



## Darwin Initiative Annual Report



Department  
for Environment  
Food & Rural Affairs

### Darwin Project Information

Project Reference	19-027
Project Title	Strengthening the world's largest Marine Protected Area: Chagos Archipelago
Host Country/ies	British Indian Ocean Territory (BIOT)
Contract Holder Institution	Bangor University
Partner institutions	University of Warwick, Zoological Society of London, FCO BIOT Administration
Darwin Grant Value	£287,788
Start/end dates of project	2012/13 – 2014/15
Reporting period (eg Apr 2013 – Mar 2014) and number (eg Annual Report 1, 2, 3)	2012-2013: Annual Report 1
Project Leader name	Dr John R Turner
Project website	Chagos Environment Outreach Project: <a href="http://www.zsl.org/conservation/regions/africa/chagos-coral/chagos-community,1915,AR.html">http://www.zsl.org/conservation/regions/africa/chagos-coral/chagos-community,1915,AR.html</a>  Scientific Expedition 2013: <a href="http://chagos-trust.org/projects/latest/feb-2013-expedition">http://chagos-trust.org/projects/latest/feb-2013-expedition</a>
Report author(s) and date	Dr John Turner, Prof Charles Sheppard, Dr Heather Koldewey, Rebecca Short and Xavier Hamon contributed to report and/or annexes. April-June 2013.

## 1. Project Rationale

**Project Goal:** To strengthen the Chagos Marine Protected Area by providing scientific knowledge for effective management, and develop a strategy that engages the support of potential stakeholders through outreach, education and engagement. The legacy will be sound management and increased value of what is currently the world's largest no-take Marine Protected Area and a unique and globally important reference site.

**Location:** The Chagos archipelago is situated in the middle of the Indian Ocean at the southernmost end of the Laccadive-Chagos ridge. There are 5 atolls with 54 small islands exposed, and 12 submerged atolls and banks. All islands are uninhabited (and have been for over 50 years) except for Diego Garcia atoll, where there is a US naval facility. The British Indian Ocean Territory extends to 200 Nm around the islands, encompassing approximately 640,000km<sup>2</sup> of ocean, between 25% and 50% of the Indian Ocean's most healthy coral reefs including the world's largest atoll structure, and 60,000km<sup>2</sup> of shallow water habitats (Figure 1 map and Figure 2 & 3 BIOT EEZ & MPA).



Figure 1: British Indian Ocean Territory, Chagos Marine Protected Area and Chagos Archipelago (inset) in the Indian Ocean. (Source [http://chagos-trust.org/sites/default/files/images/chagos\\_map.jpg](http://chagos-trust.org/sites/default/files/images/chagos_map.jpg))

**Rationale:** The BIOT/Chagos Marine Protected Area, declared in 2010, is the world's largest MPA representing 60% of the world's no-take area and 16% of protected coral reef. The MPA is of sufficient size to protect site-attached and migratory species in the Indian Ocean by protecting island biota, pelagic, reptile, seabird and sea mammal species at a time of increasing human impact and climate change. The small islands (total land area is 53km<sup>2</sup>) were used extensively for coconut plantations from late 1700s and were abandoned by 1970, when the remaining people (now known as *Chagossians*) were relocated to Mauritius or Seychelles from where they descended, and many thence to England. The islands have since been unoccupied, and bird and turtle populations have recovered to internationally significant populations, although rats and overgrown plantation limit recovery of all areas, and poaching (from Sri Lanka) of turtle, sharks, and sea cucumbers remains a concern. The challenge now is to ensure that the Chagos MPA justifies its full no-take status, particularly considering over-fishing in the region, and that it fulfils its role as a unique scientific reference site for marine biodiversity.

Chagos harbours 76 threatened species (*IUCN Red List*) including Hawksbill turtle, Red foot booby, silky shark, Coconut crab, and Bigeye tuna, providing an internationally important refuge and reference site. This Ocean Legacy MPA will protect entire ecosystems rather than species in isolation, including deepsea, pelagic, reef and small island systems including migratory species (cetaceans, sharks, turtles, birds) and those vulnerable to poaching and trade (sharks, turtles, sea cucumbers). The project will address the target of reduced pressures on coral reefs, contribute to restoring at least 15% of degraded areas through conservation and restoration activities, and an effective MPA will exceed the target of protecting 10% of marine/coastal areas,

Scientific understanding will support adaptive management based on data from representative sites and times, allowing the quantification of magnitude and significance of potential impacts from scenarios including climate change, island ecosystem restoration and possible human resettlement. The project will communicate scientific evidence and recommendations to the BIOT Section FCO to implement the management of Chagos.

**Aims and Objectives:** The aim of the project is to address those aspects that strengthen the Chagos Marine Protected Area (MPA) by providing scientific knowledge for effective management, and to develop a strategy that engages the support of potential stakeholders through outreach, education, and involvement. The rationale is that a very large no-take MPA will protect functional ecosystems and species, benefitting the large but poor human populations around the Indian Ocean. But, only 3% of the archipelago has been explored, and urgency exists in establishing a baseline against which to measure change and mitigate future impact. Direct engagement in science and communicating a broader understanding of the objectives of conservation will strengthen acceptance of the MPA. To achieve this, proactive engagement with major stakeholders is central to the project.

The main objectives of the Darwin Initiative to strengthen the world's largest MPA are:

- (1) To establish a permanent monitoring protocol for the coral atoll and island systems of the Chagos; Outputs will establish the condition on commencement of MPA management against which change can be assessed, and will aid understanding of the magnitude and significance of potential impacts. Terrestrial restoration will be expanded with input from Chagossians. Marine surveys will extend to areas previously unexplored, and establish the level of functional redundancy and response diversity in the biodiversity to assess resilience to natural and anthropogenic impacts. Scientific expeditions, lead by Warwick, Bangor and ZSL with a wide range of international collaborators.
- (2) Engagement of Chagossians in the UK, Mauritius and Seychelles through training workshops and outreach activities. Activities will be aimed at Chagossians of different generations to raise their awareness of the value of biodiversity and importance of conservation. Individuals will be identified and selected for further externally funded initiatives, such as dive training and practical island restoration and conservation work. Workshops will be organised jointly with Chagossian leaders, through ZSL and local societies in UK, Mauritius and Seychelles.

- (3) Highlight the significance of the Chagos Ocean Legacy MPA in the UK and internationally as a major step forward in conserving marine ecosystems and biodiversity; achieved through high profile media workshops and supporting events in the UK and Mauritius, led by ZSL with local organisations.

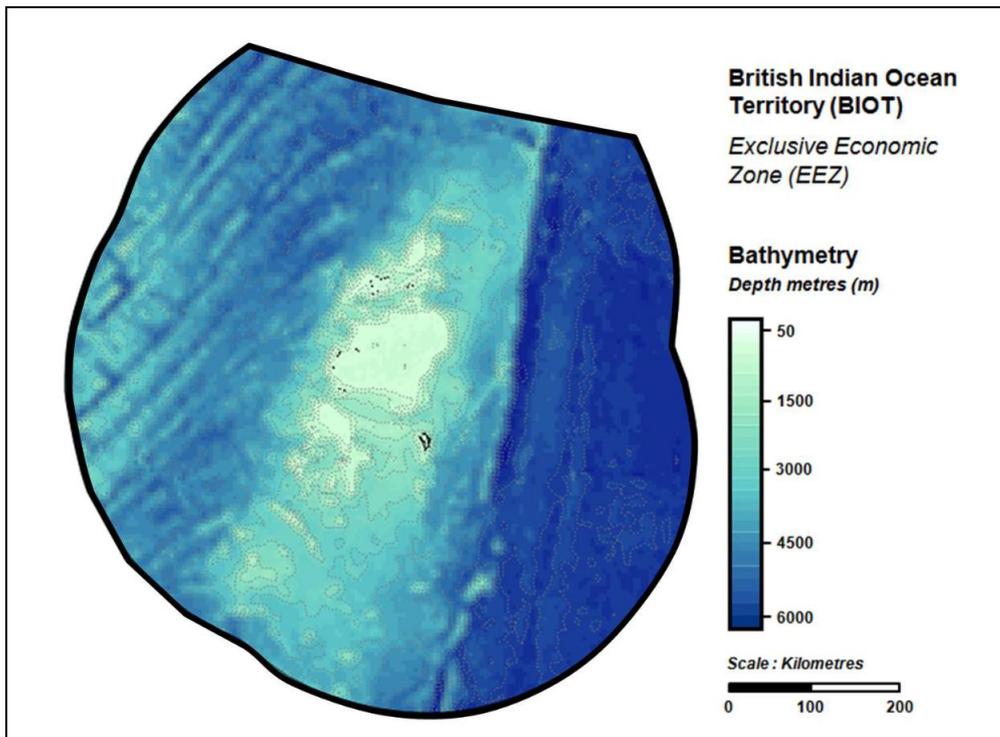


Figure 2: The British Indian Ocean Territory EEZ and bathymetry (Source Tetley & Turner)

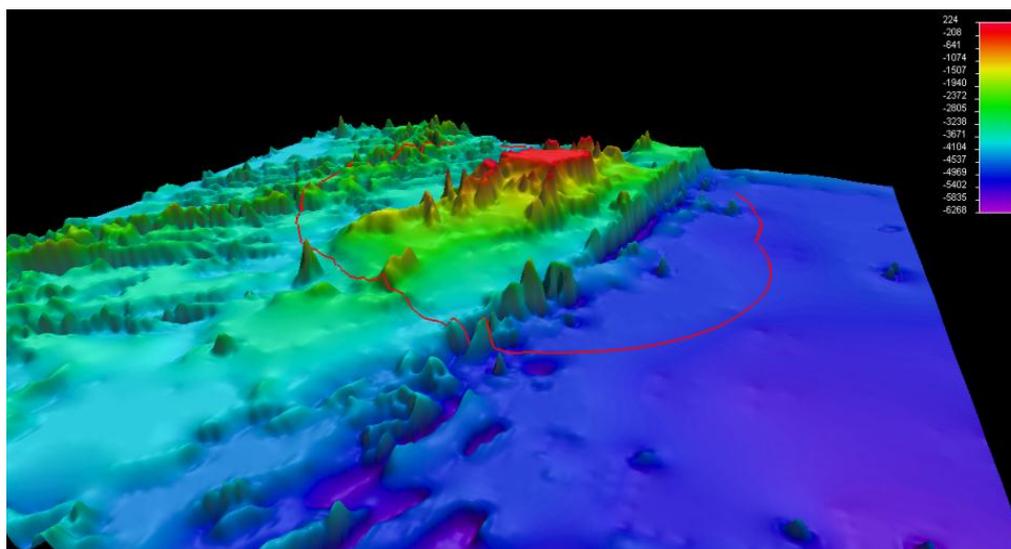


Figure 3: 3D image of Chagos Archipelago (Source Riegl & Purkis)

## 2. Project Partnerships

Bangor University is working closely with the University of Warwick, Zoological Society of London (ZSL) and The British Indian Ocean Territory (BIOT) Section at the Foreign and Commonwealth Office (FCO) to deliver this project. Bangor has project partnerships agreements in place with Warwick and ZSL. BIOT Section permit scientific expeditions to access BIOT, and they provide the MV *Pacific Marlin* patrol vessel as a platform to support the expeditions. The Project Investigators (PIs): Dr John Turner (Bangor), Professor Charles Sheppard (Warwick) and Dr Heather Koldewey (ZSL) have shared project responsibilities: Dr Turner manages the overall project and will lead expedition 3, Prof Sheppard led expedition 1 this year, and Dr Koldewey is leading the Outreach Programme from ZSL and expedition 2. The Project also part supports a Chagos Project Support Officer (Outreach) in ZSL, and a Researcher at Warwick. The PIs have held two steering group meetings (15<sup>th</sup> November 2012 and 4<sup>th</sup> April 2013) and have attended meetings at the Foreign Office (last on 4<sup>th</sup> April 2013) with BIOT Section staff for briefings. The academic project partners have known one another for many years in the context of coral reef science, and have worked together as members of the Chagos Conservation Trust, and have each worked with one another on at least one previous Chagos scientific expedition. Working with BIOT as project partner has been rewarding, due to the helpful and open relationship that has developed with John McManus, BIOT Section Head and his staff. BIOT Section have facilitated access to military flights and received and stored shipped equipment, and have provided shiptime aboard the MV *Pacific Marlin*, and assisted with security and repairs to the container laboratory. This year, BIOT helped fund one person on the team to record film of Chagos and of scientific activities for documentary and public outreach purposes, and a Chagossian to join the expedition to take part in scientific studies. In addition, BIOT have been a major co-funder, along with the Chagos Conservation Trust and this Darwin Initiative project of the highly successful Chagos Community Environment Project (see film at [www.zsl.org/chagosfilm](http://www.zsl.org/chagosfilm)) or **DVD in Annex 8**.

