Darwin Plus Main & Strategic: Final Report

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

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

Submission Deadline: no later than 3 months after agreed end date.

Submit to: BCF-Reports@niras.com including your project ref in the subject line.

Darwin Plus Project Information

Scheme	Main
Project reference	DPLUS160
Project title	Multi-Purpose Soil Survey: informing environmental management and climate change mitigation
Territory(ies)	British Virgin Islands
Lead Organisation	University of Portsmouth, UK
Project partner(s)	BVI Government: Department of Disaster Management; Land Survey; Agriculture & Fisheries; Environmental Health; Town & Country Planning; and the Ministry of Natural Resources, Labour & Migration; BVI National Parks Trust; and the H. Lavety Stoutt Community College.
Darwin Plus Grant value	£160,900
Start/end date of project	01/05/2022 to 31/12/2024
Project Leader name	Prof. Richard Teeuw
Project website/blog etc.	https://www.facebook.com/profile.php?id=100087320503724
Report authors and date	Richard Teeuw (UoP) & Melanie Daway (BVI DDM), 9/6/2025

1 Project Summary

The lack of digital soil maps for the British Virgin Islands (BVI) is a critical gap in datasets needed for the Territory's environmental management. This project has mapped and analysed the main soil types of the BVI, providing a baseline dataset and Soil GIS. Guidance documents have been produced that focus of soil suitability for on farming, construction and waste management, as well as highlighting poitential climate change impacts. The project established a soil laboratory at Tortola's main community college (which has added soil science to its curriculum) and has provided training to staff from 7 BVI partner organisations, with publicity about the project raising BVI public awareness about the importance of soils.

BVI climate change challenges include increased frequency and magnitude of hurricanes, storm surges, coastal erosion, flooding, extreme rainfall, soil erosion, landslides and debris flows; also, less-predictable growing seasons. Another major challenge is from population pressures from increasing resident population and tourists: issues with water supplies, wastewater management and sites for construction (ie, areas not exposed to geohazards, with suitable soils). BVI environmental problems include soil degradation and loss of fertility, with increased erosion because of deforestation and land clearance for farming or construction.

The impacts of climate change and population pressures vary within the BVI because of its diverse range of bedrock and soil types (ie, its geodiversity), as well as local variations in terrain and vegetation cover. This project has provided new information about BVI geodiversity, soil types and soil biodiversity, informing research into soil-plant linkages and ecosystem functions, as well as potential impacts from climate change.

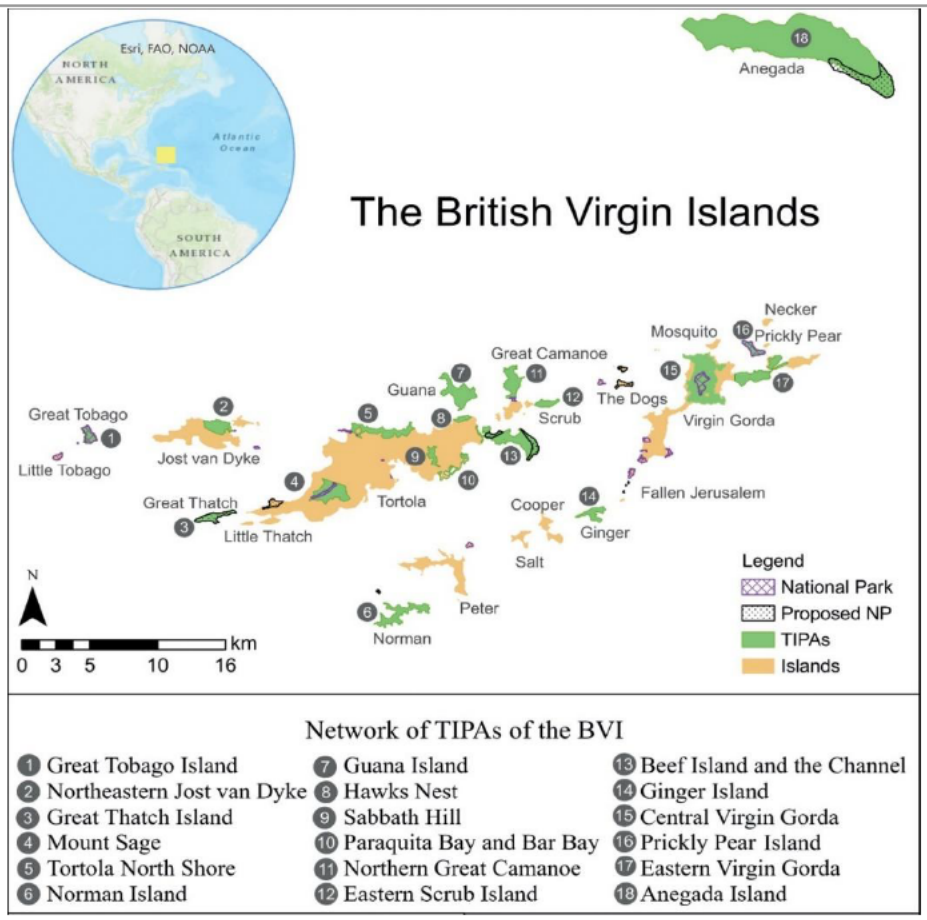

Figure 1: BVI location map, showing National Parks and Tropical Important Plant Area (TIPA) protected sites (source: BVI NPT).

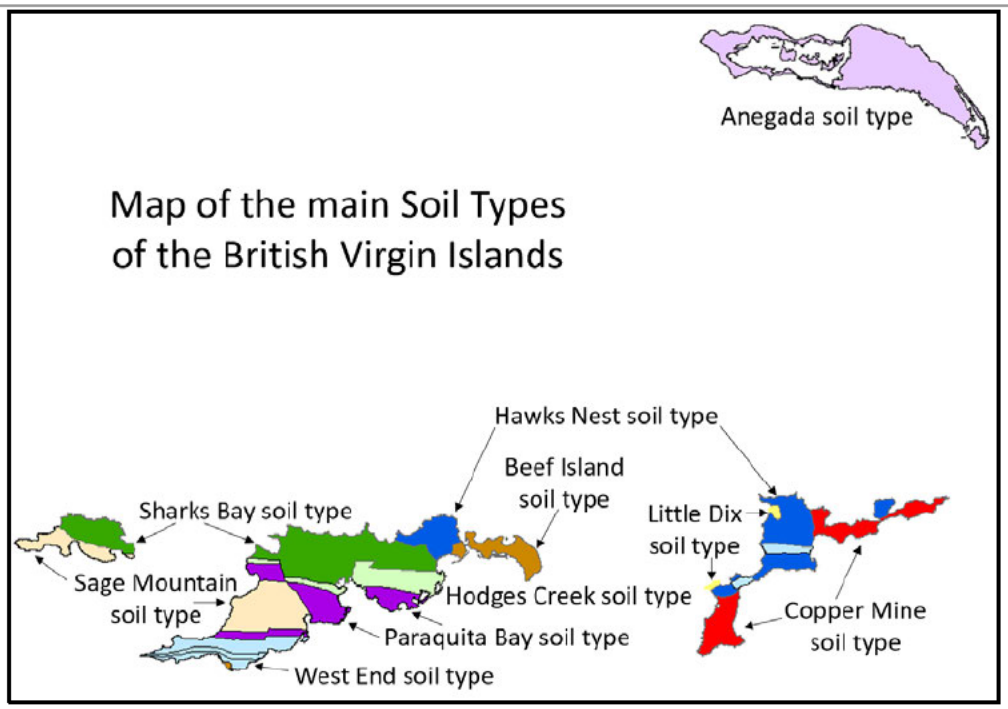

Figure 3. Distribution of the main Soil Types of the BVI.

