

Save Our Bays

Public Consultation Submission

concerning

“Response to MMO request for further information”

submitted by Aqua Botanika on 22nd August 2024

regarding

MLA/2023/00227

9th December 2024

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Summary

This Public Consultation Submission sets out reasons the MMO is not in a position to grant Aqua Botanika (AB) a licence for their proposed seaweed farm at Combe Martin, MLA/2023/00227.

We provide evidence to support this in the following sections:

- 1. Lack of a Project Description:** AB has asked the MMO to issue the licence before they design the project, due to cost. This is unprecedented – a detailed project description is necessary to assess a licence application properly. AB has changed its ‘concept’, however it significantly understates the scale of the infrastructure required and the associated risks, basing it on their pilot project in the less exposed Torbay. The project will actually require:
 - >2,500 concrete blocks to weigh it down
 - >10,000m² of seabed lost to the concrete blocks
 - >2,000 buoys to keep the lines from sinking
 - >900,000m of plastic rope, twine and lines to grow the seaweed on
- 2. Metocean Conditions:** Combe Martin is exposed to wave and current conditions far in excess of those experienced by AB on the south coast. This has implications for project design, feasibility, risk of lost gear and associated environmental impact. This has not been considered by AB. We refer to the infrastructure failure of the Algapelago seaweed farm in Bideford Bay during Storm Darragh (see [link](#)).
- 3. Entanglement Risk:** The site is close to important habitat for grey seals, dolphins and harbour porpoises. The farm is massive, with a proliferation of long lines, header lines, seed lines and buoys – as set out above. Coupled with the dynamic metocean conditions, there is a very high risk of entanglement. AB has copy and pasted a risk assessment from their sister company, Biome Algae, which is biased and deliberately misleading. AB has not even bothered to engage with the RSPCA to discuss the seal pup release scheme.
- 4. Habitats Regulations Assessment and Marine Conservation Zone (MCZ):** The farm will interact with two Special Areas of Conservation (SACs) and is 120m outside the Bideford to Foreland Point MCZ. We show that: (a) there is insufficient information presented by the applicants to make an informed assessment; and (b) regardless, loss of 10,000m² of connected habitat is certain and there is a high likelihood of adverse impacts on features (species and habitats) protected by the SACs and MCZ.
- 5. Navigational Risk Assessment:** AB have again copy and pasted most of their NRA from Biome Algae’s version at Port Quin – they even forgot to change the project name on the hazard log. They have used vessel data from the wrong location; ignored the MMOs own mapping of medium / high recreational potential; and provided no evidence of consultation with local fishers or other users of the sea since a single meeting in December 2023.
- 6. Consultation:** AB has a documented track record of deliberately avoiding engagement with fishers at their Torbay farm. At Combe Martin, they engaged with two people prior to applying, from IFCA and the North Devon Fishermen’s Association; and they have held just one public meeting, in December 2023, the minutes of which show the 12 attendees were left with a false impression of what is proposed. They have followed minimum compliance in

posting the project on a lamp post and in newspapers. And they have avoided speaking with key stakeholders, including any conservation organisations or the RSPCA at West Hatch.

7. **Safe Anchorage:** There is no justification for why a location with historic vessel anchorage has been selected, that also intercepts the main route between a denoted anchorage area and the Bristol Channel shipping lane. This could easily have been avoided through more appropriate site selection.

General points:

It is concerning that the original application and this response to a Further Information Request document passed the MMO's quality assurance process. **Aqua Botanika has copied directly from Biome Algae's own licence application documents and sought to cover this with childish formatting amendments.** They have not even changed references specific to Port Quin, which basic editing tools could have identified. And they have presented this to the MMO to support their Combe Martin licence application. We highlight much of this 'copy and pasting' in this document.

AB has no operating experience – Biome Algae operates their Torbay farm for them. **This is one of six applications coordinated by Biome Algae for 100+ hectare seaweed farm licences in the SW.** Acting CEO of the MMO, Michelle Willis, is conducting a 'comprehensive review' of these applications. It is not known why the MMO has therefore put this out for further consultation while this review is pending.

A 100ha seaweed farm in a licence area of 111.43ha is the largest ever applied for in the UK. Before Biome Algae, the MMO had issued licences for just 66ha of seaweed farms, at a much more appropriate scale given the current development of the seaweed sector in the UK. Markets are not developed, good practice is still being defined, and environmental and social impacts and benefits remain uncertain. **There is no justification, let alone commercial rationale, for seeking to turn Combe Martin into an experimental seaweed megafarm.**

The assertions in the document are not evidence-based. AB provides high level and vague descriptions of good practice, however **there is a total absence of a detailed project description or operational plan or procedure.** Much of the procedure is copied directly from Biome Algae applications.

Further, **AB has not demonstrated how it selected this particular site,** specifically how it sought to avoid overlay with important habitats for marine species and other uses of the sea, including cargo vessels, fishers and recreational users.

Fundamentally, **they have totally miscalculated and understated the infrastructure required to operate in the exposed North Devon Coast.** The experience of Algapelago, which suffered a significant infrastructure fail during Storm Darragh should be a cautionary tale for AB and the MMO.

On the basis of the analysis and evidence presented in this document, the only viable decision for the MMO to take is to refuse this application.

1. Lack of a Project Description

Key Points

Aqua Botanika (AB) has asked the MMO to issue a licence before they conduct any detailed design work on their proposed seaweed farm, due to cost (p.44). They present a generic description of the proposed farm; however, this is based on fundamentally flawed assumptions and lack of consideration of the sea conditions off Combe Martin. This renders an assessment of risk impossible. Specifically:

- They have changed the **proposed mooring system** from anchor screws to concrete blocks (termed “eco-blocks”). This is based on flawed comparisons with AB’s existing farm in Torbay (where wave and current conditions are far less extreme); North Sea Farmers pilot in Holland (which uses a different mooring system); and a project in Saco, Maine (which also uses a completely different mooring system).
- The proposed **layout** of the farm has changed significantly from the original feasibility study, from a grid pattern to a series of long lines. The applicants have understated or omitted to state the extent of the lines, ropes and buoys required.
- The description of **tracking devices** to mitigate the risk of lost gear and infrastructure failure is generic and not specific to this project. The applicant is unable to describe how they will be used because there is no detailed project description.
- Information on the **schedule** is vague and non-specific, with no timeline or method proposed for how and when the project will scale from a pilot, to an early phase (of 10-20ha) to the 100ha AB is seeking a licence for.
- There is no information on **marine and/or land logistics**, with reference to contractors based on the South coast only.

Below, we set out clear evidence of insufficient, understated or omitted information. In particular, we show that the scale and nature of infrastructure required for the exposed North Devon Coast is closer to that proposed for the Port Quin Bay farm, North Cornwall, and that the applicant’s comparisons to its existing Torbay pilot farm are totally inappropriate.

There is no precedent in England for the MMO to issue a licence for a seaweed farm before the proposed project has been designed. AB have presented a concept only, which has changed significantly since the original application, and is likely to change again through detailed design. The ‘concept’ put forward understates, or fails to describe entirely, the scope and nature of the infrastructure requirements and operational activities.

Somehow, the application and response document passed the MMO’s *Process for evidence quality assurance* (see [link](#)). It is impossible for the MMO and its statutory advisors to make a determination due to the poor quality of the information provided.

1.1 Proposed Mooring System

AB have changed the proposed mooring system from anchor screws to concrete blocks:

Note that we changed the mooring arrangement of the system design that was part of our original submission from screw anchors to eco blocks. This is to reduce negative impact which is explained in detail below. (p.5)

In the original application, the Navigational Risk Assessment, p.9, the applicants stated:

*We have chosen Helix Screw Anchors because these are easily deployed in sedimentary seabed and mud with little impact to the sea bed or the benthos. Installation of helical screw anchors also requires less on the water equipment than other anchoring systems such as blocks. At any rate, **blocks would be totally inappropriate** due to movement in storm conditions.*

The rationale provided for this dramatic turnaround is as follows:

*From what we've learned we have also **changed the hold downs** which at the time we believed would require seabed screw and anchor techniques. Since then, we have learned from **our experience at Torbay** and from shore applications in the **North Sea Holland**, that infrastructure designs with eco cube designs in high sea energy conditions **are more appropriate**. We have therefore taken the decision to utilize an artificial reef to anchor the farm that we are proposing here. (p.46)*

They also cite “Successful deployment of offshore kelp farms in Saco Bay, Maine” (p.5) in their reasoning for changing to concrete blocks. These comparisons, with Torbay, North Sea Farms in Holland and Saco, Maine are simply not valid, as we show below.

An alternative explanation, perhaps more likely, is that the site conditions have been found unfavourable for screw anchors, so the applicants have reverted to a less favoured approach. This was also the case for the Port Quin proposals, where the consultants supporting this application, Biome Algae, had to revert to gravity anchors. Helical screw anchors provide a considerably stronger anchor method and have a far smaller infrastructure footprint. The ratio of holding power to weight / footprint of screw anchor far surpasses gravity blocks. However, helical screw anchors cannot be used in harder or looser sediments such as those found off Combe Martin.

1.1.1 Torbay comparison

In *Chapter 2: Wave and Current Conditions*, we show that the Torbay seaweed farm experiences totally different metocean conditions to the Combe Martin site. Specifically, wave height comparisons show that Combe Martin is exposed to wave heights above 6m, and above 3m regularly. The maximum wave height recorded in Torbay over the same period (2023) was 3m on one occasion. Similarly, the currents off North Devon are amongst the strongest in the country: ABPmer data gives a ‘Mean Peak Spring Flow’ of 0.13m/s in Torbay, compared to 1.50m/s at the proposed Combe Martin site.

Despite this, AB states that they will use the same number and size of concrete block as they have deployed at Torbay: each anchor point is held down by a single block, 1.5m x 1.5m x 1.5m.

This arrangement has been trialled successfully in sea conditions that are equivalent to the sea conditions that are recorded for the proposed site. (p.4)

Not only is the comparison flawed, it demonstrates that AB is using totally inappropriate assumptions in their presentation of a generic project description to the MMO.

1.1.2 Port Quin Bay Comparison

A better proxy for comparison, for which we have detailed design information, is the proposed seaweed farm at Port Quin Bay. AB has full, unredacted access to this information through its partnership with Biome Algae, however they chose not to refer to it. The following table shows the recorded wave and current data for Combe Martin and Torbay, as well as the actual design case used for Port Quin Bay.

Table 1: Comparison of wave and current conditions, showing that Torbay does not have ‘equivalent conditions’ and Combe Martin is even more extreme than Port Quin.

	Torbay*	Port Quin**	Combe Martin*
Current velocity	0.13m/s	1.03m/s	1.5m/s
Significant wave height	3m	4.56m	6m

* Based on available data for 2023, see Chapter 2

** Based on actual design case used by Arc Marine for the Port Quin Bay proposal

This shows that a mooring system designed for the Combe Martin proposed seaweed farm would have to at least match the scale of that designed for Port Quin Bay, and most likely exceed it. Taking Port Quin as a proxy, we can see that the Combe Martin site would require the following infrastructure for its gravity based anchoring system, far in excess of what is presented by AB.

