



## Darwin Plus: Overseas Territories Environment and Climate Fund Final Report

*To be completed with reference to the “Writing a Darwin Report” guidance: (<http://www.darwininitiative.org.uk/resources-for-projects/reporting-forms>). It is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)*

### Darwin Project Information

|                                   |   |
|-----------------------------------|---|
| Project reference                 | DPLUS069  |
| Project title                     | Building data resources for managing the SGSSI Marine Protected Area  |
| Territory(ies)                    | South Georgia and the South Sandwich Islands  |
| Lead organisation                 | British Antarctic Survey, NERC (part of UK Research and Innovation)   |
| Partner institutions              | Government of South Georgia and the South Sandwich Islands  |
| Grant value                       | £173,932  |
| Start/end date of project         | 1 <sup>st</sup> April 2017 to 30 <sup>th</sup> June 2019  |
| Project leader name               | Dr Susie Grant  |
| Project website/Twitter/blog etc. | Project website: <a href="https://www.bas.ac.uk/project/building-data-resources-for-managing-the-south-georgia-south-sandwich-islands-marine-protected-area/">https://www.bas.ac.uk/project/building-data-resources-for-managing-the-south-georgia-south-sandwich-islands-marine-protected-area/</a><br>South Georgia & South Sandwich Islands MPA Data Portal: <a href="http://apex.nerc-bas.ac.uk/f?p=154:1">http://apex.nerc-bas.ac.uk/f?p=154:1</a><br>South Georgia GIS: <a href="https://sqgis.gov.gs/home/sqssi_mpa">https://sqgis.gov.gs/home/sqssi_mpa</a> |
| Report author(s) and date         | Susie Grant, Helen Peat, Caitlin Allan, Phil Trathan<br>November 2019   |

## 1 Project Overview

South Georgia and the South Sandwich Islands (SGSSI) is a British Overseas Territory in the southern Atlantic Ocean (Figure 1). These sub-Antarctic islands are surrounded by a 200 nm Maritime Zone, which encompasses some of the world’s most biologically rich waters, including abundant marine mammals and seabirds, diverse benthic habitats and species, as well as important commercial fisheries.

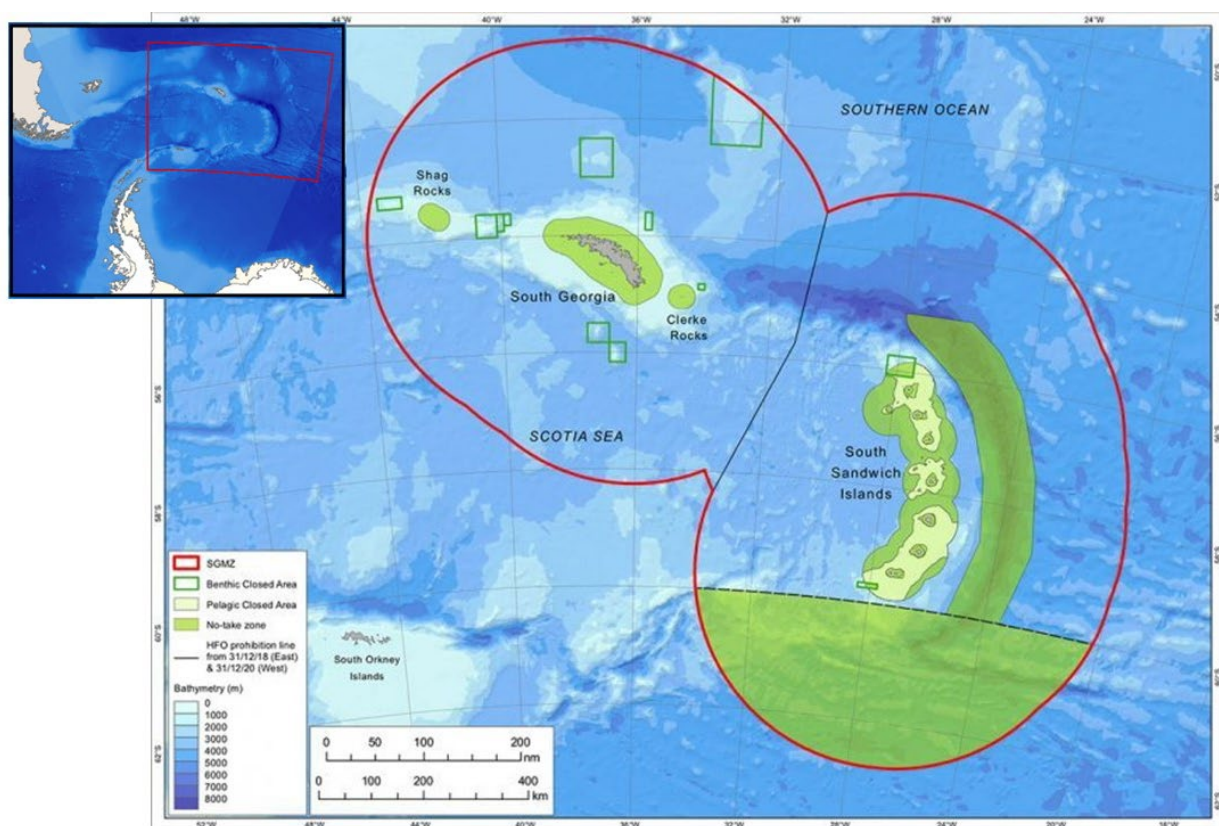
The SGSSI Marine Protected Area (MPA) was established in 2012, with the aim of ensuring the protection and conservation of the region’s rich and diverse marine life, whilst allowing the continuation of sustainable and carefully regulated fisheries.

The Government of South Georgia and the South Sandwich Islands (GSGSSI) has committed to monitor activities throughout the MPA and to undertake a review every 5 years. The first of these reviews was completed in 2018 (during the second year of this project), resulting in the announcement of a range of enhanced environmental and management measures. Review and ongoing management of the SGSSI MPA requires accessible and comprehensive data on the status and trends of marine biodiversity, ecosystem features and human activities. The aim of this project was therefore to deliver an integrated MPA Data Portal and online Geographic

Information System (GIS), tailored to provide information and analyses to support the 2018 MPA review as well as the future management of the MPA. The availability of such information will improve transparency in management and stakeholder consultation processes.

The integration of biological data with spatial information will also have significant benefits in terms of improving fundamental understanding of the marine ecosystem in this region. This is critical not only for management of the MPA, but also as a basis for extending our knowledge on the distribution and abundance of species, and their likely responses to potential future environmental change.

