

# Mara Seaweed Ltd

## St Andrews Bay Seaweed Farm – Navigational Risk Assessment



### Details

Version	Date	Description	Author(s)	Revised by
V1.3	11/07/2022	Final version	Stevie Jarron	DB-C, FH

### Updates

Section	Description	Page

### Index

<b>01 Introduction</b> .....	2
<b>02 Vessel Traffic Review</b> .....	3
<b>03 Buoyage and Lighting Arrangement</b> .....	5
<b>04 Phased Deployment</b> .....	6
<b>05 Monitoring Arrangements</b> .....	7
<b>06 Decommissioning Plan</b> .....	8
<b>07 Emergency Response Plan</b> .....	9

# St Andrews Bay Seaweed Farm – Navigational Risk Assessment

## 01 Introduction

**Mara Seaweed Ltd SC390829** is a Private Limited Company formed in 2012 (formerly Celtic Sea Spice Company Ltd). The company harvests and processes intertidal seaweeds from the coast of Fife. Mara Seaweed Ltd (Mara), propose to deploy a seaweed cultivation farm 5nm from St Andrews in St Andrews Bay. The cultivated seaweed will be grown on lines on a permanent sub surface structure anchored to the seabed.

Mara wish to provide all marine users with the information to ensure safe passage past the farm site.

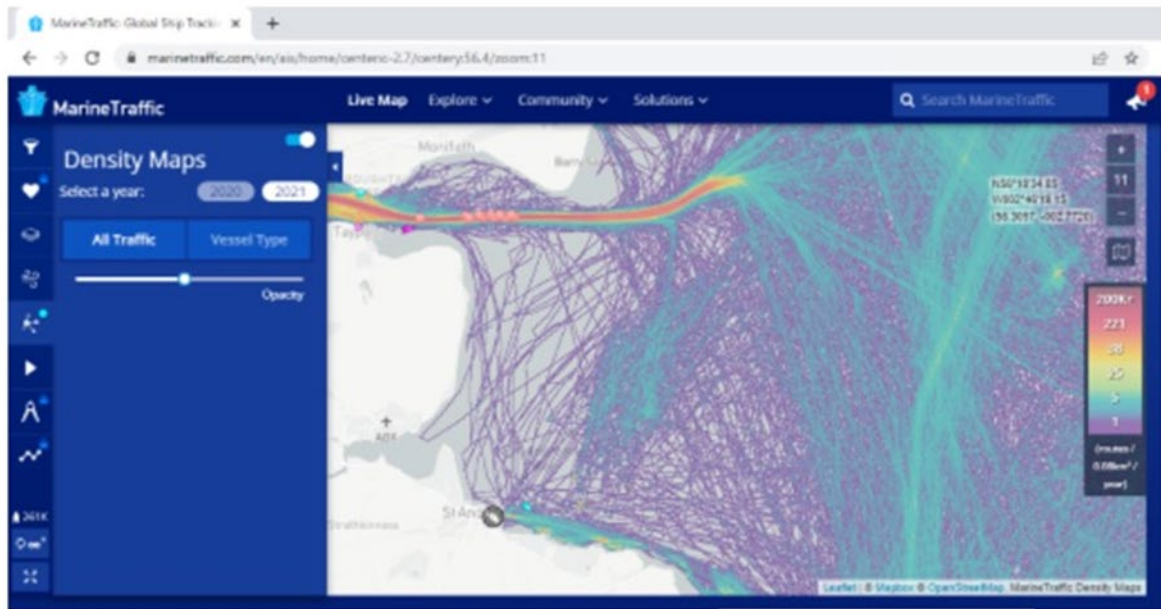
This document provides information on the farm position in relation to other users, lighting arrangements and the structure of the farm itself.

The last section of this document is the Marine Emergency Action Card (MEAC) that will be given to Northern Lighthouse Board (NLB), Marine and Coastguard Agency (MCGA) and other marine users in the area before the farm is deployed. Mara will also inform the Hydrographic Office of the positions and types of navigation buoys, as agreed by NLB and MCGA, at the site, prior to commencement of any deployment of equipment.

