Applicant: **Bartlett, Debbie**
Organisation: **University of Greenwich**
Funding Sought: **£94,618.00**

DPR7P\100059

Sustainable solutions for Sargassum inundations in Turks & Caicos

PRIMARY APPLICANT DETAILS

Title	Dr
Name	Debbie
Surname	Bartlett
Tel (Work)	
Email (Work)	
Address	

Section 1 - Contact Details

PRIMARY APPLICANT DETAILS

Title	Dr
Name	Debbie
Surname	Bartlett
Tel (Work)	
Email (Work)	
Address	

GMS ORGANISATION

Type	Organisation
Name	University of Greenwich=
Phone (Work)	
Email (Work)	
Website (Work)	
Address	

Q3. Lead organisation type

Please select one of the below options.

- ⊙ Other (e.g. Academic)

Section 2 - Title, Dates & Budget Summary

Q4. Project title

Sustainable solutions for Sargassum inundations in Turks & Caicos

Q5. Project dates

Start date:	End date:	Duration (e.g. 2 years, 3 months):
01 April 2019	31 March 2020	2 Years

Q6. UKOT(s)

(See Guidance Notes)

Which UK Overseas Territory(ies) will your project be working in? You may select more than one UKOT from the options below.

☑ Turks & Caicos Islands (TCI)

*** 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 UKOTs you have indicated above, will your project directly benefit any other country(ies)? If so, list here.

The outputs will be transferable to other OTs with Sargassum innundation

Q7. Budget summary

Year:	2019/20	2020/21	2021/22	Total request
Q7a. Request from Darwin:	£50,659.00	£43,959.00	£0.00	**£** 94,618.00

Q7b. Proposed (confirmed and unconfirmed) co-financing as % of total project cost	34

Section 3 - Lead Organisation Summary

Q8. Lead organisation summary

Please provide the following information on the lead organisation

What year was your organisation established/ incorporated/ registered?	1894
What is the legal status of your organisation?	⊙ University
How is your organisation currently funded?	The University of Greenwich receives income from diverse sources: students, businesses, government, charities, and from both domestic and international sources
Have you provided the requested signed audited/independently examined accounts? If you select "yes" you will be able to upload these. Note that this is not required from Government Agencies.	⊙ Yes

Please attach the requested signed audited/independently examined accounts.

The limit for any single file uploaded as supporting materials with your application is 6MB. Please ensure documents are saved in PDF form where possible in order to minimise size.

Financial Accounts Combined
03/09/2018
09:43:10
pdf 3.85 MB

Q9. Has your organisation been awarded Darwin Initiative funding before (for the purposes of this question, being a partner does not count)?

⊙ Yes

If yes, please provide details of the most recent awards (up to 6 examples)

Reference no.	Project leader	Title
19018	Dr Jeremy Haggar	Agroforests: a critical resource for sustaining megadiversity in Guatemala
No Response	*No Response*	*No Response*
No Response	*No Response*	*No Response*
No Response	*No Response*	*No Response*
No Response	*No Response*	*No Response*
No Response	*No Response*	*No Response*

Section 4 - Project Partners

Q10. Project partners

Please list all the partners involved (including the Lead Organisation) and explain their roles and responsibilities in the project. Describe the extent of their involvement at all stages, including project development. This section should illustrate the capacity of partners to be involved in the project, and how local institutions, local communities, and technical specialists are involved as appropriate.

Please provide written evidence of partnerships. Please add fields for more partnerships, if required. Details on roles and responsibilities in this project must be given for the Lead Organisation and all project partners.

N.B. There is a file upload button at the bottom of this page for the upload of all letters of support.

Lead Organisation name:	University of Greenwich
Details (including roles and responsibilities and capacity to engage with the project):	Dr Debbie Bartlett and Dr John Milledge have been involved in development of this project since initial contact from by the Turks & Caicos Government in January 2018. Dr Debbie Bartlett will lead the project liaising with in-country partners and supervising post-graduate students. She is an experienced landscape manager and ecologist with a strong track record, of participatory ecosystem service assessment and invasive species management. While sargassum is native it could be argued that the apparent super-abundance is equivalent to invasion and this term has been used with respect to the drift on Caribbean beaches. Recent research has included developing sustainable solutions to the invasive Prosopis juliflora in northern India providing both livelihood and biodiversity benefits. She will oversee the ecological appraisal and ecosystem service assessment ensuring in-country capacity and be responsible for report production and ensuring stakeholder participation as well as providing ecological expertise. Dr John Milledge will conduct the characterisation of the Sargassum spp and will produce a technical report on the potential for exploitation. He has over ten years experience of assessing macro algae, is a member of the Algal Biotechnology Group and has published many peer reviewed papers in this research area.
Have you included a Letter of Support from this organisation?	⊙ Yes

Do you have partners involved in the Project?

⊙ Yes

The limit for any single file uploaded as supporting materials with your application is 6MB. Please ensure documents are saved in PDF form where possible in order to minimise size.

