



## **METHOD STATEMENT**

### **LOCH MOIDART SEAWEED FARM**

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## 1. OVERVIEW

Moidart Capital Ltd, a West-Coast business based in Kinlochmoidart, has developed a small, modular seaweed farm system to stimulate the growth of the seaweed farming industry along a stretch of the coastline between Loch Hourn and Mallaig in the North and Lochaline in the South, encompassing the Inner or Small Isles.

For this project, Moidart Capital will consult with established seaweed producers, GreenSea Solutions Ltd, who have two seasons' experience of algal farming within this local geography. Using this combined experience of algal farming, marine engineering, and an in-depth knowledge of the coastline in this area, they will offer simple, standardised small-scale grid arrays that can be produced and deployed easily and cost-effectively using their own equipment. Each farm module will not exceed an area of 1,000m<sup>2</sup>. Due to their small scale, these farm modules will be visually unobtrusive, consequently with minimal impact on marine traffic and neighbouring aquaculture ventures. As part of their partnership with GreenSea Solutions, Moidart Capital will also offer consultancy, harvesting, market representation and distribution services to farmers along the West Coast.

Moidart Capital are applying for consent to deploy their pilot array in Loch Moidart in June 2022. This document is a method statement and outlines the considerations taken in choosing this location, the farm structure, and the farming activities that will take place.

## 2. FARM LOCATION

Loch Moidart is situated on the West Coast of Scotland, directly to the north of the Ardnamurchan Peninsula. The loch is split into two channels by the islands of Eilean Shona and Shona Beag, roughly 8km in length. The maximum depth in the North Channel is approximately 18m.

The pilot farm will be located in the North Channel of Loch Moidart, between the north shore of Eilean Shona and the mainland. The North Channel experiences little to no marine traffic as it is very narrow - as little as 50-metres wide, guarded at its mouth by several rocky islets. The coordinates for the site are as follows:

56°48'21"N , 005°50'47"W  
56°48'19"N , 005°50'43"W  
56°48'19"N , 005°50'43"W  
56°48'20"N , 005°50'47"W

The mid-point of the farm on the southern edge of the grid is located at:

56°48'20"N , 005°50'45"W

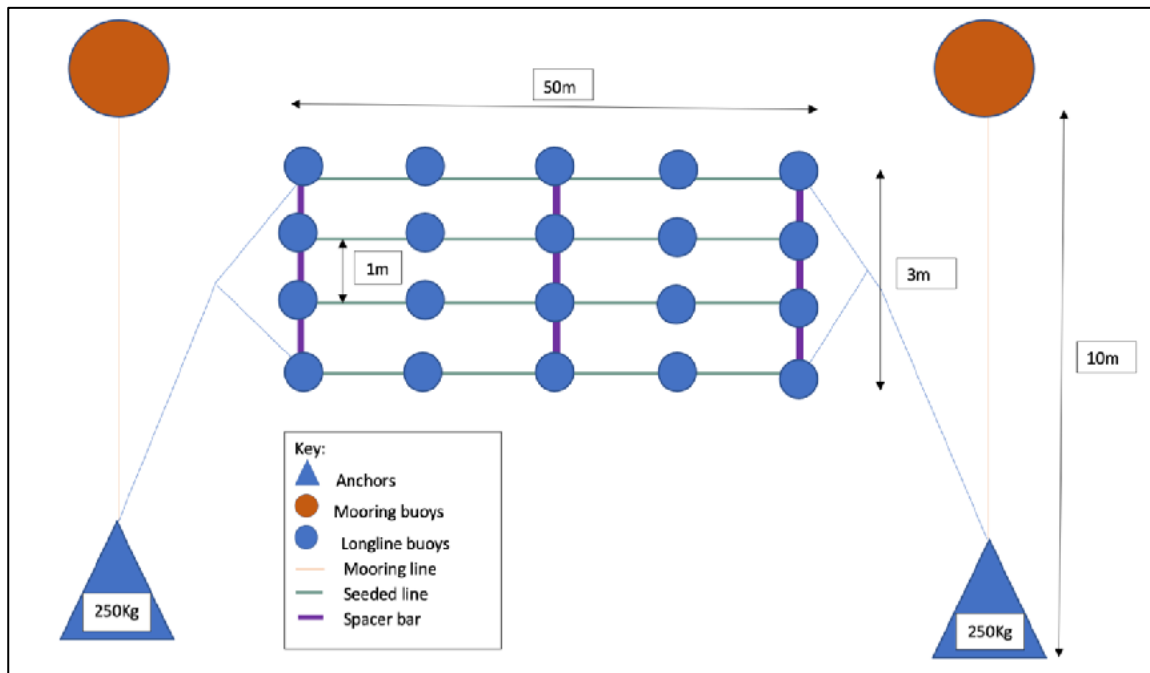
The North Channel lends itself to a seaweed trial site as it is sheltered and private, out of the main marine traffic routes into Loch Moidart, principally using the South Channel. The North Channel is approximately 4.25 kilometres in length, its waters sheltered from all sides. A South-facing aspect has been chosen with maximum sunlight in mind and with good tidal flow through 5-10 metres water depth.