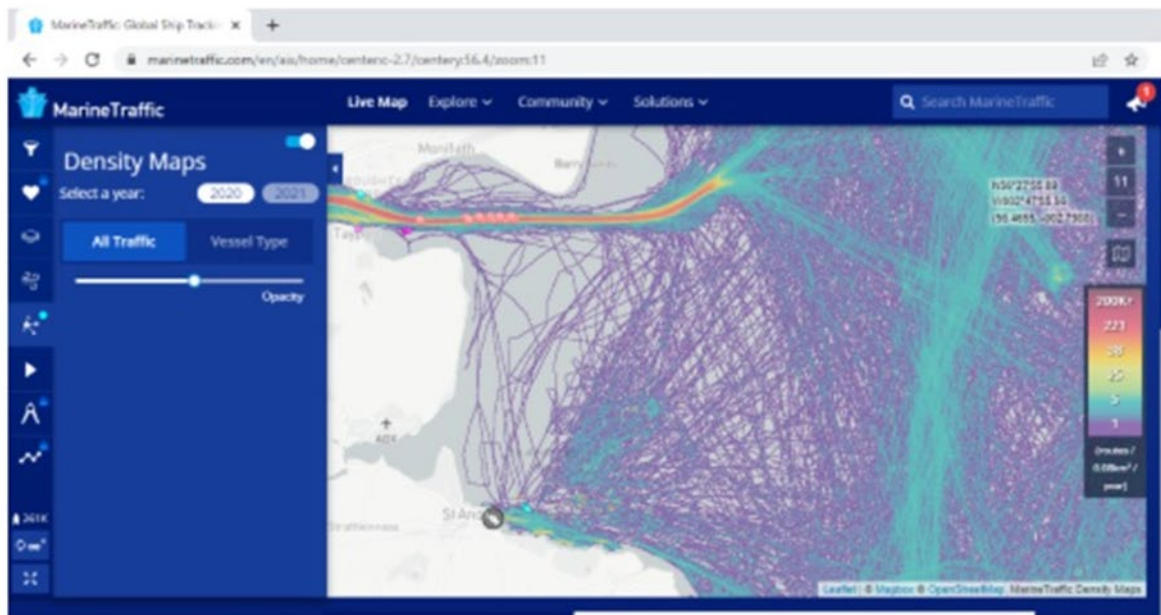
# St Andrews Bay Seaweed Farm – Navigational Risk Assessment

## 02 Vessel Traffic Review

A desktop study was undertaken to assess the Navigational Risks to vessels in the area of the proposed Seaweed Farm. Using Marine Traffic tracking software, it was possible to provide Density Maps for 2020 and 2021 (Fig 1) as well as a chart showing fishing effort of creel vessels in the same area (Fig 2).



