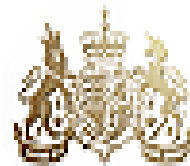
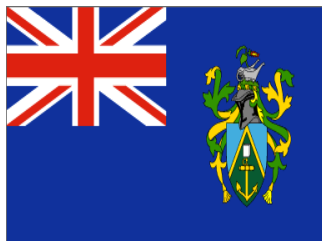


The Pitcairn Islands

Environment Management Plan 2008



Foreign & Commonwealth Office

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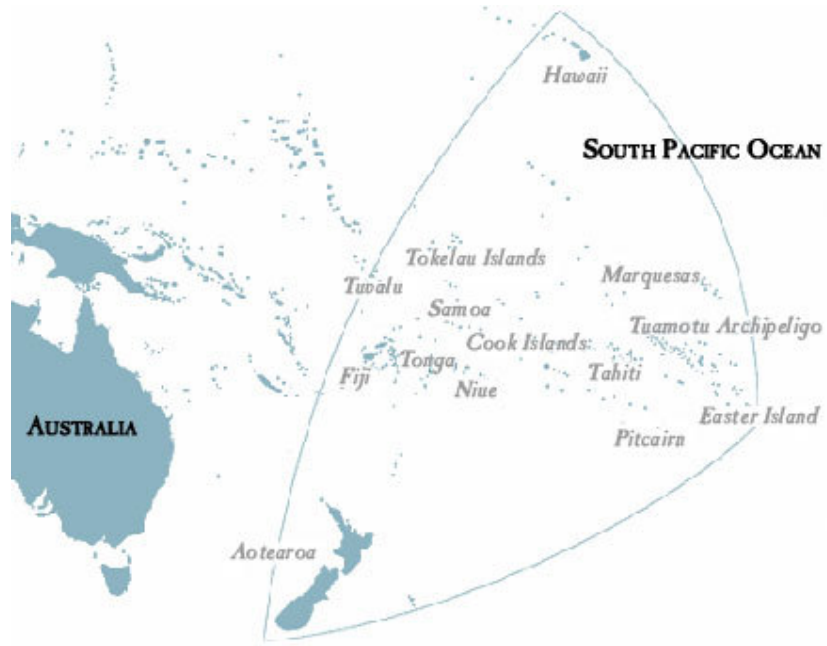


Figure 1. Location of the Pitcairn Islands Group

Acknowledgements

It is with great pleasure that I finally write the acknowledgements to this the final draft of the Pitcairn Environmental Management Plan (PEMP). This project has taken longer than initially anticipated with lots of personal life changes and job moves for me along the way, so apologies for the long gestation period. I hope this long drafting period has contributed in additional knowledge and awareness of environmental matters on Pitcairn.

I would like to thank the Pitcairn Islanders and other non-governmental and governmental stakeholder groups contacted who responded to the initial survey. The document has hopefully included all the views received from stakeholders and the superb and patient editorial team have also corrected drafts many times any remaining errors or omissions are entirely my own.

I wish to thank most sincerely Dr. Mike Brooke of Cambridge University who made many suggestions and amendments to the initial draft, they have I feel improved the content, quality and layout of this the final draft.

To the people of Pitcairn Island the custodians and guardians of a special place, and a very unique group of Islands, we hope this document aids in guiding the future direction of development on the island, to the ultimate benefit of the islanders and islands.

This environmental assessment would not have been possible without the financial support of the Overseas Territories Environment Programme (OTEP) and the Department for International Development (DFID).

Abbreviations & Definitions

AARHUS	Aarhus Convention on Access to Information, Public Participation in decision-making and access to Justice in Environmental Matters.
ACAP	Convention on Migratory species (CMS). Albatrosses and Petrels: through the agreement on the conservation of Albatrosses and Petrels
BPoA	Barbados Programme of Action 1994
CBD	Convention on Biological Diversity
CITES	International convention on International trade in Endangered Species of wild Flora and Fauna
CMS	Convention on the Conservation of Migratory Species of Animals which is also known as the Bonn Convention.
CSD	Commission of Sustainable Development
DEFRA	Department of Environment, Food and Rural Affairs
DFID	Department for International Development
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
FCO	Foreign and Commonwealth Office
GP	Guiding Principle of the Pitcairn Environment Charter
HMG	Her Majesty's Government
IOT MoU	Convention on Migratory species (CMS). Marine Turtles through the Indian Ocean Turtle Memorandum of Understanding.
IUCN	International Union for the Conservation of Nature and Natural Resources.
MEA	Multilateral Environment Agreements
OT	Overseas Territories
OTEP	Overseas Territories Environment Programme
PEG	Pitcairn Islands Environment Group
PEMP	Pitcairn Islands Environment Management Plan
Pers comm.	Personnel communication
Pers. obs.	Personnel observation
PEG	Pitcairn Islands Environment Group
PIO	Pitcairn Island Office
RAMSAR	Convention of Wetlands of International Importance especially as Waterfowl Habitat
SCREP	Convention for the Protection of the Natural Resources and Environment of the South Pacific Region
SIDS	Small Island Developing States
SOWG	Southern Oceans Working Group a committee with members from the UKOTCF, South Atlantic Working Group the British Indian Ocean Territories and the Pitcairn Island Working Group.
UNCED	United Nations Conference on Environment and Development
UKOT	United Kingdom of Great Britain and Northern Ireland Overseas Territories
UKOTCF	UK Overseas Territories Conservation Forum
WHC	Convention on World Culture and Natural Heritage
WSSD	World Summit on Sustainable Development 2002

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Executive Summary

This plan sets out ten key objectives based on the Environment Charter guiding principles for managing the environment of the Pitcairn Islands. These targets aim to implement the guiding principles of the Environment Charter and address the issues contained within these principles which include ensuring that all stakeholders play a part in decisions affecting the environment; increasing environmental awareness; highlighting the need for documentation and protection of the existing biodiversity and aiding development of the island group while integrating environmental protection. These objectives also address areas in which current environmental legislation can be improved and international obligations complied with and extended where necessary to the island group.

Objective 1 Organise a committee of members from the Island government departments, environment and heritage organisations, governor's office, environmental researchers and community representatives whose aims are to further develop environmental projects and obtain funding to implement the guiding principles of the charter using the Pitcairn Islands Environment Management Plan (**Section B4: Supporting Measures p47**).

Objective 2 Document existing local resource use on the Pitcairn Islands and ensure its use is sustainable and explore other opportunities to exploit local resources sustainably (**Section B3: Biodiversity p36**).

Objective 3 Sustain and improve the current environment of the Pitcairn Islands and aid its development in the most economically and environmentally sustainable way ensuring risk assessments are included at all stages of development (**Section B1: Environmental Development p23** and **Section B2: Economic Development p31**).

Objective 4 Integrate environmental considerations within the social and economic planning processes of the Pitcairn Islands (**Section B1: Environmental Development p23** and **Section B2: Economic Development p31**).

Objective 5 Promote sustainable patterns of production and consumption and ensure Environmental Impacts Assessments are undertaken before approval of projects on Pitcairn Islands (**Section B1: Environmental Development p23** and **Section B2: Economic Development p31**).

Objective 6 Implement effectively obligations under the Multilateral Environment Agreements already existing for the Pitcairn Islands and extend all other relevant environmental agreements (**Section B4: Supporting Measures p47**).

Objective 7 Protect, and where necessary, restoration of key habitats, species and landscape and seascape features in the Pitcairn Islands. Review baseline data on species and habitats, and landscape features, and where required, highlight areas where there are data deficiencies. Establish a protected areas policy and implement control and quarantine measures for alien invasive species on the Pitcairn Islands (**Section B3: Biodiversity p36**).

Objective 8 Review the current state of the Pitcairn Islands power generation, waste disposal and water quantity and quality and upgrade where necessary to the best environmentally sustainable method. (**Section B1: Environmental Development p23**).

Objective 9 Ensure that Pitcairn legislation and policies reflect the principle that the polluter should pay for prevention or remedies, establish effective but practical monitoring and enforcement mechanisms for all the island in the group (**Section B1: Environmental Development p23**).

Objective 10 Develop and encourage teaching in school and extra-mural courses to promote the value of the Pitcairn Islands and explain their unique role within the regional and global environment. Promote publications that spread awareness of the special features of the Pitcairn Islands, and promote awareness of charter itself and the Pitcairn Islands environment management plan (**Section B4: Supporting Measures p47**).

Section A:

General Background and Introduction

1. Introduction and Background to the Pitcairn Islands

The Pitcairn Island group comprises four islands located in the South Central Pacific Ocean. The islands, part of UK Overseas Territories, are exceptionally remote, lying at the south-eastern extremity of the central Polynesian islands south of the Tropic of Capricorn (1570km West of Easter Island; 5350km North-East of New Zealand, Fig.1). The group consists of two atolls, Oeno and Ducie (the most southerly atoll on earth), the raised atoll Henderson (a World Heritage Site) and a high volcanic island Pitcairn.

The estimated total land area of the Pitcairn group is 4516ha (Pitcairn 660ha, Henderson 3720ha, Oeno 62ha & Ducie 74ha) (Waldren *et al.* 1995 a & b, Bell & Bell, 1998). The climate of the Pitcairn Islands is sub-tropical with mean annual rainfall of approximately 1716mm but with considerable annual variation. The temperature ranges from 17⁰C to 28⁰C in summer and from 13⁰C to 23⁰C in winter, the winter period is also wetter and windier than the summer period (Spencer 1995).

Much of the biological interest in the group has centred on Henderson, designated a World Heritage Site for its unique and relatively undisturbed biota (Benton & Spencer 1995; Brooke *et al.* 2004). However, much of the plant conservation interest has centred on Pitcairn (Waldren *et al.* 1995 a & b; Kingston 2001; Kingston & Waldren 2003 & 2005), the only inhabited island in the group and the home of the descendants of the 'Bounty' mutineers.

Pitcairn Island is a small (4 x 2km²) relatively young (0.75 – 1 million years old), high volcanic island with steep slopes and a maximum altitude of 329m (Waldren *et al.* 1995a). The population of Pitcairn is approximately 50, all of whom reside in one settlement, Adamstown. There is, however, evidence of extensive occupation during Polynesian times when local stone was quarried and exported throughout South Eastern Polynesia. Polynesian occupation of the island had ceased by the time the Bounty Mutineers arrived in 1790 (Weisler 1995, Diamond 2005).

Until recently the small population of Pitcairn lived a subsistence existence with extensive areas of the island in cultivation for a variety of food crops. During this time many species were introduced both for food, ornament and timber and some of these introductions have become invasive e.g. Lantana (*Lantana camara*) and Roseapple (*Syzygium jambos*). These invasive species, coupled with the increase in the feral goat population, have seriously affected the local habitat (Kingston & Waldren 2005). Currently the main employment on Pitcairn is in local government and community services. Supplementary income is provided by the sale of wood carvings or curios to passing cruise ships, and to a lesser extent by mail order (Oldfield 1999).

Henderson is a raised coral island ("makatea") and is thought to be the Pacific's best remaining example of an elevated coral atoll ecosystem and thus is of outstanding natural value (Fosberg *et al.* 1983). Its remoteness and inhospitable terrain have protected it from human modification and its high elevation

(30m) from inundation; as a result a diverse and unique flora and fauna have arisen (Fosberg *et al.* 1983 Benton & Spencer 1995, Waldren *et al.* 1995 a & b). Henderson is currently uninhabited, but during Polynesian times up to 100 people may have resided on the island (Weisler 1995, Diamond 2005). The plants they introduced and cultivated mostly became extinct soon after the people though some remain such as Miro (*Thespesia populnea*), Coconut (*Cocos nucifera*) & Candlenut (*Aleurites moluccana*) (Waldren *et al.* 1999a) and it is thought to be the only example of a Pacific Island where the present vegetation and fauna mostly reflect the native condition (Göthesson 1997, Oldfield 1999). A management plan for Henderson Island was drawn up and published in 2004 by the Foreign and Commonwealth Office in conjunction with the Pitcairn Island Administration (Brooke *et al.* 2004).

Oeno and Ducie are low uninhabited coral atolls with maximum elevations of 1-2m (Waldren *et al.* 1999a). Oeno consists of a two small islets (Sandy Islet & Woody Islet) in a shallow lagoon. The overall area is 15 km² with 0.62km² of emergent land (Göthesson 1997). Ducie is the smallest of the islands in the group with an overall area of 6.4km² of which 0.74km² is emergent land rising 1-2m above sea level. The emergent land on Ducie consists of four islets: Arcadia Islet, Edwards Islet, Pandora Islet and Westward Islet which all fringe a central lagoon. Both islands are visited infrequently by yachts and cruise ships. The land flora and fauna of both are depauperate as the habitats are semi-arid, saline and prone to over-wash in high seas (Waldren *et al.* 1999a).

There is some information on the marine habitat and commercial fish species. Records by Sharples (1994), and specimens from observations were deposited in New Zealand's National Museum for identification. A report on the commercial fisheries potential of Pitcairn's waters was compiled by Langley and Adams (2005). A Checklist of the fishes of Henderson Island was produced by Irving *et al.* (1995) and subsequent collections made by Randall (1999).

Access to the Pitcairn Islands group requires a licence issued by the Governor (through the Pitcairn Island Administration office in Auckland) in consultation with the Island Council (Brooke *et al.* 2004).

**Plate 1. Bounty Bay the
port of entry to Pitcairn
Island**

2. The Administrative Framework and Current Environmental Legislation on the Pitcairn Islands

The Pitcairn Island group are Crown Lands and an Overseas Territory of the United Kingdom. The Pitcairn Island group were formally incorporated into one administrative district in 1938 (McLoughlin 1971). The Lands Court Ordinance Part IV gives the Governor responsibility for possession, occupation and transference of lands of the islands (Treadwell 2001).

The Wellington-based British High Commissioner to New Zealand holds the office of Governor of the Pitcairn Islands. The High Commissioner/Governor is appointed by Her Majesty, The Queen. The Governor holds formal powers “*to make laws for the peace, order and good government of the islands*”, and all the laws are styled “Ordinances”. However any law made by the Governor, may be disallowed by Her Majesty, through a Secretary of State (Treadwell 2001).

The Government in the UK can extend International Legislation and Treaties to Pitcairn after “*ratification*” (international legally binding agreement between parties) or “*signature*” (non-formal statement, legislation is not in force but indicating a compliance with legislation) or by “*extension*” (formal statement that legislation or treaty applies to a specific territory) only after a period of consultation with the Governor and Government of Pitcairn. The legislation in question will only be extended if Pitcairn wants it extended and/or it has the capability to comply. However, any of the international treaties or legislation in question can also be “*denounced*” (was party to, but not party to anymore) at any stage by the UK Government and/or the Pitcairn Government (Susan Dickson FCO *pers. comm.*).

The administration of the islands affairs lie with the Commissioner based at the Pitcairn Islands Office in Auckland (Treadwell 2001). On Pitcairn Island, the Pitcairn Island Council is responsible for the local government and administration of internal affairs within the group. The Island Council comprises: the Island Mayor (elected every three years), the Island Secretary, Chairman of Internal Affairs Committee, four officers (elected annually) and two advisers, one appointed by the governor and one by the elected members (Treadwell 2001). There are currently two Pitcairn Island posts that deal with environmental matters, those of Conservation Officer and Quarantine Officer (Treadwell 2001).

Global conferences have addressed the issues of the environment, biodiversity conservation and sustainable development on small islands states. Governments at the **United Nations Conference on Environment and Development (UNCED)** held in **Rio de Janeiro**, Brazil, 3 to 14 June 1992 adopted **Agenda 21** (a 300 page plan of action to be taken globally, nationally and locally by organizations for every aspect in which humans impact on the environment (<http://www.un.org/esa/agenda21>)). The **Rio Declaration on Environment and Development, Convention on Biological Diversity (CBD)** and the **Statement of Principles for the Sustainable Management of Forests**.

The **Global Conference on Sustainable Development of Small Island Developing States (SIDS)** was convened in **Barbados** in April, **1994**. This conference addressed the challenges facing small island states and the implementation of Agenda 21. The conference adopted the **Barbados Programme of Action (BPoA)** (<http://www.commonwealthsmallstates.org> & www.unep.ch/regionalseas/partners/sids.htm). This was the first conference that translated Agenda 21 into a programme of action for a group of countries.

A **Commission of Sustainable Development (CSD)** was established to follow up monitor and report on implementation of the Agenda 21 agreements at the local, national, regional and international levels. It was agreed that a five year review of Earth Summit progress would be made in 1997 by the United Nations General Assembly (**Earth + 5 Summit**: <http://www.un.org/esa/earthsummit>) for which the UK provided reports.

In 2000 the **UN Millennium Declaration** (<http://www.un.org/millennium/declaration/>) set out eight goals for all member states and set the target of reaching these goals by 2015 for each member state. The environment featured in **Goal 7** “*Ensure Environmental Sustainability*” and development issues in **Goal 8** “*Develop a global partnership for development*”.

The full implementation of **Agenda 21**, the Programme for Further Implementation of Agenda 21 and the Commitments to the Rio principles, were reaffirmed at the **World Summit on Sustainable Development (WSSD)** held in Johannesburg, South Africa from 26 August to 4 September **2002** and in addition set the goal of “*significantly reducing the rate of biodiversity loss by 2010*”. The challenge is to endeavour to “*deliver livelihoods and prosperity for the world's rising population without destroying the environment on which all human welfare ultimately depends*” (<http://www.un.org/summit2005/>). The UK Government signed up to these commitments. The Foreign and Commonwealth Office leads in three of these areas: International Sustainable Development Governance, Environmental Democracy/Human Rights, and Renewable Energy/Energy Efficiency (<http://www.fco.gov.uk/>). The **WSSD** reaffirmed the special case of SIDS and highlighted a series of SIDS-specific issues and concerns in the Johannesburg Plan of Action, (<http://www.johannesburgsummit.org/html>) adopted by the Summit.

