

## Darwin Plus Main: Annual Report

To be completed with reference to the “Project Reporting Information Note”  
(<https://darwinplus.org.uk/resources/information-notes>)

It is expected that this report will be a **maximum of 20 pages** in length, excluding annexes)

**Submission Deadline: 30<sup>th</sup> April 2024**

Submit to: [BCF-Reports@niras.com](mailto:BCF-Reports@niras.com) including your project ref in the subject line

### Darwin Plus Project Information

Project reference	DPLUS142
Project title	Bathymetry, and seafloor habitats within Ascension Island’s nearshore waters
Territory(ies)	Ascension
Lead Partner	British Geological Survey
Project partner(s)	Ascension Island Government (AIG), United Kingdom Hydrographic Office (UKHO)
Darwin Plus grant value	£195 811 (lower than original value – see change requests)
Start/end dates of project	April 22, End March 25 (extended 1 yr – see change requests)
Reporting period (e.g. Apr 2023-Mar 2024) and number (e.g. Annual Report 1, 2)	April 23 – March 24
Project Leader name	Rhys [REDACTED]
Project website/blog/social media	<a href="http://www.bgs.ac.uk">www.bgs.ac.uk</a>
Report author(s) and date	Rhys [REDACTED] 30/04/24

### 1. Project summary

- The nearshore habitats of the Ascension Island Marine Protected Area (AI-MPA) comprise high biodiversity and are most at risk from anthropogenic development and climate change. This project will determine the character, distribution, and extent of these key habitats through an integrated programme of hydrographic and ground-truthing surveys.
- Resulting seafloor habitat maps will provide urgently needed tools to better monitor and protect marine ecosystems, and underpin the evidence-based management of the AI-MPA by the Department of Conservation, Ascension Island Government. Bathymetric data collected will also be used to update navigational charts used for Safety of Life at Sea (SOLAS) by UKHO. All data collected will be held by well-established Data Archive Centres enabling future use by all.
- Ascension Island is south of equator in the Atlantic Ocean, approximately 1500km from the coast of Africa. It is a governed British Overseas Territory of Saint Helena, Ascension and Tristan da Cunha. Ascension is the tip of undersea volcano. This project is concerned with nearshore waters, collecting data out to 300m water depth and creating geological maps to the 3000m contour when possible.

## 2. Project stakeholders/partners

- In October 23 and January 24 BGS were able to finally start executing fieldwork on Ascension. This involved extensive planning with the Ascension Island Government (AIG) around logistics and specifically the Department of Conservation to ensure we could successfully deploy equipment from their survey vessel, what equipment was available in country and the possible areas of operation/pre-vailling weather conditions etc. After these discussions, BGS were then able to create a priority list of possible multibeam survey areas and sample locations to create the required geological maps.
- BGS has involved the Department of Conservation in map production to ensure the final outputs are suitable for their ongoing use. This is especially true for the habitat maps, adapting a generic classification scheme (EUNIS) to be applicable locally.
- In October 2021, a UK Navy survey ship the HMS Protector surveyed the shelf around Ascension. The UKHO have now supplied the data from the HMS Prospector (received Dec/Jan 23). BGS have reprocessed this data and created backscatter maps suitable for the creation of preliminary substrate maps. This initial work also helped determine the extent & type of fieldwork required to fulfil the deliverables stated in proposal. The Royal Navy survey data has significantly reduced the extent of bathymetric data required and will allow us to spend more time on focussed 'ground-truthing' and high resolution, detailed surveys which will vastly improve the final mapping outputs (seabed substrates & habitats, marine geohazards etc.).
- BGS contacted UKHO and AIG Harbour Master to further refine the targeted survey priority areas to ensure any data gaps were filled and/or data density added to areas of higher vessel traffic and known uncharted obstacles. All areas to improve and refine UKHO final chart outputs.
- BGS has supplied AIG with a version of the bathymetry data that is proving vital for various other Defra/Darwin funded projects on Ascension. The best example being a shark research team in deploying seafloor sensors (DPLUS165, 174).
- Prior to undertaking bathymetric surveys BGS contacted the National Oceanographic Centre (NOC) for information on using the recently installed tide gauge. We used real tide gauge data to reduce data. This will be a significant improvement to HMS Protectors data (predicted tides) for charts and will allow UKHO to perform further data validation.
- The BGS field team undertook various outreach activities to inform the local community of project and expected outcomes. These activities included a talk at local school (Jan 24) and presentations at both the Dept of Conservation offices for AIG staff (Nov 23) and at the local cinema open to all (Jan 24).
- Both AIG and BGS have very active outreach/comms teams and regular updates were provided via usual social media outlets – twitter, Instagram etc..
- BGS provided training to local AIG staff whenever possible. This included half a day of office-based training on data outputs and onboard the survey vessel collecting both bathymetry and ground-truth samples.

## 3. Project progress

This project was subject to numerous delays, primarily due to the COVID-19 pandemic, and underwent significant change and budget reduction when the HMS Protector fortuitously collected a lot of the required bathymetric data in 2020. BGS received this data in November 2022.

The original plan was to ship a BGS owned survey boat called the White Ribbon, an 8m Cheetah Marine catamaran. However, since project inception BGS closed its Marine

Operations facility and combined with the reduced requirement for large areas of multibeam collection due to HMS Protector data, a decision was made to sell the White Ribbon and use the only boat available on island, the Ascension Island Government owned and operated 8m RIB called 'Moray' (Appendix 1 - Fig.1).

The size of this boat would intrinsically limit the area of operation and available weather windows. It also required a novel approach to mobilising the multibeam equipment and a solution was found using a brand-new RIB mounting kit, designed and supplied by Universal Sonar Mounts (USM) (Appendix 1 - Fig.1).

No reconnaissance trips were undertaken to reduce the total number of flights and availability of staff.

Ascension is an incredibly remote location. Shipping and air freight are not always reliable and/or takes a long time and is expensive.

The recommencement of the RAF operated AirTanker, South Atlantic Air Bridge in May 2023 has made personal travel significantly easier.