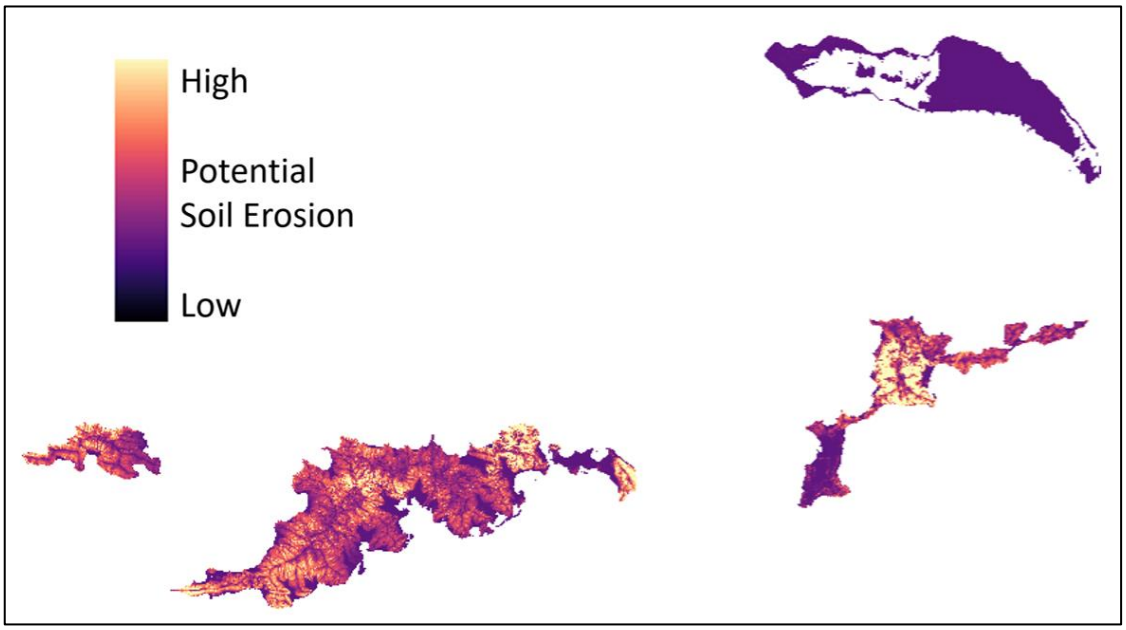

Figure 4. A BVI Soil GIS map layer: Potential Soil Erosion for the main islands. This map is derived by combining many other GIS layers in the archive, primarily: elevation (slope length and gradient), topsoil texture (sand/silt/clay), vegetation cover and rainfall. Note that the three areas with the greatest susceptibility to soil erosion are mostly in protected conservation areas: Gorda Peak (a National Park and TIPA); Beef Island, especially the easternmost hill (TIPA and proposed National Park); and Hawks Nest district (TIPA).

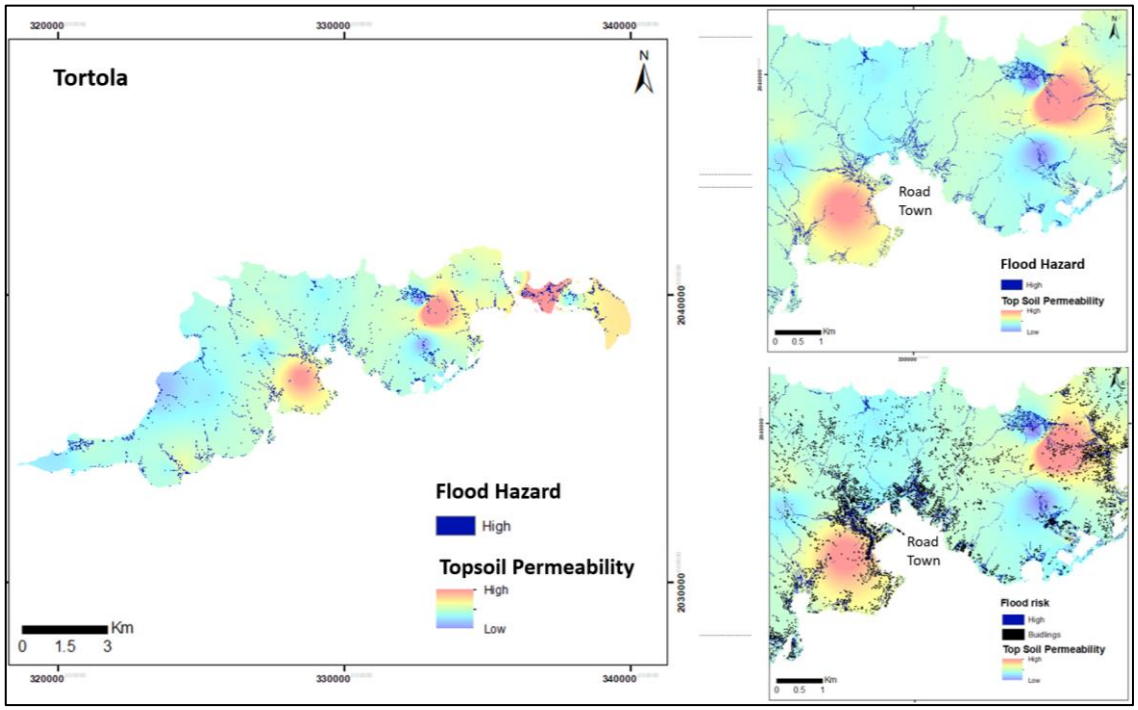

Figure 5: Risk analysis using the BVI Soil GIS: the Flood Hazard map layer of Tortola has been merged with the Topsoil Permeability map layer; the darker the blue colour, the greater the susceptibility to flooding. The final map (bottom right) zooms into Road Town with an overlay of Buildings (black), highlighting built-up areas most at risk of flooding from streams.

2 Project Partnerships

All 7 of the BVI stakeholder organisations were involved in the project design, monitoring and decision making, with a representative of each on the project Steering Committee. The lead BVI stakeholder was the **Department of Disaster Management (**DDM), which regards a BVI soil inventory and GIS-based map as essential for geohazard management and climate change risk reduction. DDM provided organisational, logistical and technical support for soil sampling and analysis. Both the DDM and the **Town & Country Planning Department** need soil

information for Hazard & Vulnerability Assessments of new construction sites. The **National Parks Trust** (NPT), recognised the need for soil data when managing critical habitats such as TIPAs. NPT has 20 years experience with Darwin projects and highlighted ways in which soil data could support an ongoing Darwin Plus BVI project led by RBG Kew. NPT provided operational support for accessing remote islands. **The BVI Ministry of Environment, Natural Resources & Climate Change** and the **Agriculture Department** are keen to determine soil suitability for farming; while the **Environmental Health Division** is concerned about soil influences on waste management. The **H. Lavity Stoutt Community College** (HLSCC) provided laboratory space for soil analysis equipment and hosted the project training workshops; training of trainers was carried out with college teachers and Soil Science added to the college curriculum.

Local communities and soil users who are not formal partners in the project fall into two groups:

(i) Farmers. To represent to views of BVI farmers, Mr William Georges, a retired agricultural scientist, attend all but one of the project's Steering Committee meetings, making many useful inputs to the project logistics, e.g. highlighting to the need for fieldwork to start as early in the day as possible and to have a 1-hour lunchbreak, to minimise the risk of afternoon heat stress.

(ii) School students: Educational aspects of the project were represented by the HLSCC. The project also carried out a school outreach programme, raising awareness about the importance of soils within that key part of the BVI population. Presentations, with hands-on demonstrations of soil features, were given to secondary school students in Tortola (hosted on the HLSCC campus and using the Soil Lab), as well as on the islands of Virgin Gorda and Anegada.

3 Project Achievements

3.1. Outputs

Output 1. BVI self-sufficiency in soil survey and soil laboratory analysis, with an associated BVI Soil GIS inventory, mapping and analysis system.

1.1. BVI Soil Lab established All of the BVI Soil Lab analytical equipment is now installed and operational, hosted by the H.Lavety Stoutt Community College (HLSCC), Tortola. Evidenced by: photos of soil analyses being carried out in the lab, the press releases and social media posts (see section 10) and the project technical report (Annex 5, item 5.2.3).

1.2. Soil survey, sampling and Soil Lab analyses All scheduled soil samples have been collected and analysed. Evidenced by: Technical Report and associated photos, sample site details and results in the BVI Soil Database (Annex 5, items 5.2.3 and 5.4).

1.3. Soil inventory, GIS database and maps - data from the soil survey and soil analyses were added to the BVI Soil Inventory spreadsheet, which was converted into an attribute table database for the Soil GIS. Evidenced by: sample site details and results in the BVI Soil Database the Technical report (Annex 5, items 5.2.3 and 5.4).

1.4. Review of predictive accuracy: relative variance of each mapped soil type. Evidenced by: the Technical Report's "*Note on the survey's level of detail" (p.8), see* Annex 5, item 5.2.3).

1.5. Soil-based thematic maps with explanatory documents: BVI Soil Types, and Soil Suitability for: (i) Farming, (ii) Construction, and (iii) Waste Management. Evidenced by: the project *Technical Report (Soil Types of the BVI*); documents on *BVI Soil Types & Farming* and *BVI Soil Types, Geohazards & Civil Engineering* (including construction and waste management), see (Annex 5, items 5.2.3, 5.24 and 5.25.

