Darwin Plus:
Overseas Territories Environment and Climate Fund
Annual Report

Important note *to be completed with reference to the Reporting Guidance Notes for Project Leaders:*

it is expected that this report will be about 10 pages in length, excluding annexes

Submission Deadline: 30th April 2017

Darwin Plus Project Information

Project reference	DPLUS052
Project title	Mapping St Helena's Biodiversity and Natural Environment
Territory(ies)	St. Helena, South Atlantic Ocean
Contract holder institution	Environment and Natural Resources Directorate, St Helena Government
Partner institutions	Environment Systems, Aberystwyth University, South Atlantic Environment Research Institute
Grant value	£212135
Start/end date of project	1st April 2016 – 31st March 2018
Reporting period (e.g., Apr 2016-Mar 2017) and number (e.g., AR 1,2)	April 2016 – March 2017 AR1 (002) F2 version
Project leader name	Derek Henry & Samantha Cherrett
Project website/blog/Twitter	None
Report author(s) and date	08/05/2017

1. Project overview

St Helena is one of the most remote islands in the world. It is situated in the South Atlantic Ocean 1200 miles from Southern Africa and 1800 miles from South America. The islands first international airport was due to open in 2016, but has been delayed.

Mapping St Helena's Biodiversity and Natural Environment will produce a series of high-detail island-wide maps and datasets, showing a baseline of habitat types, soils and other associated environmental information. The purpose of this information is to support island conservation and future management activities by helping to understand biodiversity, species (particularly endemic) geographic distribution and dynamic, protect and restore native habitats, control invasive species, aid sustainable agriculture, land resource planning and water resource management.

These maps and dataset outputs will be derived from a combination of analysis of multi-spectral satellite imagery, ground truthing field work and analysis of relevant historical and current datasets available. Additionally, training will be provided to local stakeholders in order for this data to be updated over time, via a 'living map'; subjects include and introduction to remote sensing and how environmental data is derived, field work methodology and data collection, mapping techniques. The data will be available for any organisation involved in decision making to do with land and species management.

2. Project stakeholders/partners

Environment Systems and Aberystwyth have been involved during this time period, although to a lesser extent than originally planned due to the effect of travel delays and a subsequent 'slow start'- approved following a change request submission. Both have been involved in decision making on imagery, methodologies and procurement of equipment.

Environment Systems have purchased 2014 and 2017 satellite imagery. The 2014 imagery was processed and a preliminary habitat segmentation produced, which aided field trip that took place from 5th to 20th February 2017. A proposed methodology and input into habitat classifications has also been provided. During the first week of the field trip, several workshops were well attended by stakeholders, and for the second week, practical fieldwork for ground-truthing took place, again with some of the stakeholders (details outlined for each department/organisation). The trip proved incredibly useful for all parties involved to get a better idea about the habitats on St Helena and the work required to produce the map.

Aberystwyth University: Involvement so far has predominantly been collection and assessment of historical data and field work planning, due to the delays in travel for field work. They have also been in contact with the SHNT, and to a lesser extent EMD, over soil sampling and potential additional future analyses. Aberystwyth have also provided training and sampling on Ascension Island at the start of April (to be covered in more detail in the next report) which involved Ascension Island Government and SAERI.

South Atlantic Environmental Research Institute (SAERI) have started assisting with data management protocols and advising on infrastructure for the 'living map' component of the project.

The following stakeholders, departments and organisations have been involved in the project so far;