## 3. Project Progress

### 3.1 Progress in carrying out project activities

*Output 1: To continue established baselines and develop a more comprehensive approach to long term marine and island ecosystem monitoring against which change can be assessed, and develop an understanding to assess the magnitude and significance of potential impacts from several scenarios, including climate change, island ecosystem restoration and possible human resettlement. The Chagos/BIOT Management Plan will include BAPs and identify how CBD/CMS/CITES strategic goals and AICHI targets will be addressed.*

Output 1 is covered by activities 1.1 – 1.9. The output is mostly addressed by scientific work based on data collection during 3 expeditions to Chagos. The first of these took place in this reporting year, between 19<sup>th</sup> February and 15<sup>th</sup> March, 2013.

The PIs began project planning using Skype calls (substantial planning discussions held on 2<sup>nd</sup> April 2012, 4<sup>th</sup> May, 15<sup>th</sup> October activity 1.6) prior to the first Steering Group Meeting, held at the Zoological Society of London on 15<sup>th</sup> November 2012 (**activity 1.1**). The project was first presented to BIOT Scientific Advisory Panel at its 3<sup>rd</sup> meeting on 26<sup>th</sup> June 2012 and an update on plans for the first expedition presented on 3<sup>rd</sup> December (**activity 1.2**). The Project became public at the Chagos Conservation Trust Conference held at the Zoological Society of London, on 27<sup>th</sup> November 2012 at which results of the previous (non Darwin funded) scientific expedition were reported. Continuity with previous scientific expedition work (on corals, fish, birds and vegetation in particular) is being maintained by the involvement of the PIs (Turner, Sheppard and Koldewey) and other key scientists who have been undertaking long term work in Chagos (Carr, Pratchett, Head on first expedition, and Graham, Price, Letessier, Clubbe will take part in later ones), while new aspects are being undertaken by scientists joining the scientific expeditions for the first time (Wagner, Gaither on expedition 1, and 5 others on expeditions 2 and 3).

Planning involved developing protocols for environmental survey and baseline monitoring at sites throughout the atolls, and these include permanent sites for video transects of physical substrate and benthic cover, coral species and coral recruits, cryptic fauna and fish (all addressed on expedition 1) (**activity 1.3**). Video data is being archived, and plans for the GIS database have been substantially expanded with a proposal outlined by Shepherd now being supported by additional funding (£20,000) from BIOT. The current GIS was established in 2008, but scientific data predates this to 1972, and the current need is to incorporate a wide variety of spatially referenced numerical and image data. Methods were also developed for assessing island flora and fauna, with particular emphasis on seabird and vegetation monitoring on all atolls during expedition 1 (**activity 1.4**). The classification of Important Bird Areas was revised to accommodate island clusters because it was observed that the birds do not adhere to specific islands or times for breeding. In addition island fauna and flora restoration initiatives (especially invasive flora and rat eradication) have been developed under the leadership of Clubbe and Carr and through the Chagos Conservation Trust, and have resulted in additional funding through a successful Darwin Plus application in 2013 (Ile Vache restoration project, Chagos Conservation Trust, £32,256). Reef erosion and island accretion is to be assessed using measures of net calcium carbonate production, and Roche undertook parrot fish bite rate surveys in a preliminary assessment of the removal of coral skeletal material (**activity 1.4**).

**Activity 1.5**, to develop impact matrices and mitigation measures for potential impacts has begun (in the form of a Leopold matrix to show environmental attribute against potential activity), but further work is required to assess the ecological consequences of physical change, mitigation, and potential socioeconomic consequences. This work will continue once further scientific data has been collected on the forthcoming expeditions. It has become a lesser project priority this year following the rejection of the Chagos Islanders case at the *European Court of Human Rights* in December 2012, making, practical aspects relating to resettlement less urgent. However, this priority will change over the next 2 years, because there is pressure on the FCO from the All Parliamentary Group to undertake a review to look at aspects of resettlement before the end of the Coalition Government in May 2015. Our priority to date has been to develop methodologies, establish facilities and equipment in Chagos, and plan the first expedition.

Scientific planning meetings and preparation for the field research expeditions (**activity 1.6**) took place throughout October 2012 – February 2013 with major meetings on 15<sup>th</sup> November and 6<sup>th</sup> December over logistics. A significant aspect was the development of BIOT Diving Rules and Risk Assessments for operations in BIOT (Note: these working documents are not annexed due to the comprehensive range of documents that make up the package, but are available on request). The first Darwin research expedition ran between 19<sup>th</sup> February and 15<sup>th</sup> March 2013 (**activity 1.7**) and the scientists involved are currently analyzing their data (**activity 1.8**). The international scientific expedition involved 14 personnel (from Bangor University UK, University of Warwick, UK, Zoological Society of London, University of Oxford UK, James Cook University, Australia; NOAA USA; a Chagossian, and staff from DG21 Environment, Diego Garcia). The team assembled in Singapore for military flights to Diego Garcia to join the MV *Pacific Marlin* to visit the outer/northern atolls (Salomon, Peros Banhos) and Great Chagos Bank (Nelson, Eagle, Brothers, Danger Islands) and Egmont atoll, with some time either end working sites on Diego Garcia. 3 personnel arrived one week in advance and departed one week later, in order to prepare and finalise expedition logistics. An initial expedition report has been prepared explaining what was done and why (**Scientific Expedition 2013 Report: Annex 4**). Following this successful expedition, a second Steering Group meeting was held at ZSL on 4<sup>th</sup> April, to discuss expedition outcomes, followed by a debriefing meeting at BIOT Section, FCO (**activity 1.2**).

A **Draft Chagos Management Plan (Annex 5)** (was submitted to BIOT Section and to the BIOT Science Advisory Panel in July 2012, well ahead of schedule, although at this stage the plan is a working document, which will be further developed on the basis of findings from our current research (**activity 1.9**). At present, it makes recommendations on marine, fisheries and island science and monitoring; and general needs and management activities, but is yet to include detailed Biodiversity Action Plans (BAPs) on species, and to be formatted as a formal management plan. The Plan will develop over the next two years to reflect the strengthening of the knowledge base and identification of management issues and solutions.

*Output 2: Provision of scientific survey equipment and a permanent facility for safe and secure storage between scientific visits, thereby reducing transportation logistics and associated costs*

Throughout December and January 2012, equipment was purchased and freighted to Singapore for subsequent shipping aboard the MV *Mohegan* supply ship for departures on 3<sup>rd</sup> December 2012 and 28<sup>th</sup> January 2013 to Diego Garcia. The equipment included diving and safety equipment for 12 divers, a diving air compressor, laboratory equipment, and scientific survey equipment and consumables (**activity 2.1**) and this new equipment complimented the substantial scientific expedition stores now based in Chagos (**See: Chagos Science and Conservation stores list: Annex 6a**). All equipment carries a conspicuous Darwin Initiative logo sticker bearing the words 'Chagos Science and Conservation' (**pdf of stickers: Annex 6b**) Storage become an issue, and is currently being solved by BIOT. All equipment is currently stored in secure air conditioned rooms at the USA Communications technical facility in Downtown Diego Garcia, but these will be moved to a new 42 square metre area being made available to the project in the Royal Marine Headquarters, courtesy of BIOT. This area was a workshop, and will provide a permanent secure air-conditioned store.

An air-conditioned 2.8 m x 6 m container, pre-converted into a laboratory for installation on deck of the MV *Pacific Marlin* was purchased in Singapore and shipped to Diego Garcia in October 2012, where it was first used by the ZSL *Project Ocean Pelagic* expedition run in November 2012 to house their deck head systems. The laboratory was further furnished with benches, shelving, fridge-freezer, fresh and seawater supplies and sample sorting sink, prior to this project's first research expedition (**See P.30 of Science Expedition 2013 Report: Annex 4**). The deck laboratory was removed from the ship on 18<sup>th</sup> March, and is located on land close to the Royal Marines Headquarters at Moody Brook in the marina. BIOT have kindly agreed to fund the replacement of the wooden door with a sealed metal lockable door for protection against pests and climate.

*Output 3: Engagement of Chagossians in the UK, Mauritius and Seychelles in importance of biodiversity and conservation through training workshops and outreach activities.*

There has been very significant progress on output 3, in collaboration with the Chagos Conservation Trust and BIOT. The Darwin Project co-funds a Project Officer post (Rebecca Short) in the Zoological Society of London to support the Chagos Community Environment Project. Rebecca is supported by an Outreach Officer (Xavier Harmon in year 1, and Audrey Blancart for year 2). The project also helps in funding workshops, activities and Outreach Team travel. The aim of this outreach programme is to increase environmental awareness and capacity within all Chagossian communities (initially in the UK) and to contribute practically to the conservation of the natural environment of the Chagos Archipelago. The objectives are to: (1) increase general awareness within the Chagossian communities of the tropical marine environment and issues affecting the environment of the Chagos Islands (**activity 3.1, 3.2**); (2) identify individual Chagossians with the interest in, and potential for, environmental training (**activity 3.3**); (3) provide in depth mentoring, support and training to build scientific and technical conservation capacity for a small group of individual Chagossians with demonstrated potential (**activity 3.4**); and (4) to develop priority conservation projects in Chagos that are implemented with the help of Chagossians as part of an integrated training programme.

Contacts were made with Chagossian community leaders in Crawley in April 2012, and in Manchester in May 2012 (a community about which we knew very little before contact was made). The Outreach Team then designed educational family fun days to engage the communities, and an environmental training course for those wanting greater involvement. Approximately 500 Chagossians attended the Family Fun day held at London Zoo on 7<sup>th</sup> July 2012, with 60 attending a discussion session translated into French and Creole, and 16 signed up for further training (**see Fun Day London: Annex 9b**). The Manchester Chagos Fun Day held at Manchester Museum on 21<sup>st</sup> July 2012 was attended by 91 Chagossians, with 50 attending the discussion and 28 signing up for further training (**see Fun Day Manchester: Annex 9c**).

An Environmental Training Course was run on Saturdays in August to October 2012, at various institutions by partners, and from 51 applicants, 15 began the course and 12 graduated as 'Chagos Ambassadors' at an awards ceremony on 15<sup>th</sup> November 2012. The Marine Environment module involved ZSL, Selfridges, Bangor University and the London School of Diving, and presented topics in reef ecology and coral identification; sustainable fisheries and MPAs, and biological surveys and try dive SCUBA session. The Terrestrial Ecosystem module involved the RSPB, Hampstead Ranger Service and Kew gardens, and covered: island ecology and bird monitoring; island restoration and land management; introduction to botany and Chagos plants; and included a 'Wilderness Weekend' on environmental projects and team building activities at Syers Croft with ZSL staff. The Communication module was organised by ZSL and covered communication, evaluation and social marketing and film production.

In addition, the Outreach Team have produced a twice yearly 4 page Chagos Environment Newsletter in French and English (**Newsletters: Annex 7**), and have prepared a Chagos Environment Information Pack containing a DVD of a film showcasing the Family Fun Days and Environmental Training Course; 4 Fact Sheets about the Chagos environment, and a 12 page comic book about the relationship between the community and preservation of their environment (**Hard copy of pack sent to Darwin Initiative: Annex 8**). Facebook, Youtube and online resources have been used substantially in the Outreach Project. The Film can be seen at [www.zsl.org/chagosfilm](http://www.zsl.org/chagosfilm) and the Chagos website at [www.zsl.org/chagoscommunity](http://www.zsl.org/chagoscommunity).

A detailed report is attached; See: **Chagos Environment Outreach Project : Annex 9a**.

Building on the success and lessons learnt from this UK pilot project, The Darwin Project and its partners are now looking at engaging with overseas Chagossian communities in Seychelles and Mauritius, and enhancing links with the UK population with the aim of reaching out to the entire Chagossian community and adapting to each country's socio-economic and political conditions. This is a challenging endeavour, and we are taking advice from the FCO on timing and approach due to political sensitivities at the current time (see later). A plan has been developed and a further bid has been made to FCO BIOT for additional funds (£145,478 - £202,859) to undertake such comprehensive engagement.

