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# **DPLR4\1003**

## **Investigation into the presence of microplastics in coastal Sargassum strandings**

An investigation into the accumulation of microplastics in stranded Sargassum, which engages tertiary level students to participate in the study, to understand potential threats to ecosystems, explore opportunities for removal of microplastics and Sargassum from the marine environment and to consider the long term implications of microplastics entering other ecosystems. Raise awareness of marine litter through workshops for school children.

# DPLR4\1003

Investigation into the presence of microplastics in coastal Sargassum strandings

## Section 1 - Project Title & Contact Details

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### Q1. Project Title

Investigation into the presence of microplastics in coastal Sargassum strandings

### Q2. Please select whether you are applying as an organisation or as an individual (Guidance section 3 and Guidance Glossary)

Individual\*

#### CONTACT DETAILS

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Name	Jenni
Surname	Kneale
Tel (Work)	[REDACTED]
Tel	[REDACTED]
Email (Work)	[REDACTED]
Address	[REDACTED]

\*If applying as an individual, you must open a separate project bank account used solely for your grant payment, if successful. This will be checked by the fund administrators. The maximum amount individuals can apply for from Darwin Plus Local is £20,000. Individual applicants will also be asked to provide: proof of identity, proof of solvency (e.g. bank statement), and a police check, if successful.

## Section 2 - Overseas Territory(ies)

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Q3. Please state whether the same (or similar) project proposal has previously been submitted to the UK Government for funding, including through Darwin Plus Local, Defra's other Darwin Plus grant schemes or other UK Government funding mechanisms. Failure to do so may result in the application being ineligible.

No

## Q4. Overseas Territory (Guidance section 1.3):

Which UK Overseas Territory(ies) will your project be working in? Please note that in case of a non-permanent resident population you need to demonstrate a clear, meaningful, long-term link to the territory.

British Virgin Islands (BVI)

**\* if you have indicated a territory group with an asterisk, please give detail on which territories you are working on here:**

*No Response*

In addition to the UKOT(s) you have indicated, will your project directly benefit any other UK OT(s) or country(ies)?

Yes

**Please list these here and describe how they will benefit:**

Many Caribbean islands are being negatively affected by large influxes of sargassum being deposited on the coast, Sargassum Management strategies are necessary Caribbean-wide. More data is required in terms of the presence and quantity of microplastics and other pollutants (eg arsenic) in the Sargassum, in order to assist decision makers to make strategic choices and to avoid potential cross-contamination from microplastics in Sargassum to other ecosystems, deep ocean, soil, agriculture or the food chain.

## Section 3 - Project Partners

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### Q5. Project partners (Guidance section 3.2)

In this section, please give details of all the partners involved (including the Lead Organisation) and provide a summary of their roles.

Project Leader name (Guidance section 3.1): Jenni Kneale

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Lead Organisation name (if applying as an organisation; Guidance section 3.1): *No Response*

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Lead Organisation Website (if applicable): *No Response*

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Is the Lead Organisation based in a UKOT where the project is working (Guidance section 3.1)?  Yes

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List other partners involved and where are they based: H. Lavity Stouff Community College - Tortola, British Virgin Islands

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Summary of roles and responsibilities of each partner in the project: HLSCC - laboratory facilities, student engagement (microplastics analysis)





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**I confirm that all listed partners are aware of this application and have indicated support:**      Checked

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**Attach a Cover Letter for your application (Guidance section 4.2).**

 [DPL cover \(1\)](#)  
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 pdf 40.74 KB

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## Section 4 - Project Summary & Description

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### Q6. Project Summary (Guidance section 3.8)

**Please provide a brief summary of your project. This may be used in communication activities and/or published online, if your application is successful.**

An investigation into the accumulation of microplastics in stranded Sargassum, which engages tertiary level students to participate in the study, to understand potential threats to ecosystems, explore opportunities for removal of microplastics and Sargassum from the marine environment and to consider the long term implications of microplastics entering other ecosystems. Raise awareness of marine litter through workshops for school children.

### Q7a. Description (Guidance section 2.1 and 6)

**Please provide a description of your project, including:**

- the overall objective
- the current situation and the problem the project is trying to address
- what success will look like and how you will measure it.

**Please be as specific as possible when describing the project, using quantified data and evidence where available. You may wish to consider: what are the specific threats to the environment that the project will attempt to address, and what should we know about these threats? What does your successful project look like? And how will you demonstrate whether and how your project has been successful?**

Background:

The Caribbean Sea ranks as the second most plastics polluted sea globally, yet there is an absence of regulations and education schemes relating to marine litter.