The primary objectives for FY23-24 were as follows:

- Collect the ground truth samples required for the BGS to create substrate, geomorphology and habitat maps. Drop camera transects were identified as the most appropriate solution. From preliminary substrate mapping, using multibeam and backscatter data, around 60 drop locations were identified.
- Mobilise the Kongsberg EM2040P Portable Hydrographic System (PHS) and USM RIB mounting kit on an 8m RIB. Trial the suitability of the system for use on similar projects requiring low cost, rapid mobilisation in areas with a limited supply of local charter vessels available and water access issues.
- Initial requirement/estimate was to collect around 5-10 days of multibeam data.
- Fill gaps in the data collected by HMS Protector, especially shallow areas of interest (<5-10m) and attempt to collect data from the totally uncharted south coast.
- Improve data quality and data density of HMS Protector data in priority areas around George Town. These areas were identified by UKHO prior to departure.
- Acquire higher quality backscatter data in areas of interest for marine geoscience studies and allow backscatter signature comparison with HMS Protector data.
- Collect water column data at areas of potential fresh water/gas seeps.
- Create preliminary map & report outputs.
- Provide initial training to AIG staff.
- Various outreach & knowledge exchange events.

### **3.1 Progress in carrying out project Activities**

#### Activities 1.1 – 1.4 Marine Survey

- Assessment of HMS Protector data (both bathymetry and backscatter) enabled a targeted approach to multibeam survey operations and ground truth sample transects (Appendix 4 - Fig 7). There was still significant uncertainty over certain factors that could affect survey operations, that included launch and recovery, frequency of suitable weather, effectiveness of equipment (the RIB has no cabin/shelter) and the performance of boat and crew etc. These risks were mitigated by undertaking two distinct periods of fieldwork: 31 Oct – 15 Nov 2023 and 17 Jan – 31 Jan 2024. Therefore allowing sufficient time between each period to resolve any major issues, mobilise new equipment and conduct operations on Ascension during two separate weather windows.
- The proposed multibeam survey solution was tested, prior to travel in Port Edgar, Edinburgh to confirm that it would work and was safe to operate in the challenging conditions of Ascension (<https://www.youtube.com/watch?v=eOBy9bqnJ-w&t=3s>).

- The chosen multibeam survey solution proved extremely effective as it enabled rapid mobilisation aboard a vessel of opportunity such as the *Moray*. However, an 8m RIB with no cabin/shelter from the elements for personal or equipment presented practical limitations. Survey operations should be limited to short duration surveys in enclosed water body/sheltered nearshore water without the big swells, wind, and heat typical of Ascension. Six (6) days of multibeam were collected during the first fieldwork period (Appendix 4. Fig1-4).
- BGS successfully deployed two different drop camera systems to collect video transects – Drifto2000/GoPro11 and STR SeaSpyder Nano. We collected 50 samples around the island of Ascension using both systems -15 GoPro, 35 STR (Appendix 4 - Fig 7). The size of vessel, manual handling the camera systems, sea state and wind conditions meant these were primarily all on the more sheltered west coast. These samples allow us to validate and make assumptions over backscatter signatures for substrate and habitat mapping (Appendix 4 - Fig 7). Both drop camera systems performed well and their use proved complimentary (Part 1 - Seabed).
- The data density collected is lower than required by the highest IHO hydrographic standards due to the challenging environmental conditions and survey vessel, but we are still confident in reaching IHO Order 1a (adequate for safe navigation). It was not feasible in the time available to wait for suitable weather windows required for the higher standards of data collection. The survey is not focused on object detection and this author suspects object detection requirements will be far from uniform across all survey areas, even those of similar depth.
- We collected multibeam data over all the pre-planned features of interest, infilled data in extremely shallow water (<2m), collected water column data over areas of potential gas/freshwater seeps and added extra data density to all the areas requested by UKHO (Appendix 4 - Fig 7).
- We used real tide gauge data so this will be a significant improvement to HMS Protector's data (predicted tides) for charts and will allow data validation. We were also able to collect data in the uncharted south coast, although weather conditions were far from ideal.

A full survey report – “Report of Survey: Ascension Island Multibeam & Video Transects” has been written and submitted to UKHO.

#### Activities 2.1 – 2.4 Seafloor Substrate and Habitat Mapping

The BGS ground truthing sample data were acquired using two different drop camera systems to collect video transects – Drifto 2000/GoPro11, and STR SeaSpyder Nano. A total of 50 samples around the island of Ascension were collected over the two campaigns using both systems. The size of the vessel, manual handling of the camera systems, sea state and wind conditions meant there were primarily collected to the west and north-west of the island which was more sheltered.

The samples were visually inspected to determine substrate type allowing general, qualitative observations on the composition of the seabed sediments. For the purposes of this project have also been converted into EUNIS sediment classes depending on the water depth at that location.

The following sediment classes were identified: Sand (Fig , Mixed Sediment (Sand and Gravel – Sand dominant), Mixed Sediment (Sand and Gravel – Gravel dominant), Rhodolith (Gravel to Cobbles – minor sand), and Rock.

The dominant sediment class across the entire area is ‘Mixed sediment’, found with varying proportions of sand and gravel. This was split into two classes based on a visual inspection of grain size: ‘Mixed sediment – Sand dominant with minor gravel’, and ‘Mixed sediment – Gravel dominant with minor sand’. Sand only areas were mapped primarily in the nearshore beach areas and was characterised by occurrence mobile bedforms and visible mobility of the sediments on the videos. Visual ground-truthing of the sand on the beach areas around the island showed the sand to be coarse-grained with shell fragments. Rhodolith is defined as “colourful unattached calcareous nodules composed of marine red algae” and was mapped

only in areas where it was easily identifiable on the video transects. Rock (assumed to be mainly volcanic in origin) has dominantly mapped along the coastline, and where rock was mapped on the bathymetry data.

A report – “Mapping of geomorphology, seabed substrate and nearshore habitats within Ascension Island’s Marine Protected Area” is currently being written.

See Appendix 4, Figures 5-8.

### Activities 3-3.3 - Knowledge Transfer and Project Dissemination

The Ascension Island Government Department of Conservation has been involved in all aspect of marine survey and the creation of preliminary substrate and habitat maps. This has involved extensive training in use of survey equipment and the various data outputs.