The Darwin Initiative project plans to offer 6 Chagossian Conservation Fellow Bursaries to Chagossians in years 2 and 3 of the project (**activity 3.4**) The Chagos Conservation Trust have kindly offered an additional bursary each year, which may be shared or used for a community project. The objectives of the bursaries are to enable Chagossians to be involved directly or indirectly in the conservation of the Chagos Archipelago. Their projects might advance individual or group conservation interests and knowledge, or increase awareness of Chagos conservation amongst Chagossians (and wider). They might be used for training purposes (e.g. SCUBA diving, chainsaw training, land management, bird monitoring or any other training course with relevance to conservation); a grant towards further education (e.g. school project, higher education fees, educational visit), or education and communication for conservation in the community (e.g. event, awareness raising, film production, exhibition, community art project) or other novel ideas. An application process has been developed (**Chagossian Conservation Bursaries: Annex 10**), and has generated significant interest. This year, the CCT bursary will go jointly to Claudia Naraina and Cyndie Residu from the Manchester community for Open Water diver training and for a chainsaw course run by the RSPB; and also to Jonathan Bancal for the chainsaw course with RSPB. A Darwin Initiative Chagos Conservation Fellow Bursary has been approved for Yannick Mandarin from Crawley to do diver training and expedition to Madagascar with Blue Ventures, and another has been offered to Pacaline Cotte (Crawley) to assist funding a university access course. Further bursaries are under consideration, and Kew have offered 2 Chagossians places on their botanic course free of charge (because the course was full this year when the Chagossians applied for bursaries to attend).

In addition, Yannick Mandarin, a Chagos Ambassador, was funded by BIOT and this Darwin Initiative project to join the first scientific expedition, during which he assisted with monitoring seabirds and island vegetation (**see P.21-22 and P.19 of the Scientific Expedition 2013 Report: Annex 4**).

*Output 4: Increased general public awareness in UK, Diego Garcia, Mauritius and internationally of the high value of the Chagos Marine Protected Area in protecting a wide range of oceanic ecosystems for benefit of people around Indian Ocean, and as a control site against which to assess impacts of climate change.*

This Darwin Initiative Project is working closely with the Chagos Conservation Trust, Pew Environment Group (UK) and ZSL on increasing public awareness of the Chagos Archipelago and Marine Protected Area. For example, the PIs or their representatives took part in the CCT brain-storm meeting at Pew's London offices on 1<sup>st</sup> February 2013, and Last year, a joint meeting of the Chagos Conservation Trust and the Zoological Society of London, titled *Chagos Marine Reserve: Building on Success*, was held at the Zoological Society of London on Tuesday 27<sup>th</sup> November (**activity 4.1**). While mostly featuring pre Darwin Project research, the meeting was chaired by the PIs of the Darwin project. A similar conference will be held, provisionally on 18<sup>th</sup> November 2013 largely to disseminate results of the 2013 scientific expedition and the Chagos Environment Outreach Project. Both Turner and Shepherd presented at the Reef Conservation UK meeting at the Zoological Society of London on 3rd December 2012, although neither paper was solely about Chagos (**activity 4.5**).

Chagos work by the PIs and others includes a journal paper by Sheppard et al (2012) on the *Reefs and islands of the Chagos Archipelago, Indian Ocean: why it is the world's largest no-take marine protected area* in *Aquatic Conservation: Marine and Freshwater Ecosystems* (**Annex 11a**). In addition, there are 5 chapters in a newly published book *Coral Reefs of the United Kingdom Overseas Territories*, edited by Shepherd, and no 4. *In the Coral Reefs of the World Series* published by Springer. The chapters are: Chapter 17, Shepherd et al., *British Indian Ocean Territory (the Chagos Archipelago): setting, connections and the Marine Protected Area*; Chapter 18, Shepherd et al., *Coral reefs of the Chagos Archipelago, Indian Ocean*; Chapter 19, Graham et al., *The status of coral reef fish assemblages in the Chagos Archipelago, with implications for protected area management and climate change*; Chapter 20, Carr et al., *Coral Islands of the British Indian Ocean Territory (Chagos Archipelago)* and Chapter 21, *Readman et al Contaminants, pollution and potential anthropogenic impacts on Chagos/BIOT*. All chapters are co-authored by members of the Darwin project, although much of the work featured originates on earlier expeditions than those of this project (**Sheppard (ed) Coral Reefs of the UKOT – Chagos Chapters: Annex 11b-e**).

News items about the project were published in the Darwin Newsletters, and in Bangor's Research News and local press, (**see also Annex 13 Misc Press items**):

<http://darwin.defra.gov.uk/newsletter/Darwin%20News%202012-07.pdf>.

<http://darwin.defra.gov.uk/newsletter/Darwin%20News%202012-12.pdf>

<http://www.bangor.ac.uk/news/full.php.en?nid=7345&tnid=7345>.

<http://www.dailypost.co.uk/news/north-wales-news/bangor-scientist-work-strengthen-worlds-2666430>.

The 2013 expedition scientists reported from Chagos about their daily activities in a blog, published here:

<http://chagos-trust.org/projects/latest/feb-2013-expedition>

<http://www.zslblogs.org/chagos/>

<http://www.bangor.ac.uk/oceansciences/full.php.en?nid=12644&tnid=0>

and another here:

<http://theseamonster.net/2013/03/chagos-expedition-2013>.

During the expedition, Jon Slayer recorded high quality film to record the biodiversity on islands and underwater, and to document the scientific investigations (**see P.24-25 Scientific Expedition 2013 Report: Annex 4**). The film will be used for project public outreach and scientific documentation. In collaboration with BIOT, some of the film clips may be made into a formal documentary. Anne Sheppard took 1,811 images and 73 video clips for an archive to be used for publicity and outreach purposes, and John Turner recorded 25 hours of video footage at permanent sites for research archive and education and awareness uses.

### 3.2 Progress in carrying out project activities

As documented by evidence referred to above, the project has progressed extremely well, implementing all year 1 project activities where possible, with many being progressed beyond the original ideas and ahead of schedule.

**Output 1:** Progress has been made on all activities, most of which involved planning (**activities 1.1 – 1.6**) leading to the effective completion of the first scientific research expedition from 19 February to 15th March 2013 (**activity 1.7, Annex 4**) as originally proposed, and data collation and initial analysis of results (**activity 1.8**) is on-going. A significant part of the Chagos Management Plan (**activity 1.9, Annex 5**) has been drafted ahead of schedule (2<sup>nd</sup> quarter year 2, to year 3).

**Output 2** has been achieved on schedule. Diving, safety and scientific monitoring equipment have been purchased and shipped to Diego Garcia where it is safely and securely stored in air conditioned rooms, with some equipment which requires constant maintenance or high security being stored on the ship (engines, flares, medicines, chemicals) (**activity 2.1, Annex 6a**). Although the equipment was in temporary storage at the end of the February-March 2013 expedition, this caused us some concern, and BIOT Section has now arranged for suitable permanent storage in the Royal Marine Headquarters at Moody Brook, Diego Garcia. The equipment will be moved as soon as the rooms are prepared. Further, a containerised laboratory has been acquired and furnished. This laboratory will be hoisted onto the upper deck of the MV *Pacific Marlin* patrol ship for each expedition, and stored on land at Moody Brook between expeditions. We are investigating preparation of a hard-standing and electrical/water services, so that it can be used by land expedition parties working on Diego Garcia.

**Output 3:** The Chagos Environment Outreach Project in the UK has been established most successfully this year and will be built upon in future years. The Outreach Team met with various Chagossian community leaders early in the project (**activity 3.1**) and organised a series of very well attended events and courses by the third quarter (**activity 3.2**), and based on this success, an expanded programme of events is co-funded by BIOT and the Chagos Conservation Trust for 2013/14 in both Manchester and London.

Politically, it has been an inappropriate time to link with representatives in Mauritius and Seychelles, largely because of the Chagos Islands case in the *European Court of Human Rights*, and the *High Court's Judgement on the Judicial Review of the legality of the Marine Protected Area* (both now heard, and in UK Government favour). However, the arbitral tribunal brought by Mauritius under the 1982 United Nations Convention on the Law of the Sea (UNCLOS) is ongoing and currently postponed to early 2014. We therefore await the FCO's agreement prior to establishing activities in Mauritius and Seychelles.

12 Chagossians undertook the environmental training course, and graduated as 'Chagossian Ambassadors' in November 2012, and this successful programme will be repeated in both London and Manchester this year (**activity 3.3**). We have begun to award CCT Chagos Conservation Bursaries and Darwin Chagossian Conservation Fellow Bursaries to individuals and groups for further conservation skill training on approved courses (**activity 3.4**) for year 2 on schedule.

Activities under **Output 4** mostly deliver later in the project, but as outlined in section 3.1 above, we have made early progress in holding and attending events in the UK (**activity 4.1 and 4.2**), producing book chapters and journal paper, material for a film, a scientific expedition blog and ensuring Chagos is themed in exhibits at London Zoo (**activity 4.1 and 4.5**).

### 3.3 Progress towards project outputs

The project has made excellent overall progress towards the project outputs.

Under **Output 1**, the first of three scientific expeditions has been completed on time. The following individuals undertook work on the expedition:

*Prof. Charles Sheppard, University of Warwick, UK;* juvenile coral settlement, and seawater temperature monitoring.

Dr John Turner; Bangor University, UK: Video recording of reef cover and community structure at permanent sites and establishment of a video archive.

*Prof. Morgan Pratchett, James Cook University, Australia:* Coral reef cryptofauna and coral growth studies.

*Dr Daniel Wagner, NOAA, Papahānaumokuākea Marine National Monument, USA:* Macroalgae, sponges and back corals.

*Catherine Head, PhD candidate, Oxford University UK:* Reef cryptofauna.

*Dr Michelle Gaither, California Academy of Sciences, USA:* Biogeography of fishes

*Dr Ronan Roche, Bangor University, UK:* Reef structure: rugosity and erosion by parrotfish.

*Peter Carr, University of Warwick, UK:* Seabird and island vegetation monitoring.

*Gary Fletcher, Zoological Society of London, UK:* Development of instrumentation for pelagic fish monitoring.

*Yannick Mandarin, Chagosian, Crawley, UK:* assisted with bird and vegetation monitoring on islands.

*John Slayer, UK:* Video filming.

*Anne Sheppard, University of Warwick, UK:* photography archive.

*Jason Davies DG21, USA:* Diving support.

*Dr Jon Bailey, John Radcliffe Hospital, Oxford:* Expedition doctor.

The expedition continued and in some cases established long term monitoring and impact assessment at sites on seaward and lagoon reefs, and on islands of the major atolls (Salomon, Peros Banhos, Great Chagos Bank, Egmont and Diego Garcia). Data collation and analysis will be used to map flora and fauna, assess functional diversity, assess island erosion and accretion, develop impact matrices and mitigation measures, and develop restoration initiatives for island flora and fauna. Data collection towards Output 1 will continue on expeditions 2 and 3 in years 2 and 3. (**Scientific Expedition 2013 Report: Annex 4**).

**Output 2** has been completed, with the provision of scientific, diving and safety equipment and a deck laboratory. Permanent high quality storage has been secured on Diego Garcia. (See **Scientific Expedition 2013 Report: Annex 4** and **Chagos Science and Conservation stores list: Annex 6a**) and a move is being planned by BIOT. An application has been made to the Natural Environment Research Council (NERC) National Facility for Scientific Diving (NFSD) for loan of a hyperbaric chamber to improve emergency support to diving operations.

**Output 3** has been achieved in the UK with a highly successful Chagos Community Environment Project detailed above, including Chagos Information Pack, Newsletter, and Development of Chagosian Bursary scheme with Chagos Conservation Trust providing an additional bursary, and Kew, RSPB, Blue Ventures all providing assistance with courses.

**(Chagos Environment Outreach Project Report: Annex 9a)**.

**See also letter of congratulation to Outreach Team from Henry Bellingham, Minister for Africa, The UN, Overseas Territories and the Caribbean: Annex 12)**.

Activities in Mauritius and Seychelles are currently on hold until clearance is given by the FCO (see above).

**Output 4** has been addressed this year by involvement in conferences, indirectly by 5 book chapters in Sheppard (ed) *Coral Reef of the UK Overseas Territories*, the scientific expedition blog, and film and photo recording, and development of a Chagos reef exhibit at ZSL. Activities in Mauritius and Diego Garcia are scheduled for later in the project. Contributions to this Output are on schedule.