Since 2011 the Caribbean region has been adversely affected by large strandings of Sargassum in coastal zones. Sargassum mats trap plastic in the ocean which is then stranded on beaches within the Sargassum. Macroplastics degrade under UV becoming micro and nano plastics. Contaminants such as PCBs accumulate on plastic particles. The presence of microplastics in stranded Sargassum could pose threats to multiple ecosystems.

It is possible that removal of Sargassum strandings could serve to simultaneously remove microplastics from the ecosystems. Greater understanding of potential threats and opportunities is required to produce sustainable Sargassum management and coastal conservation strategies.

There is much drive for governments and commercial entities to find a viable use for this readily available biomass. Studies indicate that Sargassum has biostimulant properties and that Sargassum compost could be used as a soil additive. Some companies are offering deep-sea sinking of Sargassum as a means of removal.

The presence of microplastics is a concern for the various ecosystems affected by the Sargassum. Microplastics could limit the use of this biomass in agriculture and soil conservancy, their presence should be explored and understood before potentially introducing ocean microplastics into agricultural soils. Deep-sea sinking of Sargassum could result in microplastics being introduced into the deep ocean, entering ecosystems and food chain. The presence and quantity of microplastics should be understood and a precautionary approach taken when creating policy and mitigation strategies.

Objective:

Quantify the presence of microplastics in Sargassum strandings at two different beaches on Virgin Gorda. One beach is cleaned of Sargassum bi-annually, the other has not had sargassum cleared for at least five years and large accumulations have built up and the bottom layers composted, giving an opportunity to assess the longer term vs shorter term impacts from Sargassum strandings. A third beach which does not accumulate Sargassum will be sampled for comparison.

Sample, analyse and document the presence of macro and microplastics in Sargassum, in all stages from initial beaching to compost, at three different beaches on Virgin Gorda. Take samples of beach sand below the Sargassum mounds at both locations and analyse for the presence of microplastics. Compare with control sample from beach not affected by Sargassum strandings. Take samples of seafloor sand / sediment from shallow waters, where Sargassum mats have sunk over sand in waters less than 1m deep, analyse for presence of microplastics and compare with other samples. Repeat sampling and analysis with fresh sargassum in new strandings on a monthly basis to compare for any seasonal variation in microplastics. Analyse results comparing samples and findings across the three different beaches.

Capacity Building:

The project will engage tertiary students to participate in collection and analysis of samples. The intention is to follow the methodology used by Aldana Arana et al 2003. Results can be compared with the findings of that study carried out in the northern Mexican Caribbean in 2023 and provide a repeatable template for future projects.

This project also seek to engage with three primary schools and one secondary school on Virgin Gorda, to provide educational workshops relating to marine litter and microplastics for students age 9 to 12. Projects from the workshops can be showcased across government departments to raise awareness throughout the territory.

Findings would be available as documents and presentations to government departments to contribute to Sargassum Management strategies.

## Q7b. Long-term sustainability (Guidance section 2.1 and 6)

**Please describe the long-term benefits of the project and the change it will bring about. How will the outcomes of the project be sustained after the funding is finished?**

Composting sargassum is being explored as a potential use of the biomass. There are concerns over Sargassum compost quality, specifically from the presence of contaminants such as plastics and arsenic which should be understood for future policy making. Commercial entities have already developed methods of sinking Sargassum into deep-ocean. Caribbean governments are being offered the services of such companies.

Provision of quantitative data on the abundance of microplastics in Sargassum will contribute to the wider dataset for the Caribbean Sea.

Data will assist decision makers and guide policy makers by providing greater understanding of the opportunities, threats and longer term, unintended or unforeseen impacts of making use of the Sargassum biomass.

Inclusion of students in research and analysis with encourage peer to peer learning, will connect with other academic institutes and projects in the region and will leave a template and methodology, creating a long-term, monitoring project which can be student led.

Introduction of marine litter workshops to schools on Virgin Gorda will raise awareness among younger people and would act as a pilot project for workshops to be repeated with future year groups.