1. Partner Name:	Department of Environment and Coastal Resources (DECR) Ministry of Tourism, Environment, Heritage, Maritime and Gaming (MTEHMG) Turks and Caicos Islands Government
Website address:	https://www.gov.tc/
Details (including roles and responsibilities and capacity to engage with the project):	The Turks and Caicos Island Government (TCIG) Department of Environment and Coastal Resources have put together a team consisting of seven officers, spread across the different islands, to deliver this project on the ground. The team members, with their respective roles are listed and CVs demonstrating competence have been provided. The TCIG team have local experience and capacity to conduct the fieldwork necessary to provide information for the impact assessment and have strong links with local communities that will enable then to engage stakeholders, including teachers, students and citizen scientists, to engage in long term coastal survey and monitoring activities. The project will be overseen at the highest level by Lormeka Williams, Acting Director, with day to day supervision of activities the responsibility of Dr Eric Salamanca, Deputy Director. It is the latter who will be responsible for liaising directly with the PI and producing quarterly reports of progress including evidence to draw down budget as appropriate.
Have you included a Letter of Support from this organisation?	⊙ Yes

Do you have more than one partner involved in the Project?

⊙ Yes

2. Partner Name:	CIEEM UK Overseas Territories Special Interest Group
Website address:	https://www.cieem.net/uk-overseas-territories

Details (including roles and responsibilities and capacity to engage with the project):	Mike Barker, Chair of the CIEEM UKOT Special Interest Group (OTSIG) and Director of Ecology at RPS Group, a leading environmental consultancy, has confirmed involvement, on behalf of the group, in this proposal. The UTSIG is committed to promoting the excellent environmental work going on in the UKOTs and providing a forum for the discussion of that work. The support offered is as part of our function as a hub for dissemination of knowledge between the OTs and would comprise: 1. Introductions to key local contacts – our committee members have strong links to the OTs including the T&C Islands, including key organisations and individuals; 2. Provision of technical support and advice during the project and on site during the two planned site visits in 2019 and 2020; 3. Dissemination of outcomes across the CIEEM OTSIG Webinar sessions and other means where appropriate. This value of this in kind contribution is £10,725. See the website for full details and names of committee members who all Ecologists and/or Environmental Managers with an active professional interest in the Overseas Territories.
Have you included a Letter of Support from this organisation?	⊙ Yes

3. Partner Name:	The School for Field Studies, Centre for Marine Resource Studies, South Caicos
Website address:	www.fieldstudies.org

Details (including roles and responsibilities and capacity to engage with the project):	Dr Heidi Hertler is Centre Director, The School for Field Studies, Centre for Marine Resource Studies, South Caicos, Turks and Caicos Islands British West Indies. With an impressive background in environmental research and in delivery of University level fieldwork programmes she and her staff are ideally placed to assist this project. This will be done by engaging students in an comprehensive programme of fieldwork based on investigating the shoreline drift on the Turks and Caicos Islands. Carrying out a project in the early stage of the project will inform later stages by providing fundamental data on the composition of the shoreline drift. Currently the assumption is that 'golden tides' are composed principally of Sargassum and, while this is likely to be the case the extent to which other macroalgae and other material such as plastic waste are also present has not been determined. This is likely to involve 3 weeks of staff time and this, in addition to accommodation for visiting researchers, is offered as in kind match funding to the project.
Have you included a Letter of Support from this organisation?	⊙ Yes

4. Partner Name:	*No Response*
Website address:	*No Response*
Details (including roles and responsibilities and capacity to engage with the project):	*No Response*
Have you included a Letter of Support from this organisation?	○ Yes ○ No

5. Partner Name:	*No Response*
Website address:	*No Response*
Details (including roles and responsibilities and capacity to engage with the project):	*No Response*
Have you included a Letter of Support from this organisation?	○ Yes ○ No

6. Partner Name:	*No Response*
Website address:	*No Response*
Details (including roles and responsibilities and capacity to engage with the project):	*No Response*
Have you included a Letter of Support from this organisation?	○ Yes ○ No

If you require more space to enter details regarding Partners involved in the Project, please use the text field below.

No Response

Please provide letters of support from the lead organisation and all partners as a combined PDF.

Letters of support
03/09/2018
12:29:37
pdf 226.7 KB

Section 5 - Project Staff

Q11. Project staff

Please identify the core staff on this project, their role and what % of their time they will be working on the project.

These should match the names and roles in the budget spreadsheet.

Please provide 1 page CVs for these staff.

Name (First name, Surname)	Role	% time on project	CV attached below?
Dr Debbie Bartlett	**Project Leader**	10%	Checked
Dr John J Milledge	Research Scientist responsible for characterisation of macro-algae	5%	Checked
Lormeka Williams	TCIG Project Oversight	3%	Checked
Dr Eric Salamanca	TCIG Project oversight/ lead partner; fieldwork	5%	Checked

Do you require more fields?

⊙ Yes

Name (First name, Surname)	Role	% time on project	CV attached below?
Kathy Lockhart	TCIG Technical lead; sampling, education, etc. (South Caicos)	10	Checked
Alexander “Roddy” McLeod	TCIG field work, sampling, education, etc. (Providenciales & West Caicos)	5	Checked
Bryan Manco	TCIG field work, sampling, education, etc. (North-Middle Caicos)	5	Checked
Amy Avenant	TCIG Awareness and Education	3	Checked
Environmental Officer (Grand Turk)	TCIG field work, sampling, education, etc in Grand Turk	5	Checked
Dr Heidi Hertler	Fieldwork project lead for initial drift assessment; development of educational resources	4	Checked
Mike Barker	Consultant technical support	0.5	Checked
No Response	*No Response*	*No Response*	Unchecked

Please provide 1 page CVs (or job description if yet to be recruited) for the Project staff listed above as a combined PDF. Ensure CVs clearly correspond to the named individual and role above.