Table 2: Conservative estimate of concrete block anchor system for Combe Martin based on Port Quin Bay detailed design document (Arc Marine), compared with figures given by Aqua Botanika

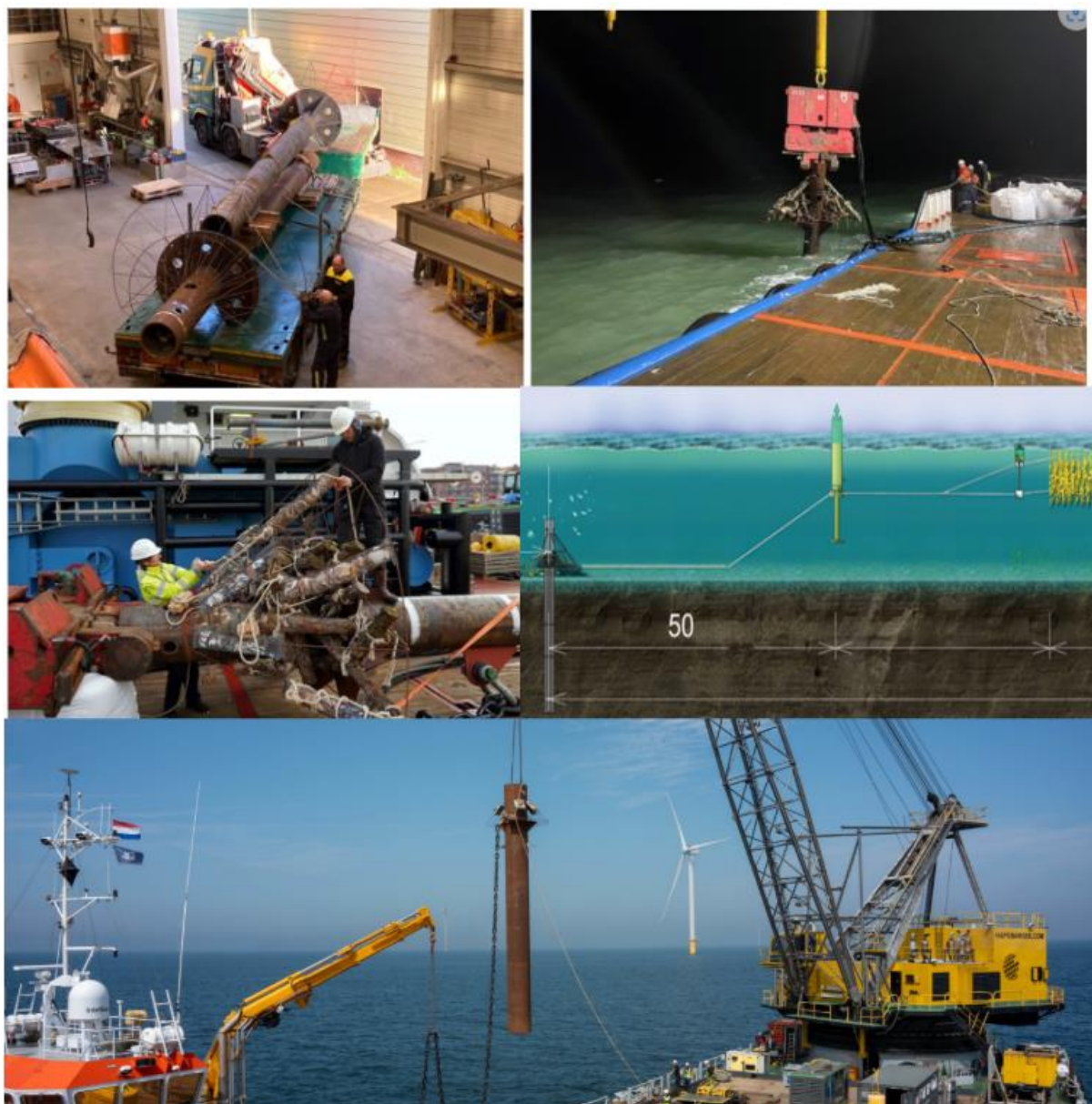
	Based on Port Quin Bay	Proposed by Aqua Botanika
Number of anchor points	506 (2 for each longline, 6 for navigational buoys)	500
Number of concrete blocks per anchor point	5	1
Total number of concrete blocks	2,530	500
Concrete block size	L/W/H – 2m	L/W/H – 1.5m
Total concrete block footprint	10,120 m²	1,134 m²
Surface weight of each concrete block	11,483.15kg	Not specified
Total weight of required concrete blocks	29,052 tonnes	Not specified

1.1.3 North Sea Farms, Holland comparison

It is unclear why the North Sea Farmers pilot has been selected as evidence to support the use of gravity anchors in an exposed coastal location. While the anchors they use are called ‘Eco-anchors’ they are in no way comparable to gravity anchor blocks (so-called ‘eco-blocks’). The North Sea Farmers’ anchors are large metal piles that are driven into the seabed and then connected together with nets. No other North Sea Farmers projects appear to use gravity anchors.

The following pictures show the anchoring system in use by North Sea Farmers (see [link](#)). This is a completely different system to that proposed by Aqua Botanika.

Figure 1: Pictures of North Sea Farmer’s anchoring system – AB have misunderstood ‘eco-anchors’ to be the same as their proposed ‘eco-blocks’.



1.1.4 Saco, Maine comparison

AB states that they have also based the shift from metal screw anchors to concrete blocks on the Saco Bay, Maine seaweed farm.

Since then, we have reconsidered this proposal based on:

5. Design development of high energy near offshore seaweed farms in sites with equivalent exposure off Saco Bay, Maine, USA. (P.42)

In making preliminary assessment we also assessed the recently published Engineering A Low-Cost Kelp Aquaculture System for Community-Scale Seaweed Farming at Nearshore Exposed Sites via User-Focused Design Process. Although this design uses a different anchorage system the location of the case study, a nearshore site in Saco Maine has very similar conditions and tide to our proposed site. (P.48)

See [link](#) to the cited study.

The applicants themselves clarify that this anchor system is completely different to either the original screw anchors or the gravity anchors. Indeed, the Maine project deliberately sought to move from concrete anchors, instead developing a metal drag anchor to provide a more optimum anchoring arrangement. This example therefore directly contradicts the applicant's justification for using a gravity-based system (concrete blocks), providing evidence that such a system is unsuitable for a project with 'high energy' sea conditions.

It is also obvious from the publication that the wave height and current values are far lower than the proposal site at Combe Martin. They use a significant wave height of 4-5m; and a maximum current speed of 0.56m/s as the basis of their design.

1.2 Proposed Farm Layout

The applicants have significantly changed the proposed farm layout from their original feasibility study. This is the case for both the overall layout, and the individual long line / grid array. See *Figure 3* at the end of this sub-chapter. No rationale is provided for this change, however the applicants state that:

The technology of alga culture is constantly advancing therefore our final designs are always completed in the year before deployment to incorporate advancements that reduce risk. (P.4)

In other words, the application contains no usable information describing the system Aqua Botanika will eventually install on which to make an assessment of the risk associated with this proposed seaweed farm. This is unique in all Marine Licence Applications for seaweed farms that have been submitted to the MMO for consideration.

The only description of the layout within the document is attached to the generic schematics:

The farm is laid in rows of long lines. The initial design has 160m runs with up to four lines. These are separated by 20m spacing for access. The rows of lines are also separated by 20m for cross access.

Riser ropes for the Special Marker Buoys (SMB) are rigged as a standard no chain rig, with flats and floating encased cable ropes to avoid drag scoping of the seabed.

Riser ropes for the farm are rigged tight and attached to the eco blocks through splicing. They are then spliced into the headline. 1m below sea surface. Risers are 36mm polypropylene rope. The risers are attached to the blocks using a heavy-duty marine grade steel loop embedded in the rock.

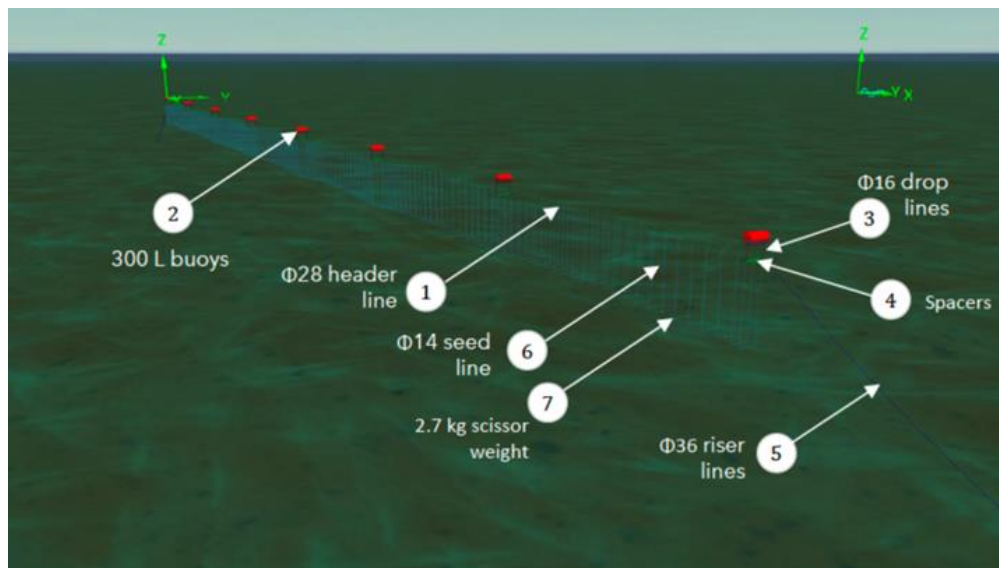
Regarding the buoys, they copy and paste from the Port Quin Bay farm application to state:

The majority of the farm infrastructure is submerged. Only navigational safety buoys and marker/floating buoys are physically on the water's surface. The eco-blocks anchoring the farm sit at depths of 10-15 m. The lines lie 2 m below the sea's surface. The eco-blocks are made from an environmentally friendly concrete mixture (Marine Crete or similar alternative) measuring 1.8 m³. (P.101)

This is incorrect. The minimum depth of the farm, according to AB, is 22m (p.103). The size of the concrete blocks is either 2.25m³ (if 1.5m x 1.5m x 1.5m) or 8m³ (if using 2m cubes such as for Port Quin Bay).

AB appears to be following the Port Quin Bay long line model for the farm layout, having changed this from a grid system. It is reasonable to assume, therefore, that a similar long line configuration will be used for each of the 250 long lines proposed. This is shown by AB and Biome Algae's design consultants as follows:

Figure 2: Arc Marine schematic of the long line design proposed for use at Port Quin Bay.



The one difference is that AB proposes using 'up to four lines' per 160m long line, which increases the number of seed lines required. This would result in a configuration consisting of:

- 8 navigational buoys (4 for the corners and 4 for the midpoints)
- 2,000 x 300l long line buoys (each long line has 8 of these)
- 1,000 x 160m header lines (each of the 250 long lines has 4x header lines)
- 4,000 drop lines (2 per 300l buoy)
- 508 riser lines (2 per long line, 8 independent navigational marker risers)
- 80,000 seed lines (320 per long line)

Calculating the length of the various different lines, this amounts to **c.900,000m of rope** to be deployed at full scale; and **2,008 buoys**. Given the dynamic sea conditions off Combe Martin the risk of lost gear and associated entanglement and marine pollution risk is significant.

These figures may look exaggerated, however they are consistent with descriptions of long line farms in operation elsewhere. The Horizon Seaweed report, entitled *Reflections on our Seaweed Farming Operations 2016-23* provides a very good description of the types of infrastructure in use, as well as the challenges faced in operating them. See [link](#). They state:

*Small scale operations should expect to have to handle low tens of kilometres of rope, and hundreds of buoys, whilst **large scale operations could be handling at least hundreds of kilometres of rope and several thousand buoys.** (P.27)*

Figure 3: Real life examples of long line systems with multiple header lines from Horizon Seaweed ([link](#)). Note these are much smaller scale than the 250x 160m long lines proposed by AB.

Longline system, with 3 header lines per long line



Longline with 3 header lines near harvest



Long line with four header lines (as proposed by AB)

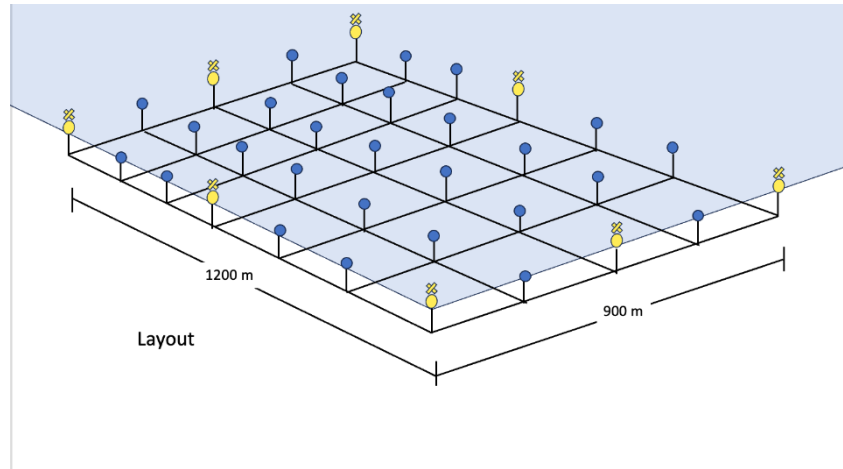


Spacer bar between header lines at the end of a long line, with marker and flotation buoys.

