

Darwin Plus: Overseas Territories Environment and Climate Fund Annual Report

To be completed with reference to the “Writing a Darwin/IWT Report” Information Note: (<https://dplus.darwininitiative.org.uk/resources/reporting-forms-change-request-forms-and-terms-and-conditions/>). It is expected that this report will be a maximum of 20 pages in length, excluding annexes)

Submission Deadline: 30th April 2021

Darwin Plus Project Information

Project reference	DPLUS103
Project title	Saint Helena Climate Change and Drought Warning Network
Territory(ies)	St Helena
Lead organisation	St Helena Government (Environment Natural Resources and Planning Directorate)
Partner institutions	Connect Saint Helena, Saint Helena Research Institute, Arctium, Centre for Ecology & Hydrology, UK Met Office
Grant value	£298,335
Start/end dates of project	April 2020 – March 2023
Reporting period (e.g. Apr 2020-Mar 2021) and number (e.g. Annual Report 1, 2)	April 2020 – March 2021. Annual Report 1.
Project Leader name	Darren Duncan
Project website/blog/social media	Under construction – will be located on SHG website at: https://www.sainthelena.gov.sh/directorates/environment-natural-resources-planning/darwin-initiative/
Report author(s) and date	Darren Duncan, Murray Henry, Ben Sansom

1 Project summary

The provision of water on St Helena is intimately linked to the distribution of habitats and in particular the cloud forest area above 650m. Previous work (DPLUS051, CEH 1990’s work) has demonstrated that native habitats function more effectively as hydrological units than introduced systems. These native habitats are the last refuges of St Helena’s rich endemic flora and fauna but they are threatened by multiple drivers of extinction, e.g. invasive species habitat loss, genetic erosion and climate change.

Previous water resource studies have been limited in scope and duration with significant knowledge gaps concerning the island’s geology, aquifers, springs and streams. The measurement of annual stream discharge across the island has never been achieved and an island water balance has only been attempted on two occasions using limited data sets (Mathieson, 1988 and Halcrow, 1969). Groundwater recharge was last estimated in 1982.

A robust data set is needed to assess the islands current water resources and provide new information linking the islands geology, hydrogeology and hydrology.

A more comprehensive long-term climate dataset is also needed across the island to assess the variability in climate.

A more accurate and comprehensive climate data set coupled with a detailed island water balance will be used to support water infrastructure planning, habitat management (to effectively manage habitat for near extinct species such as the St Helena false gumwood), agricultural development, demand forecasting, drought planning, climate change resilience mitigation and water efficiency/water demand reduction measures.

Figure 1 and Figure 2 overleaf show the project location and proposed locations for stream flow monitoring and the 6 automatic weather stations. Automatic weather stations will be located across the island to ensure that climate measurements are representative of the island and its micro-climates. Surface water and groundwater monitoring locations are being established within the island's principal surface water and groundwater catchments.

2 Project stakeholders/partners

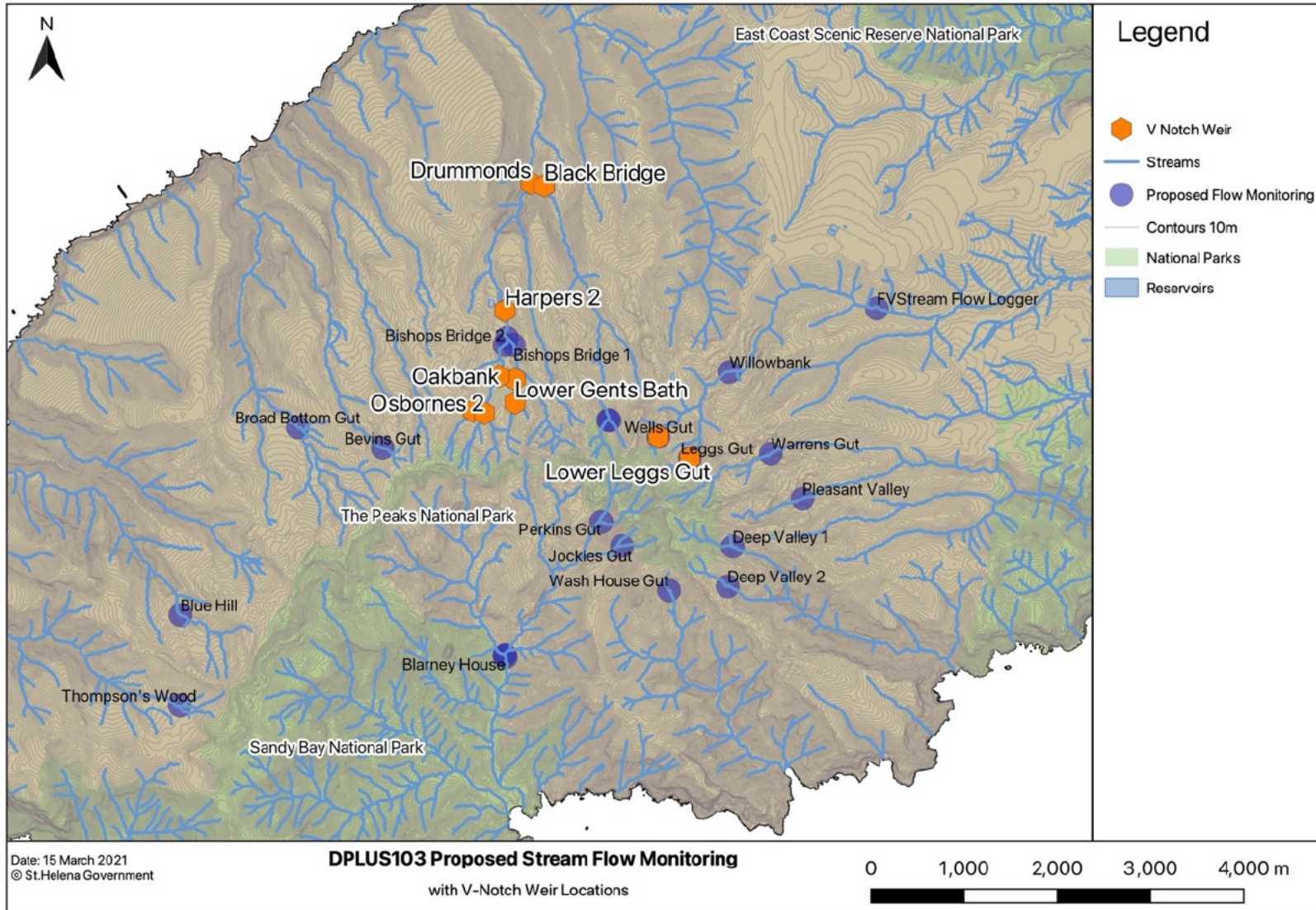
Due to Covid-19, the key stakeholder activity for Year 1 has not been completed (see Section 3). However, the Project Steering Group (PSG) has met quarterly through the year and comprises key island and international stakeholders (Saint Helena Government, Connect Saint Helena, UK Met Office, Centre for Ecology and Hydrology and Saint Helena Research Institute). PSG meeting agendas a meeting minutes are provided as separate documents to this main report as evidence of project progress and decision making.