The limit for any single file uploaded as supporting materials with your application is 6MB. Please ensure documents are saved in PDF form where possible in order to minimise size.

1 page CVs
03/09/2018
12:34:23
pdf 586.87 KB

Have you attached all Project staff CVs?

⊙ Yes

Section 6 - Background & Methodology

Q12. Summary of Project

Please provide a brief summary of your project, its aims, and the key activities you to undertake. Please note that if you are successful, this wording may be used by Defra in communications e.g. as a

short description of the project on GOV.UK. Please bear this in mind, and write this summary for a non-technical audience.

Sargassum drift on the beaches of Turks & Caicos is detrimental to the tourist-based economy.

This investigation of the issue will involve students/citizen scientists in assessing the extent and composition of macroalgae on the shoreline contributing to finding a solution while promoting biodiversity/environmental awareness.

The feasibility for exploiting the macroalgae, specifically the potential for anaerobic digestion for biogas and composting as an alternative to disposal as waste will be explored; this could reduce current dependence on oil as a fuel.

Q13. Background

What is the current situation and the problem that the project will address? How will it address this problem? What key OT Government priorities and themes will it address?

The Turks and Caicos Island Government recognises the Sargassum invasion and negative impacts on tourism – the most economically important industry – fishing and socio-economic development. Several stakeholder meetings have been held on this issue with consensus sustainable management is needed.

The Environment Charter (2001) policy #7 is "to safeguard and restore native species, habitats and landscape features, and control or eradicate invasive species", As Sargassum is considered an invasive species threatening the biodiversity and sustainability of the TCI marine environment, potential solutions are required. This is reinforced by the National Tourism Strategy and Policy (2015), acknowledges that natural environment protection must be at the core tourism development.

Turks and Caicos is almost 100% reliant on imported fossil fuel, leaving it vulnerable to global oil price fluctuations. Processing Sargassum for energy generation is consistent with TCI Energy Policy (draft, 2017) to "promote the implementation of economically viable renewable energy, ……. that will reduce the TCI's dependency on imported fossil fuels. It further states that greater use of economically viable renewable energy technologies that would stabilize the cost of electricity service in the TCI, and increase sustainability".

Q14. Methodology

Describe the methods and approach you will use to achieve your intended Outcome and Impact. Provide information on how you will undertake the work (materials and methods) and how you will manage the work (roles and responsibilities, project management tools etc). Give details of any innovative techniques or methods.

The vision is that:
The detrimental impacts currently experienced by the tourism sector will be alleviated, students will have engaged in STEM activities and the potential for macro-algae as a biomass fuel evaluated to contribute to the long- term goal that macro-algae beach deposits have been assessed from environmental and socio-economic perspectives and viable, sustainable, management strategies benefiting the natural environment and reducing dependence on oil are implemented.

This innovative, integrated approach involves a strong partnership of governmental, academic and professional bodies in finding a solution from an ecological as well as a socio-economic perspective. The impact on tourism and fishing economies is established but little is known about the environmental effects

the methods we will use to address this follow.

Capacity building: There are some basic questions that are fundamental to the project, such as how much macro-algae is arriving, on which islands, are there seasonal patterns, is it composed principally of Sargassum and what other organisms are affected, either positively or negatively? The study area is composed of different islands and the Turks and Caicos Island Government (TCIG) has committed officers with responsibilities for these, to work with the School for Field Studies (SFS) and the University of Greenwich team (TG) to carry out a scoping exercise on the first visit resulting in method to answer these questions (likely to include development of data capture sheets; workshops, piloting, documented by TG).

Field work: this will be conducted on each island with TCIG officers/SFS reporting progress to the TCIG lead oversight Eric Salamanca who will collate and liaise with TG. It is likely that local naturalists and/or environmental specialists will be asked to contribute expertise regarding species identification and the OTSIG members are likely to contribute to this activity.

Education/awareness raising: TCIG officers/SFS will engage local contacts in fieldwork with view to ensuring ongoing shoreline monitoring. Information generated during fieldwork will inform development of educational materials to raise awareness of shoreline ecology and wildlife, environmental and socio-economic issues, ecosystem services and the importance of managing natural capital of island coasts (lead Amy Avenant TCIG with Heidi Hertler SFS; oversight Eric Salamanca). While acknowledging local distinctiveness the intention for materials to be transferable across the OTs. TG postgraduate students will contribute literature research.

Technical research: TG/TCIG will develop a sampling protocol and strategy to enable collection and despatch of macro-algae to the TG labs for characterisation. These samples will be analysed to potential for commercial exploitation as feedstock for anaerobic digestion for energy production.

Report production:
• A draft ecosystem service/Ecological Impact Assessment report/risk register identifying locations/species affected and consequences of macro-algae deposition/removal will be prepared by TG and a consultation workshop, hosted by TCIG , used for participation of stakeholders.
• TG (John Milledge) will submit a report on macro-algae commercial exploitation potential to TCIG and submit a journal paper.

Dissemination: The combined results of this project will be disseminated across the OTs experiencing 'golden tides' via the OTSIG and OT Government networks as well as published reports.

If necessary, please provide supporting documentation e.g. maps, diagrams etc., using the File Upload below.

The limit for any single file uploaded as supporting materials with your application is 6MB. Please ensure documents are saved in PDF form where possible in order to minimise size.