In January **2005**, a meeting was convened in **Mauritius** to discuss recommendations for further and successful implementation of the **BPoA** for the sustainable development of the **Small Island Developing States (SIDS)**. The Mauritius meeting resulted in production of the **Mauritius Strategy** (<http://www.unep.org>). Currently, fifty-one small island developing States and territories (including the UKOT of Bermuda) are included in the list used by the United Nations Department of Economic and Social Affairs in monitoring the progress in the implementation of **BPoA**. These States and territories often work together through the Alliance of Small Island States (AOSIS). The United Nations Commission on Sustainable Development (CSD) held a SIDS day on 8 May 2006 and the focus was on energy for sustainable development, industrial development, air pollution and the atmosphere and climate change. Information on the discussions and press releases can be found at www.sidsnet.org.

The **2005 World Summit** held in the United Nations headquarters in **New York** on 14-16 September reaffirmed the targets of reaching the Millennium Development goals by 2015. On environmental

issues it outlined the serious challenge of climate change and committed to take actions to assist the most vulnerable i.e. small island states.

Currently Pitcairn is not a member of the small island states, although links with other small island states in the Pacific (<http://www.sidsnetpacific.org/>) would be of great benefit to the island group as it shares much in common with other small states on developmental and environmental issues.

Tables 1 & 2 outline the current local and international environmental legislation that applies to the Pitcairn Island Group. Table 1 outlines the Local Laws or Ordinances that are of environmental importance.

Table 1 The Pitcairn Ordinances of Environmental Interest (from Treadwell 2001)

<u>Ordinance</u>	<u>Part of Interest</u>
<i>Apiaries</i>	Part I, II, III, IV
<i>Fisheries Zone</i>	Part III,IV,V, VII
<i>Land Tenure Reform</i>	Part II & IV
<i>Landing and Residence</i>	Section 3,4,5 New Immigration Control Ordinance 2006
<i>Local Government</i>	Section 7 Local Government Regulations Part I,II,III,IV,V,VI,VIII & XI

The international treaties ratified by the UK are also ratified or extended to the Pitcairn Island group. Table 2 lists those of interest to developing the Pitcairn Environment Management Plan. The text of most of these international treaties is available online at the web addresses listed and/or details of ratification and extension to the Pitcairn Islands on the Foreign & Commonwealth Office website (<http://www.fco.gov.uk/>). These treaties will be discussed within the relevant chapters of the environment management plan in Section B of this document. Table 3 outlines international legislation of interest which to date has not been extended or ratified for the Pitcairn Islands Group.

**Table 2. Relevant Multilateral Agreements of Environmental Interest
Ratified & Extended to the Pitcairn Islands**

Environment & Wildlife Legislation

<i>Convention of Wetlands of International Importance especially as Waterfowl Habitat (Ramsar)</i>	By Extension 5.1.1976	www.ramsar.org
<i>Protocol to amend the Convention on Wetlands of International Importance 2.2.1971 especially as Waterfowl Habitat</i>	By Ratification: 19.4.1984	www.ramsar.org
<i>Amendments to Articles 6 of the Convention on Wetlands of International Importance (of 2.2.1971) especially as Waterfowl Habitat</i>	By Extension: 27.6.1990	www.ramsar.org
<i>International Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)</i>	By Ratification 2.8.1976	www.cites.org
<i>Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention or CMS)</i>	By Ratification: 23.7.1985	www.wcmc.org.uk/cmc/
<i>Vienna Convention for the Protection of the Ozone Layer</i>	By Ratification: 15.5.1987	www.unep.ch/Ozone/
<i>Montreal Protocol on Substances that Deplete the Ozone Layer</i>	By Ratification: 16.12.1988	www.hq.unep.org/ozone/pdfs/Montreal

Environment, Education & Culture Legislation

<i>Convention for the Protection of the World Cultural and Natural Heritage (World Heritage)</i>	By Ratification: 29.5.1984	www.whc.unesco.org/world_he.htm
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Customs legislation

<i>International Convention relating to the simplification of Customs Formalities</i>	By Ratification: 28.8.1924	www.austlii.edu.au/au/other/dfat/treaties
<i>Customs Convention on the Temporary Importation of Scientific Equipment</i>	By Extension: 4.12.1970	www.english.customs.go.kr/hp/eng/data

Table 2 continued from previous page**Maritime Legislation**

<i>Convention of the Protection of Submarine Cables</i>	By Signature: 14.3.1884	www.austlii.edu.au/au/other/dfat/treaties/
<i>Declaration for the protection of Submarine Cables (Explanatory of Articles II and IV of 1884 Convention on the Protection of Submarine Cables)</i>	By Signature: 1.12.1886	www.austlii.edu.au/au/other/dfat/treaties/
<i>Protocol on the protection of Submarine Cables (Entry into Force of 1884 Convention on the Protection of Submarine Cables)</i>	By Signature: 7.7.1887	www.austlii.edu.au/au/other/dfat/treaties/1901/
<i>International Regulations for Preventing Collisions at Sea</i>	By Acceptance: 28.8.1963	www.imo.org/Conventions/
<i>International Convention Relating to Intervention on The High Seas in Cases of Oil Pollution Casualties</i>	By Extension: 8.9.1982	www.sedac.ciesin.columbia.edu/entri/texts/intervention.high.seas.casualties.
<i>International Convention on Civil Liability for Oil Pollution Damage</i>	By Extension: 1.4.1976; Denounced: 12.5.1997	www.imo.org/Conventions/contents
<i>Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Materials</i>	By Ratification: 17.11.1975	www.imo.org/Conventions/contents
<i>Protocol Relating to Intervention on the High Seas in Cases of Pollution by Substances other than Oil</i>	By Extension: 9.9.1982	www.imo.org/Conventions/contents
<i>Amendments to Articles XI, XIV (4) (A) and XV (1)(A) of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other matter of 29.12.1972</i>	By Extension: 21.3.1980	www.imo.org/Conventions/contents
<i>International Convention on Salvage</i>	By Extension 22.7.1998	www.jus.uio.no/lm/imo.salvage.convention.
<i>Protocol to amend the International Convention on Civil Liability for Oil Pollution Damage of 29.11.1969</i>	By Extension: 20.12.1998	www.imo.org/Conventions/
<i>Protocol to Amend the International Convention of the Establishment of an International Fund for Compensation for Oil Pollution Damage of 18.12.1971</i>	By Extension: 20.2.1998	www.sedac.ciesin.columbia.edu/entri/texts/intervention.high.seas.casualties.
<i>Agreement for the Implementation of the Provisions of The United Nations Convention on the Law of the Sea of 10.12.1982 Relating to the Conservation and Management of Straddling Fish stocks and Highly Migratory Fish Stocks</i>	By Ratification 3.12.1999	www.fco.gov.uk/

Table 3 Relevant Multilateral Environmental Agreements yet to be extended to the Pitcairn Islands Group.

<i>Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (SCREP)</i>	Signed by HMG 16/7/87 Fiji, in respect of The Pitcairn, Islands Not ratified	www.fco.gov.uk/
<i>Convention of Biological Diversity (CBD) 1992 Earth Summit Rio de Janeiro</i>	Signed not extended	www.biodiv.org/convention/
<i>Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (AARHUS)</i>	Signed not extended 25/6/1988	www.unece.org/
<i>Convention on Migratory species (CMS). Albatrosses and Petrels: through the agreement on the conservation of Albatrosses and Petrels (ACAP)(19/6/2004)</i>	Signed not extended	www.wcmc.org.uk/cm/
<i>Convention on Migratory species (CMS). Marine Turtles through the Indian Ocean Turtle Memorandum of Understanding (IOT MoU)</i>	Signed not extended	www.wcmc.org.uk/cm/

Plate 2. Pitcairn Island Miscellany: a news-sheet from the island which has a global distribution

3. Background to Environment Charters in UK Overseas Territories and the Pitcairn Environment Charter

International recognition of the fact that environmental protection and natural resource management must be integrated with socio-economic issues culminated in the 1992 Earth Summit in Rio de Janeiro. The concept of “*sustainable development*” was originally developed by the Brundtland Commission 1987 as “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*”. It was designed to meet the requirements of both supporters of economic development as well as of those concerned with environmental conservation. Among the agreements the Convention of Biological Diversity pledges countries to conserve biodiversity and use its components in a way that will ensure that they continue to be available in the future. In the UK this resulted in the publication of the UK Biodiversity Action Plan, a summary of the state of UK biodiversity [including Crown Dependencies and Overseas Territories (<http://www.ukbap.org.uk/>)]. The White Paper on the United Kingdom’s Overseas Territories (<http://www.fco.gov.uk/Files/-2fbriefs-2fukots.pdf>) was then published which identified the objective of using the environment in a sustainable manner to provide benefits to the residents of the territories whilst conserving the natural heritage.

The following groups have been the main instigators behind the development of the Environment Charters for the Overseas Territories of the UK:

- The Foreign and Commonwealth Office (FCO)
- The UK Overseas Territories Conservation Forum (UKOTCF) - a group which has brought together non-governmental organisations, institutions whose aims include conservation of natural heritage in the Overseas Territories and the governments of the UKOT (further information on the group is available at <http://www.ukotcf.org>).

The Environmental Charters developed for the Overseas Territories, including Pitcairn were initially a result of the UKOTCF’s joint discussions with the UK government in 1998, which resulted in a Chapter in the Government’s White Paper on “*the UK Overseas Territories Partnership for Progress and Prosperity*”, published in March 1999. Also in 1999 a conference entitled “*Breath of Fresh Air*” held at London Zoo (<http://www.ukotcf.org/confs/>) was organised by the UKOTCF, on conservation in the Overseas Territories. This conference highlighted the need for the development of Environmental Charters for Overseas Territories.

The 2000 Calpe Conference: “*Linking the fragments of paradise*” (<http://www.ukotcf.org/pdf/calpe/>) held in Gibraltar (organised by the UKOTCF and Gibraltar partners) further emphasised the need for guiding Environmental Charters for the Overseas Territories. The result of these discussions and wide consultation prompted the Environment Policy Department of the FCO to generate a draft set of key principles, which became the basis of the Environmental Charters between the UK and the UKOT. The OT Governments signed these Environmental Charters in 2001. For a time little progress was made in developing the charters

into real actions. The UKOTCF worked with the Turks and Caicos Islands and then St Helena to help these territories develop strategies for action to implement the charter commitments. The Ten Guiding Principles of the Environment Charter signed by UKOT's are essentially similar in all charters, both in the commitments of the UKOT governments and the return commitments of UK government (<http://www.ukotcf.charter>).

A further wave of discussions between UKOTCF, FCO and some of the UKOT Governments resulted in a facilitation project which was established to develop an action strategy to implement the charters and serve as a model to other overseas territories. Two Strategies for Action to Implement Environment Charters were developed from this process: “*Strategy for Action to Implement Turks and Caicos Islands Environment Charter*” and “*Strategy for Action to Implement St. Helena’s Commitments under its Environment Charter*”. These were recently published and are available online (<http://www.ukotcf.org/charterStrat>).

The strategy documents developed for the Turks and Caicos Islands and St. Helena Island have expertly and usefully deconstructed the ten guiding principles of the charters into statements with realistic targets. A similar approach has been adopted here to develop the Pitcairn Environmental Charter into a working document for the environmental management of the Pitcairn Islands (Pitcairn, Oeno & Ducie). As a current management plan exists for Henderson Island (Brooke *et al.* 2004) and environment management issues for Henderson Island have been excluded from this document. In this document we have also further classified each of the guiding principles into categories for ease of discussion. The four categories we have devised are: **1. Environmental Development; 2. Economic Development; 3. Biodiversity; 4. Supporting Measures.**

The ten guiding Environment Charter Principles deconstructed into targets for Management of the Pitcairn Environment.

Guiding Principle 1 (GP1).
To recognise that all people need a healthy environment for their well being and livelihoods and that all can help to conserve and sustain it.

Objective 1 Organise a committee of members from the island government departments, environment and heritage organisations, Governor’s office, environmental researchers and community representatives whose aims are to further develop environmental projects and obtain funding to implement the guiding principles of the charter using the Pitcairn Islands Environment Management Plan (**Section B4: Supporting Measures**) .

Guiding Principle (GP2).
To use our natural resources wisely, being fair to present and future generations.

Objective 2 Document existing local resource use on the Pitcairn Islands and ensure its use is sustainable, and explore other opportunities to exploit local resources sustainably (**Section B3: Biodiversity**).

Guiding Principle 3 (GP3).
To identify environmental opportunities costs and risks in policies and strategies.

Objective 3 Sustain and improve the current environment of the Pitcairn Islands and aid its development in the most economically and environmentally sustainable way ensuring risk assessments are included at all stages of development (**Section B1: Environmental Development** and **B2: Economic Development**).

Guiding Principle 4 (GP4).

To seek expert advice and consult openly with interested parties on decisions affecting the environment.

Objective 4 *Integrate environmental considerations within the social and economic planning processes of the Pitcairn Islands (Section B1: Environmental Development and B2: Economic Development).*

Guiding Principle 5 (GP5).

To aim for solutions which benefit both the environment and development.

Objective 5 *Promote sustainable patterns of production and consumption and ensure Environmental Impacts Assessments (EIAs) are undertaken before approval of major projects on Pitcairn Islands (Section B1: Environmental Development and B2: Economic Development).*

Guiding Principle 6 (GP6).

To contribute as is appropriate for Pitcairn towards the protection and improvement of the global environment.

Objective 6 *Effectively implement obligations under the Multilateral Environment Agreements already existing for the Pitcairn Islands and extend of all other relevant environmental agreements (Section B4: Supporting Measures).*

Guiding Principle 7 (GP7).

To safeguard and restore native species, habitats and landscape features and control or eradicate invasive species.

Objective 7 *Protect, and where necessary, restoration of key habitats, species and landscape features on the Pitcairn Islands. Review baseline data on species and habitats and landscape feature and where required and highlight areas where there are data deficiencies. Establish a protected areas policy and implement control and quarantine measures for alien invasive species on the Pitcairn Islands (Section B3: Biodiversity).*

Guiding Principle 8 (GP8).

To encourage activities and technologies that benefit the environment.

Objective 8 *Review the current state of the Pitcairn Islands power generation, waste disposal and water quantity and quality and upgrade where necessary to the best environmentally sustainable method (Section B1: Environmental Development).*

Guiding Principle 9 (GP9).

To control pollution with the polluter paying for prevention remedies

Objective 9 *Ensure that Pitcairn legislation and policies reflect the principle that the polluter should pay for prevention or remedies and establish effective but practical monitoring and enforcement mechanisms for all the island in the group (Section B1: Environmental Development).*

Guiding Principle 10 (GP10).

To study and celebrate our environmental heritage as a treasure to share with our children.

Objective 10 *Develop and encourage teaching in school and extra-mural courses to promote the value of local environment and explain its unique role within the regional and global environment. Promote publications that spread awareness of the special features of the Pitcairn Islands environment & promote awareness of charter itself and the Pitcairn Islands environment management plan (Section B4: Supporting Measures).*

4. Background and Aims in developing the Pitcairn Islands Environment Management Plan

The people of Pitcairn have always been astutely environmentally aware, as their lives have always depended on the fine balance between population size and resource availability. The Pitcairn laws through the 19th Century reflect the people's concerns about the environment and its sustainability. A report in the 1850's noted that there were regulations about cutting timber for enclosures, which highlighted that in less than one hundred years since settlement timber resources were beginning to become scarce on the island (Brodie 1851). Their complete dependence on the island resources for food was further highlighted in 1884 when a law stated that "no coconuts were to be taken from "T'otherside" (Tedside) of Pitcairn Island without being accompanied by someone in authority. Erosion and drought problems were becoming evident by 1898, attributed to the loss of the island trees (Correspondence 1899).

The Pitcairn Island community was evacuated twice during the 1800's, to Tahiti in 1831 with a population of 66, and Norfolk Island in 1856 with a population 187. The main reasons for evacuations were concerns over water supplies and adequate land. In 1864 a small group of 43 persons returned from Norfolk Island to Pitcairn. During the first half of the 20th Century the environmental situation deteriorated again with an ever increasing population (in 1937 the population reached a peak of 233 persons) (Göthesson 1997). Efforts were made by The Island Council in the 1960's to bring back Pitcairn's larger and more useful trees, but these efforts were hampered by goats. Legislation was then brought in by the Island Council which allowed for goats to be fenced into one part of the island. A serious effort to reafforest Pitcairn was undertaken with up to one hundred thousand tree seeds sown, mostly of Miro (*Thespesia populnea*) and newly introduced timber tree species such as Pine (*Pinus radiata*) and Norfolk Island Pine (*Araucaria heterophylla*), both of which grew but were reported not to be thriving (Ford 1980).

The population of Pitcairn declined through the 1970's, 80's and 90's and today the island population is 48 people. A full survey of the flora and vegetation on the island was undertaken by Kingston & Waldren in 1998 (Kingston 2001) and efforts have been made since (*The Roseapple Project*) to conserve and restore the native forest on Pitcairn (Waldren *et al.* 2004 & 2005; Smyth & Waldren 2006 a & b).