In addition, this project aimed to work across stakeholder networks to develop a draft MPA Research and Monitoring Plan (RMP) for consideration by GSGSSI. The development of this plan is important in contributing to GSGSSI objectives to ensure that high quality research underpins the Territory's management. Once agreed, the RMP will guide future scientific activities in and around the SGSSI MPA that will contribute to an increased understanding of the marine ecosystem, provide information to evaluate the effectiveness of the MPA, and inform the development of enhanced management.



**Figure 1.** Map of South Georgia and the South Sandwich Islands (inset showing location in the southern Atlantic Ocean) and the extent of the SGSSI Marine Protected Area, with new enhanced measures announced in December 2018 (from: <http://www.gov.gs/32110-2/>)

## 2 Project Stakeholders/Partners

This project was a collaboration between the British Antarctic Survey (BAS Ecosystems team, BAS Mapping and Geographic Information Centre, and NERC UK Polar Data Centre) and the Government of South Georgia and the South Sandwich Islands (GSGSSI). The project leader and team members communicated regularly with GSGSSI to determine specific inputs required to inform the 2018 MPA review and priorities for inclusion in the MPA Research and Monitoring Plan, as well as to obtain feedback on the MPA Data Portal and web GIS as they are developed.

Staff changes within GSGSSI during both the first and second years of the project were challenging in terms of maintaining project continuity. However, the GSGSSI Director of Fisheries and Environment was based in Cambridge rather than in the Falkland Islands from August 2018, which made communications easier, and also saved on international travel costs originally budgeted for attendance at workshops in the UK.

During the course of the project we obtained regular input on the project objectives in the context of government priorities. The project leader was invited to give a talk at the annual GSGSSI Fisheries Science and Industry Meeting (28th September 2018) (**Evidence:** see Annual Report 2019), which was a very useful opportunity to further publicise the aims of the project and to obtain input from stakeholders on planning the development of the Research and Monitoring Plan (RMP). We have been in regular contact with the GSGSSI Director of Fisheries and Environment and the Marine Environment & Fisheries Manager to monitor progress, and for advice on the appropriate inclusion of fisheries management data. Feedback on the presentation of fisheries information was also obtained from colleagues at Cefas. Towards the end of the project we demonstrated beta versions of the Data Portal and the MPA GIS to the GSGSSI Chief Executive), and received positive feedback on their utility for management of the MPA.

The GSGSSI, as project partners and key end-users of the project outputs, has recognised the importance of a scientific approach to management of the marine ecosystem, expressed strong support for the development of the data resources and RMP as key components of the future management of the MPA. GSGSSI has also funded a short contract extension for the MPA data manager beyond the scope of this project, which has allowed further work to operationalise the RMP.

Project stakeholders include scientists who contribute and use biological and environmental datasets relevant to the SGSSI region. We have engaged with this community during the course of the project, starting with a workshop held early in the project (May 2017) to obtain input on the priorities for data to be included in the database/GIS, and derived data products to be generated (**Evidence:** see Annual Report 2018). Many of these scientists have remained engaged with the project and also attended our second workshop (December 2018) to develop the structure and content of an MPA Research and Monitoring Plan. (**Evidence:** Annex 6 - RMP Workshop Report), as well as providing feedback on the draft RMP.

Environmental NGOs are also key stakeholders in the development of effective protection and management for SGSSI, and there is broad interest from this community in accessing details of scientific activities relevant to the MPA, and in contributing to the development of effective MPA monitoring. Representatives of NGOs including Birdlife International, Pew Charitable Trusts and WWF-UK participated in the Research and Monitoring Plan workshop (**Evidence:** Annex 6 - RMP Workshop Report), and provided feedback on the development of the draft RMP.

During the project, we also had useful interactions with the DPLUS065 project on 'Mapping Falklands and South Georgia coastal margins for spatial planning'. Members of the DPLUS065 project team participated in our Research and Monitoring Plan workshop, and we have made some of new map data on South Georgia coastal margins available through the SGSSI MPA online GIS. In addition, Phil Trathan (DPLUS069 project science adviser) was invited to give a presentation on the draft Research and Monitoring Plan at a Blue Belt symposium in July 2019), whilst Susie Grant (DPLUS069 project leader) was invited to give a presentation on the project outputs and future collaborative opportunities in the UKOTs, at the DPLUS065 Spatial tools for conservation planning in remote spaces workshop (November 2019).

Towards the end of the project, we also engaged with a recently-funded Darwin Plus project (DPLUS093) on '*Hadal zones of our Overseas Territories*', who are producing updated bathymetric data for the South Sandwich Trench, and propose to use our MPA Data Portal as a platform through which to make the data publicly available. Such requests demonstrate the way in which the Data Portal is seen by external users as valuable means by which to make data accessible and directly useful for management purposes.

### 3 Project Achievements

#### 3.1 Outputs

All three of the project Outputs set out in our application have now been achieved, and together they form a package of tools that will enhance and support the management of the SGSSI MPA into the future.

##### 1) *MPA Data Portal*

The South Georgia and South Sandwich Islands MPA Data Portal has been completed, and is currently available at: <http://apex.nerc-bas.ac.uk/?p=154:1>. We are finalising consultations with GSGSSI on their preferred URL, and the site will be launched publicly in January 2020. Most of the content of the Portal is open-access, however some limited information on fisheries and unpublished data time series is restricted to those with login credentials, i.e. GSGSSI and BAS staff.

The MPA Data Portal contains 93 online pages summarising information on ecology, physical environments, human activities and scientific research within the MPA, including 62 embedded (dynamically updated) maps and 101 data summary figures. Where available, data pages are linked to the relevant BAS metadata records (BAS Discovery Metadata System - <https://data.bas.ac.uk/>), which provide the opportunity for users to request data access.

A one-day data prioritisation workshop was held in May 2017 and was attended by 32 scientists and other stakeholders from BAS, GSGSSI, Birdlife, Cefas, Exeter University, Joint Nature Conservation Committee (JNCC), Marine Resources Assessment Group (MRAG), Oxford University, Pew Trusts, RSPB, South Atlantic Environmental Research Institute (SAERI), and WWF-UK. Discussions on relevance and availability of priority datasets, and approaches for summarising and visualising information provided guidance on further work towards Output 1. Products from the data prioritisation workshop included a prioritised list of relevant datasets which should be included in the SGSSI MPA database/GIS, with information on data owners and location, access constraints, and specific parameters relevant to MPA objectives.

New datasets can continue to be added to the Data Portal in the future, either through an automatic process where embedded maps and data summary figures are updated as new data are added to underlying databases, or through users uploading metadata information directly through the website (via a 'contribute data' button) for accessioning when Polar Data Centre resources allow.

