



Environmental Impact Assessment

Volume 1 – Non-technical Summary

**Renewal of Marine Finfish Aquaculture Licence at
Deenish Island, Co. Kerry**

Licence Ref: AQ199 - Licence Site Ref: T5/202

Produced by

AQUAFAC International Services Ltd

On behalf of

MOWI Ireland

December 2020

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Report Approval Sheet

Client	MOWI Ireland
Report Title	Environmental Impact Assessment - Volume 1 – Non-technical Summary - Renewal of Marine Finfish Aquaculture Licence at Deenish Island, Co. Kerry - Licence Ref: AQ199 - Licence Site Ref: T6/202
Job Number	JN1524
Report Status	Draft
Issue Date	14/12/2020

Rev	Status	Issue Date	Document File Name	Author (s)	Approved by:
1	Final	14/12/2020	JN1524 Deenish EIA - Volume 1 – Non- technical Summary	James Forde	Mark Costelloe



Overview

For almost 40 years, MOWI has led the way in sustainable salmon farming and prides itself on producing the very best organic salmon products from the waters off Ireland's west coast.

MOWI Ireland employs over 290 people between its salmon farms, hatcheries and packing plant in Donegal, Mayo, Cork and Kerry. MOWI already produces Organic Atlantic Salmon in Bantry Bay as well as in Clew, Kenmare, Donegal and Mulroy Bays.

Salmon farming is dependent on a clean and healthy environment. MOWI Ireland holds numerous quality and environmental certifications for this site to include;

- ISO 9001:2015 (International Management Standard for Quality Systems).
- ISO 14001:2015 (International Management Standard for Environmental Systems)
- ISO 45001:2018 (International Management standard for Occupational Health and Safety)
- GlobalG.A.P Aquaculture standard
- CQA Organic salmon standard
- Naturland Organic Aquaculture Standard
- BioSuisse Organic Aquaculture Standard
- Aquaculture Stewardship Standard (ASC) for Salmon

In addition, MOWI is a founding member of the Global Salmon Initiative (GSI). This is a leadership initiative established by leading farmed salmon CEOs from around the world who share a vision of providing a healthy and sustainable source of protein to feed a growing population, while minimizing their environmental footprint, and continuing to improve their social contribution. For more information go to <https://globalsalmoninitiative.org/en/what-is-the-gsi/>

MOWI's focus is to;

- Minimize the environmental impact of our operations
- Source sustainable feed
- Continue to improve the social impact of our operations
- Manage our operations in a manner to support economic growth and stability
- Produce a healthy and nutritious product farmed in a sustainable way.

MOWI Ireland has applied to the Department of Agriculture, Food and the Marine (DAFM) for the renewal of the finfish aquaculture licence AQ199. Licence AQ199 relates to one site, namely T6/202 (the site is also referred to herein as the Deenish site). The site is located off Deenish Island, a small island situated approximately 5 km off the Co. Kerry coast between Ballinskelligs Bay and Kenmare Bay.