1.6. Soil Laboratory & equipment used by HLS Community College for teaching of Soil science and its applications, by Q1 2024. The Soil Lab is now being used by HLSCC for the teaching of Soil Science. Evidenced by: the project Technical Report photos of students carrying out soil analyses, press releases and social media posts of Sections 10.

1.7. Workshop on commercialising BVI Soil Laboratory analyses - Prof Williams (UoP, civil engineering & waste management) discussed ways of commercialising BVI Soil Laboratory analyses with the project Steering Committtee, and with members of the HLSCC administration in February 2023. Evidenced by: the report on BVI Soils and Waste Management (Annex 5, item 5.2.2).

Output 2. Training provided to BVI Government staff and to the BVI's main higher education institution (the H.Lavity Stoutt Community College, HLSCC):
2.1. Training in soil survey, soil sampling and soil analysis: 'hands-on' workshops, with online training materials. Completed: HLSCC-hosted workshops on: (i) Intro to Soil Science and (ii) Soil Sampling & Analysis, run in Nov 2022 by Prof. Teeuw; (iii) Soil Chemistry, run by Prof Couceiro in January 2023; (iv) Soils & Civil Engineering, run by Dr Tatari in June 2023 (v) Soil Microbiota & Biodiversity, run by Dr Rumble in June 2023. Evidenced by: workshop training materials and trainee feedback questionnaires (see Annex 5, items 5.1.2 and 5.13).
2.2. Training in soil database management and GIS for mapping and climate change impact assessment: 2 hands-on' workshops, run by Prof Teeuw & Dr Argyriou in April 2024, (i) for Civil Engineering & Geohazards; (ii) Agriculture & Biodiversity Completed, Evidenced by: workshop training materials, attendee feedback questionnaires (see Annex 5, items 5.1.2 and 5.13).
2.3. Training on analysis-ready soil maps & briefing documents, for environmental managers and policy makers. Completed within the two GIS workshops of April 2024. Evidenced by: the training materials, attendee feedback questionnaires (see Annex 5, items 5.1.2 and 5.13).
2.4. Learning outcomes from technical training applied within participating organisations. Uptake within the Department of Disaster Management, the Environmental Health Division, the Town & Country Planning Department, the National Parks Trust, the Agriculture Department, the Ministry of Environment, Natural Resources & Climate Change and the H.Lavity Stoutt Community College. Evidenced by: emails and letters citing usage of learning outcomes from the training, see Annex 5, items 5.1.4. and 5.2.3.

Output 3. BVI soil survey results inform government departments and raise public awareness on soil applications, associated risks and climate change preparedness.
3.1. Key soil survey findings used to inform policy. Uptake within the Department of Disaster Management, the Environmental Health Division, the Town & Country Planning Department, the National Parks Trust, the Agriculture Department and the Ministry of Environment, Natural Resources & Climate Change. Evidenced by: emails and letters of Annex 5, item 5.1.4.
3.2. Report on BVI Soils, their land use suitability and associated risks for each soil type with recommendations for climate change adaptation. Evidenced by: a summary Technical Report on '*Soil Types of the BVI' (48pp)*; and guidance documents on 'BVI Soil Types and Farming' (27pp) and 'BVI Soil Types, Geohazards and Civil Engineering'(36pp). See Annex 5, items 5.23, 5.24 and 5.25.
3.3. BVI procedures for risk assessment of new developments adjusted. The BVI Department of Disaster Management (DDM) and the Town & Country Planning Department and the Environmental Health Division have modified their Hazard & Vulnerability Assessment (HVA) procedures for assessing potential risks from civil engineering projects, (i) now referring to the BVI Soil GIS during desk studies of sites; (ii) using soil survey methods and field tests during site investigations. Evidenced by: email and letter correspondence (see Annex 5, item 5.1.4).
3.4. Public-access version of the Soil GIS and user guides. The Soil GIS database and an associated set of soil maps for each of the main islands – the BVI Soil Atlas - are now in the archives of the BVI Government's National GIS (NGIS), with unrestricted public access, Copies of the Soil GIS database and Atlas are archived with the DDM and Town & Country Planning Department, with a copy given to the H Lavetty Stoutt Community College. Evidenced by: correspondence with DDM (see Annex 5, items 5.1.4, 5.41 and 5.42).
3.5. Press releases, to raise public awareness about the importance of soils: (i) Sept 2022; (ii) March 2023; (iii) Sept 2023; (iv) April 2024. Evidenced by the Press Releases in Section 10.
3.6. Scientific articles (i) BVI soil types; (ii) multipurpose thematic soil maps; (iii) links between geodiversity, soils & biodiversity, submitted to Open Access, peer-reviewed journals. Partially Completed, Evidenced by: the project publications and conference presentations provided in Annex 5. Three articles for Open Access peer-reviewed journals currently being drafted.

3.2. Outcome

The project Outcome is:
BVI soil maps and information on soil suitability for Farming, Waste Management and Construction, leads to better-informed land management, with increased risk awareness, and climate change preparedness.

The following indicators and evidence show that the Outcome has been achieved:

1. Soil survey and soil analysis for the 4 main islands, with baseline BVI geospatial datasets produced for BVI Soil Types & Biodiversity; and Soil Suitability for Farming, Construction and Waste Management.
Evidenced by: The BVI Soil GIS database (see Annex 5, item 5.4.1); the project technical report, guidance documents on soil suitability for Farming and for Civil Engineering, including construction and waste management (see Annex 5, items 5.2.3, 5.2.4 and 5.2.5).

2. For the BVI partner organisations: technical training on soil survey and sampling, soil laboratory analyses, Soil GIS mapping and soil map interpretation.
Evidenced by: Technical training workshops were during Oct/Nov 2022 (soil survey, sampling and physical analysis) Jan/Feb 2023 (soil chemical analysis), June 2023 (soil engineering and soil biota) and April 2024 (Soil GIS). See Annex 5, items 5.1.2 and 5.4.1.

3. Partner organisations use soil suitability maps and guidelines in their activities (ie, for farming, construction, waste management and biodiversity conservation).
Evidenced by: Partner organisations are using soil suitability maps and guidelines in their activities (farming, construction, waste management and biodiversity conservation), as well as for soil-related risk management and preparedness for climate change.
See: Annex 5, item 5.1.4.

4. Partner organisations' documentation and guidelines for the public, include land use soil suitability information, soil risk management for new developments and soil-related preparedness for climate change.
Evidenced by: Land use and soil suitability guidance documents, for Farming and for Civil Engineering (which include climate change preparedness considerations), were produced as a 1st draft in Q3 of 2024. Following feedback from the project partners, revised versions of the guideline documents were produced in Q1 and Q2 of 2025. Evidence provided in Annex 5, items 5.1.4, 5.2.4 and 5.2.3.

3.3. Monitoring of assumptions

The Outcome and Output assumptions were monitored by the PI, with progress and issues encountered discussed at the project Steering Committee meetings, as evidenced by the minutes of those meetings, archived in Annex 5 (item 5.1.1). When problems were encountered, Change Request forms were submitted and all of those were approved (see Annex 5, item 5.1.5).

The project did not encounter any major issues with the Outcome and Output assumptions. However, many activities were delayed, partly due to postponement of the initial visit because of hurricane concerns and partly because the Soil GIS was incomplete in 2023, full functionality only being achieved in April 2024. That said, all of the indicators are still considered adequate for measuring the intended Outcome, with the expected pathway to change still holding.

4. Contribution to Darwin Plus Programme Objectives

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

The project has succeeded in providing the first-ever baseline data on BVI soil types and associated terrain. Soil management issues for BVI farming and civil engineering, as well as likely impacts of climate change, have been highlighted in reports produced by the project. Those soil datasets and maps are needed for the BVI to achieve greater hazard mitigation and environmental protection (BVI Multi-Hazard Mitigation Resilience Framework, 2020, p.26). The Virgin Islands Climate Change Policy (2012: p.9 & 23) and National Physical Development Plan (2019: p.85 & 104) also recognise the need for soil mapping. The project has provided key new data on soil suitability for construction and waste management, for the BVI Hazard & Vulnerability Assessment (HVA) of new developments, involving the DDM and the Town & Country Planning Department. The HVA documentation has been modified to take into account the new data on soil types, soil engineering, land use suitability and environmental impact.

4.3. Gender Equality and Social Inclusion (GESI)

Proportion of women on the Project Board[1].	Ratio: 8 women to 7 men
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women[2]	100% All project partners involve women that secure senior leadership or positions within their organisations.
GESI Scale: Sensitive	The GESI context has been considered and project activities take this into account in their design and implementation. Project addresses basic needs and vulnerabilities of women and marginalised groups and the project will not contribute to or create further inequalities

The project aimed for gender equality in its operational tasks, following UoP's guidelines on workplace gender equality and the Athena Swan Equality Charter. There were equal opportunities on the project for all genders and social backgrounds.