Key stakeholders comprise:

- Drought Resilience Forum.
- Agricultural sector.
- Forestry sector.
- Fisheries.
- Safety and Home Affairs Portfolio – Saint Helena Government (SHG)
- Local weather forecasting service.
- Tourism.
- Conservation groups (Saint Helena National Trust, Saint Helena Nature Conservation Group).
- South Atlantic Environmental Research Institute and other research groups and Universities UK Met Office.

The project team have introduced the project to island stakeholders through the “From Discovery to Discovery” conference organised by St Helena Research Institute (a Project Partner) and St Helena Tourism. The 1 day island conference was held on 12th November 2020 (<https://www.sainthelena.gov.sh/2020/public-announcements/st-helena-conference-2020-from-discovery-to-discovery-2/>).

Figure 1: Project Location with Proposed Stream Flow Monitoring Locations





Source: Saint Helena Government. Discovery to Discovery Conference

Our approach for completing the key project stakeholder activities will start with a stakeholder meeting to discuss the project, climate data and local climate reporting requirements. This meeting will then be followed up by individual stakeholder consultation by means of email communication, telephone calls and interviews. The outcomes of the data gathering will then be used to present draft climate reports for discussion amongst the stakeholders. A final meeting will be held with stakeholders to confirm the final format for climate data reporting for each stakeholder group. The reporting format will then be trialled for 1 year and updated according to feedback from real-time use of the climate reports.

3 Project progress

3.1 Progress in carrying out project Activities

3.1.1 Desk study to collate archive data (YR1). Output 1

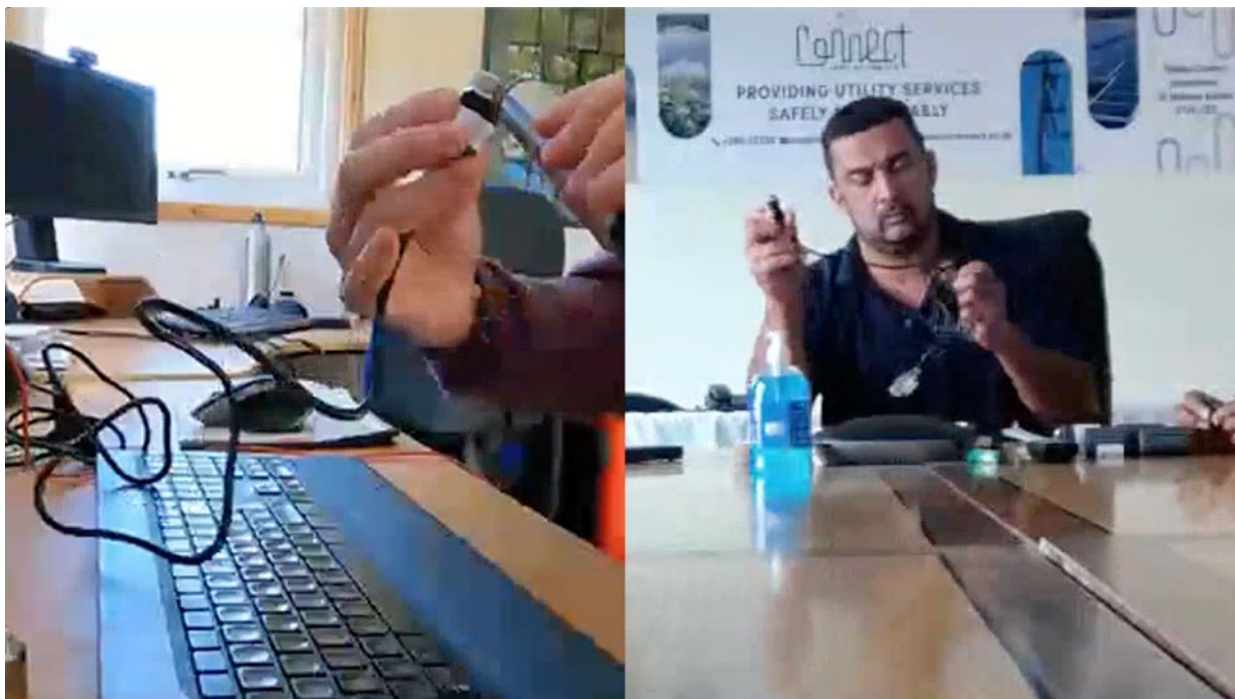
Archive data has been collated from overseas sources and is being evaluated. Due to Covid-19 international travel restrictions a small consultancy contract was developed for a local stakeholder (David Pryce) to undertake some of the data collation. The contract comprised a suite of archive report and data digitisation activities to create a comprehensive digital archive of islands climate and water resource reports and data sets. The ToR include an appendix identifying archive reports which had been identified by the project team. The Terms of Reference (ToR) for this activity are provided as evidence in a separate document.

The remainder of this activity will be completed in early Year 2 once the outputs of the contract have been received.