- ENRD GIS Department: Two staff members from the GIS department attended the Environment Systems workshops and several days of field work. Additionally, the GIS department have supported several days of field work since then. The GIS Manager has also provided datasets and information to aid field work planning and satellite imagery rectification.
- ENRD Agricultural and Natural Resourced Division: One staff member from the ANRD department attended part of the Environment Systems workshops. Additionally, ANRD have input into the habitat classification work.
- ENRD Environmental Management Division (EMD): Six staff members from the EMD department attended one or more of the Environment Systems workshops. Additionally, EMD have supported field work since then as also had significant involvement in development of the habitat classification to be used.
- ENRD Landscape and Ecological Mitigation Programme: Three staff members from the LEMP attended the one or more days of Environment Systems workshops and a day of field work, the location of which was their choice. Additionally, LEMP have also had significant involvement in development of the habitat classification to be used.
- St Helena National Trust (SHNT): Four staff members from the SHNT attended one or more days of the Environment Systems workshops and a day of field work, the location of which was their choice. Additionally, SHNT have supported several days of field work since then as also had significant involvement in development of the habitat classification to be used.
- Connect St Helena: Three staff members from Connect attended a presentation hosted by Environment Systems.
- The majority of stakeholders also attended project information sessions in November and December 2016.
- DPLUS051: assisted DPLUS051 field work, including additional testing possible of field procedures for habitat data collection and accuracy of data collection devices for DPLUS052.
- DPLUS029: assisted with development of the habitat classification and also provided information to aid field work.

The main challenges of stakeholder involvement have been time; finding suitable times that multiple stakeholder can attend workshops and meetings.

One major achievement has been the development of the habitat classification, which brought several stakeholders together to work on developing a suitable classification for all to use for the future.

Supporting evidence provided is listed in Annex 3.

3. Project Progress

Whilst progress on the project has been significantly slower than planned and air and sea access issues have really affected our project plans and timescales, we have still managed to progress slowly and hit certain targets. Delays in air access have affected the timings of field visits by ball project partners and resulted in some training occurring on Ascension Island.

There have been three change requests submitted during year one all of which have been approved. The contents of the change requests reflect the changes required (financially and with regards to timescales) to adapt to difficulties with access to St Helena which were not anticipated (to this extent) at submission stage.

Supporting evidence provided for sections below is listed in Annex 3.

3.1 Progress in carrying out project Activities

Activity 1.1 Sourcing of suitable satellite imagery: Environment Systems investigated imagery options and it was agreed that WorldView 2 imagery was less suitable for use due to cloud cover and licence restrictions. In November 2016, two images from November and December 2014 were procured. It was then decided to try and get additional more current data, due to the changes that had occurred in those three years, as well as the cloud cover being in an area of interest (the Peaks). Environment Systems then arranged the tasking of new imagery, which had been planned to take place between January and August 2017; fortunately for us a suitable image was acquired in January 2017, however, this was during the period of drought and therefore may not be fully reflecting of island conditions. Environment Systems are working on orthorectification of this imagery.

Activity 1.2 Processing of imagery to produce preliminary maps; Environment Systems created a segmentation based upon the two 2014 images, prior to visiting St Helena. The fieldwork highlighted potential problems with this segmentation, based on times and level of detail and Environment Systems were to reassess this upon processing of the 2017 imagery, and now with a greater understanding of St Helena's habitats.

Activity 1.3 Review of data held in IMS-GIS Data Centre; there are currently 113 'biota' records and 20 'environment' records within St Helena's IMS-GIS Data Centre database and of those, few contain enough recent or detailed habitat information that can be linked to our developed classification and utilised. Additional data searches in the SHG archives and department offices for other historical non-digital data were completed in the early stages of the project and most of the useful data collected was to do with historical soil sampling. Of the reports assessed, useful soil sample information was sent to Aberystwyth who have used it for field work planning and existing map validation.

Activity 2.1 Field surveys for vegetation and habitat mapping and Activity 2.2 Field surveys habitats, vegetation and soils for remaining data outstanding; Due to travel issues, only field surveys have taken place for habitat ground truthing and not soils. During Environment Systems visit, 367 habitat points were collected and subsequent field work in year one by SHG assessed and classified over 450 segments.

Activity 3.1 Ground truthing training and workshops for data collection occur and Activity 3.2 Remote sensing training and workshops occur; Implemented by Environment Systems during field work (Feb 2017) for habitats and vegetation. No soil work yet. The field visit and training from Environment Systems was invaluable, both to those of us on island guiding us with training and data requirements, but also to Environment Systems to understand the islands habitats, stakeholder knowledge, involvement and requirements. Additionally, the training and practical work that occurred during this trip made Environment Systems more aware of the complexity of St Helena's habitats and the need to adapt previously used methodologies so that we can achieve decent results. The field work and workshops also made us much more aware of the logistics and managed our expectations of what habitat information we will get from the imagery and data.

