

AnC Re-application - Scotland's Marine Planning consideration

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Introduction

This Document represents Samudra Oceans Limited (Samudra)'s review of the Scottish Government policy paper, Scotland's National Marine Plan (Part 1 - pages 1 to 11). This is outlined as a requirement in Section 6 of the Marine Scotland Application form. Samudra have also reviewed the Scottish Government paper, Scotland's Seaweed Cultivation Policy Statement (Part 2 - pages 12 to end). This was suggested as a new requirement by MS-LOT in another seaweed licensing process.

Part 1 - Scotland's National Marine Plan

The Scottish Government is fully supportive of the sustainable growth of aquaculture, including seaweed cultivation (<https://www.gov.scot/publications/seaweed-cultivation-policy-statement-2017/>), as a means to diversify the aquaculture sector. Samudra Oceans Limited (Samudra) has studied Scotland's National Marine Plan and has reviewed the General Planning Principles. Below is our understanding and response to these principles.

GEN 1 General planning principle: There is a presumption in favour of sustainable development and use of the marine environment when consistent with the policies and objectives of this Plan.

Samudra Response – Seaweed Cultivation, although a globally well-developed industry, is an emerging sector in Scotland with only a few small to medium farms in operation. Seaweed Cultivation has the potential to offer an organic and environmentally regenerative additional industry to the Scottish coastal and rural economy.

The existing site of the Seaweed farm was selected with care to ensure minimal impact on other users of the marine environment. The Seaweed Farm is constructed from corrosion free, low maintenance materials, and has a negligible impact on the surrounding environment. Seaweed requires only sunlight as an input and produces no waste output. This is in line with the aims of sustainable development and of the planning principles.



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GEN 2 Economic benefit: Sustainable development and use which provides economic benefit to Scottish communities is encouraged when consistent with the objectives and policies of this Plan.

Samudra Response – We intend to work in collaboration to establish a Seaweed processing Hub in the Oban area close to the nearest landing harbour of the harvested seaweed. To manage and operate the Hub processing facilities Samudra will employ a local workforce to service the seaweed farm which will also employ personnel from the local community.

Samudra will demonstrate their commitment to provide quality local employment opportunities building on the unique local skills and knowledge of Oban's fishing community. Samudra envisage the Seaweed farm will require 2 local full time equivalent (FTE) for seaweed harvesting with up to 4 further seasonal staff at peak times.

In addition to harvest operation, Samudra will employ up to 6 FTE employees to accommodate the expected processing needs and other responsibilities around the Hub. This will increase in time as we expand beyond processing activities into other areas of sustainable marine conservation and restoration.

During initial years Samudra will contract in ancillary support service companies to supplement their own local marine services and logistics. These will include local farm infrastructure and harvesting vessels, contract short wheel based vehicles, and shoreside resources. In total we estimate the annual costs to support both direct and indirect jobs for the Seaweed farm will be up to 10 local full time equivalent (FTE).

GEN 3 Social benefit: Sustainable development and use which provides social benefits is encouraged when consistent with the objectives and policies of this Plan.

Samudra Response – Samudra's recruitment policy favours finding employees from within the local community. We believe there are synergies between seaweed farming and the skills of local creel fishermen, local seamanship skills, vessel stewardship and other marine based skills. Seaweed Cultivation is a winter crop and may give valuable additional income to existing fishermen to visit the site, take samples and monitor the crop growth during less active fishing times of the year.

The combination of seaweed farming and creel fishing could assist in the retention of local skills and provide a more sustainable future for both marine industries. Seaweed is deployed during October/November and harvested in late March/May. These peak activity periods for seaweed cultivation tend to occur during the quieter times for creel fishing and will provide seasonal employment for fishermen and their vessels and harbour related activities.



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At a time of pressure on Scotland's fragile coastal and fishing communities, whether from changes in markets or from environmental considerations, we believe a new and sustainable industry such as seaweed cultivation could bring economic benefits to the wider community. We believe the resurrection of the seaweed industry in Scotland could act as a catalyst for other community projects associated with the marine environment.