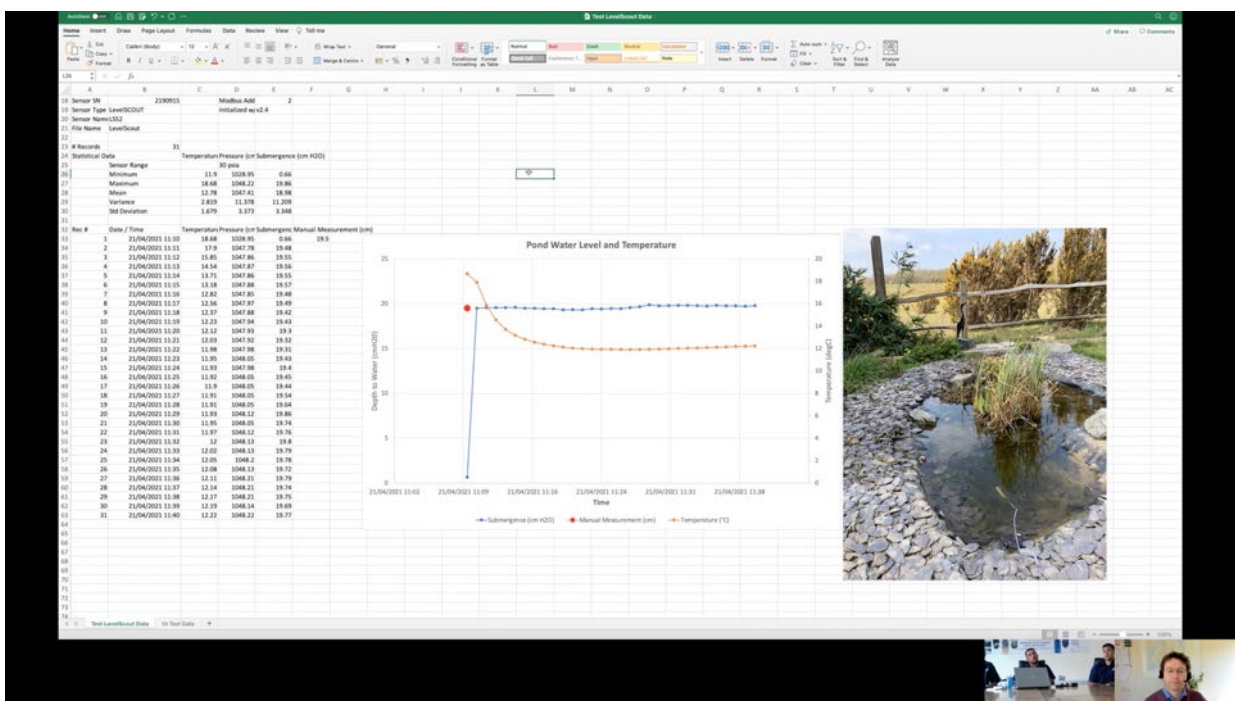
3.1.2 Collection of climate and water resource data. Output 2, Output 4

All climate and water resource monitoring equipment has been procured.

The project Water Resource Monitoring Technician (WRMT) was recruited in January 2021 and started their contract on 25th January 2021. Ryan George (the post holder) is working within Connect Saint Helena (project partner and island water resource utility). A series of remote training sessions were led by Arctium (project partner) in January and February 2021 for the WRMT and two other Connect Saint Helena staff members. The training provided an introduction to water resources, hydrology and hydrogeology, monitoring techniques and equipment familiarisation. This formal training has been followed up by separate training sessions to go through project data sets collected by the team in Connect Saint Helena and to sort out any issues with equipment which was installed in Wells Gut and Fishers Valley. Training materials have been provided separately as evidence.



Source: Arctium. Remote Training Session with Connect Saint Helena – Data Loggers



Source: Arctium. Remote Training Session - LevelScout Data Interpretation

Stream flow monitoring locations have been identified (see Figure 1). Manual stream flow monitoring at all identified locations will start in May/June 2021 (Year 2). Stream flow monitoring in Wells Gut and Fishers Valley has been undertaken since the start of the project, as this equipment was installed as part of DPLUS051 and a separate water resource project. Processed spreadsheet data from these locations is provided separately as evidence.

Temperature and humidity loggers have been installed by the Agriculture and Natural Resource Directorate (see picture below). Automatic Weather Stations (AWS) have been built and monitoring locations identified (see Figure 2). The Saint Helena Government (SHG) planning team require each weather station monitoring location to be assessed through the planning process as they will be permanently located at the selection locations. The planning process should be completed early in Year 2 so AWS data can start being collected.

All geology and geophysics work has been moved to Year 2 and Year 3 due to Covid-19 international travel restrictions.



Source: ANRD, Saint Helena Government. Installing Temperature and Humidity Loggers

3.1.3 Island water balance and climate data interpretation. Output 2

This activity will be completed in Year 3. Outreach has comprised stakeholder activity and communications described in Section 2. The recruitment of the project (WRMT near the end of Year 1) has impacted on water efficiency and reduction public outreach activities in Year 1 as the WRMT completed basic training activities between January to March 2021.

3.1.4 Protocols for climate data reporting, interpretation and data distribution. Output 5

See Section 2 for a summary of the stakeholder consultation activity method. Outputs from the activity will be used to develop climate data reporting standards, report templates and agree data distribution methods. This activity will be completed in Year 2 as staff resources from St Helena Research Institute who are leading this activity were unavailable during Q4 of Year 1. Staff resources have now been secured and the activity has started in April 2021.

3.1.5 Project Report. Output 3 and Output 5

Outputs from the project will be used to develop and climate change and drought warning plan which will be incorporated into the island Water Resource Management Plan (WRMP). The project team have identified the WRMP programme and will be contributing data and text during Year 2 and Year 3. Data collection has started (see evidence associated with Section 3.1.1 and Section 3.1.2.).

3.2 Progress towards project Outputs

3.2.1 Output 1

Covid-19 delays and international project team travel restrictions have delayed the start of this Output.

None of the archive climate and water resource data had been formally digitised at the start of the project. Mitigation activities to collate historic data sets are described in Section 3.1.1 with supporting evidence. This task is now 80% complete and will be finished in early Year 2. The delays will not impact the project programme. The change has been that a complete digital archive of data sets collected over the past 150 years is available for stakeholders and the research community to use. It has preserved many climate and water resource data sets that would have been lost had the archive hard copy reports been accidentally lost or destroyed.