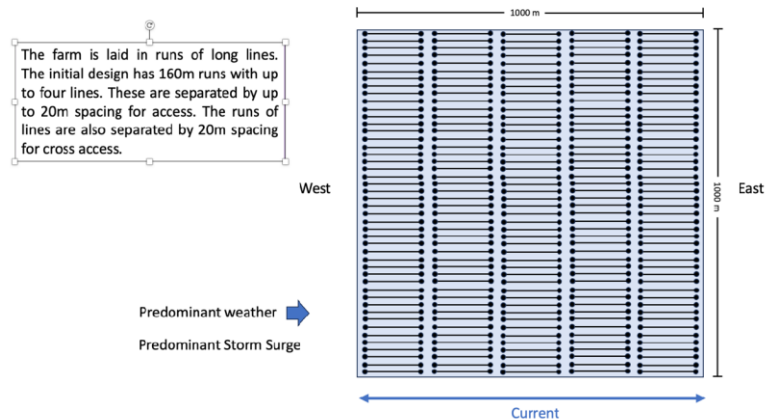


Figure 4: Changes to the overall layout from a grid system in the original application to a long line system in the current document

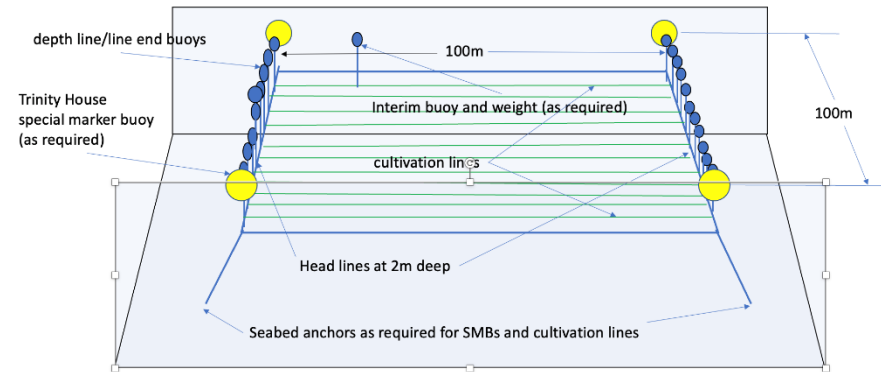
Overall layout (original)



Overall layout (current)



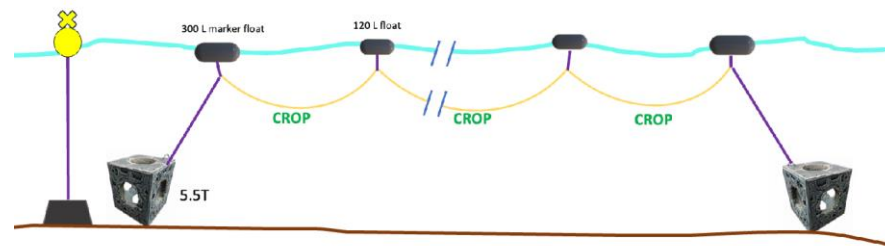
Grid system (original)



Grid Layout – 1 Hectare

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Long line system (current)



Riser ropes for the Special Marker Buoys (SMB) are rigged as a standard no chain rig, with floats and floating encased cable ropes to avoid drag scoring of the seabed.

Riser ropes for the farm are rigged tight and attached to the eco blocks through splicing. They are then spliced into the headline. 1 m below sea surface. Risers are 36 mm polypropylene rope. Headline is 28 mm polypropylene rope. The risers are attached to the blocks using a heavy-duty marine grade steel loop embedded in the block.

1.3 Proposed use of Tracking Devices

The applicants provide a long description of the types of tracking devices available with trials and case studies (pp. 7-10). This is generic information only. They include a section entitled “Details of tracker placement,” (P.10) in which they make commitments to attaching GPS trackers and RFID trackers to buoys, floating lines and other movable infrastructure. They then have a section on “Details of the operating and maintenance regime inc gear retrieval timescale and methods.” (P.10).

The contents of these sections are not specific to the proposed seaweed farm. There is no plan in place; no specificity regarding the number and type of device to be used; and no detail on operational procedures to be applied. This is common to the response document in general: high level commitments based on a long list of good practice principles, without any detailed plans or procedures presented for consideration.

In relation to lost gear, for which tracker devices are considered a mitigant, the applicants state:

*Lost Gear Management: To avoid littering the marine environment, **we use GPS markers on main buoys** and label equipment with company details. Buoys are lashed appropriately and regularly checked. If gear is lost, we follow MMO protocols, alert relevant authorities, and conduct repairs within 24 hours where possible.* (P.11)

As seen above, the farm will require over 2,000 300l buoys in addition to the 8 “main buoys” that AB proposes fitting with GPS trackers. From the document, therefore, we can see that AB only intends to track 8 of the 2,008 buoys required to operate the farm, and none of the more vulnerable 300l buoys.

Aqua Botanika has experienced loss of these buoys on its own farm in Torbay, farming in much calmer waters and at much smaller scale than is proposed in Combe Martin (see below).

Figure 5: Facebook post from Marine Farm Services, AB’s contractor on the Torbay farm, 6 Dec 2023

Looking for some help please
One of the special marks has broken free of the seaweed farm over by Torquay and the owners are on the look out for if it has washed up nearby. If anyone spots it, please can you drop us a message so that we can recover?
Picture below for reference as to what it will look like.
Many thanks in advance!



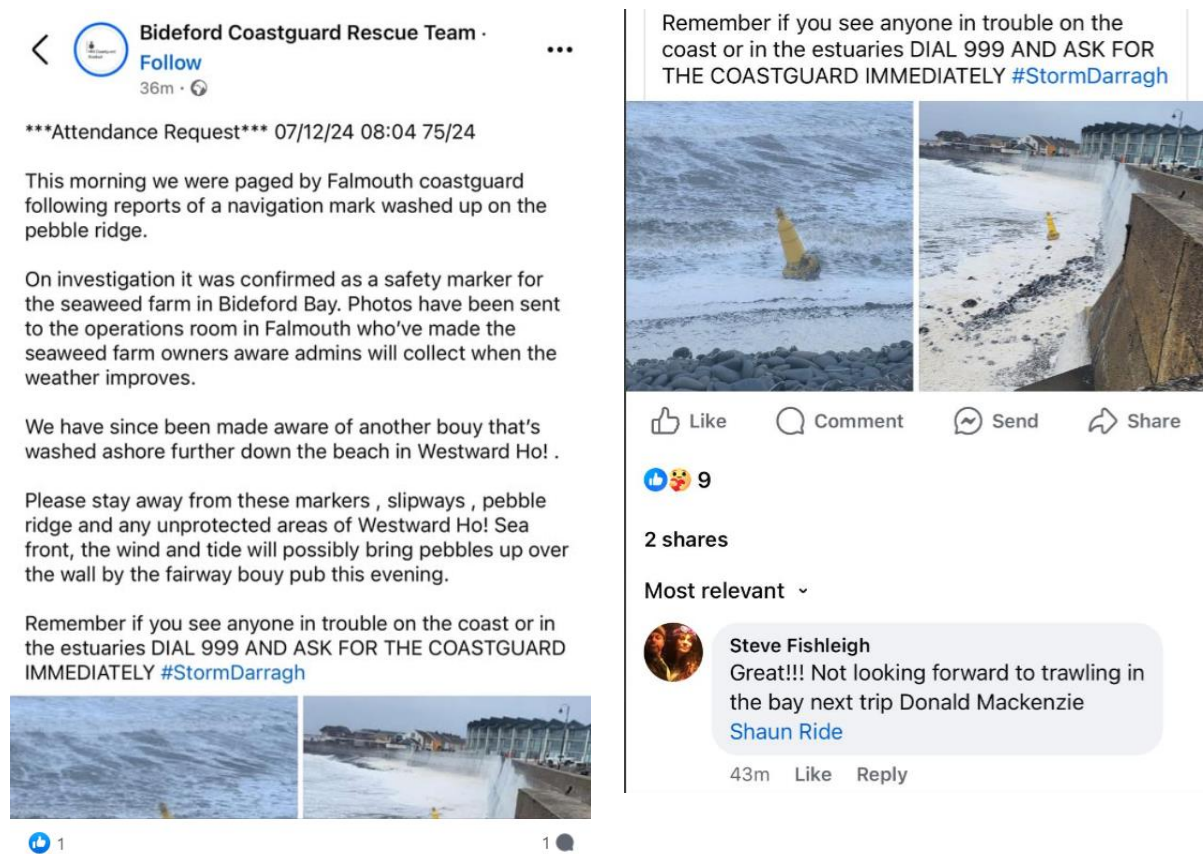
The above incident was not reported to the MMO, as required under its licence conditions (to notify the MMO of lost gear within 24 hours of the incident). Trinity House has requested that a similar requirement to notify the MMO, MCA, Trinity House and the UKHO should be in place for the proposed seaweed farm (p.35). The applicants state simply:

Noted. We will comply with the requirement. (p.35)

Other longline mussel and seaweed farmers we have spoken to confirm that lost gear is not uncommon. The majority of these operators experience gear loss, predominantly of buoys, in considerably calmer waters than those found at Combe Martin. In exposed, offshore locations, losses are reported as more significant.

On 7th December 2024, Algapelago seaweed farm in Bideford Bay suffered a significant infrastructure failure, the consequences of which are not yet known. See screengrabs below from the Coastguard confirming this incident.

Figure 6: Algapelago seaweed farm loss of infrastructure in Storm Darragh, 7th December 2024



1.4 Timeline and Rationale for a 111.43ha Licence Area.

AB does not know, or is not willing to share, a proposed schedule of activities. We have a vague statement that they will start with a 'trial period', then install '10 to 20 hectares', before installing the rest of the infrastructure 'over the next few years'.

Following an initial trial period to confirm the suitability of the location for growing seaweed and to enable Aqua Botanika to establish the necessary supply chain, seaweed buyers, staff training, etc., we plan to install the first 10 to 20 hectares of the farm, with additional sections being installed over the next few years until the farm reaches its total capacity. (P.15)

It is clear from this statement that AB is not ready or prepared to farm seaweed at the industrial scale proposed, and that seeking a 111.43ha licence from the MMO, for a duration of 30 years, is highly speculative. At Torbay, where AB has a licence to farm 10ha, they are farming just 2ha of this site. The neighbouring Algapelago farm in Bideford Bay (the application was also coordinated by Biome Algae) is for 100ha, however they have managed to farm just 2ha to date, due to a lack of markets.

AB provide no rationale for applying for a 111.43ha licence area, the largest ever proposal for a seaweed farm in the UK. In fact, there is no rationale, other than to secure a valuable asset from the state as a speculative commercial venture. There is, however, justification for NOT granting such a large licence over such a long duration:

- First, the MMO has already licensed areas far in excess of market capacity – there is no need for more;
- Second, seaweed farming in the UK is a long way from being ready to scale to these levels – markets are not developed, best practice is still being defined, and environmental and social impacts and benefits remain uncertain.

Given the very large-scale infrastructure, the associated cost and untested risk (operational, economic, social and environmental), it is simply not rational to apply for, or grant, such large areas for licences. In the absence of any explanation, it can only be assumed that this a commercial ploy to secure finance on the back of government-granted leases and licences.

1.5 Lack of Information on Marine and Land Logistics

The ‘Overview of Farm Operations’ on p.72 is entirely copy and pasted from the Port Quin Bay application, with minor layout amendments to hide the fact. In it, they provide the following operational schedule:

Figure 7: AB’s proposed schedule of activities, which is copy and pasted from the Port Quin Bay application (p.73-74)

Farm Activity	O	N	D	J	F	M	A	M	J	J	A	S
Deploying anchors & longlines												
Deploying seeds												
Farm maintenance/research												
Harvesting												

In relation to deploying the infrastructure, they state:

Anchors and longlines will require around 36 days over the lifetime of the farms. Each day, up to 8 longlines can be deployed, involving a mounted crane for eco-blocks and a working vessel to run lines.

We have shown in relation to the Port Quin Bay application that it is unfeasible to deploy that amount of infrastructure in less than 10 years. Sea conditions, port access (which is tide dependent), and the capacity of deployment vessels means that placing 2,520 concrete blocks, each weighing 11.4 tonnes, is impossible in the proposed deployment window of just ‘a few years’.

There is also no commentary on whether Ilfracombe hosts suitable vessels or has the capacity to service the proposed farm. In AB’s original application, they identify capacity constraints, as follows:

From Ilfracombe to Lynmouth there is only Watermouth which can take tenders but not large deployment craft. Deployment is a 1 in 10 year event. The campaign risk amelioration must include redundancy in the flotilla and tug capability to come to the aid of campaign ships that might become distressed. (AB Farm Site Risk Assessment)

Campaigns will be restricted by weather and tide. Weather and tide will disrupt work plans. Work plans must plan for departure and return in tidal windows. Work plans must build in capacity for time that will be restricted by weather. (Ibid)

These capacity constraints have not been further tested in the updated response document. Instead, in the same ‘Overview of Farm Operations’ on p.72-73, we have a vague description of the offshore logistical requirements, summarised as:

- Two vessels will be active for 36 days between Oct and Dec for deploying the seed lines annually
- Twelve site visits will occur between Jan to Mar for monitoring
- Harvesting between Apr to Jun requires 36-72 ‘harvesting events’
- The total number of vessel days per year will be approximately 120.

This is not an insignificant operational profile, however the applicant provides a vague and generic statement that they intend to use 3rd party contractors for this, based out of Ilfracombe.

Whilst it is not expected that we would be developing new infrastructure within Ilfracombe the activities of our seaweed farm will utilise and support existing services locally The installation, farming and landing activities will utilise existing services with the local area as well. (P.54)

Further, AB has not included in its response document any information relating to the expected yield, how it will be processed, or any assessment of the capacity of Ilfracombe harbour to receive it. In the original application, they stated in the Feasibility Study that “Aqua Botanika’s 100-hectare seaweed farm will yield 1.5 million kilograms of seaweed annually.” (P.6)

In the response document, they say:

It is expected that a working harbour in Ilfracombe will be used to land the harvested seaweed material. (p.109)

Landing 1,500 tonnes of wet seaweed at Ilfracombe harbour every year during Apr – Jun will result in considerable capacity constraints on the harbour. There is no explanation of whether this has been discussed or agreed with the Ilfracombe Harbour Masters. Further, there is no detail provided relating to the transport or processing of the product, however removal from the harbour of this quantity will require at least 50x 30 tonne trucks per year, not to mention associated storage and loading equipment.