The assumptions listed in the original log frame hold true.

### 3.4 Progress towards the project Purpose/Outcome

The Project Purpose is to strengthen the Chagos Marine Protected Area by providing scientific knowledge for effective management and to develop a strategy that engages the support of potential stakeholders through outreach, education and engagement. The legacy will be sound management and increased value of what is currently the world's largest Marine Protected Area and a unique and globally important reference site.

As detailed above, it is evident that we have made excellent progress towards achieving the **Project Purpose/Outcome** by the end of year 1. There are however two areas in which we have not made progress:

- (1) Engagement of Mauritian scientists in data acquisition. Although both a marine and a terrestrial Mauritian scientist have been invited to join the expeditions, they have not yet been given permission by the University of Mauritius and the Prime Minister's Office. This stance is exemplified by this article from a major Mauritian newspaper on 10<sup>th</sup> June 2013: *'L'Express reports: .. 'the Ministry of Tertiary Education has forwarded a circular to the University of Mauritius which asks all academics to respect Mauritius' position on sovereignty of the Chagos and Tromelin (as well as non-recognition of the MPA).'*' The circular referred to was apparently originally dated 12 January 2012 and addressed to all civil servants.
- (2) Active engagement and involvement of Chagossian groups in Mauritius and Seychelles: As mentioned earlier, political sensitivity has meant that we have postponed these activities until appropriate clearance is given by the FCO.

These events are outside our control. It is unlikely that this situation will change until after the arbitral tribunal brought by Mauritius under the 1982 United Nations Convention on the Law of the Sea (UNCLOS) (postponed to early 2014). In the meantime, we can only communicate personally and establish good relationships with the individual scientists in Mauritius.

### 3.5 Goal/ Impact: achievement of positive impact on biodiversity and poverty alleviation

Chagos harbours 76 threatened species (IUCN Red List) including Hawksbill turtle, Red foot booby, silky shark, Coconut crab, and Bigeye tuna, providing an internationally important refuge and reference site. This Ocean Legacy MPA will protect entire ecosystems rather than species in isolation, including deepsea, pelagic, reef and small island systems including migratory species (cetaceans, sharks, turtles, birds) and those vulnerable to poaching and trade (sharks, turtles, sea cucumbers). The project will address the target of reduced pressures on coral reefs, contribute to restoring at least 15% of degraded areas through conservation and restoration activities, and an effective MPA will exceed the target of protecting 10% of marine/coastal areas, and address Goals 1-3 of the strategic vision of CITES (especially Goal 1 implementation and enforcement). Most importantly, it will help address the Strategic Goals and AICHI Biodiversity targets 2011-2020, specifically A (1,4) (B(5-6-9-10), C(11-12) D (15) E (17,19) for CMS and CBD

The sub goal of the project is to ensure that the Chagos MPA justifies its full no-take status, particularly considering ever increasing fishing pressure in the region and that it fulfils its role as a unique scientific reference site for marine biodiversity. The measurable indicators are: acceptance of the Ocean Legacy Large Marine Protected Area by stakeholders on the basis of scientific knowledge, underpinning the need for strict conservation, and assessment of effects of climate change in the absence of local anthropogenic impacts. The means of verification are: agreement on marine protected area management initiatives which will include no marine resource extraction or habitat modification in the MPA, and establishment of monitoring protocols that are sustainable long term, and centralised accessible data basing.

The Project has completed one of three major expeditions in which monitoring biodiversity is the major objective, and this expedition linked directly with previous expeditions to build upon existing survey data, thereby establishing Chagos as a reference site. Most sub-projects (eg. those on coral recruitment, coral community structure, reef cryptofauna, bioerosion by

parrotfish, fish biogeography, fish biomass), already use Chagos as a control site against studies at impacted and degraded locations elsewhere in the Indian Ocean or further afield.

Acceptance of the Ocean Legacy Large Marine Protected Area by stakeholders is most important, and we have made good progress towards this goal. The involvement of Mauritian scientists remains a challenge while Mauritius argues sovereignty of Chagos and refuses to recognise the MPA. However, The Chagos Environment Outreach Project has had a positive impact on increasing the understanding of conservation and biodiversity in Chagos amongst the Crawley and Manchester Chagossian communities, and the interest and support of these communities is extremely encouraging. There is an active group of politicians, scientists and lawyers represented by *The Chagos Islands (BIOT) All-Party Parliamentary Group* who continue to argue for a review of the feasibility of Chagossian resettlement. Most Chagossian groups are supportive of the MPA provided it does not prejudice their right of return, and the Government has declared that MPA research and monitoring is without prejudice to claims to return. The project partners of this Darwin Initiative project are not taking sides on whether or not Chagossians should be given the right to settle in the British Indian Ocean Territory (BIOT), since this is a political issue for government. Our task is to provide the best scientific information to ensure effective environmental conservation and MPA management in the Territory.

Means of verification involve agreement on Marine Protected Area management initiatives which will include no marine resource extraction or habitat modification in the MPA. The PIs have been involved in discussions, and preparing proposals for the future enforcement of the MPA. In addition, the establishment of monitoring protocols that are sustainable long term, and centralised accessible data basing have been a focus.

Each expedition is returning to sites previously surveyed to ensure continuity in data sets over time to assess change. Methodologies remain consistent where appropriate, and new methodologies are being introduced on each scientific expedition for new initiatives. For example, this year, Sheppard, revisited assessing juvenile coral settlement at all sites, first undertaken in 2006 with Harris, and continued seawater temperature monitoring (initiated in 2006) at 5, 15 and 25 m depth at sites in lagoons and seaward reefs on each atoll. Turner and Roche returned to sites first visited in 2006 to record video transects at 5-10m, 10-15m, 15-20m and 20-25m to assess changes in reef cover and community structure over time. The video of sites will be archived for future comparisons. Carr continued ornithological monitoring of all the atolls concentrating on internationally important seabird colonies previously surveyed in 1996, 2006, 2010 and 2012.

New initiatives either established new monitoring methods, or undertook surveys in Chagos for comparison with sites elsewhere. Fletcher designed and tested a monitoring buoy equipped with baited remote cameras which could film large fish at 25m depth off the reef front, and impressively stream images back to ZSL in London. Roche quantified the bite rate of 2 species of parrotfish as a preliminary study which will contribute to the calculation of net calcium carbonate accretion/erosion sites around Chagos. Pratchett deployed Autonomous Reef Monitoring Structures (ARMS) – essentially IUCN standardised habitat units – on Diego Garcia, Salomon and Peros Banhos at 7-12 m. The devices will be retrieved after a year, and the biodiversity they harbour will be assessed and compared with similar deployments at sites throughout the Indo-Pacific. Pratchett also established direct measurement of coral growth rates in branching corals by staining tagged colonies using Alizarin Red. The corals will be located in a year, and growth measured by examining coral skeleton laid down beyond the red stained band, again for comparison with sites where the same experiment has been undertaken throughout the Indo Pacific Oceans.

Biodiversity is often highest amongst the groups most scientists normally neglect to study. Head assessed the high biodiversity of cryptofauna inhabiting dead coral heads, and will compare this biodiversity with that at other sites in the western Indian Ocean where reefs are degraded from anthropogenic impact. Wagner investigated the sponges, black corals and macroalgae each of which provide important habitat to other species. These studies not only refine our inventories of species, but are also highly likely to identify new species for the region, and are precursors to future investigations of deeper areas of the reefs. Gaither collected reef fish from sites across the atolls, building on work begun by Bowen on Diego Garcia in 2008. Samples will be processed for DNA analysis using genetic loci to detect patterns of dispersal

and to date phylogenetic events, and to compare with similar data from the Indo Pacific and Red Sea to assess connectivity east and west.

Further, taxonomic and biogeographic studies such as these are part of a larger research initiative under the *Big Ocean Network* (the network composed of the 7 largest MPAs in the world, representing over half of all MPA area worldwide). The *Shared Research Agenda* of the network includes biological and ecological categorisation, and investigations of connectivity. The participation of Wagner and Gaither from NOAA in the Chagos Scientific Expedition 2013 represented a link between the Chagos Marine Protected Area and the Papahānaumokuākea Marine National Monument. For further details of the science projects undertaken in Chagos on the 2013 expedition, please **see Annex 4: Scientific Expedition 2013 Report**.

All data collected this year will be centralised in appropriate databases, and to this end, the PIs are collaborating in a BIOT project to enhance a Chagos GIS, initiated in 2008. In addition, processed data will be entered into global network databases such as the Big Ocean Network, NOAA (various, including ARMS, Sea Temperatures) and the Ichthyology database at the California Academy of Sciences. Data will be submitted to Fishbase, Reefbase, and the UKOTs biodiversity database in due course.

The project will generate the best scientific data to provide information for BIOT Section to manage the BIOT/Chagos MPA for the foreseeable future and to increase the resilience of reefs and associated ecosystems in response to global changes and possible human resettlement. Long-term benefits will be the protection of biodiversity in a wide range of ecosystems, including pelagic, reef and island ecosystems, and protection of functional links between ecosystems, and of migratory species. The scale of the MPA suggests that benefits will be significant at an ocean scale, and communities in some of the poorest countries around the Indian Ocean may benefit from the preservation of a genetically-balanced stock of species which may overspill propagules, juveniles and adults to unprotected regions. Other than military and support personnel, there are no local communities in the territory. However, as explained in earlier sections, the project consults, involves, and educates Chagossian communities in the rich natural environment and conservation of the islands and surrounding marine environment. Awareness of the rich biodiversity of the UK Overseas Territories, is being raised both nationally and internationally, demonstrating how Ocean Legacy MPAs can protect ecosystems and serve as important global reference sites to help understand environmental change.

#### **4. Project support to the Conventions (CBD, CMS and/or CITES)**

Under the 2001 BIOT Environmental Charter, the UK Government facilitates the extension of the UK's ratification of multilateral environment agreements of benefit to the BIOT and which the BIOT has the capacity to implement. CITES and CMS have been extended to the territory, but CBD has not, due to the current inability to fulfil all of the Convention requirements in Chagos, for practical reasons. But, as per the World Heritage Convention, the area is treated by the UK Government with no less strict regard, subject only to defence requirements, and in the case of CBD, the capacity to implement. This project will increase the capability of BIOT in these regards.

CMS: This project will address many agreements and MOUs under the CMS, specifically:

1. MOU on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia. We have already liaised with the Secretariat who recognises the significant value of the Chagos MPA to marine turtle conservation, particularly as they are considered as flagship species on which to base interventions aimed at protecting habitats of importance for a myriad of other marine species.
2. MOU on Migratory Sharks. This is particularly important as several migratory shark species (particularly blue sharks) were the primary bycatch of the tuna fisheries that operated in Chagos prior to the establishment of the no-take MPA. We have already established a strong working relationship with the IUCN Shark Specialist Group.

The CMS MOU for dugongs may also apply. One of the islands in the Chagos archipelago is named after dugongs. Only 3% of Chagos has been explored and on the last scientific expedition, a vast area of seagrass was discovered, therefore this species may exist within the archipelago.

Bycatch is a CMS Initiative that will be addressed to an extent by this project. As the fisheries (inshore and pelagic) in Chagos are now closed, yet had significant documented bycatch, establishing monitoring systems that document changes over time for management purposes will be valuable information for this CMS Initiative.

While there is no international trade in CITES-listed species from Chagos, this emphasises its' value as a reference site for comparison with exploited sites, particularly for corals, giant clams, cetaceans, marine turtles and sea cucumbers. This Convention is also relevant in Chagos for several bird species, notably boobies, and potentially for several CITES listed sharks and seahorses (the latter have not yet been documented in Chagos).

The focal point is DEFRA for BIOT

## 5. Monitoring, evaluation and lessons

This Darwin Initiative project has been monitored by BIOT Section via briefings and debriefings, and has reported to BIOT SAG (Scientific Advisory Panel). The preliminary results of the February-March 2013 scientific expedition will be reported to SAG on 24<sup>th</sup> June by Sheppard. The PIs meet or Skype on a regular basis to assess and evaluate the project's progress in meeting the outcomes.