##### 2) *MPA Geographic Information System (GIS)*

This new MPA-specific version of the online South Georgia GIS has been completed, and is available at: [https://sggis.gov.gs/home/sgssi\\_mpa](https://sggis.gov.gs/home/sgssi_mpa). We have expanded the range of datasets accessible through this online resource, with a total of 34 layers, including updated management boundaries, fishery-specific depth contours, sea ice extent, and high resolution bathymetry. We have also collaborated with the Darwin Plus (DPLUS065) Coastal Habitat Mapping project to make high resolution habitat map data for the South Georgia coastal margin (based on Sentinel-2 satellite imagery) available in the GIS.

Data layers are free to download (in ESRI shapefile, kmz and csv formats) via the British Antarctic Survey Geodata Portal. Initial data products and visual summaries were provided to the November 2018 meeting of the SGSSI MPA Review Panel, including in the report on "*South Georgia & South Sandwich Islands MPA Review: Summary of recent (2013-2017) and planned research and monitoring*". (**Evidence:** see Annual Report 2018)

New datasets have been incorporated into the South Georgia GIS as planned (news story on the GSGSSI website: <http://www.gov.gs/31493-2/>), and the MPA-specific GIS now contains 34 data layers. Maps and data summaries were provided for use as part of the MPA review process and will be available for use by all stakeholders for future review and consultation processes. We anticipate that data layers available through the MPA GIS will be used by the community of scientists interested in the SGSSI region beyond the lifetime of this project.



### 3) MPA Research and Monitoring Plan

The Research and Monitoring Plan workshop held in December 2018 aimed to develop proposals on the structure and content of a draft RMP, as well as recommendations on its practical implementation. The workshop was attended by 33 scientists and stakeholders from BAS, GSGSSI, Argos Froyanes, Birdlife, Cefas, Joint Nature Conservation Committee (JNCC), Marine Resources Assessment Group (MRAG), Pew Trusts, RSPB, South Atlantic Environmental Research Institute (SAERI), Université de Bourgogne, University College London, and WWF-UK. The outcomes (Annex 6 – RMP workshop report) provided a comprehensive, stakeholder-led basis for development of a draft RMP. Following further consultation with the stakeholder group, a draft RMP was provided for use by GSGSSI (**Evidence:** Annex 7 – draft Research and Monitoring Plan).

The SGSSI MPA RMP is designed to be a tool to support the ongoing management of the MPA and to prioritise and focus research activities, as well as to highlight the importance of long-term monitoring. It provides a framework through which any interested scientists and stakeholders are encouraged to collect, access and analyse data, including relevant baseline data and indicators. Data collected and analysed under this plan can be used as a basis to evaluate the effectiveness of the MPA in relation to its conservation and management objectives, to consider whether the boundaries of the MPA continue to encompass the features associated with specific MPA objectives, and to further understanding of the ecosystems and resources that the MPA protects.

Relevant components of the RMP have also been incorporated into the MPA Data Portal, allowing access to research themes and priority questions, current monitoring activities, and links to relevant projects (see <http://apex.nerc-bas.ac.uk/f?p=154:83>).

#### 3.2 Outcome

The project Outcome of supporting enhanced management of the SGSSI MPA has been achieved through the provision of the MPA Data Portal, the online MPA GIS, and the MPA Research and Monitoring Plan, all of which were highlighted as being of value to recent and future MPA review processes (**Evidence:** Record of the 2018 MPA Review Workshop – <http://www.gov.gs/docsarchive/Environment/Marine%20Protected%20Area/presentations/Marine%20Protected%20Area%205-year%20Review%20Workshop%2011-12%20June%202018.pdf> and MPA 5-year Review Report to GSGSSI - [http://www.gov.gs/docsarchive/Environment/Marine%20Protected%20Area/SGSSI\\_5year\\_MPA\\_Review\\_Summary\\_Report\\_to\\_GSGSSI\\_\(Nov%202018\).pdf](http://www.gov.gs/docsarchive/Environment/Marine%20Protected%20Area/SGSSI_5year_MPA_Review_Summary_Report_to_GSGSSI_(Nov%202018).pdf)) and have been welcomed by GSGSSI. These will continue to support MPA management into the future.

Outputs from the project were made available to support the 2018 MPA review process, which resulted in enhanced management measures being implemented by GSGSSI (**Evidence:** updated MPA measures announced in December 2018 - <http://www.gov.gs/32110-2/> and enacted into legislation in May 2019 – <http://www.gov.gs/mpa-legislation-announcements-25th-may-2019/>). We anticipate that information and data layers available through the MPA Data Portal and the MPA GIS will be used by the community of scientists interested in the SGSSI region beyond the lifetime of this project.

In relation to the indicators for this Outcome, this project has:

- i) increased the availability of datasets within the MPA Data Portal and GIS to support management – the MPA Data Portal now contains 93 online pages summarising information on ecology, physical environment, human activities and scientific research within the MPA, including 62 embedded (dynamically updated) maps and over 100 data summary figures and tables. All of the available data are linked to the relevant BAS metadata discovery system, which provide a facility for data requests.
- ii) developed a Research and Monitoring Plan for implementation by GSGSSI, and for use by researchers interested in South Georgia and the South Sandwich Islands. Specific research needs identified in the research plan have already been used as a basis for guiding new research (e.g. winter tracking of Gentoo penguins (<https://www.bas.ac.uk/project/gentoo-penguin-tracking/>), improved mapping of hadal zones (DPLUS093) and updated seabird population estimates for the South Sandwich Islands (University of Oxford).

iii) implemented a clear framework under the RMP and through the Data Portal for guiding MPA-related research, acquiring data and making it accessible to support management decision-making. Together these outputs provide a facility that supports the direct application of science into policy and management outcomes.

### 3.3 Long-term strategic outcome(s)

This project has been undertaken at a critical time for the SGSSI MPA, during which its first review process was undertaken by an advisory panel of experts (<http://www.gov.gs/advisory-group/>), and enhanced management provisions were developed and announced by GSGSSI. The need for accessible datasets in support of management was reaffirmed during the review, and the ability of this project to provide such information was recognised (**Evidence:** MPA 5-year Review Report to GSGSSI - [http://www.gov.gs/docsarchive/Environment/Marine%20Protected%20Area/SGSSI\\_5year\\_MPA\\_Review\\_Summary\\_Report\\_to\\_GSGSSI\\_\(Nov%202018\).pdf](http://www.gov.gs/docsarchive/Environment/Marine%20Protected%20Area/SGSSI_5year_MPA_Review_Summary_Report_to_GSGSSI_(Nov%202018).pdf))).