2. Metocean Conditions

Key Points

- Aqua Botanika falsely states that conditions at Combe Martin are equivalent to its existing pilot farm at Torbay.
- Wave and current conditions are far in excess of those at Torbay, and even in excess of those at Port Quin Bay.
- This negates all comparisons in the response document to the Torbay farm in terms of suitability of infrastructure; risk of failure (lost gear etc.); associated environmental risk; and project feasibility in general.
- Storm Darragh caused significant infrastructure failure to the nearby Algapelago seaweed farm in Bideford Bay, highlighting the risks of operating in these conditions.
- AB has not considered these conditions at all. It doesn't have a project design yet, and is totally underestimating the scale and nature of infrastructure that would be required to withstand these conditions.

Parallels are drawn from the applicant's Torbay site throughout the initial application and the further response documents. This is not a viable proxy site. [Buck et al 2024](#) highlights that the site exposure and current are two of the most dominant factors influencing infrastructure resilience. As such, attention should be given to assessing these metocean variables during site selection and infrastructure design. The applicant regularly references the increased exposure on the North Devon coast, factoring this into their Navigational Risk Assessment and project feasibility, however they do not consider this as an additional risk factor.

Because the proposed site is high sea energy and high-volume current flow our design is based on principles that have been trialled and proven in equivalent exposure as described below.
(P.3)

Table 3: Comparison of wave and current conditions, showing that Torbay does not have "equivalent conditions" and Combe Martin is even more extreme than Port Quin.

	Torbay*	Port Quin**	Combe Martin*
Current velocity	0.13m/s	1.03m/s	1.5m/s
Significant wave height	3m	4.56m	6m

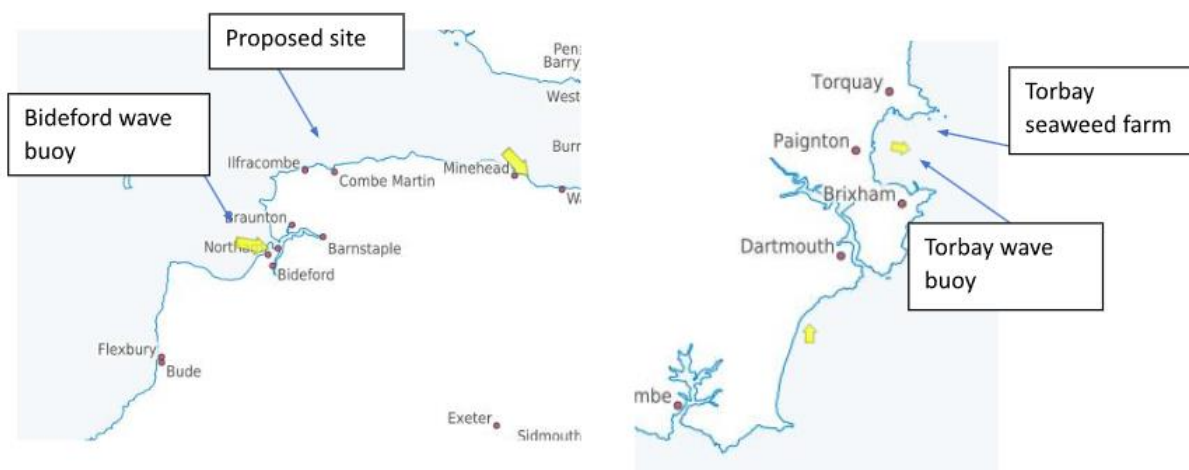
* Based on available data for 2023

** Based on actual design case used by Arc Marine for the Port Quin Bay proposal

2.1 Waves

The national coastal monitoring network contains wave buoy monitoring sites at comparable locations for both the Combe Martin proposals and the existing Torbay site. See [link](#).

Figure 8: Location of nearest wave buoys to Torbay and Combe Martin sites

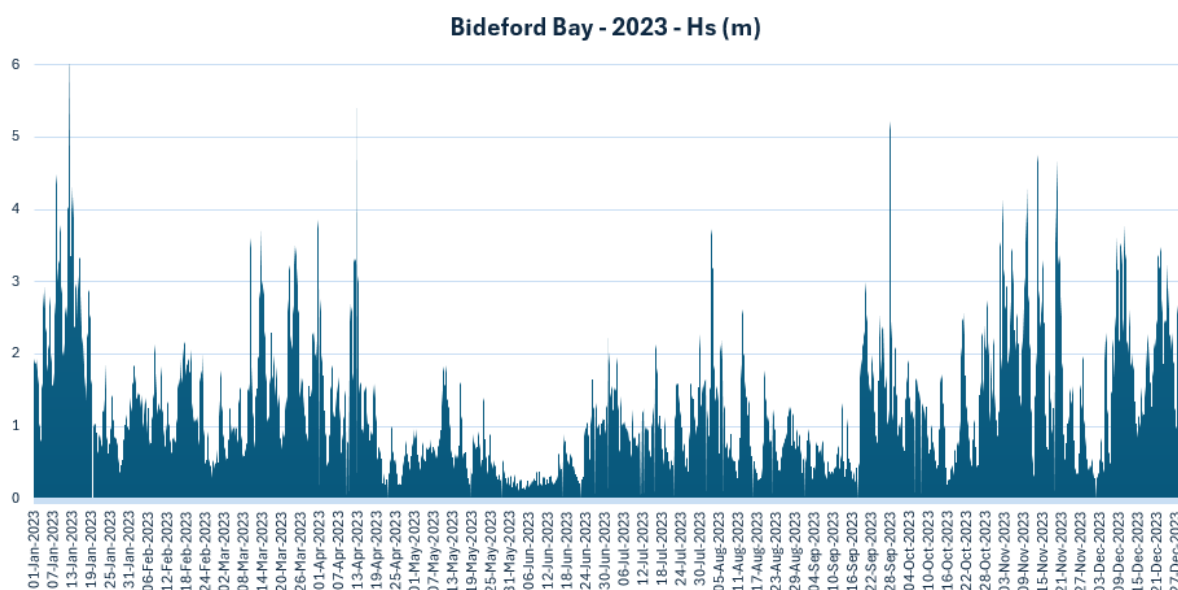


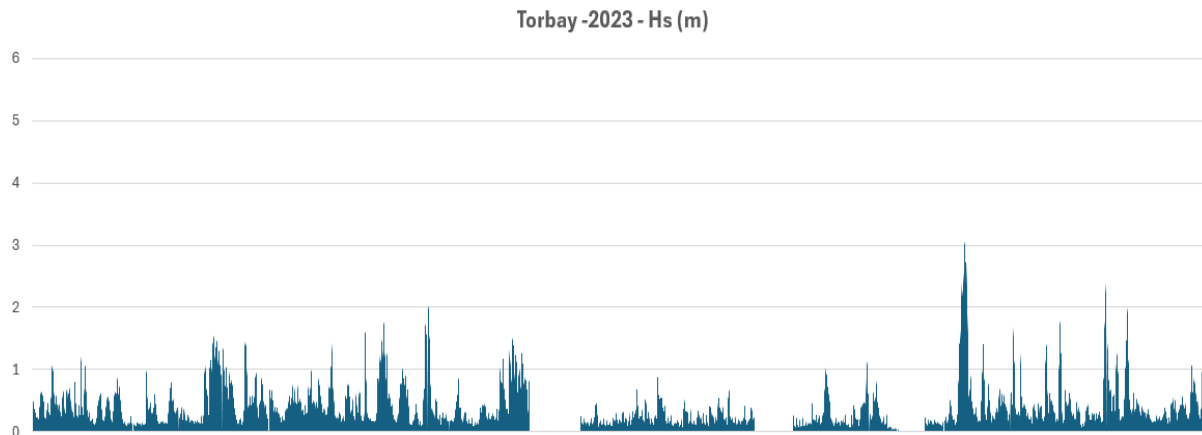
Bideford Bay wave buoy is located approximately 25km to the SW of the proposed site at Combe Martin and is in ~11m of water, exposed from a W to N direction. The Combe Martin site sits in ~25m of water, so wave height will not experience depth limitation, unlike the Bideford site. The proposed site is also exposed to a wider risk window due to its positioning. Therefore, the Bideford Bay data could understate the wave climate at the Combe Martin site, however this should highlight the general conditions expected.

The Torbay wave buoy is located less than 3km away from the existing Torbay site, and may experience slightly more shelter from a S / SE event, however this will be marginal and observations are likely to be largely indicative of the level of exposure at the existing farm.

The applicant claims that data collected over 2023 has led to them changing their design approach for the mooring from screw anchors to concrete blocks. As such 2023 data will be used for comparison, although this follows the same trend across all years.

Figure 9: Comparison of recorded annual wave height data for Bideford and Torbay wave buoys (source: CEFAS WaveNet, [link](#))

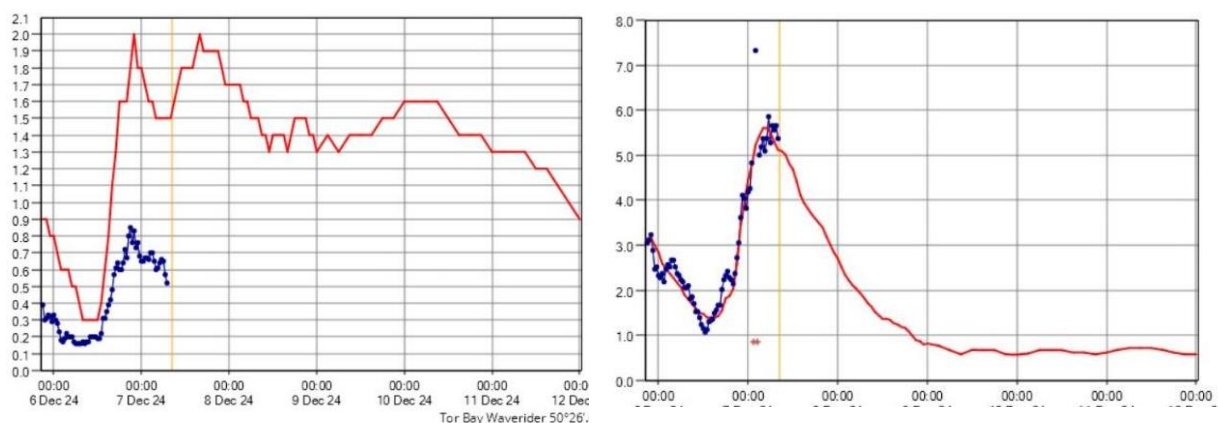




Data spikes have been removed from the Bideford dataset where sig wave heights were over 6m, to ensure a conservative approach was taken. Gaps in the Torbay dataset relate to missing data. In addition, the Scarweather wave buoy, located ~30km north of Combe Martin in the Bristol Channel, shows a similar profile to the Bideford Bay wave buoy.

To further emphasise the point, see below comparison of significant wave height observed and forecast data between Scarweather and Tor Bay wave buoys, accessed on Dec 6th prior to Storm Darragh:

Figure 10: Tor Bay (left) and Scarweather (right) wave buoy observed and forecast significant wave height data during Storm Darragh, showing less than 1m for Torbay and 5.9m for Scarweather ([link](#)).



It is clearly apparent that the Torbay wave buoy observed far smaller wave heights compared to Bideford, both as an average and maximum. This trend is also true for wave period. For example, the average wave period in 2023 was 10.25 seconds at Bideford and only 6.25 seconds at Torbay. When comparing the % of the dataset falling in certain categories of wave heights, this again reinforces the point that Torbay is not of comparable exposure to Combe Martin.

Table 4 – Percentage of 2023 data series in each wave height range.