The success of most project outcomes can be demonstrated directly:

**Output 1:** Scientific expedition 1 was completed in March 2013, with 12 diving scientists and 14 participants overall. The team undertook approximately 300 person dives, equivalent to 300 hours underwater, at 25 sites across 5 atolls. All subprojects have yielded data which is currently being collated and analysed. It is obviously too early to assess the impacts of these findings. Indicators of achievement will be numbers of papers and reports published, databases contributed to, and data entry/recommendations into the Management Plan. The PIs are experienced at planning expeditions, but some **lessons were learned** including:

- (1) Expedition timing. Analysis of mean weather data over last 3 years and experience indicates that the calmest periods are the months of April and November, after the winds change to South Easterly from the North Westerly winds most typical of the December to January period. There is a 9% and 16% probability of winds exceeding 4 on Beaufort scale in November and April respectively, compared with about 50% in June to September. Strong winds increase the difficulty of diving and equipment deployment operations. We will now schedule all expeditions in March-April of each year, with a contingency plan for November. The timing is more acceptable to BIOT Section, because the scientific visits will not follow the Chagossian Heritage visits, and therefore the Pacific Marlin can maintain regular fishery patrols. However this does put the expeditions at the year end, making financial and project progress reporting ion time more challenging.
- (2) Strong currents are common around atolls, often occurring on both sides of an atoll due to the currents splitting. Spring tidal conditions should be avoided, especially on the Great Chagos Bank, where passes are large and water volumes significant, and currents change significantly during the period of a dive.
- (3) It is understood that a scientific expedition may be interrupted if the MV *Pacific Marlin* patrol vessel encounters poaching vessels and has to make arrests. However, it must be agreed that at all other times, the fast rigid inflatable boat (FRIB) should be made available to the expedition to facilitate island landing parties for ornithological and vegetation surveys. There were circumstances when the FRIB was not available to the team during the 2013 expedition, because it was being used by the Fisheries Officer for routine patrols, and leaving us with no adequate vessel for landing island survey teams.

- (4) Some scientists encountered problems importing and exporting biological samples (both CITES and non CITES certified) through Singapore on route to USA. Guidance notes have now been prepared and will be added to the Expedition Joining Letter.
- (5) Diving operations are necessarily conservative, due to the remoteness of the sites and lack of any immediate external assistance. There are no immediate plans for extending operations to deep reefs for example, although these would be possible only with a hyperbaric chamber on site. An application has been made to NERC's National Facility for Scientific Diving for loan of a hyperbaric chamber, combined with training in chamber operation. This facility would provide greater back up in the event of an emergency.

**Output 2:** Provision of scientific equipment and secure storage has been made, thereby reducing the need to ship large amounts of equipment to and from Diego Garcia each year. Approximately £26k has been spent this year on new diving, safety and scientific equipment, including a containerised deck laboratory, and a further £14k on consumables and spares, and shipping out to Diego Garcia via Singapore. This equipment has been pooled with existing stores, providing a comprehensive scientific facility. A permanent solution for storage has now been agreed. The security and environmental protection under extreme conditions will be assessed by the level of degradation of equipment in store. Previously, boats have delaminated due to extreme temperatures, equipment has been 'borrowed' and not been returned, and dive cylinders and tools have corroded due to high humidity. Arrangements are being put in place for the equipment to be checked on a weekly or monthly basis. Some **lessons were learnt:**

The purchasing of equipment and consumables and shipping to Diego Garcia was more complex and costly than expected, underlining the need for secure and environmentally controlled storage to ensure that the stores are fit for purpose for subsequent expeditions. Hazardous materials, including safety flare and laboratory chemicals could not be air freighted and had to be purchased in Singapore by agents, and shipped to Diego Garcia by the supply vessel. These items were very expensive to purchase in Singapore compared with the UK. Arrangements were made for us to ship diving equipment to Diego Garcia via the USA FPO system – a free service for personnel on the island. The supplier was in the USA, and while this system avoided us having to pay UK VAT, shipping costs were applied at source per item, and again proved expensive. However, the system worked very well, and a lot of heavy equipment arrived in Diego Garcia in good condition and in good time.

**Output 3:** Chagossian engagement in the UK has been managed through the Chagos Environment Outreach Project run from ZSL, in collaboration with BIOT and the Chagos Conservation Trust. The success of the project is indicated by approximately 600 visitors to fun days in London and Manchester, involvement of over 40 volunteers, 110 people in discussion sessions, and 44 sign-ups for the training courses. The Chagos Environment Training Course eventually had 51 applicants, and 15 trainees began the course with 12 graduating. The Outreach Project produced 2 Newsletters, a Chagos Information Pack, a film and various onlineservation Fellow resources and social network media sources. A Chagossian Conservation Fellow Bursary workshop was attended by 9 trainees, and an application scheme was developed and 4 bursaries have been awarded for Year 2. Evaluation was undertaken with the Evaluation Coordinator at ZSL, examining activity delivery, impacts and lessons learned. The Fun Days were evaluated by polls, and each module of the training course was evaluated by feedback. Detailed lesson learned are described in the **Chagos Environment Outreach Project Report 2013: Annex 9a** and include:

#### ***Lessons learnt - community***

1. Initial apprehensions on involvement of other (than historically involved) political groups were not founded and the environmental and community nature of this project makes it acceptable and innovative.
2. The Manchester community is different from that of Crawley but have the same expectations, and will get involved in any project dedicated to Chagossians.

3. The use of the French language was useful with community meetings but Creole remains the preferred spoken language. English is better spoken within the Crawley community than the Manchester one.
4. Community meetings are crucial to communicate project aims, vision and discuss involvement of the community. Some good suggestions and ideas for the open days came from these meetings.

#### ***Lessons learnt – Activity Days***

1. Communication before the event was crucial for visitors to understand what activities are on offer and what the theme of the day is.
2. Transport and facilities could be improved, especially access to toilets.
3. Activities based in the Education Centre in London were outcompeted by the famous Zoo animals (e.g. lions and tigers). Educational activities would better be scattered around the zoo to avoid this effect. Taking the Fun Days to a local venue should be considered to tackle this and enhance inclusiveness.
4. People would have liked to come prepared to the discussion sessions, but the topics of these sessions should remain wide and open to allow the audience to ask any questions.
5. The social dimension of the Fun Days contributes largely to their success. People had a fun day out and met people from their community they did not know before. This could be enhanced by providing a larger social hub for picnic time.
6. The Manchester community was happy to have a local event to attend and the turnout showed a great interest for this type of community event.

#### ***Lessons learnt – trainees***

1. The evaluation methods (polls with tokens) used to evaluate the open day worked well and allowed collection of a lot of responses.
2. The pre/post course evaluation is also a very good method to evaluate trainees' progress and assess their distance travelled.
3. Workshop evaluation was too heavy during the event, but this was necessary and useful to evaluate each module. In the future, a simple feedback session could replace written questionnaires.

**Output 4:** Raising awareness of the Chagos Marine Protected Area is a longer term output, and is being achieved in collaboration with the Chagos Conservation Trust and Zoological Society of London and the Pew Environment Group. These organisations have professional personnel skilled in delivering public events and disseminating information in the media. A key activity for involvement and delivery are the collaborative annual conferences which largely focus on the results of the scientific expeditions. Expedition participants contribute to these, and the effectiveness of the meetings is assessed by public attendance and feedback questionnaires. In addition, scientists will publish papers, write popular articles and make contributions to books and other works. The usual measures of invitation, peer review, and publication will be used to demonstrate this output. During year 1, many digital still images and video film clips were recorded and the value of these will be assessed by their uses in public awareness. The GIS being established will archive the varying formats of data and increase accessibility. It will be a challenge to monitor whether awareness increases as a result of this Darwin Project alone, and monitoring will almost certainly have to assess the outputs from collaboration with CCT and ZSL.

The major change to M&E has been the lack of Mauritian involvement for reasons explained previously. The Steering Group undertakes M&E using standard indicators at biannual meetings and briefs BIOT directly, and via the BIOT SAG (Scientific Advisory Panel) (next meeting due 24<sup>th</sup> June, 2013).

## 6. Actions taken in response to previous reviews (if applicable)

Not applicable (Year 1)

## 7. Other comments on progress not covered elsewhere

All aspects adequately covered in depth in main sections.

## 8. Sustainability

There is knowledge of the project amongst scientists in the UK, and internationally amongst coral reef scientist and those involved in Marine Protected Areas. BIOT Section and project scientists have represented the Chagos MPA in producing the *Shared Research Agenda* of the *Big Ocean Network* and much of the research undertaken on the scientific expeditions addresses the major two areas of this Agenda, as described above.

The first stable and sustainable end-point was the establishment of scientific infrastructure and protocols for a comprehensive approach to long-term monitoring against which change can be assessed. We still intend to involve Mauritian scientists, building on existing collaborations. The environmental information will allow BIOT to effectively manage the MPA into the future. Data will be centrally archived and made accessible through GIS which will also feed into global biodiversity systems. Scientific evidence/recommendations will improve the Management Plan, especially by adding BAP species, enabling BIOT managers to implement conservation strategies, environmental impact assessment and enforcement. Monitoring will continue beyond the three years of the project, by externally funded scientists participating in future expeditions based on experience gained here. The second stable end point will be the active participation and support of all Chagossian societies in events and in the case of bursary recipients, training in relevant practical conservation techniques. Once on board and engaged, Chagossian societies, along with UK organisations such as PEW, CCT, RSPB, and others will remain involved through established, ongoing events and activities. The latter is the means to stable end point 3 whereby the importance and significance of the BIOT/Chagos MPA is widely recognised and supported in the UK and internationally. It is hoped that if Mauritian colleagues can eventually be involved, that they will help raise awareness in Mauritius.

## 9. Darwin Identity

The Project is called the '*Darwin Initiative project to strengthen the world's largest Marine Protected Area, Chagos Archipelago*'. The Darwin finch logo has been used along with the ZSL and CCT logos on most outputs.

The Chagos Environment Outreach Programme outputs, such as Information Pack, Newsletter, Film, and on line resources all feature the Darwin logo alongside the BIOT, ZSL and CCT logos. This project is collaborative, and therefore not distinctly Darwin. Documents advertising the Chagossian Conservation Fellow Bursary scheme also feature the logo. 4 sizes of tropical marine environment proof stickers have produced and are placed on all Darwin Initiative project equipment, and feature the Darwin logo along with the words '*Chagos Science and Conservation*' (**pdf of stickers: Annex 6b**). These appear on packing cases, the container laboratory, diving cylinders, compressors, tools and all major items of equipment, and therefore appear in project images.

Scientists, BIOT Section (both in UK government and represented by Royal Marine personnel in Diego Garcia) and many Chagossians who have engaged with the programme understand the role of Darwin Initiative funding. Some Science Expedition participants funds themselves to some extent, but the Project still supports them in the form of access to facilities and organisation of the expeditions, and in many cases, has made a substantial contribution to travel and subsistence costs once in Chagos. It is unlikely that the American personnel based on Diego Garcia are aware of the Darwin Initiative, (but then most have orders for only one year of duty) although they do understand that scientific research and conservation is now on going. There are plans to make presentations to military personnel in later years of the project.

## 10. Project Expenditure

**Table 1 project expenditure during the reporting period (1 April 2012 – 31 March 2013)**

Project spend since last annual report	2012/13 Grant (£)	2012/13 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below) ZSL Project Support Officer (Outreach Project) Koldewey (ZSL) Turner (Bangor) Sheppard (Warwick) Researcher (Warwick)			0	n/a
Consultancy costs			0	n/a
Overhead Costs			0	n/a
Travel and subsistence			-5.6%	Acceptable variance given exchange rate changes and travel options
Operating Costs Outreach Project			0	n/a
Capital items (see below) Diving compressor Diving equipment (for 12 divers) Field safety equipment for operations at sea Survey equipment Field laboratory equipment Field tools			+40.2%	Equipment costs higher than expected due to compulsory purchase of many items in Singapore (eg. hazardous materials – chemicals, flares)) where prices significantly higher than UK. Diving equipment provided through military FPO system from USA supplier direct to US military facility, but shipping costs were invoiced in item cost (£2709.30). Equipment purchased for 3 years of project.
Others (see below) Storage Shipping Consumable items (fuel, breathing air filters, spare parts, medication & first aid)			-14.2%	Lower costs in this header explained by some shipping costs included in item invoice under capital equipment items.
<b>TOTAL</b>				<b>Outstanding balance is mostly attributable to two freight charges which are being claimed from the organisations involved.</b>

The higher spend on equipment cost and inseparable shipping cost on USA FPO ordered items (diving equipment) have not been discussed with LTS as yet. VAT has been removed/reclaimed from items purchased and shipped directly to Diego Garcia, but Singapore Government tax was paid all items purchased in Singapore.