The project outcomes will improve the framework for research and monitoring to be undertaken in support of future MPA reviews and management. It will support the engagement of scientists and other stakeholders in identifying research needs for the MPA, and in contributing to outputs that inform management and relate specifically to the MPA objectives.

The outputs from this project address three of the key objectives set out in the South Georgia and the South Sandwich Islands Strategy 2016-2020:

2.2 Increase SGSSI's environmental global reach through collaboration and knowledge sharing with our stakeholders including the UK and other UK Overseas Territory governments and non-governmental organisations.

2.5 Enhance knowledge of the biodiversity and habitats of SGSSI through research, monitoring and review, including to establish scientific baselines from which to assess environmental change including the potential effects of climate change.

3.3 Establish arrangements for monitoring and assessing the performance of the MPA to provide evidence for future management decisions in the context of the MPA review in 2018.

The project has also directly addressed two of the strategic priorities outlined in the *UK Overseas Territories Biodiversity Strategy*, and provides an example for how similar initiatives might be implemented to address these priorities in other UKOTs:

(i) obtaining data on the location and status of biodiversity interests and the human activities affecting biodiversity to inform the preparation of policies and management plans (including baseline survey and subsequent monitoring);

(v) developing ecosystem-based initiatives for the conservation and sustainable use of the marine environment.

Building relationships with stakeholders has been an important part of the project, and we have engaged with several groups who will continue to contribute data beyond the lifetime of this project, for example BirdLife International, the South Atlantic Environmental Research Institute, Oxford University and the British Geological Survey. The two workshops convened as part of this project have brought together a network of scientists interested in MPA-related research, facilitating connections between them and raising awareness of the MPA objectives and importance of science to inform management decisions.

The outputs from this project may also be useful in informing the development of tools for marine spatial management in other UK Overseas Territories (e.g. current Darwin Plus application to create a FAIR (findable, accessible, interoperable and reusable) data repository for Tristan da Cunha environmental data), where the underlying software and web applications developed for DPLUS069 could be utilised to develop similar data portal systems elsewhere.

## 4 Sustainability and Legacy

The MPA Data Portal and GIS are designed to allow for new information to be collected, stored, accessed, and used for management purposes, well beyond the lifetime of this project. The Data Portal uses dynamic links to databases and map layers held centrally at British Antarctic Survey, and maps, tables, graphs etc. will therefore be automatically updated in the Portal when new data are added to these databases in the future, for example as part of ongoing long-term monitoring conducted (and core funded) by BAS. The Data Portal also contains a mechanism for any user to upload details of datasets that they would be willing to make available. This information will be stored until data can be added to the Portal when resources allow.

While there are provisions for some new data to be automatically included with no further time or resource costs, there will be some requirement for maintenance and updates to be undertaken beyond the lifetime of this project. In particular, it may be necessary to update the Data Portal and make relevant information available for the next MPA review in 2023. This may require further funding applications, however it may also be possible for some work to be facilitated as part of existing or future BAS contracts to undertake mapping and data management work for GSGSSI.

Both of the team members employed on short-term contracts as part of this project have now gone on to work in similar fields elsewhere, with this project providing valuable experience and technical training. Existing expertise and ongoing engagement with GSGSSI by other BAS Ecosystems and UK Polar Data Centre staff involved in this project will facilitate the development of new projects as required. The development of embedded mapping and online database tools by the BAS Mapping and Geographic Information Centre (MAGIC) and the UK Polar Data Centre has contributed to the ongoing development of technical expertise and capacity in these groups that will continue to be applied in other projects.

## 5 Lessons learned

During the course of the project we have been very aware of the complexity of dealing with many different stakeholders, and the importance of understanding a broad range of aspirations. This has sometimes caused difficulties in moving forward, however our aim has been to engage as widely as possible, and to maintain openness and transparency. The two workshops held during the project were both very valuable in obtaining a range of scientific expertise and stakeholder views to inform data and research requirements. In particular, consulting broadly on the development of a Research and Monitoring Plan resulted in very open and engaged discussion on priorities for future science and monitoring activities, and input from across a range of scientific disciplines and stakeholders (**Evidence:** Annex 6 – RMP Workshop Report).

An unforeseen delay in upgrading critical software caused some setbacks in the early stages of the project. Resolving this was beyond our control, and highlighted the need for flexibility in allowing key staff to work on different project tasks, while waiting for progress to be made. If planning the project again, we would delay the start date for the MPA data manager post, in order to establish a clear work plan following analysis of the outcomes from the Data Prioritisation workshop.

Flexibility in the project schedule was also needed to accommodate uncertainty and delays in the scheduling of the MPA review process during 2017/18. This impacted the timing of our workshop on development of the Research and Monitoring Plan, however we were able to work with GSGSSI and with the MPA review panel to determine the most appropriate way to deliver maximum benefits for the review process.

Reviewing the content of the Data Portal and agreeing access provisions with different data originators has been our biggest challenge towards the end of the project. This has relied heavily on time given voluntarily by other scientists, which has not always been completed in the timeframe anticipated due to other commitments. Establishing data access conditions was a central objective of the Data Prioritisation workshop held at the start of the project (May 2017); however for some datasets it was not possible to obtain clear guidance on this until much later. In undertaking such work again, a key lesson would be to start the review process much earlier to allow more time for this to be completed.

## 5.1 Monitoring and evaluation

Monitoring and evaluation of the project was undertaken internally via regular meetings of the BAS project core team. During the second year, we increased the frequency of these meetings and agreed milestones where possible to help monitor progress. Information was shared with the project partners via email and telephone updates. GSGSSI staff changes resulted in some discontinuity in this regular monitoring, however the relocation of one staff member from the Falkland Islands to the UK was beneficial in allowing for more direct contact. We have been in regular contact with GSGSSI staff to monitor progress, and for advice on the appropriate inclusion of restricted data.

Based on experience in the first year of the project, and recognising the need to maintain a good monitoring framework with realistic expectations, the core project team met on a more regular basis during the second half of the project to monitor progress and to prioritise activities.

The project was externally audited in September 2019 (Auditor's report attached separately).

## 5.2 Actions taken in response to annual report reviews

In response to feedback from the first annual report, we implemented more frequent core project team meetings and agreed milestones where possible. This was useful in monitoring progress on project activities and setting expectations.