There is limited baseline water resource data for the island (see Section 1). New baseline data for some water resource catchments started early, as equipment installed for DPLUS051 had continued to be maintained and downloaded by Connect Saint Helena (project partner). See Section 3.1.2 for evidence. Collection of data from new monitoring locations has been impacted by Covid-19. At the end of Year 1, new monitoring locations had been scouted with remote support from the international team. The recruitment of the WRMT in Q4 of Year 1 has delayed the start of collecting new surface water and groundwater data sets. There is sufficient time in the project to collect the minimum 20 months of new data for data interpretation.



Source: Connect Saint Helena. LevelScout Data Logger Installation

Climate data collection started in March 2021. The new AWS will start data collection in Q1 of Year 2 once planning permissions have been obtained for the monitoring locations. Historically a limited data set has been collected across the island (temp and rainfall). The project will significantly improve the suite of climate measurements made at 6 locations across the island to aid weather forecasting and the assessment of climate change.



Source: Bottom Woods Met Station. Automatic Weather Station Testing

Output indicators are still relevant and are measured through development of the digital historic climate and water resource archive and collection of new climate and water resource data.

3.2.2 Output 2

This output starts in Year 2. There has never been a geophysics survey of the geology of St Helena. A geology survey of the island was reported in a PhD thesis in 1968, completed via outcrop mapping in the field. A geology field mapping exercise has never been completed on St Helena to understand the islands water resources within key water resource catchments. Previous conceptual models have used limited data sets and geological information to assess the islands water resources and determine the mechanism for spring flow.

The completion of geology surveys and geophysics surveys are contingent on Covid-19 international travel restrictions lifting in Year 2. This work can be moved to Year 3 if necessary, without impacting on the project Output.

The measurable indicators are still considered to be suitable for the Output.

3.2.3 Output 3

A climate change and drought warning plan has never been completed for St Helena. A Climate Change Action Plan was published in 2020 by SHG and identified several actions that DPLUS103 outputs can support. The plan is provided as a separate document as evidence – see Sections 4.3.3, 4.8.1 and 4.9. Discussions have started with Connect Saint Helena regarding the project programme for the island WRMP (Section 3.1.5). This work will be completed in Year 2 and Year 3.

The measurable indicators are still considered to be suitable for the Output.

3.2.4 Output 4

An island-wide climate and water resource monitoring network using data loggers with manual measurements has never been implemented. The network of 6 weather stations and 10 water resource monitoring collection locations have been identified (See section 3.1.2). Monitoring has started in two water resource catchments (Wells Gut and Fishers Valley – 6 water resource monitoring locations) with monitoring starting in all locations during Year 2. See Section 3.1.2 evidence.

The project WRMT post has been recruited and training activities started in late January 2021 (see Section 3.1.2 and 3.1.3). An international exposure visit for the WRMT has been delayed until Year 2 due to Covid-19 international travel restrictions. The visit to the UK will include formal training and visits to the UK Met Office and CEH.

The project will enable the long term continuous monitoring of climate and water resources across the island. It has been agreed with SHG that the WRMT post will transfer to the Environmental Management Division of the Environment Natural Resource and Planning Portfolio on a permanent basis at the end of the project.

The measurable indicators are still considered to be suitable for the Output.

3.2.5 Output 5

St Helena has received weather forecasts based on data collected at the Bottom Woods weather station since the 1970's. Output 5 will enable island weather forecasts to include data collected across the island at a further 6 locations to provide a more detailed forecast representative of the islands microclimates.

Section 3.1.4 has reported on progress related to Year 1 activities associated with this Output. Section 3.1.2 has reported on climate data collection activities. The delay collecting climate data from the AWS will not impact on the project Output to upload data to the Weather observation website or development of detailed weather forecasts. These activities to support the delivery of Output 5 will start in Year 2.

The measurable indicators are still considered to be suitable for the Output.

3.3 Progress towards the project Outcome

All activities started in Year 1 will support the delivery of the project Outcome: to develop and operate a climate and water resource data collection network on St Helena with data management and reporting protocols. Baseline condition and progress concerning the project Outcome has been reported in Section 3.1 and Section 3.2.

The measurable indicators are still considered to be suitable for the Output. Evidence to measure progress will be gathered during Year 2 and Year 3.

3.4 Monitoring of assumptions

The risks and assumptions identified in the revised November 2020 logframe which was approved in January 2021 still hold true (see Annex 2). The majority of project risks that have been realised have been linked to the Covid-19 global pandemic. A total of 35 important assumptions were identified for the project Outcome, Outputs and Outputs. The following risks and assumptions have impacted on the project in Year 1 and were included in the logframe.

Project	Important Assumption	Comment
Outcome	Covid-19 response by national governments will shape the project programme in Year 1 and Year 2. Significant elements of the project may need to be postponed, re-	The project programme and budget has been revised three times during Year 1 to reflect changes in the international response to Covid-19. All geology and geophysics activities have been moved