2021



2020

Fig 1 AIS 2020 & 2021 Density Map

## St Andrews Bay Seaweed Farm – Navigational Risk Assessment

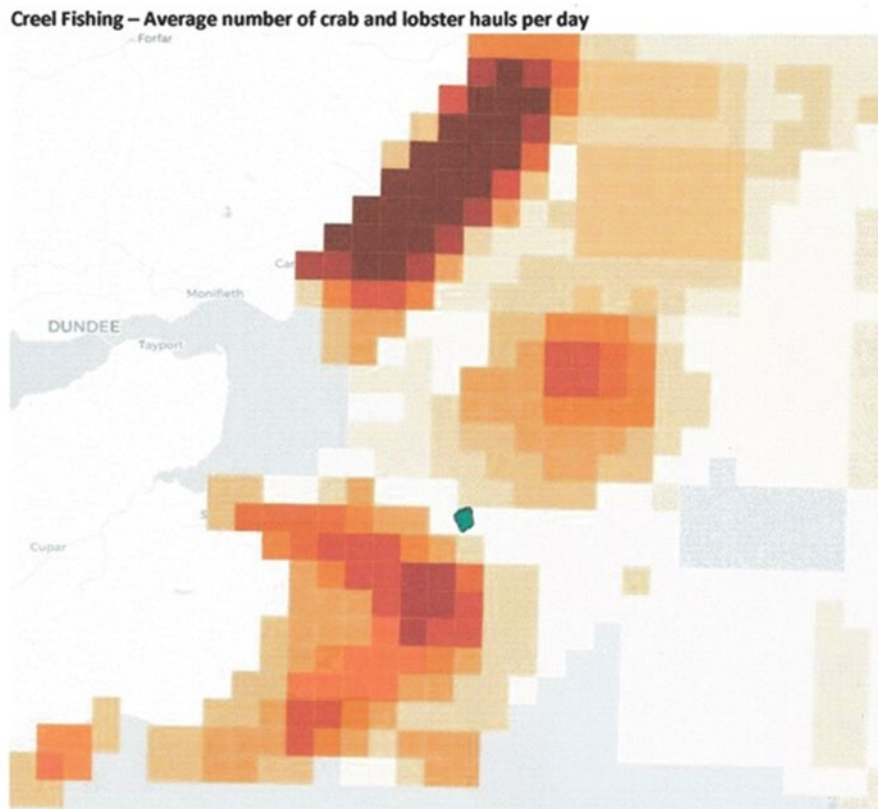


Fig 2 Fishing Density Maps

Discussion with local fishing vessel owners and fishermen associations initially led Mara to believe the site for the proposed seaweed farm was poor shellfish fishing ground, unsuitable for shellfish and so is an area they avoid.

Once the PAC process had started, 2 fishing vessel owner/skippers came forward to point out that the site chosen by Mara is part of their regular fishing grounds. Mara are in discussions with these individuals to find a mediation of compromise.

# St Andrews Bay Seaweed Farm – Navigational Risk Assessment

## 03 Buoyage and Lighting Arrangement

Mara have held discussions and been advised by Northern Lighthouse Board (NLB), Marine and Coastguard Agency (MCGA) and Royal Yachting Association Scotland (RYAS).

The conventional system for marking aquaculture sites is by the installation at the seaward corners of Special Marks. These are large, yellow coloured floating buoys. They have a top piece of a yellow St Andrews Cross and solar panel charged battery powered lights which flash yellow at night.

On discussion with RYAS, it has been observed that the open water position of the St Andrews Bay farm site, presents issues to vessels in transit, in that conventional Special Marks offer no navigational information other than their presence. A vessel seeing a yellow buoy or yellow flashing light will not know which buoy it is seeing or which side offers safe passage.

Cardinal Marks (Fig 3) are used to mark hazards and their colour and lighting set up offers information to the observer on where safe passage is available relative to their position. NLB have suggested the positioning of 4 Cardinal Marks around the site as an alternative to the special marks normally associated with aquaculture sites.

Mara have agreed that the site will be marked by 4 Cardinal Marks. Before any equipment is deployed at the proposed site, Mara will inform (as a license condition) The Hydrographic Office which maintains Admiralty paper and electronic charts so they can update accordingly. The aquaculture site will also be clearly marked on updated paper and electronic charts by a dotted line at its limits and a fish and cage symbol within. The exact position and type of the Cardinal Marks will also be given on charts (something not always present with Special Marks).

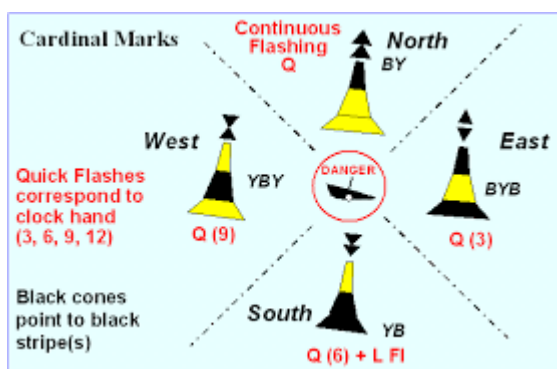


Fig 3 - Cardinal Marks

# St Andrews Bay Seaweed Farm – Navigational Risk Assessment

## 04 Phased Deployment

The St Andrews Bay site is on the east coast of Fife approximately 5nm from St Andrews. The farm is planned to be deployment in 3 phases (Fig 4).