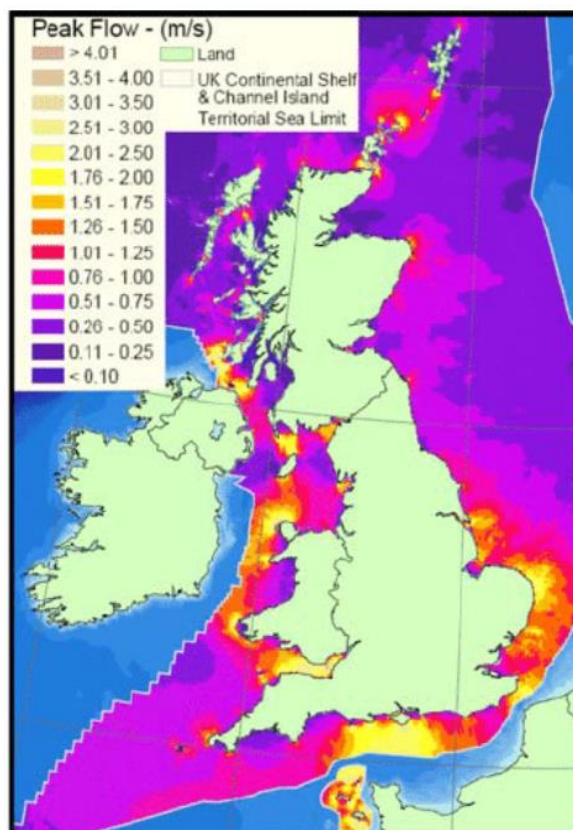
Sig wave height	Torbay (%)	Bideford (%)
>3m	0.05	5.83
2-3m	0.62	11.97
1-2m	6.51	35.38
<1m	92.82	46.82

Wave energy increases exponentially with wave height, and as such the energy associated with the North Devon coast is significantly higher than that experienced in South Devon. Combe Martin is predominantly exposed to a westerly wave direction, as opposed to Torbay being exposed to an Easterly. This significantly limits the fetch and wave height and energy. Therefore, any comparison between the exposure of the Torbay farm and the Combe Martin site should be discounted.

2.2 Currents

Currents play a critical role when determining the necessary anchor weight. The applicants routinely reference that there are strong currents in the area, and rightly so. As Figure 11 demonstrates, the currents off North Devon are amongst the strongest in the country, far stronger than both Port Quin and Torbay, due to the funnelling and tidal range within the Bristol Channel. The ABPmer dataset of metocean conditions, used by the applicants, gives a 'Mean Peak Spring Flow' of 0.13m/s in Torbay, compared to 1.50m/s at the proposed Combe Martin site.

Figure 11: Example of the peak flow for a mean spring tide around the UK ([link](#))



3. Entanglement Risk

Key Points

- The proposed seaweed farm site is close to important wild seal habitat used throughout the year (at Morte Point and Lundy). Dolphins and harbour porpoises are also recorded in the area – harbour porpoise being reliably sighted regularly, according to the Seal Research Trust. Combe Martin is also a regular release site for moulted ex-rehabilitated seal pups from RSPCA West Hatch Wildlife Hospital.
- The farm is large-scale, at 100+ hectares. The proliferation of long lines, header lines, dropper lines, buoys, seed lines and so on, means there is a very high potential for interaction with pinnipeds and marine mammals.
- The dynamic metocean conditions – strongest currents in the UK, wave heights peaking over 6m and regularly exceeding 3m – makes lost gear inevitable.
- The farm, prior to harvest, will consist of 250 ‘seaweed curtains’ (times 2, 3 or 4 depending on the eventual design), measuring 880m² each. Amongst the seaweed curtains are the 80,000 14mm seed lines. This will be a huge attraction, particularly to curious adolescent grey seals.
- AB has conducted no meaningful research to assess baseline conditions for marine mammal prevalence. They present no data. They have not sought to engage with the RSPCA to discuss the annual release of 100 rehabilitated seal pups at Combe Martin. They state simply:

...we do not assume that the proposed farm will be a special threat to these seal pups.
(p.59)

- Aqua Botanika has copied and pasted almost all of its Marine Mammals Risk Assessment from Biome Algae’s application at Port Quin Bay. They have sought to hide this by making minor amendments to the text and format, however they have left in Port Quin specific statements.
- The entirety of the ‘global assessment of entanglement risk’ has been shown to be biased and misleading, written by Biome Algae to understate the risks in support of its own licence application. The literature shows, clearly, that the risk of entanglement cannot be discounted; that the risk is significantly higher for large farms (which this is); and that low reported incidents of entanglement globally may be due to underreporting and lack of data.

3.1 Likelihood of Lost Gear

AB avoids discussion of the risk of lost gear in the response document, focusing instead on providing a generic discussion of the availability and types of tracker device that can be attached to infrastructure to monitor integrity. However, there are recent examples of significant infrastructure failures, as well as more frequent lost gear incidents, that make the risk of lost gear highly likely in the exposed conditions off Combe Martin. In an area with a known prevalence of pinnipeds and marine mammals, including the protected harbour porpoise and grey seal, there is a clear ‘pathway to impact’ and the risk of entanglement should be considered significant.

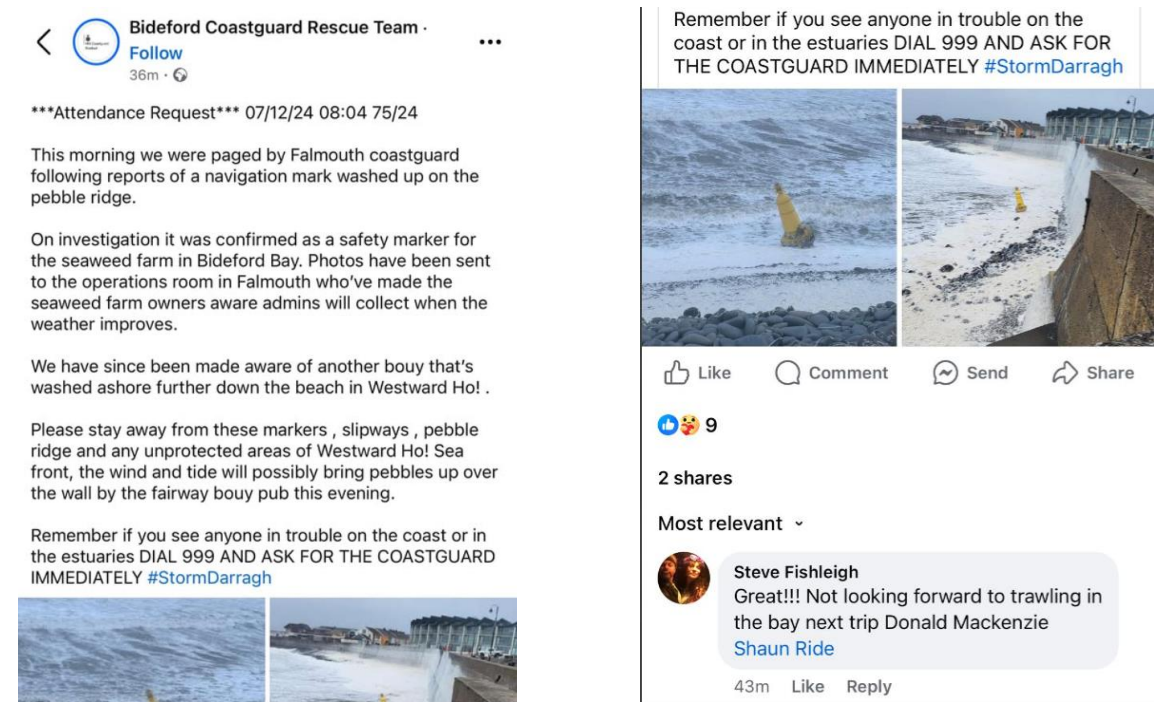
Lost buoys are frequently reported on mussel and seaweed farms, including AB's own in Torbay and Algapelago's infrastructure failure during Storm Darragh (see below). Having broken free, they leave un-tensioned ropes and lines dangling, increasing the risk of entanglement.

Figure 12: Facebook post from Marine Farm Services, AB's contractor on the Torbay farm, 6 Dec 2023



On 7th December 2024, Algapelago seaweed farm in Bidecombe Bay suffered a significant infrastructure failure, the consequences of which are not yet known.

Figure 13: Algapelago seaweed farm loss of infrastructure in Storm Darragh, 7th December 2024



Aside from the buoys, the 900,000m of associated long lines, header lines, dropper lines and seed lines all provide an entanglement risk for marine mammals. The Harvest Seaweed report ([link](#)), for example, discusses multiple operational issues with tensioning lines and failing infrastructure. It also mentions that the finer twine on which seaweed seeds are sewn can break off and dangle untensioned in the water:

Sometimes, either by improper seeding or twine snapping during the season, the twine can sag away from the grow lines. (P.36)




Figure 14: The seed lines consist of ‘fine twine’ wrapped around the 14mm header lines. Pictures from Harvest Seaweed report ([link](#))



3.2 ‘Copy & Paste’ Marine Mammals Risk Assessment

Pages 56-82, the Marine Mammals Risk Assessment, has been almost entirely copy and pasted from Biome Algae’s response to the MMO’s further information requests regarding its Port Quin Bay seaweed farm licence application. In doing so, Aqua Botanika shows very poor judgement and a total lack of serious consideration and effort in understanding the risks specific to their proposed farm at Combe Martin. One reviewer described this as “like marking a badly plagiarised GCSE coursework piece that’s been copied from an equally bad piece of work.” See overleaf for an example of how AB has made childish amendments to present this as their own work.

Figure 15: Aqua Botanika's plagiarised version of Biome Algae's marine mammal risk assessment conclusions (p.77-78)

Aqua Botanika version	Biome Algae version
<p>Overall Risk Assessment for Marine Mammals</p> <p>The comprehensive risk assessment for marine mammal entanglement and disturbance at the proposed North Devon farm indicates that the risk is not significant, based on several key factors:</p> <p>Entanglement Risk</p> <ul style="list-style-type: none"> • Global Evidence: Extensive global studies show limited evidence of marine mammal entanglement in longline farms, even in regions with extensive nearshore farming areas covering up to 22,000 hectares. • Low-Risk Assessments: Consistent global assessments indicate that longline farms pose a low risk of entanglement when best practices are followed. • Local Mammal Assessments: Evaluations of the mammal populations present in the Bay region have been conducted. • Infrastructure Considerations: Less infrastructure is required due to the nearshore location in shallower water, which particularly reduces the length and number of vertical lines. • Good Practices: Operators integrate good practice into operational profiles to minimize risks. • Engineering and Maintenance: The longlines are well-engineered and maintained according to clear protocols to reduce risk. • Static Systems: The farm systems are designed to be static, minimizing the potential for lost gear. <p style="text-align: right;">Aqua Botanika Ltd Grafton Cottage, Grafton Road, Torbay, Devon, England TQ1 1QJ Company Number 12529989</p> <hr/> <p style="text-align: center;"></p> <p>Page 78</p> <hr/> <ul style="list-style-type: none"> • Retrieval Plans: Comprehensive plans are in place for retrieving any lost gear promptly. • Operational Timing: Operations are timed to avoid sensitive periods for breeding seals and other marine mammals. • Distance Maintenance: The farm maintains a safe distance from sensitive shore-based sites. • Site Selection: The site is located over coarse sediment that does not support prey species for marine mammals and is outside main migratory routes. • Farm Design: The farm includes clear channels for navigation and ensures the infrastructure footprint does not exceed 10% of the combined licensed site area (10/100 hectares). • Monitoring Programs: Proposed monitoring programs include real-time and on-site monitoring with alert systems and rescue response plans. • Employee Training: Employees are trained in marine mammal identification, record-keeping, and response protocols. • Navigational Routes: Clear navigational routes are maintained around the farm's periphery. • Interaction Policies: Policies are in place to manage interactions with marine mammals effectively. 	<p style="text-align: center;"> </p> <p>15.0: Risk Assessment: Conclusions</p> <p>The overall risk assessment for marine mammal entanglement within static longline farms and disturbance for the proposed Port Quin farms is not significant based on, but not limited to the following:</p> <ul style="list-style-type: none"> • Global studies which indicate limited evidence of entanglement in longline farms, even in areas with 22,000 Ha of longline farms in the nearshore environment. • Global assessment that risk from longline farms is consistently low with good practice. • Assessment of mammals present in the Bay region • Less infrastructure used due to nearshore location in shallower water, particularly vertical lines. • Good practice integrated into operational profiles by operators. • Well-engineered longlines with clear maintenance protocols to reduce risk. • Absolutely static farm systems which minimize lost gear and are fully tensioned. • Lost gear retrieval plans. • Operational profiles removing pressure at sensitive periods for breeding seals and other mammals. • Maintaining distance from sensitive sites (shore-based). • Site located over coarse sediment that does not support prey species for marine mammals. • Site located outside of main migratory routes. • Low cumulative site footprint in relation to the overall protected Bristol Channel SAC (porpoises). • Clear channels within farms for navigation and a total maximum infrastructure footprint of 10% of the combined licenced site area (10.08/100.8 Ha). • Monitoring programs proposed and real-time/on-site monitoring (alert systems) and rescue response plans in place. • Employee training in marine mammals (ID, records, responses). • Clear navigational routes around the periphery of the farms. • Policies with regards to marine mammals and interactions/operations. <p style="text-align: right;">91</p>

References to Port Quin have not been removed, which further demonstrates the lack of consideration and effort applied in conducting this so-called risk assessment. For example:

Given that the proposed farms occupy 1 km² of an approximately 5.16 to 5.54 km² bay area, they cumulatively occupy about 18-19.37% of the bay, with maximal infrastructure levels occupying 10% of the 1 km². (P.64)

The eco-block anchors will occupy 1.14% of the total farm footprint, with another 8.86% comprising ropes and floats for up to 288 longlines (maximum site capacity). (P.71)

Both of these statements refer specifically to the Port Quin Bay seaweed farm design and context.