No Response

Section 7 - Objectives, Stakeholders & Sustainability

Q15. Project Objectives

How does this project:

- **Deliver against the priority issues identified in the assessment criteria**
- **Demonstrate technical excellence in its delivery**
- **Demonstrate a clear pathway to impact in the OT(s)**

This project, instigated by the Turks and Caicos Government, in an approach to the University of Greenwich regarding 'golden-tides', January 2018. The theme is the need for sustainable management of the super-abundant, arguably invasive, macro-algae (seaweed) currently affecting beach tourism estimated as contributing over 80% of GDP in the British West Indies. Tourists are reportedly avoiding affected resorts(1) referred to as "an international crisis" and "the greatest single threat" to the Caribbean (2;3).

Currently the macro-algae washed onto the shore is treated as waste, managed by removal and disposal to landfill (4). Removal from Caribbean beaches is estimated at US$ 120 million but, as neither cause or seasonal pattern is understood no 'one off' clean up would have lasting impact.

It has been suggested Sargassum, that is also affecting coastal wetlands, could be a suitable biomass for fuel and other products (5). As Turks and Caicos is virtually 100% oil dependant this could significantly contribute to climate change mitigation (SDG7) as well as improving beaches. There is no technical expertise or specialist laboratories to carryout chemical profiling and characterisation to evaluate this on T&C so partnering with the University of Greenwich is essential. If successful this could be "game-changing" and transferable to other islands affected by golden-tides,

The UofG, in collaboration with the OTSIG contribute technical expertise in investigating ecological/environmental issues around the 'golden-tides' as understanding the consequences of increase in drift and removal is fundamental to any management strategy. Local partners, the TCIG officers with the School for Field Studies (SFS) will carry out surveys to determine the drift components and seasonality. This will be extended, with workshops and production of field guides to raise awareness of strandline ecology and management, providing a focus for incorporating SDG14 and 15 into the curriculum, as well as gathering important data to contribute to the ecosystem services and natural capital assessment of the beach/shoreline area.

Constructive skill sharing and capacity building among partners will contribute to embedding good environmental decision-making in UKOT policies and processes. The TCI is not a CBD signatory so is not required to prepare a Biodiversity Action Plan a Bill on Wildlife and Biodiversity Protection is currently being drafted.

These aspects are particularly important to ensure lasting impact as characterisation of Sargassum may reveal it is unsuitable as a feedstock and so formulation of an alternative management strategy may be required.

1. Anon, Caribbean-bound tourists cancel holidays due to foul-smelling seaweed, in The Guardian. 2015, The Guardian: London.
2. Beckles, H., Greetings from the Vice-Chancellor, in Sargassum Symposium. 2015: UWI, Cave Hill.
3. Khan, A., Region needs US$120m to fight seaweed, in Trinidad Daily Express. 2015, Trinidad Express Newspapers.
4. Turks and Caicos, The TCIG Has An Important Message About the Seaweed ed 2018 29 Jan];
5. Milledge, J.J. and P. Harvey, Golden Tides: Problem or Golden Opportunity? The Valorisation of Sargassum from Beach Inundations. Journal of Marine Science and Engineering, 2016. 4(3): p. 60.

Q16. Project Stakeholders

Who are the stakeholders for this project and how have they been consulted (include local or host government support/engagement where relevant)? Briefly describe what support they will provide and how the project will engage with them.

The Turks and Caicos Island Government (TCIG) are full partners in this project and have been fully consulted about all aspects of this proposal. They have recognized the problems of Sargassum invasion and its impact of tourism, the fishing industry and socio-economic development in general.

The TCIG has conducted several stakeholder meetings with representatives of these groups to discuss this issue and has established consensus that a long-term sustainable strategy for managing Sargassum is needed. To this end the TCIG have committed to provide staff time to ensure the success of this project.

The UK Overseas Territories are vitally important for biodiversity with 74 critically endangered and 49 endangered species (compared to 10 and 12 respectively in mainland UK) and 117 vulnerable species (37 in the mainland UK). The Chartered Institute of Ecologists and Environmental Managers (CIEEM), represents and supports ecologists and environmental managers and has an Overseas Territories Special Interest Group. The chair has committed to provide technical support and advice for this project as well as introductions to key local contacts and play an active role in dissemination of outcomes across the established network of professionals across the Overseas Territories.

The Center for Marine Resource Studies, on South Caicos are partners in this proposal and have committed to engaging students in fieldwork to help gather more information about the shoreline ecology and to engage in develop and implement a local program to include local school teachers and students

All the above is evidenced in letters of support attached.

Q17. Institutional Capacity

Describe the lead organisation's capacity (and that of partner organisations where relevant) to deliver the project.

The University of Greenwich (UofG), as lead organisation, has a very strong track record in the successful management and delivery of international collaborative partnership projects, particularly in the environmental sector. There are robust financial reporting and line management procedures in place to ensure projects are monitored and evaluated appropriately and that value for investment is ensured for both partners and funding organisations.

The UofG staff involved in this proposal are of high calibre, experts in their respective fields and with strong publication records demonstrating their research ability.

Dr Debbie Bartlett is an experienced PI, a Chartered Landscape Architect and Ecologist with over 30 years' experience in environmental education and her commitment to involving stakeholders in land-use planning and decision making is evidenced in many publications. Recent research has focused specifically on invasive species and she is a member of the IUCN Commission on Ecosystem Management and a recent project in India involved engaging with local people and, as a result, turning the problem of invasive Prosopis juliflora in north west India into a solution by introducing the technique of hedge laying to mitigate for the lack of field enclosure that was enabling protected wildlife to predate agricultural crops. Her professional links have facilitated the contribution of technical support from the Overseas Territories Special Interest Group, a network of ecologists and environmental managers working in this area, a valuable additional source of technical expertise as well as a route for dissemination.