BGS has given GIS training and it envisaged this will continue into FY 24-25 when the final data products are delivered.

BGS have had abstracts accepted at <https://icslpe.com/> (1-3 July 2024) (see Appendix 4)

BGS were involved in various outreach events whilst on Ascension (see Appendix 4)

## **3.2 Progress towards project Outputs**

### 1. Seafloor Surveys, Outputs 1.1-1.4.

Please see the above completion of Activities that have contributed to the completion of outputs.

Note: BGS has had a change request accepted, allowing underspend to be transferred to this FY, enabling a further field season that will attempt to ‘add value’ by using a Unmanned Surface Vessel to collect data in area inaccessible using a survey boat.

### 2. Seafloor Substrate and Habitat Maps delivered to AIG and applied to management. Outputs 2.1 -2.4

Preliminary maps created and are under review. AIG have received initial training and providing feedback into improvements. The aim for this year is to finalise all outputs, reports and deliver them to AIG Department of Conservation. BGS will provide further training at this time.

### 3. Knowledge Transfer and Project Dissemination. Outputs 3.1-3.4

A communication plan has been developed by AIG Conservation Department and BGS. Outreach events have already been completed on Ascension. These included, talks at local cinema for community and at a local AIG office for staff. A workshop was run at local school.

The geological mapping outputs have yet to be finalised, but these will be published via Journal of Maps and BGS will investigate further publication options. Abstract already accepted at International Conference on Seafloor Landforms, Processes and Evolution (icslpe.com)

Data to be made available via BGS (geological maps) and UKHO (bathymetry) Data Archive Centres (DACs). Bathymetry has already been submitted to UKHO (March 2024).

## **3.3 Progress towards the project Outcome**

Outcome - Ascension Island Government have significantly enhanced information on geodiversity and biodiversity to successfully support management and monitoring of the MPA. Geospatial data products will provide value long-after completion of the project.

We are on track to finish this project this FY and deliver all required outputs. Measuring outcomes will be possible next FY, but full fruition of benefits will only be achieved over a longer period of time – contribution to the effective management of an MPA.

- 0.1 Complete - Before this project commenced there was no modern bathymetric data for Ascensions nearshore waters. A combination of the Royal Navy and BGS multibeam data have now covered over 95% of nearshore water.

A Change request accepted to move budget into FY24-25 to enable BGS to attempt to collect more bathymetric data in Q3/Q4 using an USV. This data will be useful for numerous DARWIN projects (oceanography, shark monitoring etc.)

- 0.2 It is a little too early in project life cycle to assess how projects outputs are employed by MPA managers for ecosystem assessment and monitoring purposes. However, AIG are already in receipt of preliminary maps and providing feed back. We are clearly on track to finish this project this FY
- 0.3 Complete - bathymetry data has been supplied to the UKHO for navigational charting. AIG Harbour Masters provided input in the creation of priority areas for survey.

### **3.4 Monitoring of assumptions**

#### Assumptions (Data quality - 1.1, 2.1)

The data collected by BGS and the Royal Navy has been processed & validated by a qualified Hydrographic Surveyor (IHO Cat A). The data is excellent quality and suitable for use by BGS and AIG.

The analysis of data supplied by Royal Navy allowed us to plan our multibeam survey and ground-truthing campaign, identifying areas of interest prior to fieldwork. This survey data allowed us to significantly de-risk the project.

We now have over 90% of the AIG continental shelf covered by bathymetric and backscatter data suitable for project outputs.

#### Assumptions 2 (suitable survey equipment & vessel)

Ascension Island Government had purchased a new RIB that was suitable for our marine survey.

The use of this RIB required a rethink in how we deploy our survey equipment. A suitable, robust and safe solution has been found & purchased. Lead Surveyor Rhys Cooper has undertaken training in operation. We also had a framework/hire agreement with Kongsberg to have a standby multibeam system available if required.

The survey equipment was tested prior to travel on a similar boat in UK ensuring everything worked and was safe to operate.

The equipment worked well in Ascension, however, an 8m RIB with no cabin/shelter from the elements for personal or equipment presented practical limitations.

#### Assumptions 3 (Weather and Travel delays)

Previous delays and subsequent change request were fortuitous as it allowed more time for covid recovery and to allow for the unforeseen Royal Navy survey data to be processed and assimilated. It also allowed for more the more regular South Atlantic Air Bridge flights to resume.

Ascension Island is a remote and exposed location. The size of survey boat did limit the area of operation and available weather windows.

#### 4. Project support to environmental and/or climate outcomes in the UKOTs

See responses above.

We have already been able to supply AIG with a version of the bathymetry and video data collected. This data has also proved vital for a shark research team in deploying seafloor sensors. The research was also carried out under Darwin/Defra funding.

We have supplied the data to UKHO who will use it to update charting.

We are currently working to finalise project outputs.

#### 5. Gender Equality and Social Inclusion (GESI)

Please quantify the proportion of women on the Project Board <sup>1</sup> .	BGS Project Team/Board – 1 man, 1 woman	
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women <sup>2</sup> .	BGS team – 1 man, 1 woman AIG team – 1 woman, 1 man	

GESI Scale	Description	Put X where you think your project is on the scale
<b>Not yet sensitive</b>	The GESI context may have been considered but the project isn't quite meeting the requirements of a 'sensitive' approach	
<b>Sensitive</b>	The GESI context has been considered and project activities take this into account in their design and implementation. The project addresses basic needs and vulnerabilities of women and marginalised groups and the project will not contribute to or create further inequalities.	
<b>Empowering</b>	The project has all the characteristics of a 'sensitive' approach whilst also increasing equal access to assets, resources and capabilities for women and marginalised groups	X. The BGS lead in creating all map outputs is a woman. AIG Head of Conservation is a woman.
<b>Transformative</b>	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	

#### 6. Monitoring and evaluation

Royal Navy & BGS survey data assessed using industry standard and coincident marine survey processing software.

<sup>1</sup> A Project Board has overall authority for the project, is accountable for its success or failure, and supports the senior project manager to successfully deliver the project.

