded as threatened on the island (limited distribution/vulnerable to disturbance/presently endangered) (Lord Howe Island Board 1985). No Lord Howe Island plant species is yet listed under Federal or NSW endangered species legislation (although all threatened endemics would seem to be likely candidates) and no up-to-date list of rare or threatened species is available that indicates the status of endemic species described since the 1985 list.

New species of endemic plants continue to be described from Lord Howe, eg Gardner(1997), McCarthy (1990,1996), Green (1993), Jones (1996), ferns (Chambers and Farrant 1993), Conn and Tozer (1993), Conn (1993), Belcher (1992).

(B) Terrestrial Vertebrate Fauna

One native mammal species is known from the island, the Large Forest Bat *Vespadelus darlingtoni* (Hutton 1986). Two reptiles occur, the skink *Leiolopisma lichenigera* and the gecko *Phyllodactylus guentheri*, both of which are still present on the islands but with reduced distributions due to the impacts of introduced predators (Hutton 1986, Cogger 1966).

The terrestrial vertebrate fauna is dominated by birds, as is typical for oceanic islands. A total of 164 species of bird have been recorded from the group, over 70% of which are only occasional visitors or vagrants (Hutton 1991). Ten species of resident breeding land and water birds have become extinct since European settlement, 43% of the total.

The Lord Howe Island Group supports 20 species of vulnerable terrestrial fauna, all of them birds. Four of these are endemic land birds, for which Lord Howe Island is obviously critical habitat. Of these, the best known is the Wood hen, which was saved from the verge of extinction by a combination of captive breeding and intensive control of threats to its habitat (introduced pigs in particular, which were exterminated on the island). The Woodhen is one of the very few species in the world whose status has been able to be changed from "endangered" to "vulnerable" due to a successful recovery program.

A further 11 vulnerable species are seabirds that breed on the islands in the group. None are currently threatened on the island, but all breed on only a restricted range of islands and so are vulnerable to impacts at their breeding sites.

The other five vulnerable species occur as occasional visitors (marked as "occasionally present" in the following list) and Lord Howe Island makes only a small contribution to their conservation.

Vulnerable species (Federal Endangered Species Protection Act 1992 Schedule 1):

Woodhen *Tricholimnas sylvestris* (endemic)

Lord Howe Pied Currawong *Strepera graculina*

crissalis (endemic)

Vulnerable species (NSW Threatened Species Conservation Act 1995 Schedule 2):

White-bellied Storm Petrel *Fregatta grallaria*

Kermadec Petrel *Pterodroma neglecta*

Black-winged Petrel *Pterodroma nigripennis*

Providence Petrel *Pterodroma solandri*

Little Shearwater *Puffinus assimilis*

Fleshy-footed Shearwater *Puffinus carneipes*

Red-tailed Tropic-bird *Phaeton rubricauda*

Masked Booby *Sula dactylatra*

Large Sand-Plover *Charadrius leschenaultii*
(occasionally present)

Mongolian Plover *Charadrius mongolus*
(occasionally present)

White tern *Gygis alba*

Pied Oystercatcher *Haemotopus longirostris*
(occasionally present)

Black-tailed Godwit *Limosa limosa* (occasionally present)

Grey Ternlet *Procelsterna cerulea*

Painted Snipe *Rostratula ben ghalensis*
(occasionally present)

Sooty Tern *Sterna fuscata*

Lord Howe Island Golden Whistler *Pachycephala pectoralis contempta* (endemic)

Lord Howe Pied Currawong *Strepera graculina*
cdssalis (endemic)

Lord Howe Silvereye *Zosterops tephroleura*
(endemic)

(C) Terrestrial Invertebrate Fauna

There is considerable endemism amongst those invertebrate groups that have been studied on the Lord Howe Island and some groups exhibit high levels of species richness. The following is largely from Commonwealth of Australia (1981).

The dipterans (flies) include at least five endemic species and a further nine that are only found on Lord Howe and Norfolk Islands. There are at least twelve endemic species of isopods (including three endemic genera).

The hydrobuidine molluscs have a remarkably rich fauna on the island, with 15 species-group taxa. This is a higher level of diversity for this group of gastropods than is known for any oceanic island (W. Ponder, pers. comm.). The mollusc fauna was described by Ponder (1982) and since that publication an additional species has been found, one of the species not found alive in 1982 has turned up, and one treated as a "form" (*Fluviopupa gracilis* aft pupa) is now regarded as a distinct species. Of these, the last is restricted to a single fenced spring in the middle of a paddock behind Pine Trees. Another species (*Hemistomia whiteleggei*) appears to be restricted to a single intermittent creek behind Old Settlement Beach, most of the population of which is outside the reserve. All but one of the other species are confined to catchments at the southern end of the island. Eight freshwater species are listed as threatened by IUCN

There is a large fauna of native terrestrial snails, all endemic Iredale (1944). At least three are extinct - one

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from Rabbit Island (*Placostylus cuciculinsulae*) and two (*Placostylus etheddegi* and *Epiglypta howinsulae*) from the southern mountains and Erskine Valley. One large species confined to the lowlands has recently been listed as endangered (*Placostylus bivaricosus*) in NSW, and three other species are listed as endangered by IUCN.

Over 50% of the 100 or more species of spiders found on the Group are thought to be endemic, and one endemic leech and ten endemic earth worm species have been described.

An endemic insect, the large and spectacular flightless Lord Howe Island Phasmid is extinct on Lord Howe Island and is probably extinct on Balls Pyramid. Its current status requires clarification.

The Lord Howe Island Group supports two species of threatened terrestrial invertebrates (NSW Threatened Species Conservation Act 1995 Schedule 1):

Lord Howe Island Phasmid *Dryococelus australis*
land snail *Placostylus bivaricosus*.

(D) Marine Flora

The Lord Howe Island Group supports more than 305 benthic algae, including 47 endemics (15%) and is very rich in marine benthic algae for its size (Millar & Kraft 1993, 1994a, 1994b). This diversity and degree of endemism is due to the unique nature and location of the reef

(E) Marine Fauna

The Lord Howe Island Group supports a diverse inshore fish fauna, with more than 400 species recorded, 15 (4%) of which are endemic, and about 40 (10%) of which are regionally endemic (Tasman Sea) (Pollard & Burchmore 1985, Francis 1993, Francis & Randall 1993). The diversity reflects the mixing of tropical species with temperate species and the range of environments present. New endemic fish species continue to be described (eg Hensley and Randall 1993).

Other aspects of the marine fauna that have been studied, such as the corals and the echinoderms, also display similar characteristics to the fish fauna, again reflecting the mixing of tropical species with temperate species and the range of environments present (eg >65 spp of echinoderms, 70% tropical, 24% temperate, 6% endemic (Pollard & Burchmore 1985)).

Integrity

Since Lord Howe Island was inscribed on the World Heritage List, the World Heritage Committee (of which Australia is a member) has redefined the criteria for listing. These now impose more stringent obligations on the State Party. The Commonwealth of Australia is required ensure that all inscribed Australian World Heritage sites strictly meet and maintain conditions of integrity. They must not be allowed to have their World Heritage values degraded.

The Commonwealth has largely delegated the management of Lord Howe Island to the New South Wales Government and with that an implied obligation to manage the area to preserve its integrity.

Thus any threats to these identified World Heritage values must be addressed.

The Biosis (1998) study also identified a wide range of

threats to the island's integrity. It is not proposed to repeat that whole list in this Management Strategy. Rather it this Management Strategy focuses particularly on threats which the author considers were not dealt with in sufficient detail in that study and in subsequent arising from it — "*Strategic Issues Study*" (Fathom Consulting, 1998) and "*Strategic Plan for Management 2000-2005*" (Manidis Roberts, 2000).

The Board is currently assisting Planning NSW to develop a new Regional Environmental Plan and has allocated \$35,000 to a consultant to refer to and update the 1983 study. Although running well behind schedule a Draft is due for completion and public release in December, 2002. In the meantime "*Strategic Plan for Management 2000-2005*" remains the effective working document. However, this has not stopped further erosion of the remaining forest in the settlement area to make way for new dwellings.

This Strategy is not intended to diminish either the values or recommendations of the above reports. Rather it is intended to complement them and provide a different orientation and to provide a different focus on critical issues to be addressed.

6. Threats to World Heritage Values

The establishment of the new airstrip in 1975 opened up the island to a much greater potential tourist influx. Since then the sustainability of the human impact on Lord Howe Island has been an ongoing concern.

This potential for greater people pressure was recognized in the determination to place a limit on the number of “tourist beds”. This was supposed to limit the tourist population on the island at any one time to a maximum of 400 persons.

The problem is that many visitors to Lord Howe Island occupy private beds and not official “tourist beds”. Thus what was seen as a mechanism for providing an effective cap on visitor numbers to a sustainable level is being circumvented. This is responsible for directly and indirectly creating the greatest threats to the island’s World Heritage values.

6.1 People Pressure

(a) Population:

While there appears to be some discrepancy between the ABS Census figures and Board’s figures there has been an ongoing incremental population increase.

The “*Social and Economic Study of Lord Howe Island*” (1984) stated: “*The Lord Howe Island Board records show a population of 228 in 1954 and 278 in 1984.*” At the time it was pointed out that there was a large increase from 1983 to 1984 “*due primarily to the influx of semi-permanent workers and their families.*”

There is a difference between “Islanders” as defined by the Lord Howe Island Act and “residents” who reside on the island but are not all of whom are classified as “Islanders”. Many “Islanders” are concerned at the exponential increase in the number of long term residents who may eventually qualify for Islander status.

As long as the demand for more services by an increasing number of visitors continues, the overall population will increase at a faster rate than the number Islanders (as defined by the Act) seeking to reside on the island. More services will be required if the number of visitors continues to grow to cater for the ever increasing demands.