**11. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes**

I agree for the Darwin Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here)

*The two outstanding achievements of the project this year have been the Chagos Environment Outreach Programme and the Chagos Scientific Expedition 2013.*

*The aim of the Outreach Programme is to increase environmental awareness and capacity within all Chagossian communities and to contribute practically to the conservation of the natural environment of the Chagos Archipelago. The Outreach Team designed educational family fun days in London Zoo and Manchester Museum to engage the communities, and a 9 week, 3 module environmental training course for those wanting greater involvement, covering marine ecosystems, terrestrial ecosystems and communication. 600 Chagossians attended the family events, and 12 Chagos Ambassadors graduated from the environment training courses. The Ambassadors are being encouraged to apply for Conservation Fellow Bursaries to fund further training, and Yannick Mandarin joined the 2013 scientific expedition to undertake island surveys.*

*The first Darwin scientific expedition ran between February and March 2013, with 14 international participants, undertaking 300 person dives, equivalent to 300 hours underwater, at 25 sites across 5 atolls, and surveyed the bird populations and vegetation on islands in each atoll. The expeditions return to sites previously surveyed to ensure continuity in data sets over time to assess change, and explore new areas. This year, studies assessed coral settlement and continued seawater temperature monitoring in lagoons and on seaward reefs on each atoll. Video transects were recorded to assess changes in reef cover and community structure over time, and monitoring of repeated earlier surveys. New initiatives established new monitoring methods, or attempted to make comparisons with sites elsewhere. These included deploying a monitoring buoy equipped with baited remote cameras which could film larger fish off the reef front, and impressively stream images back to ZSL in London. Coral growth rates measurements were started by staining tagged colonies, and the growth of skeleton laid down beyond the stained band will be assessed next year for comparison with other sites. Bite rates of parrotfish were recorded to furnish calcium carbonate budget models to assess accretion and erosion. Autonomous Reef Monitoring Structures (ARMS) – essentially standardised habitat units were fixed onto reefs, for retrieval after a year to assess the biodiversity they harbour and to compare with sites throughout the Indo-Pacific. Biodiversity is often highest amongst the groups most scientists normally neglect to study, and therefore cryptofauna inhabiting dead coral heads were collected and identified for comparison with degraded reefs elsewhere in the Indian Ocean. Sponges, black corals and macroalgae provide habitat for other species, and a reference collection was established. These studies not only refine our inventories of species, but are also highly likely to identify new species for the region, and are precursors to future investigations of deeper areas of the reefs. Fish DNA was collected to examine patterns of dispersal to compare with similar data from the Indo Pacific and Red Sea to assess connectivity east and west. Further, taxonomic and biogeographic studies such as these are part of a larger research initiative under the Big Ocean Network (the network composed of the 7 largest MPAs in the world, representing over half of all MPA area worldwide). The Shared Research Agenda of the network includes biological and ecological categorisation, and investigations of connectivity.*

**A large archive of images and video clips is available for this Darwin project**

## Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2012-2013

Project summary	Measurable Indicators	Progress and Achievements April 2012 - March 2013	Actions required/planned for next period
<p><b>Goal/Impact</b></p> <p>To ensure that the Chagos MPA justifies its full no-take status, particularly considering ever increasing fishing pressure in the region and that it fulfils its role as a unique scientific reference site for marine biodiversity.</p>		<p>Project activities this year have contributed scientific information to: underpin the need for strict conservation, and to assess change in the absence of local anthropogenic impacts. The first expeditions has obtained results that contribute to understanding the status of biodiversity within the MPA; the need to reduce pressure on coral reefs; restore degraded areas; and contribute to addressing Goal 1 of CITES and AICHI Biodiversity targets. The Chagossian Outreach Project has increased the understanding of and need for the MPA amongst different community groups.</p>	
<p><b>Purpose/Outcome</b></p> <p>To strengthen the Chagos Marine Protected Area by providing scientific knowledge for effective management and to develop a strategy that engages the support of potential stakeholders through outreach, education and engagement. The legacy will be sound management and increased value of what is currently the world's largest Marine Protected Area and a unique and globally</p>	<p>Engagement of Mauritian scientists in scientific data acquisition for monitoring, island ecosystem restoration and impact mitigation.</p> <p>Active involvement of all Chagossian groups in workshops and training initiatives in UK, Mauritius and Seychelles.</p>	<p>Mauritian scientists have been invited, but have been unable to engage due to stance taken by Mauritius on legality of MPA</p> <p>591 Chagossians have been involved in project events in year 1 and 12 graduated as Chagossian Ambassadors from Environment Training course. One Chagossian joined the 2013 scientific expedition. Chagos Bursary scheme implemented.</p>	<p>Will continue to communicate with Mauritian scientists, and reissue invitation to collaborate, on a regular basis</p> <p>Chagossian family activity days and Further training course planned for 2013-14</p>

Project summary	Measurable Indicators	Progress and Achievements April 2012 - March 2013	Actions required/planned for next period
important reference site.	Increased public awareness of the importance of the Chagos MPA, in the UK, Mauritius and Seychelles	Chagos conference at ZSL and book featuring Chagos with contributions from many project scientists published. Images and film clips recorded for awareness and education. Scientific Expedition blog published	Chagos Conference 2013-14, and Project workshop 2015 planned.  Activities in Diego Garcia and Mauritius/Seychelles dependent on political situation regarding sovereignty and recognition of MPA.
<p><b>Output 1.</b></p> <p>To continue established baselines and develop a more comprehensive approach to long term marine and island ecosystem monitoring against which change can be assessed, and develop an understanding to assess the magnitude and significance of potential impacts from several scenarios, including climate change, island ecosystem restoration and possible human resettlement. The Chagos/BIOT Management Plan will include BAPs and identify how CBD/CMS/CITES strategic goals and AICHI targets will be addressed.</p>	<p>Measures of flora and fauna mapping; reef resiliency, functional diversity and response diversity; and assessments of island erosion and accretion.</p> <p>Development of impact matrices and mitigation measures for potential impacts.</p> <p>Development of restoration initiatives for island flora and fauna.</p>	<p>Output 1 this year has been addressed by the first of 3 scientific expeditions comprising 14 scientists and support members from UK, Australia, USA and representatives from Big Ocean Network, and Chagossian community. comprising:</p> <p><i>Prof. Charles Sheppard, University of Warwick, UK</i>; juvenile coral settlement, and seawater temperature monitoring; <i>Dr John Turner, Bangor University, UK</i>: Video recording of reef cover and community structure at permanent sites and establishment of a video archive; <i>Prof. Morgan Pratchett, James Cook University, Australia</i>: Coral reef cryptofauna and coral growth studies; <i>Dr Daniel Wagner, NOAA, Papahānaumokuākea Marine National Monument, USA</i>: Macroalgae, sponges and back corals; <i>Catherine Head, PhD candidate, Oxford University UK</i>: Reef cryptofauna; <i>Dr Michelle Gaither, California Academy of Sciences, USA</i>: Biogeography of fishes; <i>Dr Ronan Roche, Bangor University, UK</i>: Reef structure: rugosity and erosion by parrotfish; <i>Peter Carr, University of Warwick, UK</i>: Seabird and island vegetation monitoring; <i>Gary Fletcher, Zoological Society of London, UK</i>: Development of instrumentation for pelagic fish monitoring; <i>Yannick Mandarin, Chagossian, Crawley, UK</i>: assisted with bird and vegetation monitoring on islands; <i>John Slayer, UK</i>: Video filming; <i>Anne Sheppard, University of Warwick, UK</i>: photography archive; <i>Jason Davies DG21, USA</i>: Diving support; <i>Dr Jon Bailey, John Radcliffe Hospital, Oxford</i>: Expedition doctor.</p> <p>The expedition continued and in some cases established long term monitoring and impact assessment at 26 sites on seaward and lagoon reefs, and on islands of the major atolls (Salomon, Peros Banhos, Great Chagos Bank, Egmont and Diego Garcia). Data collation and analysis will be used to map flora and fauna, assess functional diversity, assess island erosion and accretion, develop impact matrices and mitigation measures,</p>	

Project summary	Measurable Indicators	Progress and Achievements April 2012 - March 2013	Actions required/planned for next period
		and develop restoration initiatives for island flora and fauna. Data collection towards Output 1 will continue on expeditions 2 and 3. <b><u>Draft Chagos/ BIOT Management Plan (Annex 5)</u></b> submitted – to be updated with BAP species in years 2 and 3 . Indicators remain appropriate.	
Activity 1.1 Steering Group (SG) Meetings to establish Darwin Project and to monitor progress and delivery.		SG met 15 <sup>th</sup> November 2012 and 4 <sup>th</sup> April 2013 at ZSL. Next meeting planned for 10 <sup>th</sup> July 2013.	
Activity 1.2 Meetings with BIOT section FCO and BIOT Science Advisory Group.		Meetings with BIOT on 1 <sup>st</sup> February and 4 <sup>th</sup> April 2013. Reports at BIOT SAG on 26 <sup>th</sup> June and 3 <sup>rd</sup> December 2012 – next 24 <sup>th</sup> June 2013	
Activity 1.3 Develop protocols for environmental survey baseline and monitoring sites, including resiliency and functional diversity/response diversity measures, establishment of GIS and data archiving.		Planning meetings by Skype 2 <sup>nd</sup> April, 4 <sup>th</sup> May, 15 <sup>th</sup> October 2012, prior to SG meetings. Planning involved developing protocols for environmental survey and baseline monitoring at sites throughout the atolls, and these include permanent sites for video transects of physical substrate and benthic cover, coral species and coral recruits, cryptic fauna and fish (all addressed on expedition 1  2008 GIS being expanded. £20,000 additional funding from BIOT Section to extend this work	
Activity 1.4 Develop restoration initiatives for island flora and fauna, erosion and accretion assessment.		Birds and vegetation monitored during Scientific Expedition 1. Successful Darwin Plus 2013 bid made by Carr & Clubbe for Ile Vache rat extermination and restoration project. £32,256	
Activity 1.5 Develop impact matrices and mitigation measures for potential impacts		Leopold Matrix for environmental attribute vs activity begun, but further work required to assess ecological consequences of physical change and socioeconomic consequences and mitigation - to follow this year	
Activity 1.6 Scientific planning meetings for field research expeditions (inc preparation) to cover expedition logistics.		Scientific planning meetings and preparation for field research expeditions took place October 2012 – February 2013, with major meetings on 15 <sup>th</sup> November and 6 <sup>th</sup> December over logistics. BIOT diving rules and Risk Assessments completed. Plans now progressing for Expedition 2	
Activity 1.7 Scientific research expeditions during calmest weather periods, establishment of permanent monitoring sites and biodiversity assessment		Scientific Expedition 1 operated 19 <sup>th</sup> February – 15 March 2013, with 14 international participants from UK, Australia, USA, and included representative from Big Ocean Network on Shared Research Agenda, and a Chagossian Ambassador. 26 reef sites and islands on all major atolls	