Background

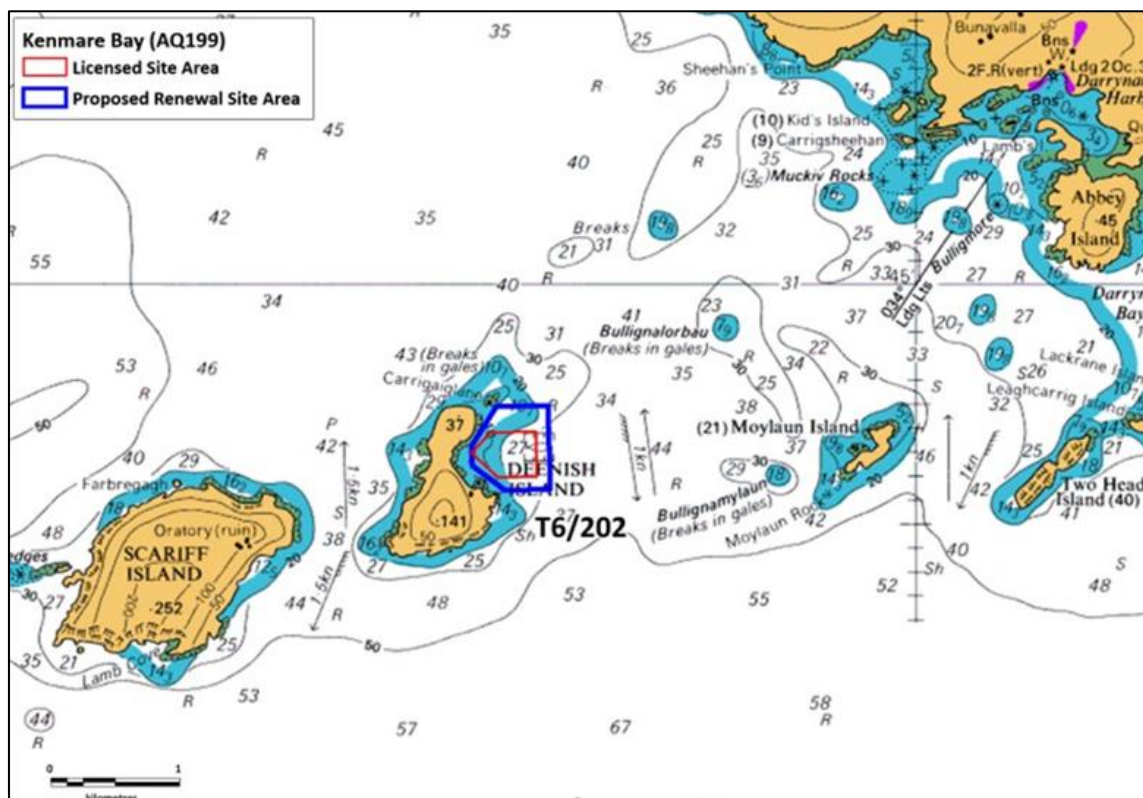
Finfish aquaculture has been ongoing in the region since the 1980's and MOWI has been operating in the area since 2008. An Environmental Impact Assessment (EIA) was undertaken to inform the aquaculture licence renewal application for licence AQ199. The full EIA is summarised in *JN1524 Deenish EIA - Volume 2 - Main Report*. The current report provides a Non-technical Summary of the EIA.

The aquaculture licence renewal application for Licence AQ199 (Licence Site Ref: T6/202), which is submitted under the Fisheries (Amendment) Act, 1997 and the Foreshore Act, 1933, includes a request to:

- 1) amend the operating conditions of the licence and
- 2) amend the boundary of the licenced area.

The existing licence has an annual harvest restriction of 500 tonnes and an allowable input of 400,000 fish. A temporary amendment to the licence was granted in 2011 under special conditions and upheld by ALAB in 2012 to change the licence specification to input 800,000 smolts every second or every other year; i.e. the equivalent number (twice) of smolts as the yearly licence, but on a biannual basis and to replace the annual harvest tonnage to a maximum standing biomass as is appropriate to the smolt input number. For the aquaculture licence renewal application, the applicant requests that the operating conditions of the licence change to allow a maximum allowable biomass (MAB) of 2,200t.

The licence renewal application also requests that the boundaries of the licenced area be amended. The existing site is shown in red in the map above. The applicant requests that the boundaries of the licensed area be amended to those shown in blue (see map below).



MOWI have achieved many awards and standards since its establishment over 30 years ago. These have included the Irish Quality Association (IQA) Q-Mark, the Fish Processing Category of the IQA National Hygiene Awards, the Excellence Ireland Hygiene Certificate and the Excellence Ireland Triple Hygiene Award. MOWI achieved the Irish Quality Salmon Standard for all company operations since 2000.

The company operates under the ISO 9001 International Quality Management Standard and was the first salmon farming company in the world to achieve the ISO 9002 International Quality Systems Quality Assurance Standard.

MOWI was the first Irish primary food producer to be certified under the ISO 14001: 1996, the International Environmental Standard. MOWI is certified under three separate internationally recognised Organic Standards: Naturland, Bio Suisse and Global G.A.P. in full compliance with EU Directive EC/710/2009.

If licensed, the proposed sites will be operated and managed with the benefit of these standards as a fully organic unit, using low stocking density, organic salmon smolts (young salmon) and organic feed.