Activities 3.3, 4.1, 4.2, 4.3 were planned for this year.

3.2 Progress towards project Outputs

Output 1: Satellite imagery sourced and processed resulting in preliminary habitat and soil maps, supported by existing collated geospatial data; as previously mentioned, imagery has been acquired and has either been, or is being processed, well within budget. Preliminary habitat data has been produced, but existing geospatial data that is relevant and useful has been lacking. Environment Systems field visit highlighted complications resulting in inaccuracies to the draft habitat data which will be revisited once the 2017 imagery has been processed. The habitat classification created was a good project achievement, bringing together the local knowledge and using historical work to create it. A first final version has been completed but may be open to minor changes as the field work continues and more habitats

are assessed during the ground-truthing. The indicators for this output are still relevant and it is likely this output will be achieved if field work occurs for soil mapping.

Output 2: Habitat and soil maps ground-truthed and refined with field data and local expertise; habitat ground-truthing is ongoing following training. Due to a travel issues, habitat data collection is slightly behind schedule and soils ground truthing will not take place until September 2017. Days in the field have been catalogued and in-kinds support recorded. Publicity of Environment Systems visit occurred in February 2017, including a talk attended by twenty members of the public. The indicators for this output are still relevant and it is likely this output will be achieved if field work occurs for soil mapping.

Output 3: Workshops held on remote sensing techniques, field techniques and monitoring systems creation; Partial progress, workshops for habitat related work and remote sensing have been completed. There may be need for refresher workshops towards the end of the project, due to the amount of data that was provided and to account for any changes in staff. Feedback forms have been issued for Environment Systems workshops, training certificates will be issued upon completion of all training. Soil related training and data collection occurred on Ascension Island in April 2017 and will be covered in the next suitable report. The indicators for this output are still relevant and it is likely this output may only be fully achieved only depending on air access to St Helena.

Output 4. Development of final maps and specific management tools informed by the baseline data; Minimal progress to date as planned for year two. The indicators for this output are still relevant and it is likely this output may only be fully achieved only depending on air access to St Helena.

3.3 Progress towards the project Outcome

Project Outcome: Production of St Helena's most comprehensive environment maps showing the functioning of habitats and soils; creating an accessible digital system to utilise RS for now and future ecosystem services monitoring; develop transferable skills, produce factual maps, concise baseline data and adaptable tools that are used for decision making, informing policy and combined to solve existing and future problems faced locally.

Good progress has been made towards the project Outcome; as outlined elsewhere in this section, the imagery acquisition has occurred as described elsewhere, although metadata has been drafted, it has not yet been submitted as this will be done in bulk. Also as outlined elsewhere, a habitat classification has been developed (and is in use by the St Helena National Trust) and methodologies are being written as fieldwork progresses. Habitat and remote sensing training has taken place, with soils training to follow. Many outputs and activities of the project were planned based upon on the habitat and soils field work being completed at the same time or close together and are therefore awaiting completion of the soils field work.

The indicators for this output are still relevant. Subject to no more travel delays, the project can still achieve its outcome by the end of funding, however, if there are any more delays or no air access by Sept/Oct 2017, we will have to seriously re-evaluate this. To try and mitigate this, we are investigating an option where a visit to Aberystwyth occurs (June 2017).

3.4 Project support to environmental and/or climate outcomes in the UKOTs

At present, there has not been significant physical data output for the project to contribute to strategic long-term outcomes, however;

- Satellite imagery purchased has been acquired with a suitable licence so that the St Helena Government, St Helena National Trust and Connect St Helena can use it.
- The habitat classification is being already being used by the St Helena National Trust in their work and has been designed with all stakeholders input, to ensure it is relevant for multiple users.

There have been two presentations to the Environment and Natural Resources Committee about the project, to introduce the project and explain the outputs and how they may be able to support government work.