Project	Important Assumption	Comment
	designed or removed from the programme.	into Year 2 and Year 3. International training has been moved from Year 1 to Year 2. All field work by international project staff has been moved into Year 2 and Year 3.
	SHG procurement process enables the timely and efficient purchase of project equipment.	The SHG procurement process was known to be lengthy. However, the combination of a delayed project award and start, plus Covid-19 restrictions resulted in equipment being purchased in Q3 of Year 1. Due to St Helena's remote location, it took another 2 to 3 months for equipment to be shipped to the island. As a consequence, equipment was delivered near the end of Year 1 resulting in a delay in equipment deployment and data collection.
	Land access agreements/ approvals for installation of permanent weather stations are supported and agreed.	The requirement of planning approval for the siting of portable climate monitoring equipment was not anticipated. It has delayed installation of the AWS until early in Year 2. The delay will not impact on the length of data record needed to support climate reporting.
	Geophysics rental equipment can be air freighted to and from the island.	This assumption is untested as there are no scheduled flights to St Helena.
Output 1. Climate and Water Resource Data Sets		
Measurable Indicator 1.1	Reports and data sets are available to assess a baseline and collate historic data.	The desk study needed to be redesigned so that additional island support could be accessed to digitise the archive historic data set. See Section 3.1.1.
Measurable Indicator 1.2	Gaps in data are identified to support interpretation of new data and location of new monitoring equipment.	Monitoring location selection will need to be modified once the archive data digitisation project is completed. Changes in monitoring locations in early Year 2 will not impact the project Outcome. Data being collection in Wells Gut and Fishers Valley will continue for the remainder of the project as they are historic data points from DPLUS051 and other island water resource projects.
Output 2. Geology and Hydrogeology Conceptual Model		
Measurable Indicator 2.1	Equipment is procured and shipped to Saint Helena in time to meet the project programme.	This assumption is still valid. It was anticipated that data collection at all monitoring locations would start in Q4 of Year 1 with the WRMT post holder recruited in Q2. This did not happen due to Covid-19 delays starting the project and producing equipment.
Measurable Indicator 2.2		This assumption is still valid. The original logframe identified a minimum of 24

Project	Important Assumption	Comment
Measurable Indicator 2.3	A minimum of 20 months data is collected during the project for interpretation.	months data, however on review the reduced length of data collection will still enable data to be interpreted to meet the Outcome.
Output 4. Long term change in the local climate and water resource data collection and interpretation capacity.		
Measurable Indicator 4.1	Covid-19 response by national governments may impact on Year 1 and Year 2 indicators.	The Year 1 indicator for developing a network of 6 weather stations and 10 water resource monitoring locations by end of Year 1 has been impacted. See Section 3.2.4.

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

The project is linked into several other St Helena long-term outcomes for the natural environment. As discussed in Section 3.2.3, the data collected from this report will contribute to the delivery of the St Helena Climate Change Action Plan (2020). The project will also support the delivery of The Peaks National Park Conservation Management Plan 2019-2024 and management objective 3b (Water Security and Climate Change Resilience Objectives).

The project will also contribute to the drafting of a new 30-year Water Resource Management Plan for the island. The Water Resource Management Plan is mandated in Section 9 of the Water Resource Strategy 2020-2050 published by SHG in November 2020. DPLUS103 project outputs will contribute to the WRMP assessment of the islands water resources and climate change impacts. DPLUS051 was used as a reference document in the Water Resource Strategy.

Copies of these national plans and strategies are provided separately as evidence.

5 Monitoring and evaluation

Darren Duncan (SHG) is the project lead and is supported by Ben Sansom (Arctium) and Murray Henry (Bottom Woods Met Office) who both share project management duties. A project organogram provided separately as evidence shows the structure of the PSG and the structure of the climate and water resource technical teams.

The project is monitored and evaluated by the PSG, who meet on a quarterly basis. Meeting agenda and minutes have been provided separately as evidence. The PSG report and challenge project progress and agree key project decisions related to project management, budget, programme etc. A standing agenda is structured to review the outputs and activities as provided in the logframe. Actions from each meeting are attributed to a member of the PSG and progress is reviewed at the next meeting.

Information is circulated via email and cloud based data storage services (OneDrive, SharePoint). Meetings are held using Microsoft Teams, Zoom or Skype. In most cases Microsoft Teams is used and PSG meetings are recorded to assist with writing meeting minutes.

Due to Covid-19, the use of Microsoft Teams has enabled all PSG members to access a reasonable quality of audio and/or video depending upon their nation's broadband infrastructure. Microsoft Teams is also used to smaller meetings between team members and delivering training courses.

Improvements at the moment relate to adequate broadband connections between the PSG. The data connection between the mainland and St Helena will markedly improve during Year 2 and Year 3 of the project as a new undersea cable will be installed to deliver fibre broadband to St Helena for the first time. It is hoped that in Year 3, sharing data and delivering video call training events will become easier.

6 Lessons learnt

It has been very difficult getting Officer time within the Attorney General Chambers in Saint Helena Government to address project contract templates and gaining draft contract approvals. This has resulted in up to 6 month delays with some project partners, working without a signed contract. The delays have been primarily related to the introduction of a new Professional Services Contract template, new staff within the Attorney General's Chambers who are unfamiliar with research grant projects and significantly reduced Government staff availability due to the necessary response to the Covid-19 pandemic. This has impacted on some project staff being able to invoice SHG in Year 1 (see Section 13).

The provision of training remotely has been challenging due to the limited broadband connection between St Helena and the mainland. This method of delivering training has only been needed due to Covid-19 international travel restrictions, as team members from the UK were going to deliver the training locally during Year 1 and complete water features surveys with the WRMT as part of a package of training. Instead, training has been limited, and the quality of data collected potentially compromised until the WRMT can receive more than one training in the field. For the moment, training videos and documents have been sent to the WRMT to supplement regular contact on Microsoft Teams to trouble shoot issues and to deliver formal training modules (see Section 3.1.2).

7 Actions taken in response to previous reviews (if applicable)

N/A

8 Other comments on progress not covered elsewhere

All progress, challenges and methodology refinements have been discussed elsewhere in the report.

9 Sustainability and legacy

Little has been done to promote the project amongst the Territories due to the delayed start and Covid-19. It is anticipated that efforts will be made in Year 2 once the project fully starts.

Local stakeholder events promoting the project on St Helena have been discussed in Section 2.

The project will enable the long term continuous monitoring of climate and water resources across the island. It has been agreed with SHG that the WRMT post will transfer to the Environmental Management Division of the Environment Natural Resource and Planning Portfolio on a permanent basis at the end of the project.

The project will deliver revised weather forecasts which will be a permanent change as the data collection and interpretation will continue way beyond the end of the project. The data will be used by local residents, local industry, conservation stakeholders, national climate change decision making, and drafting a 30 year water resource management plan for the island.

10 Darwin identity

The Darwin initiative and logo have been promoted on St Helena during local stakeholder events (Section 2). Media coverage of these events and SHG communications also ensure that the initiative is recognised. The visibility of the project will increase in Year 2 as stakeholder activities are undertaken and the project web page goes live.