The Board’s Annual Reports record precisely the number of island residents and visitors on the night of 30 June each year. The population remains more or less static. Board figures indicate that the resident population (all ages) as at 30 June 1988 numbered 286 and increased to 325 as at 30 June, 2001. On 30 June 1997 it was 317 on both 30 June 1998 and 30 June, 1999 it was 318.

The population increase in the 12 years between 1988 and 2001 then was only 37 or 13%. That would not be alarming if the building program and other infrastructure demands had not grown at a very disproportionate rate.

(b) Number of Dwellings:

One difficulty in producing this document has been the lack of data held by the Board relating to some absolutely critical issues. One such issue has been the lack of data on housing. Every subjective assessment Lord Howe Island by people who have returned to Lord Howe Island after an absence of more than a decade is that there are “*a lot of new houses.*”

It is also noticeable that the average size of houses seems

to have also grown conspicuously. Some evidence for the increase in the size of dwellings is provided in Table 1 of Development Applications.

The “*Social and Economic Study of Lord Howe Island*” (1984) reported, “*There are approximately 110 dwellings on the island. The rate of housing stock increase has been about 1 or 2 dwellings from 1971 to 1981*”. It reported that 62 were owner-purchaser, 22 were tenant houses and 26 were unstated. It said that the number of people per household was low and falling in 1981. There were then only 2.2 people per household.

The Board has provided a Register of Development Applications from 1998 to May 2002. From this the data the following table was compiled.

Year	No of dwelling additions	No of new dwellings
1988	4	2
1989	5	9
1990	8	5
1991	3	3
1992	6	5
1993	14	1
1994	5	6
1995	7	1
1996	4	2
1997	10	0
1998	4	2
1999	2	6
2000	3	6
2001	6	1
Total	81	49

These figures relate exclusively to dwellings and are entirely unrelated to any resort developments and the number of “tourist beds”.

This data indicates that 49 new dwellings were approved between 1 January 1988 and 31 December, 2001. Since the number of dwellings on Lord Howe Island in 1988 was independently estimated to be 120 (based closely on the 1984 Report and trend identified in that report) this represents a 41% growth in the number of dwellings in 14 years.

That represents 3.5 new dwellings per annum 50% increase on the previous rate of building (2.2 p.a.) described in the “*Social and Economic Study of Lord Howe Island*” (1984).

The 49 new dwellings included 12 flats for staff. However staff are part of the residential population of Lord Howe Island and the number of residents grew by only 37 over the 1998-2001 period.

Coincidental with the number of new dwellings has been the additions made to many of the existing dwellings. Table 1 doesn’t include buildings which have been

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refurbished or replaced but only where additional rooms or verandahs have been added. It doesn't include new garages or sheds. Many of the additions and replacement dwellings included additional bed capacity. Presumably all of them involved additional floor space and ground coverage.

Since the growth in the number of new dwellings is clearly outstripping the population growth the question must be asked, "What is the purpose of all the new residences?"

There needs to be a detailed assessment of the private accommodation capacity on Lord Howe Island and how it is being utilized. The number of beds available for residents, visitors and tourists needs to be more precisely known. Also the destination and duration of stay of visitors not occupying the 400 allocated tourist beds also needs to be better monitored.

The reason for the special anxiety over the exponentially growing stock of accommodation is that apart from the additional demand it is creating for infrastructure and services. Virtually all construction material needs to be imported and the building boom has helped justify the demand for more shipping capacity.

Another factor of great concern is that a significant part of the new building is at the expense of the natural environment. Furthermore it is almost exclusively at the expense of the lowland forest type which is the most precious and most poorly preserved forest type on the island.

The Fleshy-footed Shearwater nests almost exclusively in this lowland part of the forest the continuing deprivation of its habitat type through degradation resulting from exposure, and from new dwelling is of great concern and is discussed as a major threat to biodiversity.

The loss of habitat is best epitomised by the very controversial new dwelling at 68 Anderson Road. Although other options were available to the Board to provide an alternative building site, the Board allowed this project, which involved the clearing of this precious, and rare lowland forest type to proceed. The suggestion that the sacrifice of old growth mixed forest could be offset by alternative tree-planting elsewhere on the island is ridiculous. The gap created in the canopy as will have an on-going ecological impact. It is unacceptable that such habitat clearing should have been permitted on this site and other similar sites for new buildings which have been approved given the World Heritage values of the forest even in its weed infested state.

The Board could have resolved the controversy by a land exchange which would have allowed a dwelling to be located on an area where there would be no loss of natural habitat.

Elsewhere on the island there a number of new buildings which have resulted in the loss of this habitat type.

It does seem that many Islanders do not consider that the settlement is part of the World Heritage site yet this is one of the most important and most precious of any habitat type on the island. Furthermore there is not sufficient recognition of the impact which the settlement area has on the remaining part of the World Heritage area. It is as though there is a widely held feeling that the settlement area should be exempt from any constraints which may be placed on other parts of the island to protect World Heritage values.

The current policy of land release, if it continues, will allow an exponential growth in the island's permanent

population. Islanders are eligible for a land grant, and any person may become an Islander after ten years' residence. Thus there is an incentive for Islanders to prefer the option of waiting for land release rather than purchasing existing properties when they come on the market. The concessions provided for persons with Islander status are unique and are anomalous when compared with any other Australians.

One of the means of limiting the growth of Lord Howe Island is by exercising very strict control over land tenure. The principle of Crown lands and leases in perpetuity is part of Lord Howe Island's heritage. It is appropriate for a World Heritage property. Properly managed, this system could prevent exploitation of the limited natural resources which would occur under a freehold (Torrens Title) land tenure system. However, there has been a relaxation of this principle which is resulting in real estate values on Lord Howe Island distorting decision making to the detriment of the World Heritage values.

(c) *Visitor Numbers:*

	1995/96	1996/97	1997/98	1998/99	1999/00
Month	pax	pax	pax	pax	pax
July	140	457	394	229	680
August	250	226	494	442	624
September	572	574	755	536	1193
October	867	890	1068	1078	1247
November	939	883	817	1164	1088
December	589	936	1035	1101	1538
January	1405	947	1306	1747	1569
February	875	804	968	1543	973
March	845	820	1107	1184	1197
April	1091	816	1327	1238	1369
May	643	968	885	1251	1028
June	234	813	545	1338	469
Total	8450	9134	1071	12851	12935

Figures published in the Annual Report of the Lord Howe Island Board confirm the growth in visitor numbers is responsible for the most serious of all threats to World Heritage values. The impacts of increasing visitation ripple right across the island affecting demand and infrastructure with consequent environmental impacts. Increasing visitation is the most critical aspect of the People Pressures.

More visitors mean.

** more workers are required to service them.*

** a greater demand on motor vehicles,*

** more infrastructure, fuel and power, and more waste generation etc.*

In the five years from 1996 to 2000 the number of visitors grew by more than 50% as indicated in Table 2. Inquiries on the island amongst guesthouse proprietors indicated that during the five years in question there was no significant change in the length of stay nor the occupancy rates of those establishments with "tourist bed" licences. It can therefore only be concluded that most of the increase in the volume of visitation was accommodated privately.

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The Annual Report for 1997 showed the number of recorded visitors was 9133. In 1999 the number of visitors who paid the visitor levy was 12,700. This increase of 3,577 represents a 39.2% increase in just two years. This prompted further inquiries into what seems an unusual growth which is clearly placing greater demands on the island infrastructure with consequent environmental impacts. It is all the more extraordinary given that for over 15 years there has been a limit on the number of “Tourist beds” on the island which was thought to have effectively placed a cap on the visitor numbers.

The results of the inquiries produced the following table provided by the Lord Howe Island Board. Increase in visitor numbers could be explained by higher occupancy of “tourist beds” or by stays of shorter duration. Discussions with a number of lodge owners indicated that the duration of stay had reduced over many years since the flying boat days when most people stayed two or three weeks. They reported that there was no appreciable change in the average length of stay nor the rate of occupancy during the five year period covered by the by Table 1.

The Board commented in that this may present an inaccurate picture because there was a significant downturn in tourist numbers over the period 1993-94 (primarily due to a fatal aircraft accident). Subsequently the Board has provided data on passenger movements through the Lord Howe Island airport since 1978/79 developed by the Department of Transport and Regional Services for a Tourism Futures paper. It differs from the Board figures in that it counts both people arriving and people departing and therefore has to be divided by two. It also includes island residents who are not included in the Visitor Statistics provided by the Board since they do not pay the departure tax. Allowing for this there seems to be a very close correlation. It shows the number of passengers rising from about 5,000 to 7,000 in 1978/79 to 13,000 in 2000. This represents at least a doubling of visitor numbers in 22 years, in what has been a generally upward trend despite the cap on “tourist beds”.

In the year 2000-01, there was a 15% reduction in visitor numbers, which fell to 10,900. This may be attributable to the impact of the Sydney 2000 Olympic Games which affected other tourist destinations adversely. The events of 11th September 2001 are likely to result in another lower level of visitation in 2001-02.

The correlation between the growth in visitation and the growth in the “non-tourist bed” accommodation seems to be more than coincidental. Since there seems to have been a plateau in the visitors using the 393 tourist beds allocated until the end of 2001, the only explanation is that many visitors are increasingly taking advantage of extra beds available in private residences. They may be friends and family but whatever the explanation the cap on tourist numbers to Lord Howe Island is certainly being effectively circumvented and yet the board does not appear to have recognized this problem.

The decision to allocate another seven “tourist beds” without reviewing the Visitor Statistics more critically is regrettable. More regrettable is the decision to allocate those seven tourist beds purely on a cash tender basis. This process fails to consider the sustainability or the environmental impacts of the competing tenders as was proposed in the 1988 Management Strategy.