Project Description

The proposal for the farm is to have one site (T6/202) using an “all in all out” model (fish are added to pens and there is no movement from time of entry to time of harvest). The production cycle at site will be 24 months long beginning in March and includes fallowing of the site during the winter months of the second year (December – February). The fallowing of the site at the end of harvest will see no smolts present at the site which will allow time for the marine environment to recover and rest between cycles and input of the next generation of smolts

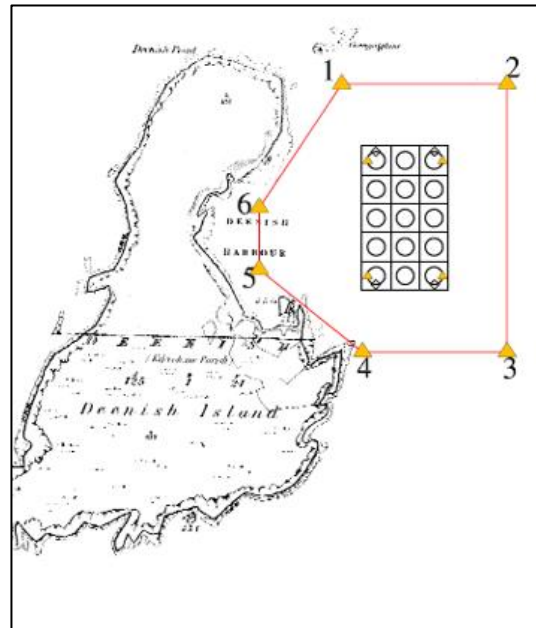
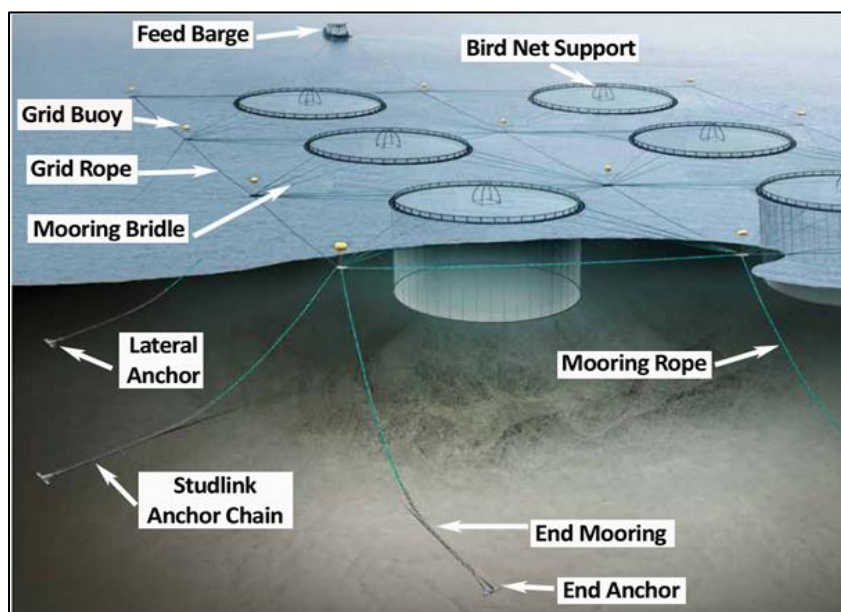
What will the farm look like?

The farm structures will look very similar to what is currently on site. However, the area occupied by the farm will be increased from approximately 14.5ha to 33.5ha if the renewal is approved. The site will contain 15 x 40.1m diameter sea pens set out in a 5 x 3 grid.

Each pen will have a surface floatation ring which will be supported within heavy duty polyethylene or steel base frames set at regular intervals around the floatation ring, upon which stanchions will be mounted to support the 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.

The floatation ring (and pen) will be held in place by a submerged mooring grid, comprising a series of 70m x 70m squares, each of which supports a pen. The dimensions of the entire mooring grid at the Inishfarnard site will be approximately 350m x 210m. Mooring bridles hold the pen in place in the mooring grid and the grid is then held in shape, submerged and in tension by moorings which, in turn, are anchored to the seabed. Grid-moored systems require the



application of more or less even tension on all moorings to keep the grid taut. Tension will be maintained by using adequate moorings, anchor chains and anchors to suit seabed and hydrographic conditions and the dimensions of the system. Dark-coloured bird (top) nets will be used to protect the stock against bird predation throughout the life cycle. The existing shore-based facilities at Ballycrovane Pier or at Dinish Island, Castletownbere will be used.

