Specification

The Specification

Project Title:	Solway Coast and Marine Project – Drone Survey of Seagrass along Dumfries and Galloway Solway Coast
Service:	Environment Team
Project Owner:	Nick Chisholm

1	INTRODUCTION

Dumfries and Galloway Council and its partners in the Solway Coast and Marine Project – Landscape Connections (SCAMP) wishes to appoint an experienced ecologist drone surveyor to carry out a drone survey of intertidal and subtidal seagrass *Zostera marina* and *Zostera noltii* meadows along the Dumfries and Galloway Coast.

Monitoring is critical to understand the dynamics of seagrass meadows and working on foot in an intertidal environment can be challenging. Drone technology has the advantage of remote operation that provides imagery that can be used to record extent of seagrass meadows and assist in identifying species and condition.

The seagrass survey will make a grid sequence of images that can be both used to generate geospatial products and be examined as a series of images. The grid sequence images will be used to map the current extent and provide a baseline for future restoration and monitoring.

The survey will form part of Phase 1 Development of SCAMP and the results will be used to support the delivery stage application to the National Lottery Heritage Fund.

2	BACKGROUND

The Drone Survey of Seagrass on the Dumfries and Galloway Solway Coast Phase 1 Development is expected to be undertaken between May 2026 – September 2026:

Fixed budget £15,000 max (excluding VAT)

The Drone Survey of Seagrass on the Dumfries and Galloway Solway Coast is part of Phase 1 Development of the Solway Coast and Marine Project (SCAMP). The survey will guide seagrass meadow restoration and provide baseline evidence to measure the change in seagrass extent.

SCAMP will deliver an 8-year holistic seascape programme to understand, conserve and develop the potential of the natural, cultural and built heritage for the people of the Solway Firth. It will focus a range of large-scale interventions and activities to deliver a coherent, and co-ordinated approach to reconnect people to the amazing Solway Firth seascape. The project will

leave the Solway Firth better understood, protected and will maximise the potential of the seascape to respond to today's nature and climate crises. Much of our work will involve new and novel ways of working, research and development, citizen science and co design.

Seagrass populations face significant threats, and their conservation is hindered by limited research and historical losses.

In 2022/23, the Solway Firth Partnership commissioned a detailed survey to examine the distribution, reproductive capacity, and health of the intertidal seagrass meadows on the coast of Dumfries and Galloway. The survey revealed that these intertidal seagrass beds are among the largest in Scotland and the UK spanning 9.28 square kilometres in the Solway and 0.792 square kilometres in Loch Ryan. These represent a significant increase in seagrass coverage over the past two decades. The recovery in Loch Ryan can be largely credited to improvements in water quality, including the end of dredging, while the resurgence of seagrass in the Solway Firth is attributed to the halt of mechanical cockling in the early 1990s.

In 2025/26 NatureScot commissioned a study to identify Characterisation of the Solway Scottish Marine Region in relation to Seagrass Restoration Planning. The study concluded that restoration of intertidal seagrass could be undertaken in sheltered muddy areas and subtidal seagrass within shallow habitats in Loch Ryan and the outer Solway Firth in mud and sandy sediments.

Now that baseline surveys and studies have been completed for the Solway coast it is an ideal time to carry out a drone survey of all known sites. The imagery will provide a baseline for future monitoring of extent and condition of seagrass meadows during the delivery phase of the project.

The imagery will also provide an opportunity to test the use of drones to distinguish between the two seagrass species, record seagrass density and identify areas of algae and invasive species.

Drone images of a known subtidal seagrass meadow in Loch Ryan will test the ability to identify and monitor areas not exposed at low tide.

3	**Specification**

We are seeking an experienced ecologist drone surveyor to map the intertidal seagrass beds on the Dumfries and Galloway Solway coast. The intertidal sites vary in size and accessibility.

Survey Locations:

The Wig, Loch Ryan – 95,000 m^2
Stranraer, Loch Ryan – 700,000 m^2
Innerwell Point. Wigtown Bay west – 28,000 m^2
Baldoon Sands, Wigtown Bay west - 4,000,000 m^2
Kirkbride Bank, Wigtown Bay east – 52,000 m^2
Skyreburn Bay – 300,000 m^2
Airds Bay – 26,000 m^2
The Dhoon (Nun Mill Bay), Kirkcudbright Bay west – 19,000 m^2
Manxman's Lake, Kirkcudbright Bay east – 335,000 m^2
Auchencairn Bay – 1,730,000 m^2
Orchardton Bay – 390,000 m^2
Horse Isles Bay – 1,000 m^2
Rough Firth, Kippford – 240,000 m^2

Carse sands, Carsethorn - 35 m^2

A survey of subtidal seagrass is to be trialled in Loch Ryan at a site adjacent to The Wig