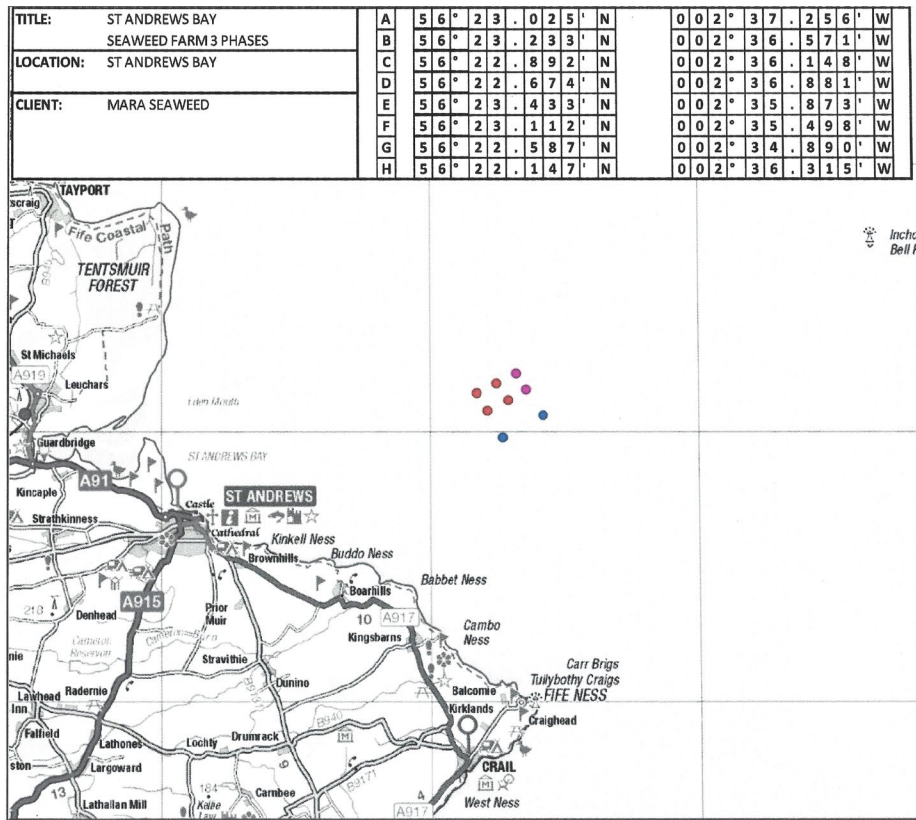


Fig 4 - St Andrews Bay map and Mara seaweed farm coordinates of the 3 phases of the farm.

Mara have agreed with NLB that the Cardinal Marks will be kept close to the extreme boundaries of the deployed equipment. That means the Cardinal Marks will be moved further out from the site as each of the 3 phases are deployed.

Mara will ensure that before any new equipment is deployed for the new Phases, Mara will inform NLB, MCGA, Local marine users and The Hydrographic Office. The exact date will be given upon which the Cardinal Marks will be moved to their new positions. The Hydrographic Office will ensure that Admiralty paper and electronic charts are updated accordingly.

# St Andrews Bay Seaweed Farm – Navigational Risk Assessment

## 05 Monitoring Arrangements

Mara will ensure that the seaweed farm at St Andrews Bay will be regularly inspected by certified mooring specialists. A provision will be made for the continuous monitoring of the Seaweed Farm outwith its operational growing period. The site will be regularly visited by farm operatives by vessel.

A record of visits and inspections will be kept by Mara and made available to any inspecting MCA staff on request (Fig 5).

Site Name	St Andrews Bay			
Date	Observer	Observation	Comments	Staff
17/11/2022	Argyll Aquaculture	Visit to site during installation	Special marks installed	SJ, DDC
18/11/2022	Argyll Aquaculture	Installation by Inverlussa Marine	Anchors lines installed	SJ, DDC
19/11/2022	Argyll Aquaculture	Installation by Inverlussa Marine	Floats and lines installed	SJ, DDC
20/11/2022	Argyll Aquaculture	Installation by Inverlussa Marine	All lines in place and tight	SJ, DDC
27/11/2022	Mara	Regular line checkby boat	All lines in place and tight	Mara staff
05/12/2022	Mara	Regular line checkby boat	All lines in place and tight	Mara staff
15/12/2022	Mara	Regular line checkby boat	All lines in place and tight	Mara staff
22/12/2022	Mara	Shore observation	Special marks working, all floats in plac	Anon
08/01/2023	Briggs Marine	Dive survey of lines	All joints and swivels intact	Briggs Marine staff
11/01/2023	Mara	Deployment of seaweed lines	All lines and floats in place and tight	Mara staff
18/01/2023	Mara	Regular line check	All lines and floats in place and tight	Mara staff

Fig 5 - An example of monitoring records

It is essential that the navigational and health and safety regulatory expectations for mooring systems are set in proportion to the potential risks with a view to develop a safe and sustainable seaweed growing platform for the long term. To do that Briggs Marine (as yet unofficial), with over 20 years experience in design, installation and maintenance of marine structures will deploy a bespoke designed Seaweed Farm for Mara (Fig 6) that uses oversized ropes, chains and anchors to ensure the structure;