<sup>2</sup> Partners that have formal governance role in the project, and a formal relationship with the project that may involve staff costs and/or budget management responsibilities.

Project Lead is a Chartered Marine Scientist and Member of IMAREST. He holds an International Hydrographic Organization (IHO) Category A survey qualification which allows him to assess and sign-off data suitable for charting, validated against the various recognised IHO standards.

The bathymetry data is currently being used to create preliminary substrate maps and can be integrated into the various mapping applications BGS uses.

The AIG Dept. of Conservation are the primary 'end of users' of mapping outputs and have been involved in every stage of their creation, from helping undertake the marine survey to providing vital feedback into the map interpretation.

There have been no changes to the M&E plan since the proposal was written and subsequent change requests.

We share all work and project planning information with AIG and UKHO

## **7. Lessons learnt**

Testing equipment in UK immediately before shipping to Ascension was vital. It meant we had confidence in its safe operation prior to using in a more remote and extreme location. We had very minimal equipment downtime.

The communication between BGS and AIG has been excellent. We had a well-formed idea of fieldwork plan and execution prior to arriving. We all worked extremely well as a team with no duplication of roles.

Travel is long and transporting equipment slightly tricky – spent more time investigating air freight options.

Underestimated the issue of internet access - wifi was severely limited and we had to rely on individuals (not organisational) starlink connections many times. This indicates a lack of proper research.

BGS Project Manager overly cautious on the cost of some aspects of field work. Boat hire, fuel, food and accommodation cheaper than expected.

The weather on Ascension for marine survey is not ideal. The BGS Project Manager should have investigated the launch and recovery of survey vessel in more detail.

For future work we would be more realistic about influence of weather and the knock-on effects of such a remote location.

We have a change request accepted to attempt a USV survey on Ascension FY24-25. We will only progress into the execution phase once we are sure we can launch and recover the equipment safely and effectively. It is a long way to go with an expensive bit of kit that is also very sensitive to weather conditions.

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

Addressed issues with last Annual Report with errors in numbering activities, outputs and outcomes.

See responses above regarding project improvement/lessons learnt.

## **9. Risk Management**

We have constantly adapted this project to allow for the new survey data, covid delays, runway maintenance, availability of accommodation and to utilise the new AIG survey vessel.

BGS has a well maintained and up-to-date Risk Register .

We followed the AIG Risk Assessment for small boat operation, expanded to include use of multibeam system and chosen seafloor sampling technique.



Significant risk factors to this project are the use of a new multibeam mounting system on a small nearshore, 8 m inflatable RIB and the impact of weather/sea state.

#### 1) Survey vessel - multibeam mounting system

Research was undertaken to ensure we reduces delays, improves safety and minimises data errors that could have resulted from inadequate vessel mobilisation. We purchased a robust and repeatable mounting system from a known manufacturer (USB) who work closely with Kongsberg (manufacturers of our multibeam system).

We received training and saw it in operation. It is also used regularly by the US Navy. However, prior to shipping the equipment to Ascension, BGS undertook a warm-up survey on a similar sized RIB in the Firth of Forth, Scotland. We tested viability of the equipment and gained familiarity in use/developed risk assessments for safe operation in Ascension.

#### Weather conditions/sea state

Ascension Island is in a very remote and exposed location. Weather conditions played a part in the amount and quality of data collected. This is the same for any marine survey operation, however, more accentuated due to potential size of swell and limiting size of a small survey vessel. The increased frequency & reduced cost of flights allowed us to spread the risk by having two separate survey seasons at slightly different periods of the year (November & January).

#### 2) Further mitigation.

- Regular communication with Ascension Island Government over vessel, flight and accommodation requests.
- Regular discussion with United Kingdom Hydrographic Office on tide gauge installation, their plans and future use of data.
- Project Manager in constant discussion over changes in survey platform and modifications required to enable its use.

### **10. Sustainability and legacy**

- BGS has supplied AIG with a version of the bathymetry & maps proving vital for a shark research team in deploying seafloor sensors. The research was also carried out under Darwin/Defra funding.
- Staff at the Department of Conservation AIG were involved in the multibeam survey.
- AIG staff and equipment were heavily involved in ground truth survey – we used their new dropdown camera capabilities and hired a new one for comparison.

### **11. Darwin Plus identity**

The Darwin Plus identity & logos used in all outreach/social media activity.

Logo used in all slides during presentations etc.

- BGS news articles covering the two trips are available here:  
<https://www.bgs.ac.uk/news/bgs-completes-first-mapping-expedition-to-ascension-island/>  
<https://www.bgs.ac.uk/news/in-photos-marine-surveying-a-remote-volcanic-island/>

- Ascension Island Government twitter feeds here:

First trip.

<https://x.com/AscensionMPA/status/1725102115360522557?s=20>

Second trip.

<https://x.com/AscensionMPA/status/1750460817047204098?s=20>

Various outreach

<https://x.com/AscensionMPA/status/1750818467383546270?s=20>

<https://x.com/AscensionMPA/status/1750816535621390808?s=20>

## 12. Safeguarding

Has your Safeguarding Policy been updated in the past 12 months?	No
Have any concerns been reported in the past 12 months	No
Does your project have a Safeguarding focal point?	Yes
Has the focal point attended any formal training in the last 12 months?	No
What proportion (and number) of project staff have received formal training on Safeguarding?	Past: % [and number] Planned: % [and number]
Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Please ensure no sensitive data is included within responses. <b>No</b>	
Does the project have any developments or activities planned around Safeguarding in the coming 12 months? If so please specify. <b>No</b>	
Please describe any community sensitisation that has taken place over the past 12 months; include topics covered and number of participants.	
Have there been any concerns around Health, Safety and Security of your project over the past year? If yes, please outline how this was resolved. <b>No</b>	

### 13. Project expenditure

**Table 1: Project expenditure during the reporting period (1 April 2023 – 31 March 2024)**

Project spend (indicative) in this financial year	2023/24 D+ Grant (£)	2023/24 Total actual D+ Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items				
Others (Please specify)				
<b>TOTAL</b>	<b>92529.00</b>	<b>93264.2</b>		

**Table 2: Project mobilised or matched funding during the reporting period (1 April 2023 – 31 March 2024)**

	Secured to date	Expected by end of project	Sources
Matched funding leveraged by the partners to deliver the project (£)			BGS
Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project (£)			

**14. Other comments on progress not covered elsewhere**

**15. OPTIONAL: Outstanding achievements or progress of your project so far (300-400 words maximum). This section may be used for publicity purposes.**

See above links to both BGS and AIG social media and news feeds.