<https://www.sainthelena.gov.sh/2021/news/st-helena-climate-change-and-drought-warning-network-project/>

11 Impact of COVID-19 on project delivery

Key issues we have encountered are related to the later announcement of grant awards in 2020 and Covid-19 restrictions on international travel between the UK and Saint Helena (due to South Africa closing international borders).

Our response has been to work with LTSI and Defra to re-base the project budget and programme several times during the year to reflect changes in Year 1 and Year 2. The logframe has also been updated on each occasion to reflect feedback from the grant award committee.

The residual impacts were delays getting field monitoring equipment to the island and uncertainty of a date when international travel can re-commence between the UK, South Africa and St Helena. We have been talking to LTSI on a regular basis concerning the budget and programme and will need to review them again in Q1 of Year 2 to assess the viability of international fieldwork planned for Year 2. This will potentially impact on the geophysics work programme for Year 2 as we need to hire geophysics equipment well in advance of a planned survey by international project staff.

We understand from SHG that international travel to St Helena from South Africa is now unlikely to start until at least September 2021 due to the continued global impacts of Covid-19. Neither Airlink nor SHG are able to confirm when international flights will resume. Limited charter flights are continuing between the UK and St Helena but will not allow a project survey team to travel to St Helena. In addition, there is insufficient budget in the project to cover for long periods of quarantine on St Helena and in the UK, plus the extra staff time on St Helena whilst waiting for flights back to the UK.

<https://www.sainthelena.gov.sh/2020/news/update-on-airlink-flights-between-st-helena-and-south-africa-2/>

<https://www.sainthelena.gov.sh/2021/news/titan-airways-charter-flights-may-2021-and-beyond/>

During the year we changed the following key aspects of the project:

- UK based training for the Water Resource Monitoring Technician post is postponed and moved into Year 2;
- UK Met Office site visit to St Helena is postponed and moved to Year 2; and
- The water resource reconnaissance field survey and installation of some water resource field equipment is postponed and moved to Year 2.
- All geology survey and geophysics surveys have been postponed to Year 2 and may need to move into Year 3 if international travel restrictions remain in place. This will not impact on the overall project outcome.

The changes have been reflected in the current logframe provided in Annex 2.

It is anticipated that the v-notch weir will be installed early in the Year 2 programme by the international team during the postponed reconnaissance field visit. Depending on the success of remote training, it is possible that mist data collection will not start until completion of the water resource reconnaissance field survey in early Year 2.

Providing remote water resource training continues positively, the project still should be on target to collect 20 months' worth of data without a field visit from the international project team. However, the number and quality of selected surface water and groundwater monitoring locations cannot be guaranteed as face to face training in the field is needed. Delaying all geology and geophysics surveys to Year 3 would still enable the project to deliver these aspects of the project without impacting on other activities in Year 2 and Year 3.

12 Safeguarding

Please tick this box if any safeguarding violations have occurred during this financial year.

If you have ticked the box, please ensure these are reported to ODA.safeguarding@defra.gov.uk as indicated in the T&Cs.

13 Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2020 – 31 March 2021)

Project spend (indicative) in this financial year	2020/21 D+ Grant (£)	2020/21 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)				
TOTAL				

Change request forms and key communications with LTSI are provided separately as evidence.

During Year 1, the project budget and programme were changed on three occasions in June, July and November 2020. In November 2020 it was understood that the SHG accounts team had not used the amended grant claim profile for the project based on the most recent budget changes. As a consequence, the Q3 grant claim brought the total grant claim to a value close to the revised total grant for Year 1 (based on the November 2020 change request).

In addition to the grant overclaim for Q3, the project team also identified 3 budget expenditure items which were anticipated to be paid in Year 1, but due to delays with staff contract drafting and Covid-19 restrictions would not be paid until Year 2. These items are:

1. Staff costs - £ [REDACTED] No invoice was submitted in Year 1 by Mr Steve Palmer because of delays getting the AGC to review and sign off the contract. This should be rectified by early May 2021.
2. Staff costs - £ [REDACTED] No invoice was submitted in Year 1 by UK CEH because of delays getting the AGC to review and sign off the contract. This should be rectified by early May 2021.
3. Operating costs - £ [REDACTED] Geophysics equipment hire needs to be arranged a minimum 3 months before the international field team reach St Helena to undertake the geophysics surveys. This item had not been removed from the November 2020 change request as it was hoped that the equipment could be hired in March 2021, for use in Year 2. Due to ongoing Covid-19 travel restrictions this has not been possible. However, the grant for this expenditure has already been claimed by SHG as part of the Q3 grant overclaim.
4. Operating costs - £ [REDACTED] Remote sensing data was going to be collected during Year 1 through the use of aerial surveys as previously achieved in DPLUS051. Again, due to ongoing Covid-19 travel restrictions this has not been possible as the survey was to be completed by the international project team. However, the grant for this expenditure has already been claimed by SHG as part of the Q3 grant overclaim.

In addition to the items above, the following invoice is still outstanding for Consultancy services:

5. Consultancy - £ [REDACTED] The archive data digitisation project should have finished on 31st March 2021. The consultant Mr David Pryce has not delivered this work at the time of writing. Darren Duncan (Project Lead) is based on St Helena and is contacting Mr Pryce to agree the delivery of this work by the end of April 2021. As a consequence of this delay, the consultancy fees for Mr Pryce have not been paid in Year 1 as the deliverable has not been handed over to the project team. We anticipate this situation will be rectified in the next 2 weeks and the late invoice will be submitted and paid in early May 2021.

The project team contact LTSI to discuss this administrative oversight. The outcome of the conversation is provided separately as evidence alongside the change request forms. The project team were advised to inform Defra through this Year 1 report. The Q4 grant claim would only be for the residual amount between the total agreed grant agreed in the November 2020 change request and the grant overclaim in Q3.

On a final note, the project has realised a salary costs underspend in Year 2 and Year 3 of approximately £ [REDACTED] This is due to the actual salary costs for the WRMT post being less than budgeted in the original grant application. After discussion with LTSI, it has been agreed to leave this within the project budget as a buffer for any Covid-19 related increase in staff costs (possible quarantine time) and to deploy on other as yet unidentified tasks which could support the project and mitigate the delays in international field work.