**(Optional) Please upload any additional and supporting materials or files (such as maps of project sites, etc) below. Maximum of 5 sides of A4, and is combined as a single PDF:**

*No Response*

## Section 5 - Project Outcome(s)

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### Q8. Project Outcome(s) (Guidance section 1.2)

**Successful Darwin Plus Local projects must demonstrate measurable outcomes in at least one of the themes of Darwin Plus with a clear focus on biodiversity and the natural environment, either by the end of the project or soon after through a credible plan.**

**Please note: Any proposals including research or monitoring are required to demonstrate a clear link to tangible outcomes for conservation of biodiversity and the natural environment. Please explain how any new research will be applied to drive environmental outcomes on the ground.**

**Please confirm that your project has a clear focus on biodiversity and the natural environment.**

Checked **Biodiversity: improving and conserving biodiversity, and slowing or reversing biodiversity loss and degradation;**

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**Please tick which additional theme(s) of Darwin Plus your project contributes to (if relevant):**

Checked **Climate change: responding to, mitigating and adapting to climate change and its effects on the natural environment and local communities;**

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Checked **Environmental quality: improving the condition and protection of the natural environment**

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Checked **Capability and capacity building: enhancing the capacity within OTs, including through community engagement and awareness, to support the environment in the short- and long-term.**

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**Please justify your selection. Please use quantitative information where possible here.**

Sargassum has been negatively impacting the Caribbean since 2011, likely as a result of climate change. While this study will not prevent the influx of Sargassum, it will contribute toward further understanding of microplastic pollutants found in Sargassum, the impacts on biodiversity and ecosystems and to formulate an appropriate response to management of Sargassum which protects the environment in the long term. Engaging students in the research and making results available to government ministers builds capacity and assists decision makers regarding environmental and conservation issues in relation to Sargassum management policies.

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## Section 6 - Workplan

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### Q9. Workplan (Guidance section 2.2)

**Please provide anticipated dates for the start and end of your planned project here. Please use the Darwin Plus Local Project Workplan (available at: <https://darwinplus.org.uk/apply/local-applications/>) to provide a list of the individual activities you have planned for this project, a brief description of what each activity entails, and the months in which the activities will be carried out. If the project involves only one activity (e.g. a purchase), please still provide project start and end dates (noting estimated times for procurement). Please note that your project must start after 1 October 2024 and be completed by 31 March 2025.**

Start date:	End date:	Duration (e.g. 3 months):
01 October 2024	31 March 2025	6 months

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**Please upload the completed Darwin Plus Local Project Workplan with your proposed project activities here**

-  [R4 DPlus Local Implementation Timetable Template FINAL\(1\).\(1\)](#)
-  24/06/2024
-  18:06:12
-  docx 34.53 KB

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## Section 7 - Costs

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### Q10. Costs (Guidance section 2.2 and please read the Finance Guidance)

**Please provide a breakdown of costs to be funded through Darwin Plus Local (in GBP).**

**Are you seeking any matched funding for this project?**

⊙ No

Budget line	Explanation	Cost in GBP
<b>Staff costs:</b>	Project lead to source and prepare equipment and to undertake collection of initial and monthly samples 10 days Field Assistant employed to assist with sample collection 10 days Project lead to set up and co-ordinate students to analyse samples 15 days Preparation and schools workshop materials and content 5 days Delivery of schools workshops 3 days Schools workshop showcase 2 days Report writing 5 days	£ [REDACTED]
<b>Consultancy costs:</b>	One main consultant to advise on microplastic sampling, analysis, findings, learning materials and support throughout the project.	£ [REDACTED]
<b>Overhead costs:</b>	Lab items and incidentals Printing of educational resources, on Virgin Gorda, for school workshops and field trips	£ [REDACTED]
<b>Travel &amp; subsistence costs:</b>	none	£0.00
<b>Operating costs:</b>	Travel between Virgin Gorda and Tortola to access lab facilities \$ [REDACTED] days * \$ [REDACTED] = \$ [REDACTED] Travel to sites to collect samples \$ [REDACTED] Transporting initial samples to lab on Tortola (car barge) \$ [REDACTED]	£ [REDACTED]
<b>Capital equipment:</b>	sampling equipment \$ [REDACTED] soil core sampler \$ [REDACTED] PPE \$ [REDACTED]	£ [REDACTED]
<b>Other Costs</b>	contingency \$ [REDACTED] Shipping of samples to labs outside of BVI in the event that further analysis is required \$ [REDACTED]	£ [REDACTED]
<b>Total:</b>		17,320.89

**This section provides more information on the budget to help evaluators understand how you will use the funds you are requesting. You do not need to list all costs, but please list and detail costs of more than £1,000 per item below, under the appropriate budget line.**

**Details of staff costs over £1,000 (if relevant)**

Project Lead employed for 44 days to co-ordinate project, prepare and deliver schools workshops and write report.