Dr John Milledge is an experienced researcher who has been working on the exploitation of seaweed for

biorefining for high-value biochemicals, nutraceuticals and fuel (particularly biogas) for over ten years. He is part of the prominent UofG Algal Biotechnology group with excellent, state of the art, laboratories for conducting characterisation of algae and conducting feasibility studies to assess potential for biogas production and/or composting.

The Turks and Caicos Island Government have an existing network of technical officers, under the leadership of Dr Eric Salamanca, Deputy Director of the Department for Environment and Coastal Resources. These have the capacity to carry out the necessary field work and have strong local community links that can be accessed to ensure that the impact of the environmental awareness raising aspects of this proposal continue beyond the funded period

The involvement of the School for Field Studies, Centre for Marine Resource Studies, provides a valuable contribution in terms of local ecological/environmental expertise and educational experience. This will enhance the capacity to engage directly with local educational establishments as well as to supervise visiting students in carrying out surveys.

Q18. Sustainability

How will the project ensure benefits are sustained after the project has come to a close? If the project requires ongoing maintenance or monitoring, who will do this and how will it be funded?

If this project establishes that the macroalgal drift is a suitable feedstock for biogas generation and/or composting, sufficient arrives on the beaches to make this commercially viable and – importantly – there are no adverse ecological impacts of removal, this could enable development of a long-term management strategy. This could be rolled out and reducing emissions and contributing to climate change mitigation strategies not only in Turks and Caicos but across the BOTs and potential to other affected beaches in the region. There would be associated job creation opportunities and reduction of the material being disposed to landfill.

The environmental education strategy is planned to engage schools/colleges in 'education for sustainability', STEM activities and facilitate curriculum incorporation of SDGs 14 and 15s to engender social responsibility. Engaging local naturalists and citizen scientists in shore search and survey activities, initially contributing to this project will enable long-term monitoring feeding into CTIG island-based officers and enabling identification of any change in deposition pattern. The identification guides and leaflets will encourage similar initiatives on other BOT islands.

The capacity building activities, with expertise shared across the partnership will have long-term benefits for all involved and may enable further collaboration in the future

Section 8 - Funding and Budget

Q19. Budget

Please complete the appropriate Excel spreadsheet, which provides the Budget for this application. Some of the questions earlier and below refer to the information in this spreadsheet. Note that there are different templates for projects requesting over and under £100,000 Darwin Plus budget

- **R7 D+ Budget form for projects under £100,000**
- **R7 D+ Budget form for projects over £100,000**

Please refer to the Finance Guidance for Darwin and IWT for more information.

N.B.: Please state all costs by financial year (1 April to 31 March) and in GBP. Budgets submitted in other currencies will not be accepted. Use current prices – and include anticipated inflation, as appropriate, up to 3% per annum. The Darwin Initiative cannot agree any increase in grants once awarded.

Darwin-plus-round7-budget-under-100k
03/09/2018
12:07:39
xls 59 KB

Q20. Co-financing

Are you proposing co-financing?

Yes

Secured

Provide details of all funding successfully levered (and identified in the Budget) towards the costs of the project, including any income from other public bodies, private sponsorship, donations, trusts, fees or trading activity, as well as any your own organisation(s) will be committing.

(See "Finance for Darwin & IWT" and the "Guidance for Applicants" documents)

Co-financing is based on match funding/in kind contribution from the following sources evidenced in letters of support.

The CIEEM Overseas Territories Special Interest Group (OTSIG) have pledged support equivalent to £10,750 with respect to:
• Introductions to key local contacts including key organisations and individuals;
• Technical support and advice during the project and on site during two visits;
• Dissemination of outcomes across the OTSIG members.

The Turks and Caicos Island Government has committed in-kind contribution of time, use of DECR vehicles,= conference/meeting rooms and other facilities calculated as equivalent to $X

The School for Field Studies has committed provision of food and lodging to groups of up to 4 visiting= researchers and local transportation calculated at approximately $X per person per day (£X).
SFS-CMRS faculty will develop and implement a local program to include local school teachers and students,= dedicating three weeks faculty and staff time as in kind support, with field work carried out by SFS-CMRS= faculty and students as appropriate (no cost available).

The University of Greenwich are not charging full overheads but consider these as a contribution in kind.£X

Calculations based on US $ 1 = £ 0.779377 GBP

Unsecured

Provide details of any co-financing where an application has been submitted, or that you intend applying for during the course of the project. This could include co-financing from the private sector, charitable organisations or other public sector schemes.

Date applied for	Donor Organisation	Amount	Currency code	Comments
No Response	*No Response*	*No Response*	*No Response*	*No Response*
No Response	*No Response*	*No Response*	*No Response*	*No Response*
No Response	*No Response*	*No Response*	*No Response*	*No Response*
No Response	*No Response*	*No Response*	*No Response*	*No Response*

Please give brief details including when you expect to hear the result. Please ensure you include the figures requested in the Budget Spreadsheet as Unconfirmed funding.

Not applicable

Do you require more fields?

⊙ No

Section 9 - Financial Controls, Value for Money & Open Access

Q21. Financial Controls

Please demonstrate your capacity to manage the level of funds you are requesting. Who is responsible for managing the funds? What experience do they have? What arrangements are in place for auditing expenditure?