Whatever the reason for this dramatic number of visitors, it is placing an increasing strain on the island resources, particularly on the transport infrastructure and this in turn

is having an increasing environmental impact in ways not yet identified. This strategy aims to avert and/or reduce the environmental impact of visitation.

It is important also to ascertain how many beds have been added to Lord Howe Island’s domestic stock in the last decade and what is their level of occupancy.

Proposals that Lord Howe Island should play host to cruise ships should be sounding some alarm signals. Cruise ships would allow the visitor numbers to dramatically escalate and place enormous peak loads on the island infrastructure for short periods.

Even with the 400 tourist bed ceiling, environmental degradation can result as more of that bed capacity moves up-market to provide a higher and higher standard of accommodation.

Other constraints need to be considered, including

- (i) *the cubic space in the total building complex per tourist bed,*
- (ii) *surface area space,*
- (iii) *consumption of drinking water per person,*
- (iv) *discharge of sewage per tourist bed,*
- (v) *the number of motor vehicles and/or number of kilometres travelled in motor vehicles,*
- (vi) *consumption of electricity per tourist bed*
- (vii) *volume of garbage generated per tourist bed,*
- (viii) *the number of staff employed per tourist bed.*





(d) Motor Vehicles:

In 1974 H.F. Recher and S.S. Clark in a report to the Lord Howe Island Board, “*Lord Howe Island Environmental Survey*” recommended “*There should be a few places in the world where the car does not rule supreme. Lord Howe Island should be one.*”

Despite this recommendation there continues to be an exponential growth in the number of motor vehicles plying the small network of roads.

The Board does not keep a record of the number of motor vehicles using the island roads. The author was referred to the RTA to ascertain the number of motor vehicles located on Lord Howe Island which they had registered. However in January 2000 there was a lively public debate going on the island. There were then said to be 290 motor vehicles on the island for a population of only 323. These may have included trucks, motor cycles and various forms of machinery.

In 2002 the Board estimated that there were 291 vehicles on the island. About 15% of these are trailers and implements. That represents almost 250 motor vehicles for 325 residents. However that figure includes seven hire vehicles.

The density of motor vehicles is especially concerning because there are only 11 kms of roads on the island.

The Board’s updated policy (08/01) has as its objectives:

“To minimize the impact of motor vehicles on the Island by limiting vehicle size and numbers and encouraging use of emission free vehicles if and when possible” and

“To ensure that equity standards are achieved by allowing Island residents reasonable access to motor vehicles.”

Unfortunately the public desire for all-weather, motorized transport is ever increasing despite the Board policy. There are legitimate reasons for people wanting motorized transport. The dilemma is how to cater for that demand without increasing the traffic or better still by reducing the traffic. It would seem that the development of an effective public transport system for the island could be one measure which requires further investigation. A transport and access study would go a long way towards identifying the issues which need to be addressed in establishing a public transport system which would effectively reduce the current level of motorized transport.

The environmental impact of so many motor vehicles extends beyond problems simply of congestion. Vehicles pose threats to wildlife, particularly mutton-birds. The greater the number of motor vehicles plying the island’s roads, the greater the fuel consumption and the greater the demand for more shipping to supply the fuel. More road usage means a greater demand for road base and screenings. Then there is the impact on aesthetics which

was identified more than a quarter of a century ago by Recher and Clark but which was virtually ignored.

6.2 Demand for Resources:

There are no useful records on the annual volume of waste generated nor water consumed nor sewage discharged into the ground water which finds its way into the marine environment.

Sewage effluent is almost universally acknowledged to have an impact on the water quality in the lagoon through up-wellings. So far though due to the strong daily flushing of the lagoon this has not yet been shown to have any identifiable adverse impacts. However it was to avert such impacts that the now bio-waste treatment facility was installed in 2000 at great cost.

The 1988 Management Strategy stated: “*The limiting factor in tourist accommodation should not be a bland approach to tourist bed capacity/allocation. Rather it should be based on the resources demand of any given tourist operation. If a tourist operator proposes to cater for more “up-market” visitors than previously, this may require a reallocation. Similarly, if a tourist operator was to cater for more guests with lower demands, there could be a valid case to increase the bed capacity of that resort.*”

Thus it is proposed that in future all applications to change the status/style of any licensed tourist operation should be accompanied by an impact statement which can justify the changes proposed and reconcile them to the island’s carrying capacity.”

(a) Shipping

Another symptom of people pressure threatening the island’s integrity is the increase in the volume of commercial shipping. This has increased by 200% from one ship per month in 1988 to 3 ships per month by 2000. In 1999-2000 there were 38 shipping movements and in 2001-2002 there were 47 shipping movements although an 18 month Board survey concluded that the two ships were operating at half their capacity.

Part of this growth in shipping can be explained by commercial rivalry. However, tonnages have been fairly consistent at least over the last 6 years

1995-96	5,900 cubic metres
1996-97	8,000 cubic metres
1997-98	6,700 cubic metres
1998-99	6,200 cubic metres
1999-2000	7,200 cubic metres
2000-01	5,900 cubic metres

A large part of the regular loading includes fuel and food supplies (since the island is almost completely dependent on imported food). The growing fleet of motor vehicles and the increasing demand for electricity is generating an ever-growing demand for fuel which is all imported in 200 litre drums.

In 2002, the Board made a decision to stop sharing the shipping volume between the two rival companies and to put the carriage of all freight out for tender. The tender was awarded to the “M.V. Island Trader.” This means that from 2002 the number of shipping movements will be reduced to two ships per month. This is still a 100% increase on the number of shipping movements in 1988. It also raises a question about the impact on the lagoon floor especially if the ship is more heavily laden by

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carrying on average approximately 50% more cargo on each trip.

The collective impact of the increased shipping has led to a significant scar on the lagoon floor in the shipping channel. A Report, "*Disturbance caused by Shipping in the Lord Howe Lagoon*" (1996) concluded that already there is some apparent damage to the lagoon floor. This results from the scouring of the ship's propellers in the shipping channel.

The Report also describes the extent to which the crust on the lagoon floor has been broken through near the jetty. This has exposed over a metre of the underlying mud. The movement of the propellers as the ships leave the wharf is likely to deepen this hole and release more mud unless the most stringent management is applied. The disturbance of the mud will create serious turbidity in the lagoon, with serious impacts.

The key to minimizing the impact of the shipping is to ensure that there is a maximum depth of water under the hull and particularly the propellers when they enter or leave the island. This means only entering the lagoon at the top of a spring tide. The reality though is that shipping does not always pick the spring tide and further, the ships may come in up to an hour and a half either side of the optimum tide which would minimize the impact. This is potentially a major issue for future management.

When the writer was present in May 2001 a vessel entered at least an hour and a half away from high tide and not at the highest tide of the cycle. The monitoring of this guideline seems to be ignored.

Another aspect of the increased shipping is the impact of the anchorage of the ships on the deeper corals outside the lagoon while ships are awaiting the time to enter the lagoon. Designated anchorages are marked on navigational charts outside North Passage and offshore from Neds Beach. Ships awaiting the appropriate tide utilise these marked areas.

The problem of offshore anchorage seems likely to be exacerbated if the Board decides to allow cruise ships to visit the island. Clearly anchor damage is just one aspect of any environmental assessment which would need to be carried out prior to countenancing any approval for this type of tourism.

(b) Electricity

Most of the electric power on Lord Howe Island is generated by the diesel motors at the Power House. Some power is fed into the grid through solar panels installed on the roof of the passenger terminal at the airport.

While ostensibly consumption of electricity may not appear to impact on World Heritage values, the reality is that fuel constitutes a major part of the cargo carried to Lord Howe Island. Much of this fuel is consumed in the Power House.

The Board is committed to electricity demand reduction. It is reviewing tariffs to reflect demand management principles through escalating price structure. This policy may be having some effect. In 1999 the Board reported a 3.3% increase in demand; in 2000 a 4.8% decrease and in 2001 a 1.9% increase.

The Board is also exploring alternative energy sources. It has installed solar panels on the roof of the airport passenger terminal which feed power into the grid. Unfortunately plans to install a wind generator have been stalled while the grid is upgraded to allow this potential

new power source to feed into the system. The delay is at least a year.

The Qantas agent on Lord Howe Island uses an experimental electric car. Capella Resorts also use electric cars for transport. Conversion to alternative energy for generating at least part of the Lord Howe Island electricity may assist in reducing the demand for diesel generated power.

(c) Limits to Growth

The limits to growth on Lord Howe Island should be determined by the impact of increasing demand on the World Heritage values rather than the ability of the island to accommodate the demand. The 1988 strategy made the following points:

The factors limiting growth are:

- (i) *The availability of a supply of potable water to meet the need for human settlement;*
- (ii) *The capacity of the environment to absorb any discharged waste water. This will depend on the quality of the treatment;*
- (iii) *The availability of land which is not carrying natural vegetation and which does not exceed the land capability of factors such as slope and soil type;*
- (iv) *The limits on the size of any structures to take account of the visual amenity of the area.*
- (v) *Provision of services and infrastructure to meet the needs of the community.*
- (vi) *The need to carry out environmental repair of degraded areas;*

These points are still valid in 2002.