In response to comments and specific queries on the second annual report, we have in this report provided:

- Evidence on the MPA Research and Monitoring Plan provided to GSGSSI (see section 3.1 and Annex 7)
- Further details and a link to the completed MPA Data Portal, including information on accessing and downloading available datasets via links to the BAS Discovery Metadata System (see section 3.1).
- More detail on approaches to ensure capacity exists to maintain the systems that have been developed, and to manage future data inputs in collaboration with the UK Polar Data Centre (see section 4).
- More detail on stakeholder interactions and how the project activities link in with other Darwin funded projects (see sections 2, 3.3 and 6).
- Details on achievements of this project in support of long-term environmental outcomes in the UKOTs (see section 3.3).
- Evidence for activities undertaken to showcase the project outputs (see section 6).

## 6 Darwin Identity

We have incorporated the Darwin Initiative logo on our two major outputs: the SGSSI MPA Data Portal and the SGSSI MPA GIS home pages (see section 3.1), as well as on our project website (<https://www.bas.ac.uk/project/building-data-resources-for-managing-the-south-georgia-south-sandwich-islands-marine-protected-area/>). The logo has also been included in presentations, workshop materials and reports, with Darwin Plus funding acknowledged in all of these.

The Darwin Initiative is well understood among scientists and practitioners working in South Georgia and the South Sandwich Islands, and this project has drawn on expertise and data from previous and current Darwin Plus projects, including DPLUS020 '*An autonomous seabird monitoring network for the Southern Ocean*'; DPLUS065 – '*Mapping Falklands and South Georgia coastal margins for Spatial Planning*'; DPLUS089 – '*Integrating genetic approaches into sub-Antarctic deep sea research and management*'; and DPLUS093 – '*Hadal Zones of the Overseas Territories*'.



Conferences and meetings at which the project outputs have been presented, with reference to Darwin Plus funding, include:

- Government of South Georgia & South Sandwich Islands Fisheries Science and Industry Meeting (September 2018)
- Blue Belt Data Management workshop (September 2018)
- Blue Belt Symposium (July 2019)
- Spatial tools for conservation planning in remote spaces (Coastal Habitat Mapping project final workshop) (November 2019)
- Cambridge Conservation Initiative/British Antarctic Survey Science-Policy Workshop – Bright Spots in Conservation: what makes a success story? (November 2019)
- Polar Data Forum (November 2019)

## 7 Finance and administration

If all receipts have not yet been received, please provide indicative figures and clearly mark them as Draft. The Final claim form will be taken as the final accounting for funds.

### 7.1 Project expenditure

| Project spend (indicative) since last annual report | 2018/19 Grant (£) | 2018/19 Total actual Darwin Costs (£) | Variance % | Comments (please explain significant variances) |
|---|-------------------|---------------------------------------|------------|---|
| Staff costs   |                   |                                       |            |   |
| Consultancy costs                                   |                   |                                       |            |   |
| Overhead Costs                                      |                   |                                       |            |   |
| Travel and subsistence                              |                   |                                       |            |   |
| Operating Costs                                     |                   |                                       |            |   |
| Capital items                                       |                   |                                       |            |   |
| Others  |                   |                                       |            |   |
| <b>TOTAL</b>  |                   |                                       |            |   |

| Staff employed (Name and position)  | Cost (£) |
|---|----------|
| Helen Peat (Data Manager)   |          |
| Sophie Farenden (MPA Data Manager – 1 <sup>st</sup> Apr to 31 <sup>st</sup> Aug 2018) |          |
| C Allan (MPA Data Manager – 1 <sup>st</sup> Nov 2018 to 31 <sup>st</sup> Mar 2019)    |          |
| Susie Grant (Project Leader)  |          |
| <b>TOTAL</b>  |          |

| Consultancy – description and breakdown of costs | Other items – cost (£) |
|--|------------------------|
| <b>TOTAL</b>                                     |                        |

| Capital items – description | Capital items – cost (£) |
|-----------------------------|--------------------------|
| <b>TOTAL</b>                |                          |

| Other items – description                                 | Other items – cost (£) |
|---|------------------------|
| M&E – 1 day of PL's time per quarter (Susie Grant)        |                        |
| M&E – 1 day of advisor's time per quarter (Eugene Murphy) |                        |
| <b>TOTAL</b>  |                        |

## 7.2 Additional funds or in-kind contributions secured

| Source of funding for project lifetime | Total (£) |
|--|-----------|
| British Antarctic Survey               |           |
| <b>TOTAL</b>                           |           |

| Source of funding for additional work after project lifetime | Total (£) |
|--|-----------|
|  |           |
| <b>TOTAL</b>   |           |

## 7.3 Value for Money

This project has provided good value for money by using a small number of staff with input from a much wider group to stakeholders, to produce three outputs that will have long-term value for the conservation and management of the SGSSI marine environment. The majority of our project budget was for salary (and overhead) for one staff member (MPA data manager), who was able to work full-time on this project for its full duration. Other (part-time) staff costs were covered by core funding provided by British Antarctic Survey, and these staff have also benefited from engagement in this project that has direct relevance to other BAS work in SGSSI.

The cost of bringing together groups of scientists and stakeholders for two 1-day workshops was minimal, but generated significant value to the project itself, and additionally as a networking opportunity for the community interested in marine conservation at South Georgia and the South Sandwich Islands.

In the longer term, the outputs from this project will continue to provide value for money in terms of guiding and supporting scientific research relevant to the SGSSI MPA, which may facilitate the acquisition of future funding.

## Annex 1 Project’s full current logframe as presented in the application form (unless changes have been agreed)

Please insert your project’s logframe (if your project has a logframe), including indicators, means of verification and assumptions. N.B. if your application’s logframe is presented in a different format in your application, please transpose into the below template. Please feel free to contact [Darwin-Projects@ltsi.co.uk](mailto:Darwin-Projects@ltsi.co.uk) if you have any questions regarding this.