The University of Greenwich has significant experience in the management and reporting controls required by funders of European and other grant projects.

The Finance Administrator allocates a unique fund code for each project to ring fence all income and expenditure and is responsible for the financial management of claims. Key dates are entered onto the finance grant register and manual diary system.

Designated staff in each faculty raise/approve purchase orders via the e-procurement system Parabilis. Original invoices are passed to the payments office to action and held on file for audit.

The Finance Administrator will check the salary data, timesheets, calculate hourly rates, ensure all costs are eligible and within budget and will prepare the claim, keeping all supporting evidence on file for audit. The systems used include: ORACLE (Banner), Business Objects reporting tool and excel spreadsheets. All claims are approved by the Assistant Director of Finance.

Q22. Financial Management Risk

Explain how you have considered the risks and threats that may be relevant to the success of this project, including the risks of fraud or bribery.

The University of Greenwich has a strict Anti-Bribery Policy which sets out the University's approach to preventing incidents of bribery and corruption and is designed to comply with the relevant United Kingdom legislation (The Bribery Act 2010); the legislation is applicable wherever in the world the incident takes place and thus affects all University activities. All staff, students and others acting on the University's behalf are responsible for complying with the relevant legislation, the terms of this Policy and associated procedures. They must all identify the risk of bribery and consider the duty to make appropriate disclosures in reporting instances of bribery as necessary.

The University's Counter-Fraud Policy, required by the HEFCE Memorandum of Assurance and Accountability takes account of the best practice guidance from the CIPFA Red Book 2: Managing the Risk of Fraud with emphasis placed on a culture of zero tolerance to fraud, measures for deterring preventing and detecting fraud and where all suspected frauds are investigated, and the necessary sanctions imposed where fraud is proven.

Payments to partner organisation will be made quarterly and will require submission of a quarterly report of activities and expenditure (see Q28)

Q23. Value for money

Please explain how you worked out your budget and how you will provide value for money through managing a cost effective and efficient project. You should also discuss any significant assumptions you have made when working out your budget.

The level of co-finance this project has attracted is evidence of the interest of the partners in the topic and of value for money. Two of the four partners are not requesting any funding but contributing all of their input as in kind match funding.

The lead organisation time costs have been kept to a minimum. The PIs involvement in supervision of two MSc research projects is effectively a contribution in kind although there are significant travel costs, as well as sufficient time for monitoring, evaluation and technical input included. Laboratory costs for the characterisation are at base rather than consultancy rate.

The strategy of involving students and citizen scientists in the fieldwork survey and monitoring elements has enabled staff costs to be reduced as well as contributing to the aim of raising awareness of the importance of the coastal environment and associated ecosystem services.

The outputs from this project, the feasibility for commercial exploitation of macro-algae, the educational materials and institutional/community capacity building are all readily transferable to other Overseas Territories

Q24. Outputs of the project and Open Access

All outputs from Darwin Plus projects should be made available on-line and free to users whenever possible. Please outline how you will achieve this and detail any specific costs you are seeking from Darwin Plus to fund this.

Technical information, the results of the chemical characterisation of the Sargassum, based on samples analysed, and an evaluation of the potential of this material as a feedstock for anaerobic digestion will be made available as an electronic report and published as a journal paper. It is not possible to predict the outcome so difficult to identify the most appropriate publication but previous work, was published in the Journal of Marine Science and Engineering, (Milledge, J.J. and P. Harvey, Golden Tides: Problem or Golden Opportunity? The Valorisation of Sargassum from Beach Inundations. 2016. 4(3): p. 60) which has an open

access fee of £X

The match funding contribution from the Overseas Territories Special Interest Group includes three days to contribute to dissemination, including the organisation and delivery of a CIEEM OTSIG webinar. This will be= available on line after delivery and this group, an active network across the Overseas Territories, will= continue to disseminate information across their contacts as appropriate. No costs requested in the= budget.

This proposal includes the development of educational materials, with assistance in development offered= by the Centre for Marine Resource Studies, with cost of production included in the TCIG budget (£X).=These will be made freely available, in print and electronically to education/citizen science/environmental=groups across the OTs.

Q25. Safeguarding

See Guidance Note 3.7

Projects funded through Darwin Plus must fully protect vulnerable people all of the time, wherever they work. In order to provide assurance of this, we would like projects to ensure they have the appropriate safeguarding policies in place. Please check the box to confirm you have relevant policies in place at that these can be available on request.

Checked

Section 10 - Logical Framework

Q26. Logical Framework

Darwin Plus projects will be required to report against their progress towards their expected Outputs and Outcome if funded. This section sets out the expected Outputs and Outcome of your project, how you expect to measure progress against these and how we can verify this.
Annex D and Annex E in the Guidance Notes provides helpful guidance on completing a logical framework, including definitions of the key terms used below.

Impact:

The macro-algae beach deposits have been assessed from environmental and socio-economic perspectives and viable, sustainable, management strategies benefiting the natural environment and reducing dependence on oil are implemented.