- can withstand such forces acting on it as are reasonably foreseeable including;
  - Environmental conditions, e.g. winds, waves, tidal currents
  - Loads during operational conditions including normal operation, contact loads from access boats and temporary loads during maintenance operations.
  - The weight of the installation and anything on it, buoyancy, drag and inertia forces from movement
  - Unplanned incidents including vessel impact
- its construction, commissioning, operation, modification, maintenance and repair of the Seaweed Farm may proceed without prejudicing the structure’s integrity.
- in the event of reasonably foreseeable damage to the installation or its moorings, it will retain sufficient integrity to enable action to be taken to organise appropriate safe repair, thus preventing mooring failure (thereby becoming a navigational hazard).
- it may be decommissioned and dismantled safely.



## St Andrews Bay Seaweed Farm – Navigational Risk Assessment

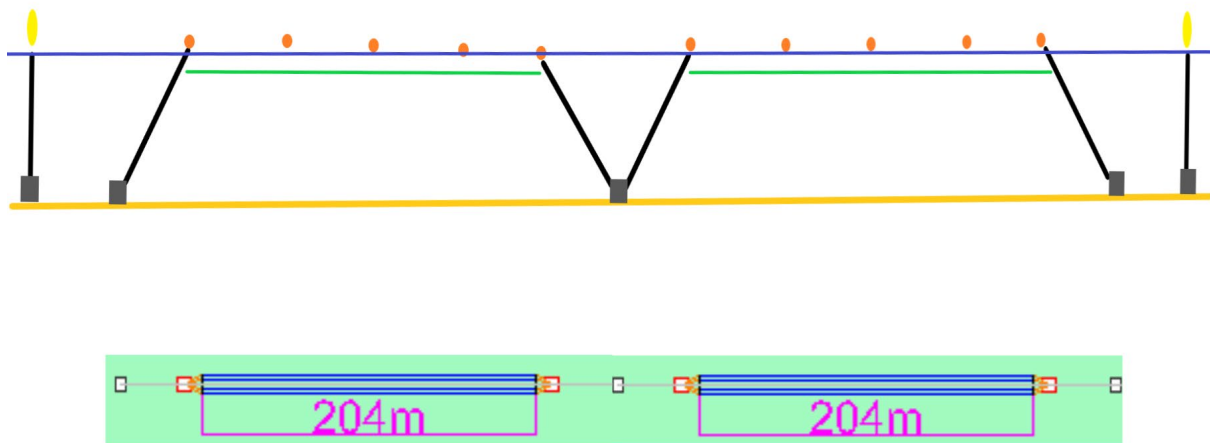


Fig 6 - Side and top view plan of longline system at St Andrews Bay site

### 06 Decommissioning Plan

Mara have been trading since 2012 and are investing heavily in the Seaweed Cultivation industry. The seaweed harvest this Farm will grow, will become high value ingredients across multiple product lines. Mara are developing in parallel to the Seaweed Farm, onshore facilities for the movement and processing of their product. Mara are already a successful trading company with good product placement in the market. The cultivation of seaweed at their new seaweed farm will strengthen their supply of seaweed.

The Seaweed Farm design has been made with long service in mind. The use of heavy ropes rather than chains will allow a decade or more of operation before major replacement of parts are required.

Should the business venture founder, Mara will hold back sufficient funds to enable the Seaweed Farm to be removed from site. The surface structure can easily be detached and towed to shore. The anchors that hold the structure in place can be simply lifted to the deck of a winch enabled vessel. The cost of decommissioning would be a fraction of the cost of deployment and the sale of the anchors and floats at the site should easily cover the cost of works.



# St Andrews Bay Seaweed Farm – Navigational Risk Assessment

## 07 Emergency Response Plan

This plan will exist both here for information and as a stand alone document that will be circulated to local HM Coastguard and RNLI stations, local vessel users, local houses and on a signpost overlooking the harbour at St Andrews.