Although the 1986 Regional Environmental Plan purported to be a "no growth" plan, the "people pressure" on Lord Howe Island significantly intensified after it came into effect. The 1988 Management Strategy noted the following scope for additional development implied in that REP:

- (i) *Areas of undisturbed endemic vegetation have been zoned for development, even though there is a recognized need to rehabilitate lost or disturbed areas of vegetation;*
- (ii) *The residential zone has been extended to include a greater amount of the breeding habitat of the Fleshy-footed Shear-water, an endangered species of mutton-bird which nests only within the settlement area;*
- (iii) *Main ground-water confluences and flood prone areas have been zoned for development, a move which could spell disaster for the marine environment as the water table is very close to the surface in these areas and most water-borne contaminants eventually percolate through the sandy soils of the settlement area to the lagoon;*
- (iv) *The power generation capacity of the island is proposed to be quadrupled, even though there is no proposal to increase the island population and carrying capacity to utilize that vastly increased capacity;*
- (v) *A new sewerage scheme has been proposed to cater for 1,000 people, but only for north of Windy Point;*
- (vi) *The number of motor vehicles on the island continues to increase. No consistent policy is applied to importation of vehicles. (The author attended a Board meeting where it was approved that a utility truck be imported to replace a VW Kombi van which had already been replaced by a bus on a "one off - one on" basis);*

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(vii) *Conversion to rural land, subdivision of existing residential lots and the release of new building sites on Crown land could see a trebling of the island's population. All this extra development, permissible under the "no-growth" REP, will have further adverse impacts on the terrestrial and marine environments, both of which are already suffering from the current level of development.*

Many of those comments on the 1982 REP have subsequently proven very prophetic.

(d) Water

The island residents have to be self sufficient for their respective water supplies. Most island buildings have large rain water tanks. However in recent years these have proved to be inadequate for all uses due to unusually prolonged periods without rain.

Many residents and guest-houses augment their roof catchments by drawing on ground-water and/or by using desalinated water. As a consequence it isn't possible to know the volume of water which is consumed. However, most of the discharged waste water ends up entering the ground-water reservoirs. The largest reservoir is below the settlement area.

There is a potential health problem in that inadequately treated septic and sewage water is leaking into the same ground water reservoirs, which are supplementing the tank water supplies for some residents.

Due to the island's hydrology of the island most of the waste water eventually enters the lagoon. The extent of the impact of this discharge is heavily dependent on the water quality. This is being regularly monitored and it needs to be.

Due to the time lag between the potential contamination of the ground-water and its discharge into the lagoon, it is most important that monitoring should be sensitive to any change in water quality very early and not wait until it is too late to raise any alarm.

(e) Waste Management

The establishment of a very efficient and high tech facility for the management of solid waste was a most commendable attempt to clean up the island. It became fully operational in 2001. It attempts to separate out putrescible and other organic waste to be composted for use around the island. The non-putrescible waste is sorted for its capacity to be recycled. All remaining non-putrescible waste, which can't be used on the island, is then compacted and shipped back to the mainland.

The plant is a response to the recognized risk to the ground-water through leakage of waste from the former dump.

Although the plant initially had some minor problems particularly with the handling of the bio-waste, that problem has now been resolved. One problem is that the islanders significantly underestimated the volume of waste which each household generates. However a year later the system is working with commendable efficiency. The waste management plant particularly the vertical composting unit represents a model for waste management and has an under-utilized potential to be both a tourist attraction in itself as well as an important opportunity to increase public awareness on waste utilization. This facility should serve as a model and has the potential to become a tourist attraction in its own right.

Although solid waste is now being treated effectively, but at a very considerable cost which has so far not been passed on to residents, there have been problems with treating sewage effluent which are now being addressed.

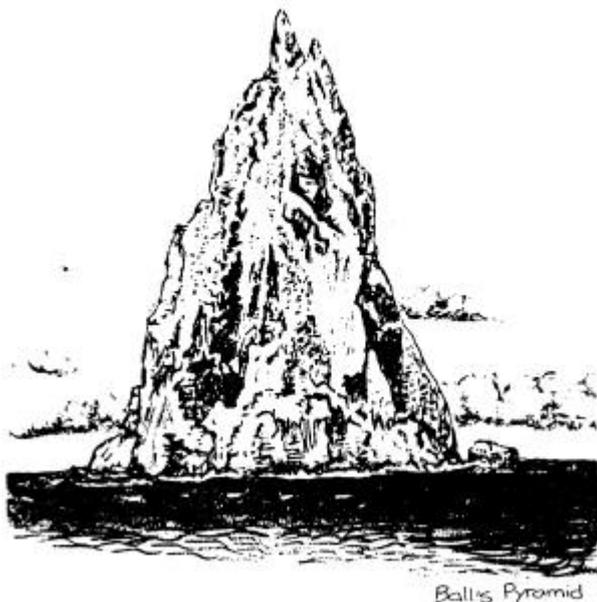
Coincidental to the establishment of the waste management facility has been many other initiatives encouraged by Ian Kiernan of "Clean Up Australia" to reduce the volume of waste on the island. This includes a move to establish a cooperative to bulk buy thus reducing packaging. This has now been adopted by a number of Island families. Such commendable moves are applauded and need to be encouraged.

(f) Carrying capacity

The most vital factor affecting the overall carrying capacity is the total island population. This needs to be based on the number of tourists plus the residential island population (including resort staff) who are on the island at any one time. There is a very important precedent for this.

Lady Elliot Island is the most southern coral cay of the Great Barrier Reef World Heritage area. It was a Lighthouse Reserve under the control of the Commonwealth Government. When a new resort was proposed the carrying capacity was assessed at a maximum of 120. The Commonwealth Government permitted a resort on this biologically important cay provided that the total number of staff and guests did not exceed 120 persons. The licence does not discriminate between numbers of staff and numbers of guests. It is just 120 persons, as a maximum, number who can be on the island at any given time.

Being an island it is easy to enforce a maximum number of people. It should be just as easy for such a ceiling to be employed for Lord Howe Island by balancing the inflow of guests with the outflow.



6.3 Loss of Biodiversity

Lord Howe Island has the unenviable record of having ten species of resident breeding land and water birds become extinct since European settlement. This represents 43% of the total number of endemic species. The Seacology Foundation, which specialises in promoting sustainable island eco-systems, regards this as the highest loss of species for an island of its size in the world. (pers comm) Thus the loss of biodiversity should be regarded as the highest priority not only to maintain the World Heritage values but also to establish credibility for now maintaining a sustainable ecosystem without the loss of further biodiversity.

The threats to biodiversity arise mainly through the lack of management of feral and introduced animals and plants. There is also an increasing threat to the lowland ecosystems through people pressure.

The other people pressure threat is posed to the marine area. A threat to the water quality in the lagoon arises from the discharge of ground-water into the lagoon. This includes most of the waste water generated on the island.

The impact of the present rate and management of shipping on the marine environment, particularly the lagoon must also be looked at very critically.

Because loss of soil leads to loss of biodiversity this needs to be better recognized on Lord Howe Island. Where the forest has been removed on the steeper slopes the mini-terracing is clear evidence of a slow but progressive landslip. This loss of soil makes it progressively more difficult for the area to be rehabilitated and this issue needs to be urgently addressed. The cleared lower slopes of the northern hills behind Old Settlement and Neds Beaches are prime candidates for reforestation as are the areas behind Pine Trees and immediately south-east of the airstrip.

Flashback: The 1998 Management Strategy stated: *"Although Lord Howe Island remains an attractive place, it is clear that its maximum carrying capacity has been exceeded and that management has allowed the island's natural environment to be degraded. The impact of the current settlement in physical terms has been:*

- * loss of habitat for wildlife;
- * loss of endemic vegetation;
- * water pollution;
- * loss of visual amenity (e.g. garbage dump in foredune area);
- * creation of significant garbage;
- * establishment of a greater infrastructure - roads, services, buildings, demands for power, airstrip, etc.;
- * and significant soil erosion, especially in areas of steep slopes where landslip is quite obvious to a trained eye.

More subtle, but nonetheless damaging, impacts have occurred in other ways, including introduction of weeds (and useful plants, such as kikuyu grass, which have become weeds in some parts of the island) and introduction of animals which have had an impact on native fauna. The island's carrying capacity must take account of the ability of management to effectively implement and police a satisfactory quarantine procedure for all importations onto the island."

Fourteen years later the many issues identified then are

still extant and some are now much more difficult to address.

(a) The Loss of Fauna

While there are no species known to be under immediate threat, some are definitely being impacted by "people pressure". This applies particularly to the Fleshy-footed shearwaters which are frequently killed by motor vehicles and by competition with islanders for habitat within the settlement area.

Although half the world's population of Fleshy-footed Shearwaters live on Lord Howe Island, none are known to breed in the Permanent Park Preserve, all breeding in the settlement area, the majority between Ned's Beach and Little Mutton Bird Ground. There is a significant accidental mortality amongst these birds due to traffic and collision with human artefacts such as glass panes, barbed wire, etc. Furthermore, the breeding habitat which has already been heavily intruded upon by past settlement, is now threatened by possible further building and clearing occurring there.

The pressure to protect the natural values of Lord Howe Island have culminated in the declaration of the major portion of the island group's terrestrial area as "Permanent Park Preserve". This is a protected status akin to National Park. For curious reasons, understood only by Islanders and politicians, the Permanent Park Preserve is not titled as a National Park.

The Board is not aware of any Shearwaters being killed by dogs and has a policy to only allow neutered dogs on to the island. Cats do not present any problem since no more cats are allowed on the island and the only remaining cat is now very old.



(b) The on-going loss of forest

Biosis identified the island as having "a substantially natural example of highly diverse vegetation communities and invertebrate communities, reflecting the complex environments found on the islands".

This is contrary to observations made over the period and on the evidence of old photographs of the island. There is a very alarming edge effect particularly where the native forest abuts cleared pasture land. Although the rate is difficult to quantify the forest is quite definitely retreating.

While there are aerial photographs taken of the island in 1984 and 2001 the difference in scale and disposition makes comparison difficult. However, old photographs can serve as a benchmark to show the rate of forest retreat. After an absence of nine years the writer noted

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that a conspicuous Banyan fig behind “Pinetrees” which had been a healthy specimen at the edge of the forest in 1988 was isolated from the forest in 1997 and looking sick. In the intervening years that fig has died and fallen down and the writer has noted the forest receding right along that edge.