How the fish farm will work

Young salmon (smolts) will be put to sea in March at the beginning of the 24 month production cycle. Approximately 650,000 smolts with an average weight of 75 g will be added to the pens. The smolts will be sourced from MOWI's Altan and/or Pettigo smolt units in Donegal. The smolts will grow out to an approximate mean weight of 2.5 kg in approximately 13-14 months post transfer. After this time, they can be counted, graded and redistributed among the pens in preparation for harvest.

Throughout this growing period, the salmon will be fed organic rations from a feeding barge (see opposite) deployed on the shoreward, most sheltered side of the site and will have a length of 24m and a beam of 10m. The feeds used for MOWI's 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 at Ballycrovane pier or Dinish Island and from there to the barge.



The proposed site is projected to hold a maximum total biomass on-site of approximately 2,200 tonnes at a peak stocking density of $\leq 10\text{kg/m}^3$ of salmon. This maximum stocking density is low by international salmon farming standards. This is in line with the high animal welfare principles and organic salmon farming standards to which MOWI operates. This leads to the production of fitter, more evenly sized fish. Peak biomass will occur between June and July of Year 2 in each production cycle. Mean harvest weight is expected to range between 4.5 and 5.6 kg with harvesting taking place approximately 16 months after the smolts were initially transferred to the site. This will involve transferring harvestable fish from the site to the harvest vessel located at sea which will then be transferred to the processing factory in Rinmore, Co. Donegal

The well boat, *MV Grip Transporter* (opposite), is under long-term lease to MOWI and it will be used for smolt transfer, counting, grading, bath treatment and harvesting. This vessel will be moored at Killybegs, Co. Donegal.



When the farm is in full production it will be serviced by a 17m twin engine workboat (*MV Orchid*), a 7m small tender work boat and a 5m PolarCirkel HDPE boat. These 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 at Ballycrovane Pier/ Dinish Island where they will be moored when not in operation.

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 (SOP's) under supervision and monitoring by the company's veterinary consultants.

All tasks on MOWI 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 *JN1524 Inishfarnard EIA – Volume 3 - Appendices*.

Salmon Farming & the Environment

To address EIA obligations under the Directive 2011/92/EU as amended by Directive 2014/52/EU an EIA has been undertaken for the proposed operations at Deenish. 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:

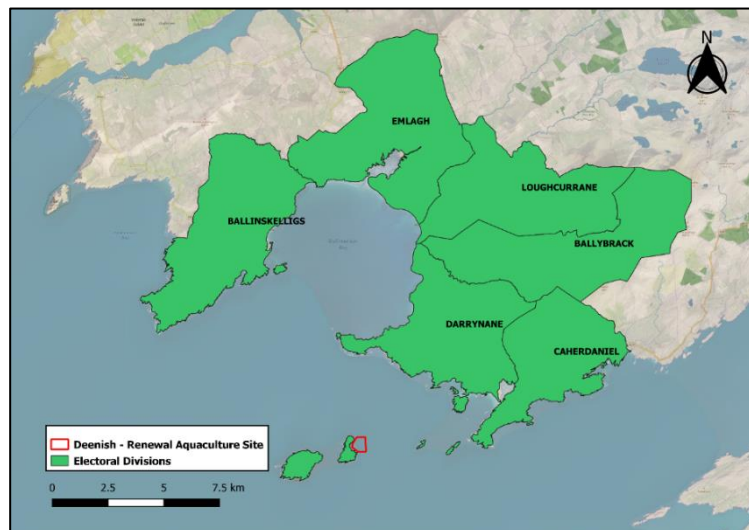
- Population and Human Health
- Biodiversity
- Land and Soils
- Water
- Air and Climate
- Noise
- Material Assets
- Cultural Heritage and Archaeology
- Landscape and Visual Resources
- Cumulative Impacts

Population & Human Health

Population

The population of the 6 Electoral Divisions (EDs) closest to the Deenish site in 2016 was 2,147 which was made up of 850 households. Of the 6 EDs, Emlaghmore located on the western side of Ballinskelligs Bay has the highest total population at 871, followed by Ballinskelligs (total population of 390), Lough Currane 311, Caherdaniel 313, Darrynane 179 and Ballybrack 83.