Discussions with members of the local community including key business leaders have already taken place as part of wider Blue Economy development. Topics have included shore and beach clean-up, tourism support activities, provision of improved welfare and educational /training support programmes, and improvements to the local marine infrastructure.

GEN 4 Co-existence: Proposals which enable coexistence with other development sectors and activities within the Scottish marine area are encouraged in planning and decision making processes, when consistent with policies and objectives of this Plan.

Samudra Response – As a major aquaculture site, Samudra is acutely aware of the importance in taking cognisance of existing marine users in the area. Seaweed cultivation in Scotland has from a very early stage been in discussion with existing stakeholder groups. As well as creel fishermen, there has been engagement with a local diving business, local moorings committee, and various boat owners who offer tourist trips close to Seaweed farms. In addition, local businesses connected with leisure tourism were made aware of the proposals. These discussions influenced the site selection and final positioning.

At a pre-pre application stage the existing Seaweed farm site was considered along with several other sites within the Oban/Lorn area. A screening exercise was undertaken to assess where any 'red line' impacts were likely. Preliminary discussions with all Statutory Consultees and key Stakeholders assisted greatly in our final decision to progress with the Aird na Cuile site. Input and guidance was also received from the Crown Estate Scotland and from Scottish Association of Marine Science (SAMS).

Other factors which influenced site selection focussed round environmental, visual, and operational criteria. The Seaweed farm site is deliberately located away from rocky reefs which is a priority marine requirement on the west coast of Scotland. It is unseen from the shore of the nearby houses so to lessen any visual impact, and its immediate location is not in conflict with the passage of pleasure craft, windsurfers or other water-sports. The safe transit lanes past the farm site north and east are clear.

The site is marked by 3 flashing yellow Special Marks at its outer edges; an arrangement considered essential by the NLB and MCGA. The site is within easy reach of boat reach of Oban harbour and other smaller ports and harbours on the Oban/Lorn coast.



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GEN 5 Climate change: Marine planners and decision makers must act in the way best calculated to mitigate, and adapt to, climate change.

Samudra Response – Samudra, as a relatively new business venture is fortunate to start from a Net Zero baseline and plan carefully how it intends meeting (or more accurately) maintaining its net zero status while building the business. We are committed to testing today's technology to the limit to ensure Net Zero Scottish Government targets are achieved. Whether this is the ropes that grow seaweed, the diesel fuelled boats, or the energy required to dry the harvest, we look at every aspect to mitigate the use of fossil fuel based technology. A commitment to Research and Development to create change is central to the Samudra business plan. We are a business whose philosophy is to mitigate the effects of the Climate Crisis through the benefits of cultivating kelp.

Seaweed Cultivation only requires clean seawater and sunshine to produce the crop; absorbing CO₂ in the growing process at a rate that far exceeds land plants; growing at up to 30cms a day from February – April/May when it is harvested. As such there is little more required beyond the seeding in the beginning and harvesting at the end that require fossil fuels. There are no feed or chemical treatment inputs throughout the process. As the crop is grown in seawater there are no requirements for fresh water. To that end it is one of very few truly sustainable food sources, even if grown and consumed in high volumes.

The potential role for seaweed as a key component in combatting or mitigating climate change is increasingly being studied and understood and is highly significant. As one of the fastest growing crops on the planet seaweed takes both carbon and nitrates out of the water. By removing nitrates, seaweed can act to de-acidify our sea lochs and improve water quality. Additionally a portion of the seaweed (estimates are in the range of 30%) of the biomass will break away from the seaweed over its growing cycle and eventually fall to the seabed sequestering the carbon it has captured.

We intend to grow seaweed for a variety of end products which will replace many more damaging fossil based products - bio plastics, nutraceuticals, amalgams, and fertilisers. As a food or feed additive seaweed has a further carbon mitigation role by replacing in whole or part meat and intensively land grown crops. Other sustainable uses of seaweed being studied or implemented include reduction of methane emissions when used as an additive in cattle feed, use in replacing plastic with biopolymers, and in bioremediation of certain marine habitats.