### Emergency scenarios and response

- vessel stranding – in the event of a vessel entering the Seaweed Farm exclusion zone and colliding with the Farm structure, the first concern is the safety of the vessel and crew. 999 should be called and the coastguard/RNLI informed. MARA should also be contacted (number below) and repairs to the Farm structure will be enacted.
- cetacean entanglement – in the unlikely event of a seal, whale, dolphin or basking shark becoming entangled in the Seaweed Farm lines, The British Divers RESCUE HOTLINE: 01825 765546 should be called - <https://bdmlr.org.uk/>
- float loss – occasionally, some line floats may become detached from the Seaweed Farm structure. This will not degrade the integrity of the Farm structure, but Mara should be contacted (number below) so the float can be recovered and the replaced back where it came from.
- Storm damage/loss of integrity of the structure – the design of the Seaweed Farm is such that multiple anchor lines hold the structure in place and the loss of several of these lines would not degrade the integrity of the Farm. But should it be observed that the Farm structure has been damaged or worse, lost from its moorings 999 should be called and the coastguard informed. Mara should also be contacted (number below) and emergency repairs to the Farm structure will be immediately enacted. Local vessels (fishing and aquaculture boats) will be retained as emergency response and ropes, floats and other equipment held in preparation for such emergency repair at Mara shore base 5 miles to the west.

Mara Contact details (to be contacted in all scenarios)

Daniel Bull-Clearie - Production Manager – a duty number will be assigned

Fiona Houston – Director/Founder – a duty number will be assigned



# St Andrews Bay Seaweed Farm – Navigational Risk Assessment

## MARINE EMERGENCY ACTION CARD

### For Mara – St Andrews Bay Seaweed Farm

Development summary (include details of the design, numbers of units/structures, mooring arrangements, subsea information, etc.) A full description including diagrams must be included below.

Emergency Contact  
One of the following or a combination of both, must be 24/7

<b>Duty Holder name</b>	<b>Daniel Bull-Clearie</b>
<b>Primary number</b>	a duty number will be assigned
<b>Secondary number</b>	a duty number will be assigned
<b>Media relations (if applicable)</b>	n/a
<b>Coastguard</b>	<b>999</b>
<b>Police</b>	<b>999</b>

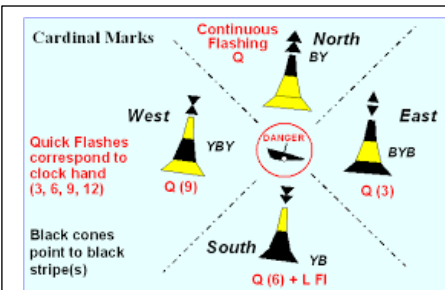
Insert a picture/drawing of the device

See attached diagram of Cardinal Marks and specification of light below

<b>Development location</b>	
Range & Bearing from land	EbyN 5nm
Dimensions of the area	Variable over time
Number of devices	4

Device Specific information (adapt to suit the device)

<b>Heights/depths (m and ft)</b>		<b>Lights / Markings</b>	
Height above sea level	Focal height of light 2420mm	Lights - White	N - Q S - Q (6) + L Fl E - Q (3) W - Q (9)
Depth below surface	1.2m	4 x Y/B Cardinal Marks	North - Black/Yellow South - Yellow/Black East - Black/Yellow/Black West - Yellow/Black/Yellow
Height above seabed	22m OD		



## St Andrews Bay Seaweed Farm – Navigational Risk Assessment

<p>Details of regular maintenance activities</p> <p>Weekly visual inspection from shore or vessel. Records will be kept for inspection by Mara. See example sheet in details.</p>	<p>Summary of number of personnel working offshore and emergency response capabilities</p> <p>Site is fallow until October, There will be no work done at site until then.</p>
---	--

<p>Details of vessels operating to/from the development – include name, callsign, description, communications (e.g. channels used), number of crew, operating limits, etc.</p> <p>No vessels are yet owned by Mara. Operations at the site begins in October. This form will be updated as staff and vessels are assigned to the work.</p> <p>Various vessels will keep visual contact on site as they pass. Local fishing vessels will visually inspect site regularly. Records will be kept for inspection by Mara.</p>
---

Personal SAR Locating Device Make & Model				
Functions: yes/no	COSPAS-SARSAT	AIS	DSC	121.5MHz
	n/a	n/a	n/a	n/a

<p>Additional information pertinent to the development</p> <p>No vessels are yet owned by Mara. Operations at the site begins in October. This form will be updated as staff and vessels are assigned to the work.</p>
--