The existing aquaculture operations at Deenish Island employs, from the local population, 7 full-time employees, with 4 cleaner fish/fish health coordinators, 6 operations staff, 2 mechanical staff and 2 admin staff all shared between four different sites, equating to 10.5 full time employees onsite. Contracting staff are also hired consisting of 4 part time staff from Beara Iron, 1 part time electrician, 4 divers working 3 days per week and 1 driver for transportation purposes from O'Callaghan transport. Staff will increase by a further 6 people during harvesting (3 full time crew assisted by 3 harvest crew). The renewal of the aquaculture licence 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**.



The total value of salmon aquaculture in 2016 in Co. Kerry was €22m, of which €14.3m is attributed to salmon production. The aquaculture production levels in Co. Kerry in 2016 were 6,313 tonnes of which 2,494 tonnes was salmon production. The renewal of the existing licence will see salmon production at the site increase from 500 tonnes (annually) to 2,672 tonnes of harvestable weight over a 2 year period (an approximate annual increase of 836 tonnes). This would increase aquaculture production in Co. Kerry from 6,313 tonnes to 7,149 tonnes, with salmon production increasing from 2,494 tonnes to 3,330 tonnes. This increase in salmon production would equate to an increase to the economy from aquaculture production of €4.78m. This is a **positive effect** of the renewal of the licence and change to operating conditions of the licence.



Hunan 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, socio-economics and tourism (including recreation) and waste 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, MOWI operate to an Occupational Health and Safety management system (18001:2007 HSAS certified) as detailed in the Company's SOPs relating to health and safety. These SOP's 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 to the site boundaries and the operating conditions will **not give rise to negative effects on human health.**

Biodiversity

Conservation

The Deenish site is located in Kenmare River Special Area of Conservation (SAC) and Deenish Island and Scariff Island Special Protection Area (SPA). The SAC is designated under the EU Habitats Directive (92/43/EEC) due to its significant ecological importance for species and habitats protected under Annexes I and II respectively of the Habitats Directive, while the SPA is designated for the protection of populations and habitats of bird species protected under the EU Birds Directive (Council Directive 2009/409/EEC). The EIA examined in great detail the potential impacts of the farm on protected habitats and species and it was determined that there would be **no significant effects.**

Seabed (Benthic) Environment

The site is located on the eastern flanks of Deenish Island and is sheltered from westerly and southerly swells. The seabed under the site is primarily flat and is characterised by predominantly sands sediments (ranging to fine and medium sand) with varying proportions of coarse shell fragments. The seabed at the Deenish salmon pens is dominated by the bristle worm community with other species such as the common starfish, starfish, and brittlestars.

The seabed in Kenmare River SAC hosts a wide range of marine communities ranging from exposed coastal areas to ultra-sheltered sites. The composition of the seabed in the bay ranges from coarse shelly sand and gravel, to reefs, muddy sand and maërl (coralline algae).

As with any living organism farmed in an intensive manner, fish will deposit waste material (faeces and a small amount of uneaten food) 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 limited migration of sediment deposition away from the pens.

The bulk of the waste generated by a pen of large salmon is organic and therefore, can be assimilated 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 to assimilate 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.

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

Kenmare Bay SAC is of conservation importance due to the presence of Harbour Seal (*Phoca vitulina*). The site also provides foraging ground for grey seals. 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 breeding, moulting and resting sites for seals, consequently **significant disturbance effects to seals will not occur**.



Kenmare Bay SAC is designated Otter (*Lutra lutra*). The farm site is outside the normal foraging range of otter while the water depths at the farm site are in excess of the diving range of otters. Consequently, it is considered extremely unlikely that otters will come into contact with the aquaculture pens or aquaculture activity; consequently, **significant effects to otter will not occur**.

In addition, cetacean species reported in the bay include bottlenose dolphins, common dolphins, Risso's dolphin, harbour porpoise, Striped dolphin, White-beaked dolphin, Atlantic white-sided dolphin, Long-finned pilot whale, Fin whale and minke whale) all have the potential to forage (albeit infrequently) in Kenmare Bay. Cetaceans rarely interact with marine farm sites and so **effects will not occur**.

