

SWMID Seaweed Farm – Aird Fada – Site designations

As part of the Marine Scotland algal farm licensing consent process, Southwest Mull and Iona Development (SWMID) have investigated the site designations for a potential site, Aird Fada on the north coast of Ross of Mull at the entrance to Loch Scridain.

[LINK](#) to map of Aird Fada site

Site Description Caveat

Normally the pre-application and final application for a marine license would require site visits and familiarisation. Due to Covid-19 restrictions, it would be disrespectful and irresponsible to undertake a journey to the Isle of Mull and to the site at this time. Every effort has been made to gather information to supplement the Pre-Application Report and the Application by use of online tools and calls with local residents to gain insight for a meaningful assessment of impacts of the site.

Site description Aird Fada

The proposed site of the Seaweed Farm at Aird Fada sits ¼ km offshore from the coastline and is overlooked by one dwelling, Ormsaig Cottage a rentable holiday home. The public road (A849) that passes the proposed Seaweed Farm site will have a view of the development.

The coastline at Aird Fada is a long cobble strewn shore in a fish hook shaped bay with rocky outcrops at the lower intertidal zone. The site of the proposed Seaweed Farm is set back from these Rocky Reefs in rapidly deepening water to beyond 25m deep, giving way to soft pelagic mud seabed at the site of the nearest proposed Farm anchors.

Other Aquaculture sites

Investigations show that in nearby Loch Scridain there are 2 mussel farms and 1 finfish farm in Loch Scridain. These are

- Inverlussa mussels @ Killiemore, comprising of Long lines 200m x 6,
- Celtic Sea mussels, Aird Fhada (Slochd Bay), comprising of 10m droppers 200m length x 10
- Scottish Salmon Company Atlantic Salmon @ Ardmeanach (CAR/L/1101522/V1 issued 19/11/2012).

Local information confirms that only Inverlussa site is active, used for mussel spat collection, not production. Celtic Sea has not operated mussel cultivation at their site for many years and the Scottish Salmon Company farm was never installed after local objections.

We therefore envisage no cumulative burden on the area through the deployment of a Seaweed Farm.

Designation of nearby waters

Special Areas of Conservation (SAC)

Aird Fada Seaweed Farm site sits outside the eastern edge of the Inner Hebrides and the Minches Candidate SAC – for Harbour Porpoise (*phocoena phocoena*). <https://sitelink.nature.scot/site/10508>.

In discussion on a similar seaweed farm licensing process, it was SNH's view that it is unlikely that the proposal will have a significant effect on the Inner Hebrides and the Minches cSAC for harbour porpoise, either directly or indirectly. An appropriate assessment is therefore not required for this site.

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We have scanned the literature and can find no evidence of cetaceans being caught up in mussel or finfish farms. We will remain vigilant to the welfare of these and other sea mammals that are abundant in the area. Please note that the operation of a Seaweed Farm does not utilise “seal scarer” sound devices or any chemical feed inputs.

As standard aquaculture practice, as encouraged by Northern Lighthouse Board, the outer site shall be marked as directed by lighten yellow buoys fitted with yellow crossed topmarks.

Shellfish Water Protected Areas

Aird Fada sits within Loch Scridain, which is designated as a Shellfish Waters Protected Area

This means that Loch Scridain is monitored by SEPA and The Food Standards Agency to ensure the continued protection of water quality in the Loch for the production of shellfish. It has long been held by Scottish Government, Marine Scotland and SEPA that any new Seaweed Farm developments should preferably be sited within Shellfish Water Protected Areas. Allowing additional water quality assurance already provided through their activities.

Locational Guideline Area Category 3

Aird Fada sits within Loch Scridain (ML02) Locational Guideline Area Category 3

Category 1, 2 and 3 areas are designated on the basis of Marine Scotland predictive models to estimate environmental sensitivity of sea lochs. Details in "*Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters*".

Chapter 7 (Aquaculture) of Scotland's National Marine Plan, Policy 3 states:

AQUACULTURE 3: In relation to nutrient enhancement and benthic impacts, as set out under Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters, fish farm development is likely to be acceptable in Category 3 areas, subject to other criteria being satisfied. A degree of precaution should be applied to consideration of further fish farming development in Category 2 areas and there will be a presumption against further fish farm development in Category 1 areas.

