Environmental Impact Assessment

Volume 1 – Non-technical Summary

Licence Review & Renewal of Marine Finfish Aquaculture Licence at Clifden Bay, Mannin Bay and Ardbear Bay, Co. Galway

Licence Refs: AQ180, AQ122, FCL591

Produced by

AQUAFACT - APEM Group

On behalf of

Ardbear Salmon Ltd. and Mannin Salmon Ltd.

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Report Approval Sheet

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Background

An Environmental Impact Assessment (EIA) was undertaken to inform the aquaculture licence review and renewal application for licence AQ180, AQ122 and FCL591. The full EIA is summarised in JN1555 EIA - Volume 2 - Main Report. This current report provides a 'Non-technical Summary' of the EIA.

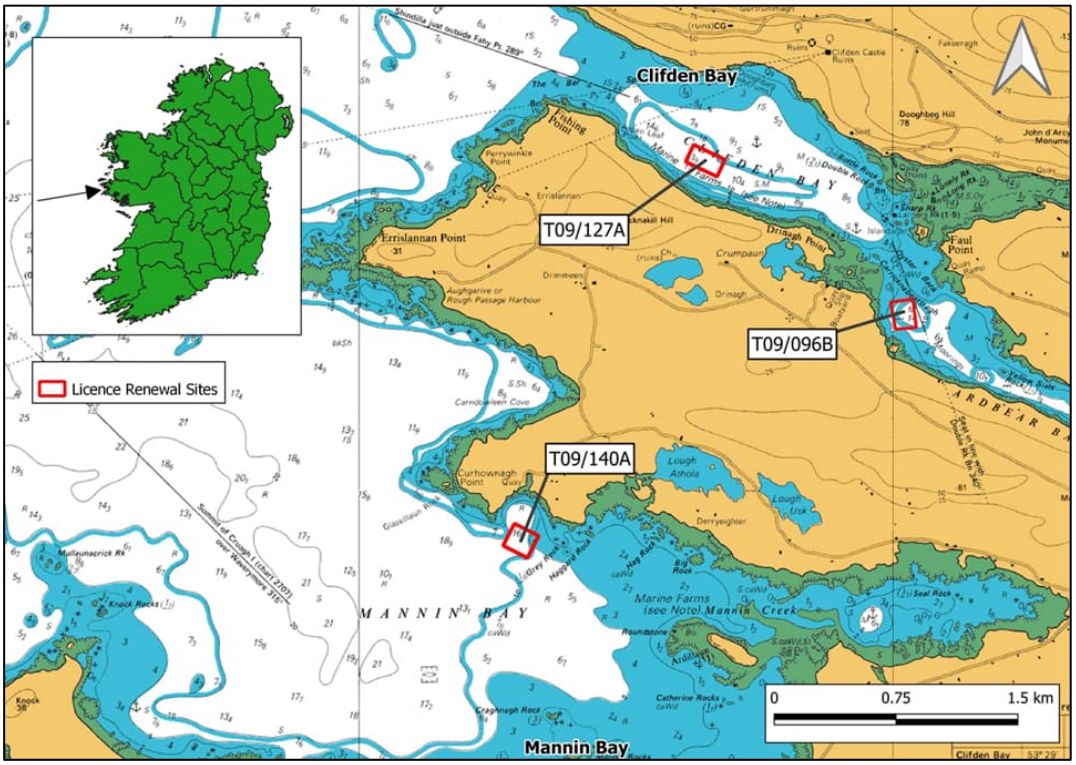
The sites associated with licences AQ180, AQ122 and FCL591 are respectively the Hawk's Nest site (site reference: T09/127A) in Clifden Bay, the Ardbear site (site reference: T09/96B) in Ardbear Bay and the Curhownagh site (T09/140A) in Mannin Bay.

The current conditions of the licences for the Hawk's Nest site and the Curhownagh site allow the annual maximum production of 100 tonnes and 200 tonnes of salmon, respectively. The licence for the Ardbear site states that the quantity of fish held at the site will be determined by the Minister for Agriculture Food and the Marine (DAFM).