Samudra is looking at a program of electrification for their marine and land modes of transport. The advancement of hybrid engine technology is now available for smaller style boats. Vehicles including vans and lorries are now capable of being battery operated. Other equipment for movement of harvest to shore and delivery to our Hub will be non fossil fuel based. The Oban



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processing facilities will be located close to the landing point at Oban harbour to reduce road miles. The above mitigation and adaptation measures will be monitored and calculated as part of Samudra's ongoing carbon mitigation strategy, Net Zero carbon footprint commitment, and internal Quality Control Management System to ensure compliance is met.

GEN 6 Historic environment: Development and use of the marine environment should protect and, where appropriate, enhance heritage assets in a manner proportionate to their significance.

Samudra Response – Our Seaweed farm site lies approximately 3km south of the historic "Gateway to the Isles" town of Oban. Careful consideration was given to the original siting of the seaweed farm, to ensure none of the natural and built beauty of the area was spoiled. The farm site is not visible from any roads or buildings in the area.

As the bulk of the existing seaweed cultivation farm infrastructure is subsurface, visual impacts from passing vessels are negligible. With only short periods to deploy farm infrastructure and harvest the site, the level of increased marine traffic is expected to be low.

Regular visits to site from local safe havens by small boats to undertake maintenance and monitoring inspections will have little or no visual or operational impact on the community. Samudra, as a new user to the local area will share the facilities with existing users and assist in its preservation and maintenance through operation dues of the local harbours and membership of local moorings committees.

It is expected that all harvested seaweed from the Seaweed farm will be transported by boat to Oban harbour. This deep-water facility is already used by commercial marine craft connected to the sea fishing, fin-fish and tourism industries, and unlikely to be impacted by seaweed landings over a 6-8 week period in the year.

GEN 7 Landscape/seascape: Marine planners and decision makers should ensure that development and use of the marine environment take seascape, landscape and visual impacts into account.

Samudra Response – As mentioned previously, the existing Seaweed Farm has a low visual profile situated over 3km from Oban and located in a part of a bay where it is not directly overlooked. There is no discernible impact on the existing seascape with the farm infrastructure located below water level. The most visible aspect of the farm are Special Mark buoys, placed to clearly delineate the outer limits of the site for mariners.



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GEN 8 Coastal process and flooding: Developments and activities in the marine environment should be resilient to coastal change and flooding, and not have unacceptable adverse impact on coastal processes or contribute to coastal flooding.

Samudra Response – This existing development has no impact on the Coastal Processes or Flooding. The site is situated in light benthic muddy seabed. The anchors holding the farm do not block the movement of any substrate from its natural course. Servicing of the farm site is from an established harbour and no new coastal developments are required to service the farm other than an Oban Processing Hub which will be based inland.

GEN 9 Natural heritage: Development and use of the marine environment must:

- (a) Comply with legal requirements for protected areas and protected species.
- (b) Not result in significant impact on the national status of Priority Marine Features.
- (c) Protect and, where appropriate, enhance the health of the marine area.

Samudra Response – The existing consented area of the farm site, sits within the Loch Sunart to the Sound of Jura – Marine Protected Area (MPA) <https://sitelink.nature.scot/site/10418> which takes much of the sea area inside the Inner Hebrides. This MPA is set up for the protection of 'Flapper skate' (*dipturus intermedius*), which are heavily affected by mobile fishing activity, both as a bycatch of commercial fisheries and destruction of their egg laying sites.

The existing consented area of the seaweed farm site sits within the Inner Hebrides and the Minches Special Area of Conservation (SAC) <https://sitelink.nature.scot/site/10508> which encompasses the greater proportion of the whole coast. This SAC is set up for the protection of 'Harbour porpoise' (*phocoena phocoena*), which frequent the west coast of Scotland.

- (a) Comply with legal requirements for protected areas and protected species.

Samudra will comply morally and legally with all legislation set to protect the many protected status habitats and species in the area. Samudra believe the their seaweed farm will contribute to the conservation, protection, and restoration of localised marine habitats and the surrounding marine environment. We will work closely with Nature Scot and others to ensure they achieve this.

- (b) Not result in significant impact on the national status of Priority Marine Features.

The [Habitat classification by EUNIS 2019](#) for the existing consented area of the seaweed farm site is given as High Energy, Shallow Circalittoral Seabed, A5.3 Circalittoral mud.