| Project summary   | Measurable Indicators  | Means of verification   | Important Assumptions   |
|---|--|---|---|
| <p><b>Impact:</b><br/>Effective protection of the South Georgia and South Sandwich Islands marine ecosystem, and sustainable management of its resources.</p>   |  |   |   |
| <p><b>Outcome:</b><br/>Management of the SGSSI MPA will be enhanced and supported into the future by development of an integrated marine data and geographic information system, and associated Research and Monitoring Plan.</p> | <p>0.1 Availability of datasets within a database and GIS to undertake spatial and temporal analyses, and to support MPA management</p> <p>0.2 Research and monitoring activities undertaken in accordance with an agreed MPA Research and Monitoring Plan.</p> <p>0.3 Implementation of a clear pathway from data acquisition to databasing, visualisation and analysis, to management decisions.</p> | <p>0.1 List of datasets included in the new marine data and geographic information system.</p> <p>0.2 Information on objectives and outcomes of MPA research and monitoring field studies undertaken annually.</p> <p>0.3 Maps and other visualisation products derived from the data. Referencing of such products in MPA reports and reviews.</p> | <p>This project depends on an ongoing commitment by GSGSSI to maintain the MPA, and to incorporate scientific advice into future management decision-making.</p> <p>GSGSSI recognises the importance of a scientific approach to management of the marine ecosystem, and has expressed strong support for the development of this resource.</p> <p>Continuing to work closely with GSGSSI will help to identify any concerns or potential obstacles, and will minimise risks of these becoming real difficulties.</p> |
| <p><b>Outputs:</b><br/>1. South Georgia and South Sandwich Islands MPA Data Portal</p>  | <p>1.1 Attendance of key scientists at workshop to prioritise relevant datasets.</p> <p>1.2 Increase in volume and types of data held in MPA database</p>  | <p>1.1 Workshop report</p> <p>1.2 Data statistics from BAS Polar Data Centre.</p> <p>1.3 Quarterly reports</p>  | <p>Assumed availability of key scientists, and engagement in the planned workshop.</p> <p>Although key data will be provided by BAS, there is a risk that additional scientific data may not be available (e.g. unpublished data may be withheld by external data owners), or key experts and stakeholders may not engage to the extent required.</p>   |

| Project summary   | Measurable Indicators  | Means of verification  | Important Assumptions   |
|---|--|--|---|
|   |  |  | <p>The project relies on appointing a new MPA data manager. It may also be put at risk if existing staff are not available to contribute to the project, or if key staff resign before the work is completed.</p> <p>In the event of this risk occurring, there is sufficient support from other project contributors within BAS to ensure that the project could continue until staff are replaced, and that appropriate training could be provided for new staff.</p> |
| <p><b>2.</b> South Georgia and South Sandwich Islands marine Geographic Information System (GIS), integrated with MPA database</p>  | <p>2.1 Transfer of datasets into GIS for spatial mapping</p> <p>2.2 Availability of data maps and visualisations</p> <p>2.3 Use of map products in MPA review process</p> <p>2.4 Use of derived products in further spatial analyses e.g. ecoregionalisation</p> | <p>2.1 Submission of derived spatial data products to MPA review process</p> <p>2.2 Data access statistics from BAS Mapping &amp; Geographic Information Centre</p> <p>2.3 Quarterly reports</p> <p>2.4 Reports of MPA review steering committee</p> <p>2.5 Referenced data products in peer-reviewed publications</p> | <p>Data quality varies, and the databasing process may indicate that there is insufficient information for all of the planned spatial analyses.</p> <p>Undertaking the project at BAS will allow access to data and expertise from existing and planned science programmes.</p>   |
| <p><b>3.3.</b> MPA Research and Monitoring Plan</p>   | <p>3.1 Attendance of key scientists at workshop to determine requirements of MPA Research and Monitoring Plan.</p> <p>3.2 Agreement of Research and Monitoring Plan.</p>   | <p>3.1 Workshop report</p> <p>3.2 Quarterly reports</p> <p>3.3 Research and Monitoring Plan adopted by GSGSSI following the 2018 MPA review.</p>   | <p>Assumed availability of key scientists, and engagement in the planned workshop.</p> <p>Commitment by GSGSSI to establish a Research and Monitoring Plan as part of updated management provisions for the MPA, following its review in 2018.</p>  |
| <p><b>Activities</b> (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1)</p> <p>1.1 Hold a 1-day workshop with relevant scientists and data managers to generate a prioritised list of datasets for spatial analyses to be included (including on marine biodiversity, ecosystem features and human activities), and to determine how these need to be summarised and visualised in order to be most useful for the MPA review process</p> <p>1.2 Identify data gaps in existing databases and South Georgia GIS, and develop proposals with relevant scientists for how these might be filled (see also Activity 3.1)</p> |  |  |   |

| Project summary   | Measurable Indicators | Means of verification | Important Assumptions |
|---|-----------------------|-----------------------|-----------------------|
| <p>1.3 Collate prioritised datasets that are not currently in an accessible format</p> <p>1.4 Design and implement queries to extract prioritised data from existing databases</p> <p>1.5 Design and implement a web data-portal to bring together prioritised datasets, to enable their use for analysis and visualisation.</p> <p>2.1 Update the South Georgia GIS with newly available spatial base data (including physical environmental data, e.g. bathymetry, physical oceanographic features, and data on existing management)</p> <p>2.2 Develop a series of spatial visualisations of prioritised datasets (based on outcomes of Activity 1.1), including data syntheses and other derived products. Analyses will include integration of physical and multi-trophic level biological data.</p> <p>2.3 Provide synthesised data products and visualisations as requested by SGSSI MPA review committee or other review contributors.</p> <p>2.4 Provide access to South Georgia GIS via new web pages, with maps embedded or closely integrated with the MPA database where appropriate.</p> <p>2.5 Publicise and facilitate access to the GIS via media releases etc.</p> <p>3.1 Hold a 2-day workshop with relevant scientists to determine the requirements for an MPA Research and Monitoring Plan, based on supporting the MPA conservation objectives and management requirements, and filling the data gaps identified in Outputs 1 &amp; 2. Consider the need for reference areas that will aid in the process of distinguishing between the impacts of climate change and harvesting.</p> <p>3.3 Prepare draft Research and Monitoring Plan for consultation with relevant scientists, and review by SGSSI MPA review committee.</p> <p>3.3 Finalise Research and Monitoring Plan, in consultation with GSGSSI.</p> <p>3.4 Establish a plan and practical mechanisms to ensure that future data collected in accordance with the MPA Research and Monitoring Plan is incorporated into the MPA database and GIS.</p> |                       |                       |                       |