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2020-2021 – if applicable

Due to delays starting many of the project activities in Year 1, we will report progress and achievements against the Logframe in Year 2.

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

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
<p>Impact: Saint Helena’s water resource decision making and policy processes will become evidence based to future proof against the risks and impacts of drought and climate change.</p>			
<p>Outcome: Develop and operate a climate and water resource data collection network on St Helena with data management and reporting protocols.</p>	<p>0.1 Monthly data collection using established protocols by staff trained through the project.</p> <p>0.2 Project data is integrated within the island Water Resource Management Plan</p> <p>0.3 Data contributing to more accurate local weather forecasts.</p> <p>See sections below for detail.</p>	<p>0.1 Data collection records.</p> <p>0.2 Published island Water Resource Management Plan.</p> <p>0.3 Island weather reports.</p>	<p>Covid-19 response by national governments will shape the project programme in Year 1 and Year 2. Significant elements of the project may need to be postponed, re-designed or removed from the programme.</p> <p>Covid-19 international travel restrictions are lifted. Project staff (local and overseas) are able to travel to and from St Helena in YR1.</p> <p>14 day quarantine restrictions on project team travelling to and from St Helena are lifted in YR2.</p> <p>Supply ship and flights to and from the island are not significantly delayed by fog/mist, mechanical failure or other issues, preventing timely installation of equipment.</p> <p>No change to import duties.</p> <p>SHG procurement process enables the timely and efficient purchase of project equipment.</p>

Project summary	Measurable Indicators	Means of verification	Important Assumptions
			<p>Equipment can be shipped to the island by air and sea in good time to allow a minimum 20 months data collection.</p> <p>Literature archives and data sources are available.</p> <p>Suitable locations are available for equipment installation.</p> <p>Climate and water monitoring equipment performs reliably to collect remote datasets.</p> <p>Land access agreements/ approvals for installation of permanent weather stations are supported and agreed.</p> <p>Geophysics rental equipment can be air freighted to and from the island.</p>
<p>Output 1</p> <p>Climate and Water Resource Data Sets (YR1-YR3)</p>	<p>1.1 Development of a historic climate and water resource data set archive (YR1).</p> <p>1.2 Collection of new baseline climate and water resource field data completed by end of Year 3.</p> <p>1.3 New standards for data collection, archive and reporting established (YR1).</p>	<p>1.1 Desk study report of historic data sets.</p> <p>1.2 Archived historic climate and water resource data sets and database.</p> <p>1.3 New baseline climate and water resource data sets and database (data portal or similar).</p> <p>1.4 Meeting minutes and documents (development of database standards and protocols for archive and new data sets).</p>	<p>Reports and data sets are available to assess a baseline and collate historic data.</p> <p>Gaps in data are identified to support interpretation of new data and location of new monitoring equipment.</p> <p>A data portal and database solution are identified early in the project and data standards are agreed.</p>
<p>Output 2</p>	<p>2.1 New island geology data collection completed to better</p>	<p>2.1a Geophysics and geology field survey project report chapter.</p>	<p>Sufficient suitable sites available for installation and management of equipment for climate, water</p>

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Geology and Hydrogeology Conceptual Model (YR1-YR3)</p>	<p>understand island water resources (YR2).</p> <p>2.2 New hydrology and hydrogeology data collection completed to better understand island water resources (YR3).</p> <p>2.3 First island water balance using long term data sets (YR3).</p>	<p>2.1b Fieldwork photographs, capacity building evidence, video, media, public talk at St Helena Museum.</p> <p>2.2a Water features survey project report chapter.</p> <p>2.2b Hydrology and Hydrogeology project report chapters.</p> <p>2.3 Water balance reporting and interpretation.</p>	<p>resource and geophysics data collection.</p> <p>Equipment is procured and shipped to Saint Helena in time to meet the project programme.</p> <p>All equipment performs well and does not suffer technical problems.</p> <p>Remote monitoring equipment does not suffer power loss (trickle charge batteries via solar PV).</p> <p>Pressure transducer calibration does not drift. Telemetry system for automated weather stations works as expected.</p> <p>A minimum of 20 months data is collected during the project for interpretation.</p> <p>Sufficient data can be collected to calculate a water balance and assess variation in climate across the island.</p> <p>Meteorological data is of sufficient resolution to allow differentiation of climate across the island.</p> <p>Geophysics data is of sufficient resolution to interpret changes in geological formation at depth.</p>

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Output 3 Climate Change and Drought Warning Plan (contributes to island Water Resources Management Plan) (YR1-YR3)</p>	<p>3.1 Climate Change and Drought Warning Plan published (YR3).</p> <p>3.2 Publicity and promotion/outreach (public communications and minimum of 1 x public consultation events) by end of Year 2.</p> <p>3.3 Climate change and drought warning plan integrated within the island Water Resource Management Plan and adopted by SHG Environment and the Natural Resources Committee as a national plan (YR3).</p>	<p>3.1a Meeting agenda, emails and published plan as evidence.</p> <p>3.1b ENRC meeting minutes.</p> <p>3.2 Print, radio, photographs as evidence.</p> <p>3.3 Published island Water Resource Management Plan</p>	<p>There is sufficient evidence and identification of climate and water resource trends/relationships to identify options for water resource management on St Helena.</p> <p>Island stakeholders engage with the development of the Climate and Drought Warning Plan.</p> <p>Environment and Natural Resource Committee approve final version of the Climate Change and Drought Warning Plan.</p> <p>Saint Helena Government and Connect identify funding and a supplier to write a 30 year Water Resource Management Plan before the end of DPLUS103.</p>
<p>Output 4 Long term change in local climate and water resource data collection and interpretation capacity (YR1-YR3)</p>	<p>4.1 Network of 6 weather stations and 10 water resource monitoring collection locations by end of Year 1.</p> <p>4.2 Technical capacity. Minimum of 4 people trained to deliver range of activities: collect, manage, interpret, archive and report data by end of project (YR1-YR3).</p>	<p>4.1a and 4.2 Photographs, equipment, procurement evidence etc.</p> <p>4.1b Installation of permanent water resource and climate monitoring network in Year 1.</p> <p>4.2a Employment of Water Resource Monitoring Technician (letter of employment).</p> <p>4.2b Induction and field monitoring training of Water Resource</p>	<p>Water Resource Monitoring Technician has been employed within first year of project.</p> <p>Covid-19 response by national governments may impact on Year 1 and Year 2 indicators.</p> <p>Climate and water resource monitoring teams on the island engage with the project and attend project training events, meetings etc.</p>