The existing farm site is clear of Rocky Reefs, which is a priority marine feature and a target area for creel fisheries. – anchors and subsurface structures will be set on soft sediment, clear



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of any rocky reefs. The anchor system will require short lines, retaining its footprint within the existing consented seaweed farm offering low seabed impact.

(c) Protect and, where appropriate, enhance the health of the marine area.

Seaweed Cultivation requires only sunlight as an input. We will use no chemicals and any litter/debris will be taken ashore and disposed of responsibly. As has been mentioned seaweed is known to enhance the health of the marine environment through improvements in water quality and habitat restoration/creation.

GEN 10 Invasive non-native species: Opportunities to reduce the introduction of invasive non-native species to a minimum or proactively improve the practice of existing activity should be taken when decisions are being made.

Samudra Response – All sea vessels, equipment and personnel will strictly follow Samudra's Biosecurity Plans being put in place. A copy of which accompanies this submission. The Seaweed species being cultivated are native and are found locally on the rocky foreshores, buoys and jetties surrounding the existing consented seaweed farm site. Seaweed seed collected for cultivation will be collected from close to the farm site. Culturing of the seaweed seed will be done in clinical laboratory conditions.

GEN 11 Marine litter: Developers, users and those accessing the marine environment must take measures to address marine litter where appropriate. Reduction of litter must be taken into account by decision makers.

Samudra Response – Any waste generated from the project will be disposed of ashore through local, certified commercial waste disposal. All ropes and equipment will be stored ashore during fallow periods of the farm (May to October). And all cleaning of ropes and equipment will be done ashore. There are no Special Waste requirements envisaged.

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GEN 12 Water quality and resource: Developments and activities should not result in a deterioration of the quality of waters to which the Water Framework Directive, Marine Strategy Framework Directive or other related Directives apply.

Samudra Response – There are no fresh water needs or waste water created from the seaweed cultivation. Cultivating seaweed at the existing farm site takes up nutrients, especially nitrates from the water moving through the site. This will improve the water quality in the coastal zone by reducing nutrient loading that can lead to algal blooms in summer.

GEN 13 Noise: Development and use in the marine environment should avoid significant adverse effects of man-made noise and vibration, especially on species sensitive to such effects.

Samudra Response – We do not envisage additional noise pollution from this project other than through visiting vessels. There will be no generator platforms left on the existing farm site. The Special Mark lights for navigation are solar/battery powered. Vessel activity will be kept to a minimum and be an insignificant increase to existing vessel movements. Harvest landing will be at Oban pier over 8 weeks of the year and will have little noise impact on existing activities at or surrounding the harbour.

GEN 14 Air quality: Development and use of the marine environment should not result in the deterioration of air quality and should not breach any statutory air quality limits.

Samudra Response – We envisage no impact on local air quality from the project.

GEN 15 Planning alignment A: Marine and terrestrial plans should align to support marine and land-based components required by development and seek to facilitate appropriate access to the shore and sea.

Samudra Response – Algal Farms do not require planning permission under T&C Planning as finfish and shellfish aquaculture does. Samudra will be using existing shore infrastructure to land harvests and service the site, and the Oban Processing Hub building will be subject to separate planning consent. The farm infrastructure deployment and harvest season is short (6-8 weeks in total) and will require 20 lorry movements over that period from pier to Hub.

GEN 16 Planning alignment B: Marine plans should align and comply where possible with other statutory plans and should consider objectives and policies of relevant non-statutory plans where appropriate to do so.

Samudra Response – As GEN 15 above.



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GEN 17 Fairness: All marine interests will be treated with fairness and in a transparent manner when decisions are being made in the marine environment.

Samudra Response – Seaweed Cultivation has very little impact on other marine users by comparison to traditional shellfish and finfish cultivation. With no feed/chemicals/additive requirement there will be few vessel movements. The only impact will be the seabed lost to the farm footprint itself. The original applicant, New Wave Foods selected the existing site following dialogue with existing creel fishermen to ensure it has the lowest impact on fishing within the area.