Project summary	Measurable Indicators	Progress and Achievements April 2012 - March 2013	Actions required/planned for next period
		surveyed. <b><u>Annex 4: Scientific Expedition 2013 Report</u></b>	
Activity 1.8 Data collation, analysis, archiving and input into relevant global biodiversity monitoring systems		Data collation and analysis underway, with input into databases planned.	
Activity 1.9 Development of Chagos Management Plan and BAPs		First draft completed and submitted to BIOT section ahead of schedule. BAP to be incorporated later in project after all expeditions completed. <b><u>Annex 5: Draft Chagos/BIOT Management Plan</u></b>	
<b>Output 2.</b> Provision of scientific survey equipment and a permanent facility for safe and secure storage between scientific visits, thereby reducing transportation logistics and associated costs.	Purchase and installation of diving compressor, boat and engine, diving equipment, survey equipment and safety equipment accessible to visiting scientists.	<b>Output 2</b> has been completed with provision of scientific equipment and secure storage made, thereby reducing need to ship large amounts of equipment to and from Diego Garcia each year. Approximately £26k spent on new diving, safety and scientific equipment, including a containerised deck laboratory, and a further £14k on consumables and spares, and shipping out to Diego Garcia via Singapore. Equipment pooled with existing stores, providing comprehensive scientific facility. A permanent solution for storage has been agreed. Arrangements being established for the equipment to be checked on a weekly or monthly basis.	
Activity 2.1. Organise & arrange preparation of safe scientific storage facility for/in Diego Garcia, including purchase and installation of diving air compressor, safe storage of boats and engines, and scientific monitoring equipment.		As above. <b><u>Annex 4: P.30 Scientific Expedition 2013 Report</u></b> <b><u>Annex 6a: Chagos Science and Conservation stores list</u></b>	Application made to NERC NFSD for loan of hyperbaric chamber for installation on Diego Garcia to emergency support. Decision due 9 <sup>th</sup> July 2013.
<b>Output 3.</b> Engagement of Chagossians in the UK, Mauritius and Seychelles in importance of biodiversity and conservation through training workshops and outreach activities.	Chagossians from all representative groups attending and taking active part in events in UK, Mauritius, Seychelles. Chagossian societies centrally involved in the organisation of the workshops and design of the activities.	<b>Output 3</b> has been achieved in the UK by Chagos Community Environment Project detailed above, including Chagos Information Pack, Newsletter, and Development of Chagossian Bursary scheme with Chagos Conservation Trust providing an additional bursary, and others (Kew, RSPB, Blue Ventures) providing assistance with courses. <b><u>Chagos Environment Outreach Project Report: Annex 9a</u></b>	
Activity 3.1 Planning meetings with Chagossian Societies and Associations to organise workshops and activities to maximise engagement in outreach activities, including meetings with		Contacts made with Chagossian community leaders in Crawley (April 2012) and Manchester (May 2012), following which Outreach Team planned family activities in London (7 <sup>th</sup> July 2012) and Manchester (21 <sup>st</sup>	

Project summary	Measurable Indicators	Progress and Achievements April 2012 - March 2013	Actions required/planned for next period
representatives in Mauritius and Seychelles		July 2012) and an environmental training course (9 weeks August- November, 2012 ) for those wanting greater involvement,	
Activity 3.2 Events, activities and workshops for Chagossian communities in UK, Mauritius and Seychelles		Approximately 600 Chagossians attended events at London Zoo and Manchester Museum with many attending discussion workshops and expressing interest in further training.	
Activity 3.3 Identification of Chagossian Darwin Fellows for specific training in conservation, and participation in Darwin project bursary and externally funded approved training in diving, survey and practical conservation techniques		<p>The Environmental Training Course run on Saturdays in August to October 2012, at various institutions by partners, and from 51 applicants, 15 began the course and 12 graduated as ‘Chagos Ambassadors’ at an awards ceremony on 15<sup>th</sup> November 2012. The course comprised 3 modules: Marine Environment (reef ecology and coral identification; sustainable fisheries and MPAs, and biological surveys and try dive SCUBA session); Terrestrial Ecosystems (island ecology and bird monitoring; Island restoration and land management; introduction to botany and Chagos plants; and included a ‘Wilderness Weekend’ on environmental projects and team building activities); Communication (communication, evaluation and social marketing and film production)</p> <p><b><u>Chagos Environment Outreach Project; Annex 9a</u></b></p> <p>Outreach Team produced a twice yearly 4 page Chagos Environment Newsletter in French and English (<b><u>Newsletters: Annex 7</u></b>), and prepared a Chagos Environment Information Pack containing DVD showcasing the Family Fun Days and Environmental Training Course; 4 Fact Sheets about the Chagos environment, and a 12 page comic book about the relationship between the community and preservation of Chagos environment (<b><u>Hard copy of pack sent to Darwin Initiative: Annex 8</u></b>). Facebook, Youtube and online resources used substantially in the Outreach Project. The Film at <a href="http://www.zsl.org/chagosfilm">www.zsl.org/chagosfilm</a> and the Chagos website at <a href="http://www.zsl.org/chagoscommunity">www.zsl.org/chagoscommunity</a>.</p>	
Activity 3.4 Conservation skill training on approved courses for Darwin Fellows (x6)		The Darwin Initiative will offer 3 bursaries to Chagossians per year in years 2 and 3 of the project. The Chagos Conservation Trust have offered an additional bursary each year, which may be shared or used for a community project. Application process developed ( <b><u>Chagossian Conservation Bursaries 2013: Annex 10</u></b> ) and generated interest. 4 awards (one shared) made for year 2: Open Water diver training and chainsaw training, botany, diving expedition in Madagascar, and a university access course.	

Project summary	Measurable Indicators	Progress and Achievements April 2012 - March 2013	Actions required/planned for next period
		Yannick Mandarin, a Chagos Ambassador, was funded by BIOT and this Darwin project to join Chagos Scientific Expedition 2013 during which he assisted with monitoring seabirds and island vegetation ( <b><u>see P.21-22 and P.19 of the Scientific Expedition 2013 Report: Annex 4).</u></b> )	
<p><b>Output 4</b></p> <p>Increased general public awareness in UK, Diego Garcia, Mauritius and internationally of the high value of the Chagos Marine Protected Area in protecting a wide range of oceanic ecosystems for benefit of people around Indian Ocean, and as a control site against which to assess impacts of climate change.</p>	<p>Outreach workshop and high profile media events at Zoological Society of London, Diego Garcia (for US military) and Mauritius, to highlight our scientific understanding of the importance of the Chagos, and objectives of conservation. Activities aimed at different age groups. Development of online educational materials and exhibits and use of social media.</p>	<p><b>Output 4</b> addressed this year by involvement in conferences, and indirectly by one paper (Sheppard et al., 2012) and 5 book chapters in Sheppard (ed) <i>Coral Reef of the UK Overseas Territories</i> (<b>Annex 11a-f</b>) the scientific expedition blog, and film and photo recording, and development of a Chagos reef exhibit at ZSL. Activities in Mauritius and Diego Garcia are scheduled for later in the project. Contributions to this Output are on schedule, but activities in Mauritius are currently politically sensitive and require FCO approval.</p>	
<p>Activity 4.1 Planning meetings to organise a variety of public outreach and media events and materials in UK, Diego Garcia and in Mauritius.</p>		<p>This Darwin Initiative Project is working closely with the Chagos Conservation Trust, Pew Environment Group (UK) and ZSL on increasing public awareness of the Chagos Archipelago and Marine Protected Area. For example, the PIs/representatives took part in the CCT brain storm meeting at Pew's London offices on 1<sup>st</sup> February 2013. Events outside UK planned for years 2 and 3.</p>	
<p>Activity 4.2 Events in UK.</p>		<p>Joint conference of the Chagos Conservation Trust and the Zoological Society of London, titled <i>Chagos Marine Reserve: Building on Success</i>, held at the Zoological Society of London on Tuesday 27<sup>th</sup> November featured results of previous scientific expeditions and the Chagos Outreach Project, and introduced next steps in work.</p>	
<p>Activity 4.3 Diego Garcia Event (inc .preparation)</p>		<p>Scheduled for Q3 year 2</p>	
<p>Activity 4.4 Event in Mauritius (inc .preparation)</p>		<p>Scheduled for Q1 year 2, but dependent on FCO approval.</p>	

Project summary	Measurable Indicators	Progress and Achievements April 2012 - March 2013	Actions required/planned for next period
Activity 4.5 Presentation of results at scientific conferences (RCUK, ESRS, ICCM, ISRS)/papers		RCUK 2012 attended in year 1; other presentations scheduled for years 2 and 3.	
Activity 4.6 Project final Chagos MPA workshop UK (inc .preparation)		Scheduled for Q4 Year 3	
Activity XX: Darwin half yearly interim and annual reports		Half yearly report submitted on time, This end of year report submitted late (as informed) due to timing of events (eg scientific expedition) at very end of reporting period.	

## Annex 2 Project's full current (original) logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p><b>Goal:</b></p> <p>Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.</p>			
<p><b>Sub-Goal:</b></p> <p>To ensure that the Chagos MPA justifies its full no-take status, particularly considering ever increasing fishing pressure in the region and that it fulfils its role as a unique scientific reference site for marine biodiversity.</p>	<p>Acceptance of the Ocean Legacy Large Marine Protected Area by stakeholders on the basis of scientific knowledge, underpinning the need for strict conservation.</p> <p>Assessment of effects of climate change in the absence of local anthropogenic impacts.</p>	<p>Agreement on marine protected area management initiatives which will include no marine resource extraction or habitat modification in the MPA.</p> <p>Establishment of monitoring protocols that are sustainable long term, and centralised accessible data basing.</p>	
<p><b>Purpose</b></p> <p>To strengthen the Chagos Marine Protected Area by providing scientific knowledge for effective management and to develop a strategy that engages the support of potential stakeholders through outreach, education and engagement. The legacy will be sound management and increased value of what is currently the world's largest Marine Protected Area and a unique and globally important reference site.</p>	<p>Engagement of Mauritian scientists in scientific data acquisition for monitoring, island ecosystem restoration and impact mitigation.</p> <p>Active involvement of all Chagossian groups in workshops and training initiatives in UK, Mauritius and Seychelles.</p> <p>Increased public awareness of the importance of the Chagos MPA, in the UK, Mauritius and Seychelles</p>	<p>Extend exploration of ecosystems, including awash atolls, Great Chagos Bank lagoon, and islands.</p> <p>Incorporation of scientific knowledge into management plans &amp; global data bases (flora &amp; fauna mapping, ecosystem restoration, anchoring zones, environmental impact assessment).</p> <p>Publication of collaborative scientific reports, and papers in international conservation journals.</p>	<p>Mauritian scientists will collaborate with UK scientists (we have worked together on previous projects) to provide scientific knowledge to underpin conservation.</p> <p>BIOT Administration will support development of ecosystem approach and integrated management of MPA based on scientific evidence and resulting recommendations, and implement the management plans.</p> <p>BIOT Administration to resource active enforcement of the MPA long term.</p> <p>Chagossians to be united in their further</p>

Project summary	Measurable Indicators	Means of verification	Important Assumptions
		<p>Lists of Chagossian participants in workshops on the conservation of marine resources and documentation of relevant skills attained eg. PADI dive certification. Lists of individuals and organisations attending workshop events. Numbers of news items and articles in various local, national &amp; international media.</p>	<p>support for the MPA, primarily by recognising that it does not affect their right to return.</p>
<p><b>Outputs</b></p> <p>1. To continue established baselines and develop a more comprehensive approach to long term marine and island ecosystem monitoring against which change can be assessed, and develop an understanding to assess the magnitude and significance of potential impacts from several scenarios, including climate change, island ecosystem restoration and possible human resettlement. The Chagos/BIOT Management Plan will include BAPs and identify how CBD/CMS/CITES strategic goals and AICHI targets will be addressed.</p>	<p>Measures of flora and fauna mapping; reef resiliency, functional diversity and response diversity; and assessments of island erosion and accretion.</p> <p>Development of impact matrices and mitigation measures for potential impacts.</p> <p>Development of restoration initiatives for island flora and fauna.</p>	<p>Permanent transects and monitoring sites established on representative islands, reefs, and atolls.</p> <p>Archived biodiversity data, including underwater video image records, and enhancement of current GIS database as a central resource.</p> <p>Incorporation of data sets into relevant global biodiversity monitoring systems.</p> <p>A management plan incorporating BAPs, and where potential impacts identified and understood, their significance and magnitude assessed, and methods for their mitigation verified through feedback monitoring &amp; adaptive management.</p>	<p>BIOT will permit regular scientific survey expeditions over the next 3 years.</p> <p>US Air Force flights from Singapore to Diego Garcia will continue to carry visiting scientists.</p> <p>No change in patrol needs that would compromise the agreed in-kind access to the BIOT patrol vessel.</p> <p>Destabilisation in Middle East or Central Asian regions involving activation of Diego Garcia military facility could delay scientific visits.</p>

<b>Project summary</b>	<b>Measurable Indicators</b>	<b>Means of verification</b>	<b>Important Assumptions</b>
2. Provision of scientific survey equipment and a permanent facility for safe and secure storage between scientific visits, thereby reducing transportation logistics and associated costs.	Purchase and installation of diving compressor, boat and engine, diving equipment, survey equipment and safety equipment accessible to visiting scientists.	Scientific equipment available to scientists for series of visits over the next 3 years and beyond.	Space will be allocated in a dry building adjacent to harbour/marina by US Naval support facility/BIOT Administration.
3. Engagement of Chagossians in the UK, Mauritius and Seychelles in importance of biodiversity and conservation through training workshops and outreach activities.	Chagossians from all representative groups attending and taking active part in events in UK, Mauritius, Seychelles. Chagossian societies centrally involved in the organisation of the workshops and design of the activities.	Interest and engagement of Chagossians – list of participants and workshop evaluation forms. Individuals identified and selected for further externally funded initiatives (eg diving and underwater survey training, practical conservation techniques).	Assumes the continued and genuine involvement of Chagossians.  Assumes external interest and sponsorship for Chagossian training initiatives, such as that previously provided by RSPB and Coral Cay Conservation.
4. Increased general public awareness in UK, Diego Garcia, Mauritius and internationally of the high value of the Chagos Marine Protected Area in protecting a wide range of oceanic ecosystems for benefit of people around Indian Ocean, and as a control site against which to assess impacts of climate change.	Outreach workshop and high profile media events at Zoological Society of London, Diego Garcia (for US military) and Mauritius, to highlight our scientific understanding of the importance of the Chagos, and objectives of conservation. Activities aimed at different age groups. Development of online educational materials and exhibits and use of social media.	Interest and engagement of general public at local, national and international levels; Workshop participant lists; positive media output – number of articles, types of media;  number of visitors to exhibit and results of formal evaluation. Number of Facebook ‘likes’, number of followers on Twitter, number of visitors to web-pages, number of downloads of web-resource materials.	Media in UK accomplish the planned documentary programmes, encouraging a rational approach to conservation in Chagos.