The application to approve renewal of the licence requests that the operating conditions attached to the licences be amended to allow the following:

- Hawks Nest (AQ180 - T09/127A)
    - Harvest 200 tonnes from a net production of 625 tonnes of salmon every 21 months
- Ardbear (FCL591 - T09/96B)
    - Harvest 182 tonnes from a net production of 86 tonnes of salmon every 21 months
- Curhownagh (AQ122 - T09/140A)
    - Harvest 380 tonnes from a net production of 110 tonnes of salmon every 21 months

The applications for renewal for the AQ180 and AQ122 licences also request that the boundaries of the existing licensed area at Hawk's Nest and Curhownagh be amended. The existing boundary of the Ardbear site will not change. The amended Hawk's Nest and Curhownagh licensed areas and existing Ardbear licensed area are shown in red in the map below.



Project Description

The combined production cycle at the sites will be a total of 21 months long beginning in October.

Hawk's Nest Site

Approximately 200,000 smolts with an average weight of 90 g are added to pens at the Hawk's Nest site at the beginning of the 21-month cycle. In month 14, a proportion of the stock will be transferred from the Hawk's Nest site to the Ardbear site (approximately 100 tonnes transferred) while a further approximately 200 tonnes of fish are harvested from the Hawk's Nest site in both months 15 and 16. In month 17 the remaining fish at the Hawk's Nest site (approximately 280 tonnes) are transferred to Curhownagh site.

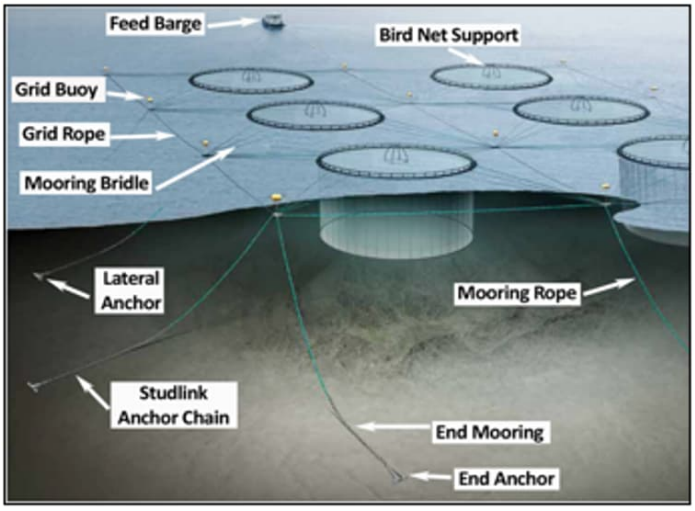
Ardbear site

The fish transferred from Hawk's Nest site to Ardbear site in month 14 (approximately 100 tonnes) are grown out until harvest which occurs at the site in months 18 and 19. Respectively, approximately 86 and 96 tonnes are harvested in month 18 and 19.

Curhownagh site

Fish transferred to Curhownagh site from Hawk's Nest site in month 17 (280 tonnes) are on-grown until harvest in month 20 and 21 (approximately 190 and 200 tonnes harvested in month 20 and 21, respectively.

What will the farm look like?



The farm structures will look very similar to what is currently on the sites. Subject to the approval of the licence renewal applications, 10 pens will continue to be deployed at the Hawk's Nest site, 3 pens at the Ardbear site and 6 pens at the Curhownagh site.

The pens are of PolarCirkel design modified and supplied by Aqualine and Fusion Marine. The pens are 90 m in circumference. The pen nets are supported within heavy duty polyethylene frame set on a flotation ring. Stanchions on the polyethylene frame support a heavy-duty handrail that runs around the pen. Pen nets, mooring bridles, sinker ropes (if required) and seal nets (if required) will be supported off the base frames of the floatation ring.

Dark-coloured top nets will be used to protect the stock against bird predation throughout the life cycle. The existing shore-based facilities at Errislannan Pier and Curhownagh Pier will to be used.

How the fish farm will work

Throughout the growing period, the salmon will be fed organic rations from a feeding barge (see image opposite) deployed on the shoreward, most sheltered side of the site.

The feeds used for organic farming operations are dry salmon feeds, manufactured to the appropriate Organic Standards. These utilise a limited selection of raw materials, mainly comprising trimmings-derived fish meals and marine oils, organic wheat and other organic plant raw materials, natural pigments, natural antioxidants, and only organic-approved vitamins and minerals.

The feed barge will feed the stock automatically throughout the day thereby optimising growth and minimising waste. Feed will be delivered directly to the shore facilities and from there to the barge.