## Annex 2 Report of progress and achievements against final project logframe for the life of the project (if your project has a logframe)

| Project summary   | Measurable Indicators  | Progress and Achievements for the life of the project   |
|---|--|---|
| <p><b>Impact:</b></p> <p>Effective protection of the South Georgia and South Sandwich Islands marine ecosystem, and sustainable management of its resources.</p>  |  | <p>The contribution of outputs from this project to date has had a positive impact on the availability of information to support the management of the SGSSI marine ecosystem and its resources.</p>  |
| <p><b>Outcome</b></p> <p>Management of the SGSSI MPA will be enhanced and supported into the future by development of an integrated marine data and geographic information system, and associated Research and Monitoring Plan.</p>   | <p>0.1 Availability of datasets within a database and GIS to undertake spatial and temporal analyses, and to support MPA management</p> <p>0.2 Research and monitoring activities undertaken in accordance with an agreed MPA Research and Monitoring Plan.</p> <p>0.3 Implementation of a clear pathway from data acquisition to databasing, visualisation and analysis, to management decisions.</p> | <p>The project Outcome of supporting enhanced management of the SGSSI MPA has been achieved through the provision of the MPA Data Portal, the online MPA GIS, and the MPA Research and Monitoring Plan, all of which were highlighted by the 2018 MPA Review Panel as being of value to recent and future MPA review processes, and have been welcomed by GSGSSI. These will continue to support MPA management into the future.</p> <p><b>Evidence for achievement of indicators: section 3.2 of this report.</b></p>  |
| <p><b>Output 1.</b></p> <p>South Georgia and South Sandwich Islands MPA Data Portal</p>   | <p>1.1 Attendance of key scientists at workshop to prioritise relevant datasets.</p> <p>1.2 Increase in volume and types of data held in MPA database</p>  | <p>The data prioritisation workshop (May 2017) was attended by a broad network of scientists (32 scientists from 12 organisations/institutes) engaged in research around South Georgia and the South Sandwich Islands (see Annual Report 1).</p> <p>The MPA Data Portal has been completed (<a href="http://apex.nerc-bas.ac.uk/f?p=154:">http://apex.nerc-bas.ac.uk/f?p=154:</a>) and includes 93 online pages, 62 embedded maps and 101 data summary figures.</p> <p><b>Evidence: section 3.1 of this report.</b></p> |
| <p><b>Activity 1.1</b></p> <p>Hold a 1-day workshop with relevant scientists and data managers to generate a prioritised list of datasets for spatial analyses to be included (including on marine biodiversity, ecosystem features and human activities), and to determine how</p> |  | <p>Completed in Year 1 (May 2017) (<b>see annual report 1</b>)</p> <p><b>Evidence: section 3.1 of this report.</b></p>  |

| Project summary   | Measurable Indicators   | Progress and Achievements for the life of the project  |
|---|---|--|
| these need to be summarised and visualised in order to be most useful for the MPA review process.   |   |  |
| <b>Activity 1.2</b><br>Identify data gaps in existing databases and South Georgia GIS, and develop proposals with relevant scientists for how these might be filled (see also Activity 3.1)                           |   | Completed in Year 1, with additional input from RMP Workshop   |
| <b>Activity 1.3</b><br>Collate prioritised datasets that are not currently in an accessible format  |   | Completed in Year 2<br><b>Evidence: section 3.1 of this report.</b>  |
| <b>Activity 1.4</b><br>Design and implement queries to extract prioritised data from existing databases   |   | Completed in Year 2. Prioritised datasets, including summaries and visualisations, now available in the MPA Data Portal ( <a href="http://apex.nerc-bas.ac.uk/f?p=154:">http://apex.nerc-bas.ac.uk/f?p=154:</a> )<br><b>Evidence: section 3.1 of this report.</b>  |
| <b>Output 2.</b><br>South Georgia and South Sandwich Islands marine Geographic Information System (GIS), integrated with MPA database   | 2.1 Transfer of datasets into GIS for spatial mapping<br>2.2 Availability of data maps and visualisations<br>2.3 Use of map products in MPA review process<br>2.4 Use of derived products in further spatial analyses e.g. ecoregionalisation | New datasets have been incorporated into the South Georgia GIS as planned (news story on the GSGSSI website: <a href="http://www.gov.gs/31493-2/">http://www.gov.gs/31493-2/</a> ), and the MPA-specific GIS now contains 32 data layers.<br><b>Evidence: section 3.1 of this report.</b><br>Maps and data summaries were provided for use as part of the MPA review process and will be available for use by all stakeholders for future review and consultation processes.<br>We anticipate that data layers available through the MPA GIS will be used by the community of scientists interested in the SGSSI region beyond the lifetime of this project. |
| <b>Activity 2.1</b><br>Update the South Georgia GIS with newly available spatial base data (including physical environmental data, e.g. bathymetry, physical oceanographic features, and data on existing management) |   | Completed in Year 2<br><b>Evidence: section 3.1 of this report</b>   |
| <b>Activity 2.2</b>   |   | Completed in Year 2 (with the exception of integration of physical and multi-trophic level biological data, which we did not have sufficient time to complete)   |

| Project summary  | Measurable Indicators   | Progress and Achievements for the life of the project   |
|--|---|---|
| Develop a series of spatial visualisations of prioritised datasets (based on outcomes of Activity 1.1), including data syntheses and other derived products. Analyses will include integration of physical and multi-trophic level biological data.  |   |   |
| Activity 2.3.<br>Provide synthesised data products and visualisations as requested by SGSSI MPA review committee or other review contributors.   |   | Completed in Year 2.<br><b>Evidence: section 3.1 of this report</b>   |
| Activity 2.4<br>Provide access to South Georgia GIS via new web pages, with maps embedded or closely integrated with the MPA database where appropriate  |   | New MPA-specific version of the South Georgia GIS has been developed in collaboration with BAS Mapping and Geographic Information Centre<br><b>Evidence: section 3.1 of this report</b>                           |
| <b>Output 3.</b><br>MPA Research and Monitoring Plan   | 3.1 Attendance of key scientists at workshop to determine requirements of MPA Research and Monitoring Plan.<br>3.2 Agreement of Research and Monitoring Plan. | MPA RMP Workshop Report<br><b>Evidence: Annex 6</b><br>Draft Research and Monitoring Plan was completed in May 2019 and a finalised version was provided to GSGSSI in September 2019.<br><b>Evidence: Annex 7</b> |
| Activity 3.1<br>Hold a 2-day workshop with relevant scientists to determine the requirements for an MPA Research and Monitoring Plan, based on supporting the MPA conservation objectives and management requirements, and filling the data gaps identified in Outputs 1 & 2. Consider the need for reference areas that will aid in the process of distinguishing between the impacts of climate change and harvesting. |   | Activity complete (December 2018)<br><b>Evidence: section 3.1 of this report</b>  |
| Activity 3.2<br>Prepare draft Research and Monitoring Plan for consultation with relevant scientists.  |   | Draft Research and Monitoring Plan was completed in May 2019 in consultation with the stakeholder group (including members of the 2018 MPA review panel).<br><b>Evidence: section 3.1 of this report</b>          |
| Activity 3.3<br>Finalise Research and Monitoring Plan, in consultation with GSGSSI.  |   | Research and Monitoring Plan finalised in September 2019.<br><b>Evidence: section 3.1 of this report</b>  |

| Project summary  | Measurable Indicators | Progress and Achievements for the life of the project  |
|--|-----------------------|--|
| <p>Activity 3.4</p> <p>Establish a plan and practical mechanisms to ensure that future data collected in accordance with the MPA Research and Monitoring Plan is incorporated into the MPA database and GIS.</p> |                       | <p>Development of dynamic links between the Data Portal and underlying databases (held by the UK Polar Data Centre) has allowed for automatic update of embedded maps and other data visualisations (graphs, tables etc.) when new data points or base map layers are added to the databases.</p> <p>The MPA Data Portal includes a facility for users to add summary records for new available datasets, which will allow for records to be maintained on sources of additional data. Any such data can then be accessioned by the UK Polar Data Centre when resources allow.</p> <p>We have also worked with GSGSSI to develop a mechanism for collecting information on new projects and data sources via the existing Regulated Activity Permit system for field projects in South Georgia and the South Sandwich Islands. This will allow for the RMP project database to be updated into the future.</p> |