Project Summary	Measurable Indicators	Means of Verification	Important Assumptions

Outcome: The detrimental impacts currently experienced by the tourism sector will be alleviated, students will have engaged in STEM activities and the potential for macro-algae as a biomass fuel evaluated	0.1 removal of drift deposits has increased 0.2 tourist dissatisfaction has decreased 0.3 4 workshops with teachers (2) and students (2) have been held 0.4 50 students have engaged in STEM activities including measuring and taking samples 0.5 a technical report	0.1 ongoing monitoring 0.2 Satisfaction survey of repeat visitors 0.3 workshop reports, sign in sheets 0.4 photographic records, student feedback and samples submitted for characterisation 0.5 report submitted	0.1 that there is exiting quantification of deposits in specific area 0.2 existing evidence of dissatisfaction
Output 1: Integrated Ecosystem Service, Ecological/Environmental Impact and Natural Capital Assessment of the coastal zone. Specific focus will be on the tidal strand line and macro-algae, such as Sargassum spp, deposited as drift.	1.1 Fieldwork report, including literature/historical information on macro-algae 1.2 Ecosystem service assessment & Ecological/Environmental Impact Assessment focusing on the socio-economic and environmental impacts of Sargassum deposits 1.3 Natural Capital evaluation developed from the preceding documents	1.1 Draft report submitted 1.2 ESS/EcIA Report submitted (this could take the form of a Natural Character Area profile identifying and providing a robust evidence base to strategic environmental opportunities) 1.3 NC evaluation submitted to TCIG	1.1 The availability of historical records – particularly regarding past levels of drift 1.2 Availability of data from local partners
Output 2: Education and awareness raising of shoreline/coastal environment	2.1 Engage with 6 educational establishments and a local naturalist on each island 2.2 Recruit 2 Greenwich post graduate students to use this project for their research 2.3 Produce 3 identification sheets and I leaflet 2.4 3 local media reports on the project	2.1 Letters of engagement from 6 educational establishments 2.2 Research proposals submitted and accepted as appropriate 2.3 3 ID sheets and 1 leaflet circulated to partners, approved and printed 2.4 printouts, tape or video recordings submitted to PI	2.1 Schools/colleges are interested in this project 2.4 That there is sufficient interest from local/national media

Output 3: Characterisation of macro-algae, such as Sargassum spp, deposited as drift to identify potential as biomass for fuel and other products.	3.1 10 samples dispatched from Turks and Caicos 3.2 10 samples received by University of Greenwich 3.3 chemical characterisation completed 3.4 experimental methane potential established	3.1 postal records 3.2 incoming postal records 3.3 & 3.4 technical report submitted to TCIG	That suitable representative samples can be collected and transported to the UK
Output 4: Research outputs developed and shared with other British Overseas Territories experiencing 'golden tides'.	4.1 Circulation of educational materials 4.2 Open access journal article on sustainable management of macroalgae such as Sargassum spp. 4.3 Conference presentation 4.4 UKOT hosted webinar 4.5 Technical report on potential for biogas generation 4.6 Management Options Appraisal workshop attended by >20 people	4.1 Confirmation by representative(s) on other BOTs 4.2 Confirmation of acceptance (email) 4.3 Presentation listed in proceedings and available on line 4.4 20 attending or viewing within two months 4.5 Shared via OT Government network 4.6 Sign in sheets, photographs and workshop report	*No Response*
Output 5: *No Response*	*No Response*	*No Response*	*No Response*

Do you require more Output fields?

It is advised to have less than 6 Outputs since this level of detail can be provided at the Activity level.

⦿ No

Activities

Each activity is numbered according to the Output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1. Each new activity should start on a new line.

Output 1 Integrated Ecosystem Service, Ecological/Environmental Impact and Natural Capital Assessment of the coastal zone
1.1 Capacity building workshop & scoping exercise
1.2 Developing fieldwork protocol(s)
1.3 Field work
1.4 Collation of data/information
1.5 Report drafting

1.6 Stakeholder workshop: discussion of draft report
1.7 Final report
1.8 Protocol for citizen science shore monitoring
1.9 Ongoing shoreline survey/monitoring
1.10 Report updating
Output 2 Education and awareness raising
2.1 Engaging students/citizen scientists/naturalists in field work
2.2 MSc students contributing background material/literature review
2.3 Developing educational materials
2.4 Workshops for teachers and students
2.5 Evaluation of material re relevance to other OTs
2.6 Engagement with local/national press and media
2.7 Exploration of social media engagement potential
2.8 Shore search guided walks, events and activities
Output 3 Characterisation of Sargassum spp
3.1 Development & testing of a collection protocol
3.2 Collection & dispatch of samples to the UK
3.3 Characterise the Sargassum arriving at the beach
3.4 Assess the seasonal variability of Sargassum and effects of weather and time
3.5 Establish experimental methane potential of fresh beach-cast Sargassum
Output 4 Dissemination
4.1 Distribution of educational materials to other OTs
4.2 Technical report on suitability of Sargassum for potential biorefining biogas production
4.3 Webinar for professionals – OTSIG (including preparation)
4.4 Management Options Appraisal workshop (including preparation)
4.5 Open Access journal article drafting
4.6 Conference presentation (potentially beyond the timeline)

Section 11 - Implementation Timetable

Q27. Provide a project implementation timetable that shows the key milestones in project activities

Please complete the Excel spreadsheet linked below to describe the intended workplan for your project.

Darwin Plus Implementation Timetable

Please add 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 fill/shade only the quarters in which an activity will be carried out.

Once you have completed your implementation timetable please upload it using the file upload tool below.

R7_DPlus - _Implementation_Timetable

01/09/2018

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xlsx 12.22 KB

Section 12 - Monitoring and Evaluation

Q28. Monitoring and evaluation (M&E) plan

Describe, referring to the Indicators above, how the progress of the project will be monitored and evaluated, making reference to who is responsible for the project's M&E.