When the farm is in full production it will be serviced by 2 x 5m PolarCirkel HDPE boat, 2 barges with 12 tonnes Palfinger cranes. The vessels will be used to transfer feed, equipment and crew and will have the capacity to carry out a wide range of day-to-day farm tasks including towing, anchor handling and net changing and cleaning. These vessels will operate from the shore base where they will be moored when not in operation.

On occasion a well boat (similar to the vessel opposite) will be used for salmon transfer, counting, grading and bath treatment.

A proactive approach is taken to health management as vaccines are used to protect the fish against the most common diseases. If diseases do occur, their treatment is governed by specific Standard Operating Procedures (SOPs) under supervision and monitoring by the company's veterinary consultants.

All tasks on the sites, from management of fish health to mooring grids and harvesting, are governed by written SOPs. Copies of many of these can be found in *JN1555 EIA – Volume 3 - Appendices*.

Salmon Farming & the Environment

To address EIA obligations under Directive 2011/92/EU as amended by Directive 2014/52/EU an EIA has been undertaken for the proposed operations at Hawk's Nest site in Clifden Bay, the Ardbear site in Ardbear Bay and the Curhownagh site in Mannin Bay.

The main purpose of an EIA is to identify, describe and present an assessment of the likely significant impacts of a project on the environmental factors; the subject matters that must be considered in the EIA process are:

- Population and Human Health
- Biodiversity
- Land and Soils
- Water
- Noise
- Material Assets
- Cultural Heritage and Archaeology
- Landscape and Visual Resources

- Air and Climate
- Cumulative Impacts

Population & Human Health

Population

The closest Electoral Divisions to the surrounding Clifden and Mannin Bay, from north to south beginning at the mouth of Clifden Bay include: Cliffden (An Clochán), Derrylea (Doire Liath), Errislannan (Iorras Fhlannáin) and Doonlochan (Dún Locháin).

The total population in the Electoral Divisions in 2016 was 2,768 and this was made up of 1,881 households. Of the 4 electoral divisions, Clifden has the highest total population at 2,159, followed by Derrylea (313), Doonlochan (215), and lastly Errislannin (82).

In 2017, 283 people were employed in the aquaculture industry in Co. Galway (BIM, 2018) of which 49 people were employed in salmon aquaculture and 22 people were employed in the smolt/parr/ova production.

At the Clifden Bay, Mannin Bay, and Ardbear Bay sites 4 – 8 full time and 4 part-time employees are required for daily on-site operations including divers, hauliers and an engineer.

The renewal of the aquaculture licences will maintain employment and will therefore continue to play a beneficial role to the local communities in the area. The renewal of the licence and approval proposed licence amendments will have no negative effects on the local population.

Human Health

The receiving environment for human health in the context of the proposed development is considered with respect to those effects to human population described above and those potential effects to the following factors: water quality, air quality, noise, traffic, socioeconomics, and tourism (including recreation) and water management as relevant to human health. Aspects of the receiving environment for these factors are outlined below in Land and Soils, Water, Air and Climate, Noise and Material Assets. In terms of Health and Safety, Ardbear Salmon Ltd. operate to a Health and Safety management system as detailed in the Company's Management Plan relating to health and safety of staff. The Company's Management Plan contains Standard Operating Procedures (SOPs) that set out the lines of responsibility for overseeing all operational health and safety systems and emergency procedures. Considering the above, the proposed operations at the farm and requested changes operating conditions will not give rise to negative effects on human health.

Biodiversity

Seabed (Benthic) Environment

As with any living organism farmed in an intensive manner, fish will deposit waste material (faeces) and a small amount of uneaten food will also be deposited, over a localised area. Hydrodynamic modelling of the water movements coupled with the feed input and waste production show that there will be localised deposition

immediately beneath the farm pens with a small amount of sediment deposition outside of the pen boundaries.

The bulk of the waste generated by a pen of large salmon is organic and therefore, is ingested by the resident flora and fauna on the seabed, many of which live beneath the surface. Faunal communities on the seabed respond in a predictable way to increases in organic matter input from fish farms. Populations of species that are very efficient at breaking down organic waste increase in response to the increased organic input and as the organic matter reduces in quantity the populations of these species reduce also.

Annual monitoring required as part of aquaculture licence conditions monitor these responses and ensure that the capacity of the faunal community that feed on the waste is not exceeded by the quantity of organic waste. Surveys carried out following fallow periods show little indication of the seafloor having been impacted from the previous production cycle. The level of waste deposition on the seafloor will not have significant effects on benthic communities.