As Aird Fada is a proposed Seaweed Farm which will create none of the nutrient issues of Finfish Aquaculture and as Loch Scridain (ML02) is a Locational Guideline Area Category 3, which does permit Finfish Aquaculture, we see no conflict with our proposed Seaweed Farm in relation to these Guidelines.

European Protected Species (EPS) and Breeding Birds

SNH have justifiable concerns that disturbance to otters (EPS) and breeding birds may be an issue during the construction and operation of an aquaculture site. This document submitted with the application considers and hopefully allays these concerns.

Otters (EPS)

From telephone discussions with local residents it was confirmed that Otters have been seen on the coastline at Aird Fada and that they had heard other residents discuss seeing otters as well. We can deduce that otters are indeed in the area from this and from numerous records entered on [NBN Atlas](#) for many decades within a 5km radius of Aird Fada, which covers the site. No holts or spraints

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have been reported by locals as there is no path along the coastline and much of the coast is not easy to access, but we must consider that breeding otters are in the local area.

Otters are regularly seen on in most parts of the Argyll coast, including in busy towns such as Oban and Tobermory (see photo below). They can be remarkably tolerant of people, vehicle and vessel movements.

Otters are European Protected Species (EPS) and as such have legal protection from harm, disturbance and habitat interference. Nothing in the development or operational phases of the Seaweed Farm will constitute a threat to the life of an otter. Nor will any part of our operation touch land to damage or destroy their holts or holes. What we must look at is whether our activities would constitute a disturbance to otter in their hunting or breeding patterns.



Otter eating fish from fishing boat net in Oban Harbour, watched by dozens of tourists.

The discussion on potential sources of disturbance can be split into 3 parts;

1/ development phase disturbance

Our development phase at each site will last only (est) a week. It will require a 16m to 22m vessel to lay the advanced anchors into the seabed 100m plus from the shoreline. Cables will then be strung between the anchor lines and floats attached.

SNH guidance suggests that “If otters are known or suspected to be breeding, the exclusion zone should normally be at least 200m radius. However, it could be reduced to 100m depending on the nature of the works, topography and natural screening. For shelters, or holts where otters are not breeding, the boundary of the exclusion zone should be a minimum of 30m.”

These exclusions zones are nominally looking at physical changes to the land near otters. As the Seaweed Farm will be sited off from the coastline and will not physically touch or alter the holt or hole of any otter, we would hope that the 100m rule would apply as a maximum. It could be argued that the most direct disturbance to the otters could be the presence of any surveyor conducting an Otter survey on the shoreline.

A male otter’s territory can be huge, using 20 km of rivers and coastline to hunt and defend up to 3 females against intrusion by other males. The female otters form sub-territories within, in which they produce up to 3 cubs, usually in early summer. The mother will rarely leave them for the first 10 weeks from birth at which point the cubs will begin to become mobile. They will then follow their

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mother as she hunts and suckles the young. She will use multiple holts and holes to dry off (otters don't like being wet!) and to sleep (which they do for more than half the day). They will nurture the cubs for a year up to 18 months to teach them to fish by catching and releasing live fish for the cubs to re-catch.

It is difficult (without the aid of photo traps) to assess whether otter shelters or holts are being used by a breeding otter or not as females with cubs reduce sprainting to avoid detection. Indeed, it is a crime to use photo traps without appropriate licenses

No works that are proposed will fall within the minimum 30m exclusion zone. The minimum distance from the high water mark at the site appears to be around (est) 100m to avoid encroaching into Rocky Reefs.

The predicted timing of the installation of the Seaweed Farm is late August, which will hopefully coincide with any otter cubs becoming fully mobile.

2/ operational phase disturbance

All operations will take place in daylight. Deployment periods will be October to November. Harvesting periods will be in April through into May. The mainly nocturnal nature of otters will hopefully allow us to present no disturbance to feeding patterns.

3/ ongoing presence and its effects

For the greater part, the Seaweed Farm will be left unattended by vessels. Outwith the operational phases (including all evenings, nights and weekends during the operational phases) little or no activity will take place over the months of June, July, August or September (aka the summer fallow period) and after the Oct/Nov deployment, the Seaweed Farm will be left unattended in December, January, February and March (aka the winter growing period).