In addition, New Wave Foods consulted with as many Stakeholders as could be reached to discuss potential impacts from the selected site. All Statutory Consultees and Stakeholders were given due notice of the plans through the appropriate Pre-Application Process set out by (the then) Marine Scotland. All the contacts made and their responses given (and any mitigation taken) are detailed in the Pre-Application Consultation Report submitted along with the original Application process.

GEN 18 Engagement: Early and effective engagement should be undertaken with the general public and all interested stakeholders to facilitate planning and consenting processes.

Samudra Response – Local engagement has been ongoing since November 2018. Dialogue with statutory and non statutory bodies has taken place since early 2018. During the screening process other sites were discussed and discounted where potential impacts on existing fishing grounds were identified.

The original operator advertised across the communities near the farm site through local press, posters, emails, and face to face meetings as required in the Pre-Application Consultation Process. They engaged with all resident users of the area on the farm proposals. Samudra intend to be a permanent continued positive influence on the well being of these communities through the presence of the seaweed farm and the management team.

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GEN 19 Sound evidence: Decision making in the marine environment will be based on sound scientific and socio-economic evidence.

Samudra Response – Although seaweed cultivation is in its relative infancy in Scotland, the structures and techniques used at the Seaweed farm site will follow those developed at other sites but most particularly those developed by Argyll Aquaculture over the last 9 years. Argyll Aquaculture have been involved in advising Samudra on a variety of seaweed farming topics over the last 6 months and have been influential in the way Samudra have structured its business model. The intention is to formalise an on-going advisory and research relationship between Argyll Aquaculture and Samudra to ensure an evidenced based approach to all aspects of seaweed farming is adhered to at the Seaweed farm site.

GEN 20 Adaptive management: Adaptive management practices should take account of new data and information in decision making, informing future decisions and future iterations of policy.

Samudra Response – Robust management of the project will be undertaken by Samudra team members who have considerable business skills combined with marine industry experience. Members of the team have had an involvement with the seaweed farming industry as it has developed. In addition local knowledge from Argyll Aquaculture of the Oban area and its environment will be invaluable to assessing change.

Links with research and development organisations involved with the cultivation of seaweed have been formed, e.g. Marivate, Seaweed Enterprises and SSIA. These organisations have an established track record of working with other seaweed farmers and have developed routine communication on new developments.

While our approach at this site will be to incorporate tested technology in the design of farm infrastructure, seeding, harvesting, and processing, we are continually researching new ways to improve current methodology. In particular we have been researching best practice to meet our Net Zero objectives including biodegradable ropes, automatic harvesting, hybrid operated marine vessels, and renewable energy sources to process biomass.

Our objective at the Seaweed farm site will be to continually test new ideas and techniques in commercial seaweed cultivation in the industry. Already a collaborative approach exists between those currently farming seaweed in Scotland, but it will be through research and field visits to those Nations currently leading the industry that future advancements will most likely come from.



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GEN 21 Cumulative impacts: Cumulative impacts affecting the ecosystem of the marine plan area should be addressed in decision making and plan implementation.

Samudra Response – Cumulative impacts affecting the ecosystem are considered to be low from all current knowledge of seaweed farming. There are other seaweed farms currently operating in the Oban area, but there is no suggestion that they have any individual or cumulative negative effect.

There are no known potential cumulative impacts which would affect the ecosystem of the farm area. However, Samudra are a tech based company with their own inspired remote sensing devices which will be placed at the Seaweed farm site. Samudra will undertake assessments to continually monitor the site and will act to mitigate any negative impacts detected.

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Part 2 - Scotland's Seaweed Cultivation Policy Statement

The Scottish Government supports the sustainable growth of the seaweed cultivation sector as a means to diversify the aquaculture sector. Samudra has studied Scotland's Seaweed Cultivation Policy Statement and has considered the policies within. Below is our understanding of those policies.

Policy 1 - In principle, the SG is supportive of small-medium farm seaweed cultivation, subject to regulatory consideration; the General Policies set out in Chapter 4 of Scotland's National Marine Plan; and any other relevant policies within that Plan. Applications for such seaweed farms should demonstrate that mitigation measures have been considered to prevent adverse environmental impacts, and set out how these will be delivered.