There is very clear evidence that the forest has been receding at this frontier over several decades. The rate has been assessed from photographs taken in 1947 when a Catalina flying boat crashed into the northern hills. Photographs taken then compared with those taken recently show that the forest has retreated at least 50 metres.

Similar observations have been made by some islanders as they note the retreat away from the fence and stile leading from Neds Beach up to Malabar, around the Catalina Wreck and on entering the Permanent Park Preserve from the Old Settlement Beach. These are just a few benchmarks where the rate of recession can be readily noted.

The loss of forest is due to a combination of two factors:

- * the withering of the forest at the edges causing dieback of some species, and*
- * the invasion of grass, particularly kikuyu to compete with the surviving trees and to suppress any growth of new trees to replace the dead ones.*

The result is a self-exacerbating domino effect. What cannot be confirmed at the time of writing is what is the actual rate of forest loss.

More research is needed to establish:

- * the actual length of frontier*
- * the rate of advance of the grass into the forest, and*
- * the rate at which the dieback of native forest species is advancing from the edge into the forest.*

This annual rate of forest loss that seems to be in the order half to a metre annually. Given the length of the interface this amounts to some hectares annually. When there is less than 1250 hectares of forest on the island the retreat of the forest needs to be addressed urgently. At the time of writing the Board was preparing a Revegetation Strategy for the island. It is hoped that this strategy will focus on reducing the length of the interface between the forest and cleared areas. Implementation of the final strategy should be given a very high priority.

To address the problem of forest recession buffer strips are urgently required to be established along the edge of the forest. This is extremely difficult because of the aggressive nature of the kikuyu.

Efforts at the northern end of Old Settlement Beach to establish a buffer were a complete failure as kikuyu suppressed every plant. Unfortunately Kikuyu is being chemically killed at the forest edges but without any new planting to stop the trees on the edge from dieing.

Whatever method used, some planting must be undertaken to stop the domino effect of wind causing the exposed edges of the natural forest to recede, thus allowing the kikuyu to advance further.

In view of the problem that is occurring at the interface between forest and pasture, it would seem to be very prudent firstly, to reduce the length of the interface by planting up grassland corners and pockets in the forest cover, and (b) to avoid creating any further pockets in the forest cover.

This has important implication when considering any future residential development. The only recent new pockets in the forest canopy have been created to accommodate domestic dwellings.

Although the Board has achieved some significant success in revegetating the Clear Place and elsewhere as well as establishing palm plantations and undertaking landscaping work, at the time of writing it had not completed a Draft Revegetation Plan to address this most urgent issue.

(c) Weeds

The war against weeds on Lord Howe Island is, it seems, slowly being lost. The reasons for this are many. The major factor is the lack of available labour for the effort. Volunteers coordinated through Friends of Lord Howe Island who are engaged in an active weed eradication, but mainly in the areas closer to the settlement. However despite their efforts new weeds are continuing to penetrate to new parts of the Permanent Park Preserve, which are less accessible. So far these haven't been addressed by the many groups of volunteers.

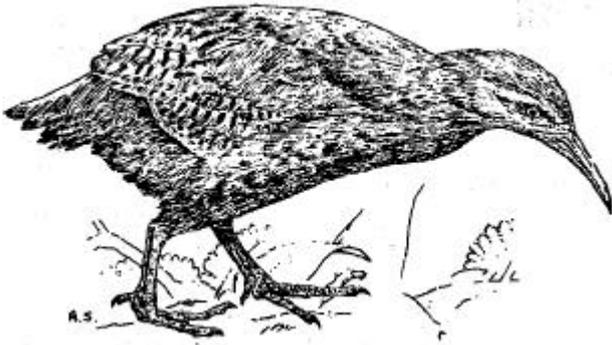
Some weeds such as the tiger lilies now seem impossible to eradicate. More pernicious weeds such as the asparagus ferns require enormous and on-going effort to contain. There seems to be little prospect of them being eliminated. However the weeds which are doing the most to change the habitat and threaten native species in the more remote areas are guavas. Because they are trees not too dissimilar to native vegetation and because they are mainly in areas further away from the settlement they have not attracted enough critical attention.

It seems that there should be a program to give priority to removing isolated populations of particular weeds while attempting to contain the spread from and eventually eliminate difficult weed species from their core areas.

In 1999 the Board published a Guide, *"Noxious Weed Control — Guidelines for Lord Howe Island Residents"* describing 19 noxious species identified by the Board as requiring action on the part of residents. One weed, bitou bush, has to be notified to the Board within three days and then *"fully and continuously suppressed and destroyed"*. Nine species are classified as "W2" which must also be *"fully and continuously suppressed and destroyed"*. This publication concedes that there are 218 introduced species of plants found on Lord Howe Island of which in addition to the noxious weeds another 30 species are *"Of concern"*.

While generally the war on weeds is being lost as more and more weeds invade previously unaffected natural areas, there are some areas where there is better news. One is the fact that so far no asparagus ferns have been identified south of the airstrip in the main part of the Permanent Park Preserve. However constant monitoring is required to ensure that any infestations are dealt with immediately.

A new *"Strategic Plan for Weed Management"* (2002) is a positive development in the War on Weeds which may turn the tide. This has identified major weeds and mapped major locations. This should be supplemented by an *"Action Plan"* assigning priorities for to the tasks involved in bringing weeds under control.



(d) Marine

The Marine Littoral Zone: Of Lord Howe Island's 37 kilometres of shoreline only eight kilometres of shore are readily accessible. Steep cliffs plunging almost vertically into the sea preclude access at most other points. The eight kilometres of shoreline that is accessible has been most heavily impacted especially on the lagoon side. Most of it was cleared of forest to the edge of the beach. Deprived of a buffer to the strong prevalent winds the forest behind has suffered. This is particularly true in the area of the Old Settlement Beach.

The Lagoon: The lagoon is six kilometres long and one and a half kilometres wide at its widest point. The depth varies from one to two metres with some holes up to eight metres deep. There is an abundance of coral in the holes and they're teeming with fish. The lagoon contains the largest but not the only part of Lord Howe Island's coral reef system which has been clearly identified as having important World Heritage values. Yet the lagoon is very vulnerable to disturbance which threatens its value:

The Biosis Study noted that the Lord Howe Island group had a "*unique example of the development of a coral reef ecosystem at the southern most limit of coral growth and under the alternating influence of warm and cool currents*".

The main identified threats to the marine environment are all relatively close to the island. These are:

- * *the impact of the water quality welling up in the lagoon from the ground water;*
- * *the potential changes of turbidity affecting the clarity of water in the lagoon;*
- * *the impact from anchor damage, outside as well as inside the lagoon;*
- * *over-fishing particularly of the slower growing fish which inhabit the drop-off. A large part of the habitat of these vulnerable species is outside the Commonwealth Marine Park. and*
- * *dramatic water temperature changes causing coral bleaching and death of other marine species.*

The first three issues have been discussed above. The final point is beyond the immediate scope of island management to address. However the issue of the potential for over-fishing needs to be addressed.

It appears that while Kingfish and other fast growing fish that inhabit the shallower offshore waters was the main target species the rate of take was sustainable. However, new technology is allowing fishing to be extended much further offshore and a new range of target species has developed. Most of these deep-water dwelling species occur around the drop-off and are slow growing. Thus there is a potential for them to be over-fished. The problem is that a significant part of the habitat is beyond the 12 nautical mile limit of the existing marine Park and there is virtually no protection under existing laws which can ensure that the take of the se species is sustainable.

This is the reason that many Islanders want the Commonwealth Marine Park extended to 30 nautical miles offshore.

The value of the marine habitat of Lord Howe Island in its capacity to act as a "seedbank" of biodiversity for future generations in the event of catastrophe on our mainland coral reefs should not be underestimated or discounted. Its position, at the confluence of tropical and temperate waters, makes it absolutely unique and the minimal exploitation leaves it as arguably the only accessible pristine, marine wilderness of its kind in this region.

(e) Feral Animals

While humans were responsible for the extinction of the first five species of endemic birds to disappear, it was feral animals, particularly rats, pigs and goats that later eliminated species which survived the first human onslaught. While pigs have now been entirely eliminated and goats almost entirely removed rats are still the biggest ongoing threat to the remaining fauna species.

While the impact of the above some feral pest species has been well recognized and has been and continues to be addressed as high priority by the Board, what is not as well recognized is the potential impacts of domestic animals and for the possibility of domestic animals becoming feral.

The Board advises that it has no knowledge of dogs attacking and killing mutton-birds. Feral ducks are a problem and becoming pests at Neds Beach.

Little is known about the environmental impacts from the release of feral invertebrates and even the extant of any such introductions. Feral earthworms and insects can quickly displace native species without even being known. A population of feral frogs has now been established on the island which has potential to impact on invertebrates.

Given the tragic history of feral animal impacts on the island fauna, one would expect more vigilance to be given to monitoring behaviour of domestic animals and imports.

(f) Quarantine

The island is courting environmental disaster by failing to enforce any quarantine program. The introduction of such a program is a high priority for the Board but applications to the Commonwealth Government for funding have so far been unsuccessful.

In the absence of any quarantine inspections a feral frog has recently been introduced to the main island. The potential consequences of this based on reports of frog introductions elsewhere are quite alarming.

At no time are visitors to Lord Howe Island warned, when booking to visit the island, through any publications prior to leaving for the island, or at Lord Howe Island airport that they should avoid bringing in any plants, plant material or animals which may have an adverse environmental impact.