3.3 Marine Mammal Risk Assessment is deliberately misleading

Detailed evidence has been provided to the MMO showing that Biome Algae (copied and pasted by Aqua Botanika) are guilty of significant bias and deliberate misrepresentation in their presentation of the entanglement risk. This can be read in full in Chapter 3 of the objection to the Biome Algae Port Quin Bay licence application – [link](#)).

In summary, **the literature on entanglement is more cautious than the applicant claims and it cannot be reasonably assumed, especially given the scale of the proposed farm and known prevalence of marine mammals, that there is no significant risk.**

From the sources cited and listed in the references (p.79), we provide some more balanced quotes below:

Price et al. 2017, Protected Species & Marine Aquaculture Interactions - [link](#)

*There remains **overall a general lack of scientific reporting on entanglement frequency and severity** of resulting injuries, mortality rates associated with interactions, effective deterrent methods, and technological innovation to reduce interactions and decrease harm if contact occurs. Importantly, negative data—scientifically collected data reflecting the lack of interactions with protected species—is also lacking. This makes it difficult to know if the paucity of reported incidents is due to low numbers of interactions or failure to detect and report them. However, the growth of the aquaculture industry worldwide is drawing attention to the potential environmental impacts of offshore aquaculture, including impacts to protected species. (p.39)*

Campbell et al. 2019, The Environmental Risks Associated With the Development of Seaweed Farming in Europe - Prioritizing Key Knowledge Gaps - [link](#)

Whilst current small-scale cultivation projects are considered ‘low risk,’ an expansion of the industry that includes ‘large-scale’ cultivation will necessitate a more complete understanding of the scale dependent changes in order to balance environmental risks with the benefits that seaweed cultivation projects can offer. (p.1)

[Note that Campbell et al. consider ‘large-scale’ seaweed farms as those requiring more than 50 x 200m lines. The proposed farm consists of 250 x 160m lines.]

Entanglement of animals cannot be ruled out, even when assuming cultivation practices will be managed to reduce the likelihood of entanglement. Small-medium scale cultivation projects pose a similar threat of entanglement to many existing aquaculture activities as mooring and cultivation equipment will utilize similar technologies, and as **large-scale cultivation projects will inherently require a greater infrastructure the risk will be increased.** (p.7)

There is limited evidence to suggest whether marine mammals and other megafauna will avoid or be attracted to cultivation activities and any responses are likely to be location- and species-specific. Cultivation activities may enhance foraging opportunities for some species, and although this would be a positive interaction it could lead to a greater risk of entanglement if poorly managed. (p.7)

Clement et al. 2013, LITERATURE REVIEW OF ECOLOGICAL EFFECTS OF AQUACULTURE, Effects on Marine Mammals - [link](#)

Physical interactions between aquaculture and marine mammals can lead to an increased risk of entanglement in structures or non-biological wastes from farm production. The risk of entanglement increases as it tends to attract predators to any associated aggregations of wild fish. (Table 4.9: Entanglement caused by farming of lower trophic level species, p. 4-15).

The presence of farm structures and their associated activities can potentially exclude or modify how particular species of marine mammals use critical or sensitive habitats. Present research has highlighted that the nature of the exclusion greatly depends on the type of culture method and the particular marine mammal species present in the cultivation area. Whales and particular dolphin species tend to be more sensitive to such disturbances, while **pinnipeds and other dolphin species (such as common and bottlenose dolphins) may actually be attracted to the novel structures and/or habitat**. (Table 4.8: Habitat modification and/or exclusion caused by farming of lower trophic level species, p.4-14).

4. Habitat Regulations Assessment (HRA) and Marine Conservation Zone (MCZ) Risk Assessment

The MMO has informed us of the following (correspondence dated 2nd December 2024):

...the project is likely, either alone or in combination with other plans or projects, to have a significant effect on a protected site or any process on which any protected feature is dependent as detailed within the Habitat Regulations Assessment (HRA).

We have completed both a HRA and Marine Conservation Zone (MCZ) Assessment for this case. Due to proximity to designated sites, we are considering the impact of the proposed works on the Bideford to Foreland Point MCZ, and the HRA considers the impacts the proposed works pose to the Bristol Channel Approaches Special Area of Conservation (SAC) and the Lundy SAC.

For clarity, the process (as we understand it) is that the MMO completes these assessments then seeks input and advice from its Primary Advisors, including the government bodies the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) and Natural England (NE).

We refer to gov.uk [Guidance: Habitats regulations assessments: protecting a European site. How a competent authority must decide if a plan or project proposal that affects a European site can go ahead.](#) (see [link](#)).

The process goes through two stages:

- Screening (to determine if there is a ‘likely significant effect’ (LSE) on the conservation objectives of a site)
- Appropriate Assessment (to assess the likely significant effects on a protected site’s integrity in more detail and consider mitigation)

A proposal will pass the integrity test if the appropriate assessment can show that there is **no reasonable scientific doubt** that the proposal will not have an adverse effect on the integrity of the site. If the proposal fails the integrity test because you cannot rule out an adverse effect on site integrity, the proposal must be rejected in its current form. This means permission is not granted.

Below we set out some general points for consideration by the MMO and its Primary Advisors demonstrating that there is **insufficient information presented** by the applicants to make an informed assessment; that **reasonable scientific doubt exists**; and that an **adverse effect on site integrity cannot be ruled out**.

3.1 General points

3.1.1 The project is not sufficiently defined to make an informed assessment.

The applicants have stated that they will only design the proposed seaweed farm after a licence is issued, as they don’t currently have the resources to pay for this. They have presented various design options in the original application and the response document, showing significant differences in key design features that impact site integrity (both on the SACs and the MCZ). Please see Chapter 1 for more detail, but to summarise here:

- They have changed the anchorage design completely, from helical screw anchors to concrete blocks – despite originally ruling out concrete blocks as ‘*totally inappropriate*.’
- They have based the new concept on their farm at Torbay, which is in relatively benign waters, and have totally understated the scale of the anchoring system required to operate off Combe Martin (they will need c.2,500 concrete blocks, not 500 as stated).
- They have presented different layout options, basing their latest concept on the farm proposed at Port Quin Bay. This has been shown (not by the applicants) to consist of a proliferation of long lines, header lines, seed lines, dropper lines and buoys, but this has not yet been defined in detail.
- This is a large-scale farm by accepted definitions¹, and the literature shows that the risk of entanglement (and other environmental risks) are significant for farms of this size.
- The timing of the proposed projects is vague (a pilot, then 10-20ha, then scaling to the full 100ha ‘over a few years’), with associated activities (vessel movements etc.) undefined.

Government guidance states that the MMO must take a “precautionary approach at each stage of the HRA process.” During screening, they are required to “consider the proposal’s integral design features or characteristics, such as its layout, timing and location to inform your screening decision”. Based on the information provided, it is likely that the MMO moved to the Appropriate Assessment stage because they did not “have enough evidence to rule out a risk.”

The same is true for the Appropriate Assessment. For example, the MMO (and Primary Advisors) are required to assess effects on the SAC’s integrity, including consideration of:

- the scale, extent, timing, duration, reversibility and likelihood of the potential effects
- how certain you are of the effects occurring
- mitigation measures that have been proposed or conditions you can attach to avoid or limit the effects
- how confident you can be that mitigation measures will be effective

As above, it is not possible to assess the ‘scale, extent or timing’ of the proposed seaweed farm’s effects without a detailed project design. In relation to mitigation measures, taking the risk of lost gear and entanglement risk for species protected under the Bristol Channel and Approaches SAC and Lundy SAC – harbour porpoises and the grey seals – the mitigations proposed by Aqua Botanika are generalized and not specific. For example, they say they will attach tracker devices to the ‘main buoys’ only, leaving the 2,000 smaller buoys attached to the long lines unmonitored. Given that these types of buoy are frequently lost on long line farms, including the applicant’s own farm in Torbay, there must surely be very low confidence in the effectiveness of the mitigation measures proposed.

Insufficient evidence + reasonable doubt = adverse effect cannot be ruled out.

¹ Campbell et al. consider ‘large-scale’ seaweed farms as those requiring more than 50 x 200m lines. The proposed farm consists of 250 x 160m lines. [Link](#).

3.2 Bristol Channel Approaches Special Area of Conservation (SAC) and the Lundy SAC.

The Bristol Channel Approaches SAC and the Lundy SAC are located to the West of the proposed farm. However, the MMO is required to take into account “any overlaps or interaction with the protected features of a site in a direct or indirect way.” ([Govt guidance](#))

The conservation objectives for the Bristol Channel Approaches SAC are stated as follows ([link](#)):

The conservation objectives for the sites are to maintain site integrity by ensuring:

- 1. Harbour porpoise are a viable component of the site*
- 2. There is no significant disturbance of the species*
- 3. The condition of supporting habitats and processes, and the availability of prey is maintained*

The Lundy SAC lists the Grey Seal as a qualifying feature.

Both of these species are sighted regularly in the location of the proposed seaweed farm, which is therefore deemed to overlap and interact with the protected features of both SACs.

AB does not make a single mention of either the Bristol Channel Approaches SAC or the Lundy SAC in the entire response document. Not even in the Marine Mammals Risk Assessment (which is copy and pasted from the Port Quin Bay seaweed farm application).

The harbour porpoise is not mentioned once in the response document. The only reference is in the same Marine Mammal Risk assessment, which states:

Porpoise and Dolphin Presence: Operations will consider the presence of porpoises and dolphins, focusing on reducing risks during their peak presence times. (p.73)

Regarding the grey seal, Aqua Botanika includes the following statement, which does not reference the Lundy SAC, rather the Pembrokeshire SAC. The statement appears to be largely irrelevant. Again, it is copy and pasted from the Port Quin Bay farm application.

Grey Seal (Halichoerus grypus) Habitat and Connectivity - The licensed site for the proposed seaweed farm is connected through migration (functional connectivity) to other regions such as North Cornwall, West Cornwall, and Pembrokeshire Marine SAC. North and West Cornwall are graded as D, indicating they are below SSSI standards and possess non-qualifying features. Pembrokeshire SAC and connected areas exhibit a range from grade A/B (outstanding to excellent examples of the feature) to C (of national importance), as illustrated in Figure 2.0. Pembrokeshire is notable for being the largest breeding colony on the West Coast, accounting for 2% of the annual pup production. (P.53)

The only other mention of the grey seal is in relation to the RSPCA's release site in Combe Martin. This information was provided by the RSPCA to the MMO, which passed it on to Aqua Botanika by email on 15th January 2024. AB states in the response document:

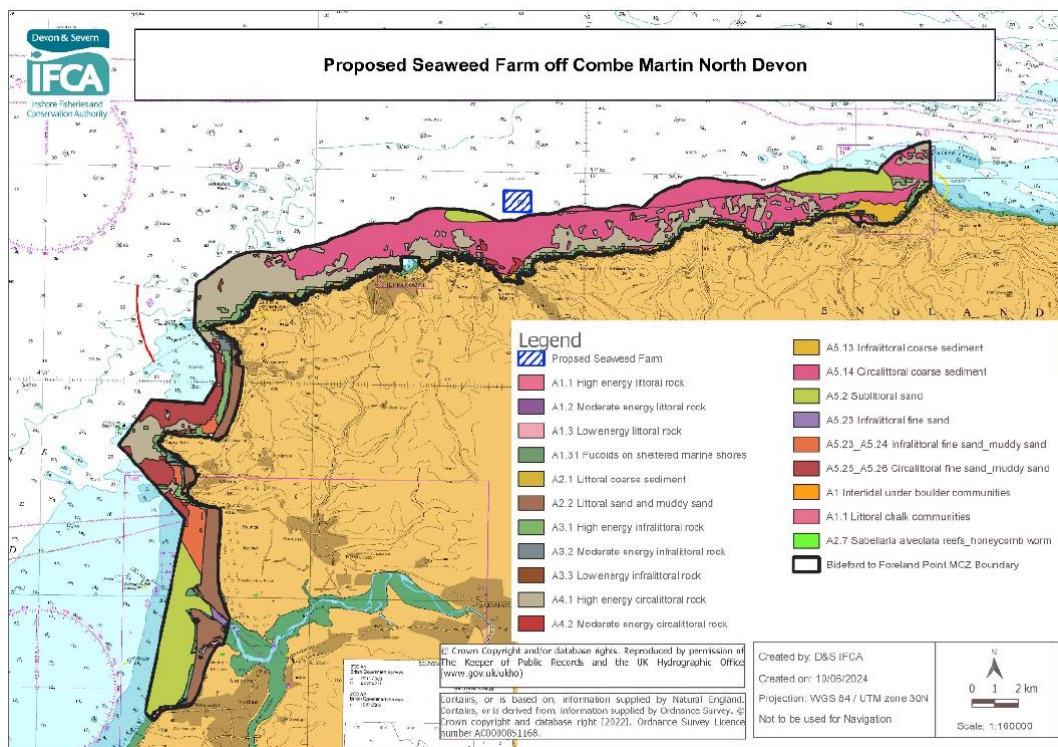
We are aware that the RSPCA wildlife rehabilitation centre have a close tie with Combe Martin. Since 2015 they have been releasing rehabilitated grey seal pups which recently have averaged some 100 releases per year. As may be seen in this discussion and our policy on Marine Mammals generally, we do not assume that the proposed farm will be a special threat to these

seal pups. In keeping with our policy and with the understanding that these releases are local we will maintain a special vigilance for grey seal pups in the vicinity of the farm. We will engage with the RSPCA rehabilitation facility in Somerset to increase our awareness of timing and nature of these releases. (P.59-60)

We note that Aqua Botanika has not contacted the RSPCA directly to date to discuss their proposed seaweed farm, which is directly offshore 1.8m from the release site and will almost certainly be of interest to the released rehabilitated pups. The statements provided in the response document are totally inadequate given the clear entanglement risk presented by the farm to these and other resident grey seals. Certainly, an adverse effect cannot be ruled out.