The BVI Soil Study Steering Committee is composed of 15 members from the 7 stakeholders (6 government agencies and the main community college). Of the 15 committee members, there are 8 women and 7 men. Female participation was encouraged in the information about training sent out to the 7 partnering organisations, with at least Male/Female parity requested when they provide trainees. Stakeholder organisation were designated 2-4 staff for training. Consequently there was male/female parity in all but one of the training workshops.

Four training workshops were conducted during 2023-2024: (i) The Soil Engineering and Geotechnics workshop (June 15 2023) involved seven (7) females and seven (7) males; (ii) The Soil Microbiota and Biodiversity Workshop (June 28 2023) included ten (10) females and eleven (11) males; (iii) The Soil GIS applications in Geohazards and Civil Engineering workshop (April 10th 2024) involved five (5) females and nine (9) males; (iv) The Soil GIS applications in Farming, Biodiversity and Conservation (April 11th 2024) involved nine (9) females and ten (10) males. nNb. The training workshops were open to all government agencies and were also open to BVI businesses, including farmers.

The outreach programme involved 4 secondary schools (2 on Tortola, 1 on Virgin Gorda and 1 on Anegada), with an introductory talk about soil science and practical demonstrations of soil properties, as well as visits to the Soil Lab and nearby soil sampling sites on the HLSCC campus.

All BVI government agencies now have access to the Soil Database and GIS map layers, Soil Maps and Land Use Suitability guideline documents via the National Geographical Information System, NGIS (ie, the data and information will not have access restricted by a single 'owning' department).

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

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

5. Monitoring and evaluation

The M&E work was shared between UoP and the BVI Department of Disaster Management, with DDM leading the M&E for our partner organisations in the BVI. The M&E mechanisms that we utilised for the project worked well for tracking the Outputs and Activities.

During its lifetime, the project had internal assessment of its activities, via its Steering Committee, which contained with representives of all relevant BVI Government agencies, as well as inputs from the BVI National Parks Trust and the BVI education sector (via the HL Stout Community College). The views of BVI farming community are also informally represented via an *ex officio* member of the project Steering Committee, Mr William Georges, a retired agricultural scientist.

There was also external assessment of the project activities, from two external experts who have experience of managing Darwin Projects: Prof Simon Cragg (UoP, mangrove expert) and Dr Premachandra Wattage of the Economics Department at Sarabaguwa University, Sri Lanka (ecosystem services expert). Dr Wattage was only been able to attend one of the Steering Committee meetings because of the Sri Lanka economic crisis and telecoms disruption. Prof Cragg attend all the Steering Committee meetings: his comments on the project's progress were positive and he provided lots of useful advice, emphasising the need to analyse soil Carbon content (which was duly completed for all sample sites during 2023-2024).

The project's Change Request forms and associated Logframe change documents are archived in Annex 5 (item 5.1.5). Unfortunately a lot of changes were needed during the project – here is a summary: Our BVI lead partners under-spent the allocated 2022-2024 funding for BVI-incurred project costs. Of the of the [redacted] allocated for BVI-partner costs during 2022-2024, only [redacted] was spent, leaving an under-spend of [redacted] Consequently, [redacted] of that 2022-2024 under-spend was re-allocated to UoP for the 2024-2025 financial year. For details, please see the Change Request submitted on 22nd February 2024.

However, there was a positive outcome: the [redacted] re-allocated to the UoP 2024-2025 project budget was used to fund the UoP team's previously-cancelled final visit to the BVI, which was re-scheduled for April 2024, That enabled the delivery of two face-to-face Soil GIS training workshops, a final phase of soil survey fieldwork and project-end discussions with each of our BVI partner organisations to discuss their use of the Soil GIS information.

6. Lessons learnt

What worked well: The BVI soil survey and sampling has gone well; the BVI Soil Laboratory has been established and is operational, enabling the physical and chemical analysis of the collected soil samples. The project publicity has been effective, particularly the Facebook posts, creating a widespread interest across the BVI, from the farming community through to school teachers and their students, with both sectors requesting (and receiving) outreach activities.

Project items that did not go well: Those items were primarily with the budget aspects of the project, as summarised in the Change Request section 5.

7. Actions taken in response to Annual Report reviews

Four issues were raised by the 2023-2024 Annual Report reviewer: they have been acted on, following consultation with the BVI lead partner, DDM (see responses in green shading below).

1	Please provide more information/evidence from activity implementation. For instance, it would be good to see the pre- and post-training questionnaires and the trainee responses from the technical training workshops mentioned in section 6 of AR1	More evidence has been provided to support Activity implementation, e.g. workshop questionnaire responses from participants (see Appendix 5).
2	Ensure that the items referred to in hyperlinks can be readily found within the relevant website (see comment in section 4.2 – the list of standard measures in Annex 3 lists 3 documents, of which the reviewer could find only 2 via the link https://www.bviddm.com/publications	All of the workshop training materials from 2022-23 and 2023-24 have now been uploaded to the website of the lead BVI partner, the Department of Disaster Management (DDM).
3	Make a clear distinction between Outputs and their logframe indicators	Distinction has now been made between Outputs and their logframe Indicators.
4	Financial reporting should include a comment on any matched funding received / mobilised	UoP & DDM have quantified their matched funding inputs in the project budget

8. Risk Management

A recent major risk to the success of this project was the PI, Professor Richard Teeuw, retiring from full-time work at the University of Portsmouth, from December 31st 2024. That coincided with the agreed end-date of the project and has consequently delayed the drafting of the main technical report and associated guidance documents, as well as this DPlus Final Report and associated journal papers. Since January 2025, Prof Teeuw has been working on a voluntary basis to complete the various project reports and journal papers.

9. Scalability and Durability

What evidence is there of increasing interest and capacity resulting from the project?

(i) Commitment from HLSCC to maintain the Soil Laboratory provided by this project. HLSCC has added Soil Science to its curriculum, using training materials provided by this project, and has developed soil laboratory usage for Summer School field-based research, with visiting USA students paying a user-fee. The HLSCC President, Dr Richard Georges, has confirmed that they will be expanding the curriculum to include more teaching of Soil Science via new courses in Agriculture and Horticulture, as well as Food Science. Land adjacent to the College will be developed for the teaching of farming and horticulture, with the soil properties of those new fields determined via analyses in the Soil Laboratory established by this project.

The College is also considering developing the lab's analytical capabilities by offering soil analyses on a commercial basis. Prof Williams, who runs an environmental lab at UoP, discussed ways of commercialising the Soil Lab analyses with the HLSCC management team and the project Steering Committtee. Prof Williams concluded that there is potential to commercialise aspects of the BVI Soil Laboratory, in conjunction with forthcoming EU-funded BVI waste management and water quality projects (see Annex 5, item 5.2.2).

(ii) Outreach to schools: BVI public interest in the project Facebook posts (see below) led to the initiation of an outreach programme involving four secondary schools – on Tortola (2), Virgin Gorda (1) and Anegada (1) – with lectures introducing soil science, soil fieldwork on the HLSCC campus and visits to the Soil Lab raising awareness about the importance of soils within that large BVI age group (see social media coverage in section 10).

(iii) Other BVI-focused projects have benefited from the soil survey & Soil GIS, notably:

The BVI Ministry of Environment, Natural Resources & Climate Change and the Department of Agriculture have built on the new BVI soil science capabilities to successfully bid for funding from the Organisation of Eastern Caribbean States (OECS), for a project on "*Integrated Landscape Approaches and Investments in Sustainable Land Management in the OECS*".

Another Darwin Plus project, led by the National Parks Trust (DP-180), "Integrating climate change resilience into protected area design and management" has been provided with soil analysis data and Soil GIS data layers.

A Darwin Plus Local funding grant (DPL00051) has been awarded to one of the trainees of this project. Mr Dick-Read (Good Moon Organic Farm Ltd) was awarded funding for a study of vermiculture applied to compost production from Sargassum seaweed, with PI Teeuw assisting with the drafting of that proposal and having an advisory role on that project.

(iv) Increasing use of project outputs by BVI Government agencies

Department of Agriculture has incorporated soil analysis to aid with the assessments of the agricultural potential of current and proposed farming footprint (i.e. Soil type, depth, fertility, drainage, pH, etc.), natural vegetation and biodiversity of the area, availability of water, etc.
- A master plan for farming plots on the Paraquita Bay Estate has been developed, including a toolkit for farmers to guide sustainable land management practices for crop and livestock farming in the Virgin Islands.
- The Soil Laboratory was used by the Agriculture Department, to carry out soil chemical analyses for a new project: "Integrated Landscape Approaches and Investments in Sustainable Land Management in the OECS".