Without an education program to heighten awareness by island visitors, the probability of other escapees at least as damaging as rats, asparagus fern, pigs or kikuyu, looms large. However an actual quarantine inspection program would increase public awareness significantly and help to avoid inadvertent introductions which are potentially harmful.

The public needs to be educated concerning the potential risk of introducing new plants, particularly in pots, as the soil could contain an infinite variety of soil-borne pathogens or feral earthworms. The potential impact of a

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root rot fungus such as *Phytophthora cinnamoni* is too appalling to contemplate. An exotic snake was introduced into the Northern Territory in pot plants.

The more obvious impact of introduced mammals and birds should not cause anyone to overlook the subtler impacts of other introductions such as caged birds, white mice, guinea pigs and aquarium fish, which may be more sinister in effect. The inevitable introduction of earthworms, insects, other invertebrates and bacteria may have adverse impacts. The impact of such introductions may take some time to fully appreciate.

The impact of introduced plants is now well understood by most visitors to the island. The invasive qualities of asparagus ferns are well known. Visitors even recognize the impact of Norfolk Island Pines on the plant community of Transit Hill. Despite this, most aggressive exotic grass, kikuyu, was propagated on the track to the summit of Mt. Gower in an attempt to prevent erosion.

A more vigorous quarantine regime is urgently needed to prevent introduction of new injurious agencies to the island. It seems incongruous that many people are employed to deal with weed control, but not one person is employed in trying to enforce quarantine regulations.

Since almost everyone arrives on the island by aircraft, and is greeted before they alight and then have to pass through the Board's terminal, it should be relatively easy to implement a quarantine program with a little vigilant inspection. Inspection procedures should also extend to cargo arriving by ship, to prevent new damaging biota being unwittingly introduced to the island.



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6.4 Impacts on Aesthetic Values

There are several threats to the aesthetic values. These include:

- * *the receding forest line*
- * *increasing urbanization with associated loss of habitat;*
- * *the increase in traffic*
- * *the island's changing lifestyle*
- * *the loss of the island's tranquility*

Unnaturalness is aesthetically disturbing. The first three factors fall into the category of being unnatural, even being the result of injury which is upsetting to the senses. Thus the people pressure on the island is affecting one of its two identified World Heritage values.

Tranquility:

While the major issue of aesthetics refers to its beauty, for most island visitors the most appealing factor has been the tranquility of the island. This tranquility is being eroded by the greater number of visitors, which grew, by more than 50% from 8,450 to 12,935 in just five years to 2000. The greater number of motor vehicles impairs it. There is now almost 250 motor vehicles for 325 men women and children resident on the island to ply the 11 kilometres of roads. The island's peacefulness has been shattered by the building program, which has seen a very significant increase in the rate of building in the last 14 years. It has been reduced by the number of shipping movements which are now necessary to bring in an increasing volume of freight, especially fuel and new building material and the provisions for a larger visitor and resident population.

Tranquility is something which previous studies have failed to address and yet it's a factor that is extremely important not only to the visitors to the island but to those who nurture and treasure the memory and thoughts of the tranquility existing in such a beautiful island. Islands themselves have a special significance in the human psyche. Thus the loss of tranquility in Lord Howe Island is of greater significance than the loss of tranquility may be in other parts of Australia.

Interestingly when in 2002 the Commonwealth Department of Communications sought submissions on offering a mobile phone service to the island, two-thirds of the more than 200 submissions were opposed on the grounds of the impact that the introduction of mobile phones would have on the tranquility of island life. It is ironical that increased motor traffic and other changes have been ignored.



7 Administration

The island is governed under the Lord Howe Island Act. Because the Act preceded the island's World Heritage listing it doesn't recognize the need to protect and preserve its unique World Heritage values.

(a) The Lord Howe Island Act

The Act defines the functions of the Board. The numbering of these functions seems to relate to priorities. Because environmental management is listed as No. 3, it appears to be subservient to the preceding functions of the Board which relate to improvement in the conditions and welfare of the island and residents, and management of the kentia palm industry of the island.

Notwithstanding the definition of the function to take "*all practical measures to protect and conserve the fisheries, fauna and flora of the island*" this is further limited by the very conservative approach as to what is "practical."

Although people with backgrounds in National Park management have served as Managers for the past 14 years Most of the management effort appears to be engaged on issues other than the protection of natural resources.

The Lord Howe Island Act is now more than 50 years old. It has been amended only once and that was before the island was World Heritage listed. Those amendments seem to be at the core of some of the problems with island management because they changed the composition of the Board to provide for a majority of Islanders and provided a definition of "Islanders" which are challenging the limits to growth.

The Lord Howe Island Act is in urgent need of review.

(b) The Lord Howe Island Board

Although Islanders represent only a small albeit vital fraction of people who use the island they are disproportionately represented on the Board. This has led to the interests of Islanders taking precedence over the wider public interest in Lord Howe Island. Attempts to reconcile the interests of the islanders resulted in the last revision of the Lord Howe Island Act, which abolished the Islanders advisory group and established instead a majority representation of Islanders on the Board. This is seen as a most retrograde step.

The status of "Islanders" is becoming more tenuous. The current real estate policy fails to prevent the transfer of property to persons and/or companies without islander status. Some islanders are taking advantage of this cashing in and leaving property in the hands of non-Islanders. The number of island residents is now equivalent to only about three per cent of the visitors who enjoy Lord Howe Island each year.

In 1988 it was recommended as follows:

The Lord Howe Island Board should be restructured and an appointed Board (or body?) should replace the present elected Board, with a membership of three persons, as follows:

A representative of the NPWS;

A representative of the administering Department;

An appointed representative from outside/the public, with qualifications in environmental management planning.

The Act should specify the role of the Lord Howe Island Residents' Advisory Committee.

On reflection considering the degree of participatory

democracy it is felt that there is a place for elected Islander representation on the Board. However, such representation should not amount to constituting a majority on the Board as it currently does.

Lord Howe Island is visited annually by well over 10,000 visitors and is an important part of the New South Wales and National Estate. As such all Australians feel some proprietary interest in the long-term future of the island.

The representatives of the 325 residents privileged to live in this Paradise shouldn't be allowed to dominate the decision making which affects the long-term future of the island, the amenity of its many visitors and the image cherished by the rest of the world.

(c) The Commonwealth Government Role

The Commonwealth Government contributes to the island's upkeep and maintenance and is the State Party to the World Heritage Convention with obligations and accountability for the protection of Lord Howe Island's World Heritage values. In the 2000-01 financial year the Commonwealth contributed \$268,000 for specific projects on the island including weed control and eradication, feral animal control, Woodhen monitoring, walking track maintenance and upgrades, rehabilitation of degraded areas and payment for a seconded ranger. In 2001-2002 this contribution was increased to \$341,000 which included \$150,000 to complete the Museum plus weed control and eradication, feral animal control, rehabilitation of degraded areas and payment for a seconded ranger.

The Commonwealth Government's introduction of the Environmental Protection and Biodiversity Conservation Act (EPBC Act) in July 2000 has very significant implications for the future management of Lord Howe Island as it has for all World Heritage areas. The EPBC Act regulates actions that will, or are likely to, have a significant impact on the world heritage values of a declared world heritage property. This includes relevant actions that occur outside the boundaries of a world heritage property. An action that will, or is likely to, have a significant impact on the world heritage values of a declared world heritage property is subject to a rigorous environmental assessment and approval regime under the EPBC Act. Actions which are taken in contravention of the EPBC Act may attract very significant penalties.

One very significant aspect of the EPBC Act is that it allows citizens to initiate challenges to actions deemed to be in contravention of the Act through the courts. This legal standing has very significant implications in that it enables citizens to have the Federal Court decide whether or not an action will have "significant" impacts.

It is because of the Commonwealth role and responsibility for World Heritage management that it seems inappropriate for the Commonwealth not to have some active representation in the decision making forum of the Board.

(d) Proposed Board Restructure

This Strategy recommends that the Lord Howe Island Act be revised. It considers that a restructuring of the Board would make major contribution towards the better protection of the island's World Heritage values. Two models to make the Board more representative for all major stakeholders (including Islanders) are offered. Both models rely on having a Community Advisory Committee established to enable wider community representation in deliberations.

One model is to expand the existing Board by one member (nominated by the Commonwealth) to make

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a Board of six with the Chair exercising a casting vote if required.

An alternative model is to have an authority similar to the Great Barrier Reef Marine Park Authority in which the Chair is appointed by the State, there is one representative nominated by the Commonwealth Government, and there is an independent person mutually agreed by the State and the Commonwealth Governments. This person could be a representative of the Community Advisory Committee referred to below.

(e) A Community Advisory Committee

Prior to the 1981 revision of the Lord Howe Island Act, there was an Advisory Committee. This was abolished in favour of increasing resident representation on the Board from one to three. Several residents applauded the valuable consultative process of the previous advisory committee.

Community Advisory Committees have been established for most of Australia's World Heritage properties and it has been the Commonwealth Government's policy to see these established for all properties. It seems most appropriate that there should be a Community Advisory Committee for Lord Howe Island and in fact the need may be more urgent here than for some other World Heritage properties.

(f) Environmental assessment

The implications of some development applications on the World Heritage values have not always been well considered or assessed. This has been evident in the process whereby the Board continues to consider approval of a new residence that will result in the loss of 172 trees when there are alternatives without such a heavy environmental impact.

Deficiencies in environmental assessment have resulted from poor environmental impact studies tendered to the Board, failure to ensure that such studies are adequately reviewed and (where necessary) the plans submitted are modified in the light of environmental assessments or alternatives proposed and, that there is compliance with approved plans.

Visitors and non-resident stakeholders are virtually disenfranchised and overlooked in the environmental assessment process which has allowed island politics to be the principal determinant in the decision making process.