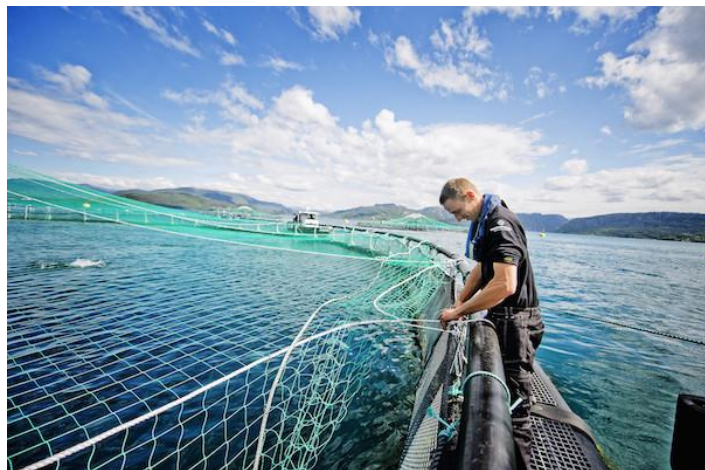
Birds

Given the location of the project, bird species with preference for foraging in terrestrial and near 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 of ranging foraging behaviour including:

- Arctic tern (*Sterna paradisaea*)
- Black-headed Gull (*Larus ridibundus*)
- Black Guillemot (*Cepphus grylle*)
- Common Gull (*Larus canus*)
- Common Tern (*Sterna hirundo*)
- Cormorant (*Phalacrocorax carbo*)
- Eider (*Somateria mollissima*)
- Fulmar (*Fulmarus glacialis*)
- Gannet (*Morus bassanus*)
- Great Black-backed Gull (*Larus marinus*)
- Guillemot (*Uria aalge*)
- Herring Gull (*Larus argentatus*)
- Kittiwake (*Rissa tridactyla*)
- Leach's Storm Petrel (*Oceanodroma leucorhoa*)
- Lesser Black-backed Gull (*Larus fuscus*)
- Little Tern (*Sterna albifrons*)
- Manx Shearwater (*Puffinus puffinus*)
- Mediterranean Gull (*Larus melanocephalus*)
- Puffin (*Fratercula arctica*)
- Razorbill (*Alca torda*)
- Red-throated Diver (*Gavia stellata*)
- Roseate Tern (*Sterna dougallii*)
- Sandwich Tern (*Sterna sandvicensis*)

The assessment of potential disturbance impacts to birds considered the sensitivity of the bird species and its foraging habitat flexibility as well as the suitability of the farm area for foraging for the species.

Many of the bird species that visit the site and forage subtidally have the potential to interact with the fish farm pens but if reasonable measures are taken against predation, such as the correct installation and fixing of bird nets, most species will do nothing more than perch until disturbed. 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 in birds.**



Fisheries

Cod, mackerel, horse mackerel, whiting and white belly anglerfish/ monkfish use the waters near Deenish Island as either nursery or spawning grounds with all overlapping the proposed aquaculture renewal site except for herring which occurs further outside of the bay. The area is also within the range of adult herring, megrim, hake, whiting, haddock, monkfish, Atlantic cod, Blue Whiting and Atlantic salmon. Given the nature of salmon aquaculture and the relatively small spatial overlap of the proposed site with nursery or spawning grounds **potential significant effects will not occur.**

The following 13 rivers flow into the Ballinskelligs bay and into the north western section of Kenmare bay Alachaí Beag Theas, Ardsheelhane, Coomnahorna, Cummeragh, Coom, Derreendrislagh, Emlaghmore, Finglas, Inny, Isknagahiny, Liss, Owreagh and Sneem. Out of these 13 rivers there are two well-known salmonids rivers, these being, the Finglas and Inny rivers which discharge into Ballinskelligs bay approximately 8.4km and 11.6km respectively from the Deenish site.



The control and reduction of sea lice within farmed salmon pens in Kenmare Bay is important to the welfare of wild salmon and sea trout as well as to the farmed salmon itself. MOWI 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 MOWI's 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 antibiotic treatments are never used prophylactically for farmed salmon. Modern treatments, in particular those for 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 are 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 ranges in consistency from of coarse shelly sand and gravel, to reefs, muddy sand and maërl (coralline algae) with seabed sediments at the farm itself consisting of fine to medium sands with varying proportions of coarse shell fragment.