## Annex 3 Standard Measures

| Code                     | Description   | Totals (plus additional detail as required)  |
|--------------------------|---|--|
| <b>Training Measures</b> |   |  |
| 1                        | Number of (i) students from the UKOTs; and (ii) other students to receive training (including PhD, masters and other training and receiving a qualification or certificate) |  |
| 2                        | Number of (i) people in UKOTs; and (ii) other people receiving other forms of long-term (>1yr) training not leading to formal qualification                                 |  |
| 3a                       | Number of (i) people in UKOTs; and (ii) other people receiving other forms of short-term education/training (i.e. not categories 1-5 above)                                 | (ii) 2 staff members (both British, female) given 'on-the-job' training in the use of web-mapping and databasing software, and good data management practices. |
| 3b                       | Number of training weeks (i) in UKOTs; (ii) outside UKOTs not leading to formal qualification   |  |
| 4                        | Number of types of training materials produced. Were these materials made available for use by UKOTs?   |  |
| 5                        | Number of UKOT citizens who have increased capacity to manage natural resources as a result of the project  |  |
| <b>Research Measures</b> |   |  |
| 9                        | Number of species/habitat management plans/ strategies (or action plans) produced for/by Governments, public authorities or other implementing agencies in the UKOTs        | 1  |
| 10                       | Number of formal documents produced to assist work in UKOTs related to species identification, classification and recording.  |  |
| 11a                      | Number of papers published or accepted for publication in peer reviewed journals written by (i) UKOT authors; and (ii) other authors  |  |
| 11b                      | Number of papers published or accepted for publication elsewhere written by (i) UKOT authors; and (ii) other authors  |  |
| 12b                      | Number of computer-based databases enhanced (containing species/genetic information). Were these databases made available for use by UKOTs?                                 | 1 new database resource created (SGSSI MPA Data Portal) and made available for use by SGSSI and other UKOTs.<br><br>1 enhanced (SGSSI MPA GIS).                |
| 13a                      | Number of species reference collections established. Were these collections handed over to UKOTs?   |  |



| <b>Code</b>                   | <b>Description</b>   | <b>Totals (plus additional detail as required)</b>   |
|-------------------------------|--|--|
| 13b                           | Number of species reference collections enhanced. Were these collections handed over to UKOTs?   |  |
| <b>Dissemination Measures</b> |  |  |
| 14a                           | Number of conferences/seminars/workshops/stakeholder meetings organised to present/disseminate findings from UKOT's Darwin project work                    | 2 (listed below):<br>DPLUS069 Data Prioritisation workshop (May 2017)<br>DPLUS069 Research & Monitoring Plan workshop (December 2018)  |
| 14b                           | Number of conferences/seminars/workshops/stakeholder meetings attended at which findings from the Darwin Plus project work will be presented/ disseminated | 6 (listed below):<br>Government of South Georgia & South Sandwich Islands Fisheries Science and Industry Meeting (September 2018)<br><br>Blue Belt Data Management workshop (September 2018)<br><br>Blue Belt Symposium (July 2019)<br><br>Spatial tools for conservation planning in remote spaces (Coastal Habitat Mapping project final workshop) (November 2019)<br><br>Cambridge Conservation Initiative/British Antarctic Survey Science-Policy Workshop – Bright Spots in Conservation: what makes a success story? (November 2019)<br><br>Polar Data Forum (November 2019) |
| <b>Physical Measures</b>      |  |  |
| 20                            | Estimated value (£s) of physical assets handed over to UKOT(s)   |  |
| 21                            | Number of permanent educational/training/research facilities or organisation established in UKOTs  |  |
| 22                            | Number of permanent field plots established in UKOTs   |  |
| 23                            | Value of resources raised from other sources (e.g., in addition to Darwin funding) for project work  |  |

## Annex 4 Publications

| Type *<br>(e.g. journals,<br>manual, CDs) | Detail<br>(title, author, year) | Nationality of lead<br>author | Nationality of<br>institution of<br>lead author | Gender of lead<br>author | Publishers<br>(name, city) | Available from<br>(e.g. weblink, contact<br>address, annex etc) |
|---|---------------------------------|-------------------------------|---|--------------------------|----------------------------|---|
|   |                                 |                               |   |                          |                            |   |
|   |                                 |                               |   |                          |                            |   |
|   |                                 |                               |   |                          |                            |   |
|   |                                 |                               |   |                          |                            |   |

## Annex 5 Darwin Contacts

|                               |  |
|-------------------------------|--|
| <b>Ref No</b>                 | DPLUS069   |
| <b>Project Title</b>          | Building data resources for managing the SGSSI Marine Protected Area |
| <b>Project Leader Details</b> |  |
| Name                          | Dr Susie Grant   |
| Role within Darwin Project    | Project leader   |
| Address                       |  |
| Phone                         |  |
| Skype                         |  |
| Email                         |  |
| <b>Partner 1</b>              |  |
| Name                          | Dr Mark Belchier   |
| Organisation                  | Government of South Georgia and the South Sandwich Islands           |
| Role within Darwin Project    | Advisor  |
| Address                       |  |
| Skype                         |  |
| Email                         |  |
| <b>Partner 2 etc.</b>         |  |
| Name                          |  |
| Organisation                  |  |
| Role within Darwin Project    |  |
| Address                       |  |
| Skype                         |  |
| Email                         |  |

## Annex 6      Supplementary material (optional but encouraged as evidence of project achievement)

### 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.  | Yes   |
| <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.                             | No    |
| <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.   | Yes   |
| <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. However, we would expect that most material will now be electronic. | No    |
| Have you involved your partners in preparation of the report and named the main contributors  | Yes   |
| Have you completed the Project Expenditure table fully?   | Yes   |
| Do not include claim forms or other communications with this report.  |       |