The other uninhabited islands in the group support a wealth of both land and marine flora and fauna (Brooke 1995 a, b, & c; Florence *et al.* 1995; Göthesson 1997; Waldren *et al.* 1995 a & 1995 b; Benton & Spencer 1995) and have not suffered much environmental degradation to date. The most notable of the other islands in the group is Henderson Island, which was designated a World Heritage Site and a recent management plan has been published for Henderson (Brooke *et al.* 2004). The islands Oeno and Ducie support a smaller land flora and fauna (Waldren *et al.* 1995 a & b, 1999b). It is important to ensure that the goals, targets and objectives of the Henderson Management Plan are enforced and that plans for Oeno and Ducie are drawn up and included within this document to ensure that the environmental management of all islands in the group are considered.

Currently plans are underway to revitalise Pitcairn Island with new infrastructure, power generation, communications and transport links through French Polynesia, which will bring tourism and more cruise ships to Pitcairn and other islands in the group (Jaques 2006). This development will also bring environmental risks and mitigating against these risks presents a major environmental challenge for the group.

The Pitcairn Islands need to develop and safeguard their unique environmental features and develop ways to enable visitors to experience these special features without damaging or downgrading the environment. The Local Government Ordinances developed by the Island Council (Treadwell 2001) provide much of the environmental management of the Pitcairn Islands and these will be discussed, integrated and commented on within the Environmental Management Plan. The Environment Charter Guiding principles will be expanded upon and also included. The development of an all inclusive Environmental Management Plan for the islands (Pitcairn, Oeno and Ducie) at this juncture is timely.

The Overseas Territories Environment Programme (OTEP) provided a source of funding to support the implementation of the Environment Charters and environmental management in the UK Overseas Territories. This is a joint programme of the Department for International Development (DFID) and the Foreign and Commonwealth Office (FCO). In December 2003, funding was sought from OTEP by Dr Steve Waldren and BEC Consultants Ltd. at the request of the FCO, to develop a Pitcairn Environmental Management Plan. Such a plan is deemed essential in order to provide the framework for the implementation of the Environmental Charter. Dr Waldren and his research team at Trinity College have been active in ecological research in the Pitcairn group for the past 13 years and have contributed towards much of the current ecological and botanical knowledge of the Pitcairn Islands (Florence *et al.* 1995; Waldren *et al.* 1995 a & b; Waldren *et al.* 1999a & b; Waldren 2002; Kingston 2001; Kingston & Waldren 2003; Kingston *et al.* 2004; Waldren *et al.* 2005; Kingston & Waldren 2005).

This document will provide the framework by which all activities that impinge on the environment can be regulated to the benefit of the people of Pitcairn Island, the UK Government, visitors to the Pitcairn Islands and the environment of the islands. The document will also aid the Islands Council, the Pitcairn Island Office and Governor's Office to fulfil their commitments to implement the Environment Charter for the Pitcairn Islands Group. More information on the development of Pitcairn Islands Environment Management Plan can be obtained from our website (<http://www.botanicalevironmental.com/projects>).

Aims of the Pitcairn Environmental Management Plan

1. To implement fully the Guiding Principles of the Pitcairn Environment Charter for the Pitcairn Islands.
2. To provide a framework for sustainable environmental management.
3. To indicate suitable and appropriate measures that should be taken locally and identify external support measures that will be needed to implement the Pitcairn Environmental Management Plan.
4. To identify gaps in relevant baseline knowledge and determine the capacity to provide the required data.

Plate 3. The developmental steps taken to formulate the Pitcairn Islands Environmental Management Plan. A poster presented at “Biodiversity that Matters” UKOTCF Conference Jersey in October 2006 by BEC Consultants Ltd.

Section B:

The Pitcairn Islands Environment Management Plan

1. Environmental Development

Introduction

The social and economic status of the Pitcairn Island Group is one area in which dramatic changes are forecast for the coming years. In the past the islands' main income was obtained from philately. However, during the last ten years income from this activity has been reduced by over 80 % and the islands entered into budgetary aid in 2004. Currently new business plans for the islands are being developed by Jaques & Associates who aim to create a sustainable economy and self sufficiency for the Pitcairn Islands. Plans include: an improved power supply; greater communications and transport links to and from the islands; an increasing number of tourist visitors and doubling the number of permanent residents on Pitcairn Island to over 100 people (Jaques 2006). These plans affect many of the items discussed within this chapter and subsequent chapters of this document.

The Tourism Feasibility Study (Tourism Resource Consultants 2005) demonstrated from its market surveys into the Cruise market, Short stay market, Medium to long stay market and Yacht market that the potential economic contribution from tourism to the Pitcairn Islands could be considerable. However, this study also highlighted the need for the Pitcairn Islands to provide:

- trips to all islands in the group
- safe and informative tours of Pitcairn Island
- eco-lodge accommodation on Pitcairn Island
- mooring facilities etc.

All of these planned developments come with environmental consequences. Increasing the population and tourist numbers will increase the demands on housing and the power supply, water supply, waste and sewage facilities.

The Environment Charter's guiding principles address some of these environmental concerns and the relevant principles are outlined in GP3, GP4, GP5, GP8 & GP9 these have been interpreted to provide five key targets:

Objective 3

To sustain and improve the current environment of the Pitcairn Islands and aid its development in the most economically and environmentally sustainable way ensuring risk assessments are included at all stages of development

Objective 4

Integrate environmental considerations within the social and economic planning processes of the Pitcairn Islands

Objective 5

To promote sustainable patterns of production and consumption and ensure Environmental Impacts Assessments are undertaken before approval of major projects

Objective 8

Review the current state of Pitcairn islands power generation, waste disposal and water quantity and quality and upgrade where necessary to the best environmentally sustainable methods.

Objective 9

Ensure that Pitcairn legislation and policies reflect the principle that polluter should pay for prevention or remedies and establish effective but practical monitoring and enforcement mechanisms for all the islands in the group.

Local & International Legislation

Local legislation for the Pitcairn Islands Group also deals with concerns of planning, waste disposal, buildings, land, permits and penalties. The relevant Pitcairn Ordinances are outlined in Table 6 (Treadwell 2001).

Table 6. The Relevant Pitcairn Ordinances

<i>Local Government</i>	Section 7 Local Government Regulations (<i>Devised by the Island Council</i>) Part II - Public Health & Town and County Planning A. Buildings B. Rubbish C. Water supplies, cisterns, wells & sanitary conveniences Part V- Public Work
<i>Land Tenure Reform</i>	Part II Land Commission Part III Allocation of Land Part IV Absentee Landowners
<i>Landing and Residence</i>	Section 3. No person to land without a licence or permit Section 4. Licence to land and reside Section 5. Permit to Land
<i>Immigration Control</i> (Treadwell 2006)	Part V – Entry clearance for settlement Part VI- Permanent residence, special provision

The Pitcairn Island group is also subject to international legislation, which addresses public participation, waste and pollution (Table 7). It is of note that some of these are extremely important from a social and environmental viewpoint. Especially important is the Convention on Biological Diversity (CBD), which was one of the key agreements adopted at the Earth Summit in Rio de Janeiro in 1992. It has not been ratified for the Pitcairn Islands.

Table 7 The Relevant International Legislation

<i>Aarhus Convention on Access to Information, Public Participation in decision-making and access to Justice in Environmental Matters (AARHUS) (25/6/1988)</i>	Signed: 25 .6.1988 not extended to Pitcairn Group
<i>Convention of Biological Diversity (Article 8, Article 10 & Article 15)</i>	Ratified by the U.K 3.6.1994 not extended to Pitcairn Group
<i>International Convention Relating to Intervention on The High Seas In Cases of Oil Pollution Casualties</i>	By Extension: 8.9.1982
<i>“London” Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Materials</i>	By Ratification: 17.11.1975
<i>Protocol relating to Intervention on the High Seas in Cases of Pollution by Substances other than Oil</i>	By Extension: 9.9.1982
<i>Amendments to Articles XI,XIV (4) (A) and XV (1)(A) of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter of 29.12.1972</i>	By Extension:21.3.1980
<i>Protocol to Amend the International Convention on Civil liability for Oil pollution Damage of 29.11.1969</i>	By Extension: 20.12.1998
<i>Convention of Wetlands of International Importance especially as Waterfowl Habitat (Ramsar)</i>	By Extension 5.1.1976
<i>Protocol to amend the Convention on Wetlands of International Importance 2.2.1971 especially as Waterfowl Habitat</i>	By Ratification: 19.4.1984
<i>Amendments to Articles 6 & & of the Convention on Wetlands of International Importance (of 2.2.1971) especially as Waterfowl Habitat</i>	By Extension: 27.6.1990

Plate 4. The view over Adamstown the only inhabited settlement in the Pitcairn Island Group.

1.1 Land Resources

<p>Current Situation (Pitcairn Lands Court Ordinance-Treadwell 2001; Immigration Control Ordinance-Treadwell 2006; Cadastral Survey Preston, 1985)</p>	<ul style="list-style-type: none"> ▪ The lands of Pitcairn, Oeno and Ducie are owned by the Governor and cannot be bought or sold without his permission. ▪ The Lands Court (the Mayor and four members of the Island Council) oversee the allocation of land to current, future and former residents of Pitcairn Island. Land is allocated as House land (lifetime of the applicant), Garden land (renewable every five years), Orchard land (renewable every 20 years) and Forestry land (for the life of the forest). Upon expiry of a Land allocation title the lands revert to the Island Council. ▪ Land can be granted to those entering Pitcairn Island for permanent settlement. Permanent settlement can be granted to spouses of Pitcairn islanders, Family members of Pitcairn islanders or those who have relevant skills which would contribute to the welfare of the community. ▪ Lack of land in Adamstown for housing, adequate land for agriculture
<p>Stakeholder views</p>	<ul style="list-style-type: none"> ▪ The new land tenure ordinance makes provision for zoning and managing areas protected as “nature reserves” or “culturally significant sites”. ▪ Currently an updated survey of lands has been commissioned by the Governor’s office.
<p>Issues arising</p>	<ul style="list-style-type: none"> ▪ The current laws are adequate given the current low population size. However; if many people return to take up residency on the island the issue of land could become contentious and lands allocated could impinge on areas of natural interest or have an adverse effect on the environment.
<p>Future development & recommendations</p>	<ul style="list-style-type: none"> ▪ It is recommended that an up to date inventory of lands available is made available to the Pitcairn Lands Commission. The geographical areas available for housing, gardening, forestry and orchard should be defined and accurately mapped for Pitcairn Island. ▪ An assessment should be made of the carrying capacity of Pitcairn Island for both residents and tourist visitors, taking into account environment resource demands (e.g. water supply, power supply etc.) and zoned into land use categories with appropriate limits placed on the area available for each category. ▪ Areas will be set aside permanently for conservation and nature reserves, and these areas should not be considered in the areas of allocated land (Pitcairn, Oeno & Ducie). ▪ Housing or camps should not be allowed in lands (or islands Oeno & Ducie) zoned for conservation or nature reserves (Pitcairn). ▪ A digital GIS version of the new Lands Plan should be produced and made available for discussion (Pitcairn)
<p>Actions</p>	<p>1.1.1 Resurvey all lands of the Pitcairn Islands showing boundaries of land use classifications for both the public record and as a planning tool. Governor’s Office (ongoing).</p> <p>1.1.2 Identify and delineate sites of cultural and natural heritage on Pitcairn Islands, and fully survey cultural sites where appropriate.</p> <p>1.1.3 Produce digitised land use map and make it available for public consultation. Train a local person in the use of GIS software for updating the land registry on an annual basis.</p>

1.2 Water Resources

Current situation (& Pitcairn Local Government Regulations, Treadwell 2001)	<ul style="list-style-type: none"> ▪ Current laws require permission for construction of wells to be obtained from the Island Council ▪ The new type of wooden water tanks are attractive and appear to store water efficiently on Pitcairn. ▪ Some attempted drilling of water boreholes by McConnell Dowell Construction Company in 2005 had mixed results, further attempts are planned. ▪ Rainwater is currently the only renewable source of freshwater on all the islands.
Stakeholder views	<ul style="list-style-type: none"> ▪ Water is required for infrastructure projects for cement mixing and block manufacture. Further water speculation drilling is due to commence in areas such as Pulau and Aute valley on Pitcairn Island.
Issues arising	<ul style="list-style-type: none"> ▪ The new vogue of water flush toilets in homes on Pitcairn Island is currently sustainable and no adverse pollution effects are currently noticeable. However, given the increasing trend towards flush toilets in homes and with population and tourism numbers set to increase this issue needs to be dealt with soon. ▪ There possibly is no sufficient underground reserve supply of fresh water on Pitcairn Island. ▪ Water provision is required for planned visits to other islands by locals and tourists.
Future developments & recommendations	<ul style="list-style-type: none"> ▪ New water facility (large well) constructed to service the anticipated needs of residents and tourists on Pitcairn Island. ▪ Plans set in place for dealing with the water needs of temporary visitors to the other islands.
Actions	<p>1.2.1 Commission hydrological survey of Pitcairn Island.</p> <p>1.2.2 Construct new wells / tanks and make additional back-up water supplies available for homes on Pitcairn Island.</p>

1.3 Infrastructure and Planning

Current situation (Pitcairn Local Government Regulations, Treadwell 2001)	<ul style="list-style-type: none"> ▪ New houses have been built outside the main settlement area in recent years. This has implications for new definitions of house, garden land and the settlement of Adamstown. ▪ No provision made in local laws for tourist accommodation on Pitcairn Island. ▪ Environment Impact Assessments (EIAs) are currently being attempted for new developments on Pitcairn Island. ▪ An analysis of the risks to the agriculture and environment on Pitcairn island associated with new trading arrangements with Tahiti, French Polynesia recently compiled by the Central Science laboratory in the U.K (Jones <i>et al.</i> 2006) ▪ One paved road from landing at Bounty Bay to the top of Hill of Difficulty completed in August 2005. ▪ Road verges sprayed with chemical and large machinery used to keep unpaved roads skimmed ▪ Use of quad bikes increasing on roads ▪ Extension to the jetty and planned breakwater/ harbour.
Stakeholder views	<ul style="list-style-type: none"> ▪ Previous temporary accommodation on Oeno has resulted in a downgrading of the environment. ▪ EIA needed on the impact of introducing flush toilets. ▪ EIA needed on breakwater construction at Bounty Bay and associated quarrying. ▪ Pitcairn is in a unique position to benefit from knowledge and experiences gained by other small island states whose pollution problems could have been avoided. ▪ Need for consultation and use of Pitcairn Islanders knowledge in development planning. ▪ Mow roadsides instead of using chemical sprays. ▪ The maintenance of unpaved roads currently has a negative

	<p>environmental impact as they act as erosion channels and the native and endemic species that grow beside road verges are under threat from machines and chemicals (e.g. regenerating <i>Metrosideros collina</i>, <i>Phymatosorus powelli</i>, <i>Myrsine</i> aff. <i>niauensis</i>, <i>Coprosma benefica</i>, <i>Macrothelypteris torresiana</i>, <i>Lastreopsis c.f. pacifica</i>). The only known site of <i>Abutilon pitcairnense</i> was wiped out by a roadside landslide in 2004.</p> <ul style="list-style-type: none"> ▪ Advent of new vehicle types such as 4 x 4 jeeps arriving on the island with no roads to support them. ▪ Engineering solution to erosion problems needs to be pragmatic, the use of local material such as giant bamboo for drainage should be investigated
Issues arising	<ul style="list-style-type: none"> ▪ New local laws need to be drawn up on the development of tourist accommodation on Pitcairn Island. ▪ New local laws need to be drawn up on the planning procedure for new housing on Pitcairn. ▪ Because of its remoteness and isolation of the Island group Environment Impact Assessments are being carried out by consultants who do not get the chance to visit the Islands (Jones <i>et al.</i> 2006; Tourism resource Consultants Ltd. 2005) there is a growing need to make EIA expertise available more locally. ▪ With the necessary number of EIA's required on Pitcairn some independent review of the quality of each assessment is necessary. ▪ A Strategic Environment Assessment is required above project level to allow for longer term environmental management ▪ Threat to native plants and erosion threats from chemicals and large machinery on roads ▪ Alien plants seed stuck on tyres using road network to invade throughout the island.
Future developments & recommendations	<ul style="list-style-type: none"> ▪ Housing type and number of maximum housing units allowed should be integrated into the island and town plan on Pitcairn. ▪ Tourist-standard accommodation built. ▪ Regulation and control of temporary accommodation on the other islands. ▪ There are many new developments planned for Pitcairn Island, it is essential that good quality EIA's be carried out with each development step. ▪ Increased tourist numbers increased traffic and increased use of quad bikes throughout the island. ▪ New breakwater and harbour planned at Bounty Bay stone for this new development is being currently sourced on island.
Actions	<p>1.3.1 Ensure that environmental issues are taken into account in developments in the Pitcairn Islands by conducting full Environmental Impact Assessments (EIAs) for the effects of sewage output from flush toilets and breakwater construction at Bounty Bay and relevant Strategic Environment Assessments (SEAs).</p> <p>1.3.2 Organise training to develop EIA expertise locally and investigate availability of EIA expertise in the region</p> <p>1.3.3 Organise independent reviews and quality assessments of EIAs.</p> <p>1.3.4 Establish public records centre in new Museum Building, to store planning data locally, to provide information on development and EIAs.</p> <p>1.3.5 Produce Adamstown town plan including marked boundaries for housing & tourism developments, extra well capacity, sewage and waste facilities. Land Court & Governor's Office (ongoing).</p> <p>1.3.6 Draw up further guidelines on residential and tourist housing standards on Pitcairn.</p> <p>1.3.7 Ensure that when visits to islands in the Pitcairn Group require provision of temporary accommodation, the visitors dismantle, remove and if necessary responsibly dispose of this accommodation at the end of the visit.</p>