Conservation Sites

The EIA examined in detail the potential impacts of the farm on protected habitats and species of conservation sites that form part of the Natura 2000 network. These sites include Special Areas of Conservation (SACs) designated under the Habitats Directive (92/43/EEC) due to their significant ecological importance for species and habitats protected under Annexes I and II respectively of the Habitats Directive, and Special Protection Areas (SPAs), designated for the protection of populations and habitats of bird species protected under the EU Birds Directive (Council Directive 2009/409/EEC). It was determined that there would be no significant effects.

Marine mammals (seals and cetaceans) and aquatic mammals (otter)

There is potential that the proposed project may interact with marine and aquatic mammals and result disturbance and entanglement impacts.

The Harbour Seal *Phoca vitulina* and Grey Seal *Halichoerus grypus* are widespread species found around the Irish coast, with greatest concentrations on the south-west, west and north-west coasts. Seal responses to disturbance can vary widely depending on the location and nature of the disturbance from increased alertness to movement towards the water and entering the water.

The farm is not located close to areas where seals reside, consequently significant disturbance effects to seals will not occur. While there is potential that seal species may predate on farmed fish and thereby become entangled in farm pens and nets, to date this has not been an issue at Hawk's Nest site in Clifden Bay, the Ardbear site in Ardbear Bay and the Curhownagh site in Mannin Bay. Therefore, it can be concluded that there will be no likely significant effects due to entanglement.

In addition, cetacean species reported in the bay include Atlantic White-sided Dolphin, Bottle-nosed Dolphin, Common Dolphin, Common Porpoise, Cuvier's Beaked Whale, Long-finned Pilot Whale, Striped Dolphin, Fin Whale and Minke Whale all have the potential to forage (albeit infrequently) in Clifden and Mannin Bay. Cetaceans rarely interact with marine farm sites and so significant effects will be unlikely.

Birds

Given the location of the project, bird species with preference for foraging in terrestrial and intertidal shore habitats will not be impacted by the presence of the proposed aquaculture sites as the pens are located in the subtidal. The assessment of potential impact to marine bird species focused on species

designated for SPAs that exhibit wide range of foraging behaviour including Arctic tern, Black-headed Gull, Common Gull, Cormorant, Fulmar, Gannet, Guillemot, Herring Gull, Kittiwake, Leach's Storm-petrel, Lesser Black-backed Gull, Manx Shearwater, Puffin, Razorbill, Sandwich Tern, Shag and Storm Petrel. The assessment of potential disturbance impacts to birds concluded that the current level of aquaculture in the bay does not impact negatively on the bird populations in the area and the proposed farm operations will not result in significant effects on birds.

Salmonids

Given the nature of salmon farming there is potential that operations may directly impact wild salmon populations by increasing lice infection rate in wild salmon, disease spread, the introduction of therapeutants and genetic interaction between farmed and wild salmon.

The control and reduction of sea lice within farmed salmon pens is important to the welfare of wild salmon and sea trout as well as to the farmed salmon itself. The operator has developed a new non-medicinal strategy to control sea lice using cleaner fish and this is their main control strategy for sea lice. Statutory monthly monitoring and operator weekly monitoring in addition to coordinated treatment of all licensed sites within the bay through the Single Bay Management Plan once trigger levels have been breached, is imperative to minimise any potential risk on wild salmonids.

The use of chemicals, including antibiotics, has been reduced with the introduction of vaccines and the application of organic standards. In-feed treatments are never used prophylactically for farmed salmon. Modern treatments, in particular those for sea lice, break down and disperse rapidly post-treatment, with no prospect of deleterious impact on wild salmonid stocks.

Overall, given the measures, controls and monitoring that will be in place at the fish farm, there will be no significant effects on fisheries.

Land & Soil

The seabed in the vicinity of the aquaculture site is dominated by medium grained sand with mixes of shell. Results from benthic surveys carried out in 2019 indicate low levels of organic enrichment at the pens with the presence of opportunistic marine worms that thrive in enriched organic environments.

Modelling showed that the deposition of organic material from the farm will be confined to the immediate footprint of the pens and will be of an order that the faunal communities can assimilate with no lasting impacts; consequently, it is concluded that the proposed operations will not significantly affect land and soils.