3.3 Bideford to Foreland Point Marine Conservation Zone (MCZ)

The proposed farm is located 120m outside the Bideford to Foreland Point MCZ.



The proposed farm will clearly interact with the protected features of the MCZ, both those located within the MCZ itself and those connected to the MCZ. The protected features of the MCZ are partially listed on p.16, and include:

- Subtidal coarse sediment (which constitutes the seabed under the proposed farm)
- Fragile sponge & anthozoan communities on subtidal rocky habitats
- Honeycomb worm (*Sabellaria alveolata*) reefs
- Pink sea-fan (*Eunicella verrucosa*)

Aqua Botanika's general assertion in its own MCZ Impact Assessment (p.17) is that the project may disturb these features, but that there will be no damage to sensitive habitats and that the concrete block anchoring system will provide ecological benefits for marine life.

The applicant states:

Physical structures used in seaweed farming may alter existing habitats, potentially displacing native species. We intend to mitigate this by creating artificial reefs using Eco blocks to secure our infrastructure and provide a reef habitat for marine life. (P.18)

Installation and maintenance activities may disturb the seabed and associated marine life, particularly during the setup and harvesting phases. See above for the use of Eco Blocks to anchor the infrastructure. We will not be drilling into the seabed or undertaking any work that will have a negative impact.

Potential for gear entanglement and damage to sensitive habitats like rocky reefs and seagrass beds. We have proposed a site outside of the MCZ. Due to the strong tidal flows in the area proposed for our farm, which effectively scrubs the area clean and has created a barren seabed. This feature, combined with our design, which utilises artificial reef cubes (rather than sea anchors) to encourage biodiversity and new life rather than seabed anchors, plus the use of floating lines with no nets or structures in which sea life can become entangled, means that we do not believe there will be any damage to sensitive habitats or risk of entanglement. (P.20)

The proposed site of the seaweed farm is 120m at its closest point from the MCZ. Figure 2 shows that the habitats nearest to the proposed seaweed farm location are coarse sediment and subtidal sand... it is unlikely that the Eco Block anchors for the proposed seaweed farm will have an impact on the features of the MCZ as the proposed site lies outside of the MCZ. (P.22)

...the introduction of the Eco Blocks will provide additional beneficial reef structures for local marine life (various)

These assertions are seriously flawed. They are certainly not evidence based. Below we provide some facts and evidence that undermines the assertions made in the applicant's document.

Loss of habitat and designated features

The anchoring system will consist of over 2,500 concrete blocks, with a total footprint of over 10,000m². Depositing 29,000 tonnes of concrete on the seabed will result in a significant loss of habitat. The seabed is subtidal coarse sediment, which is a designated feature of the MCZ. The seabed under the farm is functionally connected to that inside the MCZ, just 120m away. 10,000m² of this habitat will be lost.

AB's characterisation of the seabed as 'barren' is false and misleading. The North Devon Marine Nature Recovery Plan 2022-2027 ([link](#)) describes the same subtidal sediments as follows:

These sediment habitats typically extend from the extreme lower shore (below the intertidal zone) down to a depth of 200m. Sediment types range from boulders and cobbles, through pebbles and shingle, coarse sands, sands, fine sands, muds, and mixed sediments. Sublittoral coarse sediment and sublittoral sand habitats cover huge extents of NDBR. Shallow subtidal habitats that are exposed to stronger tidal currents and increased wave action tend to support less diverse communities dominated by robust, mobile or burrowing species adapted to the variable conditions. In contrast, in sheltered or deeper waters that are less perturbed by natural disturbance some of the most diverse marine communities can be found. Many of the inshore habitats are important nursery grounds for juvenile commercial species such as flatfishes and

bass. While offshore, coarse sediment and sand habitats support commercially important fish and shellfish fisheries. (P.37)

In the absence of a seabed survey under the proposed farm (survey data extends to the boundary of the MCZ only), it is also precautionary to assume that other designated features of the MCZ, including the fragile sponge and anthozoan communities, honeycomb worm reefs and pink sea-fan, may also be present. Again, a 10,000m² footprint is likely, therefore, to result in a loss of these features.

Lost gear risk to MCZ designated features

As has been shown, the metocean conditions at the proposed farm location are extreme, including peak waves of over 6m and currents exceeding 1.5m/s. There is a high likelihood of lost gear, given these conditions and evidence of lost buoys and other infrastructure from long line farms in the UK (including the applicant's own farm in Torbay and Algapelago's infrastructure failure during Storm Darragh).

Tidal flows, currents, wave and wind directions make it highly likely that lost gear will interact directly with the MCZ, impacting its designated features. The currents are likely to carry any lost gear the length of the MCZ, with waves and tides bringing it onshore. The applicant's proposed mitigation measures (attaching GPS locators to the 8 'main buoys' only) are unlikely to be effective.

Ecological benefit of concrete blocks is questionable

The applicant devotes a significant portion of its MCZ risk assessment to asserting that the use of concrete blocks (termed 'eco-blocks') will be beneficial to the marine environment. This assertion is highly dubious.

First, creating an artificial habitat constitutes a change to the natural habitat (which AB has wrongly assumed is 'barren'), and this should therefore be subject to an appropriate environmental assessment. Particularly as 10,000m² of this artificial habitat is to be created. Second, in the applicant's own words, the strong tidal flows are likely to 'scrub the area clean' meaning the benefits they may have observed in the relatively calm waters of Torbay (on which they make their assertions) cannot be said to automatically transfer to Combe Martin.

In conclusion, not only can an adverse effect not be ruled out, it is highly likely that the proposed farm will have a significant adverse effect on the MCZ, for which proposed mitigations are unlikely to be effective.

5. Navigational Risk Assessment (NRA) and Emergency Response Plan

Expert opinion on safety

The document does not seek independent technical support, rather relies on their existing farming partner Biome Algae, which is not qualified to provide an expert opinion on safety (p.94). Biome Algae's Angela Mead has no formal qualifications related to this discipline and the company has never held its own Marine Licence. Serious concerns have been raised about Biome Algae's own Navigational Risk Assessments associated with the live MLA/2023/00307&8 applications, from which much of Aqua Botanika's NRA has been copied. On these licence applications, a Naval Architect is referenced as supporting the assessment, yet when contacted directly they were completely unaware of the applications.

The applicants use their Torbay farm as evidence to demonstrate competence to undertake this assessment. The MMO are currently investigating reported breaches of licence in connection with this site. This includes the failure to disclose the loss of a navigational marker (see below). This does not reflect good working practices within an existing licenced activity.

Figure 16: Facebook post from Marine Farm Services, AB's contractor on the Torbay farm, 6 Dec 2023

Looking for some help please
One of the special marks has broken free of the seaweed farm over by Torquay and the owners are on the look out for if it has washed up nearby. If anyone spots it, please can you drop us a message so that we can recover?
Picture below for reference as to what it will look like.
Many thanks in advance!



Infrastructure concerns

The document states that the longlines are separated by 10-20m spacings for access. This is not consistent with the wider document and earlier submissions.

The statement on page 88 that '*harvesting will be completed by June, ahead of the busy summer period for marine traffic*' is misleading. Only the seed lines will be removed, and the long lines will be in situ throughout the year. Elsewhere in the application, the applicants state that they can't commit to farming periods as this will depend on a range of factors. Again, harvesting has

operated outside of licenced periods on the Torbay site, including over peak periods. All records to support this have been submitted to the MMO's Brixham office, which is currently investigating.

Quality of evidence

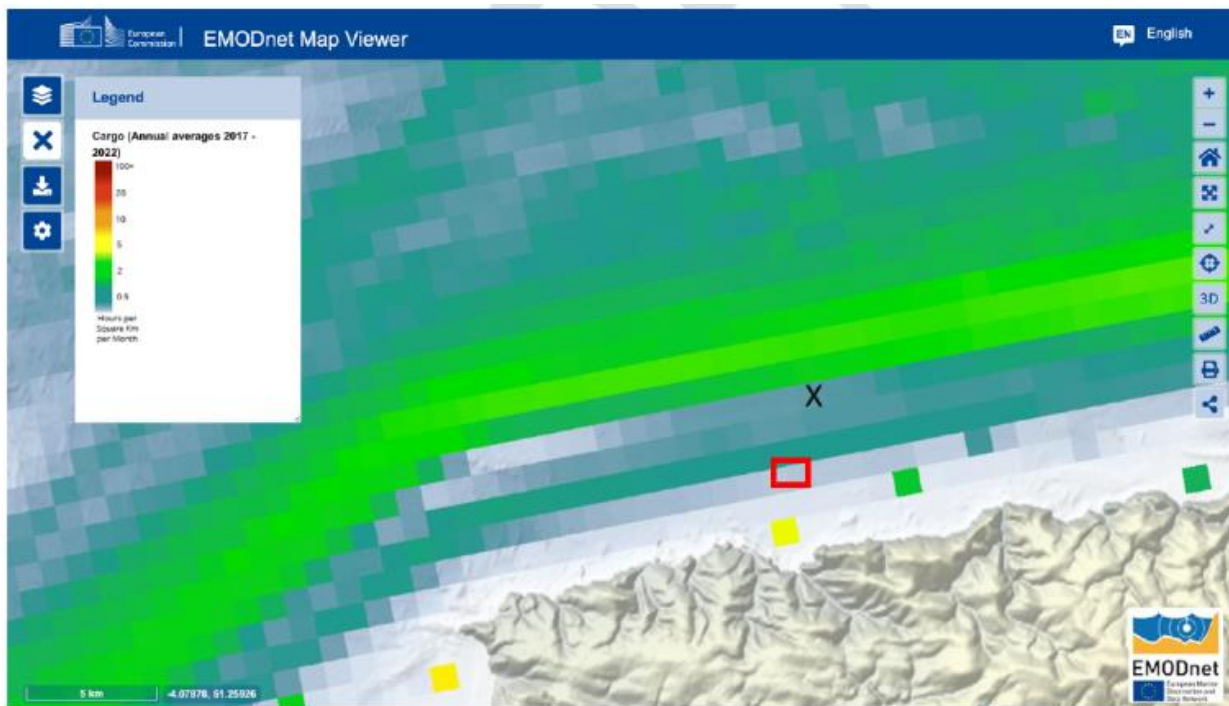
Page 88 of Aqua Botanika's NRA is a word-for-word copy of page 400 of the MLA/2023/00307&8 Further Information Document. Each navigational risk assessment should be unique and site specific. This shows a disregard for the critical nature of this component.

The review of RNLI incidents is purely speculative, and no direct conclusions can be drawn from their assumptions.

Wind, wave and current data has been assessed separately (*Chapter 2*). The applicant's approach to comparing the metocean conditions to Torbay is inaccurate and significantly understates the risks at the chosen site.

EMODnet data is used to inform the Navigational Risk Assessment. The applicants have indicated they have used data from a cell almost 2km away from the proposed site in error. As such, it is not possible to assess the conclusions drawn from this dataset. This is a significant oversight.

Figure 17: EMODnet dataset included the X to mark the location assessed by the applicants. The red box demonstrates the actual location of the proposals, based of MMOs portal.



Vessels without AIS data focuses on potting activity. No reference has been made to the MMOs own dataset showing the sailing and recreational use potential for this location. The MMOs own mapping shows this site interacts with areas of Medium/ High potential.

Chapter 5. Farm construction and layout.

The stated farm depths of 10-15m are not correct. The assumptions around mooring requirements are unevidenced and not in keeping with comparable site infrastructure assessment (Port Quin).

Anchorage – this is picked up as a separate issue, however the applicant's statement on page 103 is simply not correct:

The proposed location of the farm has been chosen to maintain the free passage of vessels in all directions of the farm.

The location directly intersects the route between the Bristol Channel and Combe Martin safe anchorage area.