	1.3.8 Conduct a Strategic Environment Assessment on the results of the land survey and town plan. Independent consultant.
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1.4 Energy production

Current situation	<ul style="list-style-type: none"> ▪ Diesel powered electricity generation with power available only in the morning and evening at set times. ▪ A Renewable Energy Appraisal Report in 1988 (Grey & Woods 1988) outlined two types of wind turbines which would be suitable for use on Pitcairn Island. ▪ Current plans (06/07 Island Budget) are to site 2 or 3 wind turbines at Highest Point on Pitcairn Island. Meteorological data shows the generators will be operational 70% of the time and two back-up diesel generators will be maintained (Jaques 2006).
Stakeholder views	<ul style="list-style-type: none"> ▪ Diesel powered electricity generation has had a negative impact on the environment of Pitcairn Island as the fuel barrels and sludge run off causing both a litter & contamination problem. ▪ Need to introduce sustainable wind or wave powered electricity generation and investigate solar and wind power potential to reduce reliance on fuel. ▪ Need to clean up generator fuel supply system (spillage of diesel and sludge). Residual oil, diesel and waste from generators contaminating the environment. ▪ Recycle and reuse old oil drums
Issues arising	<ul style="list-style-type: none"> ▪ Increased pressure on electrical appliances with the intermittent power supply, many don't last long which in turn causes a waste problem. ▪ Need for more sustainable power supply which could benefit both the islanders and the environment. ▪ Increase in quad bike numbers will lead to more fuel and energy consumption which is not sustainable given the current prices and diminishing availability of petrol and diesel products globally.
Future developments & recommendations	<ul style="list-style-type: none"> ▪ Increased tourism means an increase in energy consumption ▪ Eco-tourists will expect green energy ▪ Need for lower cost sustainable energy generation
Actions	<p>1.4.1 Investigate provision of wind, wave and solar power generation, including assessment of the wind and solar power report for St. Helena made in 2003.</p> <p>1.4.2 Commission study to investigate use of "green fuels" for transport and domestic heating, including use of rose apple in energy-efficient wood burning stoves.</p> <p>1.4.3 Build new fuel storage tanks on island and/or recycle petrol and oil drums. Public Work.</p> <p>1.4.4 Implement recommendations of Grey & Woods (1988) regarding energy saving light bulbs and appliances.</p>

Plate 5. Sugarcane harvest on Pitcairn Island. Many crops grow very well on the island. A bio-fuel crop could well be grown locally

1.5 Waste disposal

<p>Current situation (Pitcairn Local Government Regulations, Treadwell 2001)</p>	<ul style="list-style-type: none"> ▪ No guidelines currently exist for dealing with sewage output from new water flush toilets on Pitcairn. ▪ Public conveniences (Pitcairnese “Duncan”) are set up all around Pitcairn Island though many are in a poor state of repair. ▪ Current litter laws are adequate but there are many issues of non-compliance (e.g. Brown’s Water affected by rubbish & camp remains at Oeno). ▪ Currently the only landfill on Pitcairn Island is situated beside a natural stream with rubbish flowing in the stream and into the surrounding sea. ▪ Used oil and petrol drums are building up on Island ▪ Old roofing tin and buildings waste building up on island ▪ No recycling facilities available on Pitcairn Island. ▪ No facilities for dealing with hazardous waste
<p>Stakeholder views</p>	<ul style="list-style-type: none"> ▪ Strong views on litter from stakeholders ▪ No facilities for dealing in an environmentally friendly way with waste ▪ Need for organic composting facility and large mulching machine to deal with organic waste ▪ Need for waste management study ▪ Hazardous waste to be shipped off island ▪ The practice of dumping oil drums at sea must stop. ▪ An alternative to flush toilets in Adamstown should be sought as a reticulated sewage system would prove expensive.
<p>Issues arising</p>	<ul style="list-style-type: none"> ▪ Increased population and tourist numbers will bring an increase in the amount of waste generated. ▪ Relocation of landfill to a more suitable site away from stream ▪ Need for integrated waste management policy for the islands
<p>Future developments & recommendations</p>	<ul style="list-style-type: none"> ▪ Relocation of current landfill to a more suitable site on Pitcairn Island. ▪ Dedicated recycling facility for hazardous and non-hazardous waste set up on Pitcairn island in a convenient location (e.g. The Edge) ▪ Investigation into a new island fuel supply system to eliminate the use of drums (e.g. pumped directly from ships into dedicated tanks) ▪ Waste disposal promoting recycling & composting to comply with and extend international legislation. ▪ Increased use of renewable energy sources to minimise waste. ▪ Need for a proper sewage system within the Adamstown area of Pitcairn Island.
<p>Actions</p>	<p>1.5.1 Commission a study on the most efficient way to deal with sewage discharge from homes on Pitcairn Island, including projected increases (immigration, tourism), and develop new standards.</p> <p>1.5.2 Contact the St. Helena group working on waste disposal and drainage projects for St. Helena and contact DFID regarding report on obtaining safe palatable water.</p> <p>1.5.3 Organise shipping to remove recyclable and hazardous material from Pitcairn Island on a regular basis.</p> <p>1.5.4 Establish a landfill facility with lined, covered cells in a more suitable site on Pitcairn, to comply with best international standard.</p> <p>1.5.5 Produce guidelines for the disposal of domestic waste, including that from future tourist accommodation.</p> <p>1.5.6 Ensure all waste generated by visitors to Henderson, Oeno and Ducie is removed at the end of the visit.</p> <p>1.5.7 Establish a recycling facility on Pitcairn Island to deal with organic waste and defunct electrical goods.</p> <p>1.5.8 Commission feasibility study to investigate setting up incineration facilities to best international standard.</p>

2. Economic Development

Introduction

Business plans for the Pitcairn Island Group developed by Jaques & Associates (Jaques 2006), a tourism report (Tourism Resource Consultants 2005) and a renewable energy appraisal (Grey & Woods 1998) commissioned by the Pitcairn Islands Administration and the Governor's Office, have suggested many approaches to the development of the Pitcairn Islands which encompass sustainable development ideals.

The developments include a new trade link and memorandum of understanding between the Pitcairn Islands and French Polynesia, the installation of wind turbines to harness electricity, a new breakwater/ harbour to encourage cruise ships to visit Pitcairn as well as stops at the other islands in the group, and the development of international markets for the sale of local produce (carvings and honey) to provide a boost for the island's economy and development.

However, during current economic development the islands environment could suffer unless measures are put in place to protect it. A synergistic relationship between development and the environment is possible for the Pitcairn Islands with good quality Environmental Impact Assessments (EIA's) and an overarching Strategic Environment Assessment (SEA). An SEA will link multiple developmental environmental impacts above individual project level. Much of the proposed economic development for the island (which went into budgetary aid in 2004) centres on tourism and having an ecologically sound environment. High value low number tourism was deemed the most feasible for the islands as it has the least impact on local life and the environment (Tourism Resource Consultants 2005; Jaques 2006).

Developing sustainable energy and water resources for Pitcairn Island is a major consideration. Many other small island states have commissioned reports on the development of sustainable energy (Uhlen & Toftevaag 1986) and these are being utilised and updated (Leslie Jaques *pers. comm.*, Heather Christie *pers. comm.*) Much of what is proposed in Section B:1(p.20) of this document for Environmental Development is relevant to this Section. The Environment Charter guiding principles deemed appropriate to this section are outlined GP3, GP4 & GP5. The objectives we outline for the economic development are:

Objective 3

To sustain and improve the current environment on the Pitcairn Islands and aid development in the most economically and environmentally sustainable way.

Objective 4

To Integrate environmental considerations within the development planning processes of the Pitcairn Islands.

Objective 5

To promote sustainable patterns of production and consumption and ensure Environmental Impact Assessments are undertaken before approval of major projects.

Local & International Legislation

The Pitcairn Island group is subject to international legislation which address aspects of the environment and development. This legislation is outlined in Table 12. It is of note that some important legislation from an environment and development viewpoint has not been ratified for the Pitcairn Islands, for example the Convention on Biological Diversity (CBD), which was one of the key agreements adopted at the **Earth Summit** in Rio de Janeiro in 1992.

Table 12 The Relevant International Legislation

<i>Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (SCREP)</i>	Signed: 16:7:87 in respect of the Pitcairn Islands. Ratification has not taken place
<i>Convention of Biological Diversity (CBD) 1992 Earth Summit Rio de Janeiro</i>	Signed not extended
<i>International Regulations for Preventing Collisions at Sea</i>	By Acceptance: 28.8.1963
<i>The Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention)</i>	By Ratification: 29.5.1984
<i>Agenda 21</i>	14. 6. 1992
<i>World Summit on Sustainable Development</i>	9. 2002
<i>International Convention Relating to Intervention on The High Seas In Cases of Oil Pollution Casualties</i>	By Extension: 8.9.1982
<i>International Convention on Civil Liability For Oil Pollution Damage</i>	By Extension: 1.4.1976; Denounced: 12.5.1997
<i>Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Materials</i>	By Ratification: 17.11.1975
<i>Protocol relating to Intervention on the High Seas in Cases of Pollution by substances other than Oil</i>	By Extension: 9.9.1982
<i>Amendments to Articles XI, XIV (4) (A) and XV (1)(A) of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other matter of 29.12.1972</i>	By Extension: 21.3.1980
<i>International Convention on Salvage</i>	By Extension 22.7.1998
<i>Protocol to amend the International Convention on civil liability for Oil Pollution Damage of 29.11.1969</i>	By Extension: 20.12.1998
<i>Protocol to Amend the International Convention of the establishment of an International Fund for Compensation for Oil Pollution Damage of 18.12.1971</i>	By Extension: 20.2.1998
<i>Convention of Wetlands of International Importance especially as Waterfowl Habitat (Ramsar)</i>	By Extension 5.1.1976

<i>Protocol to amend the Convention on Wetlands of International Importance 2.2.1971 especially as Waterfowl Habitat</i>	By Ratification: 19.4.1984
<i>Amendments to Articles 6 & & of the Convention on Wetlands of International Importance (of 2.2.1971) especially as Waterfowl Habitat</i>	By Extension: 27.6.1990

The Pitcairn ordinances of interest in environment and development planning are outlined in Table 13. The Apiaries Ordinances set down stringent rules with regard to the keeping of bees, disease control and the importation of bee and bee products; these regulations are essential if the quality of the hives and honey on Pitcairn Island is to be maintained into the future. The Fisheries Zone ordinances also set down stringent rules for foreign fishing fleets and set out the details for obtaining a permit or licence from the Governor to fish in the exclusive economic zone of the Pitcairn Islands.

Table 13 The Relevant Pitcairn Ordinances

<i>Fisheries Zone</i>	Part III,IV,V,VII
<i>Apiaries</i>	Part I, II, III, IV

2.1 Tourism

Current situation	<ul style="list-style-type: none"> ▪ Currently only a small numbers of visitors to the Pitcairn Islands, mainly due to a lack of regular transportation to and from New Zealand or French Polynesia. A new trade link with French Polynesia with six sailings per year to Pitcairn for freight and passengers will help boost tourist numbers (Jaques 2006). ▪ Currently only five to ten cruise ships have a scheduled stop at Pitcairn annually, visitors that come ashore from these ships take a quad bike island tour and buy curios. Up to forty cruise ships use the route between Easter Island and Tahiti (Jaques 2006). ▪ New museum built as visitor attraction behind main square ▪ Henderson Island Management Committee is currently producing brochures aimed at the tourist market ▪ New market square cover in Adamstown. ▪ Increased production of local honey for markets in Japan & London (Jaques 2006) ▪ 70% of Pitcairn’s food requirements are imported (Jaques 2006) ▪ New ecotrail at Pulau a great success during the November to February cruise ship season (Carol Warren <i>pers comm.</i>)
Stakeholder views	<ul style="list-style-type: none"> ▪ Need for more environmental awareness as the islands prepare towards developing tourism ▪ The environment and cultural heritage on Pitcairn is its biggest asset ▪ Need to develop further onshore activities for short and long term visitors
Issues arising	<ul style="list-style-type: none"> ▪ New trade link with French Polynesia will see the numbers of visitors to the island increase. This will lead to an increase in the use of power and other resources. Domestic waste increase, sites for new accommodation, increased number and usage of sanitary facilities, and increased road usage may have a negative effect on the environment. ▪ Increased traffic between all the islands in the group will increase the risk of introduction of non-native invasive species.
Future developments & recommendations	<ul style="list-style-type: none"> ▪ Planned increase in tourist numbers from both cruise ships, and short stay visitors arriving through French Polynesia.

Actions	<p>2.1.1. Develop promotional materials to support tourism, including brochures and leaflets aimed at different tourist groups (cruise ships, eco-tourists etc.), highlighting the attractions of the Pitcairn Islands.</p> <p>2.1.2. Develop tourism, particularly ecotourism, with new ecotrails, local people trained as guides and project leaders, and supporting guidebooks and leaflets.</p> <p>2.1.3. Draw up environmental codes of conduct for visitors for all islands in the Pitcairn group as outlined in the Henderson Island Management Plan (Brooke <i>et al.</i> 2004).</p>
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2.2 Food Production

Current situation	<ul style="list-style-type: none"> ▪ Fishery issues are highlighted within the Laws of Pitcairn, Henderson; Ducie & Oeno revised ed. (2001) Chapter XXIX Fisheries Zone. ▪ A Fishing plan required by contractors before a fishing licence is issued by Governor ▪ Fisheries zone established and mapped as Pitcairn Islands Exclusive Economic Zone (EEZ). ▪ 24 hour notice to Mayor of Pitcairn Island upon foreign boat entry into Pitcairn EEZ. ▪ Transhipment of catches to other boats not permitted inside EEZ. ▪ Catch rate of commercial species in Pitcairn EEZ, such as albacore, comparable to catch rates in other EEZs (including Tonga, Fiji, Niue, Cook Islands and Vanuatu) (Langley & Adams 2005) ▪ Monthly local fish catches recorded in the local news-sheet <i>The Pitcairn Miscellany</i>. ▪ Incidents of illegal commercial fishing with the 200 mile Pitcairn exclusive economic zone (Oldfield 1999) ▪ Many of the islanders produce some of their own fruit and vegetables in privately owned garden plots.
Stakeholder views	<ul style="list-style-type: none"> ▪ Policing of the Fisheries zone an issue
Issues arising	<ul style="list-style-type: none"> ▪ Currently very strict fishing laws though scant information on fish stocks in the fisheries zone.
Future developments & recommendations	<ul style="list-style-type: none"> ▪ Issue of Contract Fishing Licences to certain groups could provide an income for the islanders. ▪ Increased commercial interest in broadbill swordfish (<i>Xiphias gladius</i>). Pitcairn waters may represent a suitable habitat for this species (Langley & Adams 2005) ▪ Increased need for fresh fish for tourism. Sustainable harvest and fresh wild fish a selling point to cruise ships. ▪ Need to develop a sustainable horticultural practice of producing good quality local produce for sale in local store and to cruise ships.
Actions	<p>2.2.1 Replace reliance on pesticides with integrated pest and disease management strategies, including broadening the genetic base of food crops and appropriate crop rotation</p> <p>2.2.2 Increase diversity of locally produced food to reduce imports, and to supply the tourist trade.</p> <p>2.2.3 Promote the use of the EEZ to licensed operators. Contact New Zealand and French Polynesian Fishing Authorities.</p> <p>2.2.4 Monitor and police the EEZ by putting into practice recommendations of Langley & Adams (2005) for policing of EEZ: seek co-operation from New Zealand for air over-flights and French Polynesia for vessel policing.</p> <p>2.2.5 Investigate possibility of niche export markets for high value agricultural products</p> <p>2.2.6 Ensure that harvesting of local fish stocks are sustainably managed.</p>

2.3 Curio Trade

Current situation	<ul style="list-style-type: none"> ▪ Island souvenirs are mostly crafted from island timber and timber obtained from Henderson Island. The main plants used are <i>Thespesia populnea</i> (Miro), <i>Cordia subcordata</i> (Toa) & <i>Cyathea medullaris</i> (Man Fern). Sharks are also used for their teeth to adorn carvings. ▪ Some small scale marketing of curios on the internet.
Stakeholder views	<ul style="list-style-type: none"> ▪ <i>Thespesia populnea</i> (Miro) planted previously on Pitcairn had not been managed or maintained resulting in large poorly grown trees not suitable carving timber.
Issues arising	<ul style="list-style-type: none"> ▪ Increase in the trade of souvenirs. This will lead to increase the pressure on timber resources from Pitcairn and Henderson. ▪ Increased tourists will also result in an increased market for Pitcairn produce.
Future developments & recommendations	<ul style="list-style-type: none"> ▪ Need to develop a sustainable horticultural practice of producing good quality local timber for anticipated increased curio trade.
Actions	<p>2.3.1 Ensure that materials gathered from natural sources and used by curio trade are sustainably harvested, and if necessary take measures to ensure security of future stocks.</p> <p>2.3.2 Improve the management of existing plantations on Pitcairn of species used in the curio trade (Miro and Tou) to ensure quality timber is produced.</p> <p>2.3.3 Promote the sustainable sale of locally produced curios, including use of the internet and suitable retail outlets in New Zealand and elsewhere.</p>

Plate 6. Reynold Warren collecting wood for curio making on Pitcairn Island. The wheelbarrow is of the traditional type designed and constructed on the island.

3. Biodiversity

Introduction

The Joint Nature Conservation Committee compiled a special report of biodiversity in the Overseas Territories in 1999 entitled “*Biodiversity: The Overseas Territories*” (Oldfield 1999) which provided an overview of international agreements relevant to nature conservation of the territories, the protected areas within each territory, the habitats and species of major significance and a risk of extinction for species using the IUCN threat category. The Pitcairn Island group was assessed in Chapter 12 of this document.