Water

Soluble waste from fish farms consists of nitrogen products (mostly ammonia) and smaller amounts of phosphorus. Hydrodynamic modelling was carried out to simulate how the soluble wastes released from the farm would disperse. This modelling shows that the concentrations of both nitrogen and phosphorus fall well within the surface water Environmental Quality Standards (EQS) for high status coastal and transitional waters. Projected organic wastes from the farm are used to calculate amount of dissolved oxygen usedby anaerobic organisms to break down organic material (referred to as the water Biological Oxygen Demand [BOD]). Results show that while the maximum BOD concentration at

the farm pens exceeds the EQS limit the concentration immediately outside the site boundaries are well below the EQS limit. Any potential impact to water quality will be confined to the farm area and impacts beyond this are negligible; consequently, it can be concluded that the operations will not significantly affect water quality.

Air and Climate

The air quality in the surrounding area is good with few industrial facilities emitting airborne waste. The main emissions associated with the aquaculture activities (*e.g.,* diesel generators, aerosols from sea lice treatments and dust from feed) currently occur with no evidence of impacts on air quality; it can be concluded that the proposed operations will not result in significant effects to air quality.

Noise

Small numbers of personnel and vessels move around the site daily throughout the production cycle. At certain times, heavy equipment, such as service vessels with cranes or well boats with deck-mounted cranes, fish pumps and grading equipment moor at the site, especially during harvest. The noise from the site tends to be consistent, of middle register and quite low in decibel terms. The noise levels currently generated at the aquaculture site will slightly be increased if the licences are renewed. There is no evidence that these noise levels are having any impact on the local communities; it can be concluded that the operations will not result in significant noise effects.

Material Assets

Traffic

The traffic associated with the existing aquaculture operations consists of car use by approximately 4 to 8 full time staff and 4 part-timers. There can be 30 to 40 articulated trucks per year bringing feed to the site and a waste disposal truck, which collects mortalities, the interval depending on the rate of mortality at the site. Additional traffic occurs during harvesting when an articulated lorry brings the fish to the processing factory, the regularity depending on the harvest schedule.

All aquaculture associated traffic makes up part of the daily traffic volumes in the area but a slight increase in traffic level is likely due to increase in production being requested. The operations proposed will not significantly result in negative adverse effects to existing levels of traffic; there will be no significant effect on traffic.

Shipping and Navigation

All aquaculture associated vessel traffic makes up part of the existing shipping levels in the area. Shipping traffic associated with the site will slightly increase as a result of increase production being requested. However, the effects of this increase in shipping traffic levels will be minor and changing the site boundaries or operating conditions attached to the licence; there will be no significant effect on shipping and navigation.

Commercial Fisheries

Operations at the existing licence sites do not significantly affect fisheries in the bay; there will be no significant effect on commercial fishing.

Aquaculture

The renewal of the licence and approval of the amendments proposed for the sites will see an increase in salmon production at the sites. The proposed operation will have a significant positive effect on aquaculture production levels in the area.

Tourism and Recreation

Tourism and recreation activities in the area currently take place in harmony with the existing aquaculture operation. The significance of the visual impact from all vantage points would be classified as slight or negligible; consequently, it is concluded that there will be no significant effect on tourism and recreation.

Waste Management

Waste management associated with the harvesting and processing of fish and the recovery of mortalities is governed by SOPs which the operator has put in place at all facilities with requirements for the effective disposal of waste material; consequently, significant environmental effects associated with the production and disposal of waste material can be discounted.

Cultural Heritage and Archaeology

No archaeological features or indications of archaeological materials were identified from the surveys conducted over the proposed aquaculture site areas; consequently, it is concluded that there will be no significant effects on heritage and archaeology.

Landscape and Visual Resources

The visual impact of a proposed development considers the sensitivity of an observer, or observer group, and the scale of the visual impact. Unlike the siting of a new farm, fish rearing pens including those at Hawk's Nest site, the Curhownagh site and the Ardbear site have been a normal part of the landscape in Clifden, Mannin and Ardbear Bays for the past 30 to 40 years, and the shore base facilities a permanent and normal part of the shoreline during this period. The significance of the visual impact from all vantage points would be classified as slight or negligible; consequently, there will be no significant effect to landscape and visual resources.

Cumulative Impact Assessment

The only aspects of activities at the farm sites that could potentially give rise to in-cumulative impacts are discharges from the farms acting in combination with discharges from the sites. Hydrodynamic modelling exercises undertaken to determine the fate of discharges from all the sites indicated that that there will be no cumulative impacts.