A brief diurnal phase of otter feeding during the shortest days of the year will coincide with the winter slow growing period, where the Seaweed Farm left mostly unattended save for occasional visits by small boat to check condition of the Seaweed Farm structure (a condition of consent) and to take samples of the seaweed for quality and growth monitoring. We will ensure we do not visit the site near to dawn or dusk to prevent disturbance to otter feeding times during the hard winter months. This also a good practice for safe use of small vessels in winter. Similarly, the summer fallow period will see the Seaweed Farm left mostly unattended save for occasional visits by small vessel to check condition of the Seaweed Farm structure (a condition of consent).

Shorelines of proposed Seaweed Farm

Some of the coastline rises sheer from the water and as such would be too dangerous to survey. These sections of coast would by their nature not be suitable for otters either.

The land directly behind the shore on this coast rise sharply as "raised beach" formations due to isostatic uplift. This creates a secondary sea cliff visual barrier between the shoreline and inland sites. This may present additional danger to anyone trying to cross the site. These areas, with their rock strewn scree surfaces may, along with the rocky coastline, provide suitable holes and caves that otter could use as holts and shelters.

Again, it is difficult (without the aid of photo traps) to assess whether otter shelters or holts are being used by a breeding otter or not as females with cubs reduce sprainting to avoid detection. Indeed, it is a crime to use photo traps without appropriate licenses.

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Breeding Birds

SNH raise concerns that the development and operation of the Aquaculture site may cause disturbance to priority bird species ([Wildlife & Countryside Act 1981 \(as amended in Scotland\) Schedule 1](#)).

We can deduce that the rocky coastline at the proposed site will be attractive to many bird species for nesting and feeding. Indeed the area has numerous records entered on [NBN Atlas](#) within a 5km radius of Aird Fada. It is unlikely that any priority bird species which breed in Scotland will nest in the areas where the Seaweed Farm is being sited. There are however numerous low rocky ledges at the proposed site that will be used as nesting sites for seabirds, such as oyster catchers.

Wildlife & Countryside Act 1981 makes it illegal to intentionally or, in Scotland and Northern Ireland, recklessly injure or kill any wild bird or damage or destroy an active nest or its contents. This is fairly clear and we can assure that none of our operations will interfere with the nest sites and our Seaweed Farm will be a minimum of 100m away from the coastline nest sites.

The law on disturbance of non-schedule 1 birds is not so clear.

The “Scottish Marine Wildlife Watching Code” and the more detailed “Guide to Best Practice for Watching Marine Wildlife”, produced by SNH and are described by them as “a concise code of conduct... of broad Principles.. On the coast, On the sea, and In the sea... this guidance applies equally to everyone”. These state that no legislation provides an actual safe distance from breeding birds but rough advice suggests from 50-150 metres and up to 300 metres for very sensitive species (such as terns, which do not nest near the proposed site).

The waters around Argyll are regularly crossed by commercial and pleasure vessels of all sizes and power methods. With the ever increasing number of vessels and people who venture out on the water it is difficult to say whether any site can be considered isolated. Many seabirds are accustomed to the presence of humans and live in harmony with us. The inaccessible nature of the rocks and cliffs near the proposed site give added security to any nesting seabirds.

There is anecdotal evidence that suggests even the most sensitive species of bird and other animal, can become very tolerant, even cohabiting with humans eg common terns mating in the rigging of fishfarm boats, otters feeding on fishing boats in busy harbours and otters sunbathing in waterside gardens, oblivious to human presence.

The proposed Seaweed Farm will be sited away from the shoreline (est 100m) which will place them even further from nest sites of any breeding seabirds of the area.

The Wildlife and Countryside Act 1981 (as amended) also states in Bylaw 37 (3a+b) that there can be no restriction of passage of a vessel through a marine nature reserve (MPA).

The development phase vessels will only be within the area of the Seaweed Farm for (est) a week in late August. A point at which many of the nest sites will either have been abandoned or the chicks near to fledging and adult birds less spooked by vessel movements

Our operational vessels shall only be within the area of the Seaweed Farm for late Autumn deployment periods and late Spring harvesting periods, with small vessel visits for sampling and maintenance checks.