Other relevant reviews of biodiversity, legislation and implementation of environmental commitments in the Overseas Territories and the Pitcairn Islands are available from the UKOTCF website under publications (<http://www.ukotcf.org/ukotcf/index.htm>). In a review report for DEFRA the UKOTCF undertook a survey of the existing and potential Ramsar sites in the UK Overseas Territories and Crown Dependencies. Five potential Ramsar sites are listed for the Pitcairn group: Ducie island [UK 62001], Henderson Island [UK62002], Oeno Island [UK62003], Brown’s Water Pitcairn island [UK62004] and the coastal waters of Pitcairn island (1.5km around the island) [UK62005].

The booklet “Promoting Biodiversity Conservation in the UK’s Overseas Territories” supported by WWF-UK and compiled by the UKOTCF highlights some of the unique endemic plants and globally important seabirds to be found in the Pitcairn Islands (p.16) and the threats they face.

The review document on The Convention of Biological Diversity and the UK Overseas Territories for the World Wildlife Fund – UK entitled “Overlooking Britain’s greatest biodiversity” (Cross & Pienkowski 1998) investigated compliance with the Articles outlined in the Convention on Biological Diversity in the different Overseas Territories. Although this legislation has not been ratified for the Pitcairn Island Group there are many examples of where they comply with Articles of the CBD e.g. International Co-operation - with New Zealand in a Rat eradication scheme; a biodiversity plan - The Henderson Island Management Plan; the identification of biological diversity – The Sir Peter Scott Commemorative Expedition 1991-1992 the results of which were published by the Linnean Society (Benton & Spencer 1995) and a database maintained by the World Conservation Monitoring Centre. The main area of CBD legislation which the Pitcairn group were found not to comply with were in connection with ongoing monitoring of biodiversity.

The vegetation types and species of all four islands were assessed by Dr. S. Waldren, Dr. J Florence & Dr. A.J. Chepstow-Lusty (Florence *et al.* 1995, Waldren *et al.* 1995a; Waldren *et al.* 1995b) with more recent work on the flora and vegetation of Pitcairn and Henderson Islands carried out by Dr. S. Waldren & Dr. N. Kingston in 1998 (Kingston 2001, Kingston & Waldren 2002, Kingston & Waldren 2003, Kingston *et al.* 2004, Kingston & Waldren 2005). Local pockets of native vegetation occur on Pitcairn while the vegetation of Henderson, Oeno and Ducie remains mostly intact. With regard to individual plant species,

60% of the flora of Pitcairn is threatened (Kingston & Waldren 2005) while less than 20 % of the flora of Henderson is threatened (Waldren *et al.* 1995a). These two islands are the most floristically rich of all the islands in the group and they support a number of endemic and endangered species, Pitcairn holds ten endemic plant species and five are critically endangered (Kingston & Waldren 2005) and Henderson holds nine endemic species (Waldren *et al.* 1999b) of which two are threatened (Waldren *et al.* 1995b). Both Oeno and Ducie have depauperate floras, yet Oeno contains three threatened taxa, one of which may be extinct (Waldren *et al.* 1995b). Only two vascular plant species have been recorded from Ducie (Florence *et al.* 1995).

The Pitcairn Islands are categorised as a high priority endemic bird area by BirdLife International (Saunders 2006) with internationally significant populations of seabirds. The recent work on the avifauna of the islands has been carried out mainly by Dr. M. de L. Brooke (Brooke 1995 b, 1995c, 2006) and in conjunction with others (Brooke & Hartley 1995, Brooke & Rowe 1996, Brooke & Jones 1995) with older reference work by Williams (1960).

A recent publication “Important Bird Areas in the United Kingdom Overseas Territories-priority sites for conservation” (Saunders 2006) includes a section on the Pitcairn Island group. The information was compiled by Dr. M. de L. Brooke (pp. 185-199) and lists the occurrence of globally threatened and restricted range bird species for the islands (p.187) and sites of global conservation importance for birds (p. 188) as well as listing the key species for each island in the group (pp.189, 191,193 & 196).

Bird diversity is low but highly specialised (e.g. only 4 land bird species on Henderson but all of these are endemic at species level, one of which, the flightless Henderson crane (*Porzana atra*), is one of the few remaining rail extant on Pacific islands. Ducie Island is the world’s main breeding station of Murphy’s Petrel (*Pterodroma ultima*) (250,000 pairs in 1991) and Oeno Island holds the world’s second largest colony (12,500 pairs in 1991). The only land bird found on Pitcairn Island is endemic, the Pitcairn Reed-Warbler (*Acrocephalus vaughani*) (Brooke 2006).

The island’s insects were assessed by Dr. T.G. Benton (Benton 1995) and spiders by Benton & Lehtinen (1995). Invertebrate diversity is also high on Henderson with many of these species likely to be indigenous and many of the mites and spiders thought to be endemic (Benton 1995; Benton & Lehtinen 1995). The land snail fauna is also of immense interest on both Henderson and Pitcairn (with 16 and 26 species respectively), but there are fewer than six species on Oeno and Ducie (Preece 1995 a & b).

The fish of the Pitcairn Islands show a low degree of endemism (Irving *et al.* 1995; Randall 1999) and green turtles and hawksbill turtles occur around the Pitcairn Islands (Oldfield 1999) with nest sites of the former on the east beach of Henderson (Brooke 1995a). An assessment of the marine invertebrates in the island group was carried out by Paulay in 1989. Marine mammals are in need of assessment within the Pitcairn group and it is probable that there are many cetacean species occurring in the surrounding waters (Oldfield 1999). Humpback whales (*Megaptera novaeangliae*) are regular in small numbers during the Austral summer.

Many of these papers are included in a special publication by the Linnean Society entitled “*The Pitcairn Islands: biogeography, ecology and prehistory*” (Edited by T.G Benton & T. Spencer 1995).

The main threats to habitats, species and landscape features on the Pitcairn Island group are non-native invasive species, human disturbance, habitat clearance and erosion (Brooke 2006, Kingston & Waldren 2005; Waldren *et al.* 1999a & 1999b, 1995b). The threat of non-native invasive species looms large with many of the plant and animal species of Pitcairn already under threat due to the invasion of exotic Roseapple (*Syzygium jambos*) (Kingston & Waldren 2005; Waldren *et al.* 1995b; Benton & Spenser 1995; Preece 1995a, Brooke 2006).

To address the threat of the invasive exotic *Syzygium jambos* (Roseapple) to the native vegetation on Pitcairn Island a research project (*The Roseapple Project*) has been investigating control methods for *S. jambos* and restoration of the native vegetation. This project was initiated in 2003 with funds from EFOT (Environment Fund for the Overseas Territories), (FFI) Flora and Fauna International, The Stanley Smith Horticultural Trust and IRCSET (Irish Research Council for Science, Engineering & Technology). (Waldren *et al.* 2005, Smyth & Waldren 2006 a & b, Smyth 2008).

A newly planned trade link with French Polynesia (Jaques 2006) could increase the threat from invasive species and extra efforts will have to be put in place to safeguard the biodiversity of the group. A recent analysis of the risks to the agriculture and environment of Pitcairn Island associated with new trading agreements with Tahiti, French Polynesia was compiled by Jones, Macleod and Roy (2006) at the Central Science Laboratory, DEFRA, York, U.K. The potential invasive species highlighted in this report which would pose a severe threat to the unique habitats, species and landscapes of Pitcairn Island include; *Miconia calvescens* (Purple plague tree), *Rattus rattus* (ship/black rat), *Achatina fulica* (giant African snail), *Bactrocera dorsalis* (oriental fruit fly) and *Ralstonia solanacearum* (brown rot of potato family crops). The recommendations highlighted the need to source fruit and vegetable from reputable suppliers in Tahiti, the need for produce inspection in Tahiti and Pitcairn, the need for proper incineration facilities on Pitcairn for produce suspected of disease, and ship container insecticide spraying in Tahiti (Jones *et al.* 2006). The environment charter guiding principles GP2 & GP7 have been interpreted to provide two targets within the habitats, species and landscape feature conservation planning section of the PEMP, these are:

Objective 2

To document existing local resource use and ensure its sustainable use and explore other opportunities to utilise local resources sustainably.

Objective 7

Protection and where necessary restoration of key habitats, species and landscape features on the Pitcairn Island Group. Review baseline data on species and habitats and landscape feature and where required and highlight areas where there are data deficiencies. Establish a protected areas policy and implement control and quarantine measures for alien invasive species.

Local & International Legislation

Many of the international treaties, agreements and conventions which deals with habitats, species and landscape conservation issues are widely known. They are listed in Table 9, but some of the most notable within this context are briefly discussed here.

The **Ramsar Convention** deals with sustainable use and conservation of wetlands, primarily (though not exclusively) as waterfowl habitats. It was one of the first modern global intergovernmental treaties on conservation and the wise use of natural resources and it recognised the extreme importance of wetlands as both biodiverse and conservation-worthy habitats. **CITES**, which is also quoted in Pitcairn Regulations (Treadwell 2001) as the “**Washington Convention**”, aims to ensure that international trade in highly sought after species such as orchids etc., does not threaten their survival in the wild. **The Bonn Convention** highlights the protection of habitats of migratory species from disturbances including strict control of the introduction of and control of already introduced exotic species. **WHC**, a Convention concerning the protection of the World Cultural and Natural Heritage, the aim of which is to define and conserve the world’s heritage by drawing up a list of sites whose outstanding values should be preserved for all humanity, Henderson Island is listed as a World Heritage Site.

Two important pieces highly relevant global legislation are not extended or ratified for the Pitcairn Islands but it is recommended that they be extended to the group; **CBD**, the Convention on Biological Diversity which deals with biodiversity and its sustainable usage and conservation for the benefit of all, **SCREP** which deals with the protection of the Natural Resources and Environment of the South Pacific. The Pitcairn Island group is subject to the following international legislation (Table 9).

Table 9 The relevant International Legislation

<i>Convention of Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar).</i>	By Extension 5.1.1976
<i>Protocol to amend the convention on wetlands of International importance 2.2.1971 especially as waterfowl habitat.</i>	By Ratification: 19.4.1984
<i>Amendments to Articles 6 & & of the Convention on Wetlands of International Importance (of 2.2.1971) especially as waterfowl habitat.</i>	By Extension: 27.6.1990
<i>International Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES or Washington Convention).</i>	By Ratification 2.8.1976
<i>Convention on the Conservation of Migratory species of Wild Animals (Bonn Convention or CMS).</i>	By Ratification: 23.7.1985
<i>International Convention relating to the simplification of Customs Formalities.</i>	By Ratification: 28.8.1924
<i>Customs Convention on the Temporary Importation of Scientific Equipment.</i>	By Extension: 4.12.1970
<i>International Convention on the Regulation of Whaling.</i>	Signed 24.9.1931 (not extended to Pitcairn Group)

<i>Bonn Agreement on Convention on Migratory species (CMS). Albatrosses and Petrels: through the agreement on the conservation of Albatrosses and Petrels (ACAP)(19/6/2004).</i>	Signed 9.6.2001 (not extended to Pitcairn Group)
<i>Bonn Agreement Convention on Migratory species (CMS). Marine Turtles through the Indian Ocean Turtle Memorandum of Understanding (IOT MoU).</i>	Signed 23.6.1979 (not extended to Pitcairn Group)
<i>Convention of Biological Diversity (CBD) 1992 Earth Summit Rio de Janeiro.</i>	Signed 5.6.1992 (not extended to Pitcairn Group)
<i>Convention for the Protection of the Natural Resources and Environment for the South Pacific Region (SCREP).</i>	Signed by HMA 16/7/87 Fiji, in respect of The Pitcairn Islands Not ratified
<i>The Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention)</i>	By Ratification: 29.5.1984

Many of the Pitcairn Ordinances are concerned with land related issues, which could indirectly affect the habitats, species and landscape features of Pitcairn Island (Table 10). The threat of alien pest and disease species are addressed in Local Government Regulations (Treadwell 2001).

Table 10 The relevant Pitcairn Ordinances

<i>Apiaries</i>	Part I, II, III, IV
<i>Land Tenure Reform</i>	Part II Land Commission Part III Allocation of Land Part IV Absentee Landowners
<i>Landing and Residence</i>	Section 3. No person to land without a licence or permit Section 4. Licence to land and reside Section 5. Permit to Land Immigration Control Ordinance (Treadwell 2006)
<i>Local Government Regulations</i>	Part IV Animals and Wildlife Part III Plant and Animal Quarantine

Plate 7. *Taeniophyllum fasciola* a leafless orchid growing on Pitcairn Island which photosynthesises through its roots. It is the only species in the Pitcairn Island group listed in Cites Appendix 1.

3.1 Biosecurity

Current situation	<ul style="list-style-type: none"> ▪ Quarantine and Biosecurity Officer appointed for Pitcairn Island. All container grown stock and plants imported to the island are checked. ▪ No dedicated quarantine facility at Bounty Bay where produce arrives onto Pitcairn. ▪ A report by the Central Science Laboratory, DEFRA by D.R Jones, A.R McLeod & S. Roy (2006) outlines six main mitigation measures to protect Pitcairn Island from new invasive species.
Stakeholder views	<ul style="list-style-type: none"> ▪ Need for effective and efficient quarantine and biosecurity systems to avoid introduction of new alien species from French Polynesia.
Issues arising	<ul style="list-style-type: none"> ▪ The serious risk of the spread of aliens from French Polynesia e.g. <i>Miconia calvescens</i> (Melastomaceae), <i>Melinis minutiflora</i> (Poaceae), <i>Acacia farnesiana</i> (Fabaceae) (Jones <i>et al.</i> 2006). Also the risk of non-native invasive established species on Pitcairn Island spreading to the other islands in the group.
Future developments & recommendations	<ul style="list-style-type: none"> ▪ New trade links and tourism through French Polynesia increase the risk of new alien species arriving on Pitcairn. ▪ Implement the six mitigation measures outlined by Jones <i>et al.</i> (2006).
Actions	<p>3.1.1 Organise large-scale discussions between the Quarantine & Biosecurity Officer, FCO, SIDS, DFID, OTEP, DEFRA and other relevant expert bodies to set in place adequate and secure quarantine and biosecurity measures.</p> <p>3.1.2 Build dedicated quarantine and produce checking building on the landing on Pitcairn Island with adequate disposal facilities, and visual information to aid identification of threat species and diseases.</p> <p>3.1.3 Draw up a 'blacklist' of species not allowed on the Pitcairn Islands, using information drawn from watch list of French Polynesian invasive species and other Pacific Islands (Meyer 2000), alien species in New Zealand, the recent DEFRA report (Jones <i>et al.</i> 2006).</p> <p>3.1.4 Draw up protocols for examination and destruction of accidentally introduced species imported with various goods (for example in wood, animal foodstuffs, furniture).</p>

3.2 Habitat Conservation

Current situation	<ul style="list-style-type: none"> ▪ Ducie, Oeno and Pitcairn Island have sites identified for listing under the RAMSAR Convention (Pienkowski 2005). ▪ Oeno undisturbed apart from camping area, though no areas are protected. (Oldfield 1999, Bell & Bell 1998, Pienkowski 2005). ▪ Part of Oeno island recommended as a protected area (Bell & Bell 1998) ▪ Pitcairn has mostly disturbed habitat (with less than < 30% of the island covered in native forest) but scientific work has highlighted that most of the vegetation types and many of the threatened species on Pitcairn would be conserved if three areas were to be set aside as nature reserves (Tautama, High Point & Down Rope) (Kingston & Waldren 2005). ▪ Need for new reserve areas to include areas of cultural importance Tautama, Down Rope, Christian's Cave and Henderson's Caves. ▪ Pitcairn has a serious goat problem and coastal areas already prone to erosion are being further threatened by goats grazing and damaging the already depleted native vegetation (Noeleen Smyth <i>pers. obs.</i> 2005). ▪ No marine protected areas listed for any of the island group ▪ Roseapple Project trial plots investigating habitat restoration using native species throughout the island (Waldren <i>et al.</i> 2005; Smyth & Waldren 2006 a & b, Smyth 2008).
Stakeholder views	<ul style="list-style-type: none"> ▪ A good GIS map and database is needed to collate all the scientific information collected to date on the Pitcairn Group. ▪ Need to protect areas prone to soil erosion with native plant planting

	<ul style="list-style-type: none"> ▪ New land ordinances will make provision for nature and culture reserves ▪ Planting native flora will preserve the uniqueness of Pitcairn Island ▪ Areas prone to erosion need planting with native plant species (e.g. St. Paul's). ▪ The goat problem needs to be dealt with if there is to be any success with habitat restoration on Pitcairn Island. ▪ Continued local employment through sustainable conservation activities on Pitcairn Island
Issues arising	<ul style="list-style-type: none"> ▪ Marine survey to identify areas for protection (Oldfield 1999). ▪ The continued need to (Bell & Bell 1998) monitor rat populations on all islands. ▪ Need for goat control on Pitcairn Island. ▪ Need for a permanent funding for the nursery facility and ongoing funding to support the propagation of native plant species. ▪ Need for continued funding to restore eroded habitats on Pitcairn Island. ▪ Need for the recommended results of the OTEP funded trial treatments of <i>S. jambos</i> (Roseapple project) to be acted upon and the guidelines used to continue and expand the eradication of roseapple on the island.
Future developments & recommendations	<ul style="list-style-type: none"> ▪ Increased visitor numbers and increased shipping links with French Polynesia increase the risk of alien and invasive species threatening protected areas. ▪ Goat problem if not dealt with on Pitcairn will cause further coastal erosion and damage remnant stands of remaining native vegetation. ▪ Increased fishing for industry & recreation in Pitcairn Waters ▪ Development of an eco-volunteer programme to support the propagation of native plant species for habitat restoration schemes
Action & implementing body	<p>3.2.1 Define areas as nature reserves for Pitcairn and develop management plans for these.</p> <p>3.2.2 Develop habitat restoration schemes on Pitcairn, including areas prone to erosion and those invaded by alien plant species.</p> <p>3.2.3 Ensure the sites in the Pitcairn Islands that have been recommended as Ramsar sites are designated.</p> <p>3.2.4 Implement Local Government Regulations Part IV A: 1-4 Animals and Wildlife Ordinance with regard to controlling goats.</p>