Town and Country Planning Department will incorporate the data produced by the Soil Project into the physical development process regulations. All applications submitted to the department for revision will be assessed with the inclusion of soil analysis. Land that is not suitable for development due to adverse soil factors can be identified, therefore aiding in the implementation of proper building within that area.

Department of Disaster Management has run a 'Soil Awareness' training session with the Cedar International School, Tortola, as part of the outreach element of the project. The GIS soil data that produced by this study will be incorporated into the Hazard Vulnerability Assessment (HVA), which will assist with risk reviews of new construction developments.

Environmental Health Department will be using soil information from the reports produced by soil survey project. The data provided will be used for assessments of soil permeability, specifically for septic tanks installation and determining the suitability of wastewater treatments.

National Parks Trust (NPT) of the Virgin Islands - The soils analysis application will enable the NPT to collect additional soil samples in other national parks, when conducting fieldwork for plant research: *"We will be using the Soil Laboratory, especially the micro-organism and soil biodiversity assessment. That is especially interesting to us to better understand soil health, in the context of climate change and the impacts of extreme weather events".* The NTP has made use of some of the BNVI Soil GIS datasets, notably the 3m-pixel Digital Elevation Model that the project produced for the main BVI islands.

10. Darwin Plus Identity

The Darwin Plus scheme and its logo have been promoted though the BVI soil survey project on several media platforms, through the Department of Disaster Management's Facebook page, Government of the Virgin Islands media page, a soil survey initiative press release on November 8th 2022, the H. Lavity Stout Community College webpage, and National Park Trust of the Virgin Islands webpage. The Darwin Plus scheme has also been promoted during the project's technical training workshops, in November 2022 and January 2023.

Recognition of the UK Government's contribution to the project's work:
All Darwin Plus, DEFRA and UK Aid logos on title slide for all of the training courses, press briefings and Steering Committee meetings. For this multi-purpose soil survey of the British Virgin Islands, the Darwin Plus funding was recognised as enabling a distinct project with a clear BVI-focused identity. Via the BVI multi-purpose soil survey initiative, many BVI organisations – particularly the 7 that are partners in the project - have can become more familiar with the Darwin Plus funding programme. The Darwin Plus programme can be linked back through the BVI soil survey project media sources. Facebook has been our most effective way of publicising the project and its Darwin Plus funding, e.g. via the BVI Soils Facebook posts, DDM Facebook posts and HLSCC Facebook posts (see list below).

12. Finance and administration

12.1 Project expenditure

Project spend (indicative) since last Annual Report	2023/24 Grant (£)	2023/24 Total actual Darwin Plus Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs	[redacted]			
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items				
Others				
TOTAL	**68,145.32**	**50,784,33**		

Staff employed (Name and position)	Cost (£)
Prof. Richard Teeuw (PI; specialist in geohazards, soils & GIS)	[redacted]
Prof. Fay Couceiro (Soil Chemistry specialist)	
Prof. John Williams (Waste Management specialist)	
Dr Alireza Tatari (Soil Engineering specialist)	
Dr Athanasios Argyriou (GIS & remote sensing specialist)	
TOTAL	

Other items – description	Other items – cost (£
UoP Technician (extra soil analysis: % clay, silt, sand)	[redacted]
TOTAL	

12.2. Additional funds or in-kind contributions secured

Matched funding leveraged by partners to deliver the project	Total (£)
Professor Richard Teeuw: 31.5 days of 'pro bono' work	[redacted]
University of Portsmouth, departmental research support funding, for mineral spectrometry analysis of 150 BVI soil samples.	
TOTAL	

Total additional finance mobilised for new activities outside of the project	Total (£)
Darwin Plus Local project (DPL00051): *Pontodrilus sp.* earthworm consumption of Sargassum seaweed (2023-2024). Teeuw gave advice on how to draft a research funding proposal, and had an advisory role on DP00051 via the project steering committee. BVI soil chemistry lab results from DP160 (soil analysis of farms using Sargassum mulch) informed the studies of DPL00051.	[redacted]
TOTAL	

12.3. Value for Money

The overall benefits of the project most likely outweigh the costs, as indicated by these criteria:

Economy: Every effort has been made to made best-value purchases, e.g. selecting the best of 3 quotes per item of major equipment; checking BVI and USA prices against UK prices and freight costs; carrying many equipment items in the flight luggage of UK team members, rather that paying additional air-freight costs. The BVI has relatively expensive accommodation costs, therefore a long-term agreement was made with a hotel adjacent to the office of our main BVI partner (DDM) at a lower room-cost than that asked of tourists, often with the UK team members sharing a single apartment, rather than paying for individual rooms.

Efficiency: The matched funding contribution to the project was [redacted] up to the end-project date (31/12/2024). That was mostly for 31.5 days of work carried out by PI Teeuw [redacted] but also included [redacted] of UoP departmental research support funding that enabled clay mineral spectrometry analyses to be carried out on 150 BVI soil samples – which detected the previously unknown occurrence of Smectite shrink-swell clay minerals in Virgin Gorda soils. NB. *although Richard Teeuw retired from UoP on 31/12/2024, he has continued to work on the drafting of the project technical reports and this Final Report, on a pro bono basis, for one day per week during the past 6 months, adding a further 22 days to the Matched Funding.*

Effectiveness: The outputs have achieved the desired outcome, even though the PI could not exercise total control over outcomes. Soil-based activities in the stakeholder BVI Government departments and recently funded projects (e.g. OECS funding for sustainable agriculture, as well as a successful DPlus Local project funding proposal) have been leveraged by this project's outcome, indicating significant potential for expansion or replication of the project.

Additionality: apart from the initial funding needed to equip the BVI soil laboratory and provide training in soil survey and sampling, as well as basic soil lab analyses, no further inputs are needed from Darwin Biodiversity Challenge Funds – the BVI is, in effect, now self-sufficient in its soil science needs. The large pool of trained-up staff from the 6 BVI Government agencies that are stakeholders in the project, provides cover for soil survey or analysis tasks if a few key staff are removed; the HLSCC also has capabilities for further training of trainers (using the materials provided by the project), should the need arise.

Equity: the project was designed to be as inclusive as possible, involving 6 BVI government agencies that have interests in soils and environmental management, as well as the BVI's main community college (with further outreach activities involving BVI schools), also representatives of local businesses and the farming community. Organisations attending the training workshops were asked to provide an equal number of male and female trainees (and generally did so).

13. Other comments on progress not covered elsewhere - none.

14. OPTIONAL: Outstanding achievements of your project

I agree for the Biodiversity Challenge Funds Secretariat to publish the content of this section.

(i) The soil types of the BVI have been mapped and analysed - 62 sites were sampled, yielding 216 soil samples for analysis. A Soil Laboratory has been established in the BVI's main community college, with soil science added to the teaching curriculum. The Laboratory has been used to analyse soil physical and chemical properties, with the ensuing database containing over 11,000 items. That dataset forms the basis of the BVI Soil GIS (Geographical Information System), enabling knowledge-based guidance for environmental management and providing a baseline against which climate change impacts can be assessed.

(ii) Capacity Building and Training has been provided, in soil survey methods, soil chemical analysis, soil physical analysis, soil microbiota & biodiversity, and in uses of the BVI Soil GIS in civil engineering, farming and conservation. Training has been provided to staff from BVI Government agencies, businesses, farmers and teachers, with 54 people trained via 'hands-on' workshops.

(iii) The project's outreach programme has visited secondary schools on all of the BVI' s main populated islands, with talks given on soil science and practical demonstrations of soil properties. The outreach also involved visits by five secondary schools to the Soil Lab and nearby soil sampling sites on the H. Lavity Stoutt Community College campus.