Samudra Response – Samudra's desire is to have a substantial seaweed farm at the site. To do this, the aim is to deploy up to 9 Grids in from Autumn 2024 onwards. To begin seaweed cultivation, a small first deployment on existing structures will begin in Oct 2024 for a first harvest in March/April/May 2025. This will be in the region of 12 tonnes of the large brown kelp *Ulva lactuca*.

The document above sets out Samudra's response to "Chapter 4 of Scotland's National Marine Plan". Full consideration to environmental implications of the farm are set out in the accompanying document "AnC Re-application - Environmental Responsibilities" and other documents accompanying this Re-application.

Policy 2 – Only species native to the area where seaweed cultivation will take place should be cultivated, to minimise the risk from non-native species.

Samudra Response – Seeded stock of preferred species *Ulva lactuca* (Atlantic Wakame) and *Sargassum muticum* (Sugar Kelp) will be sourced from the local area. Only very small amounts of fertile seaweed material are required to be taken for stock in the seeding process. Full details can be seen in the accompanying document "AnC Re-application - Environmental Responsibilities" in the section – "Biosecurity Plan".

Policy 3 – Where seaweed is grown for human consumption, cultivators should site farms away from sewage outfalls and other potential sources of pollution.

Samudra Response – The chosen farm site is 3 km from the port of Oban and the harvests from it are intended as a food source for human consumption. The farm site is in a sea area where there are no sewage outfalls or other known sources of pollution. Any coastal domestic or industrial effluent discharges will be greatly diluted by coastal water movement before reaching the site. While any potential sources for pollution are not envisaged to reach the existing seaweed farm site, regular monitoring and recorded data collection of water quality



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will be undertaken throughout the year. This will be collected via remote sensing equipment installed at the farm site and samples collected as part of an ongoing programme of data collection.

Policy 4 – Equipment used in seaweed cultivation should be fit for purpose to withstand damage from adverse weather conditions.

Samudra Response – A detailed desk study was undertaken using maps and charts of wave patterns and available weather and sea state data during the original screening process. Considerable local knowledge of weather conditions exists within the local team and from a local diving company which cover the last 25 years. All equipment and farm infrastructure is designed to exceed the most adverse sea weather conditions envisaged during the life of the farm. Farm designs will exceed in robustness, the maximum adverse sea conditions and drag forces they will encounter.

Policy 5 - Other marine users and activities should be considered in the siting of farms.

Samudra Response – A Pre-Application Consultation (PAC) process was undertaken by the original operator where existing and visiting marine users were informed. This included the fishing sector, local diving company, pleasure boat companies and visiting leisure craft.

Policy 6 – Small-medium size farming is unlikely to be spatially limited, and may be located anywhere in Scotland, subject to agreement and appropriate local conditions.

Samudra Response – The original operators of the farm site considered a number of potential sites to locate the farm

Proximity to the local facilities and manpower of Oban provides an opportunity for Samudra to undertake its wider objectives for seaweed farming. Samudra's vision for seaweed farming is to create tangible benefits for the local community whether these are environmental, social, economic or educational. We believe that seaweed farming can become a platform for other marine conservation and restoration projects involving the local community. We know there is much more likelihood of measurable economic benefits coming to a community where the seaweed farm is integrated into that community rather than being completely isolated.

Policy 7 – The SG is supportive of IMTA.

Samudra Response – Samudra are a new venture business with the cultivation of seaweed as its core activity. Samudra will therefore concentrate on growing and processing native seaweeds into high value end products. However the concept of seaweed farming in conjunction with other marine species or as a catalyst to conserving or restoring habitats is



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one we fully endorse. Integrated Multi Trophic Aquaculture (IMTA) is currently being investigated by Samudra as a means of improving the marine environment, providing supplemental income, increasing biodiversity and aiding in carbon capture.

While the concept of IMTA is one which will we believe will evolve over time there are practical challenges to overcome concerning the design of farm infrastructure. Different marine structures would likely be required to best create optimum growing conditions for other trophic species (mussels, oysters, scallops, sea urchins, sea cucumbers etc). Samudra will consider the opportunities around IMTA and apply for any additional trophic license consent through the appropriate Marine Directorate route.