3.3 Species Conservation

Current situation	<ul style="list-style-type: none"> ▪ Systematic lists have been produced for vascular plants, vertebrates & invertebrates for Henderson Island (Brooke <i>et al.</i> 2004). ▪ A list of plant species (including introduced & ornamental) on all the islands including their local names and uses has been published by Göthesson 1997. ▪ Local Government Regulations 1971 (Part IV) cover animals and wildlife and lists concerns with species protection. The legislation prohibits killing or taking eggs of wild birds and controls the extent to which certain prescribed species may be exploited. The regulations were amended in 1982 with three whales, three seabirds and two turtles added to the list. The regulations were extended to protect migratory species (Treadwell 2001). ▪ Species restoration plans for <i>Abutilon pitcairnense</i>, <i>Myrsine</i> aff. <i>niauensis</i> & <i>Coprosma benefica</i> on Pitcairn Island. ▪ No programmes in place for threatened species on other islands ▪ Habitat recovery replacing <i>S. jambos</i> with native species will provide more habitats for the native vertebrates and invertebrates on Pitcairn Island.
Stakeholder views	<ul style="list-style-type: none"> ▪ Extension of IUCN categories to all native and endemic biota especially vertebrates, invertebrates and vascular plants for all islands in the group. ▪ A need to maintain viable native plant populations by further developing species action plans & planting native plant species on Pitcairn. ▪ Propagation and protection of threatened rare endemic plants in the island nursery. ▪ Need to develop viable populations of native plant species to preserve the uniqueness of the Pitcairn Island flora.
Issues arising	<ul style="list-style-type: none"> ▪ Main threats to plant species on Pitcairn Island are habitat clearance, erosion, spread of invasive species, small population sizes or restricted distribution, lack of a frugivorous bird species and exploitation (Kingston & Waldren 2005). ▪ Roseapple (<i>Syzygium jambos</i>) is currently posing a threat to biodiversity and soil

	<p>erosion on Pitcairn Island (Brooke 2006, Kingston & Waldren 2005, Preece 1995a).</p> <ul style="list-style-type: none"> ▪ Long term plans for continuing <i>Syzygium jambos</i> control, ensuring the “Roseapple Project” (Waldren <i>et al.</i> 2005, Smyth & Waldren 2006 a & b, Smyth 2008) receives funding with volunteers and local staff employed. (OTEP Project bid). ▪ Further scientific work on assigning species IUCN Categories, Species action plans (Scientific project). ▪ Permanent funding for the nursery to continue growing seed and cuttings of native plant species (Smyth 2008).
Future developments & recommendations	<ul style="list-style-type: none"> ▪ Development of eco-volunteer programme to work on alien invasive species. ▪ Developments of eco-tourism to allow visitors to experience the unique biodiversity of the island group. ▪ Development of volunteer programme to work with islanders on implementing species restoration plans. ▪ Expanding species restoration and recovery programmes to include threatened plant species on Henderson (<i>Myrsine hosakae</i> & <i>Santalum insulare</i> var. <i>hendersonensis</i>) and Oeno (<i>Bidens hendersonensis</i> var. <i>oenoensis</i>) and place these species in ex-situ conservation sites on Pitcairn Island. ▪ Further expanding species restoration programme to include all species listed as threatened on the Pitcairn Islands (Waldren <i>et al.</i> 1995 a) ▪ Assessment of endemic land snail populations on Pitcairn Island. ▪ Continued assessment and population counts of endemic avian fauna.
Actions	<p>3.3.1 Develop and implement existing species action plans and draw up new action plans for threatened native species. PEG.</p> <p>3.3.2 Secure ongoing funding for further development of the island nursery for species recovery and habitat restoration work.</p>

Plate 8. The endemic and extremely threatened *Abutilon pitcairnense*, found only on Pitcairn Island. This species was considered extinct for many years, and was refound as recently as 2003 by islander Carol Warren.

3.4 Invasive species

<p>Current situation</p>	<ul style="list-style-type: none"> ▪ Threats to the native biodiversity are mainly due to widespread alien species on Pitcairn (Kingston & Waldren 2005). ▪ There are some protection measures in place within the Pitcairn ordinances in Part III of Local Government Regulations. These regulations outline the duties of the quarantine officer whose duty it is to ensure that plants are not imported from any place within the tropics, to certify legally imported plants are pest and disease free and the sole port of landing is at Bounty Bay on Pitcairn Island (Treadwell 2001). ▪ The “Roseapple project” (Waldren <i>et al</i> 2005, Smyth & Waldren 2006 a & b, Smyth 2008) has set up experimental plots in invaded <i>S. jambos</i> forest and chemically treated <i>S. jambos</i> and replaced <i>S. jambos</i> with native and economic plant species ▪ Pacific rat (<i>Rattus exulans</i>) eradication was attempted on Pitcairn, Oeno and Ducie in 1997, although many of the recommendations of Bell & Bell (1998) were not followed up. The islands were visited in 2003 by Dr. M. de L Brooke who found Oeno to be rat free. ▪ A project bid for rat control on the Pitcairn Island group was granted by the Darwin Initiative (Geoff Hilton 2007 <i>pers. comm.</i>). Fieldwork will begin in 2009. ▪ Large increase in the number of goats on Pitcairn Island in 2005 (Noeleen Smyth <i>pers. obs.</i>) ▪ Mediterranean fruit flies (<i>Ceratitis capitata</i>) are a problem especially on <i>Citrus sp.</i> on Pitcairn Island. Pheromone traps are issued annually by the Conservation Officer these traps emit a female fruit fly pheromone which attracts the male fruit flies where they are then trapped. This helps reduce the number of male fruit flies in the population available for breeding and in turn it is hoped reducing the overall population of fruit flies on the island.
<p>Stakeholder views</p>	<ul style="list-style-type: none"> ▪ Need to deal with all alien species causing environmental damage Mediterranean fruit fly (<i>Ceratitis capitata</i>), Grab-a-leg/bindy (<i>Cenchrus echinatus</i>), Rat (<i>Rattus exulans</i>), Mosquitoes (<i>Anopheles sp.</i>), Roseapple (<i>Syzygium jambos</i>), Lantana (<i>Lantana camara</i>) & Guava (<i>Psidium guajava</i>). ▪ Goats are problem on Pitcairn will cause further coastal erosion and damage remnant stands of remaining native vegetation if not dealt with. ▪ Many projects are started (e.g. rat eradication, fruit fly eradication & roseapple control), but when funding runs out the projects end. Short term payments or projects are not enough to deal with the invasive or damaging alien species and there is a need for long term project funding to tackle these problems. ▪ Continued monitoring of rat populations on all islands
<p>Issues arising</p>	<ul style="list-style-type: none"> ▪ Alien invasive species are already damaging Pitcairn’s environment ▪ The need for long term funding to allow for completion of effort and success in controlling and eradicating alien species
<p>Future developments & recommendations</p>	<ul style="list-style-type: none"> ▪ New tourism developments increase the risk of spreading invasive alien species throughout the Pitcairn Island Group
<p>Actions</p>	<p>3.4.1 Draw up and implement plans to effectively control goats on Pitcairn, and enforce Local Government Regulations Part IV A: 1-4, Animals and Wildlife: Control of Domestic Animals.</p> <p>3.4.2 Enhance existing efforts to control and eradicate non-native invasive species in the Pitcairn Islands</p> <p>3.4.3 Develop and implement specific management plans for other non-native invasive species currently affecting the Pitcairn Island Group.</p> <p>3.4.4 Promptly destroy founding naturalised populations of non-native species to prevent spread into the surrounding areas.</p> <p>3.4.5 Put control measures in place to prevent introductions from Pitcairn to Henderson, Oeno or Ducie.</p> <p>3.4.6 Distribute information video to cruise ship companies to make visitors aware of the dangers of introduced species to the Pitcairn Island group.</p>

Plate 9. The infamous invasive species Roseapple (*Syzygium jambos*), introduced to Pitcairn Island as a source of fuel-wood, and is now considered one of the main threats to biodiversity on Pitcairn Island.

3.5 Inventory and Monitoring

Current situation	<ul style="list-style-type: none"> ▪ The Pitcairn Island Group holds 24 endemic plants, 170 endemic terrestrial invertebrates and 4 endemic birds (Oldfield 1999). ▪ IUCN Threat Categories (IUCN 2000) have been assigned to all native plant species on Pitcairn (Kingston & Waldren 2005) and Henderson (Waldren <i>et al.</i>1995b). [The IUCN Red List Categories and Criteria are intended to be an easily and widely understood system for classifying species at high risk of global extinction http://www.iucnredlist.org/info/categories_criteria2001]. ▪ Currently Kingston & Waldren (2005) categorise 60% of the flora of Pitcairn Island as threatened and 20% as globally threatened (Kingston & Waldren 2005). ▪ Monitoring of endemic plant populations on Pitcairn Island was carried out during fieldwork in 2003, 2004 and 2005 by Smyth. N.
Stakeholder views	<ul style="list-style-type: none"> ▪ There is a need for long term funding to support monitoring and further inventory work especially in the marine habitat into the future
Issues arising	<ul style="list-style-type: none"> ▪ There is a need to develop and train local people in monitoring important species groups on the island and funding to support ongoing monitoring into the future.
Future developments & recommendations	<ul style="list-style-type: none"> ▪ New development at Bounty Bay and the landing will alter the marine habitat of the area with little baseline data to identify the risks of such developments. ▪ A strategic programme of monitoring and reporting based on locally trained people is important to protect the existing biodiversity of the islands into the future.
Action & implementing body	<p>3.5.1 Devise and implement locally-based monitoring programme for important species groups (birds, marine mammals, etc), and species of global conservation importance.</p> <p>3.5.2 Devise and implement a monitoring plan for invasive species, particularly those which are the subject of existing control measures.</p> <p>3.5.3 Compile an inventory of scientific information using a suitable database and GIS, and link with development/planning databases.</p> <p>3.5.4 Where developments are planned in the marine environment around Pitcairn Island, ensure adequate baseline data on marine biodiversity and ecosystems are available to support environmental impact assessments.</p>

4. Supporting Measures

4.1 Introduction

It is clear that the implementation of an ambitious plan to protect the environment in a remote oceanic island will falter unless adequate supporting measures are provided. Direct funding to implement the actions described is one form of support that will obviously be required, but in this section we consider additional actions that will facilitate the implementation of the Environmental Management Plan. These actions involve two approaches: firstly, increasing public participation and awareness through environmental education, and secondly, through provision of robust local environmental legislation to ensure that people of Pitcairn can live sustainably on their unique island in the future.

Local people have a good intrinsic knowledge of their environment. For example, during field work in 1997 many of the local community were able to show S. Waldren and N. Kingston populations of locally rare plants, and many were aware of changes to the local environment following colonisation by certain plant species. Increasing and building on their knowledge base with training in the areas of Environment Impact Assessment, ecotourism and as project leaders in habitat management and restoration schemes are of paramount importance. Environmental awareness and education is a key area if the island group is to develop sustainably. In addition, the islanders need to educate visitors to the islands on various environmental issues, in order to maintain and improve the environment of the Pitcairn Islands. Development of new skills in conjunction with their existing skills will provide a livelihood for the Pitcairn Islanders and ensure both a sustainable environment and sustainable development, both of which are a rich resource for future generations.

Increasing environmental awareness through community-based projects is an important means of securing local participation in environmental issues. For example, the OTEP-funded Roseapple control project involved a large section of the local community in an environmental project, and projects of this sort are likely to be important in promoting local understanding of environmental issues. In a similar way, incorporation of locally-based environmental issues into the school curriculum could have many local benefits.

An ultimate goal should be to build local capacity such that environmental projects can be developed and undertaken using local knowledge. To this end, providing local paid positions dedicated to environmental issues would provide a significant and cost-effective measure. Some specialist outside help will be required for particular issues, and this could be both facilitated and formalised by forming advisory groups to help foster sustainable development in the island group.

The formation of a Pitcairn Environment Group is desirable, whose duties will include the implementation of this management plan and other aspects such as developing environmental projects, obtaining finance for environmental projects, aiding development projects, seeking environmental expertise from relevant bodies and environmental education. Representation on this group should include both the local and international stakeholder interests and it is suggested to include members from UKOTCF and some

funding and development bodies. The formation of this committee will also aid compliance with the guiding principles of the Pitcairn Environment Charter, articles of international legislation, local legislation and ensure that key articles of international legislation are complied with to ensure that ratification and extension of useful legislation can be applied to the Pitcairn Islands.

In addition to stimulating local ownership and participation in environmental protection, there will clearly be a need for various local environmental regulations to be developed and enforced. Development of local legislation and new or modified ordinances is clearly a matter for the local people of Pitcairn. We hope that the need to secure environmental protection to secure a safe and sustainable future for the forthcoming generations of Pitcairn islanders should be reason enough to carefully examine the Pitcairn Law Book and determine where improvements might be made.

We believe that the dual approach of improving local understanding and participation in environmental issues, together with the provision of robust and locally relevant legislation provides a sound basis for good environmental governance.

The implementation of this environment management plan for the island group is of paramount importance and the completion of proposed measures will depend on a dedicated working group. Several guiding principles have been adopted from the Environmental Charter to provide three objectives that are relevant to supporting the implementation of the management plan.

Objective 1 Organise a committee of members from the Island government departments, environment and heritage organisations, governor's office, environmental researchers and community representatives whose aims are to further develop environmental projects and obtain funding to implement the guiding principles of the charter using the Pitcairn Islands Environment Management Plan.

Objective 6 Effectively implement obligations under the Multilateral Environment Agreements already existing for the Pitcairn Islands and extend all other relevant environmental agreements.

Objective 10 Develop and encourage teaching in school and extra-mural courses to promote the value of the Pitcairn Islands and explain their unique role within the regional and global environment. Promote publications that spread awareness of the special features of the Pitcairn Islands, and promote awareness of charter itself and the Pitcairn Islands Environment Management Plan.

Local Legislation & International Treaties and Agreements

Most international treaties and conventions do not include aspects of environmental awareness and environmental education. However, the majority mention the need for sustainable development (**CBD & Agenda 21**), the well-being of human communities (**Ramsar**), the fair and equitable sharing of benefits and public awareness (**CBD**), and the World Heritage Convention (**WHC**) has as one of its aims “*preserving sites for all humanity and ensuring their protection through close co-operation*”. These aims all have their roots in awareness and education.

Local Pitcairn Ordinances, like many local laws throughout the world, do not single out environmental awareness. However, respect for education is outlined in the Local Government Regulations Part V, which

exempts “any person in fulltime attendance as a student at the public school or undertaking fulltime study by correspondence” from Public Work (Treadwell 2001).

Table 15 The Relevant Multilateral Agreements

<i>Convention for the protection of the Natural Resources and Environment of the South Pacific Region (SCREP)</i>	Signed by HMG (16/7/87) Suva, Fiji, in respect of Pitcairn, Henderson, Ducie and Oeno Islands (Ratification has not taken place)
<i>Convention of Biological Diversity (CBD) 1992 Earth Summit Rio de Janeiro</i>	Not signed or ratified
<i>Aarhus Convention on Access to information, public participation in decision-making and access to Justice in Environmental Matters (AARHUS) (25/6/1988)</i>	Not signed or ratified
<i>Convention on Migratory Species (CMS). Albatrosses and Petrels: through the agreement on the conservation of Albatrosses and Petrels (ACAP)(19/6/2004)</i>	Not signed or ratified
<i>Convention on Migratory species (CMS). Marine Turtles through the Indian Ocean Turtle Memorandum of Understanding (IOT MoU)</i>	Not signed or ratified

4.1 Environmental Education

Current situation	<ul style="list-style-type: none"> ▪ Environmental issues are not on the school curriculum ▪ No local environment awareness campaign
Stakeholder views	<ul style="list-style-type: none"> ▪ Limited environmental tuition in school ▪ The precious and unique environment of the Pitcairn Island group is the biggest asset the Pitcairn population has. ▪ Support needed to develop a good environmental awareness and education programme (environmental awareness programmes are becoming standard throughout Europe, New Zealand and French Polynesia). ▪ Need to contact island teacher in order to develop an environmental programme
Issues arising	<ul style="list-style-type: none"> ▪ Need for environmental awareness and education programmes on Pitcairn
Future developments & recommendations	<ul style="list-style-type: none"> ▪ The people of Pitcairn are the custodians of the environment on the islands, and without interest in and awareness of current global environmental issues no benefits will occur. ▪ Inventory of heritage sites which may potentially qualify for protection e.g. Down Rope, Tautama.
Actions	<p>4.1.1 Source and provide appropriate training for islanders interested in working with, leading or managing environmental projects, including relevant correspondence courses.</p> <p>4.1.2 Educate the island community on waste, promoting “reduce, reuse and recycle”.</p> <p>4.1.3 Increase public awareness of environmental issues by producing information on how individuals can make a difference to the global environment. Ensure that this information can be accessible to all locals, including school children.</p> <p>4.1.4 Incorporate environmental awareness into the school curriculum.</p> <p>4.1.5 Develop local capacity to work on species restoration and train islanders to lead these species restoration programmes.</p> <p>4.1.6 Encourage local people with knowledge of traditional crafts to share knowledge with other locals and tourists.</p>

Plate 10. The Pitcairn islanders who participated and developed, the building of island nursery and the invasive species control project “The Roseapple project”, which was funded by OTEP from 2003-2006. The island Conservation Officer Mr. Jay Warren received Darwin Initiative funding to develop horticultural skills at the Royal Botanic Gardens, Kew in London. He and the Roseapple project manager, Mrs. Carol Warren, are pictured in Hawaiian shirts.