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Rocky Reefs

Although the proposed site does not sit within a marine Special Area of Conservation (SAC) for Rocky Reefs, SWMID is aware of and respects the importance of protecting these complex marine features. The design and the exact final placement of the Seaweed Farm and anchors will prevent any damage to Rocky Reef features and future proof the site should any new SAC are assigned to the area's features. At the proposed site, any anchors (and therefore the Seaweed Farm above) will be set into soft pelagic mud, offshore away from any Rocky Reefs.

Benthic Shading – The Seaweed Farm will be sited (est 100m) off from the coast to ensure they do not interact with Rocky Reefs in the area. This will prevent any shading damage to the wild seaweed forests and the communities they support in these habitats. To estimate the shading effect on the benthic muds beyond the Rocky Reefs, we used simple arithmetic to calculate the amount of shading under the Seaweed Farm the plants will create as they grow.

With the assumptions

- the lines and floats provide a negligible level of shading
- The sun's azimuth (midday) at this latitude moves from Sep 40°, Dec 15°, Mar 40°, Jun 60°. But we will assume overhead sun (which it never is) and that the plants will stand out at 90° from the lines (which they never will).
- Seeded lines will be 200 cm apart either side of a line, so each plant will have 200 cm space.

Thus, measured plant growth (cm) / 200 (cm) x 100 (to make it a %) = % available plant space

- Even at maximum density, alaria plants do not blanket cover the water (est 50% max density), nor do the plants block all available light (est 50% shading max).

Thus, % available plant space x 0.5 (max density) = % coverage

AND % coverage x 0.5 (shading max) = shading%

So,

- Seeded lines placed in the water in Nov, plant length 0cm = 0% coverage = 0% shading
- Growth by end Dec <10cm = 2.5% coverage = 1.25% shading.
- Growth by end Jan <25cm = 6.25% coverage = 3.13% shading.
- Growth by end Feb <50cm = 12.5% coverage = 6.25% shading.
- Growth by end Mar <75cm = 18.8% coverage = 9.4% shading.
- Growth by end Apr <100cm = 25% coverage = 12.5% shading.
- Growth by end May <125cm = 31.25% coverage = 15.63% shading.
- Growth by end Jun <10cm (fully harvested) = 2.5% coverage = 1.25% shading.
- July = plants naturally stop growing and produce sporophylls (fruiting bodies). Lines are removed from water and taken ashore.

With these assumptions we estimate the maximum shading around the end of May, after which harvesting will reduce the plant lengths. The conservatively high figure of ~15% shading at this point should pose no lasting detrimental effect to the benthic mud communities of the seafloor, 20m to 30m below the Seaweed Farm.

The vast volume of water that moves through any given spot on this coast will make any effects from shading on the water column negligible.

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Deposition of Accumulations of Seaweed Fragments - Alaria plants are robust and at point of harvest almost all plants still have their narrow pointed tips. We thus we conclude that there is a negligible loss of plant material over the growing season. Photographic evidence of intact plants at harvest are available.

During harvesting operations at other similar seaweed farms, the offcuts and discards from the operation were swept up and estimated to be less than ~1% of waste of harvest weight. We offer that this is a negligible amount of plant material to drift into the wider system and rot away as vast amounts of other wild seaweeds do.

Disposal of waste seaweed ashore

A process for the disposal of fouled, harvested material is being discussed through SEPA (Waste Management Licensing (Scotland) Regulations 2011, para 7(1) – see Table 2 (aquaculture) 02 01 03 Plant-tissue waste). This involves a licensing process for the disposal of seaweeds ashore that fail strict quality control procedure during processing. Once procured the license will give consent for any waste seaweed to be disposed on land as agricultural composting via a simple reporting system.

Any Risk of Enhanced Sedimentation due to Alterations in Water Flow and the Potential for Physical Impacts to Arise as a Result of the Placement of Moorings - The site for the Seaweed Farm was deliberately chosen for its active nature, both in current and wave exposure. Given the relative mass of the lines and supports of Seaweed Farms and the natural hydrodynamic nature of the alaria we intend to grow, we are confident that there will be no alteration to the water flow.

As the seaweed cultivation process does not require any inputs of feed or chemical to sustain or nurture the plants, we do not foresee our activities to add to the sedimentation of the area. Also, as indicated, given the current and wave exposure of the chosen site, we cannot foresee that our activities will impede or alter existing sediment transport.