3.5 Monitoring of assumptions

Imagery Assumptions (cost and suitability): Whilst we did not acquire the most detailed imagery, the imagery we did get is perfectly adequate to fulfil the needs of the project, with greater licence flexibility. WorldView 2 imagery was excluded, alternative Pleiades cloud free imagery tasked within budget. Free data was unfortunately deemed not detailed enough for our complex habitats.

Stakeholder organisations continue project involvement: despite staffing and departmental changes, stakeholder organisations have continued to assist with local species knowledge, in-kinds field support, habitat classifications and field planning.

There is still a low risk of this occurring in the second year of the project.

Existing data comprehensive enough for field work not to be required: early on it became apparent that many datasets would be too old, not detailed enough, or did not have suitable spatial accuracy. Of those that were still relevant, we have waited until after training and input from Environment Systems on methodology to see if it can be utilised.

Travel; travel has been and possibly still is the biggest problem we have faced with this project. We have made Darwin aware of all the travel issues as soon as they have occurred and tried to adapt the project around this, and submitted change requests to reflect this. Currently we still do not know when an air service might start, where from, or how much it will cost. It has suggested that we will know in May/June, however this is very short notice for the trips planned for September. We have had regular correspondence with the project team, about the travel issues and their effects.

With this in mind, this should still be classed as a high risk.

Outputs are not comprehensive enough: Recent fieldwork has made the project team and stakeholders more aware of RS capability and the dynamic nature of the habitats and the difficulty of the project; due to the dynamic state of many of our habitats, there are large areas of mixed species, which don't seem to follow the 'rules' that Environment Systems usually rely on for mapping, potentially making their job harder. This was discussed during the field trip and it was agreed that any output would be better than the data we have now and that should this become an issue, focus could shift to emphasise training that would allow stakeholders to correct, update and add to the initial map outputs. The visit from Environment Systems helped manage the expectations of stakeholders and if the data turns out to be less detailed than hoped then we will try to increase the training to equip stakeholders with the ability to update the map themselves.

This should be increased from low to medium risk.

4. Monitoring and evaluation

This is covered in other sections.

The project finances have been managed through both departmental and corporate finances, and following lessons learnt from previous projects, we have adopted a new system of cost codes that cover both Darwin Plus and SHG requirements.

Originally we had planned bi-monthly project team meetings; due to the travel issues we have actually had to communicate and discuss progress and amendments more regularly, dates of which have been recorded in a Document Register. As per the project partner MOUs, organisations have contributed at project reporting stages and regular internal informal discussions and updates between Derek Henry and Samantha Cherrett outlining issues and key stages of the project.

5. Lessons learnt

One of the biggest lessons learnt is to have flexibility built into the project, particularly in relation to timescales. We have had to repeatedly postpone field trips to St Helena and because of this our timescales have inevitably slipped.

One minor issue we have had related to payment of goods and services at the end of the financial year. The deadlines provided by SHG were earlier in the month, meaning that some items purchased in year one, will have to come out of the year two budget. Additionally, travel bookings made in year one through SHG made for year two, will not be paid for until year two. This should be considered in future projects.

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

Not applicable - no previous annual report.

7. Other comments on progress not covered elsewhere

Following air access delays and a broken RMS St Helena and two unusable runways, which have affected project team visits to St Helena so far, we still have concerns about travel for this financial year and the effect on the project. In spite of this our current plans are as follows; Aberystwyth and SAERI will travel by RMS St Helena, via Ascension, in September 2017 with a view to change to flights if available. Environment Systems will only be able to travel here by plane, and are therefore highly reliant on air access news. A second visitor from Aberystwyth by air is reliant on flights being available in September. We are reasonably confident that our approved revised budget can adapt to this uncertainty.

8. Sustainability and legacy

Again, due to the project delays, coupled with ongoing staff and departmental restructuring changes within SHG it is uncertain at this stage as to the most suitable exit strategy and best placed data manager. We have raised two options with the IT department for the best way of making digital data available in the future.

All stakeholders show continued interest in the outputs of the project and it is hoped that the outputs themselves will encourage them to continue to add to the living map and datasets.