I agree for the Biodiversity Challenge Funds to edit and use the following for various promotional purposes (please leave this line in to indicate your agreement to use any material you provide here).

<b>File Type (Image / Video / Graphic)</b>	<b>File Name or File Location</b>	<b>Caption including description, country and credit</b>	<b>Social media accounts and websites to be tagged (leave blank if none)</b>	<b>Consent of subjects received (delete as necessary)</b>
				Yes / No
				Yes / No
				Yes / No
				Yes / No
				Yes / No

## Annex 1: Report of progress and achievements against logframe for Financial Year 2023-2024

Project summary	SMART Indicators	Progress and Achievements April 2023 - March 2024	Actions required/planned for next period
<p><b>Impact</b></p> <p>There is a step-change in our understanding of the biodiversity and geodiversity of the nearshore Ascension Marine Protected Area providing a baseline to underpin future ecosystem assessment, monitoring, and development.</p>		<ol style="list-style-type: none"> <li>1) Trial survey undertaken in the Firth of Forth to ensure proposed methodology works &amp; all all equipment working and present before shipping to Ascension</li> <li>2) All equipment shipped to Ascension for arrival prior to fieldwork commencing</li> <li>3) Two successful survey campaigns to Ascension undertaken in Oct 2023 and Jan 2024</li> <li>4) Undertaken two seafloor ground-truth survey – locations determined by 3).</li> <li>5) Preliminary substrate, geomorphology and habitat maps completed – currently under review.</li> <li>6) Completed various outreach and knowledge exchange activities.</li> </ol>	<ol style="list-style-type: none"> <li>1) Present initial results at various conferences – International Conference on Seafloor Landforms, Processes and Evolution &amp; others to be confirmed</li> <li>2) Knowledge Exchange – need identified for more GIS training at AIG Dept of Conservation and particularly on data outputs</li> <li>3) AIG Dept of Conservation to provide feedback and improve relevance of habitat map</li> <li>4) Change request accepted to add value to project by undertaking another marine survey using an Unmanned Surface Vehicle (USV) in the hard to reach areas (if possible)</li> <li>5) Finalise all data outputs &amp; reports</li> <li>6) Complete all relevant knowledge exchange &amp; outreach.</li> </ol>

Project summary	SMART Indicators	Progress and Achievements April 2023 - March 2024	Actions required/planned for next period
<p><b>Outcome</b></p> <p>Ascension Island Government have significantly enhanced information on geodiversity and biodiversity to successfully support management and monitoring of the MPA. Geospatial data products will provide value long-after completion of the project.</p>	<p>0.1 At least 70% of the AI-MPA nearshore area (60 km<sup>2</sup>; 0-100m depth) is surveyed and mapped with particular emphasis on priority area along west coast, ensuring comprehensive characterisation of nearshore environment (Year 1 Q4);</p> <p>0.2 Project outputs regularly employed by MPA managers for ecosystem assessment and monitoring purposes (From Year 2, Q4);</p> <p>0.3 Bathymetry data will be supplied to the UKHO as significant contribution towards navigational charting (Year 2 Q3)</p>	<p>0.1 Complete – the Royal Navy survey has provided extensive coverage of nearshore waters &lt;100m, extending out to depths greater than 3000m. There are still data gaps and areas of interest not surveyed.</p> <p>0.2 N/A – Too early in project lifecycle</p> <p>0.3 Complete</p>	<p>0.1 Change request accepted to move budget into FY24-25 to enable BGS to attempt to collect more bathymetric data in Q3/Q4 using an USV</p> <p>0.2 Finalise geomorphology, habitat and substrate maps with input from AIG. Provide training in GIS and data outputs</p> <p>0.3 Complete – possible increase in data supplied based on success of 0.1</p>
<p><b>Output 1. Seafloor Surveys</b></p>	<p>1.1 Assess Royal Navy Prospector Survey data – reprocess into suitable backscatter and bathymetric products for marine geological mapping. Assess and indicate areas for resurvey/high definition coverage.</p> <p>1.2 Acoustic (at least 70% of nearshore area) and ground-truthing (at least 30 sites)</p>	<p>1.1 Complete – great quality survey allowing us to expand mapping area and concentrate subsequent survey on areas of interest (higher resolution/water column data etc.) and fill gaps/data holidays/quality issues.</p> <p>Preliminary substrate mapping has commenced using this data.</p> <p>Appendix 4.1</p> <p>1.2 Complete – surveys successfully undertaken Oct 2023, January 2024 (see attached survey report)</p> <p>1.3 Complete – Royal Navy data &amp; BGS data delivered to AIG - Jan/Feb 2023 (UKHO) &amp; Feb 2024 (BGS).</p> <p>1.4 Complete – delivered to AIG January 2024.</p> <p>1.5 Complete – BGS bathymetry data delivered to UKHO</p>	

Project summary	SMART Indicators	Progress and Achievements April 2023 - March 2024	Actions required/planned for next period
	<p>surveys conducted (completed by Year 1 Q4);</p> <p>1.3 High-quality MBES hydrographic data processed and delivered to AIGCFD (Year 2 Q 1);</p> <p>1.4 Ground-truthing data classified and delivered to AIGCFD (Year 2, Q2);</p> <p>1.5 Processed hydrographic data delivered to UKHO and data repository (Year 2 Q3);</p>		
<p>Activities</p> <p>1.1 Assess Royal Navy Prospector Survey data – reprocess into suitable backscatter and bathymetric products for marine geological mapping. Assess and indicate areas for resurvey/high-definition coverage.</p>		1.1 Complete (see Appendix 4.1)	None
<p>1.2 Acquire continuous high-resolution (<math>\leq 5\text{m}</math> resolution) multibeam echosounder (MBES) bathymetry (water depth) and backscatter data (proxy for seafloor composition and hardness) within the nearshore waters around Ascension Island (&lt; 100m depth)). Utilise BGS's portable MBES system (Kongsberg EM2040P) aboard a locally-contracted vessel. This system is very well suited to undertaking cost-effective survey in this remote environment. Acquisition conducted according to habitat priority areas;</p>		1.2 Complete (See associated survey report OR_24_014_RoS_BGS_Ascension_D RAFT.pdf)	1.2 Change request accepted to move budget into FY24-25 to enable BGS to attempt to collect more bathymetric data in Q3/Q4 using an USV
<p>1.3 Deploy drop-camera system from locally-contracted vessel to provide point-source ground-truth samples of seafloor habitat types;</p>		1.3 Complete (See associated survey report OR_24_014_RoS_BGS_Ascension_D RAFT.pdf)	