Charts indicating the location and layout of the pilot farm structure can be found in Appendix A at the end of this document.

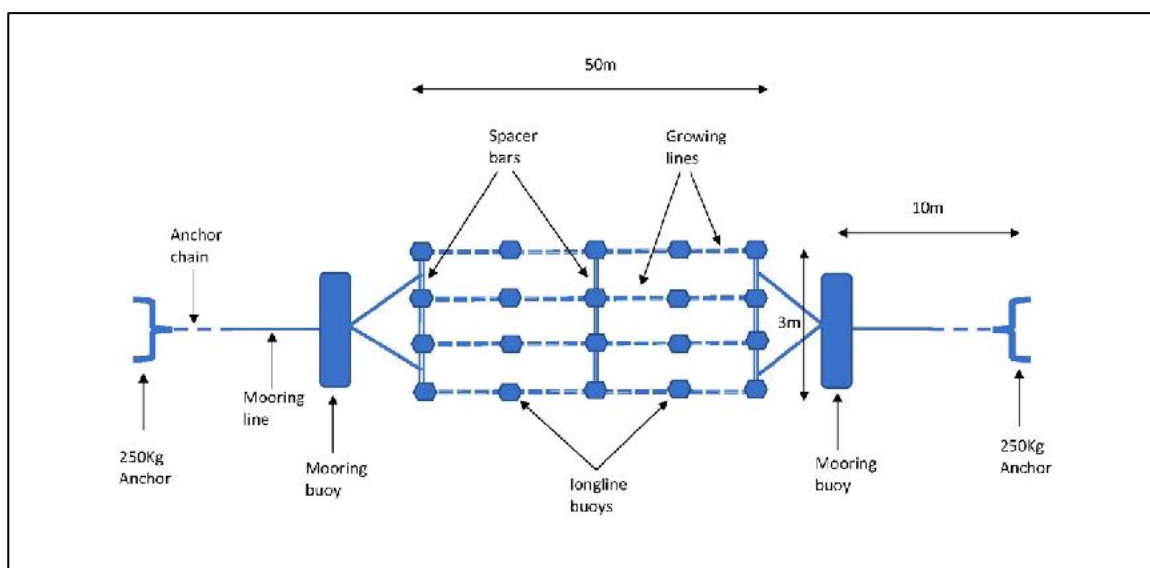
### 3. FARM STRUCTURE

The cost of the farm structure will be below £5,000.00, so the marine license application fee will be £180.00. Moidart Capital will make this payment by direct bank transfer to Marine Scotland.

The pilot farm will consist of four 50-metre longlines, suspended between a 250kg anchor at either end (Figures 1 & 2). The lines will be held apart by spacer bars at each end, and a central bar placed midway along the structure at 25m. The farm will be marked with regulation buoys.



**Fig. 1** Illustration of Loch Moidart pilot farm design. Figure is approximate and individual elements not to scale.



**Fig. 2** Aerial view of farm structure. Figure is approximate and individual elements not to scale.

To comply with Marine Scotland requirements regarding Pre-Application Consultations, this site will not exceed 1,000m<sup>2</sup> in area and the dimensions of the structure will be significantly below this limit. The growing grid itself will only occupy 150m<sup>2</sup>, but the footprint of the supporting mooring lines and anchors has been considered to ensure that the farm structure does not encroach over the designated site limit. There are no intentions to increase the size of this structure in future years.

The Loch Moidart pilot farm will allow Moidart Capital to prove concept and fine tune their modular farm design where necessary, which they intend to roll out commercially once this phase has been completed successfully. The farm structure will be unique, using a simple combination of parts that allow for straightforward deployment, recovery and reuse or ease of replacement when necessary. Each farm section is modular and can be altered or expanded easily if required.