9. Darwin identity

Previous Darwin projects have raised awareness on this small island and so governmental staff, stakeholders, councillors and local population are familiar with its remit.

Unfortunately, this project doesn't currently have much that we can update the island with exciting news about its development as most of the work to date has been data collection and analysis. Most promotion will occur when we receive the 2017 imagery and start producing final outputs from field work. Internal documentation and presentations carry the Darwin logo and logos of partner organisations. Few published materials and physical products have been produced but those that do recognised the Darwin Initiative.

When opportunities have arisen, we have promoted the project, including submission to two Darwin Plus Newsletters, one ENRD internal newsletter, presentation to the councillors within the SHGs Environmental and Natural Resources Committee (ENRC) and during the Environment Systems visit, a public talk, a further ENRC presentation, two radio interviews (making reference to the Darwin Initiative) and a local newspaper article.

10. Project Expenditure

Table 1: Project expenditure during the reporting period (1 April 2016 – 31 March 2017)

Project spend (indicative in this financial year	2016/17 D+ Grant (£)	2016/17 Total actual D+ Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs			4	-
Consultancy costs	0	0	0	-
Overhead Costs			1	-
Travel and subsistence			15	£1188.30 savings including for lower T&S and travel costs plus payment to be made year two instead of year one
Operating Costs			32	£134.39 saving from greater in-kinds support
Capital items			-1	-
Others (Please specify)			13	£872.07 saving due to non-purchases partly because of travel disruption and general purchase efficiencies
TOTAL			**6**	

Projected project expenditure has changed through the course of the first year due to travel issues to St Helena; all have been agreed through change requests (change-request_01_20160331_F1, change-request_02_20160800_D3F1, and change-request_03_20170100_D1F1).

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2016-2017 – <u>if appropriate</u>

Project summary	Measurable Indicators	Progress and Achievements April 2016 - March 2017	Actions required/planned for next period
Impact To create robust data and systems to support the long term strategic planning, development and adaptation of St Helena's public, private and voluntary sectors for environmental and climate change management.		Development of habitat classification for long term use. Early stages of development for data management protocols.	
Outcome Production of St Helena's most comprehensive environment maps showing the functioning of habitats and soils; creating an accessible digital system to utilise RS for now and future ecosystem services monitoring; develop transferable skills, produce factual maps, concise baseline data and adaptable tools that are used for decision making, informing policy and combined to solve existing and future problems faced locally.	0.1 Imagery acquired for use and combined with existing harvested data. 0.2 Field methodologies, mapping methods and classifications designed, understood and implemented. On-going strategy developed. 0.3 Training completed for minimum of one training or workshop session for at least one participant per stakeholder organisation. Skills for surveying and analysis acquired. 0.4 Surveying completed for soils and habitat. Final summary reports for each created. 0.5 Final non-editable and paper maps produced. 0.6 Living maps and subject specific tools, maps and data layers created	0.1 See previous comments on imagery status. Metadata written but not yet submitted – to be done in bulk. 0.2 Methodologies for habitat classification were circulated and discussed in workshops, but adapted during field work. Final classification subject to tweaks; this version is also now currently being used by the St Helena National Trust. Strategies and methodologies still to be finalised. 0.3 Training participation attendance sheets for completed remote sensing and habitat workshops provided, soils work ongoing. 0.4 Incomplete due to project delays 0.5 Year Two 0.6 Year Two	Complete 2017 satellite imagery rectification and recreated segmentation if necessary (Environment Systems May-June 2017) Continue habitat field surveys and supply data to Environment Systems for next draft of the map. By end Sept 2017) Soils fieldwork and training to occur, with subsequent field surveys (Sept 2017) Methodologies, reports and other key relevant documentation to be finalised (ongoing until end of field work)
Output 1. Satellite imagery sourced and processed resulting in preliminary habitat and soil maps, supported by	1.1 Acquisition of suitable satellite imagery, within budget 1.2 Processed imagery used to produce a preliminary habitat and soils map. 1.3 Collated soils, habitat and species	1.1 Partially completed; Pleiades 2014 imagery provided, tasked Pleiades 2017 imagery purchased but orthorectification ongoing. Pleiades deemed more suitable than WorldView2 due to licencing restrictions. Free imagery also deemed less suitable once investigated due to the islands terrain and complicated habitats, but purchased	