4.2 Introduction to Legislation and implementation

The implementation of this environment management plan for the island group is of paramount importance and the completion of proposed measures will depend on a dedicated working group. Objective 1 and Objective 6 outline the relevant charter aspirations and guiding principles which are required to satisfy the aspirations set out in this document.

Objective 1

To organise a committee of members from Island government departments, environment and heritage organisations, Governor’s office, environmental researchers and community representatives whose aims are to further develop environmental projects and obtain funding to implement the guiding principles of the charter using the Pitcairn Environmental Management Plan.

Objective 6

Implement effectively obligations under the Multilateral Environment Agreements (MEAs) already existing for Pitcairn and extension of other relevant agreements.

The formation of a Pitcairn Environment Group whose duties will include the implementation of this management plan and other aspects such as developing environmental projects, obtaining finance for environmental projects, aiding development projects, seeking environmental expertise from relevant bodies and environmental education. Representation on this group should include both the local and international stakeholder interests and it is suggested to include members from UKOTCF, the newly formed SOWG and some funding and development bodies. The formation of this committee will also aid compliance with the guiding principles of the Pitcairn Environment Charter, articles of international legislation, local legislation and ensure that key articles of international legislation are complied with to ensure that ratification and extension of useful legislation can be applied to the Pitcairn Islands.

Local & International Commitments

Table 15 lists relevant international multilateral agreements not extended to the Pitcairn group which would be of benefit to protecting the Pitcairn Islands Environment.

Table 15 The Relevant Multilateral Agreements

<i>Convention for the protection of the Natural Resources and Environment of the South Pacific Region (SCREP)</i>	Signed by HMG (16/7/87) Suva, Fiji, in respect of Pitcairn, Henderson, Ducie and Oeno Islands (Ratification has not taken place)
<i>Convention of Biological Diversity (CBD) 1992 Earth Summit Rio de Janeiro</i>	Not signed or ratified
<i>Aarhus Convention on Access to information, public participation in decision-making and access to Justice in Environmental Matters (AARHUS) (25/6/1988)</i>	Not signed or ratified
<i>Convention on Migratory Species (CMS). Albatrosses and Petrels: through the agreement on the conservation of Albatrosses and Petrels (ACAP)(19/6/2004)</i>	Not signed or ratified
<i>Convention on Migratory species (CMS). Marine Turtles through the Indian Ocean Turtle Memorandum of Understanding (IOT MoU)</i>	Not signed or ratified

4.2 Legislation and Implementation

Current situation	<ul style="list-style-type: none"> ▪ The environment and species of the Pitcairn Island Group are currently somewhat protected both by Pitcairn ordinances and internationally ratified legislation. ▪ There are lists of important MEAs (p.13) yet to be extended to the Pitcairn group. ▪ The Henderson Island Management Committee developed targets on environmental issues on Henderson (Brooke <i>et al.</i> 2004). ▪ Pitcairn has a global responsibility to protect its indigenous flora: 20% is considered globally threatened (Kingston & Waldren 2005) ▪ The Island Council, the land Council, the Pitcairn Island Office, the Governor’s Office, the Pitcairn Working Group and the newly formed
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	<p>Southern Oceans Working Group currently all play key roles in the environment and development of the Pitcairn Islands.</p> <ul style="list-style-type: none"> ▪ The aims of all these groups overlap and there is a need for the proposed over-arching environment group whose main priority is ensure that the environment of Pitcairn Islands is protected and developed in a sustainable fashion into the future to the benefit of all.
Stakeholder views	<ul style="list-style-type: none"> ▪ Resources, both human and financial, need to be in place to ensure the Environmental Management Plan for the Pitcairn Island group is taken forward. It needs to be a working plan.
Issues arising	<ul style="list-style-type: none"> ▪ Need for the Pitcairn Island group to ratify the UK signed International declarations listed in Table 15. ▪ The need for core funding in support of environment initiatives on the Pitcairn Island Group.
Future developments & recommendations	<ul style="list-style-type: none"> ▪ Increased tourism and shipping ▪ Eco-tourism needs environmentally aware islanders if it is set to develop and succeed. ▪ Need to form a committee to include all the islands in the Pitcairn Group. ▪ The need for core funding in support of environment initiatives on the Pitcairn Island Group.
Actions	<p>4.2.1 Designate Natural and Cultural Reserves on Pitcairn by Ordinance.</p> <p>4.2.2 Where relevant, make new Ordinances for the Pitcairn Law Book to enhance the environment of the Pitcairn Islands and promote the implementation of actions contained in the PEMP.</p> <p>4.2.3 Amend the animal and wildlife sections of local government ordinances to afford protection for endemic species, and for threatened non-endemic but native species.</p> <p>4.2.4 Produce a system of fines or penalties for breach of new environmental regulations.</p> <p>4.2.5 Investigate the ratification of and compliance with relevant MEAs.</p> <p>4.2.6 Establish a Pitcairn Islands Environmental Group (PEG).</p> <p>4.2.7 Create a government-funded position of 'Environmental Officer', with main responsibilities to oversee environmental projects and to liaise closely with the Conservation and Biosecurity Officers, and appoint a suitable individual to the post.</p> <p>4.2.8 Secure ongoing funding specifically targeted at control and eradication of invasive non-native species.</p> <p>4.2.9 Develop capacity to undertake environmental projects locally, including use of volunteers and outside expertise as appropriate.</p> <p>4.2.10 Set in train a process to periodically review implementation of PEMP, including periodic revision of PEMP.</p>

Section C:

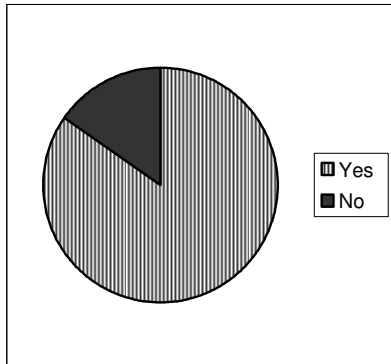
Stakeholder Consultation

Stakeholder Response to Questionnaire & Survey

A total of 58 stakeholders from the various groups (**Islanders, Governor's Office, Pitcairn Islands Administration, Engineers, Environmental NGOs, and Researchers**) was issued with questionnaires by email in 2005. Of the 58 initial contacts we received responses from 13 stakeholders and stakeholder groups (response percentage of population surveyed: 22.4%) representing all of the above groups contacted.

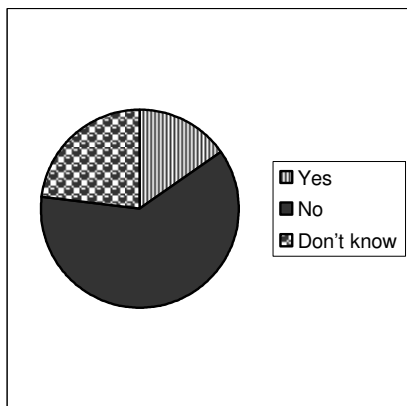
The strongest view held by the majority of stakeholders (84.6%) (cumulative of all groups contacted) was that waste disposal is currently inadequate and is causing a pollution problem on Pitcairn Island and some of the other islands in the group (especially Oeno) and that this issue should be addressed. All the views and comments received from stakeholders who responded are included throughout this report in the chapters in Section B and listed under the category of stakeholder views. The full text of the questionnaire can be found in Annex One (p. 61). The following results were obtained from the statement questions.

1. Are you aware of the Environment Charter for the Pitcairn Islands?



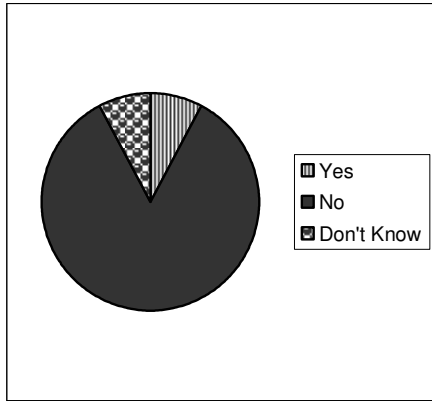
The majority of stakeholders (84.6%) were aware of the existence of the Environment Charter for the Pitcairn Island group.

2. Do you think that natural resources are used wisely in the Pitcairn Islands?



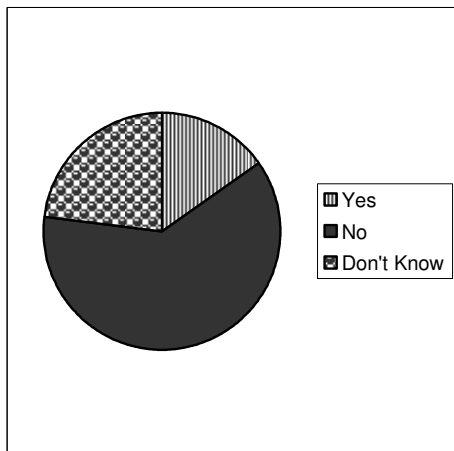
The majority of stakeholders (61.5%) felt that natural resources were not being used wisely in the island group while a substantial percentage (23.1%) did not know whether they are being used wisely or not.

3. Are environmental concerns taken into account sufficiently in decision making?



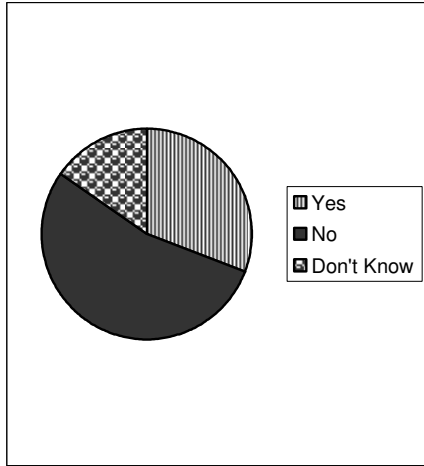
Most stakeholders (84.6%) felt that environmental concerns were not taken sufficiently into account in decision making while similar low numbers (both 7.7%) thought they were or did not know.

4. Are local people and relevant experts consulted sufficiently in decisions which affect the environment?



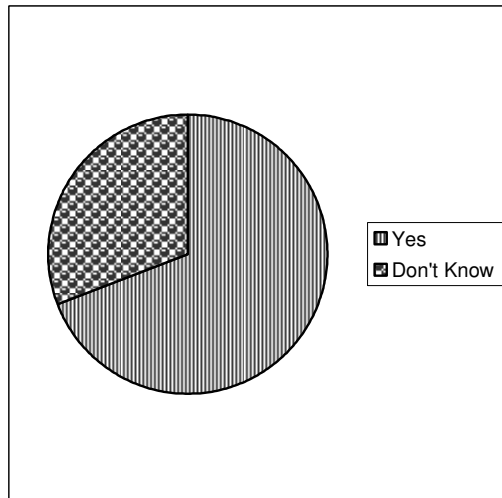
The majority of stakeholders (61.5%) felt that not enough consultation was being carried out with regard to decisions that could affect the environment while others (15.4%) felt there was enough consultation and the rest (23.1%) did not know whether any consultation occurred or not.

5. Are Environmental Impact Assessments used in development planning?



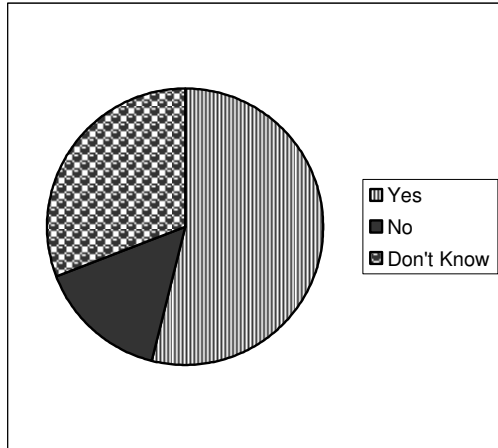
Environmental Impact Assessment is an important component in ensuring development occurs in tandem with adequate environmental protection. Stakeholders (53.8%) felt that impact assessments are not used in development planning, some (30.7%) thought they were being used and 15.1% did not know.

6. Have previous developments on Pitcairn had a negative impact on the Environment?



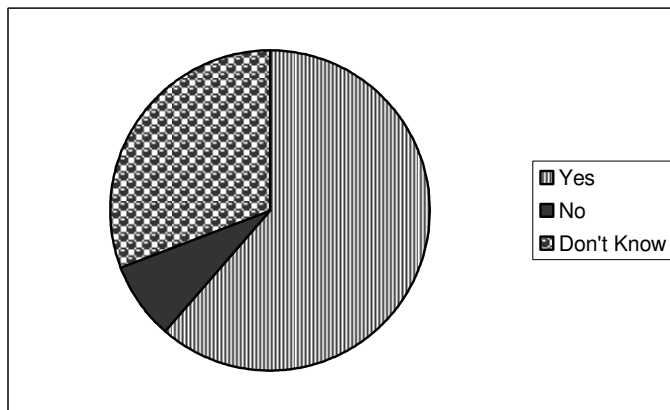
With regard to previous developments on Pitcairn Island, the majority of stakeholders (69.2%) felt a negative impact was imposed on the environment while some (30.8%) did not know whether any impacts had occurred or not. Significantly no one considered that previous developments had no impact.

7. Will future developments have the potential to result in environmental degradation under current planning and policy regulations?



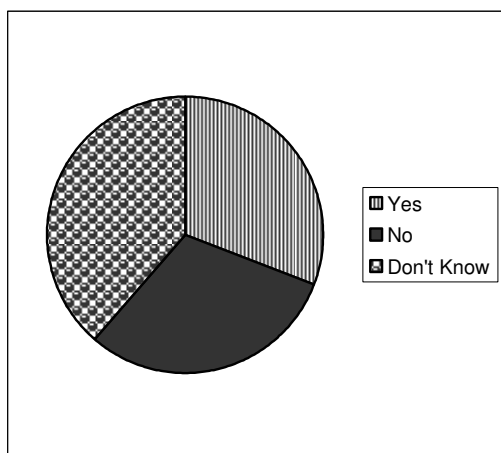
With regard to future developments on the islands, stakeholders (53.8%) felt that current planning and policy regulations would not be enough to protect the environment from degradation. Many (30.7%) did not know whether future developments would affect the environment and some (15.4%) thought that they would not.

8. Does Pitcairn have pollution problems?



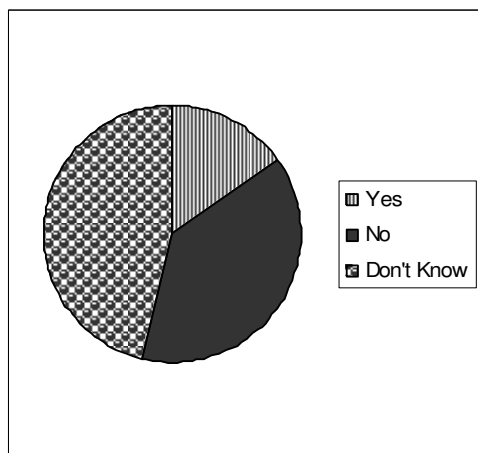
The majority (61.5%) of stakeholders felt that Pitcairn Island has already suffered from the effects of pollutants in the environment. A percentage (30.8%) did not know whether pollutants had affected the environment and only 7.7% felt that there were no effects of pollutants on Pitcairn Island.

9. Do Pitcairn's policies encourage activities that benefit or do not harm the environment?



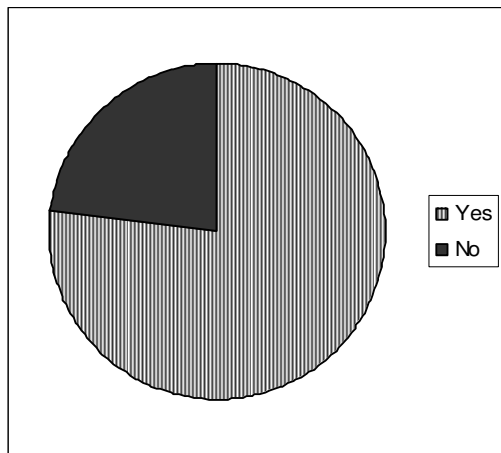
The larger percentage of respondents (38.4%) felt that they did not know enough about Pitcairn environment policies in relation to the environment while an equal amount thought that they did (30.7%) and did not know policies.

10. Are children being taught to understand and value environmental heritage on Pitcairn?



The majority of stakeholders (46.16%) were not aware of one way or the other of environmental teaching on Pitcairn Island, some (38.5%) felt the children did not receive any environmental education and a small percentage (15.4%) replied that they did receive some education with regard to environmental heritage.

11. Is protection of the environment important to us?



The majority of stakeholders felt that protection of the environment was important to them (77.1%). However, a significant though small percentage felt that it was not important to them (23.08%).

Full details of the individual stakeholder's views and comments can be found throughout this document and all these views have been taken into consideration when formulating the action plans for the Pitcairn Island Group. The stakeholder survey form used to compile the data can be found in Annex One.