In terms of benthic faunal community, Inishfarnard conformed to the NPWS community type; 'Coarse sediment dominated by polychaete community complex'. Results from benthic surveys carried out in 2017 and 2018 indicate low levels of organic enrichment at the pens due to 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 (marine worms) can assimilate with no lasting impacts; consequently, it is concluded that the proposed operations will not **significantly effect land and soils**.

Water

Water depth at the western edge of the proposed licenced area closest to Deenish is Island is approximately 6m. Depths increase eastward away from the island reaching approximately 30m and 33m respectively on the northern and southern boundaries. Lowest tidal current at the Deenish site occur around the turn of the tide and range from 0.02m/s to 0.07m/s while maximum current speeds occur at mid-flood period and ranged between 0.05m/s and 0.26m/s.

Soluble waste from fish farms consist 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 needed by 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 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 result significantly effect 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 on a daily basis 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 be maintained 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 in Coulagh Bay consists of 7 employee cars on a daily basis (this may increase to 10 on some days, depending on staff attendance who also work on additional sites in the area), a 22 ton 16.4m long articulated lorry brings feed to the site at a minimum of once per week (max 4 times per week) and a waste disposal lorry which collects mortalities a minimum of once per week, 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. As this is a licence renewal application, all aquaculture associated traffic makes up part of the daily traffic volumes in the area. The operations proposed at Deenish will not significantly changes existing levels of traffic; there will be **no significant effect on traffic.**

Shipping and Navigation

As this is a licence renewal application, all aquaculture associated vessel traffic makes up part of the existing shipping levels in the area. Shipping traffic associated with the site will not significantly change due to the renewal license, changing the site boundaries or operating conditions attached to the licence; there will be **no significant effect on shipping and navigation.**

Commercial Fisheries and Aquaculture

A range of commercial fishing occurs in the coastal waters of Ballinskelligs Bay, Deenish Island and Kenmare Bay. The existing licence does not significantly affect fisheries in the bay; there will be **no significant effect on commercial fishing**.

Salmon production in Co Kerry was estimated in 2017 to be 2,494 tonnes with a value of over €14.2 million (figures based on BIM 2017 Survey). The renewal of the licence and approval of the amendments proposed will see salmon production at the site change from 500 tonnes (annually) to 2,672 tonnes of harvestable weight over a 2 year period. 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 renewal application varies from the existing licence in that it requests change to the boundaries of the existing site and to the operating conditions attached to the licence. If approved, the site boundaries will increase from 14.5ha to 33.5ha. The relative change in site area is not significant and will not prohibit or impact upon any existing recreational activity in the bay; 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 Standard Operating Procedures which MOWI have 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

The proposed licence renewal will have no direct interaction with surrounding shipwrecks and impact on any of the sites located in the adjacent townland. No archaeological features or indications of archaeological materials were identified from the side-scan sonar survey conducted over the proposed aquaculture site; consequently, it is concluded that there 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 Inishfarnard have been a normal part of the landscape in Kenmare Bay and the shore base 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 cumulative impact of the renewal of licence T6/202 and other projects in the vicinity (existing or permitted) was examined during the EIA procedure. The only projects that could have the potential to give rise to cumulative impacts are salmon farms within Kenmare Bay. These farms are located at Doon

Point, Kilmakilloge Harbour, and at Inishfarnard Island. The sites at Doon Point and Kilmakilloge Harbour are currently unstocked and have been so for some time; consequently, cumulative effects from these sites are excluded. The Inishfarnard island site is currently operated by MOWI. The assessment identified that the only aspects of the Deenish and Inishfarnard projects that could give rise to cumulative impacts are discharges from the farms.

Hydrodynamic modelling exercises were undertaken to determine the fate of discharges from the Deenish and Inishfarnard sites. The modelling exercises indicated that as plumes of discharges from the sites do not combine, being separated by the deep Kenmare Bay channel with limited northerly or southerly flows. Given that the spatial footprint of discharges from the farms do not overlap it is **concluded that there will be no cumulative effects.**