Project summary	SMART Indicators	Progress and Achievements April 2023 - March 2024	Actions required/planned for next period
1.4 Process MBES bathymetry and backscatter data to IHO charting standards;		1.4 Complete (see Appendix 4.1)	1.4 Attempt to add more data in inaccessible areas using an USV (Unmanned Surface Vessel)
<b>Output 2.</b> Seafloor Substrate and Habitat Maps delivered to AIG and applied to management	<p>2.1 Classified seafloor substrate maps completed, at least including Hard Substrates and Seafloor Sediment Composition. Further outputs include geomorphology and sediment mobility indicators (Year 2 Q2);</p> <p>2.2 Seafloor habitat maps: classified with reference to seafloor morphology, hardness, composition, and biological cover (Year 2 Q3);</p> <p>2.3 Map products delivered via GIS project and database (including processed acoustic data, ground-truthing locations and classification, interpreted substrate layers, and habitat map). Content and formats agreed with AIG (delivered Year 2 Q3)</p> <p>2.4 Final Project Report: Describes survey, data acquired, analysis methods, observations and key findings, and recommendations on applicability of map products. Report to include high-quality</p>	<p><i>2.1 Preliminary maps created and under review. AIG have received initial training and providing feedback into improvements</i></p> <p><i>2.2 Preliminary maps created and under review. AIG have received initial training and providing feedback into improvements</i></p> <p><i>2.3 Preliminary maps created and under review. AIG have received initial training and providing feedback into improvements</i></p> <p><i>2.4 Report is currently being written – final review will happen once maps finalised</i></p>	<p>2.1 Finalise maps and deliver to AIG with associated feedback and training</p> <p>2.2 Finalise maps and deliver to AIG with associated feedback and training</p> <p>2.3 Finalise maps and deliver to AIG with associated feedback and training</p> <p>2.4 Finalise report and publish using official BGS publications route.</p>



Project summary	SMART Indicators	Progress and Achievements April 2023 - March 2024	Actions required/planned for next period
	figures of underlying data and habitat maps .(Year 2 Q4)		
<p><b>ACTIVITIES</b></p> <p><b>2.1 Seafloor mapping</b></p> <p>2.1.1 Substrates. Apply geospatial analysis to characterise seafloor morphology and composition using a range of quantitative and qualitative methodologies;</p> <p>2.1.2 Use bathymetric derivatives, together with backscatter data and ground-truthing observations to model distribution of hard substrates (important predictor of benthic habitat character) and sediment composition;</p> <p>2.1.3 Produce further classified maps indicative of seafloor processes (e.g. seafloor geomorphology, sediment thickness and mobility);</p>		<p>2.1.1 Preliminary maps created and under review.</p> <p>2.1.2 Preliminary maps created and under review.</p> <p>2.1.3 Preliminary maps created and under review.</p>	<p>2.1.1 Finalise maps and deliver to AIG with associated feedback and training</p> <p>2.1.2 Finalise maps and deliver to AIG with associated feedback and training</p> <p>2.1.3 Finalise maps and deliver to AIG with associated feedback and training</p>
<p><b>2.2 Seafloor Habitats:</b></p> <p>2.2.1 Analyse and classify ground-truthing imagery;</p> <p>2.2.2 Incorporate existing data within nearshore, and deeper, environments;</p> <p>2.2.3 Produce final seafloor habitat maps (attributed according to morphology, hardness, composition, and biological cover);</p>		<p>2.2.1 All groundtruth video/images analysed and used in creation of preliminary maps</p> <p>2.2.2 All data, from a wide range of sources (including local knowledge) examined and incorporated into preliminary maps</p> <p>2.2.3 Preliminary maps created and under review.</p>	<p>2.2.1 Finalise maps and deliver to AIG with associated feedback and training</p> <p>2.2.2 Finalise maps and deliver to AIG with associated feedback and training</p> <p>2.2.3 Finalise maps and deliver to AIG with associated feedback and training</p>
<p><b>2.3 Project delivery via GIS database, project reports and maps, and stakeholder engagement:</b></p> <p>2.3.1 Supply seafloor data, and classified map products of seafloor substrate and habitats;</p>		<p>2.3.1 Preliminary maps (GIS database) currently being worked-on and a report being written – final review will happen once maps finalised.</p>	<p>2.3.1 Finalise report and publish using official BGS publications route.</p> <p>2.3.2 Additional data from USV sent to UKHO</p>