Section D:

Summary of the Pitcairn Islands Environment Management Plan

Summary of Targets and Actions

1. Environmental Development

Here we summarise the recommended actions to meet Objectives 3, 4, 5, 8 & 9 linked to the Environment charter guiding principles with regard to Environment Development as outlined in section B1 (p.22).

Key to symbols and abbreviations used in the summary tables:

EI = Environmental Impact

- * - will have a small but useful effect on the environment
- ** - will significantly enhance the environment
- *** - will produce a major improvement in the environment

R= Resources needed

- * - can be implemented with minimal additional resources
- ** - will require a moderate amount of resources to implement, both financial and manpower
- *** - will require significant financial, manpower and possibly infrastructural resources to implement

D= Duration

- * - could be applied immediately, given the necessary resources, and would have immediate effects
- ** - requires implementation over a period of time to have the desired effect
- *** - needs an ongoing commitment to have any effect (NB does not include actions which could have immediate effects, but which may require an on-going maintenance)

Code	Area	Topic	Actions	EI	R	D
1.1.1	Environmental Development	Land resources	Resurvey all lands of the Pitcairn Islands showing boundaries of land use classifications for both the public record and as a planning tool (ongoing).	**	**	*
1.1.2	Environmental Development	Land resources	Identify and delineate sites of cultural and natural heritage on Pitcairn Islands, and fully survey cultural sites where appropriate.	***	**	**
1.1.3	Environmental Development	Land resources	Produce digitised land use map and make it available for public consultation. Train a local person in the use of GIS software for updating the land registry on an annual basis.	**	***	***
1.2.1	Environmental Development	Water resources	Commission hydrological survey of Pitcairn Island.	**	***	*
1.2.2	Environmental Development	Water resources	Construct new wells / tanks and make additional back-up water supplies available for homes on Pitcairn Island.	**	**	**
1.3.1	Environmental Development	Infrastructure & planning	Ensure that environmental issues are taken into account in developments in the Pitcairn Islands by conducting full Environmental Impact Assessments (EIAs) and relevant Strategic Environment Assessments (SEAs).	***	***	**
1.3.2	Environmental Development	Infrastructure & planning	Organise training to develop EIA expertise locally and investigate availability of EIA expertise in the region.	**	**	**

Code	Area	Topic	Actions	EI	R	D
1.3.3	Environmental Development	Infrastructure & planning	Organise independent reviews and quality assessments of EIAs.	**	***	*
1.3.4	Environmental Development	Infrastructure & planning	Establish public records centre in new Museum Building, to store planning data locally, to provide information on development and EIAs.	**	***	**
1.3.5	Environmental Development	Infrastructure & planning	Produce Adamstown town plan including marked boundaries for housing & tourism developments, extra well capacity, sewage and waste facilities (ongoing).	**	**	**
1.3.6	Environmental Development	Infrastructure & planning	Draw up further guidelines on residential and tourist housing standards on Pitcairn.	**	**	*
1.3.7	Environmental Development	Infrastructure & planning	Ensure that when visits to islands in the Pitcairn Group require provision of temporary accommodation, the visitors dismantle, remove and if necessary responsibly dispose of this accommodation at the end of the visit.	**	*	*
1.3.8	Environmental Development	Infrastructure & planning	Conduct a Strategic Environment Assessment on the results of the land survey and town plan. Independent consultant.	**	**	*
1.4.1	Environmental Development	Energy Production	Investigate provision of wind, wave and solar power generation, including assessment of the wind and solar power report for St. Helena made in 2003.	**	*	*
1.4.2	Environmental Development	Energy Production	Commission study to investigate use of "green fuels" for transport and domestic heating, including use of rose apple in energy-efficient wood burning stoves.	**	*	*
1.4.3	Environmental Development	Energy Production	Build new fuel storage tanks on island and/or recycle petrol and oil drums.	*	**	*
1.4.4	Environmental Development	Energy Production	Implement recommendations of Grey & Woods (1988) regarding energy saving light bulbs and appliances.	*	*	*
1.5.1	Environmental Development	Waste Disposal	Commission a study on the most efficient way to deal with sewage discharge from homes on Pitcairn Island, including projected increases (immigration, tourism), and develop new standards.	***	**	*
1.5.2	Environmental Development	Waste Disposal	Contact the St. Helena group working on waste disposal and drainage projects for St. Helena and contact DFID regarding report on obtaining safe palatable water.	**	*	*
1.5.3	Environmental Development	Waste Disposal	Organise shipping to remove recyclable and hazardous material from Pitcairn Island on a regular basis.	**	*	*
1.5.4	Environmental Development	Waste Disposal	Establish a landfill facility with lined, covered cells in a more suitable site on Pitcairn, to comply with best international standard	***	**	**

Code	Area	Topic	Actions	EI	R	D
1.5.5	Environmental Development	Waste Disposal	Produce guidelines for the disposal of domestic waste, including that from future tourist accommodation.	**	*	*
1.5.6	Environmental Development	Waste Disposal	Ensure all waste generated by visitors to Henderson, Oeno and Ducie is removed at the end of the visit.	**	*	*
1.5.7	Environmental Development	Waste Disposal	Establish a recycling facility on Pitcairn Island to deal with organic waste and defunct electrical goods.	***	**	**
1.5.8	Environmental Development	Waste Disposal	Commission feasibility study to investigate setting up incineration facilities to best international standard.	**	***	**

2. Summary: Economic Development

The actions to fulfil Objectives 3, 4 & 5 connected to the guiding principles of the Environment Charter for the Pitcairn Island with regard to the Environment and Development and are found in Section B2 (p.30).

Code	Areas	Topic	Actions	EI	R	D
2.1.1	Economic Development	Tourism	Develop promotional materials to support tourism, including brochures and leaflets aimed at different tourist groups (cruise ships, eco-tourists etc.), highlighting the attractions of the Pitcairn Islands.	**	**	*
2.1.2	Economic Development	Tourism	Develop tourism, particularly ecotourism, with new ecotrails, local people trained as guides and project leaders, and supporting guidebooks and leaflets.	**	***	**
2.1.3	Economic Development	Tourism	Draw up environmental codes of conduct for visitors for all islands in the Pitcairn group.	**	*	*
2.2.1	Economic Development	Food Production	Replace reliance on pesticides with integrated pest and disease management strategies, including broadening the genetic base of food crops and appropriate crop rotation	***	**	*
2.2.2	Economic Development	Food Production	Increase diversity of locally produced food to reduce imports, and to supply the tourist trade.	*	*	*
2.2.3	Economic Development	Food Production	Promote the use of the EEZ to licensed operators. Contact New Zealand and French Polynesian Fishing Authorities.	**	**	**
2.2.4	Economic Development	Food Production	Monitor and police the EEZ by putting into practice recommendations of Langley & Adams (2005) for policing of EEZ: seek co-operation from New Zealand for air overflights and French Polynesia for vessel policing.	**	***	**
2.2.5	Economic Development	Food Production	Investigate possibility of niche export markets for high value agricultural products	*	**	**
2.2.6	Economic Development	Food Production	Ensure that harvesting of local fish stocks are sustainably managed.	*	**	**
2.3.1	Economic Development	Curio trade	Ensure that materials gathered from natural sources and used by curio trade are sustainably harvested, and if necessary take measures to ensure security of future stocks	**	*	*
2.3.2	Economic Development	Curio trade	Improve the management of existing plantations on Pitcairn of species used in the curio trade (miro, tou) to ensure quality timber is produced	**	**	*
2.3.3	Economic Development	Curio trade	Promote the sustainable sale of locally produced curios, including use of the internet and suitable retail outlets in New Zealand and elsewhere.	*	**	*

3. Summary: Biodiversity

Listed is a summary of the recommended actions with regard to Biodiversity as outlined in section B3 (p. 35). These actions are proposed to fulfil the aspirations of Objective 2 and Objective 7 which are linked to the guiding principles of the Environment Charter for the Pitcairn Islands.

Code	Areas	Topic	Actions	EI	R	D
3.1.1	Biodiversity	Biosecurity	Organise large-scale discussions between the Quarantine & Biosecurity Officer, FCO, SIDS, DFID, OTEP, DEFRA and other relevant expert bodies to set in place adequate and secure quarantine and biosecurity measures.	**	**	**
3.1.2	Biodiversity	Biosecurity	Build dedicated quarantine and produce checking building on the landing on Pitcairn Island with adequate disposal facilities, and visual information to aid identification of threat species and diseases.	***	***	**
3.1.3	Biodiversity	Biosecurity	Draw up a 'blacklist' of species not allowed on the Pitcairn Islands, using information drawn from watch list of French Polynesian invasive species and other Pacific Islands (Meyer 2000), alien species in New Zealand, the recent DEFRA report (Jones <i>et al.</i> 2006).	***	*	*
3.1.4	Biodiversity	Biosecurity	Draw up protocols for examination and destruction of accidentally introduced species imported with various goods (for example in wood, animal foodstuffs, furniture).	***	*	*
3.2.1	Biodiversity	Habitat Conservation	Define areas as nature reserves for Pitcairn and develop management plans for these.	***	*	*
3.2.2	Biodiversity	Habitat Conservation	Develop habitat restoration schemes on Pitcairn, including areas prone to erosion and those invaded by alien plant species.	***	**	**

Code	Areas	Topic	Actions	EI	R	D
3.2.3	Biodiversity	Habitat Conservation	Ensure the sites in the Pitcairn Islands that have been recommended as Ramsar sites are designated.	**	*	*
3.2.4	Biodiversity	Habitat Conservation	Draw up and implement plans to effectively control goats on Pitcairn, and enforce Local Government Regulations Part IV. (see also 3.4.1 same action recommended for dealing with goats as an invasive species)	***	***	**
3.3.1	Biodiversity	Species conservation	Develop and implement existing species action plans and draw up new action plans for threatened native species.	***	**	**
3.3.2	Biodiversity	Species conservation	Secure ongoing funding for further development of the island nursery for species recovery and habitat restoration work.	***	**	**
3.4.1	Biodiversity	Invasive species	Draw up and implement plans to effectively control goats on Pitcairn, and enforce Local Government Regulations Part IV – Animals and Wildlife: Control of Domestic Animals - Parts 2 & 4	***	***	**
3.4.2	Biodiversity	Invasive species	Enhance existing efforts to control and eradicate non-native invasive species in the Pitcairn Islands	***	**	**
3.4.3	Biodiversity	Invasive species	Develop and implement specific management plans for other non-native invasive species currently affecting the Pitcairn Island Group.	***	***	**
3.4.4	Biodiversity	Invasive species	Promptly destroy founding naturalised populations of non-native species to prevent spread into the surrounding areas.	***	*	*
3.4.5	Biodiversity	Invasive species	Put control measures in place to prevent introductions from Pitcairn to Henderson, Oeno or Ducie.	***	*	*
3.4.6	Biodiversity	Invasive species	Distribute information video for visitors to the island to cruise ship companies to make visitors aware of the dangers of introduced species to the Pitcairn Island Group.	**	**	**
3.5.1	Biodiversity	Inventory and monitoring	Devise and implement locally-based monitoring programme for important species groups (birds, marine mammals, etc), and species of global conservation importance.	***	**	***
3.5.2	Biodiversity	Inventory and monitoring	Devise and implement a monitoring plan for invasive species, particularly those which are the subject of existing control measures.	***	**	***
3.5.3	Biodiversity	Inventory and monitoring	Compile an inventory of scientific information using a suitable database and GIS, and link with development/planning databases.	**	**	**
3.5.4	Biodiversity	Inventory and monitoring	Where developments are planned in the marine environment around Pitcairn Island, ensure adequate baseline data on marine biodiversity and ecosystems are available to support environmental impact assessments.	*	**	*

4. Summary: Supporting Measures

The actions to develop the aspirations of Objective 10, 1 & 6 are summarised here and the main discussion with regard to Environmental education, legislation & implementation can be found in Section B:4 (p.46) of this document.

Code	Areas	Topic	Actions	EI	R	D
4.1.1	Supporting Measures	Environmental Education	Source and provide appropriate training for islanders interested in working with, leading or managing environmental projects, including relevant correspondence courses.	**	**	**
4.1.2	Supporting Measures	Environmental Education	Educate the island community on waste, promoting “reduce, reuse and recycle”.	***	*	*
4.1.3	Supporting Measures	Environmental Education	Increase public awareness of environmental issues by producing information on how individuals can make a difference to the global environment. Ensure that this information can be accessible to all locals, including school children.	***	**	*
4.1.4	Supporting Measures	Environmental Education	Incorporate environmental awareness into the school curriculum.	***	*	*
4.1.5	Supporting Measures	Environmental Education	Develop local capacity to work on species restoration and train islanders to lead these species restoration programmes.	**	**	**
4.1.6	Supporting Measures	Environmental Education	Encourage local people with knowledge of traditional crafts to share knowledge with other locals and tourists.	*	*	*
4.2.1	Supporting Measures	Legislation	Designate Natural and Cultural Reserves on Pitcairn by Ordinance.	***	*	*
4.2.2	Supporting Measures	Legislation	Where relevant, make new Ordinances for the Pitcairn Law Book to enhance the environment of the Pitcairn Islands and promote the implementation of actions contained in the PEMP.	***	*	*
4.2.3	Supporting Measures	Legislation	Amend the animal and wildlife sections of local government ordinances to afford protection for endemic species, and for threatened non-endemic but native species.	***	*	*

Code	Areas	Topic	Actions	EI	R	D
4.2.4	Supporting Measures	Legislation	Produce a system of fines or penalties for breach of new environmental regulations.	***	*	*
4.2.5	Supporting Measures	Legislation	Investigate the ratification of and compliance with relevant MEAs.	**	**	**
4.2.6	Supporting Measures	Implementation	Establish a Pitcairn Islands Environmental Group (PEG).	*	**	**
4.2.7	Supporting Measures	Implementation	Create a government-funded position of 'Environmental Officer', with main responsibilities to oversee environmental projects and to liaise closely with the Conservation and Biosecurity Officers, and appoint a suitable individual to the post.	**	**	**
4.2.8	Supporting Measures	Implementation	Secure ongoing funding specifically targeted at control and eradication of invasive non-native species.	**	**	**
4.2.9	Supporting Measures	Implementation	Develop capacity to undertake environmental projects locally, including use of volunteers and outside expertise as appropriate.	**	**	**
4.2.10	Supporting Measures	Implementation	Set in train a process to periodically review implementation of PEMP, including periodic revision of PEMP.	**	**	**

Annex One Stakeholder Questionnaire Survey Form

1. Are you aware of the Environment Charter for the Pitcairn Islands?

Yes	No

2. Do you think that natural resources are used wisely on the Pitcairn Islands?

Yes	No	Comments

3. Are environmental concerns taken into account sufficiently in decision making?

Yes	No	Comments

4. Are local people and relevant experts consulted sufficiently in decisions, which affect the environment?

Yes	No	Comments

5. Are Environmental Impact Assessments used in development planning?

Yes	No	Comments

6. Have previous developments on the Pitcairn Islands had a negative impact on the Environment?

Yes	No	Comments

7. Will future developments have the potential to result in environmental degradation under current planning and policy regulations?

Yes	No	Comments

8. Do the Pitcairn Islands have a pollution problem? If so what are they in your opinion?

Yes	No	Problems

9. Do Pitcairn Island policies encourage activities that benefit or do not harm the environment?

Yes	No	Comments

10. Are children being taught to understand and value of environmental heritage on Pitcairn?

Yes	No	Comments

11. Is protection of the environment important to us?

Yes	No	Comments

12. What institutions that you are aware of are working for the environment on Pitcairn?

Institution	Benefit

13. What things should be done to benefit the environment on Pitcairn?

1	
2	
3	
4	
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10	

14. What are your greatest concerns for the environment on Pitcairn?

1	
2	
3	
4	

15. Are there any other Environmental Issues that you think need to be considered in the drafting of an Environmental Management Plan for the Pitcairn Island Group?

Name: _____

The data are collated and kept at the offices of BEC Consultants Ltd. and was solely used for the purpose of the development of a draft Pitcairn Island Environmental Management Plan. The provisions of the Irish Freedom of Information Act 2000 and Environmental Information Regulations Act 2004 apply to all data and correspondence.

Annex Two Pitcairn Environment Charter

Environment Charter PITCAIRN



Guiding Principles

for the UK government, for the government of Pitcairn and for the people of Pitcairn.

- 1.) To recognise that all people need a healthy environment for their well-being and livelihoods and that all can help to conserve and sustain it.
- 2.) To use our natural resources wisely, being fair to present and future generations.
- 3.) To identify environmental opportunities, costs and risks in policies and strategies.
- 4.) To seek expert advice and consult openly with interested parties on decisions affecting the environment.
- 5.) To aim for solutions which benefit both the environment and development.
- 6.) To contribute, as is appropriate for Pitcairn, towards the protection and improvement of the global environment.
- 7.) To safeguard and restore native species, habitats and landscape features.
- 8.) To encourage activities and technologies that benefit the environment.
- 9.) To control pollution, with the polluter paying for prevention or remedies.
- 10.) To study and celebrate our environmental heritage as a treasure to share with our children.

Handwritten signature of Steve Christian in black ink.

Steve Christian
(for Pitcairn)

Handwritten signature of Veronica Amos in black ink.

Veronica Amos
(for the United Kingdom)

Date: 23 OCTOBER 2001

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Plate 11. The nest of the endemic Pitcairn Island reed warbler (*Acrocephalus vaughani*), perched on Rao-ti (*Cordyline fruticosa*) the roots of which were used in the past to produce alcohol.