(g) Environment Protection Plan

A major deficiency in the protection of Lord Howe Island's World Heritage values has been the lack of an overall management plan. Although there is a plethora of useful planning instruments ranging from the Regional Environmental Plan to the latest weed management strategy, decision making still appears to be relatively *ad hoc*. Through these *ad hoc* decisions there has been an incremental increase in overall development without an effective monitoring of the implications of the overall trend.

The Regional Environmental Plan (1986) was an important instrument but rather than managing development it has facilitated accelerated development as discussed elsewhere in this Strategy. It has long been recognized as having exceeded its use-by date but bureaucratic restructuring in the state planning instrumentality has significantly delayed the production of a new Draft REP. A review of the Regional Plan for Management is

pending. Work has begun but rather than be ready by the June 2002 a new Draft is now not expected to be released before December, 2002. In the meantime the recently ratified Strategic Plan for Management, are the principal strategies for implementing day-to-day management on the Island.

A "tyranny of small decisions" has caused many of the problems on the island. Many of these do not appear to be addressed by any Plan. It has resulted in a failure to recognize potential environmental outcomes. An example of the impact of small decisions is apparent when one sees dead muttonbirds which have been caught up in barbed wire. There seems little need for barbed wire at all on the island but this has not been addressed.

An overall Management Plan is needed to bring together the main elements of the various plans and which affords a proper priority to recognition and protection of World Heritage values.

All Board decisions need to take into consideration the impact that their decision will have directly and indirectly on Lord Howe Island's World Heritage values. Many issues require a multi-disciplinary approach. The Board already has staff skilled environmental matters. However it seems desirable that a wide range of skills be represented in the decision making process.

(h) Land tenure

The past practice of restricting ownership to persons who are Islanders or island residents is breaking down. This particularly applies where valuable properties are concerned. It seems that in future, many properties will be owned by incorporated bodies or companies where it will be more difficult to enforce "island resident" status.

It should be recognized that the relatively good condition of the island when it was inscribed on the World Heritage list is largely due to the family tradition of the original island settlers and families. Notwithstanding this, the breakdown of the island family tradition is lessening. Earlier residents had a proprietary interest in preserving the island's unique values. As more property is sold to non-island residents, this commitment to protecting the heritage is being diluted.



8 Recommendations

Key Issues

The key to managing and sustaining Lord Howe Island's World Heritage values relies on more effectively managing the people pressure and limiting and preventing the inroads into the native forest by wind, grass and other weeds as well as feral animals. The management of people pressure hitherto doesn't seem to have sufficiently taken World Heritage values into account and the degradation of the forest has been largely taken for granted and inadequately addressed.

The four most serious issues threatening Lord Howe Island's World Heritage values are:

- * *The lack of an effective cap to ensure that visitor numbers are maintained at a sustainable level;*
- * *The withering away of the natural forests at the edges;*
- * *The spread of weeds particularly into areas previously unaffected.*
- * *Risks to the marine environment from increased shipping and movement of larger freight vessels and from the quality of water discharged into the lagoon through the ground water.*

These are therefore the areas of major focus of this strategy.

8.1 People Pressure:

(a) *Limiting numbers for the island:*

* *Consideration needs to be given to placing a cap on the number of people who can be on the island at any time as happens on Lady Elliot Island.*

* *The slow steady upward creep of the population should be more closely monitored. Factors driving the population increase, particularly the ratio of residents to Islanders should be analyzed along with the discrepancy between the ABS figures and the Board figures for the island population.*

* *Any revision of the Lord Howe Island Act should consider redefining "Islanders" and Islander rights.*

(b) *Number of Dwellings:*

- * *The Board should assess bed capacity of each of the dwelling as well as trying to establish the bed occupancy rate to establish how much of the visitation to the island is being catered for in private residences.*
- * *Each new building application needs to be considered more critically especially the justification for additional residential capacity.*
- * *There should be no further release of Crown land (including reassignment of existing leases) to accommodate any new development. Any development should be confined to existing areas and be within the current area of settlement.*
- * *Islanders should only be able to obtain a lease by way of sale or through devolution by will or intestacy. If an Islander does not take up a lease available for transfer, it should be held in trust until an Islander is willing and able to take the transfer.*

- * *There should be no further removal of any trees (other than weed species) for urban development or urban expansion without an environmental impact assessment being independently carried out. The standard of the assessment should be commensurate to scale of the anticipated impact as determined by the Environmental Advisor to the Board.*

(c) *Visitor Numbers*

* *It is important to establish the rate of usage of island accommodation by workers (not Islanders) and house guests who are not occupying "tourist beds",*

* *The Board should commission an independent study to determine the carrying capacity of Lord Howe Island in terms of the aggregate number of people which it is sustainable to be on the island at any one time. This should be done without consideration of the proportion of island residents and workers to island visitors.*

* *All visitors not using designated tourist beds should notify the island Board of their accommodation when they arrive on the island. The cap of 400 tourist beds is unlikely to put a ceiling on visitor numbers while there is alternative accommodation for them to stay in.*

(d) *Motor Vehicles*

* *The Board should continue its policy on motor vehicles and monitor the number of motor vehicles. It should be a strict condition that the vehicle being replaced leaves the island immediately the new import arrives and that it is replaced by the same kind of vehicle (e.g. small vehicle with all vehicle; motorbike with motor bike).*

* *To facilitate the means of limiting the necessity for using private motor vehicles, the Board needs commission a Transport and Access Study to explore destinations and reasons for current motor vehicle use with a view to coming up with a comprehensive plan to reduce traffic including the consideration of the benefits of the provision of public transport on the island.*

8.2 Demand for Resources

(a) *Shipping*

* *The hull clearance of all major shipping entering the lagoon needs to be better regulated to ensure that:*

(a) *ships with insufficient clearance under their propellers are not allowed to enter the lagoon at all; and*

(b) *the ships are only scheduled to arrive on spring tides and that they enter the lagoon right on the top of the tide;*

* *The Board should attempt to identify what is driving the demand for sea freight. This should be done with a view to minimizing the volume of freight and the number of shipping movements in the lagoon. .*

* *In consultation with the shipping companies designated deepwater anchoring points should be established offshore for larger shipping which*

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will minimize damage.

(b) Limits to Growth and Carrying Capacity

* The Board should assess the resources and infrastructure on the island with a view to establishing what are the Limits to Growth for the island. Failure to do so will only encourage a “cargo cult” mentality and promote unrealistic expectations on the part of islanders.

(c) Electricity

* The Board should:

(a) encourage greater energy conservation measures by both residents and visitors in the same way as it is effectively doing in the implementation of a waste management program;

(b) review the policy on electricity supply to move as quickly as possible to replacing at least some the electricity from alternative energy sources (wind and solar) as soon as possible.

(e) Water

* The Board should attempt to determine the usage of potable water on the island and establish how much is drawn from rainwater tanks, how much from the ground water and how much from desalination.

(f) Waste Management

* The Board’s waste management policies should be used as a model for other communities in Australia and other countries. To be even more effective the Board should encourage all visitors to the island to visit the waste management facility as a part of a wider educational program.

8.3 Biodiversity

(a) The Loss of Fauna

* The island needs an annual census of all fauna populations at least in general terms to chart the trends in the various fauna populations. This is fundamental to helping establish management priorities.

(b) The on-going loss of forest

* The natural attrition from exposure of the edges must be urgently addressed. This needs to be mapped and quantified using old photos and records.

* Any land with more than 10% slope needs to be taken out of agriculture and reverted to native forest as soon as possible.

* Pockets of grassland enclosed by forest should be reforested as the highest priority to reduce the length of the vulnerable forest edge.

* The collection of palm seeds should be a sustainable industry but management guidelines need to address harvesting and extracting the seeds from the natural forest areas to ensure that the pristine qualities of the forest aren’t compromised.

* To provide a wind buffer and to improve the aesthetics the foreshore area south of the airstrip and Old Settlement Beach should be given a high priority for reforestation.

(c) Weeds

* Kikuyu grass needs to be dealt with as a noxious weed particularly where it is invading the forest areas.

* More effort needs to be given to addressing the woody weeds such as guavas that are displacing endemic species in the forest.

(d) Retention of existing Vegetation

* As a matter of policy no more development applications which involve the loss of natural forest habitat should be approved. Further development should only be located on already cleared land.

(d) Marine

* The quality of the fresh water discharging from the ground water into the lagoon needs to be constantly monitored for anything which may degrade the water quality within the lagoon;

* The clarity of water in the lagoon needs to be monitored to ensure that there is no increase in turbidity as a result of shipping movement.

* The Commonwealth Government should consider extending the marine Park to 30 nautical miles to fully protect the fishery on the seamount edge.

(e) Feral animals

* The Board’s efforts to rid the island of feral animals needs to be applauded and supported.

* The Board should establish a register of all domestic pets and define a policy for each type of pet based on their possible environmental impacts if they escaped into the wild. Any unclaimed domestic animals should be destroyed.

* All cats on the island should be removed from the island or neutered and no more introduced.

(f) Quarantine

* A vigorous quarantine regime to prevent introduction of new injurious agencies to the island needs to be implemented as a matter of high priority.

* An officer should be responsible for overseeing the implementation of a quarantine policy and regulations which should address:

(a) An education program for all island visitors before they reach the island of imports that are proscribed to the island and reasons for such bans;

(b) the inspection of luggage and freight arriving on the island to minimize the risk of introducing more injurious agencies including plants and animals;

(c) An education program for to increase island residents’ awareness of the potential impact of a some plants and animal s and other potential injurious agencies such as rot fungus such as *Phytophthora cinnamoni*.

* All shipping cargo should be inspected to prevent more introductions of pests and other injurious agencies and cooperation of the shipping companies sought to prevent any accidental introductions getting on board or on the hull of the ships.