Field Assistant employed for 10 days to assist with sample collection

**Details of overhead costs over £1,000 (if relevant):**

*No Response*



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**Details of travel and subsistence costs over £1,000 (if relevant):**

No Response

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**Details of operating costs over £1,000 (if relevant):**

No Response

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**Details of capital equipment costs over £1,000 (if relevant):**

No Response

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**Details of consultancy costs over £1,000 (if relevant):**

No Response

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**Details of other costs over £1,000 (if relevant)**

■ contingency for unforeseen expenses and to allow for variables and changes to cost estimates  
Contingency for shipping samples to labs in the event that further analysis is required as facilities are not available in the BVI.

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**If your project budget was prepared in another currency and converted to GBP, please provide the exchange rate, its source, and the date it was accessed:**

Other currency:	Exchange rate:	Source of this exchange rate:	Date exchange rate accessed:
USD	£1 = \$1.27	Wise Payments Ltd	24 June 2024

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**Darwin Plus Local has been created to build capacity and contribute to local economies in-territory.**

What % of the total will be spent in the OTs? ■

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**If less than 80% of the total project spend is to be spent within the OT(s), please explain why.**

No Response

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## Section 8 - Local and National Priorities

### Q11. Local and national priorities

**Please explain how this project aligns with local and national priorities? You may wish to consider the project in the context of national environmental laws, objectives, strategies, territory specific agreements, action plans or policies.**

This project aligns with projects currently being undertaken by the Caribbean Natural Resources Institute (CANARI) to develop greater understanding of and find solutions to the sargassum problem in the Caribbean.

Within the BVI this project sits within the Virgin Islands Climate Change Adaptation Policy and Virgin Islands Climate Change Programme.

In 2022 the BVI Government introduced the new BVI Food Security and Sustainability Act, understanding the threats and opportunities of using Sargassum as a soil additive is a current topic within Government and the community.

The project would contribute toward UN Sustainable Development Goals 4, 12, 14 and 15.

**Will the project take place on Government owned land or water or involve biocontrol, invasive alien species control or eradication?**

No

## Section 9 - Project Risks

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### Q12. Project Risks

**Please demonstrate your consideration of any risks involved in this project and how you intend to manage them. Please note the importance of health and safety and environmental risk assessment in the design of your project. If there is any possibility that your project may have negative impacts on the environment or human health, it is important that you provide a comprehensive analysis of potential environmental and human health risks, and the prevention measures you will take to ensure the work does not cause harm.**

**Depending on your project, you may wish to consider:**

- Biosecurity risks – particularly for projects involving external equipment.
- Safeguarding risks – particularly for projects involving vulnerable groups such as children, older people or people with disabilities.

Risk	Mitigation
Health risks associated with handling Sargassum and ocean plastics	PPE to be worn during field and lab activities
Health and safety at laboratory	HLSCC Health and Safety Policy and lab rules to be followed
<i>No Response</i>	<i>No Response</i>

**Do you require more fields?**

No

## Section 10 - Terms & Conditions

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### Q12. Terms and conditions (Guidance section 3.10)

**By applying for Darwin Plus Local you are adhering in full to the grant Terms and Conditions in full (available at: [Darwin Plus website](#) and as referenced in the Guidance at section 3.10). For information, the Terms and Conditions include requirements for all applicants to (amongst other requirements as per the full Terms and Conditions):**

- Uphold a zero tolerance for inaction approach to tackling sexual exploitation, abuse, and harassment.

- Where appropriate, make all reasonable and adequate efforts to address gender inequality and other power imbalances.
- Notify all cases of fraud and theft (whether proven or suspected) relating to the project to the Grant Administrator as soon as they identified.

**Please indicate you have read, and understood, and will adhere to the Terms and Conditions.**

Checked

**Supporting documents list (please have these ready to attach with application)**

- Cover Letter of no more than two A4 pages. (Guidance section: 4.2 has information on what this cover letter should include).
- If the project takes place on public land or water or is addressing invasive alien species, a Letter of support from OT Government.
- Project Workplan in the template provided for Darwin Plus Local (available at: <https://darwinplus.org.uk/apply/local-applications/>).
- Map and additional information (optional) maximum five additional pages.