(iv) BVI government departments are benefiting from the knowledge produced by this project, notably: Agriculture, Town & Country Planning, Environmental Health and Disaster Management, as well as the National Parks Trust and the Ministry of Environment, Natural Resources & Climate Change. They benefit from provision of soil maps and data, which provide previously unavailable information for environmental management: from land suitability for agriculture, mitigation of pollution, stabilisation of erosion or landslides, to biodiversity conservation and modelling impacts of climate change. (= 287 words)

Annex 1 - Report of progress and achievements against logframe for the life of the project

Project summary	Progress and achievements
Impact - BVI soil types and soil biodiversity surveyed and mapped, with self-sufficiency in soil survey and analysis capabilities, enabling improved management of land and waste, with better risk management and climate change preparedness .	The BVI now self-sufficient in soil survey and soil analysis: a Soil Laboratory is now established and operating in the H Lavity Stoutt Community College, with 4 of the technical staff trained by the project able to train other BVI technical staff. All of the BVI soil types and sub-types have now been sampled and analysed, with results added to the BVI Soil GIS Database.
Outcome - BVI soil maps and information on soil suitability for Farming, Waste Management and Construction, leads to better-informed land management, with increased risk awareness and climate change preparedness.	Evidence provided in section 3.2 of report and in Annex 5.
Indicator 0.1 Soil survey and soil analysis for the 4 main islands, with baseline BVI geospatial datasets produced for: BVI Soil Types & Biodiversity; and Soil Suitability for: Farming, Construction, and Waste Management, by Dec 2023	Soil survey and soil analysis carried out all 4 of the main islands (and also 2 National Park islands), with baseline BVI geospatial datasets produced for BVI Soil Types. Evidenced by: the BVI Soil GIS database (see Annex 5, item 5.4.1); the project technical report, guidance documents on soil suitability for Farming and for Civil Engineering, including construction and waste management (see Annex 5, items 5.2.3, 5.2.4 and 5.2.5).
Indicator 0.2 For the BVI partner organisations: technical training on soil survey and sampling, soil laboratory analyses, Soil GIS mapping and soil map interpretation, by April 2024.	Technical training provided during Oct/Nov 2022 (soil survey, sampling & physical analysis) Jan/Feb 2023 (soil chemical analysis), June 2023 (soil engineering and soil biota) and April 2024 for Soil GIS training. Evidence provided in Annex 5, items 5.1.2 and 5.4.1).
Indicator 0.3 Partner organisations use soil suitability maps and guidelines in their activities (farming, construction, waste management and biodiversity conservation), as well as for soil-related risk management and preparedness for climate change, by Q3 2024.	Partner organisations are using soil suitability maps and guidelines in their activities (farming, construction, waste management and biodiversity conservation), as well as for soil-related risk management and preparedness for climate change. Evidence provided in Annex 5, item 5.1.4).
Indicator 0.4 Partner organisations' documentation and guidelines for the public, include land use soil suitability information, soil risk management for new developments and preparedness for climate change by Q3 2024	Land use and soil suitability guidance documents, for Farming and for Civil Engineering (which include climate change preparedness considerations), were produced as a 1st draft in Q3 of 2024. Following feedback from the project partners, revised versions of the guideline documents were produced in Q1 and Q2 of 2025. Evidence provided in Annex 5, items 5.1.4, 5.2.4 and 5.2.3.
Output 1. BVI self-sufficiency in soil survey and soil laboratory analysis, with associated BVI Soil GIS inventory, mapping & analysis system	
Indicator 1.1 - BVI Soil Lab established, by Nov 2022.	Soil Laboratory has been established within the H Lavety Stoutt Community College, Tortola. The Soil Laboratory has been equipped with soil particle size analysis kit (sieve shaker & sieve set, with pipette & hydrometer for % clay analysis); a soil chemistry analyser (PalinTest S500);

	penetrometers for soil strength tests and equipment for analysing topsoil microbiota (an indicator of soil biodiversity). Evidenced by media coverage in Section 10 and in Annex 5, item 5.2.3.
Indicator 1.2 - Survey and sampling of BVI soils, focusing on the 4 largest islands, with analysis of collected soils, by Nov 2023	All 10 major soil types of the BVI sampled, along with their sub-types, on the 4 main islands. 200 soil samples were collected from 65 soil sample sites. Particle size distribution analysis carried out on all samples, with chemical analysis carried out on all of the 65 the topsoil samples. Civil engineering properties of the main BVI soil types and sub-types were analysed during June 2023. At UoP, the % clay was determined via automated laser diffraction and clay mineralogy was determined by spectroscopy. Evidenced by Annex 5, items 5.2.3 and 5.4.1.
Indicator 1.3 - Soil inventory, GIS database and maps of the main Soil Types, by April 2024.	The BVI soil inventory and Soil GIS is now operational; copies of the Soil GIS database and soil maps have been provided to all of the BVI partner organisations, as well as the BVI National GIS archive. Evidenced by Annex 5, items 5.2.3, 5.4.1.and 5.4.2.
Indicator 1.4 - Review of predictive accuracy: relative variance of each mapped soil type, by Q3 2024	This has been incorporated into the Methodology section of the technical report on 'Soil Types of the BVI' (p.8). Evidenced by Annex 5, item 5.2.3.
Indicator 1.5. Four soil-based thematic maps with explanatory documents: BVI Soil Types, and Soil Suitability for: Farming, Construction, and Waste Management, by January 2024.	Thematic maps and guidance documents have been produced for Farming and for Civil Engineering (construction and waste management). Evidenced by Annex 5, items 5.2.3, 5.2.4, 5.2.5 and 5.4.2.
Indicator 1.6 - Soil Laboratory and Soil Sampling equipment used by the H Lavity Stoutt Community College for teaching of Soil science and its applications, by Jan 2024.	HLSCC is using the BVI Soil Laboratory for teaching, and Soil Science is now part of the college curriculum. Evidenced by photos and media items in section 10, as well as in Annex 5, items 5.1.4 and 5.2.3.
Indicator 1.7 - Workshop on ways of commercialising BVI Soil Laboratory analyses, involving UoP project staff who manage soil, geotechnics and waste treatment labs, H Lavity Stoutt Community College managers & other BVI partners, by Feb 2023.	In February 2023, Prof Williams (UoP Civil Engineering & Waste Management) met with staff from all of our BVI partner organisations, discussing ways of commercialising the BVI Soil Laboratory (evidenced by Annex 5, item 5.2.2). Also, in June 2024, Prof Teeuw (UoP; project PI) and Ms Daway (DDM, BVI lead agency) met with the HLSCC President (Mr Georges) and his Soil Lab staff (Ms Dawson & Ms Zaluski) for further discussion on Soil Lab commercialisation.
Output 2. Training provided to BVI Government staff and to the BVI's main higher education institution (H. Lavity Stoutt Community College)	
Indicator 2.1. - Training in soil survey, soil sampling and soil analysis: two 'hands-on'; workshops, with supporting online training materials, by Feb 2023.	Completed, via training workshops on Soil Science & Soil Description (Nov 2022) and Soil Chemistry (Jan 2023). Evidenced by the training materials of Annex 5 (item 5.1.2).

Indicator 2.2. - Training in soil database management and GIS usage for mapping and climate change impact assessment: two workshops, by April 2024.	Evidenced by the training materials of Annex 5 (item 5.1.2).
Indicator 2.3. -Training on analysis-ready soil maps & briefing documents, for environmental managers and policy makers: two online workshops, by April 2024.	Completed within the April 2024 GIS workshops. Evidenced by the training materials of Annex 5 (item 5.1.2). Nb. Changed from online training, to face-to-face training: see Change Request of Feb 20th 2024 (Annex 5, item 5.1.5) .
Indicator 2.4. - Learning outcomes from each technical training workshop applied within the participating organisations, by Q3 2024	Partially Completed – some of the learning outcomes from the training workshops have been applied within all of the project stakeholder organisations. Evidenced by Annex 5, item 5.1.4
Output 3. BVI soil survey results inform government departments and raise public awareness regarding soil applications, associated risks & climate change preparedness	
Indicator 3.1 - Key soil survey findings used to inform policy: for each of the project partners, the project will produce a briefing document, by Q3 2024.	Briefing documents, on Farming and for Civil Engineering (construction and waste management) have been produced for the project partners: evidenced in Annex 5, items 5.24 and 5.25. Those documents are available online, via the BVI DDM website
Indicator 3.2.- Report on BVI Soils, their land use suitability, the risks associated with each soil type and recommendations for climate change adaptation, by Q3 2024.	(a) The technical report, 'Soil Types of the BVI' is evidenced in Annex 5 (item 5.2.3); it is now shared publicly via the BVI DDM publications webpage (b) Unfortunately it is not possible to monitor the number of people accessing that webpage.
Indicator 3.3. - The BVI procedures for risk assessment of new developments adjusted to include inputs from the soil survey guidelines on land use suitability & the Soil GIS maps, by Q3 2024	BVI risk assessment processes for new construction sites, including the Hazard & Vulnerability Assessment (HVA) have been modified by the DDM, the Town & Country Planning Department and the Environmental Health Division to include soil geotechnical sampling (e.g. soil permeability and pocket penetrometer tests), as well as inputs from the Soil GIS maps and guidance document on Geohazards & Civil Engineering. Evidenced in Annex 5, item 5.1.4.
Indicator 3.4. - Public-access version of the Soil GIS and user guides, hosted by the BVI Government NGIS website and the H Lavety Stoutt Community College, ~~by Q1 2024.~~ by Q3 2024	(a) Public-access Soil GIS data, analysis-ready maps and guidance documents have been posted on the DDM and NGIS websites. Duplicate items sent to the HLSCC are not yet posted on their website. (b) Unfortunately it is not possible to monitor the number of people accessing those webpages. (c) Questionnaire surveys of BVI NGO and education sector organisations (to assess awareness of soil types, their land use suitability and risk management issues, as well as soil-focused recommendations for climate change preparedness) were not carried out, due to delays in getting the BVI Soil GIS operational and a lack of time by the end of the project.
Indicator 3.5.- Press releases, to raise public awareness about the importance of soils: (i) Sept 2022; (ii) March 2023; (iii) Sept 2023; (iv) ~~March~~ April 2024.	3.5. Press releases about the soil survey findings: (i) Sept 2022; (ii) March 2023; (iii) Sept 2023; (iv) April 2024. Evidenced in section 10.