Project summary	SMART Indicators	Progress and Achievements April 2023 - March 2024	Actions required/planned for next period
2.3.2 Prepare raw and processed data for project partners, stakeholders, and relevant data repositories to ensure long-term application of the data;		2.3.2 <i>Bathymetry data has already been submitted to UKHO for review and use in charting.</i>	
2.4 <u>Final Report</u> Prepare report(s) in collaboration with AIG detailing the survey campaign, acquired data, and methodologies employed. The project report will also describe key observations and potential discoveries, as well as emphasise the applicability and impact of the data and map outputs;		2.4 A draft report on survey data acquisition and data has been completed and signed-off using a BGS QA publications worksheet. A geological mapping report is currently being work on and will be finalised once maps complete and reviewed	2.4 Finalise report and publish using official BGS publications route.
<b>Output 3. Knowledge Transfer and Project Dissemination</b>	<p>3.1 Communication Plan created in consultation with AIG (Year 1 Q3);</p> <p>3.2 Science communication to public, including at least two educational outreach activities on AI, and at least one article published in gray literature (e.g. Darwin newsletter) (completed by Year 2, Q4);</p> <p>3.3 Minimum 1 peer-review paper submitted to scientific journal (Year 2 Q4);</p> <p>3.4 Geospatial products uploaded to accredited data archive centre. (Yr 2 Q4)</p>	<p>3.1 Communication plan being led by AIG conservation department and BGS.</p> <p>3.2 Outreach events already completed on Ascension. Talks at local cinema for community and at local AIG office for staff. A workshop was run at local school.</p> <p>3.3 Journal of Maps will be one of several publication options. Abstract already accepted at International Conference on Seafloor Landforms, Processes and Evolution (icslpe.com)</p> <p>3.4 Data to be made available via BGS (geological maps) and UKHO (bathymetry) Data Archive Centres (DACs).</p>	<p>3.2 Present at various international conferences</p> <p>3.3 Publish data on Journal of Maps</p> <p>3.4 Submit final data to DACS</p>

## Annex 2: Project’s full current logframe as presented in the application form (unless changes have been agreed)

Project Summary	Measurable Indicators	Means of Verification	Important Assumptions
<b>Impact:</b> There is a step-change in our understanding of the biodiversity and geodiversity of the nearshore Ascension Marine Protected Area providing a baseline to underpin future ecosystem assessment, monitoring, and development.			
<b>Outcome:</b> Ascension Island Government have significantly enhanced information on geodiversity and biodiversity to successfully support management and monitoring of the MPA. Geospatial data products will provide value long-after completion of the project.	0.1 At least 70% of the AI-MPA nearshore area (60 km <sup>2</sup> ; 0-100m depth) is surveyed and mapped with particular emphasis on priority area along west coast, ensuring comprehensive characterisation of nearshore environment (Year 1 Q4); 0.2 Project outputs regularly employed by MPA managers for ecosystem assessment and monitoring purposes (From Year 2, Q4); 0.3 Bathymetry data will be supplied to the UKHO as significant contribution towards navigational charting (Year 2 Q3)	0.1 Survey Completion report produced and approved by AIGCFD; 0.2 Project outputs received and incorporated into the AI-MPA Monitoring and Research Strategy; Project outputs cited within MPA management reporting; 0.3 Data meet IHO standards, and are made available to the UKHO.	Weather and sea conditons allow surveys to be undertaken successfully and in a timely manner.  All travel for fieldwork is permitted as per FCO guidelines.  Mitigation  Sufficient time built into survey schedule to allow for delays. Flexible survey plan allows sheltered areas to be prioritised to reduce lost days.  Project not due to start until September 2021 when travel restrictions predicted to have eased.
<b>Outputs:</b> 1. Seafloor Surveys	1.1 Assess Royal Navy Prospector Survey data – reprocess into suitable backscatter and bathymetric products for marine geological mappning. Assess and indicate areas for resurvey/high definition coverage.  1.2 Acoustic (at least 70% of nearshore area) and ground-truthing (at least 30 sites)	1.1 Completed and suitable bathymetric & backscatter data layers from Royal Navy data.  1.2 Brief ‘Survey Completion’ report issued including: areas mapped, description of data acquired and data quality, number of ground-truth samples, preliminary figures of data acquired);	1.1 Data is collected that is fit for purpose and can be processed into a suitable format  1.2 Local vessel secured (multiple options on island), workable weather conditions (survey in sheltered areas where possible), timely shipment of survey equipment and personnel;  1.2 Hydrographic survey equipment functioning properly (equipment tested in advance) ; surveyors

	<p>surveys conducted (completed by Year 1 Q4);</p> <p>1.2 High-quality MBES hydrographic data processed and delivered to AIGCFD (Year 2 Q 1);</p> <p>1.3 Ground-truthing data classified and delivered to AIGCFD (Year 2, Q2);</p> <p>1.4 Processed hydrographic data delivered to UKHO and data repository (Year 2 Q3);</p>	<p>1.2 Processed data meet IHO charting standards, and received by AIGCFD;</p> <p>1.3 Classified data received by AIGCFD in usable formats, e.g. spreadsheets, and within GIS database;</p> <p>1.4 Receipt of data by UKHO and data repository;</p>	<p>have suitable hydrographic certification (BGS has qualified personnel);</p> <p>1.3 Drop frame camera and other ground-truthing equipment functioning properly (equipment tested in advance); survey personnel have suitable training and experience for data acquisition (BGS has qualified personnel);</p> <p>1.4 UKHO want, and require data (BGS and UKHO have active dialogue about project and deliverables).</p>
<p><b>2. Seafloor Substrate and Habitat Maps delivered to AIG and applied to management</b></p>	<p>2.1 Classified seafloor substrate maps completed, at least including Hard Substrates and Seafloor Sediment Composition. Further outputs include geomorphology and sediment mobility indicators (Year 2 Q2);</p> <p>2.2 Seafloor habitat maps: classified with reference to seafloor morphology, hardness, composition, and biological cover (Year 2 Q3);</p> <p>2.3 Map products delivered via GIS project and database (including processed acoustic data, ground-truthing locations and classification, interpreted substrate layers, and habitat</p>	<p>2.1 AIG in receipt of substrate maps; Maps included in final project report, and incorporated into GIS deliverables;</p> <p>2.2 AIG in receipt of habitat maps; Maps included in final project report, and incorporated into GIS deliverables.</p> <p>2.3 Maps used in at least two MPA management decisions by Y2 Q3</p>	<p>2.1 &amp; 2.2 Survey data are of suitable quality; Project staff have suitable training and expertise (BGS has numerous staff with suitable qualifications).</p> <p>AIGCFD are able to use project outputs for MPA management and monitoring, and potential future developments (Data formats specified/agreed early in project to ensure that AIG and local stakeholders can access all outputs);</p>