### **Activities (details in workplan)**

- 1.1 Steering Group Meetings to establish Darwin Project and to monitor progress and delivery (inc. preparation)
- 1.2 Meetings with BIOT section FCO and BIOT Science Advisory Group (inc. Preparation) for monitoring and evaluation.
- 1.3 Develop protocols for environmental survey baseline and monitoring sites, including resiliency and functional diversity/response diversity measures, Establishment of GIS and data archiving
- 1.4 Develop restoration initiatives for island flora and fauna, erosion and accretion assessment.
- 1.5 Develop impact matrices and mitigation measures for potential impacts
- 1.6 Scientific planning meetings for field research expeditions (inc. preparation) to cover expedition logistics.
- 1.7 Scientific research expeditions (3 x 1 month) during calmest weather periods, establishment of permanent monitoring sites and biodiversity assessment
- 1.8 Data collation, analysis, archiving and input into relevant global biodiversity monitoring systems
- 1.9 Development of Chagos/BIOT Management Plan incorporating BAPs and Impact mitigation recommendations
- 2.1 Organise & arrange preparation of safe scientific storage facility for/in Diego Garcia, including purchase and installation of diving air compressor, safe storage of boats and engines, and scientific monitoring equipment.
- 3.1 Planning meetings with Chagossian Societies and Associations to organise workshops and activities to maximise engagement in outreach activities, including meetings with representatives in Mauritius and Seychelles
- 3.2 Events, activities and workshops for Chagossian communities in UK, Mauritius and Seychelles
- 3.3 Identification of Chagossian Darwin Fellows for specific training in conservation, and participation in Darwin project bursary and externally funded approved training in diving, survey and practical conservation techniques
- 3.4 Conservation skill training on approved courses for Darwin Fellows ( x 6)
- 4.1 Planning meetings to organise a variety of public outreach and media events with supporting materials in UK, Diego Garcia and in Mauritius (inc .preparation)
- 4.2 Events in UK (inc preparation)
- 4.3 Diego Garcia Event (inc .preparation)
- 4.4 Event in Mauritius (inc .preparation)
- 4.5 Presentation of results at national and international scientific conferences (RCUK, ESRS, ICCM, ISRS) and publication in peer reviewed journals
- 4.6 Project final Chagos MPA workshop UK (inc .preparation)
- X.X Darwin half yearly interim and annual/final report (s)

**Original project implementation timetable showing the key milestones in project activities.**

	Activity	No of Months	Year 1 2012/13				Year 2 2013/14				Year 3 2014/15			
			Q1 A-J	Q2 J-S	Q3 O-D	Q4 J-M	Q1 A-J	Q2 J-S	Q3 O-D	Q4 J-M	Q1 A-J	Q2 J-S	Q3 O-D	Q4 J-M
1.1	Steering Group Meeting s to establish Darwin Project and to monitor progress and delivery (inc. preparation)	1	▪		▪		▪		▪		▪		▪	
1.2	Meetings with BIOT section FCO and BIOT Science Advisory Group (inc. Preparation)	0.5	▪			▪				▪				
1.3	Develop protocols for environmental survey baseline and monitoring sites, including resiliency and functional diversity/response diversity measures, Establishment of GIS and data archiving	6	▪	▪	▪									
1.4	Develop restoration initiatives for island flora & fauna, erosion and accretion assessment.	4	▪	▪	▪									
1.5	Develop impact matrices and mitigation measures for potential impacts	1		▪	▪									
1.6	Scientific planning meetings for field research expeditions (inc preparation) to cover expedition logistics.	3		▪				▪		▪				
1.7	Scientific research expeditions during calmest weather periods, establishment of permanent monitoring sites and biodiversity assessment	3				▪					▪			▪
1.8	Data collation, analysis, archiving and input into relevant global biodiversity monitoring systems	15					▪	▪			▪	▪		▪
1.9	Development of Chagos Management Plan and BAPs	18							▪	▪	▪	▪	▪	▪
2.1	Organise & arrange preparation of safe scientific storage facility for/in Diego Garcia, including purchase and installation of diving air compressor, safe storage of boats and engines, and scientific monitoring equipment.	6	▪	▪	▪						▪			▪
3.1	Planning meetings with Chagossian Societies and Associations to organise workshops and activities to maximise engagement in outreach activities, including meeting s with representatives in Mauritius and Seychelles	1	▪	▪										
3.2	Events, activities & workshops for Chagossian communities in UK, Mauritius & Seychelles	3			▪		▪		▪		▪		▪	
3.3	Identification of Chagossian Darwin Fellows for specific training in conservation , and participation in Darwin project bursary and externally funded approved training in diving, survey and practical conservation techniques	0.5			▪									
3.4	Conservation skill training on approved courses for Darwin Fellows (x6)	6					▪	▪			▪	▪		
4.1	Planning meetings to organise a variety of public outreach and media events and materials in UK, Diego Garcia and in Mauritius (inc .preparation)	1			▪									
4.2	Events in UK (inc preparation)	3				▪	▪						▪	
4.3	Diego Garcia Event (inc .preparation)	0.5							▪					
4.4	Event in Mauritius (inc .preparation)	1					▪							
4.5	Presentation of results at scientific conferences (RCUK, ESRS, ICCM, ISRS)/papers	6		▪	▪		▪	▪	▪		▪		▪	
4.6	Project final Chagos MPA workshop UK (inc .preparation)	3												▪
X.X	Darwin half yearly interim and annual reports	2			▪		▪		▪		▪		▪	▪

## Annex 3 Standard Measures

**Table 1 Project Standard Output Measures**

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for reporting period	Total planned during the project
2	MSc project work	1					1	3
3	Darwin Bursary	0					0	6
4A	Input into Under-graduate courses(nos. enrolled)	240					100	300
4B	UG Training weeks	2					2	6
4C	Input into Postgraduate courses (nos.enrolled)	18					20	200
4D	PG training weeks	2					2	6
5	Chagossian Environment Training Course graduates	12					15	40
6A	Chagossian public events attendees	600					?	90
6B	Training weeks	6					6	18
7	Training materials (for modules)	3						3
8	Person weeks in host country	46					45	120
9	Management Plans	1					1	5
11A	Papers published	1					1	5
11B	Papers submitted	1					1	5
12b	GIS/Video/Photo archive	3					1	3
13A	Species ref collections established (sponges, black corals, macroalgae, cryptofauna-crustacea)	4					0	4
13B	Species ref collections enhanced (fish)	1					0	1
14A	Conferences/Workshops organised	1					1	3
14B	Conferences attended	3					2	7
15A	Press releases Mauritius	0						3
15B	Local press Mauritius	1						?
15 C	National Press release UK	0					0	20
15D	Local Press release UK	3					2	5
16A	Newsletters	4					2	6
16B	Circulation	?					?	300-500
17A	Dissemination networks established	2					0	2
17B	Dissemination networks extended	2					2	4

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for reporting period	Total planned during the project
18B	Local TV programmes	0					0	2
18D	TV features	0					0	2
19B	National Radio UK	0					0	4
19D	Local Radio UK	0					0	3
20	Physical assets	£26k					£18.5k	£20k
21	No. Facilities – scientific storage/container lab	2					2	2
22	No. Permanent field plots	26					25	50
23	Value of resources raised from additional sources	556,861						554,553

**Table 2 Publications**

Type (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
Journal	Sheppard et al (2012)		Aquat Conserv Mar Freshwat Ecosyst. 22:232–261	
Sheppard CRC, Ateweberhan M, Bowen BW, Carr P, Chen CA, Clubbe, C, Craig MT, Ebinghaus R, Eble J, Fitzsimmons N, Gaither MR, Gan CH, Gollock M, Guzman N, Graham NAJ, Harris A, Jones R, Keshavmurthy S, Koldewey H, Lundin CG, Mortimer JA, Obura D, Pfeiffer M, Price ARG, Purkis S, Raines P, Readman JW, Riegl B, Rogers A, Schleyer M, Seaward MRD, Sheppard ALS, Tamelander J, Turner JR, Visram S, Vogler C, Vogt S, Wolschke H, Yang JMC, Yang SY, Yesson C (2012) Reefs and islands of the Chagos Archipelago, Indian Ocean: why it is the world's largest no-take marine protected area. <i>Aquat Conserv Mar Freshwat Ecosyst</i> 22:232–261*				
Book	Sheppard (ed) (2013) <i>Coral Reefs of the UK Overseas Territories. No 4. Coral Reefs of the World: 5 chapters on Chagos*</i> :  (All chapters are co-authored by members of the Darwin project, although much of the work featured originates on earlier expeditions than those of this project)	Springer	Springer DE  <a href="http://www.springer.com/environment/aquatic+sciences/book/978-94-007-5964-0">http://www.springer.com/environment/aquatic+sciences/book/978-94-007-5964-0</a>	£72
Chapter 17, Shepherd et al., <i>British Indian Ocean Territory (the Chagos Archipelago): setting, connections and the Marine Protected Area</i>				
Chapter 18, Shepherd et al., <i>Coral reefs of the Chagos Archipelago, Indian Ocean</i>				
Chapter 19, Graham et al., <i>The status of coral reef fish assemblages in the Chagos Archipelago, with implications for protected area management and climate change</i>				
Chapter 20, Carr et al., <i>Coral Islands of the British Indian Ocean Territory (Chagos Archipelago)</i>				
Chapter 21, Readman et al., <i>Contaminants, pollution and potential anthropogenic impacts on Chagos/BIOT</i>				

## Annex 4 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

Annex 4: Chagos Scientific Expedition 2013 Report

Annex 5: Draft Chagos/BIOT Management Plan

Annex 6a: Chagos Science and Conservation stores lists (Excel spreadsheet) ; 6b pdf of Darwin Initiative Chagos Science & Conservation stickers

Annex 7: Chagos Environment Outreach Project Newsletters (x2)

Annex 8: Chagos Environment Information Pack (Hard copy-includes DVD, factsheets, comic book)

Annex 9a: Chagos Environment Outreach Project Report 2013; (9,cb) Fun Day summary sheets x2); 9d Example local newspaper articles.

Annex 10: Chagossian Conservation Bursaries 2013

Annex 11a: Sheppard et al (2012) Reefs and islands of the Chagos Archipelago, Indian Ocean: why it is the world's largest no-take marine protected area. Aquatic Conserv: Mar. Freshw. Ecosyst. 22: 232–261; Annex 11a-f: Sheppard ed. (2013) Coral Reefs of the UK Overseas Territories, No 4. Coral Reefs of the World Vol 4. Springer (5 Chagos chapters).

Annex 12: Congratulations letter to Outreach Team – Bellingham

Annex 13: Misc Press items

### Checklist for submission

	Check
<b>Is the report less than 10MB?</b> If so, please email to <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> putting the project number in the Subject line.	✓
<b>Is your report more than 10MB?</b> If so, please discuss with <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> about the best way to deliver the report, putting the project number in the Subject line.	X
<b>Have you included means of verification?</b> You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	✓
<b>Do you have hard copies of material you want to submit with the report?</b> If so, please make this clear in the covering email and ensure all material is marked with the project number.	✓
Have you involved your partners in preparation of the report and named the main contributors	✓
Have you completed the Project Expenditure table fully?	✓
Do not include claim forms or other communications with this report.	