Darwin Initiative projects are expected to be adaptive and you should detail how the monitoring and evaluation will feed into the delivery of the project including its management. M&E is expected to be built into the project and not an 'add' on. It is as important to measure for negative impacts as it is for positive impact.

There are uncertainties inherent in this proposal. All partners accept that there are a number of 'ifs' and it is by no means certain that the vision – of making commercial use of the drift to enable cleaning of the beaches can be realised.

Monitoring and evaluation of progress against output 1 is fundamental and will be the focus in the first half of year 1. The results may require adaptation, particularly regarding output 3 as, although it is thought the drift is mainly Sargassum this may not be the case; literature suggests this may be more than one species. This would affect the chemical characterisation process. Further there may be differences between islands and beaches of different aspect.

The range of activities against output 1 are also fundamental to outputs 2 and 4 and, even if no potential for exploiting the drift is identified, these activities will stand alone as valuable contributions to the Turks and Caicos Environment Charter and the National Tourism Strategy and Policy (1.4 & 1.7). The reports that are required from the TCIG to release budget will enable monitoring against the activities listed in the Gantt chart for each quarter, with justification if progress has not been made. The PI will liaise regularly with the TCIG lead via skype to formally review and make adaptions as required. These meetings will be documented and signed by both parties.

The exact nature of the activities in output 2 will be determined by the target audience, the degree of interest generated from primary or secondary pupils, local naturalists and the community in response to outreach and publicity (2.1). Monitoring of engagement will inform the nature of activities (2.8), the design and content of ID guides and leaflets (2.3) and the routes for wider dissemination (output 4). It will also influence the potential for setting up survey and monitoring of the shoreline beyond the life of this project and, as always when working with 'citizen scientists' this may differ between islands (1.8 & 1.9).

The scoping exercise (1.1) and development of sample collection protocol (1.2) are fundamental to output 3 and so 4.2 & 4.4-4.6. The results of field survey (1.3) will feedback into sample collection as it may be found that composition differs by location (3.1 & 3.2).

Monitoring and evaluation will be required for all activities listed and the PI, who is experienced in project management and reporting, in consultation with the TCIG team, will make minor adjustments as required to ensure that knowledge of the ecology and ecosystem services associated with the island shorelines is

increased, the importance recognised, and the impact of macro-algae drift is better understood. This is seen as the 'worst case' scenario and will enable/inform the Management Options Appraisal (4.4) and will be the focus for dissemination (4.3) even if the results for output 3, specifically 3.5, do not support exploitation of drift for biogas production.

Number of days planned for M&E	15.00
Total project budget for M&E (this may include Staff and Travel and Subsistence Costs) (£)	
Percentage of total project budget set aside for M&E (%)	5.00

Section 13 - Certification

Certification

On behalf of the

trustees

of

University of Greenwich

I apply for a grant of

£94,618.00

I certify that, to the best of our knowledge and belief, the statements made by us in this application are true and the information provided is correct. I am aware that this application form will form the basis of the project schedule should this application be successful.

(This form should be signed by an individual authorised by the applicant institution to submit applications and sign contracts on their behalf.)

- **I enclose one page CVs for key project personnel and letters of support.**
- **I enclose the most recent 2 sets of signed and audited/independently verified accounts.**

Checked

Name	Kate Farrow
Position in the organisation	Research Development Officer

Signature (please upload e-signature)	**KF Signature (002)** 03/09/2018 12:22:57 png 23.7 KB
Date	03 September 2018

Section 14 - Submission Checklist

Checklist for submission

	Check
I have read the Guidance documents, including the "Guidance Notes for Applicants" and "Finance Guidance".	Checked
I have read, and can meet, the current Terms and Conditions for this fund.	Checked
I have provided actual start and end dates for this proposed project.	Checked
I have provided a budget based on UK government financial years i.e. 1 April – 31 March and in GBP.	Checked
I have checked that the budget is complete, correctly adds up and have included the correct final total at Q7.	Checked
The application has been signed by a suitably authorised individual.	Checked
I have included a 1 page CV for all the Project staff (listed at Q11) on this project, including the Project Leader.	Checked
I have included a letter of support from the applicant organisation, main partner(s) organisations and the relevant OT Government.	Checked
I have uploaded a signed copy of the last 2 years annual report and accounts for the lead organisation, or provided an explanation if not.	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 GOV.UK.	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 the Darwin Initiative, Darwin Plus and our sister grant scheme, the IWT Challenge Fund. We also provide occasional updates on other UK Government activities related to biodiversity conservation and share our quarterly project newsletter. You are free to unsubscribe at any time.

Checked

Data protection and use of personal data
Information supplied in this application form, including personal data, will be used by Defra as set out in the latest copy of the Privacy Notice for Darwin, Darwin Plus and the Illegal Wildlife Trade Challenge Fund available **here**. This Privacy Notice must be provided to all individuals whose personal data is supplied in the application form. Some information, but not personal data, may be used when publicising the Darwin Initiative including project details (usually title, lead organization, location, and total grant value) on the GOV.UK and other websites.

Information relating to the project or its results may also be released on request, including under the 2004 Environmental Information Regulations and the Freedom of Information Act 2000. However, Defra will not permit any unwarranted breach of confidentiality nor will we act in contravention of our obligations under the General Data Protection Regulation (Regulation (EU) 2016/679).