Survey Requirements
Timing and Environmental Conditions
All surveys must be undertaken during peak seagrass growth (July–August), and:

- Within an appropriate tidal window (typically within ±2 hours of lowest tide for intertidal surveys)
- During suitable weather conditions
- With clear documentation of:
  - Tide state and height
  - Weather conditions at time of survey

Drone Survey Methodology
The contractor must set out a clear and robust methodology. As a minimum, this should include:

- **Flight planning parameters**, including:
  - Image overlap
  - Flight altitude and coverage strategy
- **Spatial resolution:** Imagery must be of sufficient resolution to clearly identify seagrass extent (typically around 3 cm per pixel or better)
- **Positioning and accuracy:** The contractor must ensure high positional accuracy of mapped outputs (e.g. through RTK/PPK GPS or ground control points), and state the expected accuracy
- **Sensor type**, clearly specified:
  - Multispectral imagery (desirable, particularly for assessing condition, density, or species differentiation)
  - RGB imagery (minimum requirement)

Subtidal Survey (Trial Component)
The contractor is required to propose and implement a method to trial drone-based detection of subtidal seagrass in Loch Ryan.
The proposal must:

- Clearly describe the proposed approach (e.g. shallow water imaging, multispectral use, timing relative to tide and water clarity)
- Define realistic and measurable outputs (e.g. detection, indicative mapping, or classification)
- Identify key limitations and risks

This element is exploratory.

Seagrass Mapping and Classification
The primary objective is to map the spatial extent of seagrass meadows. Contractors should also outline their capability to:

- Differentiate between Zostera marina and Zostera *noltii* (where feasible)
- Classify seagrass density (e.g. sparse, moderate, dense)
- Identify macroalgae and/or invasive species (where detectable)

Proposals should clearly state what level of classification is achievable and the expected confidence.

Ground-Truthing
Contractors must specify their approach to validation, including:

- Whether ground-truthing is required to support classification
- Methods for validation (e.g. quadrat sampling, GPS-referenced observations)

SCAMP will confirm whether any supporting field data can be provided.

Data Processing and Outputs
The survey must produce high-quality, GIS-ready outputs. As a minimum, deliverables must include:

- **Georeferenced orthomosaic imagery**
- **Raw imagery** (JPEG or RAW format)
- **Mapped outputs**, including:
  - Seagrass extent polygons
  - Attribute data (e.g. density classification, where undertaken)
- **GIS data formats**:
  - ESRI Shapefile and/or GeoPackage
- **Metadata**, including:
  - Survey dates and times
  - Equipment and settings used
  - Processing workflow
  - Accuracy statements

The consultant will be expected to have all the necessary licences and permissions to carry out the work.

Site information will be provided to the consultant.

Contract administration
We anticipate monthly, or as required, online or in person meetings between SCAMP and the consultant that will include a progress report and identify issues and opportunities.

Outputs

- Initial meeting agreeing a planned approach to the drone surveys
- Drone surveys of 15 locations
- Draft report, including:
  - Methods
  - Results
  - Maps and imagery
- Digital mapping outputs (GIS-ready datasets)
- Final report and datasets, incorporating feedback

Outputs should be suitable for repeat monitoring in future years

Time scale

- Initial meeting June 2026
- Drone surveys July - August 2026
- Draft report and digital mapping presentation September 2026
- Final report and data sets November 2026

To guide the consultant, we have provided the following supporting documents:

Pricing schedule document – to be completed by the consultant

Pricing Guide: Consultants are invited to submit a fixed fee tender as described in this briefing document and the submission will be assessed on a quality/price (70/30%) basis.

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Consultants are invited to submit a fixed fee tender as described in this briefing document and the submission will be assessed on a quality/price (70/30%) basis.

The **budget** for the opportunity mapping of intertidal seagrass is a maximum of £15,000 ex VAT

4	ADDITIONAL INFORMATION

We are looking for an individual, team or organisation with:

- Experience of working on / delivering environmental consultation work – including working on seagrass and / or habitat restoration programmes (especially coast and marine).
- Familiarity with the Solway coast.
- Ability to travel to and around the project area.
- Strong track record of producing clear, well written, high-quality reports.

Insurance
The Consultants must confirm and evidence that they have the appropriate Employers Liability Insurance (£5 Million), Public Liability Insurance (£5 Million) and Professional Indemnity (£1 Million).

Questions to be submitted via email to: nick.chisholm@dumgal.gov.uk and Karen.Morley@dumgal.gov.uk

Council contact details
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5	SUSTAINABILITY

Our Council has adopted a ***Sustainable Procurement Policy,*** tenders should include a statement as to their approach to carbon reduction, fairtrade and community benefit.

It is a condition of this tender that contractors shall pay the real living wage to all employees working on the contract and provide an 'effective voice' channel. Tenders should be prepared to evidence this if required.

Reference:	DGC-SCAMP-20260506