Indicator 3.6 - Scientific articles, about: (i) BVI soil types; (ii) multi-purpose thematic soil maps; (iii) links between geodiversity, soil types & biodiversity, submitted to Open Access, peer-reviewed journals, *by Q3 2024*	Only partially completed. Evidenced by: the project publications and conference presentations provided in Annex 5 (items 5.2 and 5.3). Three articles for Open Access peer-reviewed journals currently being drafted.

Annex 2 - Project's full current logframe as presented in the application form (agreed in Change Request of 22.2.2024)

Title: Multi-Purpose Soil Survey: informing biodiversity management and climate change mitigation

Outcome: BVI soil maps and information on soil suitability for Farming, Waste Management and Construction, leads to better-informed land management, with increased risk awareness, and climate change preparedness	0.1 Soil survey and soil analysis for the 4 main islands, with baseline BVI geospatial datasets produced for: BVI Soil Types & Biodiversity; and Soil Suitability for: Farming, Construction, and Waste Management, by Dec 2023 0.2 For the BVI partner organisations: technical training on soil survey and sampling, soil laboratory analyses, Soil GIS mapping and soil map interpretation, ~~by February~~ by April 2024. 0.3 Partner organisations use soil suitability maps and guidelines in their activities (farming, construction, waste management and biodiversity conservation), as well as for soil-related risk management and preparedness for climate change, ~~*by Q1 2024.*~~ *by Q3 2024.* 0.4. Partner organisations' documentation and guidelines for the public, include land use soil suitability information, soil risk management for new developments and preparedness for climate change, ~~*by Q1 2024.*~~ *by Q3 2024*	0.1 Report on BVI Soil Survey, with geospatial datasets, augmented by maps and explanatory documents on: BVI Soil Types & Biodiversity; and Soil Suitability for: Farming, Construction, and Waste Management. 0.2. Questionnaire survey results of the BVI partner organisations, show increased awareness of soil types, their land use suitability and risk management issues, as well as soil-focused recommendations for climate change preparedness. 0.3 User data from the partner organisations on their activities involving soil maps and guidelines on soil suitability (e.g., number of times per month that BVI Soil Survey webpages are accessed). 0.4a. BVI Hazard Vulnerability Assessment application form for new developments is modified to include inputs from the soil survey guidelines on land use suitability and the Soil GIS maps. 0.4b. Guidance documents prepared by BVI partners on land use suitability of soils, or soil-related risk management , or soil-focused preparedness for climate change.	New BVI soil maps and associated reports will be easily accessible to government agencies, NGOs and the public. Training and access to the soil map sets will lead to changes in behaviour and better land/soil management. Project partner organisations have the ability to intervene on environmental issues.

Outputs: **1**. BVI self-sufficiency in soil survey and soil laboratory analysis, with an associated BVI Soil GIS inventory, mapping and analysis system.	1.1 BVI Soil Lab established, by November 2022. 1.2. Survey and sampling of BVI soils, focusing on the 4 largest islands, with analysis of collected soils, by Nov 2023 1.3 Soil inventory, GIS database and maps of the estimated 10 main Soil Types, by ~~Dec 2023~~, April 2024. 1.4 Review of predictive accuracy: relative variance of each mapped soil type, ~~*by Q1 2024.*~~ *by Q3 2024* 1.5. Four soil-based thematic maps, with explanatory documents: BVI Soil Types, and Soil Suitability for: (i) Farming, (ii) Construction, and (iii) Waste Management*,* ~~*by Q1 2024.*~~ *by Q3 2024* 1.6. Soil Laboratory and Soil Sampling equipment used by the Lavity Stoutt Community College for teaching of Soil science and its applications, by January 2024. 1.7. Workshop on ways of commercialising BVI Soil Laboratory analyses, involving UoP project staff who manage soil, geotechnics and waste treatment labs, HLSCC managers & other BVI partners, by February 2023.	1.1 BVI Soil Lab equipment installed and operational 1.2 Field data and soil lab analysis data available to partners, with fieldwork reports available on ResearchGate. 1.3 Soil inventory, GIS database and maps uploaded to the BVI Government NGIS website. 1.4 Results of predictive accuracy review for each mapped soil type uploaded to the BVI Government NGIS website. 1.5 Four soil-based thematic maps, with explanatory documents uploaded to the BVI Government NGIS website. 1.6. Soil Science included in the teaching curriculum of the Lavity Stoutt Community College. 1.7a. Workshop attendee list provides gender disaggregated data. 1.7b. Questionnaire to project partner organisations at the end of the workshop, to gain ideas on possible BVI Soil Laboratory commercial activities, with recommendations on a business development strategy.	The Lavity Stoutt Community College maintains its agreement to host the BVI Soil Laboratory. Representative samples collected and analysed for all main soil types. BVI Government NGIS website operates effectively.
2. Training provided to BVI Government staff and to the BVI's main higher education institution (Lavity Stoutt Community College, which will host the laboratory and the workshop training). Aiming for 20 trainees.	Target audience of 20 trainees (14 from project partners; 6 from BVI businesses or NGOs) will benefit from: 2.1. Training in soil survey, soil sampling and soil analysis: two 'hands-on'; workshops, with supporting online training materials, by February 2023.	2.1, 2.2 and 2.3. Evidenced via training materials, attendance records and participant contact details, disaggregated by gender. *2.4. Uptake and application of learning outcomes for each technical training workshop (Outputs 2.1, 2.22.3), assessed*	Staff of our BVI partner organisations will be available for the training sessions Facilities will be available for the soil analysis training and

The training will also be available to BVI-based businesses & NGOs	2.2 Training in soil database management and GIS usage for mapping and climate change impact assessment: two workshops, by ~~February~~ by April 2024. 2.3 Training on analysis-ready soil maps & briefing documents, for environmental managers and policy makers: two online workshops, by ~~February~~ April 2024. *2.4. Learning outcomes from each technical training workshop applied within participating organisations, ~~by Q1 2024~~ Q3 2024.*	*via a set of questionnaire surveys: (i) pre-workshop, to determine initial levels of knowledge and understanding;* *(ii) at the end of each workshop, to determine take-away lessons learnt;* *(iii) two months after each workshop, to see how the learning outcomes have been used by the partner organisations.*	GIS training, at our Community College partner. Should a pandemic curtail travel, then alternative online training materials will be provided, paid for by reallocation of the un-used travel funding.
3. BVI soil survey results inform government departments, and raise public awareness, regarding soil applications, associated risks and climate change preparedness.	3.1 Key soil survey findings used to inform policy: for each of the project partners, the project will produce a briefing document*, ~~by Q1 2024.~~ by Q3 2024.* 3.2 Report on BVI Soils, their land use suitability, the risks associated with each soil type and recommendations for climate change adaptation, *by Q3 2024.* 3.3. The BVI procedures for risk assessment of new developments will be adjusted to include inputs from the soil survey guidelines on land use suitability and the Soil GIS maps, *~~by Q1 2024.~~ by Q3 2024* 3.4. Public-access version of the Soil GIS and user guides, hosted by the BVI Government NGIS website and the Lavetty Stoutt Community College, *~~by Q1 2024.~~ by Q3 2024* 3.5. Press releases, to raise public awareness about the importance of soils: (i) Sept 2022; (ii) March 2023; (iii) Sept 2023; (iv) ~~March~~ April 2024. 3.6 Scientific articles, about: (i) BVI soil types; (ii) multi-purpose thematic soil maps; (iii) links between geodiversity, soil types & biodiversity,	3.1. Briefing documents, informed by the BVI soil survey, for the government project partners, on soil applications, soil risks and climate change preparedness, published and available online, via by BVI Government NGIS website. 3.2a. BVI soil survey report shared publicly via the Virgin Islands Government website and via ResearchGate, by March 2024. 3.2b. Monitor the number of people accessing the BVI Soil Report via the Virgin Islands Government website and via ResearchGate. 3.3. BVI Hazard Vulnerability Assessment form modified to include inputs from the Soil GIS maps and soil survey guidelines on land use suitability. 3.4a. Public Soil GIS data, analysis-ready maps and user guides posted on the BVI Department for Disaster Management website and the Lavetty Stoutt Community College website. 3.4b. Monitor access to the BVI Public Soils webpages by members of the public, NGOs, businesses and education sector.	BVI Government NGIS website operates effectively and allows public access, as well as monitoring the number of people accessing the website. ResearchGate continues to be freely accessible to public use.