#### 4. SEEDING

The pilot farm will be used to grow two species of brown kelp native this area, *Alaria esculenta* (winged kelp) and *Saccharina latissima* (sugar kelp). To avoid the introduction of Non-Native Species (NNS), each 50m longline will be seeded with seed material grown from fertile sorus tissue collected within 5 miles radius of the site.

Moidart Capital intends to carry out a trial summer seeding following deployment of the farm structure in June 2022. Although the summer season is not the primary growth season, Moidart Capital is keen to explore the possibility of year-round growth cycles. Following this initial seeding, any yield will be harvested at the end of August 2022 and the farm will be re-seeded in October, for harvest in April 2023.

Longlines will be direct-seeded using locally won seed culture developed by the Scottish Association for Marine Science (SAMS), an approved hatchery based at Dunstaffnage.

#### 5. HARVEST, TRANSPORT & PROCESSING

Using an industry-approved estimate of 7-10kg/m, we anticipate a potential yield of 1.5-2 tonnes of kelp (wet weight). The crop will be harvested from the longlines by hand and taken in crates by boat to Moidart Capital's private jetty at Kinlochmoidart. The harvesting process will take two days at most. Once landed, the kelp will be directly transported by road to a specially constructed facility also in Kinlochmoidart. All farming and processing activity will take place within a 5-mile radius.

#### 6. STAKEHOLDERS & STATUTORY AUTHORITIES

Having been established in this area for many years, Moidart Capital has close, working relationships with landowners and stakeholders along this coastline and has already received substantial interest from individuals interested in investing in its modular farm structures.

Moidart Capital has consulted with local stakeholders, including local fishermen and landowners bordering the North Channel of Loch Moidart. No objections have been raised and Moidart Capital will continue to consult with these stakeholders throughout the licensing and deployment process.

As recommended by Crown Estate Scotland, Moidart Capital has contacted the necessary statutory authorities regarding our intentions for the pilot site. Their recommendations are included within the relevant sections of this method statement.

## 7. ENVIRONMENTAL CONSIDERATIONS & BIOSECURITY PLAN

Moidart Capital has consulted with Marine Scotland and NatureScot to ensure that the farm site poses no threat to the surrounding ecological environment. A complete Biosecurity Plan will be appended to the Marine License application. Ecological and biosecurity measures will include:

- Carrying out a survey of the seabed to ensure precise anchor placement and minimal disruption to local environment
- Ensuring that fertile spores for seed cultures are collected from within a 5-mile radius of the site
- Any marine equipment or machinery, including deployment and harvest vessel used on the site, will be cleaned and inspected regularly to avoid introduction of Invasive Non-Native Species.
- All crew members working on the site will be informed of the biosecurity measures in place and instructed in best-practice methods when handling farm materials and fresh kelp.
- Harvested kelp will be taken directly to a processing site near to the farm site for immediate processing.
- A detailed, site-specific marine biosecurity plan will be implemented and updated at regular intervals.

### **Water salinity and freshwater input**

Loch Moidart is designated as a Shellfish Growing Water. Freshwater inputs directly to the designated area are limited to minor streams, none of which are monitored by SEPA but are considered to be of at least good quality. Much of the freshwater flowing through the North and South channels comes from the River Shiel and the River Moidart. Both these rivers are classified by SEPA as being of good quality. The Scottish Sea Lochs Catalogue gives a salinity reduction of 0.1ppt for the North Channel (CEFAS, 2012).

### **Benthic shading**

Due to the small scale of the farm growing structure, the perceived level of benthic shading is considered to be minimal. Nevertheless, data will be taken throughout the growing season to establish level of shading below the farm site, and any necessary amendments will be made in consultation with NatureScot.

### **Biomass shedding and waste disposal**

Waste from the farm site, including loss of plant material from the lines during the growing cycle, is expected to be minimal. Studies indicate that <5% of a kelp plant's biomass will be lost during the growth cycle, and that this is reduced even further dependent on growing season and harvest time (Campbell et al., 2019). A higher biomass due to plant age can also impact likelihood of shedding – in order to mitigate this risk Moidart Capital will harvest when the seaweed plants are relatively juvenile, between 4 and 5 months old.

Moidart Capital has a zero-waste ethos and will harvest all available biomass from the growing lines. Following inspection at their processing facility, any biomass that is considered substandard will be used in fertiliser products produced by GreenSea Solutions.