Any Operations Required for the Establishment and Subsequent Maintenance of the Development Site - This is an area for speculation, but we will consider worst case scenarios;

- The establishment of the Seaweed Farm is estimated to be no more than 1 (working) week of boat time on station. (Aug).
- Deploying of seaweed lines is estimated to be no more than 2 (working) weeks of boat time on station. (Nov).
- Harvesting of seaweed lines is estimated to be no more than 4 (working) weeks of boat time on station. (Apr – May).
- Plant husbandry, monitoring and sampling will be done regularly by small boat, estimated at fortnightly.
- Maintenance of the seaweed farm infrastructure will be contracted to a specialist company, requiring divers and support vessel and will likely be bi-annual, a day each time for each Farm.
- The level at which more mature plants will require husbandry over time is unknown.

The Seaweed Farm will be sited away from the shoreline and the Rocky Reefs along it and as such the vessel movements during the phases above should pose no greater disturbance during construction of operational phases than any other vessel movement along this coast.

In discussions on similar Seaweed Farm licensing SNH have indicated that, after considering the above information during the application process, they may be in a position to advise Marine Scotland that there is no need for them to undertake an Appropriate Assessment as part of the HRA in relation to seaweed farm marine license applications.

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Landscape Impact

In discussions on similar seaweed farm licensing SNH expressed concern that the proposed seaweed farm system is new, and as such, it is difficult to predict the resulting landscape impacts from these developments. During that process SNH did not request that a full LVIA was required as part of the application to enable consideration the landscape impacts of that development. SNH did not have a position on the significance of the landscape impacts of this development. As such, they requested that a photomontage from various approaches to the site be provided so that they could consider this topic further for the site. This was provided and SNH subsequently discounted any impact on the landscape and did not request further work or mitigation.

SWMID respect the duty of SNH (and other competent authorities eg SEPA) to be satisfied that a project will not have a ‘likely significant effect’ on a site.

The proposed site of the Seaweed Farm at Aird Fada sits 4 km east and ½ km offshore from the coastline opposite the settlement of Achnahard, locally known as Harbour. The settlement and nearby Ardtun, comprise of around 10 buildings, a mix of rentable holiday lets, 2nd homes and residential properties. The houses at Achnahard overlook the sea but a headland sits between their homes and any view of the proposed site of the Seaweed Farm. Local discussions on Seaweed Farming have been openly discussed within the wider community for over 2 years and no formal objections to the site have been raised by local residents. The public road (A849) that passes into Ardtun sits back from the coast at the point of the proposed Seaweed Farm, so road traffic to Ardtun from the west will have no or little view of the development.

The proposed site of the Seaweed Farm at Aird Fada sits ¼ km offshore from the coastline and is overlooked by one dwelling, Ormsaig Cottage a rentable holiday home. The public road (A849) that passes the proposed Seaweed Farm site will have a view of the development.

There are no recognised footpaths on the OS maps at the site.

The low profile and subsurface nature of a seaweed farm means that all that will be seen on the surface are lines of grey floats that form the corner of each square, shared as the corner of the adjacent square, to form the grid system. In the case here 4 floats 100m each apart (300m across) by 9 floats each 50m apart (200m long). As seaweed is neutrally buoyant and the structure will not hold fish cages, the grey floats will be smaller 300l floats than the usual 600l finfish farm floats.

Due to Covid 19 restrictions and respect to the safety and wellbeing of the local community, a site visit to gather required local knowledge and digital images to create a seamless photomontage were not possible by the author. We offer a substitute image of a finfish farm at a different site with a similar coastal background, where the fish cages had been removed for cleaning. This can give us an idea of what the future Seaweed Farm will look like.

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This is a view of a fallow finfish site in Cuan Sound (now removed) with larger grey floats. Image taken from less than 1km away.

It is our view, that the image of the fallow finfish site in Cuan gives the reader a good idea what Seaweed Farm will look like. We have demonstrated that the floats will be very hard to see from any distance beyond 1km without binoculars or zoom cameras. The background shoreline and land at the proposed Aird Fada site, with rough grass/heath with rocky outcrops and are used for grazing of sheep.

Special Mark buoys for the safety of marine navigation, will be insisted upon by Northern Lighthouse Board as they are at every aquaculture site in Scotland.

We feel the Cuan view gives a fair example of what the site will look with a Seaweed Farm installed.