Project summary	Measurable Indicators	Means of verification	Important Assumptions
		Monitoring Technician and climate monitoring staff (photographs, training material, remote video training sessions, UK training and exposure visit documents, photographs, email).	<p>Staff resources are available to collect all monitoring data required for project.</p> <p>Island stakeholders incorporate the project monitoring network and standards into “Business as Usual” activities beyond the life of the project.</p>
<p>Output 5</p> <p>Climate and Water Resource Products and Services (YR1-YR3)</p>	<p>5.1 Agreed methods and standards for climate data management (YR1).</p> <p>5.2 Data set included on Weather Observation Website portal or similar. Monthly data uploads from Q4 in Year 1.</p> <p>5.3 Publication of annual island climate report (YR2-YR3).</p>	<p>5.1a Procedures Manual. Development of standard climate data reports, stakeholder agreement of frequency of reporting and format for delivering reports (stakeholder events and meeting photographs, reporting).</p> <p>5.1b Statement of adoption of protocols by stakeholders. Reporting of protocols to stakeholders. 1 x report.</p> <p>5.2a Climate data reports for key stakeholders. Year 2 to Year 3 monthly data distribution in agreed format following consultation. 24 x data reports.</p> <p>5.2b Monthly Met Office verification of data upload to Weather Observation Website portal or similar.</p>	<p>Standard climate data sets, frequency of reporting, method of reporting and access to data are agreed by island stakeholders.</p> <p>Staff resources continue at the same level to provide climate. data in agreed formats beyond the end of the project.</p>

Project summary	Measurable Indicators	Means of verification	Important Assumptions
		5.2c Weather forecasts (print, web site evidence). 5.3 Annual island climate report.	
<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)</p> <p>1 Desk Study - to collate archive data (YR1).</p> <p>1.1 Collate archived climate and water resource background data from SHG, Connect Saint Helena, and mainland literature to produce 2 datasets spanning at least 150 years of data (YR1). 1.2 Desk based assessment and analysis of SHG archive water resource reports and climate data (YR1). 1.3 Desk Study Report Section (YR1).</p> <p>2. Collection of climate and water resource data (YR1-YR3)</p> <p>2.1 Procurement of stream monitoring equipment (6 x Diver logger, 2 x Diver barometric logger, Diver comms equipment, 1 x stream flow meter, 1 x portable flume) (YR1 Q2). 2.2 Procurement of groundwater monitoring equipment (4 x Diver logger) (YR1 Q2). 2.3 Procurement of climate monitoring equipment (7 x Hobo Rain gauge data logger, 6 x automated weather stations, 17 x Hobo temperature/RH data loggers, weather station and logger comms equipment) (YR1 Q2). 2.4 Recruitment of Water Resource Monitoring Technician and training of water and climate monitoring teams (YR1). 2.5 Water features survey – identify 6 stream flow monitoring locations and 4 groundwater monitoring locations (YR2). 2.6 Identify up to 4 geophysics survey lines (YR2). 2.7 Installation of stream and groundwater monitoring equipment (YR1& YR2). 2.8 Installation of permanent meteorological monitoring equipment in 6 locations across Saint Helena, upgrade select ENRP monitoring locations and install temperature/humidity data loggers (YR1). 2.9 Collection of daily climate data using telemetry systems and data loggers (YR1 – YR3). 2.10 Collection of monthly stream and groundwater level data logger data (YR1 – YR3). 2.11 Collection of weekly manual stream flow gauging data (YR1 – YR3). 2.12 Geophysics and geology surveys (YR2). 2.13 Interpretation of catchment geology and hydrogeology (report chapters) (YR2 – YR3).</p> <p>3. Island water balance and climate data interpretation. (YR3)</p>			

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Communication and events – quarterly and annually (YR1 – YR3)</p> <p>3.1 Calculation of water balances from collated water level, flow, meteorological and geophysics survey data (YR3).</p> <p>3.2 Interpretation of climate data across island (YR3).</p> <p>3.3 Interpretation of water balance – identify trends and/or relationships between climate and catchments across the island (YR3).</p> <p>3.4 Refined ecosystems services assessment for water resources (YR3).</p> <p>3.5 Water efficiency and water reduction outreach to public (YR1 – YR3).</p> <p>4. Protocols for climate data reporting, interpretation and data distribution (YR1 – YR3)</p> <p>4.1 Consultation with key stakeholders to determine key uses for climate data (YR1).</p> <p>4.2 Development of standard climate data reports, stakeholder agreement of frequency of reporting and format for delivering reports (YR1).</p> <p>4.3 Providing climate data in agreed formats (YR2 – YR3).</p> <p>4.4 Annual island climate data report (YR1 to YR3).</p> <p>4.5 World Observation Weather network data upload (YR1 – YR3).</p> <p>5. Project Report (YR1 – YR3)</p> <p>5.1 Collation of all desk based and field data, interpretation and of all data (YR1 – YR3).</p> <p>5.2 Draft Climate Change and Drought Warning plan (integrated into the island Water Resource Management Plan) for public consultation (YR2).</p> <p>5.3 Island Climate Change and Drought Warning Plan published (YR3).</p> <p>5.4 Production of project final report (YR3).</p>			

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

[Redacted content]

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.	N
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.	Y
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Y
Do you have hard copies of material you need 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. However, we would expect that most material will now be electronic.	N
Have you involved your partners in preparation of the report and named the main contributors	Y
Have you completed the Project Expenditure table fully?	Y
Do not include claim forms or other communications with this report.	