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8.4 Aesthetic Values

* Lord Howe Island's potential as an excellent educational resource to enhance the appreciation of the natural environment should be more fully explored.

* Although Lord Howe Island has been the subject of a great deal of study and research, further research particularly studies with relevance to managing the island better should be encouraged.

* Lord Howe Island's inspiration for artists should be further encouraged within management guidelines, particularly that which visual artistic work which helps more people to appreciate the island without having to be there.

8.5 Administration

*The Lord Howe Island Act now 50 years old should be reviewed. The review should include recognition of Lord Howe Island's World Heritage status and require that World Heritage values be protected. It should also review the structure of the Board.

*The Lord Howe Island Board should be re-constituted. There are two options to accomplish this. Either

- (a) Enlarge the existing Board by the addition of one new member to increase its size to six. The New South Wales Government should invite the Commonwealth Government to nominate the additional member to the Board. This would establish parity between appointed and elected Board members but with the Chair exercising a casting vote if required. or
- (b) Reduce the size of the Board to three with the Chair being nominated by the State, another member nominated by the Commonwealth Government, and the third member mutually agreed by Commonwealth State Agreement who is not a public servant.

*A Community Advisory Committee should be constituted in the Lord Howe Island Act with a structure which provides for representation of all major specific interest groups including stakeholders and representatives of the voluntary conservation movement. It should not be restricted to people who reside on the island. It should be as widely representative as possible, rather than being based on local popularity.

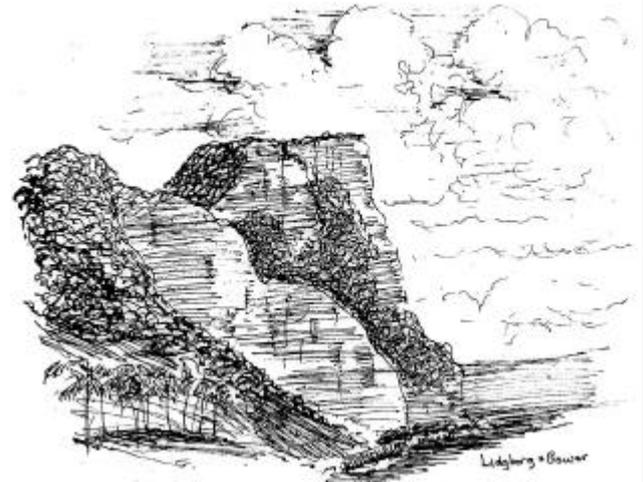
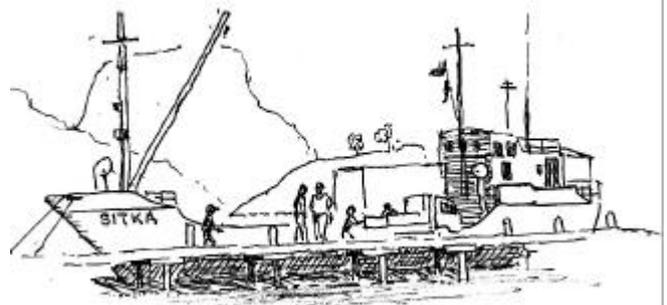
*The Advisory Committee should be asked to address major aspects of the overall management of the World Heritage site and the protection of World Heritage values. It should be scheduled to meet independently of the Board.

*A Management Plan for Lord Howe Island which incorporates or reconsiders recommendations all of the many plans developed over the last decade should be developed as a high priority.

*In consideration of plans and environmental assessments which could have significant impact on Lord Howe Island, the Board should seek submissions and comments from non-residents.

*That the matter of property ownership be investigated to ensure, through appropriate amendments to the Lord Howe Island Act, that the title deeds of island properties remain as far as

possible with Islanders, and that foreign interests be not allowed to gain ownership.



9. Conclusions

Lord Howe Island is a jewel of the Pacific but it is also a Paradise in Peril with many of the values which were responsible for it being listed as one of the natural wonders of the world now threatened by a range of human and human induced activities.

Lord Howe Island has a unique management in the Australian public administration that as hitherto served it well. However during the decade of the 1990s there was unprecedented growth in many areas which are now threatening some of those World Heritage values. The Board responsible for the administration of the island seems to have been oblivious to these subtle changes. Yet cumulatively the changes present a very alarming situation which needs to be addressed urgently.

This Management Strategy is an attempt to focus on those issues where there has been a deficiency in the administration. This should not be taken as a censure of the Board because there are many other areas where the Board has been very efficient and effective in the discharge of its responsibilities particularly to the island residents.

However this strategy is focussed on World Heritage values which should be the major focus of the island management. These seem to have suffered while the Board has been serving the interests of the residents.

Residents represent only about 3% of the number of people who visit Lord Howe Island each year. Visitors and others with a stake in how Lord Howe Island is managed have been significantly under-represented in the decision making process.

This Strategy doesn't try to deal with every environmental issue on Lord Howe Island. It is beyond the resources of the publisher and also beyond its scope as a "Strategy". It attempts only to suggest some of the ways in which the identified deficiencies can be rectified

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The Author

John Sinclair was commissioned to prepare the manuscript for a book on Lord Howe Island in 1979 when he began his research of the island. Although the book never eventuated, he avidly continued to study all aspects relating to Lord Howe Island since 1979.

He first visited Lord Howe Island for eleven days in May 1988 preparatory to developing the first Management Strategy. He walked extensively, met several people to discuss various aspects of management and attended a meeting of the Lord Howe Island Board.

His interest in environmental management began in 1967. However his special interest in islands grew when he began a famous campaign for Fraser Island in 1971 for which he was named “Australian of the Year” for 1976. He has prepared three Management Strategies for Fraser Island (1978, 1987 and 1990).

He has made a special study of the management of off-shore islands, attending the CONCOM Workshop on the Management of Australia's Offshore Islands at Barrow Island in 1985. He also participated in workshops on island management at the Third World National Parks Congress in Bali in 1983.

Since 1967, Sinclair has been actively involved in the voluntary conservation movement holding Executive positions of the Australian Conservation Foundation, the Wildlife Preservation Society of Queensland and the Fraser Island Defenders Organization. He has served on a number of Inter-governmental committees. He is United Nations Environment Program's Global 500 Laureate and won the Goldman Environmental Prize for Island Nations in 1993.

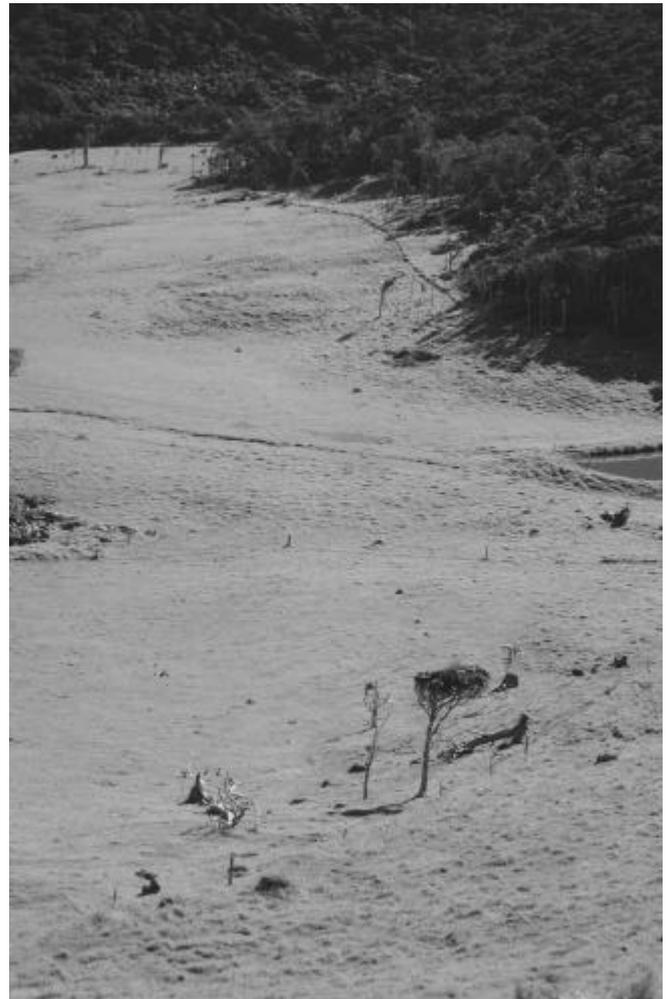
Sinclair is deeply committed to improving the management of Australia's World Heritage sites which he regards as the “jewels in the crown” of Australia's natural heritage. He attended World Heritage Area Managers Workshop in Ravenshoe in 1998 and the 24th Meeting of the World Heritage Committee when it met in Cairns in 2000 at his own expense.

He has been conducting *GO BUSH Safaris* since 1988. This is an ecotourism venture which has focussed exclusively on Australia's World Heritage sites. He has annually visited more such sites on an annual basis than any other Australian since.

Since 1997 Sinclair has conducted annual 9 day safaris to Lord Howe Island each May. During these he has continued to monitor developments and change on Lord Howe Island particularly with respect to its management to ensure that its long term management is sustainable and compatible with preserving Lord Howe Island's World Heritage values.



Photo from near stile above Neds Beach showing the retreating forest of the Permanent Park Preserve behind Old Settlement Beach



End Photos Showing the the retreat of the forest at the edges



The “Fallen Banyan” and retreating forest on Transit Hill behind Pinetrees
In 1988 this tree was on the edge of the forest. It was still alive in 1998.



Withering forest edge on the Hill behind Old Settlement Beach.
The fence line hasn't changed since 1988 but the forest continues retreating.



Behind Old Settlement Beach — the most urgent area to be needing revegetation



Where rainforest grew now so long ago now there is a forest of cherry guavas — and kikuyu continues to invade the remnants — not far from the Administration Offices