	<p>map). Content and formats agreed with AIG (delivered Year 2 Q3)</p> <p>2.4 Final Project Report: Describes survey, data acquired, analysis methods, observations and key findings, and recommendations on applicability of map products. Report to include high-quality figures of underlying data and habitat maps .(Year 2 Q4)</p>		
<p><b>3. Knowledge Transfer and Project Dissemination</b></p>	<p>3.1 Communication Plan created in consultation with AIG (Year 1 Q3);</p> <p>3.2 Science communication to public, including at least two educational outreach activities on AI, and at least one article published in gray literature (e.g. Darwin newsletter) (completed by Year 2, Q4);</p> <p>3.3 Minimum 1 peer-review paper submitted to scientific journal (Year 2 Q4);</p> <p>3.4 Geospatial products uploaded to accredited data archive centre. (Yr 2 Q4)</p>	<p>3.1 Communication plan agreed between project partners. Knowledge exchange activities included as appendices in final project report;</p> <p>3.2 Verification may include presentations, published articles, photographs, teacher feedback and examples of children’s work;</p> <p>3.3 Journal confirmation email(s);</p> <p>3.4. Upload notification from data archive centre.</p>	<p>3.1 &amp; 3.2 Ability to reach local stakeholders. (Project partners AIG are part of local government and have established network on island);</p> <p>3.3 Project findings hold sufficient scientific interest to warrant peer-reviewed study (Proposed surveys will identify features offshore relevant to seafloor habitats and volcanic environments for the first time);</p> <p>3.4 Suitable geospatial data archive identified (several candidate domestic and international data repositories, e.g MEDIN).</p>

**Activities** (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)

### **1 Marine Survey - Year one, Q1 onwards (2023/2025)-**

#### **Activity contributing to outputs 1.1 – 1.4**

Hydrographic acoustic survey and ground-truthing campaign.

1.1 Assess Royal Navy Prospector Survey data – reprocess into suitable backscatter and bathymetric products for marine geological mapping. Assess and indicate areas for resurvey/high definition coverage.

1.2 Acquire continuous high-resolution ( $\leq 5\text{m}$  resolution) multibeam echosounder (MBES) bathymetry (water depth) and backscatter data (proxy for seafloor composition and hardness) within the nearshore waters around Ascension Island ( $< 100\text{m}$  depth)). Utilise BGS's portable MBES system (Kongsberg EM2040P) aboard a locally-contracted vessel. This system is very well suited to undertaking cost-effective survey in this remote environment. Acquisition conducted according to habitat priority areas;

1.3 Deploy drop-camera system from locally-contracted vessel to provide point-source ground-truth samples of seafloor habitat types;

1.4 Process MBES bathymetry and backscatter data to IHO charting standards;

### **2 Seafloor Substrate and Habitat Mapping – Year 1-2 (2023-2025): Activity contributing to outputs 2.1 - 2.3**

#### **2.1 Seafloor mapping**

2.1.1 Substrates. Apply geospatial analysis to characterise seafloor morphology and composition using a range of quantitative and qualitative methodologies;

2.1.2 Use bathymetric derivatives, together with backscatter data and ground-truthing observations to model distribution of hard substrates (important predictor of benthic habitat character) and sediment composition;

2.1.3 Produce further classified maps indicative of seafloor processes (e.g. seafloor geomorphology, sediment thickness and mobility);

#### **2.2 Seafloor Habitats:**

2.2.1 Analyse and classify ground-truthing imagery;

2.2.2 Incorporate existing data within nearshore, and deeper, environments;

2.2.3 Produce final seafloor habitat maps (attributed according to morphology, hardness, composition, and biological cover);

#### **2.3 Project delivery via GIS database, project reports and maps, and stakeholder engagement;**

2.3.1 Supply seafloor data, and classified map products of seafloor substrate and habitats;

2.3.2 Prepare raw and processed data for project partners, stakeholders, and relevant data repositories to ensure long-term application of the data;

2.4 Final Report Prepare report(s) in collaboration with AIG detailing the survey campaign, acquired data, and methodologies employed. The project report will also describe key observations and potential discoveries, as well as emphasise the applicability and impact of the data and map outputs;

### **3 Knowledge Transfer and Project Dissemination: Activity contributing to outputs 3.1 - 3.4**

3.1 Communication Plan developed early Y1 to include not only formal reporting but also social media engagement, academic outputs and grey literature. The Communications Plan will be a living document, updated regularly at Project Board meetings.

- 3.2 Project partners will actively communicate (e.g. public presentations) with AIG and local stakeholders to highlight the need, interest and value, and findings from the habitat mapping
- 3.3 Publish at least 1 peer reviewed paper
- 3.4 Ensure dissemination via appropriate data archive centres. MEDIN, EMODnet etc.

**Annex 3: Standard Indicators**

*The introduction of Standard Indicators was after this projects design, application and subsequent award.*



**Table 1 Project Standard Indicators**

DPLUS Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
E.g. DPLUS-A01	E.g. Number of people in eligible countries who have completed structured and relevant training	People	Men	20			20	60
E.g. DPLUS-A01	E.g. Number of people in eligible countries who have completed structured and relevant training	People	Women	30			30	60
E.g. DPLUS-B01	E.g. Number of new or improved habitat management plans available and endorsed	Number	New	1			1	2
E.g. DPLUS-B01	E.g. Number of new or improved habitat management plans available and endorsed	Number	Improved	1			1	3

In addition to reporting any information on publications under relevant standard indicators, in Table 2, provide full details of all publications and material produced over the last year that can be publicly accessed, e.g. title, name of publisher, contact details, cost. You should include publications as supporting materials with your report. Mark with an asterisk (\*) all publications and other material that you have included with this report.

**Table 2 Publications**

Title	Type (e.g. journals, best practice manual, blog post, online videos, podcasts, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)

## Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the <b>correct template</b> (checking fund, type of report (i.e. Annual or Final), and year) and <b>deleted the blue guidance text</b> before submission?	*
<b>Is the report less than 10MB?</b> If so, please email to <a href="mailto:BCF-Reports@niras.com">BCF-Reports@niras.com</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:BCF-Reports@niras.com">BCF-Reports@niras.com</a> about the best way to deliver the report, putting the project number in the Subject line.	*
<b>Have you included means of verification?</b> You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	*
If you are submitting photos for publicity purposes, do these meet the outlined requirements (see section 15)?	No
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.	