existing collated geospatial data	data from assessment of existing data held on island. Assessed for usefulness to identify potential additional field work. 1.4 Classifications and field surveys designed for habitat map	imagery was within budget. 1.2 Primary iteration of segmentation based on 2014 imagery completed and following field work to be refined using 2017 imagery. Soils work ongoing due to travel delays. 1.3 Historical soils data collated and provided to Aberystwyth for field work planning. Weather data also provided. Environmental data provided to Environment Systems although many datasets deemed less suitable, not detailed enough or too historical. 1.4 Mostly completed; workshops and field work have led to the development of a suitable classification. During fieldwork it might be necessary to refine some habitat descriptions and classifications. Relevant evidence in Sections 2, 3.1, 3.2 and Annex 3 Indicators are still valid.
Activity 1.1 Sourcing of suitable satellite imagery		Completed. 2009 imagery may also be purchased depending on segmentation produced using 2014 and 2017 imagery.
Activity 1.2 Processing of imagery to produce preliminary maps		Completed. 2017 imagery orthorectification to be completed.
Activity 1.3 Review of data held in IMS-GIS Data Centre. Visit to SHG archives and department offices to search for other historical non-digital data. Create digital versions of useful data.		Review completed. Digital data to be cleaned and finalised if deemed useful.
Output 2. Habitat and soil maps ground-truthed and refined with field data and local expertise	2.1 Practical field work for vegetation and soils ground truthing in areas of uncertainty involving project team where necessary. Supplementary soil analysis. Preliminary map refined. 2.2 SHG and available field based staff in stakeholder organisations complete field work for ground truthing and collate all existing data required to fill data gaps.	2.1 Habitat fieldwork completed during visit. Soil fieldwork delayed. Publicity of Environment Systems visit. 2.2 Habitat fieldwork ongoing due to delays. Soil fieldwork delayed. In-kinds time has been provided by local stakeholders for field work. Relevant evidence in Sections 2, 3.1, 3.2 and Annex 3 Indicators are still valid.
Activity 2.1 Field surveys for vegetation and habitat mapping. Field surveys for soil sample collections		Ongoing; habitat survey completed, soils surveys planned for Sept 2017
Activity 2.2 Field surveys habitats, vegetation and soils for remaining data outstanding.		Ongoing; habitat survey ongoing, soils surveys planned for Sept 2017

Output 3. Workshops held on remote sensing techniques, field techniques and monitoring systems creation	3.1 Attendance certificates issued. Feedback gathered for hosts. 3.2 Attendance certificates issued. Feedback gathered for hosts. 3.3 Monitoring systems in place for training. Attendance certificates issued. Feedback gathered for hosts. On island publicity.	3.1 Habitat workshops completed, soil workshops delayed. Soil related training on Ascension for AIG and SAERI April 2017. Certificates to be issued together. Feedback requested from attendees. 3.2 Completed. Certificates to be issued together. Feedback requested from attendees. 3.3 Year Two Relevant evidence in Sections 2, 3.1, 3.2 and Annex 3 Indicators are still valid.
Activity 3.1 Ground truthing training and workshops for data collection occur		Ongoing; habitat survey completed, soils surveys planned for Sept 2017
Activity 3.2 Remote sensing training and workshops occur		Completed; refresher sessions may be required, or soils specific sessions.
Activity 3.3 Creation of monitoring systems		Planned for Year Two following completion of Outputs 1-2
Output 4. Development of final maps and specific management tools informed by the baseline data	4.1 Creation of final maps and integration with regional data management system. Reporting by consultants. 4.2 Creation of 'living map' comprising geospatial data 4.3 Tools for management of invasive species, water resources, agricultural management habitat conservation and restoration created	Planned for Year Two (from Sept 2017) Indicators are still valid.
Activity 4.1 Preliminary maps updated with survey data to produce final maps		Planned for Year Two following completion of Outputs 1-3
Activity 4.2 Digital data combined into 'living map'		Planned for Year Two following completion of Outputs 1-3
Activity 4.3 Development of subject specific tools for individual stakeholders		Planned for Year Two following completion of Outputs 1-3