**If your application is successful**

If your project application is successful, the Fund Administrator (NIRAS) will ask you to provide some financial evidence for due diligence checks before you receive your project grant. (Please see section 3.3 of the Darwin Plus Local Finance Guidance). Please be ready to provide this evidence promptly.

- **Financial evidence for organisations:** Year-end financial statements, the latest management accounts or audited accounts (if you have these).
- **Financial evidence for individuals:** Proof of identity such as a passport, ID card or driving licence and solvency (such as bank statements) and a police check.

## Section 11 - Certification

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### Certification

**I certify that, to the best of my knowledge and belief, the statements made in this application are true and the information provided is correct.**

Checked

**I have the authority to submit an application on behalf of my organisation.**

Checked

**Name:** Jenni Kneale

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**Position in the organisation: (if applicable)** *No Response*

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**Signature (please upload e-signature)**  [1000001890](#)  
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Date: 24 June 2024

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## Section 12 - Submission Checklist

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### Checklist for submission

	Check
I have read the Guidance documents, including the "Darwin Plus Local Guidance" and the "Darwin Plus Local Finance Guidance".	Checked
If my proposed project takes place on public lands or water or is addressing alien invasive species, I have uploaded a Letter of Support from Government.	Unchecked
I have uploaded a cover letter that details the information requested in the guidance (Guidance section 4.2 has information on what this cover letter should include).	Checked
I have read, and can meet, the current Terms and Conditions for this fund (found at: <a href="https://darwinplus.org.uk/apply/local-applications/">https://darwinplus.org.uk/apply/local-applications/</a> ) for this fund.	Checked
I have provided actual start and end dates for my project that fit this Round.	Checked
I have provided my summary budget based on UK government financial years i.e. 1 April – 31 March and in GBP in the application form.	Checked
I have uploaded my project workplan using the specific template provided (available at: <a href="https://darwinplus.org.uk/apply/local-applications/">https://darwinplus.org.uk/apply/local-applications/</a> ).	Checked
I have uploaded all supplementary documents if I have any.	Unchecked
(If copying and pasting into Flexi-Grant) I have checked that all my responses have been successfully copied into the online application form.	Unchecked
The application has been signed by a suitably authorised individual (clear electronic or scanned signatures are acceptable).	Checked
I have checked the Darwin Plus website immediately prior to submission to ensure there are no late updates.	Checked
I have read and understood the Privacy Notice on the Darwin Plus website.	Checked

### We would like to keep in touch!

Please check this box if you would be happy for the lead applicant (Flexi-Grant Account Holder) and project leader (if different) to be added to our mailing list. Through our mailing list we share updates on upcoming and current application rounds under Darwin Plus. We also provide occasional updates on other UK Government activities related to biodiversity conservation and share project news. You are free to unsubscribe at any time.

Checked

### Data protection and use of personal data

Information supplied in the application form, including personal data, will be used by Defra as set out in the **Privacy Notice**, available from the [Forms and Guidance Portal](#).

This **Privacy Notice must be provided to all individuals** whose personal data is supplied in the application form. Some information may be used when publicising Darwin Plus including project details (usually title, lead partner, project leader, location, and total grant value).

Project Title:

## Darwin Plus Local

Provide a **Project Implementation Timetable** that shows the key milestones in project activities. Complete the following table as appropriate to describe the intended workplan for your project. Round 4 is for a **maximum of 6 months** with activities starting from 1 October 2024. All activities must be completed by 31 March 2025.

Please add/remove columns to reflect the length of your project. For each activity (add/remove rows as appropriate) indicate the number of months it will last, and shade only the months in which an activity will be carried out. The workplan can span multiple pages if necessary.

Activity #	Description (max 25 words)	No. of months	UK Financial Year 2024/25					
			Calendar Year 2024			Calendar Year 2025		
			Oct	Nov	Dec	Jan	Feb	Mar
1	Collect initial sample sets from 3 beaches	1	x					
2	Co-ordinate students from HLSCC	6	x	x	x	x	x	x
3	Analysis of initial samples	1	x	x	x			
4	Collection of monthly samples	6	x	x	x	x	x	x
5	Analysis of monthly samples	6	x	x	x	x	x	x
6	Prep and delivery of schools workshops	2				x	x	
7	Co-ordination of school workshops project – showcasing work at HLSCC and between Government departments	1					x	x
8	Report writing and presentation for government departments	1						x
9	Handover resources / teacher training in schools for continuation of workshops for future school groups	1					x	