A Chartered Vertical Depth (CVD) of 2m has been assumed across the farm area, which is not compatible with >2,000 300 litre buoys. The longlines and seed lines will be mobile in the water column, and it will be impossible to maintain a level 2m plane across the infrastructure. This is misleading and potentially dangerous by implying that vessels with a shallow draft can enter the farm area.

The reference to removing seed lines is disingenuous as the seed lines are attached to the header lines that are sited at the top of the infrastructure, these header lines will be in situ permanently.

When assessing ALARP, the stability of the Eco-Blocks is claimed to be 'proven'. This is not the case. In comparison with the Port Quin applications, less than 10% of the weight identified as required to create stable mooring points is being proposed at Combe Martin (see *Chapter 1*).

Chapter 6. Safe activity Within & Around the Farm

Part of the mitigation to achieve ALARP includes rerouting vessels that will be transitioning through the bay. This conflict could easily have been avoided through appropriate site selection.

In addition, the distances also indicate that rerouting vessels around the proposed farm site as they transition in and out of the Bay reduces the risk to ALARP (p.103)

The applicants also recognise that vessels could find themselves transitioning through the farm site accidentally. This would cause a significant risk to the vessel in question, alongside those who would be required to recover the vessel that would become entangled. Given the proximity to a well frequented area of safe anchorage, this clearly is not compatible with ALARP.

The applicants state that the safe anchorage is just outside the harbour of Combe Martin, over 1.3 nautical miles from the farm. This is not correct, and also varies significantly depending on what mapping is used. Safe anchorage should not be considered a discreet spot on the map, rather the wider safe anchorage area, including the consideration for historic anchorage. This has not been reviewed.

Decommissioning Statement

The applicants state:

Therefore, the loss of equipment is assessed as a low risk. This is evidenced by the fact that in three years of our partner Biome operating in St Austell Bay and two years in Torbay, there has been no significant infrastructure loss on an existing operating licenced farm. (p.106)

We would consider the loss of the navigational marker at the Torbay site as a significant infrastructure loss. This was not reported through the appropriate channels and is currently being investigated by the Brixham MMO office.

Regarding the funding of the decommissioning, the applicants state:

Decommissioning of the site is the actionable and financial responsibility of the applicants, whatever the circumstances that require the licenced site to be returned to its original status before the installation of the farm (infrastructure). This will be undertaken as a legal priority of the applicants, in line with licence conditions. It should be noted that the cost of decommissioning would be a fraction of the cost of deployment. The sale of the infrastructure and other CAPEX would easily cover the cost of decommissioning the site. P107

The applicants have already stated they are unable to fund initial survey work to determine the composition of the sediment under the farm site, and that they are unable to fund a detailed assessment of the mooring design. It is clear that the applicants will not have capacity to fund the decommissioning activities at the time of licencing / deployment.

The comment that the CAPEX would cover the recovery costs is also highly concerning. No assessment has been made, but considering the likely scale of anchor blocks alone required to stabilise the site in such dynamic conditions, it seems inconceivable that anyone would be willing to salvage these in return for second hand concrete blocks and used rope.

Site Operations & Emergency Response Plan

The monitoring programme states a range of partners will undertake monitoring alongside Aqua Botanika. This should be verified as the institutes listed are unlikely to support a 30-year monitoring programme, and appear to have been speculatively selected based on localised and short term monitoring programmes at other locations. This is not an appropriate substitute for a robust, applicant owned monitoring programme.

Ecological monitoring will be conducted alongside in-house Scientific team and their partners, Exeter University, the University of Plymouth and the MBA (UK). This also involves CEFAS, the MBA, The Crown Estate, Earthly and Oceans 2050, as they have partnered with these institutes to monitor seaweed farms in the Southwest region. (p.109)

The applicants claim to expect to use Ilfracombe Harbour, yet there is no confirmation or correspondence in support of the applicants from Ilfracombe Harbour. As the harbour dries out, it doesn't seem to be appropriate for a rescue vessel to be stationed here. It is also impractical due to operational constraints.

It is expected that a working harbour in Ilfracombe will be used to land the harvested seaweed material. The working harbour will also house all applicant vessels, including the emergency response vessel. (p.109)

Promises of a permanently manned 'fast workboat' to deploy within 15-30mins is also questionable and should be evidenced.

The majority of the ‘Standard Operational Procedures’ are lifted directly from the Port Quin Navigational Risk Assessment, as is the ‘Emergency Scenarios’.

Appendix 1: Safety Assessment and Risk Matrices

This appendix includes:

- Formal Safety Assessment
- Risk Control Matrix 1
- Risk Control Matrix 2

These are all a direct copy of the Port Quin submissions. The only details that have been changed are the ‘Assessed By’ ‘Assessed On Site By’ and ‘Date’ fields. This is to the extent that **the ‘Project No / Location’ field has incorrectly been left as the Port Quin MLA codes, MLA/2023/00307 & MLA/2023/00308.**

These should be site specific. The assessor should not just swap their names on a previous form.

9.1 Formal Safety Assessment I – Summary Table: Hazard Log

Brief description of the work or Method Statement Title	Navigational Risks and Hazards in proximity of Seaweed Farm	Project No/ Location:	MLA/ 2023/ 00307 & MLA/ 2023/ 00308	Method Statement Ref No	Marine procedures		
		Assessed By:	Daniel Placek	Assessed On Site By:	Daniel Placek	Expected Duration of	
		Date of Assessment:	30/05/ 2024	Date of on-site assessment:	30/05/2024	Review Cycle:	1
Persons & Vessels at Risk:	EMP - Employee	CON - Contractor	PUB - Public	CV - Company Vessels	OV - Other Vessels		

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Company Number 12529989

6. Consultation

Consultation has been limited throughout the application process. Early consultation with IFCA and NDFA to identify a suitable location was held in March 2023, but this was informal and it is not clear whether a project concept was discussed in any detail to allow them to provide an informed opinion.

A community meeting was held with 12 individuals representing the Parish Council and other groups in December 2023, as evidenced with Parish Council minutes on p.37-38. It is stated that copies of the feasibility assessment were circulated before the meeting. Note that this feasibility assessment does not even state the location of the proposed farm or show a map. It is generalised and biased. Further, the minutes demonstrate that attendees were misled on key aspects, as demonstrated by the following selection of statements:

- The money needed for decommissioning the scheme would be held in escrow.
- The ropes forming the farm will be removed each year so they will only be in the water for part of the year.
- The RSPCA at West Hatch had confirmed that the farm would have no implications for the seal releases on Combe Martin beach. There is nothing likely to trap or injure seals on the farm, but it may spark their interest for a while.
- More likely to lose a buoy to storm damage than to lose their seaweed.
- Etc.

None of these statements, apart from the likelihood of losing a buoy, are based on fact.

- AB has not committed to setting aside money for decommissioning (they state it will be funded from the sale of used equipment)
- Only the seed lines will be removed each year, with all of the mooring infrastructure, long lines, marker buoys etc. remaining in place.
- The RSPCA has not been consulted by AB at any stage in the application process and have not confirmed, in writing or in person, to anyone, that there would be no implications on seal releases.

Early consultation would have been based on the original feasibility study. The project concept has been altered considerably and no detailed information would have been presented to the consultees to make an informed opinion.

There is no evidence of any additional consultation taking place since December 2023 with local stakeholders. For example, there is no stakeholder list or record of consultations.

There are weaknesses in the statutory / minimum compliance methods of publicising the proposed project. One lamp post and one notice in a local paper is unlikely to have caught the public's attention.

Notably, key stakeholders have not been consulted. This includes the RSPCA.

Aqua Botanika has a track record of deliberately avoiding consulting with affected stakeholders. For the Torbay farm, they included the following statement on their application:

“...following discussions with locals we have chosen not to consult with the fishing industry. From our research and discussions with IFCA and others, it is apparent that ventures of this nature rarely if ever receive the support of local fishermen who resist the creation of areas that they will no longer be able to fish within.” (MLA/2023/00308 application form)

Despite this, AB consistently makes bold but unsupported commitments to engaging with a range of stakeholders in the planning and management of the proposed farm. This sounds great, but is pure conjecture given their track record.

We will Involve local communities in the planning and managing of the seaweed farm to ensure their support and participation. We have engaged with Ilfracombe Council, Combe Martin Parish Council, IFCA, local fishing groups, The Angling Trust, Ilfracombe Harbour Master, local diving groups, Surfside Kayak Hire, and OSKC Kayak hire in Combe Martin. There are no sailing training schools in Combe Martin. We believe that overall, we have local support for the proposals. (P.24)

Through the use of advanced monitoring techniques and collaboration with conservation groups, we aim to set a high standard for responsible aquaculture practices. (P.77)

7. Safe Anchorage

The South West Marine Plan (SWMP) Policy SW-CO-1 identifies that space is essential for marine activities to function, listing anchorage as a specific example.

This is also relevant for SW-PS-1. A precedent has been set where all recent SWMP aquaculture licences have been conditioned to preserve safe anchorage. 'Licensed activities must not encroach on any recognised anchorage, either charted or noted in nautical publications.' (L/2023/00169/1, L/2023/00028/1, L/2022/00127/1).

There are three main concerns relating to the proposal's encroachment on safe anchorage:

1. While the denoted anchorage location appears closer to Combe Martin, there is clear evidence of long-term anchorage within the farm perimeter from cargo vessels as shown in Fig 1. These will be displaced, with no appropriate assessment to understand the viability of alternative arrangements. This is particularly pertinent for vessels with deeper drafts and when multiple vessels seek to use safe anchorage concurrently.
2. The farm area sits directly between the main shipping routes used in the Bristol Channel and the main safe anchorage location. AIS demonstrates that vessels routinely intersect the farm proposals when utilising near shore anchorage. These vessels will need to divert around the farm site, something that increases the risk of entanglement or accident, especially during times of distress or adverse weather conditions.
3. Displaced routing will also force larger vessels to use a channel between the south east corner of the farm site and Copperas Rock navigational buoy (designation 2S5SL), located 0.8 nautical miles further south east from the farm site. This introduces unnecessary risks, not in keeping with the principles of ALARP. There is no justification for why a location with historic vessel anchorage has been selected, that also intercepts the main route between a denoted anchorage area and the Bristol Channel shipping lane. This could easily have been mitigated through more appropriate site selection.

Figure 18 – Cargo vessel presence using AIS data 2013 to present day (<https://globalfishingwatch.org>)

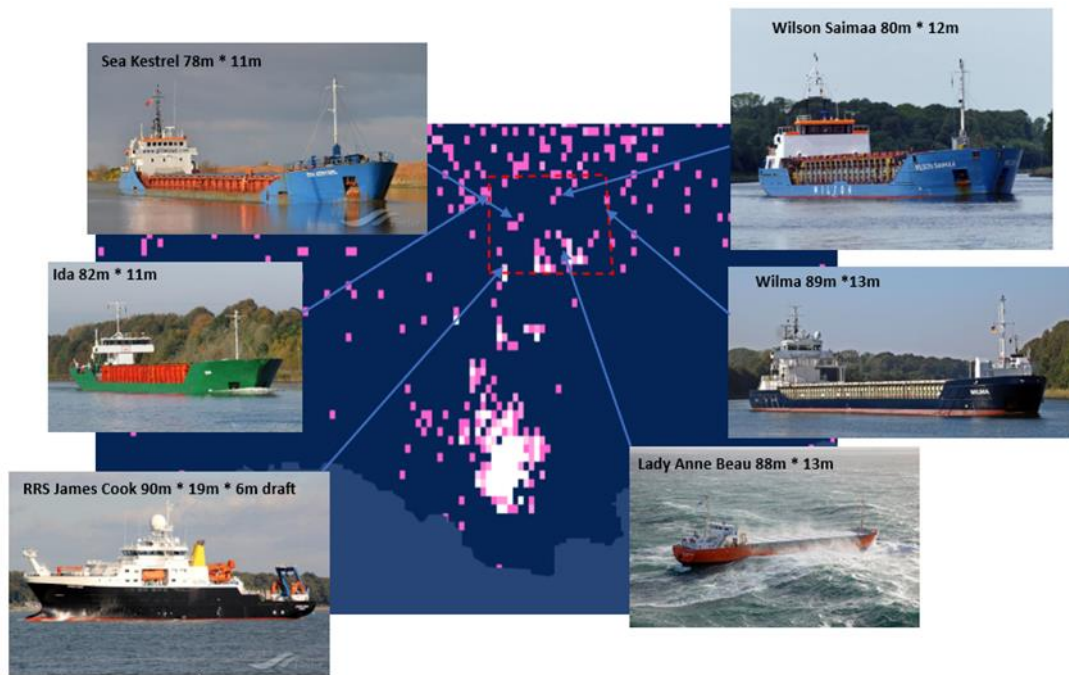


Figure 19 - MMO's Explore Marine plans, showing the location of the farm proposals and Copperas Rock navigational buoy (designation 2S5SL)