Annex 2: Project's full current logframe as presented in the application form (unless changes have been agreed) - – if appropriate

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 if you have any questions regarding this.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Impact: To create robust data and systems to support the long term strategic planning, development and adaptation of St Helena's public, private and voluntary sectors for environmental and climate change management.			
Outcome: Production of St Helena's most comprehensive environment maps showing the functioning of habitats and soils; creating an accessible digital system to utilise RS for now and future ecosystem services monitoring; develop transferable skills, produce factual maps, concise baseline data and adaptable tools that are used for decision making, informing policy and combined to solve existing and future problems faced locally.	0.1 Imagery acquired for use and combined with existing harvested data. 0.2 Field methodologies, mapping methods and classifications designed, understood and implemented. On-going strategy developed. 0.3 Training completed for minimum of a one training or workshop session for at least one participant per stakeholder organisation. Skills for surveying and analysis acquired. 0.4 Surveying completed for soils and habitat. Final summary reports for each created. 0.5 Final non-editable and paper maps produced. Digital layers produced. Reporting by consultants. 0.6 Living maps and subject specific tools, maps and data layers created. Specific for invasive species control, habitat management, land management and water resource management are utilised by	0.1 Recent imagery purchased, available for use, metadata submitted to IMS-GIS Data Centre. Methodologies circulated. 0.2 Documentation finalised, circulated and agreed by project partners. 0.3 Training manuals produced. Training verified by participation statistics 0.4 Metadata for reports and spatial data submitted to IMS-GIS Data Centre. 0.5 Metadata for final 'static' products submitted to IMS-GIS Data Centre. Reports circulated. 0.6 Stakeholder organisations successfully use these tools for decision making	Suitable imagery is available and licence restrictions do not hinder project aims. Stakeholder organisations continue project involvement.

	stakeholders.		
Outputs: **1**. Satellite imagery sourced and processed resulting in preliminary habitat and soil maps, supported by existing collated geospatial data	1.1 Acquisition of suitable satellite imagery, within budget 1.2 Processed imagery used to produce a preliminary habitat and soils map. 1.3 Collated soils, habitat and species data from assessment of existing data held on island. Assessed for usefulness to identify potential additional field work. 1.4 Classifications and field surveys designed for habitat map	1.1 Imagery provided to SHG 1.2 Preliminary maps provided to SHG and stakeholders by Environment Systems and Aberystwyth University 1.3 Suitable soils, habitat and species data provided to Aberystwyth University and Environment Systems by SHG, including habitat surveys, 2015 1m DEM, 1989 imagery, soil reports, vegetation reports, and other relevant data. 1.4 Classifications agreed by project team and stakeholders involved in long term use.	Suitable cloud-free satellite imagery can be purchased within budget. There is a low risk of the imagery being unsuitable or costly; options have already been investigated by Environment Systems and two WorldView 2 images identified. Additional free imagery has been sourced and only one of the WorldView 2 images could be used should costs escalate. Existing data identified at early stages is suitable and does not require additional field work for ground truthing and sampling. A contingency of local consultancy and field work has been included, should this happen. Medium risk of existing soils map is comprehensive enough and cannot be improved upon although it is expected that this will not be the case. Focus will shift to transferring the historical data to a format upon which it can be used for this project, check the spatial accuracy and develop soils services maps based on existing map after validation whilst substituting with additional soil samples and analysis to measure relevant parameters.