	submitted to Open Access, peer-reviewed journals , ~~*by Q1 2024.*~~ *by Q3 2024.*	3.4c. Questionnaire surveys of BVI NGO and education sector partner organisations show increased awareness of soil types, their land use suitability and risk management issues, as well as soil-focused recommendations for climate change preparedness. 3.5. Press releases about the soil survey findings: (i) Sept 2022; (ii) March 2023; (iii) Sept 2023; (iv) March 2024. 3.6. Articles in Open Acces peer-reviewed journals (3), submitted by March 2024.	

Activities

1.1 Soil laboratory established.
1.2. Soil survey, sampling and soil lab analyses.
1.3 Soil inventory, Soil GIS database and maps.
1.4 Review of predictive accuracy for each soil type.
1.5 Thematic soil suitability maps and soil management guidelines.
1.6. Soil Laboratory and Soil Sampling equipment used by the H Lavity Stoutt Community College for teaching of Soil science.
1.7. Workshop on ways of commercialising BVI Soil Laboratory analyses.

2.1. Training in soil survey and soil analysis.
2.2 Training in GIS-based soil mapping.
2.3 Training on soil maps and briefing documents, for environmental managers and policy makers.
2.4. Learning outcomes from each technical training workshop applied within the participating organisations.

3.1 Report on BVI Soils, highlighting the value of soil data.
3.2. Briefing documents on soil applications and soil sensitivity.
3.3. BVI Hazard Vulnerability Assessment form modified to include Soil GIS inputs and soil-based land use suitability guidance.
3.4. Public-access version, BVI Soil GIS and documentation.
3.5. Press releases on project findings.
3.6 Open Access journal articles on key project findings.

ANNEX 3

Table 1 - Project Standard Indicators

DPLUS Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DPLUS Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DPLUS-A01	2.1. Training in soil survey, soil sampling and soil analysis: two 'hands-on'; workshops, with supporting online training materials, by February 2024.	Number of people from key national stakeholders completing soil survey physical, chemical, engineering and microbiota soil analysis training.	No. of People	Gender: 24 females, 16 males Age group: 18 to 65 Stakeholder group: 7	40	40	20	100	100
DPLUS-A03	2.4. Uptake and application of learning outcomes for each technical training workshop (Outputs 2.1, 2.2, 2.3), assessed via a set of questionnaire surveys	Number of local/national organisations with improved capability and capacity as a result of project.	No. of organisa-tions	Government department: 5 Para-governmental: 1 College/school: 1	7	7	7	7	7
DPLUS-A04	2.4. Learning outcomes from each technical training workshop applied within the participating organisations, by March 2024.	Number of people reporting that they are applying new capabilities 6 months after training.	No. of People	Gender: all Females Age group: 30 to 50 Stakeholder group: 3	3		7	10	20
DPLUS-A05 (y1)	2.4. Learning outcomes from each technical training workshop applied within the participating organisations, by March 2024.	Number of trainers trained reporting to have delivered further training by the end of Year-2 of the project	No. of Trainers	Gender: Female (3); Male (1); Age group: 18-30 Stakeholder group: Community College (2); Government agency (2)	4	4		8	8
DPLUS-A07	2.4. Uptake and application of learning outcomes for each technical training workshop (Outputs 2.1, 2.2, 2.3), assessed via a set of questionnaire surveys	Number of government departments with enhanced awareness and understanding of soils and associated biodiversity and climate change issues	No. of depts.	No. of government departments: 6	6	6	6	6	6
Extra A07 for Schools	This is an unexpected extra indicator, following requests from BVI schools for awareness training. It is within *Output 3: BVI soil survey results inform government departments, and raise public awareness, regarding soil*	Number of school/college students with enhanced awareness and understanding of soils and associated biodiversity and climate change issues	No.of students	Age group: 15-20 Female: 9; Male: 28 No. of schools: 4 Seventh Day Adventist School, Cedar International School and the H. Lavity Stoutt Community College,	37	18	35	90	80

DPLUS Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DPLUS Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
	applications, associated risks and climate change preparedness.			Tortola. Anegada main school; Ciboney School, Virgin Gorda					
DPLUS-C12	3.5. Social media coverage, to raise BVI public awareness about the importance of soils.	Social Media presence	Number (by a relevant metric)	By month/year: Feb 2023 Platform: Facebook DDM website, newspaper, news site, government webpage	12	7	8	27	24
DPLUS-C14	This is not directly covered, but relates to *3.1: Key soil survey findings used to inform policy: for each of the project partners, the project will produce a briefing document, by January 2024.*	Number of decision-makers attending briefing events (via press conferences and project steering committee meetings).	Number	Attendee gender balance: 8 women to 7 men. Types of decision-makers: Govt (73), NGO (6%), farmers (21%) Number of events: 6	15	15	15	15	15
DPLUS-C15	3.5. Press releases, to raise public awareness about the importance of soils: (i) Sept 2022; (ii) March 2023; (iii) Sep 2023; (iv) April2024	Number of Media related activities.	Number	Internet/ Print/ and sub-national / national / international	2	5	1	8	4
DPLUS-C19	2.1. Training in soil survey, soil sampling and soil analysis: two 'hands-on'; workshops, with supporting online training materials, by February 2023.	Number of other publications produced.	Number	Training manuals (6) Review of BVI waste management (1); report on BVI soil microbiota & biodiversity sampling (1)	4	4	4	12	9

Annex 3

Table 2 - Publications

Title	Type	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
BVI Soil Microbiota and Soil Biodiversity	Report (15pp)	H. Rumble (2023)	Female	UK	BVI Department of Disaster Management	https://www.bviddm.com/publications/
Terrain and soil mapping for disaster risk management in the British Virgin Islands	Conference presentation	R. Teeuw, A. Argyriou and M. Daway (2023)	Male	UK, Greece, BVI	UK Remote Sensing & Photogrammetry Society (RSPSoc)	Conference Abstracts booklet: https://www.rspsoc.org.uk/index.php/rspsoc-events/rspsoc2023.html
Issues of soil degradation through wastewater and waste disposal in the British Virgin Islands	Report (20pp)	J. Williams (2023)	Male	UK	BVI Department of Disaster Management, Tortola	https://www.bviddm.com/publications/
Earth observation, geomorphology and soil surveys for drought early warning systems and risk management.	Conference Presentation	R. Teeuw (2024)	Male	UK	Cranfield University, MADIS (Management of Disaster Risk & Societal Resilience)	https://www.cranfield.ac.uk/events/events-2024/madis-conference
Soil Types of the British Virgin Islands	Report (48pp)	R. Teeuw (2025)	Male	UK	BVI Department of Disaster Management, Tortola	https://www.bviddm.com/publications/
BVI Soil Types and Farming	Guidance Manual (27pp)	R. Teeuw (2025)	Male	UK	BVI Department of Disaster Management, Tortola	https://www.bviddm.com/publications/
BVI Soil Types, Geohazards and Civil Engineering	Guidance Manual (36pp)	R. Teeuw (2025)	Male	UK	BVI Department of Disaster Management, Tortola	https://www.bviddm.com/publications/

Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the **correct template** (checking fund, scheme type of report (i.e. Annual or Final), and year) and **deleted the blue guidance text** before submission?	Y
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the Subject line.	Y
Is your report more than 10MB? If so, please consider the best way to submit. One zipped file, or a download option, is recommended. We can work with most online options and will be in touch if we have a problem accessing material. If unsure, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the Subject line.	N
If you are submitting photos for publicity purposes, **do these meet the outlined requirements (see section 14)?**	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
Have you provided an updated risk register? If you have an existing risk register you should provide an updated version alongside your report. If your project was funded prior to this being a requirement, you are encouraged to develop a risk register.	Y
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.	