## 8. LOCH MOIDART AND LOCH SHIEL WOODS SAC

The intended site is located close to, but not within, the Loch Moidart and Shiel Woods SAC (Figure 3). Moidart Capital will consult closely with NatureScot regarding this proximity. Qualifying marine interests for which the area is designated an SAC include intertidal mudflats and sandflats and the presence of otter (*Lutra lutra*).

The risk to marine mammals [such as otter (*Lutra lutra*), grey seal (*Halichoerus grypus*), harbour seal (*Phoca vitulina*), harbour porpoise (*Phocoena phocoena*)] of entanglement in small to medium-sized seaweed farms is minimal. To mitigate this risk, Moidart Capital will ensure that growing and mooring lines within the farm structure are fully tensioned at all times, that there are no loose lines at any time, and that the site is regularly monitored. They will engage closely with resources provided by the Scottish Entanglement Alliance (SEA) and ensure that all site workers receive adequate instruction in entanglement risk and resolution.

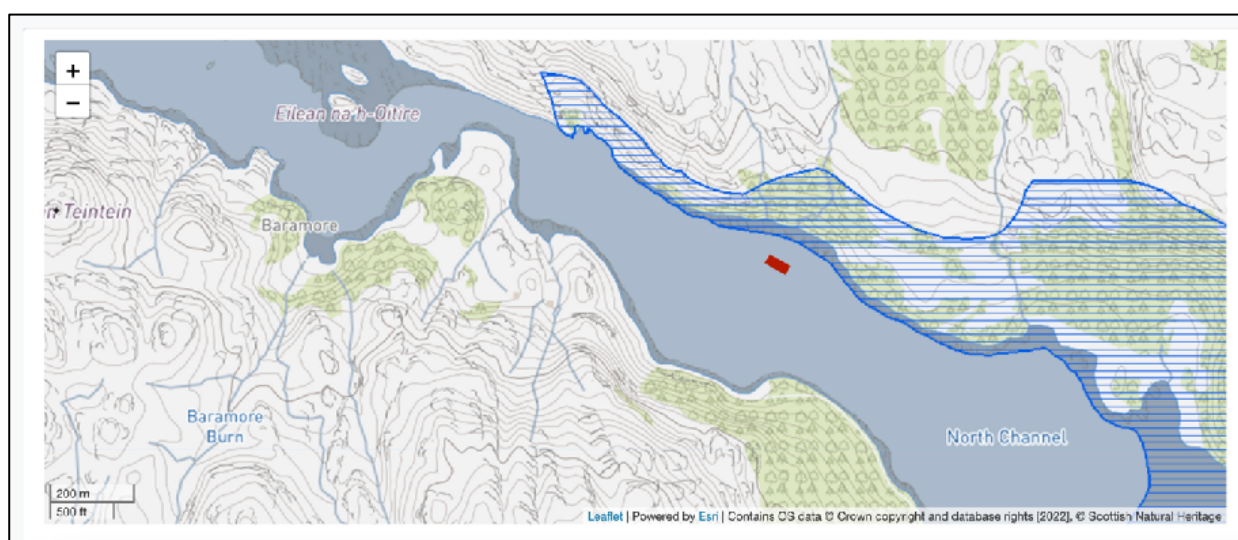


Fig. 3 Loch Moidart pilot farm in relation to Loch Moidart and Loch Shiel Woods SAC

## 9. ROLES, OUTCOMES & ROUTE TO MARKET

Moidart Capital will be solely responsible for installation, maintenance, and harvest of the Loch Moidart pilot farm. GreenSea Solutions Ltd will act in an advisory capacity and will not partake in any operational activities at the site.

As part of their advisory role, GreenSea Solutions will provide guidance in establishing routes to market and guaranteed supply chains for kelp grown on the Loch Moidart pilot farm and on future deployments.

Further to their farming operations, Moidart Capital plans to install a commercial processing plant at nearby Kinlochmoidart in 2023, with an intended processing capacity of up to 1000 tonnes of seaweed for farmers along the West Coast by 2025. A processing facility in this location would be able to service kelp landed at both Salen, on the southern side of the Ardnamurchan peninsula, and Glenuig overlooking the Sound of Arisaig, being equidistant from both.



## 10.FUNDING

The intended pilot farm has an estimated material and installation cost of £5,000.00 or less. Funding for the Loch Moidart Seaweed Farm pilot will be provided by Moidart Capital Ltd. A full financial overview can be offered upon request

## APPENDIX A - MARINE CHARTS AND PHOTOGRAPHS OF SITE