2. Habitat and soil maps ground truthed and refined with field data and local expertise	2.1 Practical field work for vegetation and soils ground truthing in areas of uncertainty involving project team where necessary. Supplementary soil analysis. Preliminary map refined. 2.2 SHG and available field based staff in stakeholder organisations complete field work for ground truthing and collate all existing data required to fill data gaps.	2.1 Days in the field catalogued and collected data incorporated into preliminary map. Data gaps identified for additional field work. Analysis of collected data. On island publicity. 2.2 Days in the field catalogued and collected data incorporated into maps. Samples sent to partner organisations if required	A low risk that field based staff in partner organisations are fail to or unable to assist at key times. A contingency for local consultancy and field work has been included, should this happen, however stakeholders have proven historical working relationships and have pledged in-kind time.
3. Workshops held on remote sensing techniques, field techniques and monitoring systems creation	3.1 SHG and available field based staff in stakeholder organisations attend workshops and training sessions on field techniques required for successful ground truthing prior to start of surveying for data gaps. 3.2 Training session on remote sensing techniques 3.3 Monitoring systems developed and training session delivered	3.1 Attendance certificates issued. Feedback gathered for hosts. 3.2 Attendance certificates issued. Feedback gathered for hosts. 3.3 Monitoring systems in place for training. Attendance certificates issued. Feedback gathered for hosts. On island publicity.	Travel costs for off island trainers and trainees is a huge uncertainty at present and the most fluid aspect of the budget, due to the unknown cost of flights from Feb 2016 and potential accommodation and other on-island costs in 2017-2018 after air access. A contingency has been included to allow for increases in costs.
4. Development of final maps and specific management tools informed by the baseline data	4.1 Creation of final maps and integration with regional data management system. Reporting by consultants. 4.2 Creation of 'living map' comprising geospatial data 4.3 Tools for management of invasive species, water resources, agricultural management habitat conservation and restoration created	4.1 Metadata provided to IMS-GIS Data Centre. Reports circulated. 4.2 Creation of map incorporating historical and current data as a basis upon which to add additional data in the future 4.3 Creation of project environment and training with stakeholders involved in each specific aspect. On island publicity.	Low risk that the outputs are not comprehensive enough to fulfil the needs of the department. The key needs of the stakeholders has been discussed to try to identify the most useful information and the development of the living map will allow more data to be added in the future to fill any gaps that might exist

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)

1.1 Sourcing of suitable satellite imagery

1.2 Processing of imagery to produce preliminary maps

1.3 Review of data held in IMS-GIS Data Centre. Visit to SHG archives and department offices to search for other historical non-digital data. Create digital versions of useful data.

2.1 Field surveys for vegetation and habitat mapping. Field surveys for soil sample collections.

2.2 Field surveys habitats, vegetation and soils for remaining data outstanding.

3.1 Ground truthing training and workshops for data collection occur

3.2 Remote sensing training and workshops occur

3.3 Creation of monitoring systems

4.1 Preliminary maps updated with survey data to produce final maps

4.2 Digital data combined into 'living map'

4.3 Development of subject specific tools for individual stakeholders

Annex 3 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

Provided with this report are the following documents via dropbox:

https://www.dropbox.com/sh/6hww1zfka1sx5xx/AABF2whLT9MiNt9Uikx8h7zsa?dl=0

Section 2:

- Environment Systems Field Trip Schedule
- Attendance Sheets for major presentations and information sessions (x 6)
- ENRC Agenda
- Training and Field work Photographs
- Training data examples
- Final working Habitat Classification (v6)
- Field Work location and support sheets
- St Helena metadata form
- St Helena Data Management Manual – latest version

Section 3:

- Satellite imagery orders
- Low resolution images of acquired imagery
- Draft segmentation created by Environment Systems
- Satellite Imagery Metadata
- Local newspaper adverts and articles
    - St-Helena-Independent-20170210 – page 23
    - Sentinel_170216 – page 12
    - Sentinel_170223 – page 5
- As previous section: Field Work location and support sheets
- As previous section: Environment Systems Field Trip Schedule
- Available on request due to file sizes: Workshop presentations

Section 4:

- DPLUS052 Communication Log & Key Document Register (to end March 2017)

Section 9:

- Project Leaflet
- ENRD Newsletter
- As previous section: Local newspaper adverts and articles

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	YES
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	NO
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	YES
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	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.	